# 1. Literature Review

Review into the Suicide and Self-Harm Prevention services available to current and former serving ADF members and their families

National Mental Health Commission

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# Table of Contents

# List of Tables

# List of Figures

# Abbreviations and Definitions

| Abbreviation | Definition |
|---|---|
| ABS | Australian Bureau of Statistics |
| ACEs | Adverse Childhood Experiences |
| ACT | Australian Capital Territory |
| ADF | Australian Defence Force |
| AIF | Australian Imperial Force |
| AIHW | Australian Institute for Health and Welfare |
| AISRAP | Australian Institute for Suicide Research and Prevention |
| AOD | Alcohol and Other Drugs |
| APA | American Psychological Association |
| APS | Australian Public Service |
| ARA | Australian Regular Army |
| ASDR | Age Standardised Death Rate |
| ASIST | Applied Suicide Intervention Skills Training (Program) |
| AUD | Alcohol Use Disorder |
| AUDIT | Alcohol Use Disorders Identification Tool |
| CDC | Centres for Disease Control (US) |
| CoC | Chain of Command |
| CRESP | Centre for Research Excellence in Suicide Prevention |
| CSF | Comprehensive Soldier Fitness (US Army) |
| CTSS | Centre for Traumatic Stress Studies |
| DALYs | Disability-Adjusted Life Year |
| DoH | Department of Health (Australia) |
| DSH | Deliberate Self Harm |
| DSM | Diagnostic and Statistical Manual of Mental Disorders |
| DVA | Department of Veterans Affairs |
| ED | Emergency Department |
| ESO | Ex-Service Organisation |
| GFC | Global Financial Crisis |
| HD | Health Directive (ADF Policy) |
| K10 | Kessler 10 |
| LiFE | Living is for Everyone Framework |
| MHFA | Mental Health First Aid |
| MHP&R | Mental Health Psychology and Rehabilitation |
| MHRAT | Mental Health Risk Assessment Training |
| MRT | Master Resilience Training (US Army) |
| NHMRC | National Health and Medical Research Council |
| NHS | National Health Service (UK) |
| NMHC | National Mental Health Commission |
| NSSI | Non-suicidal self injury |

| OECD | Organisation for Economic Cooperation and Development |
|------|------|
| PACPMH | Phoenix Australia Centre for Posttraumatic Mental Health |
| PCL | Posttraumatic Stress Disorder Checklist |
| PFA | Psychological First Aid |
| POPS | Post-Operational Psychological Screening |
| PTSD | Post-Traumatic Stress Disorder |
| RAAF | Royal Australian Air Force |
| RAN | Royal Australian Navy |
| RtAPS | Return to Australia Psychological Screening |
| SUB | Substance Use Disorder |
| STB | Suicidal thinking and behaviour |
| UK | United Kingdom |
| UN | United Nations |
| USA | United States of America |
| USPSTF | US Preventative Services Task Force |
| VAA | Veteran's Affairs Administration (US) |
| VVCS | Veterans and Veterans Families Counselling Service |
| WHO | World Health Organisation |

## Key Definitions

There are several key terms to define for this report. A full glossary is included at the conclusion of the Literature Review.

**Australian Defence Force (ADF):** The ADF in this Review refers to the three service arms, Army, Navy and Air Force and those uniformed personnel within the Department of Defence. It includes regular service personnel and reservists.

**Mental Health:** Mental health is a state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. In this positive sense, mental health is the foundation for individual well-being and the effective functioning of a community (WHO, 2010).

**Mental (health) disorder / psychiatric disorder / mental illness:** A mental (health) disorder or psychiatric disorder or diagnosable illness characterised by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress that significantly interferes with an individual's cognitive, emotional or social abilities.

**Prevention:** A strategy or approach that reduces the likelihood of risk of onset, or delays the onset of adverse health problems or reduces the harm resulting from conditions or behaviors.

**Risk factor:** A suicide risk factor is the presence of any factor empirically shown to correlate with suicidality, including age, sex, psychiatric diagnosis and past suicide attempts. In this report, it includes warning signs, sometimes described as proximal risk factors.

**Self Harm, Deliberate Self Harm (DSH) or Intentional Self Harm (ISH):** The various methods by which individuals injure themselves, such as self-cutting, self-battering, taking overdoses or exhibiting deliberate recklessness.

**Service or Serving Personnel:** These are the regular and reservist uniformed personnel within the Department of Defence and the three service arms (Army, Navy and Air Force).

**Stigma:** Stigma refers to the social disapproval of individuals or groups due to a discredited characteristic that distinguishes them from others. Corrigan (2004) and Thornicroft et al. (2007) map stigma as a problem of knowledge (ignorance), attitudes (prejudice) and behaviour (discrimination).

**Suicidal Ideation and behaviours:** A complex process that can range from suicidal thoughts, through planning of suicide, to attempting suicide and ending in suicide. Suicidal behaviour is the consequence of interacting biological, genetic, psychological, social, environmental and situational factors (Hawton and van Heeringen, 2009).

**Suicide (or 'fatal suicidal behaviour'):** An act with a fatal outcome which the deceased, knowing or expecting a potentially fatal outcome, has initiated and carried out, knowing or expecting a potentially fatal outcome (De Leo et al., 2004).

**Veterans:** In this report, veterans are any former members of the ADF or where specified, other military services. It includes those for have served in any capacity – those deployed and those not deployed to conflict zones, peacekeeping missions and humanitarian missions.

# Executive Summary

This literature review serves to introduce the reader to the phenomenon of suicide more broadly, and present a comprehensive knowledge base of suicide, self-harm and prevention within military populations both within Australia and worldwide.

The terms of reference for The Review were set as follows:

1) The incidence of suicide among serving and former serving Australian Defence Force (ADF) members compared to the broader Australian community.

2) The range of services available to current and former serving members and their families.

3) The effectiveness of these services in supporting members and their families while they serve, as they transition from Defence to civilian life, and later in their civilian life.

4) Any duplication or gaps in current services and how they might be addressed.

5) Any barriers to current and former serving members accessing services, taking into account cultural relevance, availability of providers, employment, functional capacity and degree of ill health.

6) The extent to which former serving members utilise services provided by other parts of government, ex-service organisations, the private sector or non-government organisations

## Approach

The literature review intends to, in part, present an evidence base for the Terms of Reference. As with any major literature review, it is possible that there exist unintentional omissions, oversights and gaps in what is presented. Furthermore, there are limitations on what can be included here. Nevertheless, the authors have constructed this review being mindful that the reader may be approaching the topic with 'fresh eyes'. As such, suicide as a phenomenon in the general population serves as an introduction, before delving deeper into its occurrence within the ADF and ex-serving population.

Regarding military populations, the experience of international military organisations and personnel are drawn upon to inform this literature review. How suicide effects serving and ex-serving populations of the ADF, including veterans, non-deployed ex-service personnel, peacekeepers, reservists, and families is of primary importance. However, international literature serves to offer unique comparisons and reference points for the consideration and analysis of the Australian evidence.

Evidence included in this review is drawn from many sources including: health literature databases; general academic databases; internet search engines; relevant State and Federal authority websites; materials provided by Australian State and Federal authorities; service provider websites; and reference lists contained within the bibliography of this review. Data was examined up to 1 February 2017.

It is recognised that contained within the many sources referenced in this literature review may reside data inaccuracies, weak methodological protocols and a high variability of research designs. These shortcomings will be addressed at the beginning of the review. Importantly, the language used throughout the literature review when referring to suicide and associated events, is aligned with a direct language approach. Section 1 describes the methodology and contextual information.

## The Structure of the Literature

This literature review is structured in two distinct parts. **Part 1** is a comprehensive presentation of the phenomenon of suicide and self-harm. This includes prevalence of suicide and self-harm within the general population, risk and protective factors of suicide and self-harm, lived experience of suicide, suicide prevention strategies and methods for assessing suicide risk. It is important to remember that

this section provides an overview of suicide and self-harm in general. Suicide and self-harm within the ADF may reflect elements of this discussion, but remains unique to the military context.

The literature indicates that suicide is a complex problem, and includes a range of social, personal, and contextual risk factors, the constellations of which vary with individuals. It is a response to overwhelming conditions, sometimes built up over time, sometimes impulsive.

Global prevalence for suicide is increasing, and Australian data indicate upward trends of between 5% and 10% per year. Self-harm, while associated with suicide on many levels, is a separate issue and requires special consideration. The conditions that may lead to self-harm, including affect-regulation, anti-dissociation, anti-suicide, interpersonal-influence, interpersonal boundaries, and self-punishment help to distinguish self-harm from suicide and provide opportunities for intervention. Section 2 introduces the prevalence and contextual data around suicide and self-harm.

The pathways to suicide and self-harm are partially explained by models of behaviour developed over decades of research. Increasingly the literature indicates the need for early intervention and there is a growing body of research that supports an 'ideation-to-action' framework. A better understanding of the contributors to suicidal ideation are particularly poignant for serving and former members of the ADF, as their distinctive shared experiences augur well for early prevention strategies. While the pathways are difficult to predict, some patterns have been identified and remain the focus of research (biological, sociological, and psychological research). Section 3 examines these models and frameworks..

The risk factors for suicide have been the focus of significant research and caution needs to be exercised in regard to a 'checklist' approach to suicide prevention. While numerous factors have been identified (e.g. mental disorder, adverse childhood experiences, isolation, drug and alcohol misuse), the constellations of factors and an individual's personal vulnerability increase complexity. The risk factors are often described as 'distal', factors that might predispose an individual to risk, and 'proximal', factors or stressors that may persuade an individual to consider suicide as a solution. For serving and former ADF personnel, the training, sometimes perilous working environments, solidarity within ranks, and career pathways add distinctive complexity to an understanding of risk and support (both in-service, and after discharge) and these are discussed at length in Section 4.

Protective factors bolster an individual's capacity to find alternate solutions to problems or challenging circumstances. These factors include social connection, resilience, access to care frameworks, a sense of belonging and contribution, positive relationships, a sense of purpose and clear values. As with risk factors, protective factors can present in any combination and are also, complex. These are discussed in Section 5.

The 'lived experience' provides an insight into the challenges of major life events, and also mental illness. While adverse conditions increase the risk of considering suicide as a solution, appropriate care and support can lead to pathways to recovery. The lived experience adds to our knowledge of risk and protective factors, and this is examined in Section 6.

For those serving and former personnel, risk and protection is a factor of recruitment, training, enculturation, strict hierarchies, deployment, working environments and transitions. These experiences are not shared with the general population and comparisons are unhelpful. In that regard, an exploration of workplace cultures and suicide was examined. Findings indicate access to lethal means of suicide, high stress levels, uncertainty and isolation increase the risk for suicide. Workplace cultures, inculcated belief systems and their underlying assumptions regarding behaviour bring particular challenges to organisational change and these are explored in Section 7.

A series of international and national frameworks have shaped the way in which suicide prevention strategies have been designed, including action areas for high risk groups. National and state based

strategies are examined and comparisons made to international examples. Individual and population based strategies are described, and effectiveness is discussed in Section 8. At a more local level, the challenges of suicide risk assessment and responding to suicide are outlined in Sections 9 and 10, including processes in emergency departments (ED), response protocols and practice guidelines.

**Part 2 of the review** pertains specifically to suicide and self-harm in military organisations overseas and the ADF. Prevalence statistics are provided, risk and protective factors are discussed, suicide prevention programs delivered to military populations are covered, and military risk assessment and screening tools are evaluated. Further to this is a discussion of emerging neuro-scientific and information technology research relevant to suicide prevention in the ADF.

The incidence (rates) of suicide within the ADF are lower than the general population; and the rates for the former ADF population are slightly higher. These statistics vary over time (and age-groups) but these trends are consistent. Key findings in the literature indicate cultural barriers to help-seeking, exposure to trauma, depression, guilt and shame, and substance abuse as particular concerns. International comparisons help an understanding of the complexity of suicide, and the important local contextual factors. Response to suicide in the military has been widely discussed in the literature, however many suicide prevention programs have been reported as having little impact. For former-serving personnel, the issues are more complex, with longer timelines, and access to timely and effective support is often problematic. More recent literature describes prevention strategies as more preparatory (e.g. resilience training) and educational (e.g. de-stigmatising of mental health issues), and these augur towards more protective environments. Some 'generic' suicide prevention programs have not been rigorously evaluated and their impact remains unknown. Section 11 examines this data.

Section 12 examines self-harm in the ADF. The data is however, equivocal. Nevertheless, the military literature identifies social isolation as a key contributor. Uncertainty in major career transition points, interpersonal instability and a lack of social contacts appear to be predictors of self-harm in military personnel, and mirror the risk factors associated with suicide ideation, attempts and deaths.

Responding to suicide and self-harm risk in the military is complex, and while much research has been conducted, less is known about the effectiveness of programs and strategies. For any individual (or group) it requires an understanding of the individual, social and contextual factors, and which of these (or combinations) are modifiable. More specifically it is important to understand the characteristic risks of groups of individuals for whom a concern has been identified (e.g. exposure to trauma). There is little support (or evidence of efficacy) for 'off-the-shelf' suicide prevention training, however some multi-layered intervention programs have shown promise. The ADF has addressed concerns for suicide by adopting an occupational mental health and wellbeing approach, recognising a shared responsibility for mental health and wellbeing between command, individual ADF personnel and the health care system. Several programs and initiatives have been implemented, however concerns and challenges remain. Transition out of the ADF has been identified as a major concern and potentially a point of positive intervention. The return to civilian life involves a sense of loss, removal of financial security, changes in social connection and the loss of identity. Section 13 describes several of these programs and models.

Some programs regarding suicide prevention have been standard practice, including the use of screening tools and risk assessment tools. While these can contribute to an understanding of an individual's risk, the efficacy of screening and assessment is unclear particularly within military settings. A critical discussion of these practices is presented in Section 14.

The literature review concludes with the key areas that require focus, as identified by the extant literature discussed throughout the document. A comprehensive bibliography of relevant literature is provided for the reader.

# 100 Key Points

### Section 2 Introduction and Suicide and Intentional Self Harm

- Suicide is a complex phenomenon, and is a response to overwhelming conditions, both personal and contextual.

- Suicide prevention and self-harm mitigation is a global public health priority.

- Age standardised suicide rates in many countries have not reduced over time, in Australia latest data suggest the suicide rate is increasing.

- Suicide rates are likely to be underestimated across the globe due to coronial reporting protocols, data collection methods and various other sources of incomplete or incorrect recording of deaths.

- Self-harm should be considered a distinct behaviour separate from suicide, though the two may co-occur.

- Stigma can be reinforced, often unintentionally, through language and thus acts as a barrier to prevention and help seeking behaviours

### Section 3 Pathways to Suicide and Self Harm

- The phenomenon of suicide has been studied for over a century, and in such time a number of explanatory models have been advanced

- Despite the amount of research conducted, suicide research is considered to be in a 'pre-paradigm phase'

- Risk factors for suicide can be related to individual, social and contextual variables, for which there is no clear 'check list' to determine whether an individual is likely to die by suicide

- At present, an ideation-to-action framework may present an emerging paradigm that can explain the progression from consideration of suicide (based on an accumulation of risk factors) to the behaviour of suicide

### Section 4 An Analysis of Risk Factors

- Risk factors are important for the development of suicide prevention strategies; however, the relative strength of a risk factor is subject to conjecture within the literature

- Risk factors are made up of distal factors (e.g. impulsivity) and proximal factors (e.g. negative life events)

- In a recent 50-year meta-analysis, researchers found that papers investigating risk factors were not significantly better than chance at predicting suicide.

- Risk factors which may pre-dispose an individual to suicidal or self-harm behaviours include: mental illness; stigma; adverse childhood experiences and adverse life events; the trauma that comes with colonisation for Aboriginal and Torres Strait Islanders; social and economic hardship and neurological and genetic factors

- It is highly likely that a combination of risk factors, rather than one single variable, contributes to the onset of suicidal ideation and suicidal behaviours

### Section 5 An Analysis of Protective Factors

- Analogous to risk factor research, few studies can identify strong protective factors regarding suicide and self-harm

- A broader understanding of mental wellbeing, resilience and social connection affords stronger evidence of protective factors which are relevant to suicide and self-harm

- Social connection has been found to play a key role in increased life expectancy and resilience

- Social support is negatively correlated with PTSD symptom reporting upon return from military deployment, with fewer symptoms being reported when social support is high

- Resilience plays a key role in maintaining mental wellbeing, particularly in response to adverse life events and traumatic experiences.

- Resilience is a process, rather than a personality trait. It requires thoughts, actions and behaviours that can be learned and developed

- Neurological research suggest resilience is a key human function, vital to our capacity to survive

- A health system wide protective factor is the ability for an individual to access quality mental health care

- Quality care involves an integrated system with cross-sector health professions working together to deliver care in a non-stigmatised and respectful manner

- Presentation and transition through and out of emergency departments for those with a mental health condition is a critical point of contact

- Successful implementation of several initiatives, such as 24-hour crisis care, assertive outreach, 7-day follow up front line clinical staff training have been shown to reduce suicide rates

### Section 6 The Lived Experience of the General Population

- The lived experience of someone who has survived a suicide attempt, or those bereaved by suicide, are extremely important in informing what can be done to prevent suicide behaviour

- Suicide can be prevented with appropriate action

- There is a shortage of professional care for suicidal behaviour

- There are significant rural and remote challenges in provision of care and support

- The stigma associated with suicide is a strong risk factor

- There is a clear link between mental illness, the access to and effectiveness of care and suicidal behaviour

- Major life events and traumatic experiences can be key indicators of suicidal behaviour

- Support for family, friends and work colleagues after a suicide is imperative

### Section 7 Suicide and Self Harm in the Workplace

- The workplace is often the last place where there is sustained contact with someone who has died by suicide

- There is a link between workplace settings and increased rates of suicide including: access to lethal weapons; occupations involving high stress environments; and where men or women are working in non-traditional occupations

- Some occupations, such as the military, may lean toward a 'healthy worker effect' whereby those employed go through significant health screening to be able to be employed in such a setting

- Workplace culture plays a role in the mental health of a workforce

- Building a positive, resilient workplace culture can have benefits for the wellbeing of any workforce

## *Section 8 Suicide Prevention Strategies*

- There has been an increase in the development and publication of suicide prevention strategies

- Despite the increase, suicide rates remain stagnant or continue to rise

- Suicide prevention models typically address a balance between reducing risk factors and increasing protective factors

- In a study of 41 suicide prevention strategies, the three most effective implementations included reducing access to lethal means, the continuation of contact with persons discharged from an acute mental health unit, and implementation of emergency call centres

- There are difficulties in evaluating suicide prevention strategies as they are often population focused which becomes difficult when considering the variability of experiences any given person may have within an evaluation period

- Multi-level, complex interventions seek to promote individual, family and community connectedness

- Multi-level prevention programs focus on both those at the lower risk spectrum, to those who may be considered high risk for suicidal behaviour

## *Section 9 National and International Suicide Prevention Frameworks*

- The World Health Organisation stipulates that there is no excuse for a country or jurisdiction to not have developed and implemented its own suicide prevention strategy and framework

- Several countries have established frameworks, however, most notably Canada does not yet have a national suicide prevention framework

- Australia's suicide prevention framework is the Living is for Everyone (LIFE) Framework

- LIFE incorporates whole of population promotion and prevention strategies, intervention for identified risk groups, integrated professional care, long term treatment and support options and multi-layered support

- Suicide prevention frameworks are only effective when they are implemented completely, rather than in a fragmented way

## *Section 10 Assessing Suicide Risk*

- Assessing suicide risk using standardised measurement is complex

- Several screening tools have been developed for various professional health services

- Evidence suggests that screening for suicide risk in adolescent and adult populations, and with psychiatric inpatient populations provide very little clinical benefit

- Simple checklists should be cautioned against, particularly given the complexity of suicide risk

- An open dialogue and flexible approach based on motivational theory for uncovering suicidal ideation and intent has been suggested as an effective screening mechanism

- Risk assessment during discharge from emergency departments is important, particularly as suicide risk is greatest 30 days after discharge from hospital

### *Section 11 Responding to Suicide and Self Harm*

- Postvention is the active response and support provided to an individual after attempting suicide, and to those close to someone who has died by suicide

- At present, the US Department of Defence does not have a postvention policy

- There are several approaches to postvention including sending regular postcards to individuals who have attempted suicide and outreach services for those bereaved by suicide

- An emerging space is that of digital postvention pathways including online and mobile applications to actively support someone after a suicide attempt

- Postvention research remains a challenge and more understanding of the effectiveness of digital interventions is required

## Part 2

### *Section 12 Suicide in the ADF and Other Military Populations*

- The suicide rate amongst US military populations have increased significantly since the early part of this century

- Suicide rates among ADF personnel have not followed this trend but remain constant

- Between 2001 and 2014 292 ADF personnel died by suicide, comprising of 142 ex-serving personnel, 84 full time serving personnel and 66 reservists

- For those aged 18-24 in the ADF, the suicide rate is significantly higher when compared with the general population

- Risk factors for suicide, much like the general population, are many and complex, however homelessness in ex-serving personnel is a major concern

- Co-morbidity of homelessness, mental illness, and drug and alcohol abuse greatly increase the risk of suicide ideation and behaviours

- Specific to military populations are the feelings of guilt, shame and moral injury experienced due to involvement in traumatic experiences whilst deployed

- Moral injury refers to the guilt and shame felt when one has taken actions, or witnessed actions, against the deep moral code they were brought up with

- The ordered and predictable nature of Australian Military culture is heavily ingrained in recruits, serving members and veterans

- As a consequence of this culture, personnel may feel the need to show no signs of weakness, which can prevent help-seeking in response to mental illness

- Stigma is also associated with such a high pressure cultural environment such as the ADF.

### *Section 13 Self Harm in the ADF and Other Military Populations*

- There is considerable variability in rates of self-harm in military and veteran populations worldwide

- Social connections and support may be protective factors preventing self-harm

- Self-harming behaviours not only affect the individual, but also those around them, suggesting support for families is also important

- Family members of Australian Vietnam veterans have been shown to have a higher risk of suicidal ideation, planning and attempts

### *Section 14 Responding to Suicide and Self Harm in Military Contexts and Veterans*

- Suicide prevention programs and their effectiveness within military populations is lacking evidence

- 'Off the shelf' programs may not address the complexity of suicidal ideation and behaviour in such a specialised population

- The Israeli military has shown significant drops in their suicide rates, seeing a 57% decrease

- A key measure of the Israeli Defence Force program was reducing weapon availability

- The period of transition out of the ADF is a critical time to provide high quality prevention and intervention strategies

- Returning to civilian life can be a difficult process as an individual must construct a new identity outside of the defence force

- Adding to this pressure is the need to find further employment and maintain family relationships which may have been strained through their time in the Defence Force

- Incidence of mental illness and alcohol and other drug abuse may make the transition process more difficult

- The 'Thriving Transition Cycle' offers a model to identify where an individual may be in the process of transitioning into civilian life and what can be done to support them through the experience

- Several programs have been initiated within the ADF to address resilience, mental wellbeing, and military culture regarding mental health including BattleSMART, the Keep Your Mates Safe Suicide Prevention Training, ASIST Gatekeeper Training and Suicide Risk Assessment Training

- Evidence for the effectiveness of these programs is lacking

### *Section 15 Risk Assessment and Screening*

- Suicide risk screening within military populations is common practice worldwide

- Evidence for the effectiveness of such screening tools varies, and often mirrors that of evidence related to the general population

- The ADF currently employ the Kessler Psychological Distress Scale, Posttraumatic Stress Disorder Checklist and the Alcohol Use Disorders Identification test when personnel return from deployment

- Personnel are then subject to a Post Operational Psychological Screening assessment

- Personnel are cognisant of how to score below risk thresholds on the screening tools used within the ADF. This may be done to avoid being discharged or ensure future deployment

- Risk assessment is most effective when it is properly resourced (e.g. conducted by clinical psychologists or psychiatrists), done comprehensively (screening tools and interviews), and when and where members feel comfortable to provide honest responses, without fear of persecution

### Section 16 Emerging Technologies and Innovation

- Emerging technologies and innovation will contribute significantly to the understanding of suicide in the general population and specific populations, such as the ADF, in the near future.

- Early studies on deployment effects on neurological functioning found that those deployed to the Iraq war showed signs of decreased levels of sustained attention, verbal learning and visuo-spatial memory upon return from overseas.

- Evidence suggests 'pre-traumatic experiences' can affect an individual's post-deployment experience.

- Development in neuro-science and biological testing offer significant opportunities for improved assessment and treatment of military populations affected by mTBI and PTSD and at elevated risk of suicidal behaviours.

- Digital technologies present another area of innovation which includes the development and use of online and mobile technologies to promote self-agency, mental wellbeing, prevent suicide, monitor emotional states, intervene in a crisis and provide postvention support to individuals

- Digital technologies will enable serving and former ADF members and the their families clear pathways to care

# 1.    Introduction

The Terms of Reference outlined for the Review of Suicide and Self Harm Prevention for current and former members and families of the ADF include:

1. The incidence of suicide among serving and former serving ADF members compared to the broader Australian community.

2. The range of services available to current and former serving members and their families.

3. The effectiveness of these services in supporting members and their families while they serve, as they transition from Defence to civilian life, and later in their civilian life.

4. Any duplication or gaps in current services and how they might be addressed.

5. Any barriers to current and former serving members accessing services, taking into account cultural relevance, availability of providers, employment, functional capacity and degree of ill health.

6. The extent to which former serving members utilise services provided by other parts of government, ex-service organisations, the private sector or non-government organisations

## 1.1    Purpose of the Literature Review

The purpose of this literature review is three-fold:

- to identify the prevalence of self-harm, suicidal ideation and suicidal behaviour in general, in the Australian Defence Force (ADF) and International military populations;

- to gather information on suicide prevention and evidence based best practice in regard to ADF and International Military personnel; and

- to present a focused search of Australian and International suicide prevention materials and resources relevant to the ADF and International military populations.

## 1.2    Literature Review Methodology

The evidence base for this report is drawn from the literature in suicide, and in particular as it affects serving populations and ex-serving populations of the Australian Defence Force. For the purposes of this report, this will include veterans, non-deployed ex-service personnel, serving populations, peacekeepers, reservists, and families and carers of those with a mental disorder or lived experience with suicide.

International literature is included as a tool to fill gaps in current Australian research and empirical evidence. International research on veterans, non-deployed ex-service personnel, serving populations, peacekeepers, reservists, and families will be included in this review.

Standard search processes were adopted, and the search included identification of literature and resources using:

- health literature databases such as Cochrane, Medline, Cinahl, Embase, Healthstar, PubMed electronic databases;

- General databases such as ProQuest, Ingenta, Jstor electronic, the NCVER database (VOCED) and Google Scholar;

- Internet search engines;

- Internet sites of relevant State and Federal authorities in Australia;

- Materials provided by relevant State and Federal authorities in Australia;

- Internet sites of relevant authorities and service providers in the international community; and

- References lists from articles contained in the bibliography of this Review.

A Glossary of Terms is included at the end of this literature review.

Key search words used in the search are noted in Table 1.

**TABLE 1** KEY SEARCH TERMS

| Populations Categories | Intervention Forms | Focus Categories |
|---|---|---|
| Veteran | Individual | Self-harm |
| Peacekeeper | Family | Suicide |
| Defence | Community | Suicide ideation |
| Spouse | Prevention | Suicidal behaviours |
| Family | Suicide | Suicidal thoughts |
| Friend | Mental health | NSSI |
| Service personnel | Post-vention | DSH |
| Reservist | Neuro-biology and suicide | Neuro-science and suicide |
| e-mental health | Genomics and suicide | Technology based suicide prevention |

## 1.3  Data Quality and Limitations in Methodology

Given the scale of literature being reviewed in this report there will be limitations to the research discussed, data gathered and findings presented. For clarity, these limitations are brought to the reader's attention here rather than within the main body of the report. Limitations pertain to the correctness and completeness of suicide rate data, the rigour with which suicide prevention strategies are evaluated, the variation in research methodology throughout the literature and the myriad contextual factors that differ between military and defence organisations worldwide. These limitations should be considered when reading this report.

### Correctness and completeness of suicide data

Inaccurate data records, missing data and coronial determinations compromise the data on suicide mortality and morbidity (Cantor and Neulinger 2000; De Leo et al. 2010). Similarly, while a status of veteran might contribute to vulnerability, for example, isolation, remote living, or homelessness (Perl 2011), the status of a deceased as a veteran is not necessarily recorded.

Furthermore, in Volume 2 of the NMHC's Review of Mental Health Programmes and Services (2014) the following areas and key statistics remain problematic and/or missing, with questions remaining over the rigour of suicide data in Australia:

- accurate numbers of deaths by suicide or suicide attempts;

- numbers of people presenting to emergency departments with suicidal thinking, plans or attempts;

- types of support accessed by, or offered to people, with suicidal thinking or behaviours;

- types of support which people find helpful in preventing suicidal thinking or behaviour, or in the aftermath of an attempt;

- outcomes of specific initiatives to prevent or address suicidal behaviour; and

- Aboriginal and Torres Strait Islander use of general population suicide prevention services.

### *Evaluation of suicide prevention strategies*

Further to this, the Commission found that suicide prevention programs and strategies, whilst meeting general key performance outcomes, rarely measured efficacy in terms of reduced suicide rates as a result of program implementation. This lack of rigour and quality data measurement when implementing suicide prevention programs prevents and obstructs the development of genuine, efficacious suicide prevention strategies and ultimately leads to stagnation in reducing suicide rates.

This has been highlighted by Dillon et al. (2015) finding that targeted interventions investigating changes in large populations suffered from a number of methodological shortcomings including: inability to attribute reductions in suicide to the intervention; the requirement for large sample sizes; limited ability to generalise beyond the sample; inconsistency of what is deemed 'treatment as usual'; and lack of consistency concerning definitions of outcomes.

### *Variations in research methodology*

More recently, a major meta-analysis of suicide risk factors led by researchers at Harvard University (Franklin et al. 2016), pointed to machine learning of risk algorithms as a way forward in understanding the complexity of risk for suicide. The authors found that over the last 50 years of research, utilising single or simple constellations of risk factors to predict suicide deaths was only slightly better than chance, highlighting the sheer magnitude of complexity behind suicide deaths (Franklin et al. 2016).

This complexity is reflected in the vast variations in research methodologies found in suicide risk factor research. A clear example of this is in research focussing on traumatic brain injury and subsequent suicide risk. There is, yet, inconclusive evidence of a link between traumatic brain injury and increased risk of suicide (Skopp et al. 2012), potentially due to the methodological heterogeneity of this particular area of inquiry.

 A further note of caution in relation to systematic reviews and meta-analyses. In a recent critique of the explosion in these two forms of peer review publication (Ioannidis (2016), Ioannidis from Stanford Medical School, points to the misleading and often conflicted results from systematic and meta analyses. There are several points he makes on why we need to be careful in accepting the findings form these reviews:

- sampling biases

- narrow parameters for inclusion

- the exclusion of the most recent studies (studies included in systematic and meta analyses have usually being published more than 18 month prior)

- poor methodology.

So far from these being the 'gold standard' of research, Ioannidis argues that few systematic reviews and meta-analyses "are both non-misleading and useful" (Ioannidis 2016, p. 485).

He is not alone in this view. Gilbert et al. (2010) argue that in healthcare decision-making, 'data' must be integrated with expert knowledge and context. The "Expert-based Cooperative Analysis" (EbCA), which incorporates explicit prior expert knowledge in data analysis methods, and elicits implicit or

tacit expert knowledge (IK) to improve decision support in healthcare systems is relevant in the discussion about making sense of conflicting evidence in suicide prevention (Gilbert et al. 2010).

*Contextual variation between countries*

Data are further complicated due to the significant social, cultural, personal, historical and operational differences between military services across jurisdictions. For example, the operational and deployment experience of a US army soldier in the Iraq war will be unique, and distinguishable to that of an Australian veteran of the Vietnam War and different again to an Australian or Canadian soldier deployed to the Rwanda Peacekeeping mission. As such, accurate comparisons between jurisdictions are extremely difficult to make. International literature is thus presented not with a view to compare but as a mechanism to provide greater insight and diversity to the literature being presented.

## 1.4     Suicide and language

Suicide and self-harm are significant public health issues and both have considerable stigma associated with them. Stigma can be reinforced, often unintentionally, through language and thus acts as a barrier to prevention and help seeking behaviours.

In this Literature Review, direct language around suicide and self-harm is applied. Table 2 provides guidance on appropriate language.

**TABLE 2** APPROPRIATE SUICIDE TERMINOLOGY (BEATON ET AL. 2013)

| Stigmatising Language | Appropriate Terminology |
|---|---|
| Committed suicide | Died by suicide |
| Successful suicide | Suicided |
| Completed suicide | Ended his/her life<br>Took his/her own life |
| Failed attempt at suicide | Non-fatal attempt at suicide |
| Unsuccessful suicide | Attempt to end his/her life |

## 1.5     Structure of this Review

The review will first discuss the phenomenon of suicide as it pertains to the general population (Part A), followed by suicide and suicidal behaviours within the context of ADF and International military personnel (Part B). The review will conclude with a summation of identified gaps in current literature, data and suicide prevention strategies within the ADF, along with key recommendations.

The Review also includes a summary of systematic and meta analyses of risk and protective factors and assessment tools. Key terms in this Review are defined in the foreword of the report and a full list of terminology is contained in Glossary at the conclusion.

# PART 1

## 2.  Suicide and Intentional Self Harm

### 2.1  Introduction - What Do We Mean by Suicide and Self-harm

Suicide is a complex problem and carefully described as '… a conscious act of self-induced annihilation, best understood as a multidimensional malaise in a needful individual who defines an issue for which the suicide is perceived as the best solution' (Leenaars 1999, p.155). Added to this is the important consideration of the processes that differentiate between suicidal thoughts and suicidal behaviour (Joiner et al. 2005; Klonsky and May 2015).

Suicide is a response to overwhelming conditions, both personal and contextual. It is often a perceived solution to the accumulation of problems over time, but sometimes the result of impulsive and precipitous behaviour. The complexity of the pathways towards suicide makes them difficult to predict, however early intervention and prevention ought to be prioritised above crisis management.

Suicide prevention and self-harm mitigation is an emerging global public health priority (Aleman and Denys 2014; WHO 2014). It is a phenomenon that is preventable and should be addressed by every government and civil society (WHO 2012). Public health professionals, clinicians and scientists will play key roles in suicide and self-harm prevention (Aleman and Denys 2014).

### 2.2  Prevalence

#### Global Prevalence

Suicide is a major health problem worldwide, trending higher each year (WHO 2014). Conservative estimates have suicide deaths over 1,000,000 each year, and 25 attempters for every suicide death (WHO 2012; Goldsmith et al. 2002). The contemplation of suicide as a solution is even more common and increases that number to approximately 140 million, or around 140 for every suicide death (Borges et al. 2008). In individual countries the data collection processes vary and comparisons are more difficult, however, the rates for suicide are a major public health concern (WHO 2014).

Despite efforts to reduce suicide over the past few decades in particular, suicide remains a persistent public health and social problem (CDC 2016). A significant amount of research has been undertaken over the past half century into understanding suicidal thinking and behaviour (STB) but clarity on the key factors and the constellation of factors associated remains a challenge (Franklin et al. 2016).

Suicide rates also vary considerably with changes to governmental policy, conflict and economic instability (Stuckler and Basu 2013). In Australia, the lowest rate of suicide was recorded during the period of the Second World War – a period when the nation faced its greatest threat – while the highest rates (age standardised death rate - ASDR) were during the period of the Great Depression (Doessel et al. 2009a). A similar trend showing the relationship of suicide to the economic cycle is evident in the US (Luo et al. 2011).

Chang and colleagues (2013) investigated suicide rates between 2000 and 2007, compared with the suicide rate trend post-2008 and after the global financial crisis (GFC) that resulted that year. The authors found that suicide rates in European and American countries significantly increased, with almost 5,000 additional suicides when compared with the expected trend post GFC. Groups most affected by the GFC included men, particularly middle-aged men, and those countries that experienced higher levels of job loss and unemployment. Similar effects of unemployment were

observed in Japan during the 'lost decade' of the 1990s where economic burden and high levels of unemployment and/or insecure employment saw strong correlations with increased suicide rates (Chen et al. 2012). As can be seen in Figure 1, suicide rates in Japan increased significantly between the years of 1997 and 1998 and are yet to recover many years later. Instability of employment and casualisation of the workforce may also influence population level suicide rates (Page et al. 2013), thus current trends of employment practice here in Australia and across the developed world toward these flexible and unstable terms and conditions ('precarious employment') have negative effects on health generally and mental wellbeing in particular (Kim and von dem Knesebeck 2015; Caldbick et al. 2014).

Figure 1 also shows significant decreases in suicide rates in Finland and to a lesser extent in France. Between 2000 and 2011 Finland saw a 25.8% decrease in suicide rates, compared to the global average of 7% (OECD 2013). Despite this, the country is still experiencing significantly higher suicide rates when compared with the UK, USA and Australia. Governmental policy has also been linked to increases in suicide rates, with significant increases associated with austerity measures in Greece post-2010 (Rachiotis et al. 2015) and Ireland post-2008 (Corcoran et al. 2015).

**FIGURE 1** AGE STANDARDISED DEATH RATE FOR INTENTIONAL SELF-HARM OVER TIME BY COUNTRY (WHO MORTALITY DATABASE)
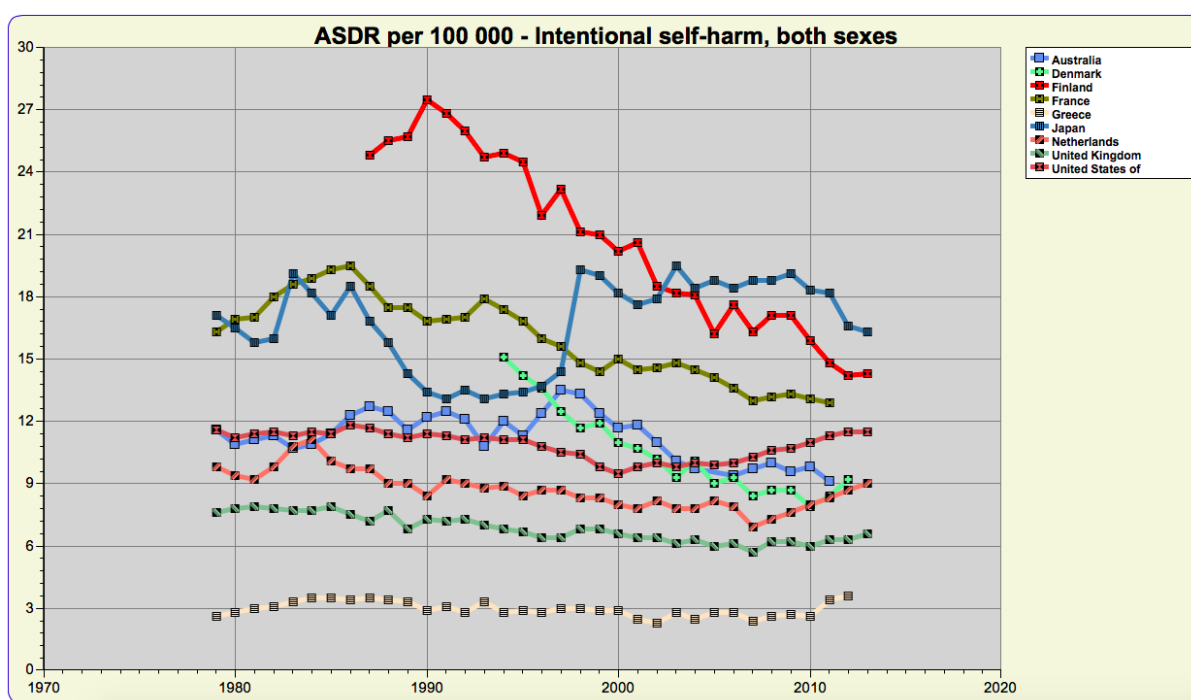


### Australian Prevalence

In Australia in 2015, the year for which the most recent data are available, there were 3,027 suicide deaths in Australia (Australian Bureau of Statistics (ABS) 2016[1]). Recent indicators show an escalation in suicide and data continue to show trends of between 5% and 10% increase annually.

In Australia, the average age of death by suicide also continues to increase and 2015 data show it approaching 45 years of age. Suicide is now the leading cause of death for all people up to the age of 44 and responsible for the greatest number of potential years of life lost. Suicide is now the second

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[1] Note that the ABS provides Explanatory Notes with the data on intentional self-harm. The 2015 figure is the preliminary figure and two further revisions will be provided by the ABS in 2017 and 2018. The latter will be the final official figure for suicide deaths in 2015. Based on recent revisions, the final figure is likely to be some 5-8% above the preliminary figure

leading cause of death for men aged 45-54, and continues to rise with women. This is even more remarkable when examined over the period since 1920 (Doessel et al. 2009b).

Furthermore, suicide is the second to cardio vascular disease as the leading cause of premature death among Aboriginal and Torres Strait Islander men. Almost all the additional deaths due to external causes between 2006-2015 (2,476 additional deaths) can be attributed to suicide and falls – 2,068 deaths (op. cit.). As such, suicide continues to be a significant public health concern and has far-reaching impacts upon families and the communities within which they are embedded.
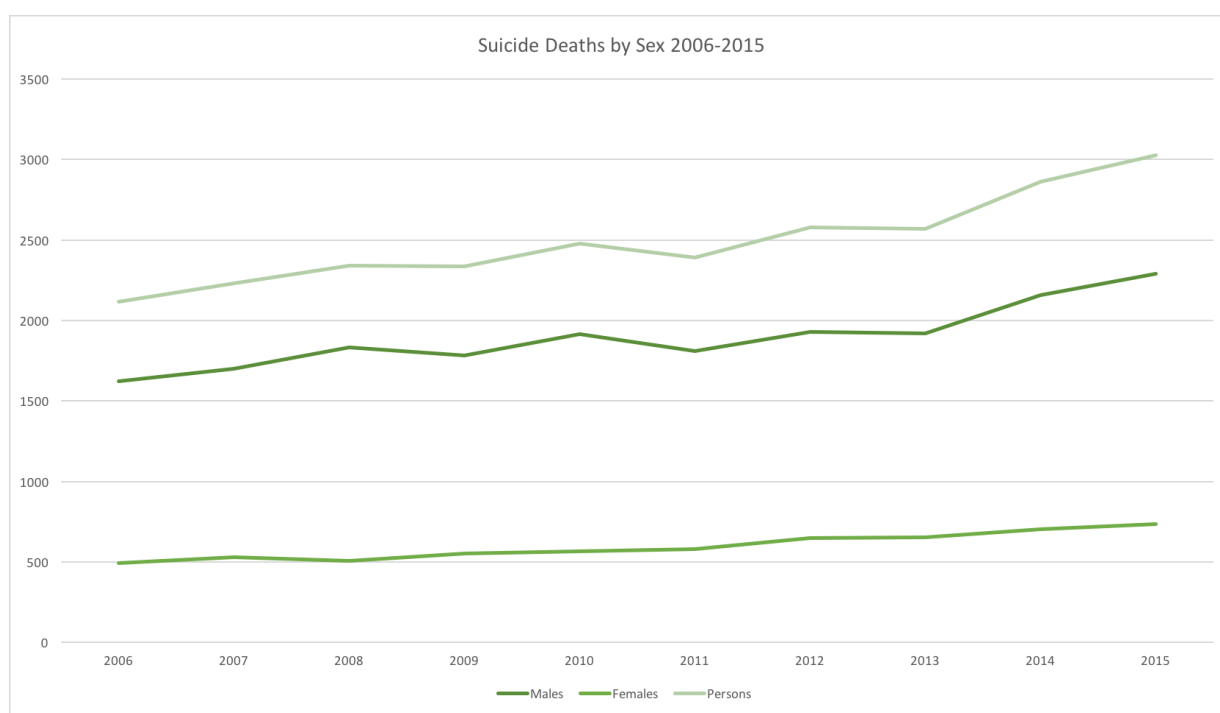


**FIGURE 2** Number of suicides over time in Australia (Australian Bureau of Statistics)

As Figure 2 shows, the number of suicides in Australia has steadily increased since 2005, with males at increased risk of dying by suicide. The ASDR increase over the decade is 24 percent or 42.9 percent in total numbers. The Northern Territory had the highest increase in suicide ASDR at 38 percent, Western Australia, Tasmania and Queensland were also well above the national average increase. The gender disparity in suicide deaths persists when age groups are separated out, as can be seen in Figure 3, with males older than 85 showing increased levels of suicide.

The ASDR for suicide from 2011-2015 in each state and territory of Australia is shown in Figure 4 (3303.0 - Causes of Death, Australia, 2015). The Northern Territory has the highest ASDR for suicide whilst the suicide rate is lowest for the ACT.
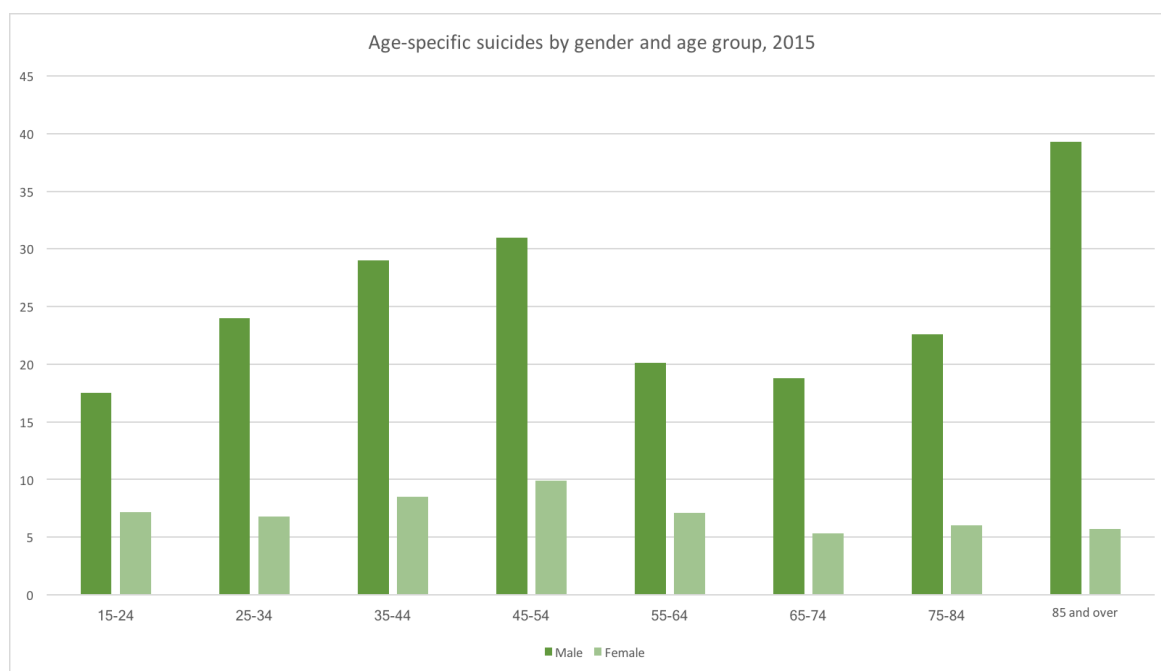
**FIGURE 3** Age-specific suicides by gender and age group (Australian Bureau of Statistics)
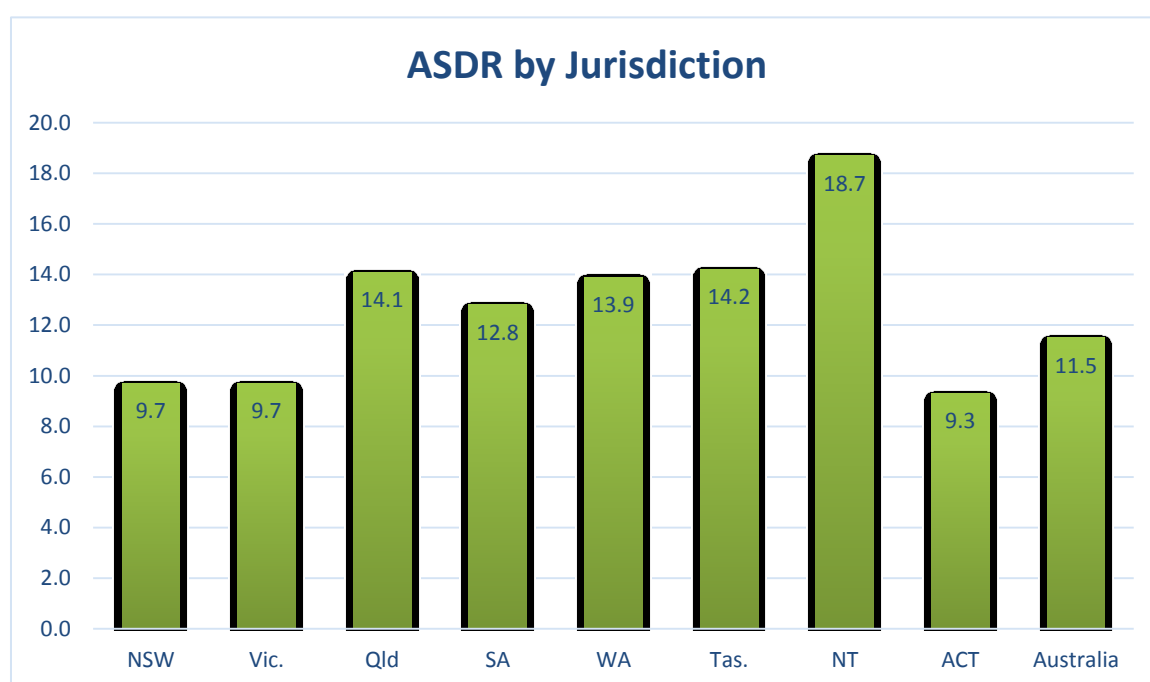


**FIGURE 4** Age standardised death rate due to suicide by state (Australian Bureau of Statistics)

## 2.3    Suicidal Thinking and Behaviour

In addition to suicide deaths, there are many individuals who consider suicide, who make suicide attempts, and who are admitted to hospitals for intentional self-harm (AIHW 2009). This data is difficult to aggregate (Robinson et al. 2013) but data (e.g. ABS 2008) indicate that both suicide

attempts and suicidal ideation occur significantly more frequently than suicide, with one in eight adult Australians reporting having experienced suicidal thoughts[2] at some point over their lifetime and over half a million adults having made a suicide attempt. For Australian service personnel, this pattern is mirrored but significantly greater (roughly double) with nearly 4% of ADF personnel reporting suicidal behaviour in the previous 12 months (Dunt 2009; Fairweather-Schmidt et al. 2012).

There are several negative consequences associated with suicidal ideation (AISRAP 2015) and suicide attempters have a higher risk for dying by suicide (Owens et al. 2002; Nock et al. 2008), and this risk remains throughout the lifetime (Souminen et al. 2004). However, many experience intense and debilitating periods of ideation and long periods of low or no ideation (Witte et al. 2005; Marsden et al. 2016).

This is especially important when transition issues are considered, and there is movement away from a secure and supported environment, to one that is less so (Bruce 2010). More effective intervention occurs early in the trajectory towards suicide (and at known points of uncertainty within a transition (Knox et al. 2010).

## 2.4    Intentional Self-Harm

### What we know about self-harm

There is a growing body of literature regarding intentional self-harm and suicidal behaviour. Although there are links between the two behaviours, it is important that they are not viewed on a linear scale. Intentional self-harm is deliberate injury of body tissue without suicidal intent. While there has been significant literature about risk factors for self-harming (e.g. Gratz 2003; Skegg 2005; Taliaferro and Muehlenkamp 2015), less has been said about their function and the consequent barriers to help-seeking). Klonsky (2007) describes seven functions of self-harm and indicators of associated pathways (Table 7).

**TABLE 3** FUNCTIONS OF DELIBERATE SELF-HARM (KLONSKY 2007)

|   | Function | Explanation |
|---|---|---|
| 1 | Affect-regulation | To alleviate negative affect / arousal |
| 2 | Anti-dissociation | To end (to 'ground') the experience of dissociation |
| 3 | Anti-suicide | To replace, compromise, avoid the impulse to suicide |
| 4 | Interpersonal-influence | To seek help from or manipulate others |
| 5 | Interpersonal boundaries | To assert autonomy |
| 6 | Self-punishment | To derogate or express anger towards oneself |
| 7 | Sensation-seeking | To generate exhilaration or excitement |

There is also evidence of self-harm in clinical (particularly those with borderline personality disorder/history of childhood maltreatment/neglect) and non-clinical populations. In fact, it is a pervasive and elusive phenomenon that resists simplistic explanation and checklists of risk factors. The seven functions of self-harm are described below.

**1.    Affect-regulation** is a strategy employed to alleviate affective arousal. When someone is emotionally distressed, a range of strategies are available, some functional, some dysfunctional. Those who have learned poor coping skills, or who are less able to manage their affect, may turn to self-

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[2] Suicidal thoughts are defined as seriously thinking about or contemplating killing oneself.

harm as a strategy to stop the bad feelings. It is a dysfunctional, but effective, affect-regulation strategy. The emotional pain, the distressing images or memories, and the internal hyperactivity is often overwhelming (Ewing 2016). The mechanisms are not clear but some have hypothesised that it offers psychological respite (Brown et al. 2002) and biological release (Bell and McBride 2010).

2.    **Anti-dissociation** occurs when an individual moves away from the personalised connection to self. It is a (sometimes) dysfunctional coping strategy when the disconnection is prolonged. The intensity of the emotional burden may trigger dissociation as an episodic response (Gunderson 2009). The numbed-out state is both psychological and physiological and to break out of this condition requires an interruption (Ewing 2016). Self-harm, in this context, is a way to interrupt the dissociation (to ground the individual back in the present), and regain a sense of self (to feel alive again) (Klonsky 2007). Dissociation is a barrier in and of itself. The compartmentalising of emotional responses to distress effectively moves the person away from a personal connection. Precipitators to dissociation (e.g. abuse or trauma) raise issues of broken trust, negative reinforcement and breaches of confidentiality: often in the context of failed family relationships.

3.    **Anti-suicide** in this context is a compromise with the desire to suicide. Urges to suicide are transient (linked to situations), and best understood as a multi-dimensional malaise in a needful individual who defines an issue for which the suicide is perceived as the best solution (Shneidman 1993). In this context, self-harm can be seen as a compromise with a desire to suicide. It is more easily identified and labelled as suicide prevention when a crisis occurs and an urgent intervention is required. Research into self-harm (Hawton et al. 2003; Robinson et al. 2013; Plener et al. 2015) demonstrates that a large proportion of the population remain poorly informed regarding suicide risk. They are unable to talk about suicide or suicidality and cannot read-the-signs of someone who is suicidal and trying to communicate their sense of hopelessness. It is no surprise that help-seeking is a vague and stigmatised process and stigma surrounding suicide and help-seeking remains a pervasive barrier (Fliege et al. 2009). There is a need for broader discussion of the trajectories towards suicide and self-harm. Solutions will flow from a wider acceptance of mental health as a community responsibility.

4.    **Interpersonal-influence** is an often described in the popular media as a 'cry for help' or as attention seeking. The manipulation of others in the environment is sometimes a functional component of self-harm. It may serve as a way of eliciting affection (when it is absent), or attention (when the absence of attention is intolerable). It is a dysfunctional but effective means of discharging the emotional pain. Those who self-harm may or may not be aware of the reinforcement of the behaviour provided by those who respond. Help-seeking in this context is problematic with those needing the most support expected to be the least likely to seek support (Galdas et al. 2005; Jones et al. 2013). Logically there is a need to de-stigmatise help-seeking and increase awareness amongst all professionals.

5.    **Interpersonal boundaries** is associated with attachment theory (Bowlby 1988) and describes an individual's need for secure links to a significant other in their lives in order that they individuate successfully (to assert their own identity). Those that lack a normal sense of self may self-harm to affirm the distinction between themselves and others and their (constructed) identity. The barriers to help-seeking here are self-evident, as the affirmation of the constructed identity works against the acceptance of support.  Researchers agree that a strong self-concept is important to behaviour, and cognitive and emotional outcomes (Hines et al. 2013; Shelef et al. 2014). It becomes more complicated when cultural factors are involved and when mixed messages exist in regard to belonging, and to cultural norms; and this confusion may frustrate help-seeking behaviour (Jones et al. 2013).

6.    **Self-punishment** is the self-loathing experienced by some individuals, expressed through self-harm. This self-directed anger has the impact of assuaging the unbearable pain of self-derogation and can be comforting (Klonsky 2007). Self-hatred and the internal rules that have been constructed

around the coping behaviour often lead to self-punishment; a reminder of their weakness and the need to be stronger or more vigilant and the defensive avoidance that has served them as a strategy (Ewing 2016). One of the most pervasive barriers to help-seeking is an individual's (false) perception that they are coping and don't need help (ambivalence). Further, any suggestion that they are not coping is resented. Fierce independence, forged from the dysfunctional (albeit effective) coping activities. Fears that others would not take them seriously or would fail to understand why they were self-harming, contribute to this reluctance to seek out assistance.

**7.** **Sensation-seeking** involves the addictive adrenalin rush of a thrill-seeking activity, in the sense that many 'chase the rush'. For some individuals, the generation of excitement or exhilaration can be derived from self-harming behaviour. It is habitual dysfunction and edgy, but represents a significant functional driver (Nixon et al. 2002). This can become 'contagious' amongst those seeking to be part of the group, but persistent self-harm often reflects the deep insecurities and distress (Owens et al. 2002). The underlying causes are often overlooked when sensation-seeking is identified as the driver. Media focus (often misinformed) may contribute to this perception and reduce the likelihood of individuals seeking help. The normalising of self-harming behaviours within peer groups is another barrier (whether as peer pressure or the pressure to belong) (Baumeister and Heatherton 1996).

### Issues for Self-Harm

Like suicide, the factors that influence self-harming behaviour are complex, and the current literature varies significantly between sources. Furthermore, definitions concerning self-harm are continually under debate, with non-suicidal self-harm recently being introduced into the DSM V garnering proponents for and against the addition (Plener et al. 2015).

In a systematic review of longitudinal research into NSSI and DSH Plenar (2015) and colleagues found that self-harming behaviours peaked around the age of 16 and then declined, with prevalence rates much lower in adulthood when compared with adolescents. Fliege et al. (2009) conducted an extensive systematic review on risk factors for deliberate self-harm and found that being female, having negative childhood experiences and being diagnosed with some form of psychopathology were all potential risk factors for self-harm. However, much like suicidal behaviours, the complexity of risk factors extends to the varied contextual dynamics people find themselves in combined with the methodological heterogeneity of studies on this topic.

The link between self-harm and suicide is equally complex, however it is accepted that those who self-harm are at a significantly higher risk of attempting suicide (Hawton et al. 2003). The most significant predictors of suicide after an episode of self-harm according to a meta-analysis by Chan et al. (2016) include suicidal intent, physical health problems and being male. Surprisingly, after adjusting for confounding variables, alcohol misuse and prior psychiatric history were not significant predictors of suicide after an episode of self-harm, however the authors caution against this finding given the multiple ways these constructs were measured across studies.

### 2.5    Other External Causes of Sudden Death

Among those aged 15-44, suicide is the leading cause of death, followed by accidental poisonings (including drug overdoses) and land transport accidents. Other forms of sudden death are also prominent such as hanging/asphyxiation. Within these classifications there is likely to be a significant number of intentional self-harm deaths (Austin et al. 2012; Large and Nielssen 2009; Tøllefsen et al. 2012). It is generally accepted that the official number of suicides is some 20-30% below the actual number due to stigma, problems with data collection and the legal variations across jurisdictions (De Leo et al. 2010; Tøllefsen et al. 2012).

**TABLE 4** SELECTED EXTERNAL CAUSES OF DEATH, MECHANISM BY INTENT, AUSTRALIA (ABS)

| Mechanism of death | Accidental death | Intentional self-harm | Assault | Undetermined intent | Other intent | Total |
|---|---|---|---|---|---|---|
| Poisonings | 1,224 | 628 | 1 | 117 | 0 | 1,970 |
| Hanging | 172 | 1,611 | 10 | 27 | 0 | 1,820 |
| Drowning and submersion | 186 | 53 | 0 | 22 | 0 | 261 |
| Firearms | 3 | 178 | 31 | 18 | 0 | 230 |
| Contact with sharp object | 4 | 80 | 96 | 7 | 0 | 187 |
| Falls | 2,301 | 134 | 0 | 11 | 0 | 2,446 |
| Other | 2,570 | 180 | 98 | 78 | 222 | 3,148 |
| Total | 6,460 | 2,864 | 236 | 280 | 222 | 9,840 |

Underestimation of suicide rates has also been observed in international jurisdictions. In a large-scale study of undetermined injury deaths in Canada between 1991 and 2001, it was estimated that actual suicide rates would increase 26.5% for men and 37.7% for women, and that significant changes to the suicide rates across provinces would result if undetermined injury deaths were revised (Auger et al. 2016). Similar observations have been made in Tel Aviv, where suicide rates could potentially be 42% higher than reported after erroneous reporting of cause of death (Bakst et al. 2016).

# Key Points

- Suicide is a complex phenomenon, and is a response to overwhelming conditions, both personal and contextual.

- Suicide prevention and self-harm mitigation is a global public health priority.

- Age standardised suicide rates in many countries have not reduced over time, in Australia latest data suggest the suicide rate is increasing.

- Suicide rates are likely to be underestimated across the globe due to coronial reporting protocols, data collection methods and various other sources of incomplete or incorrect recording of deaths.

- Self-harm should be considered a distinct behaviour separate from suicide, though the two may co-occur.

- Stigma can be reinforced, often unintentionally, through language and thus acts as a barrier to prevention and help seeking behaviours.

# 3.    Pathways to Suicide and Self Harm

## 3.1    An Overview of Models

Suicide is a uniquely human experience, a 'dark domain' of the human condition (Tatz 2016). It is little surprise then that theories to explain the phenomena have been generated over a long period and from many perspectives.

Franklin et al. provide a succinct summary of the models of suicide. They include:

- The biological (e.g., Oquendo et al. 2014)

- The sociological approaches (e.g., Durkheim 1897), and

- The psychological theories that conceptualise suicide as a phenomenon related to the following: psychache (Shneidman 1993); escape from aversive self-awareness (Baumeister 1990); hopelessness (e.g., Beck et al. 1985); emotion dysregulation (Linehan 1993); perceived burdensomeness, thwarted belongingness, and capability for suicide (Joiner et al. 2005; Van Orden et al. 2010); defeat, entrapment, and low social support (Williams 2001); various diathesis-stress models (e.g., Mann et al. 1999; O'Connor 2011; Wenzel and Beck 2008); and "ideation to action" frameworks (Nock et al. 2016).

These three approaches are clearly defined as far back as the early 1970s in the key clinical textbooks for psychiatrists (Soloman and Patch 1974).

Philosophers and writers have over centuries tried to provide insight into why people kill themselves. The 18th century German writer van Goethe insisted suicide is part of human nature, while others like 20th century French essayist Albert Camus see it 'the only really serious philosophical problem'.

What is somewhat concerning is that all of these 'models' and approaches remain actively researched and promoted. As Franklin and colleagues (2016) point out, there is no dominant paradigm and the study of suicide is still in a 'pre-paradigm phase' after almost 150 years of serious research. Much of the research efforts in suicide prevention, assessment, intervention and treatment have centred on identified risk and protective factors.

## 3.2    Risk and Protective Factors – an overview

Risk of suicide is the result of a complex interchange between a wide range of personal and contextual factors. These can be described as 'distal' factors that might predispose an individual to risk, and 'proximal' factors that may persuade an individual to consider suicide as a solution (Moseicki 1997; Nock et al. 2008; van Heeringen 2012). Proximal factors are often referred to as 'warning signs' in the literature. In this review, both 'warning signs' and 'risk factors' are discussed as risk factors.

Distal factors can be described as (a) the contextual social, economic, environmental, and familial factors (in public health terms, 'social determinants'), (b) the presence of a clinically diagnosed psychiatric disorder, (c) personality traits and/or genetic disposition. It is common for risk factors to arise from each of these domains, and to combine to increase the level of risk (Beautrais 2000).

Certain social determinants of suicide exist including those living in rural and remote geographical locations, level of educational attainment and occupational status. For men living in rural and remote locations suicide risk is considerably larger than their metropolitan dwelling counterparts (Caldwell et al. 2004). Low educational attainment is also associated with higher suicide risk, with those in Australia with low educational attainment more likely to make a suicide attempt, though this was only the case for working-age employed (Taylor et al. 2004). Similar observations have been made in other cultures, with education attainment in Japan being associated with suicide deaths (Kimura et al. 2016).

**TABLE 5** IDENTIFIED RISK AND PROTECTIVE FACTORS FOR SUICIDE (DEPARTMENT OF HEALTH AND AGEING)

| | Risk Factors for Suicide | Protective Factors for Suicide |
|---|---|---|
| **Individual** | gender (male) | gender (female) |
| | mental illness or disorder | mental health and wellbeing |
| | chronic pain or illness | good physical health |
| | immobility | physical ability to move about freely |
| | alcohol and other drug problems | no alcohol or other drug problems |
| | low self-esteem | positive sense of self |
| | little sense of control of life circumstances | sense of control over life's circumstances |
| | lack of meaning and purpose in life | sense of meaning and purpose in life |
| | poor coping skills | good coping skills |
| | hopelessness | positive outlook and attitude to life |
| | guilt and shame | absence of guilt and shame |
| **Social** | abuse and violence | physical and emotional security |
| | family dispute, conflict and dysfunction | family harmony |
| | separation and loss | supportive and caring parents/family |
| | peer rejection | supportive social relationships |
| | social isolation | sense of social connection |
| | imprisonment | sense of self-determination |
| | poor communication skills | good communication skills |
| | family history of suicide or mental illness | no family history of suicide or mental illness |
| **Contextual** | neighbourhood violence and crime | safe and secure living environment |
| | poverty | financial security |
| | unemployment, economic insecurity | employment |
| | homelessness | safe and affordable housing |
| | school failure | positive educational experience |
| | social or cultural discrimination | fair and tolerant community |
| | exposure to environmental stressors | little exposure to environmental stressors |
| | lack of support services | access to support services |

Furthermore, job loss and financial difficulties (Coope et al. 2015) and living alone (Buron et al. 2016) increase the risk of suicide. In reality, however, risk of suicide is much more complex, multifaceted and dynamic. The following section will provide an overview of significant risk factors, and conclude with how they may intertwine to escalate risk.

## 3.3    Ideation-to-Action Framework

The notion of a progression or trajectory in suicide studies is longstanding and widespread. The progression is steeped from thinking about suicide, to planning, to attempts and finally to death by suicide. However, the hypothesis of a continuum is probably limited to a minority of cases and then within a psycho-pathological scenario such as depression or early psychosis (Svetitic and De Leo 2012) and should not be generalised.

These authors go on to make the important point that excessive reliance on screening programs based on the continuum of risk can result in a "remarkable underestimation of risk" and wrongly result in the withdrawal of surveillance and or support (p. 76).

There is a growing body of research that supports an ideation-to-action framework (Joiner 2005; O'Connor 2011) based on a lifetime of accumulated risk. It could be argued that this forms the 'emerging paradigm' on suicide and suicide prevention.

In differentiating men who thought seriously about suicide and even planned the event, to those that attempted suicide (moved to act), O'Connor (2015) identified some key factors that overlayed the underlying life-time accumulation of risk. These key tipping points were intimate partner problems, cognitive impairment and entrapment.

Here the different sources of suffering, together with a sense of hopelessness, lead to the consideration (ideation) of suicide as a solution (Klonsky and May 2015). The moderators of connectedness and belonging are important early interventions and augur well for positive outcomes. An isolated, despondent individual will be at increased risk, buffered only by the capacity to end his or her life (Joiner 2005; Klonsky and May 2015). For the defence services, this is an especially important consideration (Hines et al. 2013).

# Key Points

- The phenomenon of suicide has been studied for over a century, and in such time a number of explanatory models have been advanced

- Despite the amount of research conducted, suicide research is considered to be in a 'pre-paradigm phase'

- Risk factors for suicide can be related to individual, social and contextual variables, for which there is no clear 'check list' to determine whether an individual is likely to die by suicide

- At present, an ideation-to-action framework may present an emerging paradigm that can explain the progression from consideration of suicide (based on an accumulation of risk factors) to the behaviour of suicide

# 4.    An Analysis of Risk Factors

The identification and analysis of risk factors has been a critical component of research into suicide. The WHO (2012) has noted:

> "The identification of risk and protective factors is a key component of a national suicide prevention strategy, and can help determine the nature of type of interventions required. Risk factors, in this context, are indicative of whether an individual, a community or a population is particularly vulnerable to suicide." (p. 13)

The Australian suicide prevention strategy (known as the LiFE Framework, 2007) places a similar emphasis on understanding risk and protective factors and that action to prevent suicide "must be grounded on the best possible understanding of these risk factors" (Learnings about Suicide, p. 2).

Knowing the strength or predictive value of a risk factor or group of risk factors is fundamental to suicide risk assessment and prevention efforts. However, the number of risk factors and conjecture over their relative value is prominent in much of the literature.

In a recently completed seminal work examining risk factors for suicidal thoughts and behaviours, a large team of researchers at Harvard, Boston and Vanderbilt universities, conducted a meta-analysis of 365 studies from the past 50 years (Franklin et al. 2016). The meta-analysis method is invaluable as it can reconcile many of the differences shown in individual studies in terms of the effect size of risk (and protective) factors. The meta-analysis reviewed over 4,000 risk/protective factors. The key finding from this enormous study is stark:

> "… that, at least within the narrow methodological limits of the existing literature, existing risk factors are weak and inaccurate predictors of STBs. Analyses also revealed the following: predictive ability has not improved over the past 50 years …" (p. 27)

To put this another way, the predictive ability across odds ratio, hazard ratio and diagnostic accuracy analyses was only slightly better than chance (Franklin et al. 2016). It is important to note that most studies only evaluated one risk factor, rather than analysing multiple factors that may contribute to suicide deaths. In reality, the aetiology of suicide may be a constellation of varied risk factors, and as such, a personalised approach to prevention is as important as a generalised one. Nonetheless, there is value in examining here some of the factors identified prominently in the literature.

## 4.1    Mental Disorders and Suicide

The connections to mental health or wellbeing are undeniable (Beautrais 2000; Cantor and Neulinger 2000; Joiner 2005), and the presence of a mental illness or disorder is a long acknowledged risk factor for suicide across all age groups, genders and a wide range of locations (McLean et al. 2008). However, it is important to understand that:

- The relationship between mental illness and suicide is not necessarily causal and that not all mental illnesses have the same level of suicide risk,

- The vast majority of people who experience a mental illness do not experience or show signs of suicidal thoughts or behaviours, and

- A person does not have to have a diagnosable mental illness to have a suicide risk.

(Mendoza et al. 2010)

Several diagnoses of mental illness, including mood disorders, schizophrenia, personality disorders and childhood disorders, and a history of psychiatric treatment in general have been established as risk factors for dying by suicide.

Depression is a very common mood disorder worldwide. In Australia over 20% of adults will have at least one episode of major depression in their lives and over 6% in any one year. Between 60-70% of people who die by suicide have symptoms consistent with major depression at the time of death and the suicidal risk is 20 times greater than for people with no depressive disorder (Terra 2008).

For those with bipolar depression, suicide risks are approximately 15 times that of the general population (Harris et al 1997). Suicide, for people with a diagnosis of bipolar, often first occurs when work, study, family or emotional pressures are at their greatest.

Just under 1% of the Australian population will develop schizophrenia. It is estimated that there is a 4 to 10% lifetime risk for suicide among persons with schizophrenia and a 40% lifetime risk of suicide attempts (World Fellowship for Schizophrenia). A WHO study found the most common cause of death for those with schizophrenia was suicide (Sartorius et al. 1986). Several risk factors for suicide amongst those suffering from schizophrenia have been identified: positive symptoms, co-morbidity with depression, lack of treatment, downgrading in level of care, chronic illness, a good educational background and high performance expectations. Suicide is more likely to occur earlier in the course of the illness (McGorry et al. 1998).

Importantly, a number of studies have shown that systemic improvements to mental health services can reduce death due to suicides in a defined catchment (Kapur et al. 2016; Hegerl et al. 2013). Chronic pain or physical illness (Fishbain 1999; Fuller-Thomson et al. 2016; Ratcliffe et al. 2008) also increases the risk of suicide (Haw and Hawton 2015).

## 4.2    Stigma, Mental Illness and Suicide

Over time stigma toward those experiencing mental illness has reduced, however public stigma is often dependent upon the type of illness. For instance, perceptions of discrimination and dangerousness are often high for those diagnosed with chronic schizophrenia (Reavley and Jorm 2011).

Public stigma toward mental illness has been linked to increased suicide rates. Schomerus et al. (2015) analysed public stigma toward mental illness across 25 European countries, theorising that the social isolation and stress associated with the public stigma of mental illness may play a role in increased suicide rates. For those who survive a suicide attempt, the stigma felt from others can also be a significant burden and may result in social isolation, reduced psychological and somatic functioning, concealment of the attempt and grief (Hanschmidt et al. 2016).

Oftentimes the stigma from those close to an individual or a health worker, perceived or otherwise, may exacerbate risk. Cerel et al. (2006) found that over 50% of those who presented to an emergency department after attempting suicide felt that health staff treated them unprofessionally and did not take the attempt seriously. Similar findings have been repeatedly reported in Australia (Milner et al. 2013).

Health professional stigma however is not as pervasive as that from friends and family. Equally important are the perceptions of suicide stigma from family and friends following a suicide attempt. Frey et al. (2016) noted three clear patterns of stigmatising from friends and family including: statements that indicated the individual was a burden; reactions that sought to avoid or excessively monitor future behaviours in order to conceal a suicide attempt; and actions that sought to project strength, communicating that the individual was not a burden on those close to them. These differential reactions may reduce or increase risk for subsequent suicide attempts. Stigma may also be felt by those close to someone who has died by suicide (Peters et al. 2016).

Beyond the public, health professionals, friends and family, the individual experiencing suicidal thoughts may self-stigmatise or internalise the stigma of those around them. Rimkeviciene et al. (2015) identified four themes from interviews with suicide attempters concerning personal stigma:

- internalised beliefs that suicide attempts were simply 'attention seeking' behaviours prevented seeking or accepting treatment,

- lack of serious consideration when presenting to health services were internalised,

- being perceived as bad or dangerous resulted in self-stigmatic feelings, and

- distance and avoidance was another prominent theme.

Internalised stigma, or self-stigma, has been shown to be a significant predictor of suicide ideation longitudinally after controlling for mental illness symptoms, age and gender (Oexle et al. 2016).

## 4.3    Adverse Childhood Experiences (ACEs) and Suicide

Adverse Childhood Experiences (ACEs) have been linked to suicide amongst adolescent (Isohookana et al. 2012) and later life adulthood (Carlier et al. 2016; Sachs-Ericsson et al. 2016). Across the lifecourse, ACEs have been found to increase the likelihood of dying by suicide by 2-5 times, whilst those with 7 or more ACEs were found to be at increased odds of suicide attempt by a magnitude of greater than 30 times (Dube et al. 2001). ACEs influence physical and mental health throughout the lifespan, and can be visualised in figure 5.
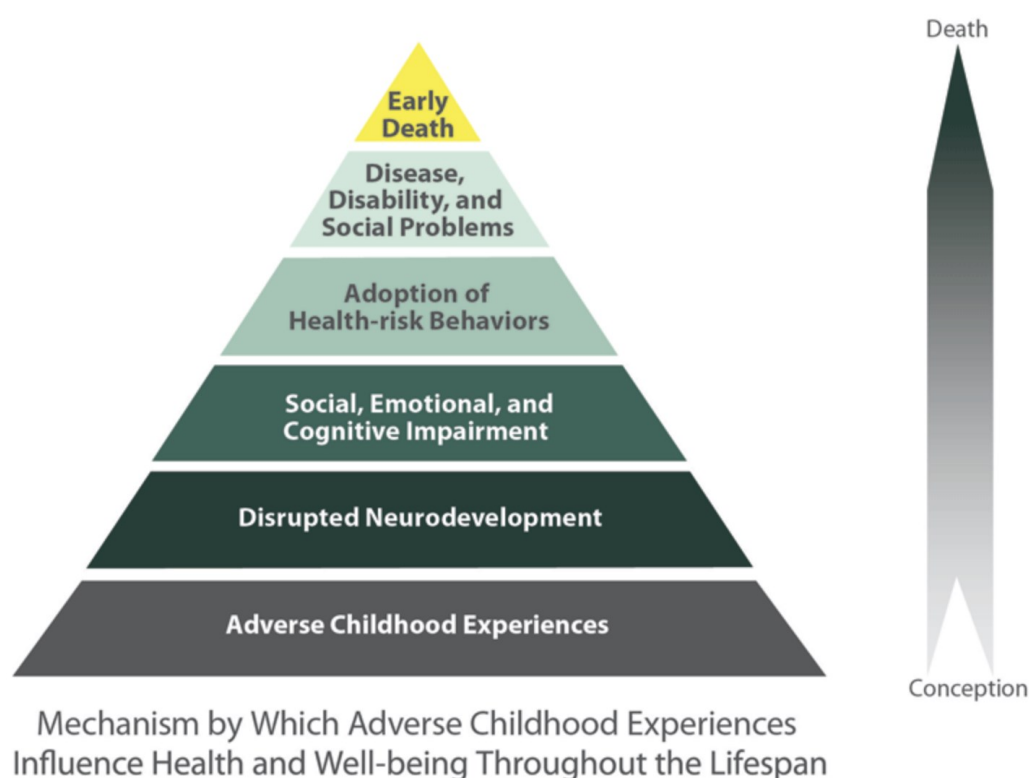


**FIGURE 5** ACES INFLUENCE OVER THE LIFE COURSE (CENTERS FOR DISEASE CONTROL 2016)

ACEs particularly linked to increased suicide risk include those of a sexual nature, with emotional abuse, neglectful parenting and general maltreatment heightening risk of suicide (Brodksy 2016). Sexualised abuse is of particular interest as links are now emerging between the environmental

aetiology of suicide risk and its effects upon neurological development. The interaction between the two are emerging as potent risk factors for suicide throughout the lifespan.

The stress-diathesis model has recently been advanced as a clear causal link between ACEs and suicide. In particular, the model stresses that 'suicidal behaviour results from the interaction of a behavioural and biological predisposition to act on self-destructive urges, paired with a stressor or trigger such as a recent life event' (Brodksy 2016, p. 85).

Carlier et al (2016) compared in a cross sectional study, suicidal and non-suicidal clients with mood, anxiety and somatoform (MAS) disorders. They reported that the suicidal MAS clients mostly had one or more mood disorders, multiple diagnoses, worse functional capacity, more self-harm and greater childhood abuse and neglect. Consequently, they recommend routine screening and monitoring of childhood abuse and suicidality for MAS clients.

Lee and colleagues (2016) conducted a study to examine the relationship between ACEs and the mental health of over 3,300 Canadian Armed Forces (CAF) personnel following deployment. Results showed that those with a history of ACEs were more prone to negative psychological and social impacts following combat exposure. Finally, another recent Canadian study (Afifi et al. 2016) identified several individual and relationship level factors that could be targeted for intervention strategies for improving mental health in adults with a history of child abuse.

## 4.4    Social Determinants

A substantial body of evidence going back 50 years shows the impact of social determinants (education, housing, occupation and income) on an individual or community's mental health and suicidal behaviour (Hollingshead and Redlich 1958; Langner and Michael 1963). It is increasingly clear that levels of mental distress among communities need to be understood less in terms of individual pathology and more as a response to relative deprivation and social injustice, which erode the emotional, spiritual and intellectual resources essential to psychological wellbeing (Wilkinson 1997; Pickett 2006; WHO Europe 2009). Disadvantage starts before birth and accumulates throughout life. (WHO 2014).

What the more recent research emphasises is that it's not poverty per se but relative disadvantage that impacts adversity on the mental wellbeing of individuals, families and small communities that have fewer economic, social and environmental resources.

> *"It is abundantly clear that the chronic stress of struggling with material disadvantage is intensified to a very considerable degree by doing so in more unequal societies. An extensive body of research confirms the relationship between inequality and poorer outcomes, a relationship which is evident at every position on the social hierarchy …. The emotional and cognitive effects of high levels of social status differentiation are profound and far reaching: greater inequality heightens status competition and status insecurity across all income groups and among both adults and children. It is the distribution of economic and social resources that explains health and other outcomes in the vast majority of studies." (WHO Europe, 2009)*

Lower educational attainment, living alone, unemployment, home ownership, low income and poverty are all associated with higher rates of mental illness and suicide (Lorant et al. 2003; Kessler et al. 1994; Blakeley et al. 2003; Page et al. 2013) but the strength of the association varies in different countries.

One social determinant where the evidence is consistently strong is homelessness. Being homeless increases an individual's risk of dying by suicide (Noel et al. 2015), and alarmingly, in Australia young homeless females are more likely to attempt suicide than young homeless men – a reversal of the general population trend (Flatau et al. 2015).

The combination of homelessness and veteran status is particularly potent in relation to suicide (Ainslie 2016; Schinka et al. 2015) and is discussed in detail in Part B of this review.

## 4.5    Adverse Life Events

Adverse life events and exposure to continued trauma also exacerbates risk of suicide in an individual. The correlates between stress, trauma and suicide are varied and complex. Links have been observed between sleep disturbances/insomnia and suicide (Woznica et al. 2015) with feelings of hopelessness mediating this relationship (Woosley 2015). For those imprisoned, suicide rates are significantly higher when compared with the general population (Carli 2015), and in Australia it is estimated that between 30 and 50% of deaths in prison are due to suicide (Grigg 2016).

Loss of a loved one to suicide may increase subsequent suicide risk for the bereaved. In a study of over 3,000 UK participants aged 18-40 those who were bereaved by suicide in either a direct family member or close friend were 1.65 times more likely to die by suicide when compared to bereavement of someone close dying by natural causes (Pitman et al. 2016). This same risk persists in military personnel and veterans (Hom et al. 2017).

Intimate partner problems and domestic violence have also been found to precipitate suicide (Comiford et al. 2016; Logan et al. 2015). O'Connor (2015) makes the point that 'intimate partner problems' are one of the key differentiations between those who think and even plan suicide and those who act. Both men and women have been found to be at increased risk of suicide when experiencing domestic violence (Dufort et al. 2014), and similar links are drawn in Australian immigrant and refugee populations (O'Connor et al. 2016).

Often associated with trauma, stress, and adverse life events is the co-morbidity of alcohol and other drug abuse. Alcohol Use Disorder (AUD) has been linked to suicidal ideation, attempts and deaths by suicide (Britton et al. 2015; Darvishi et al. 2015). Chronic and occasional cocaine use and chronic amphetamine use have also been linked to attempted suicide (Artenie et al. 2014). Ultimately, risk for suicide is often the result of multiple factors coalescing, as Yuodelis-Flores and Ries (2015) highlight:

*"Several predisposing and precipitating risk factors such as marital and interpersonal relationship disruption, occupational and financial stressors, recent heavy substance use and intoxication as well as a history of previous suicide attempts and sexual abuse combine in an additive fashion with personality traits and mental illnesses to intensify risk for suicidal behaviour" (p. 98).*

## 4.6    Indigenous People

It is important to note that 'Indigeneity' itself is not a risk factor for suicide, but the ancillary effects of colonisation, developed over time, contribute to significantly higher rates of suicide within Indigenous populations across the globe (Tatz 2004; Hatcher 2016). Indeed, in relation to Australian Aboriginal peoples, there are no recorded suicides prior to the 1960s and no cultural history of suicide at all (Hunter and Milroy 2006). The erosion of language, intergenerational trauma, loss of culture, identity, practices, and connection to country all contribute to significant risk factors for suicide (Ferguson et al. 2016; Tempier 2016).

In the Kimberley region of Western Australia, Indigenous suicide rates have increased over the last decade, with a marked increase in youth and female suicides (Campbell et al. 2016). The complex erosion of culture, happening steadily over time, necessitates culturally specific and sensitive approaches to suicide prevention that go deeper than gatekeeper training, and promote and empower Indigenous communities (Kuipers et al. 2016; Wexler et al. 2014).

In Canada, where suicide rates in First Nations youth are five to seven times higher than the general population, and Inuit rates are 11 times higher, significant measures are being taken to prevent

suicide deaths in these communities, including community-based solutions to empower young people and their communities (Health Canada 2016).

## 4.7    Personality

Perfectionism and impulsivity are two well documented personality traits associated with suicidal behaviour.

Perfectionism has been shown to be a significant predictor of suicide risk within undergraduate populations (Bender et al. 2012), though Flamenbaum and Holden (2007) posit a more complex pathway concerning perfectionism and suicidality. Perfectionism has also been observed as an important variable interacting with symptoms of PSTD, a common psychopathology experienced by military populations (Flett et al. 2016). Concern over mistakes from the past has been observed in the link between perfectionism and PTSD. In a highly regimented and structured role that demands adherence to high standards, the military is a key setting where these links may be viewed.

Impulsivity as a personality trait is on the other hand a well-documented risk factor for serious suicidality. The literature often implies that a key mechanism associated with suicide is a 'spur of the moment' decision in response to an adverse life event. However, the relationship between impulsivity and suicide is complex. Thomas Joiner (2005) explains:

> "Impulsivity is implicated not so much at the time of death, but beforehand, leading to experiences that allow people to get used to pain and provocation … Through repeated impulsive acts, suicidal and otherwise, impulsive people may become experienced, fearless and competent regarding suicide and thus capable of forming plans for their own demise" (p 185)

Impulsivity is also a characteristic behaviour of people with some mental illnesses – most notably Borderline Personality Disorder and Bi-Polar Affective Disorder. Unsurprisingly, research shows that people with these conditions and those who have died by suicide, have lower levels of serotonin – a key chemical (neurotransmitter) in the brain and brain stem (Fergusson et al. 2005).

## 4.8    Neurological and Genetic Factors

Genetic and epigenetic (non-genetic influences on gene expression) risk factors for suicide have come under increasing investigation in recent times, and present complex understandings of how an individual's genes and heritability can affect suicide risk (Yin et al. 2016).

Twin and family studies have shown that identical twins of suicide victims have an increased risk of suicide themselves, when compared with non-identical twins, suggesting that suicidality has a genetic component, which may be independent (although related) to the genetic predisposition for mental illness (Bennett 2009a; Fu et al. 2002; Glowinski 2001).

Bennett purports that suicidality may occur due to a reduction in the brain's synaptic function in the frontal lobes – that is, the connections between the different parts of the brain are reduced – particularly following the onset of mental illness (e.g. major depression) and/or the occurrence of stressful or traumatic life experiences, such as sexual and/or physical abuse (Bennett 2009a). The reduced synaptic connections and communication between different parts of the brain may also lead to the disintegration of the brain's grey matter, causing further dysfunction. This dysfunction within the brain may then increase the likelihood that an individual will experience suicidal thoughts and behaviours (Bennett 2009b).

Importantly, whilst mental health may elevate risk for suicidal behaviour, specific genes and their interactions with each other may explain elevated suicide behaviour risk in the absence of mental illness (Sokolowski et al. 2015). The plethora of gene's being investigated lies outside the scope of

discussion for this Review, however Lin and Tsai (2016) provide an up-to-date overview of genetic and neurochemical current research.

The emergence of epigenetic research, whereby environmental factors influence the development and expression of gene make up, presents further fertile ground for exploration regarding risk factors for suicide (Turecki 2016). As discussed earlier, the impact of adverse childhood experiences are being investigated for their effects on gene expression. Of critical importance are the early years of a child's life, whereby "the social and physical environment defines lifelong trajectories of physical and mental health" (Brodsky 2016, p. 86). Trauma in the early years can impede DNA methylation (the process of genes adapting to their environment), and as a result, influence future suicidal behaviours (Brodsky 2016).[3]

## 4.9    Multiple Risk Factors

A great deal of research focussing on risk factors in isolation can be problematic, in part due to the geographical and historical heterogeneity of suicide risk and the lack of external validity that arises from poor sampling methods (Nock 2016). To overcome these limitations there have been promising efforts in epidemiological studies that assess constellations of risk factors for suicide behaviours.

Borges et al. (2010) explored the following risk factors in developed and developing countries: "female sex; younger age; lower education and income; unmarried status; unemployment; parent psychopathology; childhood adversities; and presence of diverse 12-month DSM-IV mental disorders" (p. 2) and found that taken together, prediction of suicide attempts after identifying ideation could be done relatively accurately.

In a recent Australian case–control, psychological autopsy study, the suicidal characteristics of young males without a psychiatric diagnosis were examined. A number of indicating behaviours were more frequently displayed, including evidence of previous attempts, disposing of possessions and making statements of hopelessness. These individuals also presented with higher levels of neuroticism and aggression, and had experienced relationship difficulties and poorer quality of life (Ross et al. 2017).

Combining risk factors with real-time machine learning analytics is seen as a positive step forward to accurate prediction of suicide attempt, an avenue which is currently being explored (Kessler et al. 2016; Nock 2016; Tran et al, 2013).

### Risk factors often cluster together

During the Inner City Sydney Registry week in 2015, 8% (n=42) of the homeless people who participated in the survey indicated that they had previously been members of the ADF. Of these, 61% were sleeping rough and 20% were in crisis accommodation. Among these 42 veterans, 36% had attempted to harm themselves in the last year, 60% reported substance abuse and 48% had seen a professional in relation to a mental health issue in the last 6 months. Nearly one third had been physically assaulted while homeless, further highlighting the

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[3] This emerging area of research has far reaching implications for many disciplines, see DeLisi and Vaughn (2015) for an overview of epigenetics and criminology.

# Key Points

- Risk factors are important for the development of suicide prevention strategies; however, the relative strength of a risk factor is subject to conjecture within the literature

- Risk factors are made up of distal factors (e.g. impulsivity) and proximal factors (e.g. negative life events)

- In a recent 50-year meta-analysis, researchers found that papers investigating risk factors were not significantly better than chance at predicting suicide.

- Risk factors which may pre-dispose an individual to suicidal or self-harm behaviours include: mental illness; stigma; adverse childhood experiences and adverse life events; the trauma that comes with colonisation for Aboriginal and Torres Strait Islanders; social and economic hardship and neurological and genetic factors

- It is highly likely that a combination of risk factors, rather than one single variable, contributes to the onset of suicidal ideation and suicidal behaviours

# 5.    An Analysis of Protective Factors

As with risk factor analyses, there are few robust studies showing strong effects in relation to individual protective factors (Franklin et al 2016). The author's state:

> *There were many fewer protective factor effect sizes than risk factor effect sizes, and studies rarely set out a priori to investigate protective factors. The majority of these effect sizes were demographic factors that we coded as protective factors based on their expected associations with each outcome according to epidemiological statistics on STBs (suicidal thoughts and behaviours)"* (p. 30)

Stronger research evidence exists in related fields of mental wellbeing, social connection and resilience and these are discussed here.

## 5.1    A Broader Perspective on Protective Factors.

A broader conceptual framework of protective factors for suicide prevention is emerging based on mental wellbeing, social connection, resilience and community assets.

This framework recognises that an individual may have a diagnosis of a serious mental disorder, but that they can and do function well and live fulfilling and contributing lives. It recognises that an individual with few social connections living in a community with comparatively few 'assets' may be vulnerable to suicidal behaviour.

In a recent report (unpublished) prepared by the Young and Well Cooperative Research Centre, four conceptual models linking mental wellbeing and social connection with resilient individuals emerged in their review of the literature on the mental wellbeing of young people, being a:

- Socio-economic perspective
- Social ecology perspective
- Strengths based perspective
- Mental capital perspective

When examining young people and mental wellbeing at a community level, 2 more conceptual models were identified, namely 1) an asset based perspective and 2) a social network perspective.

The model presented in the report makes use of the key principle that "resilient individuals are more able to contribute to their communities, while resilient communities generate social environments that nurture resilient individuals" (Burns et al. 2014 p. 19). This also acknowledges that culture can be a significant factor adding to or dragging on individuals' and communities' resilience. To build resilience, rather than focussing on changing individuals, this approach focuses on making social and physical ecologies facilitate the development of resilience.

The model in this report parallels the approach provided in an earlier report to the Rudd Government in 2009. It pointed to the need to shift from a focus on mental (ill) health to mentally healthy (National Mental Health Advisory Council, 2009). It emphasised a population health approach building mental wealth (greater cognitive function + reduced burdens of disease) across entire communities as opposed to overly focusing on individuals at risk or already experiencing a mental disorder.

## 5.2    Social Connection and Social Cohesion

It is generally agreed that social connection plays a beneficial role in the maintenance of psychological wellbeing and indeed recovery from mental ill-health (Kawachi and Berkman 2001) and the link between social isolation and suicide dates back to Durkheim seminal work (1897).

A variety of terms have been used to explain aspects of social connection and the idea that social relationships shape an individual's ability to be happy and healthy – e.g. social integration (Wray et al. 2011), social cohesion (Friedkin 2004), social capital (Portes and Vickstrom 2011) and belongingness (Joiner 2005).

The first meta-analysis of social isolation and mortality showed that social isolation is at least as important as other well-known and researched health risk factors such as smoking, sedentary lifestyle, excessive drinking of alcohol and air pollution (Holt-Lunstad et al. 2015). The study examined cumulative data from 70 independent studies, with over 3.4 million participants followed for an average of 7 years. The meta-analysis revealed a significant effect of social isolation, loneliness, and living alone on mortality. After accounting for all other causes, the increased likelihood of death was 26% for reported loneliness, 29% for social isolation, and 32% for living alone.

Connectedness therefore increases life expectancy and resilience, contributing to our capacity to collectively work smarter and thrive in a complex and challenging world with significant benefits for the individual and the workplace (Joiner 2005; Wray et al. 2011).

Social support is one of the most robust correlates with PTSD symptoms and Shallcross and colleagues (2016) cite several studies with civilian and military populations. In a longitudinal study of US Iraq and Afghanistan veterans, they found that individuals with more social supports 1 year after deployment will report fewer PTSD specific symptoms later on. The social supports work to increase interactions and provide more opportunity to disclose and undermine avoidance. Naturalistic social interactions could thereby reduce the need for more clinical interactions.

There is potentially a flip side to the evidence that social cohesion and social integration are universal protections for individuals against suicidal behaviour. Mueller and Abrutyn (2016) examine Durkeim's work from a group and community perspective where too much cohesion and conformity can increase the risks for an individual. Mueller and Abrutyn undertook an in-depth, qualitative study (n=110) in a tight knit community with a serious adolescent suicide problem. The features of this highly integrated community are relevant to any discussion of suicide in a military context: that is, an intensely regulated culture; an emphasis and high value on academic achievement; cohesive social networks that facilitate rapid spread of information, amplify the visibility of actions and attitudes, and increase the potential for swift sanctions.

This combination of cultural and structural factors generates intense emotional reactions to the prospect of failure among young people in this town and an unwillingness among both themselves and their parents to seek psychological help for mental health problems. This case illustrates (1) how high levels of integration and regulation within a social group can render individuals vulnerable to suicide and (2) how sociological research can provide meaningful and unique insights into suicide prevention (Mueller and Abrutyn 2016).

## 5.3    Resilience

Our capacity for resilience is influenced by many factors and includes many of the individual and social protective factors listed in Table 5 earlier (LiFE Framework 2007). The impact of our immediate and wider community, including personal and family relationships, work places, organisations that we connect with, where we live, events we encounter, all have the potential to strengthen or erode our personal resilience and wellbeing.

Yet research identifies many examples where individuals and communities despite the economic, social and environmental challenges they face demonstrate remarkable resilience and capacity to prevail.

Resilience contributes to mental health and wellbeing, which in turn strengthens resilience (Keyes 2007; Pettigrew and Donovan 2009). When resilience is viewed as a process rather than a trait it provides individuals, families, organisations and communities with the knowledge and confidence that they can learn resilience strategies and skills. Their capacity to proactively and confidently manage their responses to the challenges and setbacks experienced in daily life can be significantly increased.

## Defining Resilience

The American Psychological Association (APA) defines resilience in several ways that identifies a capacity to recover from stress, resist illness, adapt to stressful situations or function above the norm despite stress or adversity (2014).

A broad, straightforward definition of resilience that encompasses all the ways in which the term appears in the literature comes from an influential report on assets-based approaches to community health in the UK:

> *"The ability of individuals, families and neighbourhoods to cope positively with change, challenge, adversity or shock" (Foot 2012, p. 45)*

Increasingly society has progressed from a focus on survival to the desirable outcome of personal fulfillment and meaningful lives. While 'bouncing back' denotes a return to the original state of functioning whether that be from illness or adverse events, the capacity to 'flourish' describes a state of superior functioning. Individuals are better able to manage stressors while life satisfaction, mental health and wellbeing are increased (Fuller 1998; Smith et al. 2008).

Additionally, an economic imperative in the work place is focused on maximising performance to boost productivity. Providing opportunities for individuals and workplaces to increase their resilience and even flourish results in many significant benefits for all.

The APA (2014) identifies that resilience is not a trait but involves the use of behaviours, thoughts and actions that can be learned and developed. As people build their resilience skills they increase their capacity to positively manage the hurdles they face and bounce back from difficult situations.

Resilience therefore is ordinary, not extraordinary. People commonly demonstrate resilience as evidenced by individuals' capacity to rebuild their lives after disastrous events. They are able to maintain their health and wellbeing while managing experiences that may be negative, difficult or even catastrophic.

A common belief is that resilient people breeze through life's difficulties without being impacted by negative emotions. The APA acknowledges that emotional pain and sadness are common in people who have suffered major adversity or trauma in their lives and that the road to resilience is likely to involve considerable emotional distress and transient periods of grief.

It is also important to recognise that the diversity of individuals, and cultures, means that the development of resilience will be a personal journey and that strategies will vary as people respond differently to stressful life events.

Resilience therefore includes:

- A capacity to understand one self,

- To utilise personal strengths and

- To identify and learn behaviours that are beneficial to an individual's wellbeing.

It requires attention to several aspects of an individual's wellbeing, is an ongoing process and is based on spiritual, physical and mental growth.

Resilient people generally demonstrate the following:

- A sense of purpose,

- Clear values

- Capacity to manage and acknowledge negative emotions, while predominantly demonstrating positive emotions

- Engagement in their personal and work lives

- A sense of belonging and contribution

- Positive relationships

- Better (than would otherwise be the case) physical health and

- Are more mentally healthy.

Current neuroscience research demonstrates that resilience is a key human function, vital to our capacity to survive (Karatsoreos et al. 2013). It identifies the neurological and physiological link between our brains and our capacity to build resilience, providing opportunities to apply evidence-based strategies for individual and workplace application.

Maintaining resilience and progressing towards thriving requires an ongoing process of assessment, learning, application and reflection. Actively working towards and achieving a balance between physical and mental fitness, physical and mental relaxation and a sense of self and overall wellbeing contributes to the growth of resilience.

The model below (Figure 6) illustrates 31 strengths that encourage and enhance individual and community resilience. In the context of the ADF, with strong social ties and cultural bonds, this model may have great relevance.
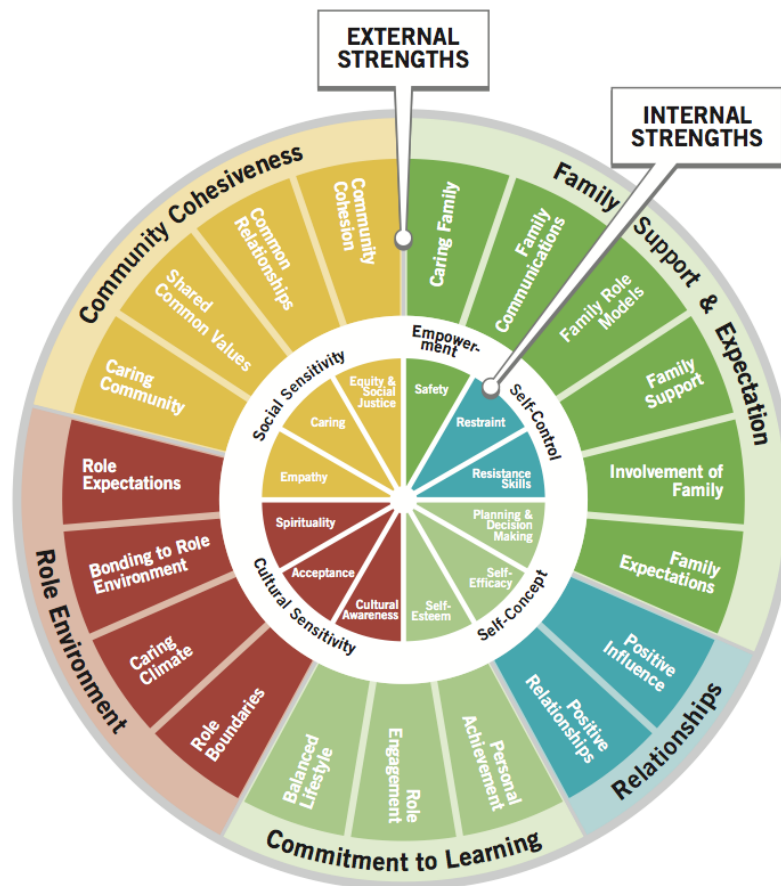
**FIGURE 6** THE ADULT RESILIENCE FRAMEWORK (THE RESILIENCY INITIATIVE 2012)

## Resilience and the workplace

A resilient workplace includes the creation of a psychologically safe work environment with a focus on wellbeing, the provision of support to address and even prevent mental illness. There is recognition that through participation in productive and satisfying work individuals benefit from a sense of purpose and fulfillment, financial stability, collegiality and opportunities to grow (Reme et al. 2015).

Through active leadership, policies, process and actions, organisations can contribute significantly to the resilience, mental health and psychological wellbeing of their employees, reduce stress and mental strain, while benefitting from increased productivity and economic outcomes.

## Connectedness and Resilience

Connectedness for individuals therefore directly impacts on resilience. In the workplace it enhances the capacity for individuals to develop shared understanding of needs, motivations, rewards and punishment systems, increasing the likelihood of coordinated behaviour and team work to achieve shared goals. Opportunities for strengthening relationships, managing conflicts and embracing diversity benefit the organisation and the individual.

Educational psychologist Andrew Fuller (1998) conducted focus groups with young people to determine significant factors that promote resilience in Australian adolescents. His findings were that resilience for young people results from a sense of belonging: to a family, an area, a friendship group or school.

## 5.4     Access to Quality Mental Health Care

The ability to access quality and appropriate care is key in reducing rates of suicide, and more broadly, the experience of ill-mental health within the community. Access to care that is of high quality and varied in service type is not always straight forward, and is highly dependent upon where one lives (Mendoza et al. 2016). Significant numbers of people with a mental illness do not seek or receive appropriate treatment, and the needs of people who receive treatment are not consistently met (McGorry et al. 2013). A central element in preventing suicide is provision of psychiatric care, especially for mood disorders (Hegerl et al. 2013).

Integrated care has been flagged as a tool to address the increasing demands on healthcare services coupled with the stagnation or, in places, contraction of workforce numbers (Awan et al. 2015). In a rapid review of integrated care systems, Rodgers et al. (2016) found that integrated care systems required a collection of the following elements: "(1) information sharing systems; (2) shared protocols; (3) joint funding/commissioning; (4) co-located services; (5) multidisciplinary teams; (6) liaison services; (7) navigators; (8) research; and (9) reduction of stigma" (p. v). Access to such a battery of integrated care is generally not available to people seeking mental health care in Australia.

Connecting health care for people presenting to hospitals with mental health disorders was identified by the Queensland Chief Psychiatrist as fundamental to reducing suicides in that state. A significant number of the suicides in 2015 involved persons who had been seen by a public mental health service in the week prior to their death (2015). An estimated 20-30% of all suicides recorded in Australia involve patients who have not been admitted to care on presentation or following discharge from acute care.[4]

The National Mental Health Commission's review (2014) emphasised the need for a stronger, more flexible and integrated system of mental health care in Australia to prevent illness and keep people well (p.27). A key element of the Commission's proposed reforms and "rebalancing the system" focussed on "integrated care pathways …, to encourage the best and most efficient use of resources" (p.48).

### Systems Responses to ED Presentations and Hospital Discharge

Presentation at Emergency Departments (ED) of suicidal patients is considered inconsistent with people trying to get help (SANE 2014). Studies have also shown that post-discharge follow up from ED for patients presenting with suicidal behaviour and policies on dual diagnosis does reduce suicide risk (Luxton et al. 2013; While et al. 2012).

Alternatives to ED presentation for mental health patients include mobile crisis resolution teams, acute day hospitals and crisis or safe houses (Sjoile et al. 2010; Johnson 2013, Shattell et al. 2014). Johnson and colleagues have undertaken numerous studies over the past two decades on the efficacy of these models in terms of reducing hospital admissions and crisis presentations to ED. Suffice to say, it is not any one of these interventions that result in lower ED presentations, hospital admissions or improved outcomes for patients with suicidal behaviours, but the combination or suite of alternatives available within the overall service system in the region.

The importance of providing integrated care pathways (or stepped care) to individuals with mental illness, including those with suicidal behaviour, has become increasingly clear. Recent trials have demonstrated the incidence of new cases of depression and anxiety could be halved by introducing stepped care and providing treatment based on sub-threshold clinical staging (Hickie et al, in press).

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[4] There are no reliable data available but discussions with colleagues at AISRAP indicate that this is probably the extent of suicide associated with non-admission at ED and following discharge from acute psychiatric care within a 3 month period.

In response to the continuing problems associated with both ED presentations and hospital discharge for people with mental health problems, particularly those with higher risk of suicide, several programmatic or systems responses have developed.

In the US, SAMHSA has described the need for five core services for addressing 'behavioural health crises: 23-hour crisis observation or stabilisation; short-term, crisis residential stabilisation; mobile crisis teams; crisis hotlines and web services; and peer crisis services (SAMSHA 2014). This continuum of services for addressing the needs of people in crisis has been informed by mental health care reforms in several regions over the past decade (MacArthur Foundation 2007; Willging et al. 2007).

Also in the US, a guide for EDs for adult patients with suicide risk sets out an end-to-end process (presentation to admission and discharge) for all adult patients with suicide risk (Suicide Prevention Resource Centre 2015). It includes decision-making tools, comprehensive assessment processes, a framework for individual care plans and guidance on sharing health care records for health professionals (see Figure 7).

The ZEROSuicide initiative is seen as a best practice systematic and programmed response to reducing sentinel events for 'behavioural care' patients in the US. ZEROSuicide applies many of the principles of quality management to reduce if not eliminate, the multiple cracks in the fragmented system of care for people with mental health and substance abuse problems. ZEROSuicide builds on work done by health care organisations such as the Henry Ford Health System (HFHS) in Michigan where through a sustained whole-of-system change initiative has seen an 80% reduction in suicide.[5]
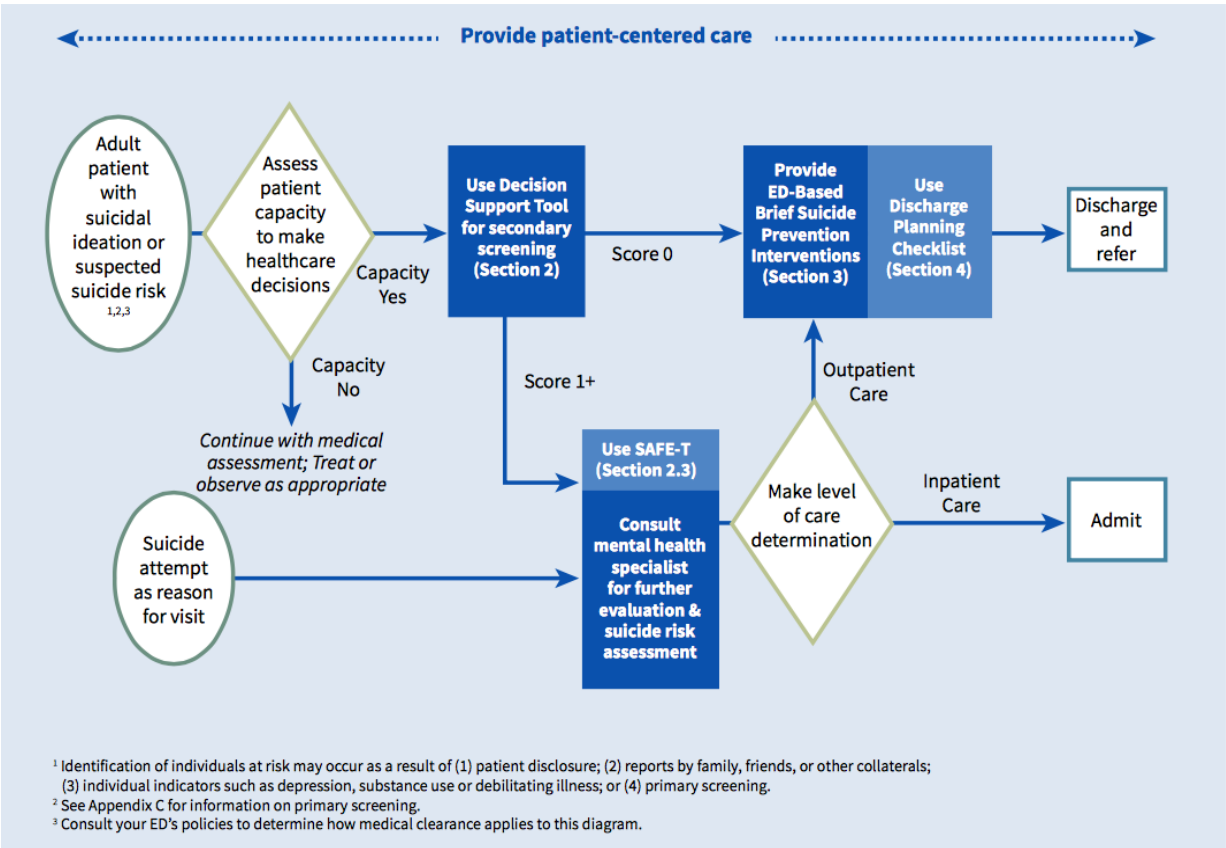


**FIGURE 7** PROCESS FOR CARE AND DISCHARGE OF PATIENTS WITH SUICIDE RISK FOR EMERGENCY DEPARTMENTS (SUICIDE PREVENTION RESOURCE CENTRE 2015)

[5] Personal correspondence with authors and Professor David Covington.

In the UK, system-wide initiatives to develop, implement and evaluate integrated care pathways (ICPs) have been underway for more than a decade in Scotland and Wales and more recently in England.

One of the most significant and robust evaluations of mental health service provision and the prevention of suicide was undertaken in England and Wales between 1997-2006. This cross-sectional pre- and post-analysis of national suicide data in England and Wales examined the uptake and implementation of key mental health service recommendations and their association with suicide rates (While et al. 2012).

The study clearly showed strong associations between the implementation of several key service reforms and lower rates of suicide. Those mental health services that implemented more recommendations had more significant reductions in suicide rates. The key service reforms were:

- The provision of 24-hour crisis care – crisis response teams including a single point of access for people in crisis available 24/7. These teams are intended to promptly respond to mental health crisis in the community and so prevent inpatient admission (or ED crisis presentations). They provide only short-term input until other services are available.

- Local policies on patients with dual diagnosis – specifically written policy on the management of patients with dual diagnosis

- Multi-disciplinary review following suicide – specifically written policy on multidisciplinary review and information sharing with families after a suicide

- Assertive outreach – services include an assertive outreach team that provides intensive support for people with severe mental illness who are more difficult to engage in more traditional services

- 7-day follow up – written policy on follow-up of patients within 7 days of psychiatric inpatient discharge

- Non-compliance – written policy on responses to patients who are non-compliant with treatment

- Criminal justice sharing – written policy on sharing of information on risk with criminal justice agencies

- Training – front-line clinical staff receive training in the management of suicide risk at least every 3 years.

Similar significant and sustained reductions in suicide have been shown in other European studies (Hegerl et al. 2013; Hubner-Liebermann et al. 2010; Szekely et al. 2013). In these studies the best predictor of a reduction in suicide rates was changes in anti-depressant medication and access to mental health care (Gusmao et al. 2013).

## Key Points

- Analogous to risk factor research, few studies can identify strong protective factors regarding suicide and self-harm

- A broader understanding of mental wellbeing, resilience and social connection affords stronger evidence of protective factors which are relevant to suicide and self-harm

- Social connection has been found to play a key role in increased life expectancy and resilience

- Social support is negatively correlated with PTSD symptom reporting upon return from military deployment, with fewer symptoms being reported when social support is high

- Resilience plays a key role in maintaining mental wellbeing, particularly in response to adverse life events and traumatic experiences.

- Resilience is a process, rather than a personality trait. It requires thoughts, actions and behaviours that can be learned and developed

- Neurological research suggest resilience is a key human function, vital to our capacity to survive

- A health system wide protective factor is the ability for an individual to access quality mental health care

- Quality care involves an integrated system with cross-sector health professions working together to deliver care in a non-stigmatised and respectful manner

- Presentation and transition through and out of emergency departments for those with a mental health condition is a critical point of contact

- Successful implementation of several initiatives, such as 24-hour crisis care, assertive outreach, 7-day follow up front line clinical staff training have been shown to reduce suicide rates

# 6.    The Lived Experience in the General Population

Beyond the peer-reviewed literature, there is a rich and growing body of personal accounts of suicidal survival, suicide loss and bereavement. These accounts provide a rich source for understanding why people die from suicide and the impact of suicide loss.

Many submissions were made to the Senate Inquiry into Suicide in Australia in 2010. Over 250 accounts from survivors of suicide and stories of loss from family members and carers were summarised in the report, 'Suicide and Suicide Prevention in Australia: Breaking the Silence' (Mendoza et al. 2010).

These stories were from people who had experienced the suicide of someone close to them – often within their families – and included those bereaved by suicide, survivors of suicide and those who experience suicidal ideation. While reflecting the intense pain, guilt, soul searching and aloneness associated with suicide loss, these stories also provide unique, poignant insights into the painful inner turmoil of the loved ones who suicide: real data, real people.

For those in the military, the emerging themes are similar, but with particular significances. The themes reflected in these personal accounts are summarised here.

**Suicide can be prevented**

A resounding theme in many stories from the bereaved was that they felt the suicide of a loved one could have been prevented. A common thread was that those who died did not really want to end their life, but rather take away the emotional pain that they were experiencing in that moment. This is consistent with the literature (Shneidman 1993) and an indicator of the emotional turmoil experienced by those considering suicide as a solution.

Expectations in the military are different from civilian life and the capacity to function, and to be deployable are dominant. An inability to function is this context is failure, and the consequences for career are compromised. The operational incapacitation of a serving member of the ADF is a major consideration for poor mental health outcomes (Bale 2014).

**Shortage or deficiency of professional care for suicidal behaviour**

Reports from bereaved family members indicate that a number of health agencies let them down. All too frequently, these stories recalled how their loved one was turned away from care, not provided with appropriate care or follow-up care, or that they were not informed or involved in the care planning of the suicidal loved one.

For those serving in the military, access to timely health care is consistently provided, however there are confounding issues (Galdas et al. 2005): in particular, the impact of help-seeking on career trajectories is an apparent barrier, and the stigma associated with mental health presentations is persistent (Jones et al. 2013).

**Rural and remote challenges**

Those who wrote about their experience with suicide and living in rural and remote areas expressed that often help is not available in the local town, forcing people to either travel to major centres, or wait for a scheduled time when relevant professionals travel to a town from a major centre. Frustration was also expressed about long waiting lists, and often having no alternatives for the suicidal person's care.

For those in the military, the challenges of posting and generational cycling adds a layer to the capacity to engage with local communities. This is most poignantly felt by families who are the first line of support (Cerel et al. 2008; Lester et al. 2012; Skinner and Diggins 2013).

**Misunderstanding and stigma associated with suicide**

Experience of a fear of the unknown around suicide was reflected in many stories, and a resounding recommendation from those with suicide experience was that suicide awareness campaigns, and education around suicide needs to be provided to the Australian community. We have a duty of care to make it easier for future generations to discuss and address suicide, providing them with the tools to recognise, acknowledge, and prevent suicide.

For those in the military, the stigma of mental ill-health is a limiting risk factor. The impact on help-seeking and perceived disengagement with unit camaraderie looms as a significant barrier (Greden et al. 2010; Jones et al. 2013; Bale 2014).

**Mental illness and suicide**

Many of the personal stories also discussed a link with diagnosed mental illness, and it clear that disabling mental health conditions were present but were unrecognised at the time. This was often recognised in retrospect by the bereaved. There was evidence in these stories that mental health literacy in the community needs to be significantly improved to ensure people receive appropriate treatment but also to improve opportunities for saving lives. This improvement needs to be accompanied by improved access to mental health services. Although mental illness is not always associated with suicidal ideation, the experiences of many individuals who were and are living with such illnesses was clearly apparent in many stories.

In the military, the barriers to care are often linked to career pathways. The prevalence of mental health disorders in the military (especially anxiety, depression, and PTSD) are acknowledged risk factors for suicide. In addition, knowledge of pathways for support, being allowed time to seek help, and risks to deployment were repercussions (McFarlane and Hodson 2010).

**Major Life Events matter**

Losing one's job, being unemployment over extended periods, job insecurity, financial stress, intimate partner problems, death of close friends or family members, bullying or harassment, violence and abusive relationships, natural disasters – all of these 'life events' or circumstances can act as triggers for suicidal behaviour. This was particularly evident in the stories where the person's own coping mechanisms and resources were becoming overwhelmed. Problem drinking and/or gambling – often over an extended period - were clearly associated with many of the suicide deaths. It featured as a contributing factor in a downward spiral of deteriorating relationships, employment difficulties and general despair, which exacerbated loneliness and alienated key supports.

For those in the military, the risk of injury, or death is an ever present consideration. Incidences of sexual trauma are not uncommon (Ramchand et al. 2015). Associated trauma from operational theatres is also a risk (Litz et al. 1997; Belik et al. 2007).

**Lives changed forever - Family interventions after a suicide**

It was evident from the stories told by the bereaved that having to rebuild their lives again was an overwhelming prospect; to carry on and regain some sense of normalcy without the loved one who has died by suicide. The reality is, that for many of these people, they will be haunted by losing a loved one to suicide every day for the rest of their lives, and all story writers' were unified when they expressed that losing a loved one in this way should never happen. A striking feature of these stories was how often those left behind had to cope with minimal informal or professional support. In some cases, where multiple suicides occurred in a family. We know that bereavement support works.

For those in the military, the death of a serving member (or ex-serving member) will often involve significant negotiations with the ADF or the DVA, both for support, and any entitlements (Dunt 2009).

**Responding to Suicide Risk**

It was reported that hospital Emergency Departments are ill-equipped and inappropriate environments to undertake suicide risk assessment. Despite years of efforts to improve this situation, the risks of being treated with disregard, disrespect and trivialised on presentation to a hospital ED remains high. Alternative settings for people experiencing a personal crisis and at risk of suicide are now commonplace in many developed countries. Across Australia, there are almost no alternative settings to ED.

For those in the military, the prospect of rehabilitation has significant portent. For some it may be a path to recovery, for others a stage in a 'medical' discharge. Both have impact on the individual's capacity to serve and to be supported (Dunt 2009).

**The Need for Answers and Action**

Many of the stories spoke to the frustration with the lack of focus on mental health and suicide prevention, the lack of available effective therapies and services overwhelmed. Too often our suicide prevention efforts have been too small in scale, too short in duration and too poorly resourced to make any difference. Such examples clearly demonstrate the need for suicide prevention strategies to address risk at both the community and population levels, rather than just that of the individual. These messages are also accurate for serving and ex-serving personnel.

# Key Points

- The lived experience of someone who has survived a suicide attempt, or those bereaved by suicide, are extremely important in informing what can be done to prevent suicide behaviour

- Suicide can be prevented with appropriate action

- There is a shortage of professional care for suicidal behaviour

- There are significant rural and remote challenges in provision of care and support

- The stigma associated with suicide is a strong risk factor

- There is a clear link between mental illness, the access to and effectiveness of care and suicidal behaviour

- Major life events and traumatic experiences can be key indicators of suicidal behaviour

- Support for family, friends and work colleagues after a suicide is imperative

# 7. Suicide and Self-Harm and the Workplace

Workplaces are often the last place where there is sustained contact with many of the 2,500-3,000 people who died by suicide in Australia in each year. Working age men make up the majority of suicide deaths. In workplaces where a suicide occurs, it has a disturbing impact on work colleagues (Shellenbarger 2001).

In recent years, there has been greater focus in research on the links between suicide, occupation and workplace settings. The association is not as simple as 'higher rates occur in male dominated workplaces'. Unskilled workers, workers on lower incomes, more precarious employment and lower education are often also associated with these workplaces.

Nonetheless some of the known factors associated with higher suicide rates include:

- when an occupation has a special knowledge and/or access to lethal means of suicide

- occupations and settings with higher levels of stress, uncertainty and isolation such as farming, resources and construction sectors

- men or women in non-traditional occupations – that is, women working in male dominated professions and men working in female-dominated professions may experience increased internal occupational stress that increases risk of suicide.

(Agerbo et al. 2007; Andersen et al. 2010; Heller et al. 2007)

Several studies have shown the significantly higher rates of suicide among the building and construction sector. Heller et al. (2007) showed that these workers in Queensland had a suicide rate 1.46 times the national rate and that younger workers in this industry had a significantly elevated rate of suicide (2.52 times).

The inherent nature of construction and resources sector jobs includes well-known risk factors:

- Male dominated

- Long working hours (minimum of six days up to 28 days)

- Low job security

- High rates of divorce and intimate partner problems

- Fly in/Fly Out or Drive In/Drive Out work arrangements with extended 'swings'

- Hard, noisy, dusty, hot and generally unpleasant work environments

- Elevated use of alcohol and other drugs, particularly cannabis and meth-amphetamine.

One study also found that construction workers were generally unaware that they worked in a higher risk industry and believed that suicide could not be prevented (Edith Cowan University, 2012). The same study found they were unlikely to seek help if feeling depressed and lacked confidence in dealing with suicidality.

Extensive research on mental health and workplace culture and climate have been undertaken (Karklins and Mendoza 2016). Factors associated with poorer mental health outcomes include:

- the quality of workplace relationships – e.g. communication, counterproductive behaviours, negative leadership behaviours

- psychological quality – e.g. levels of control or autonomy, demands and complexity

- job insecurity and perceived career decline

- organisational injustice – e.g. procedural injustice, unfair pay
- poor organisational culture – e.g. patterns of violations of norms, beliefs, community standards, coercive leadership

The nature of entry into the military or a defence force can skew the population in question toward a generally healthier individual, physically and mentally. The 'healthy worker effect' asserts that "workers usually exhibit better health status and lower overall death rates than the general population because severely ill and disabled people are excluded from employment" (Nielsen and Knardahl 2016, p. 232). The nature of screening and evaluation of prospective employees for military or defence service is designed to select those with strong physical and mental health characteristics, which may reflect the lower suicide rates observed in military and defence personnel compared with the general population (McFarlane and Hodson 2010). Contention arises when investigating the healthy worker effect amongst veteran populations, where the effect may not be as strong as when the individual is employed compared with when they leave the military (Bollinger et al. 2015), even after controlling for a number of socio-demographic variables (Kang et al. 2015).

## 7.1    Workplace Culture

Workplace culture, or organisation culture, can have a significant impact on the mental health of employees and contribute to suicide risk. Schein (1985), a doyen of the organisational theory field, describes 3 fundamental levels at which culture manifests:

- *Artefacts* are apparent on the surface as behaviour and tangible products of the group (e.g., language, the group's design of its environment, enacted rituals) and beneath these forms the *climate of the organisation* represents the deepest level of cultural artefacts.

- *Espoused beliefs and values* are shared ideals and theories held by members of the organisation. When they are clearly articulated they can help guide and direct action and behaviour.  When well understood by all members they can be a unifying force.

- The *underlying assumptions* that members tend to share and take for granted, developed through shared experiences in the organisation, are the core of the organisational culture.  These assumptions are generally unquestioned or unexamined and are difficult to discern as they exist largely at an unconscious level (sometimes they are expressed in a management philosophy).  They provide the key to understanding why things happen the way they do.

There are several ways workplace culture can be identified and understood, and can be through direct examination, including:

- Observed behaviour: language, customs, traditions
- Group norms: standards and values
- Espoused values: published, publicly announced values.
- Formal Philosophy: mission
- Rules of the Game: written and unwritten
- Climate: climate of group interaction
- Embedded skills
- Habits of thinking, acting, paradigms: Shared knowledge for socialization.
- Shared meanings of the group
- Metaphors or symbols

Hofstede (1991) discussed five domains of culture, with power distance being the first domain: the degree to which the society accepts there to be a difference in levels of power. The remaining four domains include: uncertainty avoidance, which reflects the extent to which a society accepts uncertainty and risk; individualism vs. collectivism, which reflects the extent to which people are expected to stand up for themselves, or alternatively act predominantly as a member of the group or organisation; masculinity vs. femininity, which refers to the value placed on traditionally male or female values, such as competitiveness or assertiveness; and long-term vs. short term orientation, which reflects an emphasis on values oriented towards the future, such as persistence, over those oriented to the present or past, such as tradition.

It is important that these aspects of culture work together with effective leadership in order for a workplace to be successful. The relationship and importance of culture in the ADF and suicide prevention is discussed in Part B.

## Key Points

- The workplace is often the last place where there is sustained contact with someone who has died by suicide

- There is a link between workplace settings and increased rates of suicide including: access to lethal weapons; occupations involving high stress environments; and where men or women are working in non-traditional occupations

- Some occupations, such as the military, may lean toward a 'healthy worker effect' whereby those employed go through significant health screening to be able to be employed in such a setting

- Workplace culture plays a role in the mental health of a workforce

- Building a positive and resilient workplace culture can have benefits for the wellbeing of a workforce

# 8. Suicide Prevention Strategies

## 8.1 An Overview

Despite considerable research and the production of suicide prevention programs, suicide rates continue to increase, and there is little evidence to indicate the efficacy of routine suicide prevention strategies (Klonsky and May 2015). Furthermore, Martin and Page (2009) describe the importance of protective factors, and the value of 'connectedness' to mitigate risk.

Models for suicide prevention activity typically look for a balance of (a) reducing risk factors, and (b) increasing protective factors. For any individual (or group) that requires an understanding of the individual, social and contextual factors, and which of these (or combinations) are modifiable. An understanding of risk factors can usefully assist the identification of groups for whom a particular concern has been identified (e.g. exposure to trauma) (Gradus et al. 2013).

The risk for suicide is a complex balance of risk and protective factors, particularly when risk reduces the ability to cope with difficult circumstances. Risk and protection factors can exist at three levels:

- The individual's health, personality, and experience;

- The social connection to family, friends, and community;

- The contextual life events and circumstances to which an individual belongs.

Some things can be changed or modified (e.g. an understanding of health); some things are fixed (e.g. an individual's age). Risk is a complex interaction of distal factors (e.g. impulsivity) and proximal factors (e.g. negative life events), and these will vary with individuals and with groups or identifiable populations (Platt and Hawton 2000). The complexity of the interaction between risk and the individual's circumstances is an important consideration, and caution should be exercised in the implementation of simplistic solutions.

A model that can act as a starting point for understanding and responding to an individual's personal and contextual circumstances is shown in Figure 8. It shows an integrated bio-psycho-social model based on the impact that biological, psychological, psychiatric and social risk factors may have on the development of suicidal behaviour.

Despite this complexity, the majority of suicide prevention efforts use only one or a small number of limited reach strategies. These strategies reappear in several reviews over the past decade or more (Mann et al. 2005; Scott and Guo 2012) and are promoted as effective prevention strategies:

- Particular education of primary health care providers - most often GPs;

- Training of well-placed 'gatekeepers' to enable early intervention and referral – most particularly ED staff and emergency services personnel;

- Restricting access to the means to suicide, particularly firearms, pharmaceuticals and known 'hotspot locations (bridges, cliffs, etc.)

- Structured support for individuals identified as at risk;

- Structured collaboration and follow up care (especially those who attempted suicide);

- School based programs

- Provision of help lines or crisis support lines (such as Lifeline in Australia)

- Education of the media/responsible reporting.
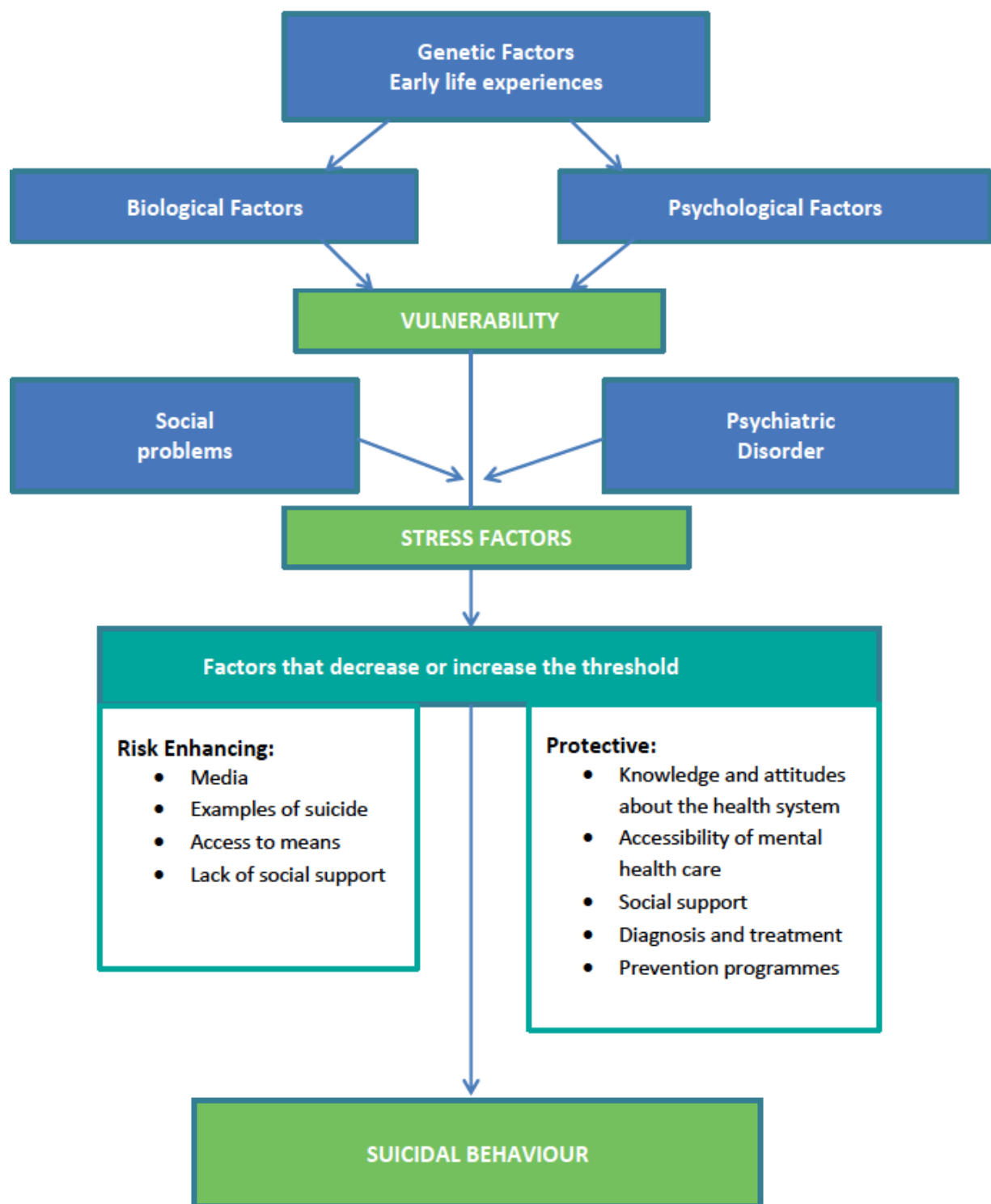
**FIGURE 8** AN EXPLANATORY MODEL OF SUICIDAL BEHAVIOUR (VAN HEERINGEN 2001)

Du Roscoat and Beck (2013) examined suicide prevention interventions in terms of efficiency. They examined 41 evaluation studies and found the three most efficient interventions were limiting access to lethal means, the continuation of contact with persons discharged form an acute mental health unit and implementation of emergency call centres. Four other intervention categories were seen as promising but without sufficient evidence – these were training of GPs, reorganising care, school

programs, and general information campaigns. The authors make the point that most of the available studies focus on people with existing psychological disorders rather than the broader population.

A recent systematic review and meta analysis (Milner et al. 2016) assessed whether suicide prevention provided in the primary health care setting and delivered by GPs results in fewer suicide deaths, episodes of self-harm, attempts and lower frequency of thoughts about suicide. The findings again challenge some of the prevailing and accepted strategies on suicide prevention with the authors stating that they cannot on the basis on the study recommend "the roll out of GP suicide prevention initiatives".

The difficulty in gauging the value of a number of these interventions is the lack of specification provided. For example, 'school based programs' is a broad category that may include psychological assessment, one-to-one psychological support, teacher and/or parent education, resilience training for students, peer-led programs and so on. Few school studies examine these different approaches to school based suicide prevention or they are within a broader pedagogical framework and those that have are too small or too short in duration to draw strong conclusions (see SAMHSA's National Registry of Evidence-based Programs and Practices and Reconnecting Youth program[6]).

One large European study – the SEYLE project – is an exception. The study involved over 11,000 students across 164 schools in 10 countries. It tested 3 interventions for effect at 3- and 12-month intervals. The 3 interventions were: (1) Question, Persuade, and Refer (QPR), a gatekeeper training module targeting teachers and other school personnel, (2) the Youth Aware of Mental Health Program (YAM) targeting pupils, and (3) screening by professionals (ProfScreen) with referral of at-risk pupils. After 12 months, the YAM was the only intervention showing a significant reduction in student suicide attempts and suicide ideation (Wasserman et al. 2015).

## 8.2     Multi-level, Complex Interventions

In the US, the CDC sets out a strategic direction for the prevention of suicidal behaviour centred on promoting individual, family and community connectedness (CDC, accessed 27 November 2016). It sets out a comprehensive and integrated approach to addressing suicide as a public health problem. This expands the range and reach of potential prevention strategies from those focussed on people at or near the point of crisis. It includes wider application of integrated models such as the US Air Force Prevention model and others – both multi-level, integrated, whole-of-community approaches.

Recent suicide research has expanded the understanding of suicide risk and vulnerability. An important development is the 'ideation-to action framework' (Klonsky et al. 2016) that describes the trajectory to suicide as discrete stages (a) the development of suicide ideation, (b) the progression to suicide attempt. The factors that surround these pathways are unique, and distinguish ideation from attempt. These understandings will inform the recommendations for a suicide prevention strategy.

Strategies for suicide prevention vary considerably and range from awareness raising, to community gatekeeper programs, and to broad ranging, staged strategic programs. In Australia, the National Suicide Prevention Strategy (LiFE framework Department of Health and Ageing 2008) provides a framework for action, but is descriptive. The individual states and territories of Australia have developed independent, aligned strategy documents that address their particular concerns (e.g. Department of Health and Human Services 2016).

Regrettably, despite more than two decades of governments publishing suicide prevention plans and strategies, there is almost no evaluation data available. This is examined in the next section.

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[6] See http://www.reconnectingyouth.com/research/ry-evaluation-studies/#js for information on Reconnecting Youth.

Further, there is a lack of consistent evidence regarding the most effective strategy to prevent suicide (Mann et al. 2005; Windfuhr 2009). While the complexity associated with the trajectories towards suicide are acknowledged, the programs that address the known risk factors, and behaviours on multiple levels are more highly regarded (Althaus and Hegerl 2003; Van der Feltz-Cornelis et al. 2011). Multi-modal for defined populations or geographical areas, have shown promise in a number of countries (Ono et al. 2008; Gullestrup et al. 2011; Preti et al. 2009). Less comprehensive programs lack the sophistication to address the complex trajectories towards suicide, and attempts to simplify risk assessment are flawed (Hom et al. 2016).

A continuous study program examining a multi-modal community suicide prevention program began in Nuremberg, Germany in 2000. Known as the 'Alliances against Depression (2000-2014)' the multi-level community approach has been applied in 10 European countries and Chile (Hegerl et al, 2009; Hegerl et al. 2013). An overview of the tasks to establish a regional intervention is shown in Figure 9

## Key Points

- There has been an increase in the development and publication of suicide prevention strategies

- Despite the increase, suicide rates remain stagnant or continue to rise

- Suicide prevention models typically address a balance between reducing risk factors and increasing protective factors

- In a study of 41 suicide prevention strategies, the three most effective implementations included reducing access to lethal means, the continuation of contact with persons discharged from an acute mental health unit, and implementation of emergency call centres

- There are difficulties in evaluating suicide prevention strategies as they are often population focused which becomes difficult when considering the variability of experiences any given person may have within an evaluation period

- Multi-level, complex interventions seek to promote individual, family and community connectedness

- Multi-level prevention programs focus on both those at the lower risk spectrum, to those who may be considered high risk for suicidal behaviour

**FIGURE 9** AN OVERVIEW OF THE TASK FOR A REGIONAL SUICIDE PREVENTION PROGRAM (HEGERL 2015)

# 9. National and International Suicide Prevention Frameworks

## 9.1 International suicide prevention frameworks

The WHO set out a public health action agenda for member nations for the prevention of suicide in 2012 (WHO 2012). It includes detailed processes on how to develop an effective suicide prevention strategy, including the directives of setting out clear objectives, identifying risk and protective factors that are regionally relevant, determining effective intervention strategies, targeting prevention at the general population, at risk group and individual level, improving case registration and research and continual monitoring and evaluation of key outcomes. Importantly, the WHO asserted that "…the lack of resources – human or financial – can no longer remain an acceptable justification for not developing or implementing a national suicide prevention strategy" (WHO 2012, p. 20), a clear position that suicide prevention is a significant public health issue.

## 9.2 National suicide prevention frameworks

Several national and jurisdictional suicide prevention strategies are worth covering for consideration with the Australian suicide prevention initiative.

In Scotland, the current suicide prevention plan expires in 2016. It covers several key strategic areas across five themes: Responding to people in distress; talking about suicide; improving the NHS response to suicide; developing the evidence base and supporting change and improvement. Broadly, these themes aim to strengthen health service and individual responses to people in distress, de-stigmatise talking about suicide, collecting high quality data and evidence and, supporting transitions for suicide prevention services.

England's 2010-2015 strategy for suicide prevention included some clearer key areas of action including reducing the suicide risk for those in high-risk groups and reducing access to the means of suicide. However, general statements were still present including the intention to tailor approaches to improve mental health in specific groups. In the detailed document, these specific groups included young people, men, survivors of abuse and/or violence and people living with long-term chronic physical illness. The specifics of how these specific groups are to be assisted are lacking, particularly concerning integrated care across services.

The current Irish suicide prevention strategy 'Connecting for Life' presents a more comprehensive and ambitious strategy than the previous two discussed. In the document, key outcomes of reducing suicide rates overall and in specific population groups are clearly stated. Further, the strategy also aims to reduce presentations of self-harm, again at a population level and in identified high-risk populations. Importantly, the strategy clearly details how progress will be evaluated, with defined primary outcome measures and variables along with secondary indicators including measuring how the media reports suicide; access to support services and heightened public understanding. Further to these goals are a systematic process evaluation, not only assessing the impact of the strategy and implemented goals, but also the processes underpinning the strategy.

In Canada, there is currently no national suicide prevention strategy amidst fervent calls from academics and public health representatives for the development of one (Eggertson 2015). Despite this, the Province of Quebec has been leading the way in strategy formation, implementation and success, seeing suicide rates in the province decline steadily over the last decade with their 'Help for Life' suicide prevention strategy. The strategy outlines several key areas of action including:

Provide and consolidate essential services and put an end to the isolation of caseworkers;

- Increase professional skills;

- Intervene with groups at risk;

- Foster promotion-prevention programs among young people;

- Reduce access to and minimize risks associated with the means of suicide;

- Counteract the trivialisation and the sensationalisation of suicide by developing a sense of community and responsibility; and

- Intensify and diversify research.

What is unique about the Quebec document is its significant level of detail including actionable strategies with defined time frames for delivery and the specific areas that will have responsibility in implementation. Furthermore, specific indicators of implementation are detailed and key outcome measures are included, encompassing mortality rates for suicide by sex and age, suicide method, attempted suicide rate and hospitalisation rate following a suicide attempt. These are all clearly defined key outcome measures. Despite the key strengths of the strategy, implemented in 1998, there remained significant omissions with Inuit and Indigenous populations unrepresented throughout the document (Crawford 2015).

In the US, the Surgeon General released a national strategy in 2012 setting out 4 key strategic directions: Fostering healthy and empowered individuals, families and communities; strengthening clinical and community preventative services; tailoring acute treatment and support services; and outlining an agenda for high quality research and evaluation (U.S Department of Health and Human Services 2012). The strategy was a comprehensive directorate for suicide prevention for the next decade.

## 9.3    Australia's Approach to Suicide Prevention

Australia was one of the first countries to establish a specific national suicide prevention strategy and accompanying dedicated program of funding. The initial strategy (1995-1999) focused on youth suicide and had a budget allocation of $31 million over four years. The strategy was broadened to address suicide across the life course. The National Suicide Prevention Strategy, NSPS, has continued since that time. The NSPS is promoted as the 'Living is for Everyone' (LiFE) Framework (2007)[7]. The broad elements and parameters of the LiFE Framework are:

- Whole population interventions to:

  - reduce access to the means of suicide;

  - reduce negative stigma of suicide; and

  - improve resilience of families, and communities;

- Interventions for identified at risk groups to build resilience, and build an environment that promotes self-help and access to support;

- Identification of signs of a person at risk of suicide and provision of relevant support;

- Interventions for those showing signs of high risk for, or imminent likelihood of suicide;

- Accessing early care and support when treatment and specialised care is needed;

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[7] A comprehensive outline of the Australian Government's past and present role in suicide prevention is provided in Volume 3 (Submissions section) of the Review.

- Integrated professional care when needed for treatment, management and recovery;

- Long term treatment and support to prepare for a positive recovery and future, and

- Ongoing care and multi-layered support.

In 2014, the National Mental Health Commission was engaged by the Government to conduct a Review of Mental Health Programs and Services (the Review). The Commission's final report, *Contributing Lives, Thriving Communities*, was submitted to Government on 1 December 2014.

The Review highlighted the existing complexity, inefficiency and fragmentation of the mental health system [8]. The Commission recommended a fundamental changes to the mental health system to shift the focus of the system from crisis and acute care to community based services, primary health care, prevention and early intervention; and to better focus services on supporting individuals and families.

The Review found that current efforts around suicide prevention were fragmented, lacked focus and were largely unevaluated. The Review concluded that a new approach to suicide prevention was needed, with strong national direction backed by comprehensive, coordinated planning and implementation at a regional level.

The Australian Government subsequently responded to the Review and largely endorsed the recommendations for reform. The Government is now in the process of re-orienting suicide preventions services and devolving the responsibility for implementation tot eh Primary Health Networks (PHNs).

In addition to the national government actions, most Australian states and territories have had and/or have suicide prevention strategies or frameworks in place. While these are largely consistent with the LiFE Framework, there are important differences in emphasis and approach.

Recently, the NSW Mental Health Commission with the Centre for Research Excellence in Suicide Prevention (CRESP) have developed a 'systems approach' prevention framework driven by 4 key pillars:

- Implement evidence-based suicide prevention strategies in local areas, using existing community structures and initiatives where possible

- Adopt a common evaluation framework across local areas

- Engage local communities, such as health services, schools, community agencies, worksites, rural and remote services, and the police, in suicide prevention, and build and readiness across these organisations within the community.

- Establish good implementation, governance, resources and processes at central and local areas.

(NHMRC, CRESP 2015 p. 9)

Of note are the prevention strategies ranging from the individual to population levels bound to the first key strategic focus. These include nine evidence-based practices shown to be effective in suicide prevention. The strategies are outlined in Figure 10.

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[8] National Mental Health Commission, *Contributing Lives, Thriving Communities*, 2015, http://www.mentalhealthcommission.gov.au/our-reports/contributing-lives,-thriving-communities-review-of-mental-health-programmes-and-services.aspx (accessed 11 November 2016)

**FIGURE 10** SUICIDE PREVENTION STRATEGIES – INDIVIDUAL AND POPULATION (NHMRC AND CRESP 2015)

The nine suicide prevention strategies however do include areas where further evidence is required to evaluate effectiveness in preventing suicide. At present, there is insufficient evidence concerning screening for suicide in primary care, general public awareness campaigns and media reporting guidelines. Additionally, further investigation of gatekeeper training, education of GPs and internet and phone line supports is required (Zalsman et al. 2016).

## 9.4 Do 'National Suicide Prevention Frameworks' make a difference?

Variability exists when evaluating suicide prevention frameworks and their ability to reduce suicide deaths and attempts. Whilst there is significant overlap and agreement across frameworks within and outside of Australia, the effectiveness of any given framework is highly dependent upon its implementation (Christensen 2016). Fragmented implementation can reduce effectiveness and in the long term may not show a reduction in suicide rates. As such, prevention strategies that target specific areas in isolation may be ineffective and be extremely difficult to evaluate.

Thus, suicide prevention frameworks must be detailed based on a systems approach to suicide prevention, and to be successful, must be implemented at a whole-of-system level. A successfully implemented suicide prevention strategy can expect a 10-17% reduction of suicide deaths within 3 years (National Office for Suicide Prevention 2015). These strategies must be systemic and include approaches at individual, community and population levels. Broadly, national strategies have shown

effectiveness in reducing suicide deaths amongst young and old populations, but tend to have small to no effect in working age populations (Matsubayashi and Ueda 2011), suggesting that those within this population need greater consideration. Successful suicide prevention frameworks depend upon comprehensive implementation and action, and buy-in from all involved from policy makers to health professionals (Christensen 2016).

Effectiveness of a suicide prevention framework is also contingent upon the integration of services, not only mental health, but ancillary social services such as Centrelink, homeless organisations, education sites, workplaces and the places in which people live (NMHC 2013). The NMHC asserted in their 2013 report card on mental health that Australia's current strategies 'do not offer any sense of what interventions should be prioritised' (p. 90), which means that any suicide prevention strategy moving forward cannot be a general guideline document, but a focussed, assertive and direct framework for action and implementation.

# Key Points

- The World Health Organisation stipulates that there is no excuse for a country or jurisdiction to not have developed and implemented its own suicide prevention strategy and framework

- Several countries have established frameworks, however, most notably Canada does not yet have a national suicide prevention framework

- Australia's suicide prevention framework is the Living is for Everyone (LIFE) Framework

- LIFE incorporates whole of population promotion and prevention strategies, intervention for identified risk groups, integrated professional care, long term treatment and support options and multi-layered support

- Suicide prevention frameworks are only effective when they are implemented completely, rather than in a fragmented way

# 10.  Assessing Suicide Risk

Suicide risk assessment, in various settings, has shown mixed results and few have been evaluated using longitudinal studies (Franklin et al. 2016). Most of the risk assessment tools have been developed through expert consensus and are rationally derived.

A number of suicide risk assessment screening tools, mnemonic strategies and guidelines currently exist, including but not limited to:

- Working with the Suicidal Patient – A Guide for Healthcare Professionals (Samra and Blisker 2007);

- Self-Directed Violence Classification System (Matarazzo et al. 2013);

- Columbia Suicide Severity Rating Scale (Posner et al. 2011);

- IS PATH WARM (Juhnke et al. 2007); and

- Nurses' Global Assessment of Suicide Risk Scale (van Veen et al. 2014)

These mechanisms for assessing suicide risk are often developed for differing audiences, for example, medical students, primary health carers or the general public. Nevertheless, there is significant heterogeneity amongst suicide screening tools. Accuracy and efficacy of screening tools have also come under question, with some research finding that screening for suicide risk in adult and adolescent populations (O'Connor et al. 2013) and with psychiatric inpatient populations (Large and Ryan 2014) may not be effective. Large and Ryan (2014) found that classifying psychiatric inpatients in terms of suicide risk provided no clinical decision-making benefit. In the O'Connor et al. (2013) meta-analysis, it was observed that accuracy of screening tools was lower in older adults, evidence was minimal for screening in adults, and poor with adolescent populations.

The limited evidence supporting screening tool use in clinical and community settings is often due to the scarcity of evaluative techniques utilised during development of screening tools. In particular, many screening tools lack measures of specificity and sensitivity, diagnostic accuracy or comparisons with clinician interviews and/or evaluations (O'Connor et al. 2013). Ryan and Large (2013) argue that comprehensive suicide risk assessments should be abandoned for "comprehensive clinical assessments of each patient's situation and needs" (p. 463).

Both Jobes (2006) and Shea (2009) similarly argue against simple checklists in favour of more open dialogue or flexible approach based on motivational theory for uncovering suicidal ideation and intent. The Collaborative Assessment and Management of Suicidality (CAMS) approach (Jobes 2006) is a therapeutic philosophy and clinical framework – not a single set of checks and assessments. Shea's (2009) CASE approach, similarly combines the art of conversation with the science of clinical assessments.

Given the complexity of risk factors experienced by any given individual discussed earlier, a thorough and personalised approach is warranted. Shea makes the point that the person with the most serious suicidal intent may be the most likely to withhold disclosure.

## 10.1  Risk assessment in emergency departments

The first 30 days after discharge from an emergency department is the period in which risk of a patient dying by suicide are highest, while 70% of those discharged will not attend their first outpatient appointment (Capoccia and Labre 2015). Within prisons, a quarter of inmates who died by suicide in the 9 years prior to 2011 were deemed not a risk of suicide days before their deaths (Ting

2011). This occurrence is often due to a mix of poorly devised risk assessment protocols and inadequate training for those performing risk assessments (Ting 2011).

The process by which assessment of risk and commensurate response is determined on presentation to an emergency department can impact the pathway an individual takes through the care system. As outlined above, simple screening tools appear insufficient for suicide assessment (Bolton et al. 2012). An assessment should encompass more than a single clinician's observation or use of a screening measure. Ryan and colleagues (2015) assert the following requirements for clinical assessment of suicidal patients presenting to an emergency department:

- Clinicians should be respectful and reassuring

- They should review old notes, conduct a full history and examination

- Speak to family, friends and any clinicians involved in the individual's care

- Management of the individual should be guided by the individual and not by notions of risk

- The clinician should document a negotiated management plan.

These practices are not always standard within emergency departments, however. Milner et al. (2013) observed that emergency department staff were more likely to judge the urgency of cases based on simple demographic characteristics of an individual, rather than comprehensive assessment as outlined above. Suicide risk assessment within military populations is often conducted differently to civilian contexts, thus a separate section is dedicated to these processes later in the review.

## Key Points

- Assessing suicide risk using standardised measurement is complex

- Several screening tools have been developed for various professional health services

- Evidence suggests that screening for suicide risk in adolescent and adult populations, and with psychiatric inpatient populations provide very little clinical benefit

- Simple checklists should be cautioned against, particularly given the complexity of suicide risk factors

- An open dialogue and flexible approach based on motivational theory for uncovering suicidal ideation and intent has been suggested as an effective screening mechanism

- Risk assessment during discharge from emergency departments is important, particularly as suicide risk is greatest 30 days after discharge from hospital

# 11.   Responding to Suicide and Self-Harm

The practice of 'postvention' "aims to provide support to survivors attempting to cope with a suicide death, reduce the possibility of suicide contagion, and tackle the social stigma associated with suicide" (Erlich 2016, p. 255). Despite being a critical aspect of reducing the incidence of suicide, postvention practices and responding to suicide and self-harm after the fact is primarily practiced with young children and adolescent populations (Erlich 2016).

At present, evidence for the effectiveness of various postvention strategies and clear guidelines for postvention across the lifespan is lacking (Erlich 2016; Jordan 2015), and cross-cultural research on the topic is minimal (Andriessen 2014). As of 2015, the Department of Defense in the United States "currently has no policies or procedures addressing what to do after a suicide death to prevent subsequent suicides, and there is a limited evidence base to describe the state of the art in this area" (Ramchand et al. 2015, p. xiii). There are, however, several avenues being explored within the literature that show promise in suicide postvention strategies.

The 'Postcards in Persia' trial utilises cost effective postcards mailed to survivors of suicide in the 12 months following a suicide attempt (Hassanian-Moghaddamm et al. 2011). In a trial with 2,300 participants, 9 postcards were mailed over a 12-month period to a random selection of participants while the remaining cohort was subject to treatment as usual follow a suicide attempt. The study showed a significant decrease in suicide ideation and number of attempts, however did not find any decrease in self-cutting.

A similar study conducted out of a hospital emergency department in Newcastle, Australia evaluated the effectiveness of a postcard program that sent 8 postcards over 12-months coupled with standard treatment compared with standard treatment alone (Carter et al. 2005). Whilst self-poisoning in total numbers was reduced in the postcard group, overall proportion of self-poisoning events did not significantly differ. In a postcard study of self-harm presentations to an emergency department, researchers in Christchurch, New Zealand found that hospital re-presentations did not significantly differ with a control group (Beautrais et al. 2010). Postcard postvention studies at present remain inconclusive in their effectiveness.

For those bereaved by suicide, the StandBy Response Service in Australia provides community based postvention support services by face-to-face outreach or telephone methods. Available only to those who seek it out, the service provides crisis support and service linkage to the community. Of interest in a study by Comans et al. (2013) was the cost effectiveness and cost-benefit of such a service for the community. The StandBy service was found to be significantly more cost-effective than treatment as usual, and robust to different scenario models with an 81% chance of being more economically feasible than treatment as usual. Despite this positive finding, there was little evaluation of the bereaved experience of the StandBy service.

Szumilas and Kutcher (2011) conducted a systematic review of post-suicide intervention programs investigating both the cost-effectiveness and outcomes of postvention programs for school aged children, families and communities. The study did not identify any robust cost-effectiveness evaluations for postvention programs. Postvention practices which were outreach in nature, actively providing support post-suicide and linking to existing services were reviewed as having more positive outcomes than other postvention approaches. Despite these positive steps, the postvention studies reviewed were generally of poor quality.

One other emerging area of postvention guidance lies in the digital space, with online and mobile technologies changing the landscape of how communities and people respond, share information and engage with one another through digital means. A key example is the spread of information online following a suicide within a school community.

Headspace Australia recognises that it is almost impossible to control the way information is shared on social media, but schools can use social websites as tools to disseminate important and accurate information to students and parents, along with efficient postvention strategies (Headspace, 2012).

Larsen et al. (2016) identified two postvention mobile applications and rated them as having some evidence for their effectiveness. The two apps functioned using a safety plan process, having the user develop a safety plan, monitor cognitions and feelings, delivered videos with information and provided facts about the grieving process. One application was identified that provided ongoing outreach to someone who had survived a suicide attempt, however evidence was minimal for this mobile application. The evaluation of postvention practices within military bodies or indeed, the ADF, is lacking. There is a need to develop evidence based guidelines and practices in responding to suicide and supporting the bereaved through the grief process.

With a comprehensive understanding of suicide and self-harm within the general population being presented, the literature review now turns its attention to suicide and self-harm in the context of military organisations and the ADF. Whilst there is some overlap between general populations and military or ex-serving personnel, there are important contextual differences that set these two populations apart. The review begins with an analysis of suicide and self-harm prevalence within international and Australian armed forces.

## Key Points

- Postvention is the active response and support provided to an individual after attempting suicide, and to those close to someone who has died by suicide

- At present, the US Department of Defence does not have a postvention policy

- There are several approaches to postvention including sending regular postcards to individuals who have attempted suicide and outreach services for those bereaved by suicide

- An emerging space is that of digital postvention pathways including online and mobile applications to actively support someone after a suicide attempt

- Postvention research remains a challenge, and more understanding of the effectiveness of digital interventions is required

# PART 2

# 12. Suicide in the ADF and Other Military Populations

Deaths due to suicide, and other forms of sudden mortality, have become an increasingly important issue in many countries in recent years. This is part due to the large military deployments among NATO countries and allies, such as Australia and Japan, and a community concern for the wellbeing of both service personnel and veterans and their families (Harris and Baba 2012).

Reports of high suicide rates among US military personnel following deployments to Iraq and Afghanistan have raised considerable media, political and academic concern (Kuehn 2009; Lineberry and O'Connor 2012). Indeed, in 2016 a global social media campaign known as '22 Kill' garnered widespread advocacy and personal action to address the reported number of suicides – 22 deaths a day on average – of US veterans ([https://www.22kill.com](https://www.22kill.com)). This was also evident in media reporting and political discourse in Australia.

## 12.1    The Current and Former ADF Communities

### What the data shows

In Australia, the data on suicide in the veteran community is equivocal. Reporting and data collection is incomplete, and the range of presentations does not necessarily capture service status. In 2009, a comprehensive review of Australian service personnel in six studies provided some data on suicide (Dunt 2009). The personnel included veterans from the Vietnam, Korean, and Gulf war theatres, and provided some insights into the suicide rates of veterans compared with the general population. The study showed higher rates for suicide in the veteran community in two theatres (Korea 31% higher, Vietnam 21% higher), but the other studies were inconclusive. The Dunt Report (2009) highlighted the importance of evidence-based activity for suicide prevention and made a number of recommendations, including the prevalence study of mental health disorders in the ADF (McFarlane and Hodson 2010).

The Dunt Report (2009) made a total of 52 recommendations, 2 of which were partially accepted in the Governments response, with the remaining recommendations accepted by the Government. Selected recommendations included:

- The role of chaplains in primary care mental health services is supported (recommendation 3.3);

- Psychology assets should be more efficiently deployed by greater use of non-psychologists where this is possible and redesign of post-deployment psychological screening so as to increase the availability of psychologists on base for primary mental health care on base (recommendation 4.5);

- Pre-deployment briefings and other annual briefings should include education and training in mental resilience (recommendation 6.1);

- On-base 'rehabilitation platoons' stigmatise their members and, as a practice should be discontinued (recommendation 10.1); and

- At a broad conceptual level, the ADF needs to welcome the member's family as well as the member into the broad 'Defence family'. Acknowledgement of this in itself is important.

The 2000 ADF Health Status Report identified that in the period 1994-1998, suicides were the third leading cause of death behind natural causes and motor vehicle accidents and accounted for one in six

deaths for permanent ADF members. Gisler and Sadler (2000) reported 142 suicides in the ADF between 1985-2000. This was 14.3 per 100,000. The rate in the ARA and the RAN was 16.3 and 10.9. for the RAAF. When compared with the non-ADF same age male populations, the suicide rates for 15-24 year olds were similar while for the 25-44 age groups, the overall ADF rate was significantly less than the non-ADF male population.

The most recently released data from the Australian Institute of Health and Welfare (2016) details the incidence of suicide among serving and ex-serving personnel between the years of 2001 and 2014. The report found that in the specified period 292 service personnel died by suicide. See Figure 11.
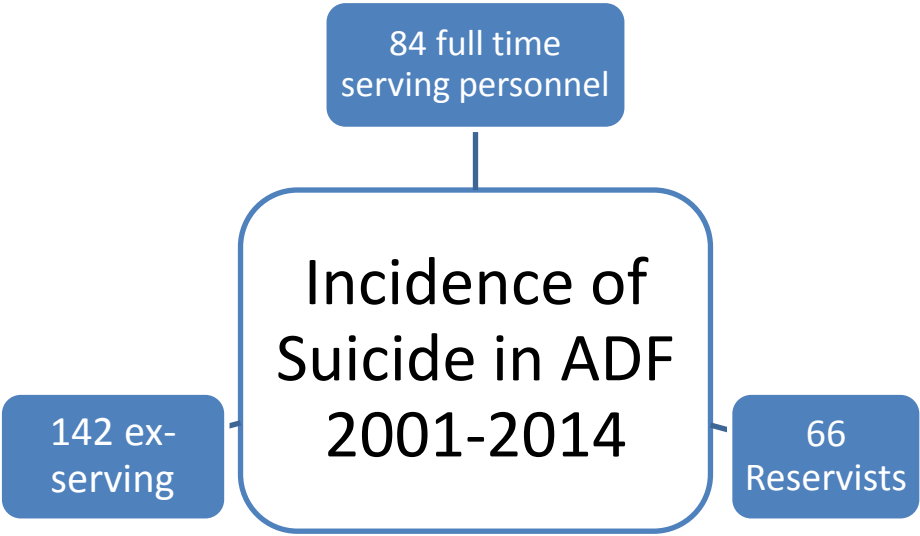


**FIGURE 11** INCIDENCE OF SUICIDE IN THE ADF 2001-2014 (AIHW 2016)

After adjusting for age, when compared with Australian men in the general population, the suicide rate was 53% lower for men serving full-time, 46% lower for men in the reserves and 13% lower for men who were ex-service personnel, though this last figure was not statistically significant. Interestingly, for those ex-service personnel aged between 18 and 24 the suicide rate was significantly higher when comparing with the general population. Younger ex-serving personnel were approximately 1.9 times more likely to die by suicide than men in the general population of the same age (AIHW, 2016).

It is important to stress, that the AIHW report is a preliminary report and only examined suicides among ADF members in the serving or reserve populations from 1 January 2001 and those who had separated from the ADF after that date.

Table 6 displays suicidal ideation, planning and attempts by males, females and total with a comparison between the ADF and general population data sourced from the ABS. The ADF data is drawn from the 2010 ADF Mental Health Prevalence Study (McFarlane and Hodson 2010), and does not include those deployed to the Middle East. As shown, ideation and planning is significantly higher in the ADF study sample when compared with the general population, whilst suicide attempts do not significantly differ.

**TABLE 6** SUICIDE BEHAVIOURS OF THE ADF COMPARED WITH THE GENERAL POPULATION

| | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | ABS% | ADF% | ABS% | ADF% | ABS% | ADF% |
| **Felt so low that you thought about committing suicide** | 1.5 | 3.7* | 2.8 | 5.1* | 1.7 | 3.9* |
| **Made a suicide plan** | 0.3 | 1.1* | 0.5 | 1.2* | 0.4 | 1.1* |
| **Attempted suicide** | 0.3 | 0.4 | 0.4 | 0.5 | 0.3 | 0.4 |
| **Any suicidality** | 1.6 | 3.8* | 2.8 | 5.1* | 1.8 | 4.0* |

The 2010 ADF Mental Health Prevalence Study (McFarlane and Hodson 2010) indicated that 17.9% of ADF members sought help for stress, emotional, mental health or family problems. Significantly, barriers to ADF personnel disclosing a mental health concern included:

- fear they would be treated differently (27.6%);

- concern that their career would be adversely affected (26.9%);

- Deployment capacity would be reduced (36.9).

The prevalence of mental disorders in the ADF was similar to the Australian general population; it is important to note that anxiety disorders rated highly (particularly among females), and that affective mood disorders (e.g. depression) rated highly among males. In Australian veterans of the Gulf War, minor and moderate depression was observed to be more prevalent when compared with a general population sample (DVA 2015). This same sample was also found to be at greater risk of PTSD, alcohol misuse and abuse (particularly for lower ranked personnel), having suicidal thoughts and making a suicide plan (DVA 2015). Actual suicides were equivalent with the general population sample.

### Risk factors

While there is some equivocation regarding rates of suicide ideation in the ADF, there is more agreement on specific concerns and risk factors in suicide deaths. These include demographic factors (e.g. young males), and the underlying psychological factors (particularly depression, PTSD, and alcohol misuse) (Dunt 2009).

Deployment continues to be a factor of interest and while the 2010 ADF Mental Health Prevalence Study (McFarlane and Hodson 2010) did not find that deployed personnel were more likely to suffer mental health conditions, it did find that deployed personnel were more likely to seek help for mental health and family problems. This finding mirrors those from Hawthorne et al. (2014) on Australian peacekeepers, where greater than 80% had sought help in the previous three months for a mental health concern, much higher than the general population rate. The authors theorised that this may be due to ease of access to care for veteran populations. Similar rates have been observed overseas, with non-deployed UK military personnel meeting diagnostic criteria for ill-mental health seeking help at a rate of 60% (Jones, Twardzicki et al. 2013). The ADF Mental Health Prevalence Study (2010) also indicated increased levels of traumatic symptomology with each combat exposure on deployment.

AISRAP (2015) concluded that there was limited research available concerning "… suicide mortality, non-fatal suicidal behaviour and suicidal ideation among individuals who have left the ADF" (p. 8), which suggests follow-up research and longitudinal tracking on ex-serving personnel may require strengthening. Qualitative data from McKay (2010) re-iterate the importance and significance of transition periods in ex-serving personnel, finding that returning to civilian life, reintegrating with existing relationships and entering different forms of employment post-service had significant impacts upon suicide behaviours.

**Homelessness amongst veterans**

The high prevalence of homelessness among military veterans in the US is well documented, and there are growing concerns about homelessness amongst defence force veterans in Australia. However, there is a paucity of robust data to substantiate the magnitude of this, impeded in part by the absence of veteran status in most homelessness surveys and service data collection. A report commissioned by DVA in 2009 (Thomson Goodall Associates 2009) cited a figure of 3,000 based on census data but the accuracy of this figure has been questioned by the DVA and ADF. More recently, a study commissioned by the RSL in Queensland (Himalaya Consulting 2016) used more robust methodology to estimate the proportion of homeless veterans in that state - estimated to be around 384 for that state alone in 2011.

An alternative and objective source of data on the prevalence and risk profile of homeless veterans is found in data being collected each year in Australia using the Vulnerability Index-Service Prioritization Decision Assistance Tool (VI-SPDAT); an evidence based validated methodology used internationally to collect information on vulnerable and at-risk people. Demographic questions within the VI-SPDAT include a question about whether the participant has prior defence force service. During the Inner City Sydney Registry week for 2015, 8% (n=42) of participants indicated they had previously been members of the ADF. Melbourne registry week data reports the prevalence of veterans as 9% in 2010, and 8% in 2011 and 2012. In the Perth registry week data collected in 2016 5% had served in the ADF, and in the 2015 registry week survey, veterans constituted 6.8%. Tables 7 and 8 detail homeless veterans data from Australia-wide registry week surveys.

Whilst these numbers may not seem large, they are proportionally far higher than the prevalence of veterans within the overall Australian community. Registry week data provides a very conservative estimate of total homelessness, as it captures only those who are sleeping rough on the street or who are in overnight crisis accommodation, and does not include the many people defined by the ABS as secondary or tertiary homeless (temporary accommodation, hostels, couch surfing etc.).

In the 2016 Perth registry week sample, 76.7% of respondents identifying as veterans were sleeping rough, compared to 63.3% of their non-veteran counterparts. In terms of income support, veterans reported claiming disability support (30.0%) and unemployment benefits (53.3%); however, not one respondent reported receiving Veterans Affairs income support. Registry week surveys in Melbourne (2010-2012) also reported an absence of homeless veterans receiving Veterans Affairs income support.

**Factors contributing to homelessness among veterans**

The overrepresentation and unique challenges experienced by homeless veterans have primarily been examined in an American context (Tsai et al. 2013; Kaplan et al. 2012), but the contributing factors mirror those experienced by veterans of military service elsewhere; vulnerability to homelessness is exacerbated by the challenges of social readjustment when returning to civilian life, relationship strain, impediments to meaningful employment, mental health issues and disabilities arising from military service (Goldstein et al. 2012). Whilst homeless veterans may share some common risk factors for homelessness in the general population, including financial stress and limited support structures, they have a higher prevalence of mental illness and substance abuse issues (Gaziano et al. 2015).

The recent report commissioned by the Qld RSL also report that lower educational attainment, limited social support networks and childhood adversity are both significant risk factors for homelessness and, in some cases, reasons for joining the ADF (Himalaya Consulting 2016). In addition to the cluster of factors that render veterans at higher risk of homelessness, there are some commonly identified

immediate precipitants, with financial stress, family breakdown and the loss of social attachments often being the immediate causes of homelessness for veterans (Himalaya Consulting 2016).

**Prevalence of mental health, substance use issues and suicide.**

Of significant concern is the high rates of mental health issues and self-harming reported among the veterans captured in recent registry week surveys of homeless people in Sydney (2015) and Perth (Alliance to end homelessness 2016). Among the veteran's captured in the Sydney registry week data: of these 42 veterans, 36% had attempted to harm themselves in the last year, 60% reported substance abuse and 48% had seen a professional in relation to a mental health issue in the last 6 months. Nearly one third had been physically assaulted while homeless, further highlighting the vulnerability of veterans who find themselves in these circumstances.

There was also a high prevalence of mental health issues among veterans in the Perth 2016 registry sample (n=30); 30.0% reported seeing a mental health professional in the last six months and 33.3% had attempted self-harm in the last year. Problematic AOD use was reported by 60.0% of veterans in the sample. In terms of use, 36.7% of veterans reported daily alcohol consumption and 33% reported injecting drugs in the last 6 months. Veterans in the sample had an average of 6.6 visits to an ED, more than twice that of non-veterans (2.95) and much higher than the general population. Seventy per cent of veterans in the Perth Registry Week homelessness data reported having spent time in jail and, on average, veterans reported around 10 interactions with police in the last six months.

Suicide and suicidal ideation among homeless veterans has been the subject of several studies in the US (Goldstein et al. 2012; Tsai et al. 2013; Kaplan et al. 2012). Homeless veterans experiencing mental health and substance use issues, which are themselves exacerbated by homelessness, have an increased risk of suicidal ideation and suicide attempts (Goldstein et al. 2012; Tsai et al. 2013; Tsai and Rosenheck 2015). Mental health and substance use issues are the primary cause of family breakdown, homelessness and suicide attempts for homeless veterans (Kaplan et al. 2012; Ijadi-Maghsoodi et al. 2016). Homeless veterans who have symptoms of depression or have difficulty in inhibiting aggression are the most at risk of suicidal behaviours (Goldstein et al. 2012).

**The needs of homeless veterans**

Homelessness services do not routinely identify whether people accessing their services are veterans, and so data on the proportion that access such services is sparse. Over 50% of homelessness services responding to a national survey of homelessness services were unaware of the veteran status of their clients (Donoghue 2015; Thomson Goodall Associates 2009), whilst 15% of the services surveyed estimated that veterans constituted 3% or more of their clientele, and about a third estimated veterans to represent 1-2% of clients. General homelessness services are unlikely to be fully aware of veteran services available in the community nor equipped to help clients navigate veteran specific services or veterans' entitlements. The DVA commissioned report on veterans at risk noted that many homelessness agencies consider that homeless veterans have additional needs, and may require specialist services, including supportive housing, specifically designed with veterans' needs in mind (DVA 2009). The recent NSW Initiative (Home for Veterans) is the only example of this in Australia to date. It has also been noted in the literature that mainstream health services are not often well equipped to address the mental health issues of homeless veterans (Matthieu et al. 2014).

**TABLE 7** NUMBER OF REGISTRY WEEK RESPONDENTS PER SITE PER YEAR (MICAH PROJECTS INC 2017)

| | Number of respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Brisbane | Nepean | Newcastle | Perth | Sydney | Sutherland | Hobart | Melbourne | Townsville | Total per Year |
| 2010 | 260 | * | * | * | 330 | * | * | 164 | 56 | **810** |
| 2011 | 112 | * | * | * | 87 | * | 61 | 151 | * | **411** |
| 2012 | 174 | 166 | * | 189 | 53 | * | 106 | 57 | * | **745** |
| 2013 | 133 | 7 | * | * | 53 | * | 61 | 140 | * | **395** |
| 2014 | 1108 | 66 | * | 176 | * | * | 51 | 35 | * | **1437** |
| 2015 | 379 | * | * | 232 | 492 | 23 | 52 | 149 | * | **1327** |
| 2016 | 446 | 77 | 50 | 620 | 41 | 14 | 29 | 161 | * | **1438** |
| **Total per Site** | **2612** | **316** | **50** | **1217** | **1056** | **37** | **360** | **857** | **56** | |

Note: * denotes no data collected at the site in the respective year.

**TABLE 8** PROPORTION OF REGISTRY WEEK RESPONDENTS WHO HAVE SERVED IN THE ADF (MICAH PROJECTS INC 2017)

| | Veterans as a proportion of all respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Brisbane | Nepean | Newcastle | Perth | Sydney | Sutherland | Hobart | Melbourne | Townsville | Average per Year |
| **2010** | 5.0% | * | * | * | 5.8% | * | * | 8.5% | 14.0% | **8.3%** |
| **2011** | 3.6% | * | * | * | 5.7% | * | 3.3% | 8.6% | * | **5.3%** |
| **2012** | 3.4% | 3.6% | * | 4.2% | 7.5% | * | 5.7% | 7.0% | * | **5.2%** |
| **2013** | 3.8% | 0.0% | * | * | 5.7% | * | 1.6% | 3.6% | * | **2.9%** |
| **2014** | 6.2% | 6.3% | * | 2.8% | * | * | 3.9% | 20.0% | * | **7.8%** |
| **2015** | 6.1% | * | * | 6.5% | 8.2% | 8.7% | 1.9% | 5.4% | * | **5.3%** |
| **2016** | 5.9% | 6.5% | 10.0% | 4.7% | 4.9% | 0.0% | 6.9% | 4.3% | * | **5.4%** |
| **Average per Site** | **4.9%** | **3.3%** | **10.0%** | **4.6%** | **6.3%** | **4.4%** | **3.9%** | **8.2%** | **14.0%** | |

Note: * denotes no data collected at the site in the respective years

*Guilt, Shame and Moral Injury*

While mental health diagnoses are regularly cited as strong predictors of suicide and suicidal behaviour, there is evidence to suggest that feelings of guilt and shame, and the onset of moral injury as a result of combat related duties and deployment may have an effect on suicide and suicidal behaviour, over and above that of psychiatric diagnoses (Bryan et al. 2015; Nazarov et al. 2015). Identifying and addressing such socio-emotional correlates of suicide and suicidal behaviour affords the opportunity for prevention and early intervention before they manifest in clinical levels of mental illness, and for more targeted clinical intervention strategies in later onset of mental illness. Likewise, positive trait and state based emotions such as pride and self-forgiveness may act as a buffer against suicidal ideation and behaviours (Bryan et al. 2013, Bryan et al. 2015) and should also be considered when evaluating underlying aetiology of suicide and suicidal behaviour.

Importantly, recent research suggests that mechanisms of self-judgement underpinned by feelings of guilt "may explain why some (military personnel) contemplate suicide and make suicide attempts within the context of psychological distress whereas others do not" (Bryan et al. 2015, p.153). This is important to understand as mental illness may then not be a direct or consistently reliable indicator of a suicide attempt or suicide death within a military population. Further theory contributing to understanding why military personnel die by suicide include the Interpersonal Psychological Theory of Suicide, with some scholars suggesting that serving in the military may inhibit the fear of death and pain associated with suicide (Selby et al. 2010).

In a study of 97 active US air-force personnel receiving outpatient mental health care Bryan et al. (2013) found that as levels of guilt increased in those who had experienced combat, levels of suicidal ideation increased significantly. No association was observed in those personnel who had not experienced combat. Furthermore, feelings of guilt and shame were observed to be stronger predictors of suicidal ideation over and above the effects of depression in the outpatient sample of active US air-force personnel (Bryan et al. 2013). While the researchers found that being involved in combat was associated with feelings of guilt, a later meta-analysis found conflicting results (Bryan et al. 2015). It is suggested that context of deployment and type of combat exposure are important when investigating guilt, shame and suicidal behaviours as generalised constructs will promote contradictory findings.

Related to guilt and shame arising from combat exposure is the concept of the 'moral injury'. Guilt and shame involves the perception of one's behaviour "… diverging from the moral values and standards with which one identifies" (Nazarov et al. 2015, p.3), a moral injury is when personal action/inaction violates the individual's moral standard (Litz et al. 2009) to a high degree causing psychological distress. As noted by Shaw (2013) "People, including soldiers in combat contexts, do not kill other humans easily or without psychological consequences" (p. 110), and whilst focussing on a psychological diagnosis (such as PTSD) may provide a macro view to understanding suicidal behaviour and suicide in military personnel, this may obscure the unique and complex experiences of combat from the perspective of the individual, their moral norms, ethics and cognitions underlying psychological diagnoses. Furthermore, the experience of moral injury need not be confined to those who have direct experience of wartime conflict, but may also effect those serving in peacekeeping, disaster and humanitarian scenarios, and may also develop over the course of years (McFarlane 2016). As a clear and distinct construct separate from PTSD (which concerns the experience of threat to self), moral injury encapsulates the experience of transgressions commissioned by the self toward others (Dokoupil 2012).

Empirical data on moral injury within military and defence populations is beginning to surface, however there remains scarce data on how it may underlie suicidal behaviour. In one US study (Bryan et al. 2014) it was observed that the moral injury borne from witnessing the transgressions of others was higher in those who had both attempted suicide and those who had engaged in self-injurious

behaviour. The authors suggest that those individuals who present with "…distress regarding the rightness or wrongness of their actions may be at increased risk of SITB (self-injurious thoughts and behaviours)" (p. 5).

*Social determinants of mental health issues in veterans*

The social determinants of health are an important aspect of veterans' mental health at individual, interpersonal, community and societal levels (Logan et al. 2016). At an individual level personal experiences and behaviours such as substance abuse are associated with poor mental health and suicidal behaviour (Logan et al. 2016; Langhinrichsen-Rohling et al. 2011). The breakdown of interpersonal relationships and community level factors such as employment opportunities are also causes of poor mental health (Langhinrichsen-Rohling et al. 2011). Societal level factors, including stigma associated with mental health issues and a lack of understanding of veterans' experiences in the broader community can also lead to mental illness and suicide attempts (Logan et al. 2016).

## Protective factors

There are also important buffer or protective cognitions that may prevent suicidal thoughts and behaviours amongst military personnel. In relation to guilt, shame and moral injury are a sense of pride (Bryan et al. 2013) and self-forgiveness (Bryan et al. 2015). In a study of outpatient US Air Force personnel Bryan et al. (2013) found that feelings of pride resulted in lower feelings of shame in those who had high levels of suicidal ideation. In a paper on self-forgiveness it was observed that those with higher levels of self-forgiveness displayed less severe levels of posttraumatic stress regardless of the severity of trauma they had experienced while serving. Furthermore, those with a history of suicidal ideation and attempts scored lower on the self-forgiveness measure.

There appears to be strong evidence for the role guilt, shame and moral injury play in suicidal ideation and behaviour, and as drivers of significant psychological diagnoses. Furthermore, the evidence base suggests that these underlying factors may be useful markers to target in prevention, early intervention and clinical intervention phases when looking to address suicide and suicide behaviours within military personnel. Despite the research presented above, there remains a lack of understanding regarding these variables within an ADF population, and indeed, much of the research cited was conducted with primarily active US Air Force personnel recruited from an outpatient mental health treatment centre. As such, the research and findings may not reflect an ADF population.

## 12.2    Peacekeepers

The non-combatant role of the Peacekeeper does not lessen the stressful exposure and future risk of poor mental health outcomes and suicide. Peacekeepers have a complex role in managing volatile situations and balancing the competing vested interests. Their role exposes them to unique pressures and trauma (Thoresen et al. 2003; Rozanov and Carli 2012). A study of Australian veterans by Ward (1997) concluded that at least 20% of Australian soldiers serving in Somalia had significant levels of psychiatric morbidity, twice that of their peers in the general population.

In a more recent study (Thoresen et al. 2003) the increased risk of suicide for peacekeepers was, in part, attributed to certain vulnerability factors before entering the peacekeeping service. In particular, reference was made to the selection of young, unmarried men for whom partner support was not available. In a later study (Thoresen et al. 2006) three dimensions were identified (a) involuntary discharge from the peacekeeping service, (b) negative life events, and (c) marital status. The authors conclude that that damage to self-esteem, combined with the lack of protective support contribute to suicide risk. A recent review of the medical aspects in UN missions (Johnson 2016) recommended that interventions be designed to reduce psychological morbidity.

## 12.3    The Lived Experiences of Suicide in the Australian military

Beyond contemporary research and data reports lie the personal lived experiences of military personnel and ex-service personnel that can shed considerable light on the experience of suicide. These experiences are often collected in autobiographical and biographical recounts of soldiers, whether they be formalised within academic literature or present in the public domain. Both forms offer rich historical pictures of the experience of suicide, providing the ability to trace the experience of suicide across time and place.

Historian Richard Reid writes about Capt. David Twinning ("That famous army of generous men": some stories and reflections for Remembrance Day', 2016**)** who saw active duty in the First World War. Upon returning to Adelaide in 1919, Reid described Twinning as having only one 'visible wound' to his left arm as a result of shell attacks in Pozières. In 1931, Twinning was found deceased in the Keswick Drill Hall. The death was ruled a suicide. Even more compelling was the effect the suicide had on those close to the soldier. Harry Downes, a close friend of Twinnings and who also served in the AIF, wrote in a magazine article at the time:

> *"For some people the war ended in 1918. But to those of us who understand, the grim reaper is still taking his toll, just as surely as he did at Messines or Passchendaele. And to me, Don Ack Toc (D.A. Twining's nickname) has gone to join his comrades of Gallipoli and Flanders 'killed in action' just as surely as if he had 'stopped it' in the strenuous days of 1914-18". (Reveille n.p.)*

This eulogy for a fallen soldier and friend paints a stark picture of the mental wounds of war that were evident a century ago. Four months later Harry Downes too would take his own life.

John Hamilton's compelling narrative of Capt. Hugo Throssell (2013) chronicles one man's journey from nation hero to his lonely suicide in 1933. Throssell was awarded Victoria Cross for his extraordinary gallantry during a ferocious night of battle during the August campaign at Gallipoli. He suffered serious brain trauma and later infection but returned to the conflict in the Middle East in 1917. Hugo's brother was killed at 2nd Battle of Gaza that same year.

On his return to Australia and marriage to an English writer, Throssell, the son of a former WA Premier, publicly denounced the war in 1919. He and his family, were forever alienated. Darkened by the experience of war and the loss of his beloved brother, Hamilton charts Throssell's cascade to suicide – unable to hold down a job, deepening financial debt, interpersonal conflicts, the psychological (and probable neurological) injuries, long periods of isolation from his wife and only child and development of deep depression. He had several hospital admissions for care but there was nothing else – no support, no rehabilitation. He shot himself in November 1933, aged 49.

A memorial plaque to Hugo Throssell was not erected in his hometown of Northam until 1999. Like his father, Ric Throssell also suicided, in 1999, aged 77.

The lived experience of those close to a soldier are also valuable lenses to view the effects of war. In her thesis, Woodhams (2004) writes of her father's experience of being a prisoner of war, the ensuing nightmares he experienced that which also haunted her, and the subsequent effects his experience imparted upon her own life and struggle with suicide:

> *"It was always my father's experiences, however, that dominated my early childhood and adolescence. His nightmares were such a constant presence that they became 'normal'. He used to talk about the funny – and noble – experiences of the war. But he never spoke about the awful. And nor did we ask…" (Woodhams 2004, p. 7).*

The 'normality' of painful experiences upon returning from war was a constant theme according to Woodhams, who, when painting a portrait of a Vietnam Veteran who experienced post-traumatic stress disorder, remarked,

*"His view, that this was a 'normal' response to the experience of war, may be true but it did not help their wives, children and friends cope with the silences, the withdrawals, and the 'missing parts'" (Woodhams 2004, p. 7).*

Again, the experience of those around the individual can be equally as painful and serves as a catalyst for familial and marital pressures. Woodham is articulate in describing the experience of suicide and the meaning behind it. One reflection which is particularly relevant to the transitional experience of a soldier into civilian life is starkly stated,

*"I still shudder at Dewey's description of what happens when 'an organism' is dislocated from its normal surrounds. If it cannot find a way to accommodate itself within the new order, it dies" (Woodhams 2004, p. 24).*

The effect on those close to a veteran are far from trivial, as children of Vietnam Veterans have been found to be three times more likely to die by suicide than the general population (O'Brien 2011). O'Brien presents a number of detailed excerpts of children of Vietnam Veterans who had experienced familial distress upon their parent returning from service, further re-iterating that the mental wounds of war are not restricted to service men and women alone.

The importance of a rapid response to personnel who are experiencing poor mental health cannot be overstated. The following excerpt of a female Iraq veteran highlights that early treatment and a compassionate response to trauma may have saved years of mental anguish,

*"They say early intervention is imperative. It took Defence 13 months before I received the treatment I needed. I initially had anxiety when I came off the ship in July 2013, then PTSD symptoms began in early 2014 when I was posted back to the same base exposing me day after day to the previous trauma, then 6 months later depression hit.*
*It is a hard enough battle every day to be living with mental health issues and scarred from my Service; it is even harder to battle on without support networks, without anyone who really has a clue about what happens post Defence, without an income, without a home, without fair treatment and trying to start all over again because I served my Country." (Mental Health of ADF Personnel, Submission 19, 23 June, 2015).*

In all of the lived experience cases described above, early intervention, social connection, meaningful employment and an appropriate response to personnel mental health issues may have weakened the deleterious impacts felt by the individual and their families.

Noteworthy here is Edward Scarr's (2016) recent monograph on mental health and the ADF was based in part on a number of interviews with serving and ex-serving ADF personnel. The common themes in those interviews include "*the persistent issue of stigma that surrounds reduced mental fitness, and the challenges of the transition period between a career in Defence and one in the civilian workforce, and the corresponding impacts on (mental) fitness*" (Scarr 2016, p.3).

## 12.4    Military Culture and the ADF

According to Schein's foundational work (1985) culture is the most difficult organisational attribute to change, and that most organisational change efforts fail because of a lack of appreciation for the role of culture and the need to address cultural change above other elements of the change process. The ADF has been addressing aspects of culture over the past two decades to better reflect the expectations of the Australian community.

Military culture is a broad field of literature. Specific elements of Schein's and Hofstede's constructs of culture are stronger, or more dominant in a military organisation. For example, collectivism and cohesion have been extensively studied (King 2006; Siebold 2007; Kirke 2009).

With less than a year, through recruitment and conventional military training, a comprehensive transformation from civilian to soldier/sailor/airman is complete. It is a process of cultural immersion (Kelty et al. 2010). Collective attitudes, practices, rituals, symbols are inculcated. The outcome is strong attachment, interdependence and behavioural conformity (Dabovich et al. in press).

Scarr reminds us of the "unique features of the military" world that this is the only organisation (the ADF) where the core business is to train and maintain a workforce proficient in killing and the destruction of property. He goes on to say *"this is thought to carry with it unique challenges to the non-physical elements of the wellbeing of the men and women who choose this profession"* (2015, p.3).

Renowned Australian journalist, Chris Master's conducted hundreds of interviews and undertook three 'tours' with the ADF in Afghanistan to help bring the Australian people closer to the 'modern digger' (Masters 2012). Master's tells it from the soldier's perspective. He makes the point how rapidly cultural immersion is complete:

> *When I spoke to remarkably focussed and capable young soldiers on patrol in a maddeningly complex battle space, I was often surprised by how new they were to Army life. They had learned a lot in little time, as sometimes the process from civilian to soldier was not much more than a year (p. xviii)*

As with any large organisation, different business units will have different cultural features. In the military, elite or specialist units are trained to be different and pride themselves on that differentiation. While these units sit within the overall force, the personnel are trained to undertake and achieve extra-ordinary tasks and take higher risks. In the ADF, the motto of Special Operations Command is 'Acies Acuta', which is Latin for 'The Cutting Edge' (ADF 2016).

A quote from a senior military commander cited by Dabovich captures this point:

> *"Each has volunteered to live in a world where personalities are less important than the task, and the task can only be achieved by a team. They have subjugated their own egos in order to work together, to stay focussed, to forge a united fighting force. So they don't whine. They don't psychoanalyse. They don't obsess. They do." (Dabovich et al. in press)*

Complicating matters is the evolution of culture within the military over time, along with the diverse and complex sub-cultures within any organisation. The ADF is not availed of this evolution and diversity, as Captain James Brown wrote in the Australian Army Journal (2013),

> *Isolating the culture specific to the officer corps is difficult. There are many cultures and sub-cultures within the Australian Army. Some are based on particular traditions and practices within and between corps. Junior officer training in a cavalry regiment, for example, is remarkably different to that of a signals regiment. There are perceived cultural differences between north and south: personnel posted to units in Darwin proudly distinguish themselves from those posted to Melbourne or Adelaide. Similarly, there are cultural differences between the 'lighters' of 3 Brigade and the mechanised warriors of 1 Brigade (though, as Plan Beersheba rolls out, these cultural differences seem likely to dissipate)" (Brown 2013, p. 247)*

This sub-cultural shift can make it difficult for external service providers to deliver personalised care and support, and highlights the importance of providers understanding that the ADF continually undergoes cultural change, whether that be occurring as a natural phenomenon (Brown 2013) or imposed as a top down initiative (John 2013; Smith 2013).

This strong sense of collective identify can pose challenges for help-seeking and early intervention for mental health and suicidal thinking and behaviour, as illustrated in this point (Dabovich et al. in press):

*"When soldiers hide or minimise their injuries and illnesses, a false picture of health is created, one which has the potential to undermine a unit's capability, the health of individual soldiers, as well as their families."*

## Australian Military Culture

The Australian military culture is ordered and predictable. It is a secure scaffolding in which operations are designed and executed; it is predictable, hierarchical and certain. The transition from serving personnel to ex-serving personnel is much less so.

It is also clear that the ADF is different to other military forces in some important and relevant aspects. This has been recorded widely by many different war correspondents, Australian and non-Australian, for the past century.

Military service requires dedication and significant periods of time (often during the formative years of young adulthood). The values established are often forged in trials of hardship, unquestioned camaraderie and loyalty. There are severe risks associated with failure, limited ability to express emotion, and constant expectations to perform in a crisis. In an effort to address issues of 'culture' the Australian Army Journal proposed an edition that "…should take a significant step towards addressing the dearth of research on a number of military and culture related topics in the Australian context" (Richardson 2013). The edition was published in the winter of 2013 and contained a wide-ranging examination of culture in the military, especially the Australian Army (Leahy et al. 2013).

For the purposes of this discussion, culture in the ADF can be regarded as a shared set of values and norms that bond individuals together, although there are many sub-sets and sub-cultures within the organisation (John 2013). Each corps has its own set of core values and these differ from the overarching ADF core values, as summarised in Table 9 below.

The institutional military model has been described as driven by a purpose beyond self-interest; a separate patriotic institution (Huntington 1957). Others describe a more integrated model (Janowitz 1960), and a reflection of society, charged with a common purpose: an occupational military model. In doing so, it shares the same core values and is committed to protect them, but the societal norms and standards are reflected in the group.

**TABLE 9** ADF Core Values (McClymans 2016)

| Service arm | Culture |
|---|---|
| ADF | Professionalism, loyalty, integrity, courage, innovation, and teamwork; |
| Army | Courage, initiative, respect, and teamwork; |
| Navy | Honour, honesty, courage, integrity, and loyalty |
| Airforce | Respect, excellence, agility, dedication, integrity, and teamwork. |

Recruitment has become a 'needs-based' process and inclusive of all sub-sets of society, and this in turn affects attitudes and values within the culture. Project LASER (Barton and Johnson 2011) describes the debrief following separation as including multiple, complex issues of both a professional and personal nature. While the ADF moves towards an occupational model, albeit with strong traditional values, it must be mindful of the emerging work-life balance.

*"… Army families are unique in that serving members often lack control over where or when they relocate or deploy, and this uncertainty exists for the entirety of the serving members career. Inevitably, this has flow-on effects for the family relationships and personal health and wellbeing of Army members." (Skinner and Diggins 2013, p. 173)*

Many changes have been made to the employment conditions for the ADF to embrace family-oriented policies, however the implementation of the policies has been hindered by a prevailing "…culture of 'presenteeism', the tempo of the force generation cycle, and the willingness and ability of commanders to approve the use of these policies" (Skinner and Diggins 2013, p. 184). As a result, the stress that can be felt by serving members may radiate to family members which can cause strain within defence force families.

A study (O'Toole et al. 2010) identified mental health issues within partners of Veterans. They found anxiety disorders, depression, PTSD and stress disorders significantly in excess of the general population. The study concludes that the partners of veterans are not just struggling with their impaired partner, but their own elevated psychiatric illness. The cascading effect may have implications for the mental health of their children (O'Toole et al. 2010).

> *"Interestingly and sadly, one of the findings was of a threefold higher than expected suicide rate in the children of Vietnam veterans, associated we believe with divorce, separation, family violence and the difficulties associated in living in a family where there is mental illness. This group may be just as much at risk of homelessness, or even more so, than veterans themselves" (Kilham 2003, p. 2)*

The impact of suicide related thinking and behaviour also has a significant negative impact on family members, and the consequent pressure on the family structure is profound (Cerel et al. 2008). Furthermore, family members of Australian Vietnam Veterans have themselves found to be at higher risk of suicidal ideation, planning and attempts (O'Toole et al. 2015).

A key issue is the overlap between health care and personal systems that is entwined in the military. In this regard, the career ramifications of help-seeking are significant barriers, especially when deployment is a consideration. This can

> *"… create uncertainty and reluctance among gatekeepers to bring attention to a peer in need. These types of issues that are unique to the military context are not addressed at all in the best-practice literature, and, therefore, there are really no data that can guide those policies and decisions." (Ramchand 2011, p. 59)*

The key operational aspects of the military culture are camaraderie, intensity, elitism, and distinctiveness (Harris et al. 2013), driven by the processes of training and a shared fate. A consequence of this rigid culture is the pressure to be strong (not to fail or be weak), rigid and rational thinking, and an inability (or reluctance) to express emotions and limit options in a time of crisis (McKay et al. 2010). In the transition process this is undone, and there is often an inability to disengage (Yanos 2004) combined with psychological distress that impacts on quality of life and mental wellbeing (Karekla and Panayiotou 2011). The processes in help-seeking behaviour often involves apprehension and delays (Galdas et al. 2005). For the military, this holds far greater solemnity as the culture demands full capacity for active service and the transitions to civilian life are difficult for both the individual transitioning and the families that surround them.

The importance of understanding culture within the unique context of military systems and service is extended beyond the risk for suicide and low levels of help-seeking behaviour, to the cultural sensitivity and knowledge of health practitioners in the general population. It is increasingly common for ex-service personnel and indeed, currently serving members, to access support or care externally or be referred to outpatient services by command. This heightens the need for practitioners to be understanding, sensitive and informed on evidence based practices for personnel care (Coll et al. 2011; Kuehner 2013; Westphal and Convoy 2015). Unfortunately, cultural competency of health practitioners with regard to military understanding is often overlooked in training and development,

with only 21% of US medical schools surveyed identifying military culture as being integrated into their cultural awareness and practice programs (Meyer 2015).

## Support

A recent study in the UK indicated the value of peer support albeit more accessible to those already engaged (Greden et al. 2010; Green et al. 2010). Consequently, the benefits of interventions for PTSD, depression and psychosocial difficulties may help to build social support networks and reduce the risk of suicide ideation (Pietrzak et al. 2010). Further research from the UK suggests military personnel are able to identify self-harming behaviour in peers and see the benefits of referring them on to assistance, however they may be reluctant to do so for fear of harming the career of the individual in need of help (Greenberg et al. 2007). Whilst the ADF has implemented the Keep Your Mates Safe (KYMS) program (MHP&R Branch, JHC 2012), designed to aid personnel in identifying and acting appropriately when concerned about a peer's self-harming behaviour, these extraneous influences must also be taken into account.

In Australia, Ex-Service Organisations (ESO) provide varied support to ex-service personnel around the country. In 2015 a significant mapping project of these services was conducted to better understand what services are being provided, where they overlap and where opportunities for improved service provision can be explored (The Aspen Foundation 2015). Several key findings came from the report including, concerning, that many young veterans lived in areas that were under-serviced by ESO's, just one-third of ESO's engaged personnel prior to deployment, and that 50% of the ESO pension support volunteer workforce will require replacement over the next decade. Importantly, it was identified that transition periods a veteran goes through require increased focus by ESO's, with these services traditionally focussing on later ex-service phases of a veteran's life. This was an important finding given that transition periods have been found to be significant risk factors for suicide behaviours in ex-service personnel (McKay et al. 2010).

## 12.5    International Military Populations

### What the data shows

Suicide rates vary considerably between armed forces across the globe and is likely a reflection of the inherently complex nature of suicide, coupled with the diverse nature, roles and involvement in conflict for each country.

In the US, the suicide rate within active service personnel was 19.9 per 100,000 in 2014, ranging from 16.3 in Navy personnel up to 23.8 in army service members (Department of Defense 2015). This is much higher than the general population. Latest figures for the first quarter of 2016 have revealed a total of 58 suicides across the four arms of defense in the US for serving personnel (Franklin 2016).

Ursano et al. (2016) also report a significant increase in suicide attempts in the US Army over the past decade with rates of 569 per 100,000 'non-deployed' enlisted soldiers and 362 and 292 per 100,000 for 'previously deployed' and 'currently deployed' soldiers respectively. The study examined data over the five years 2004-2009. Given that evidence that rates of suicidal behaviour increase among veterans overtime, the 'previously deployed' rates are likely to climb.

In August 2016, the US Department of Veterans Affairs (VA) released the most comprehensive analysis of Veteran suicides ever undertaken examining over 55 million records on Veterans across all states and territories for the period 1979-2014 (US Dept of Veterans Affairs 2016):

> *"This report on Veteran suicide is unprecedented in its breadth and depth of information about the characteristics of suicide among Veterans. It contains the first comprehensive assessment of differences in rates of suicide among Veterans with and without use of VHA services and*

*comparisons between Veterans and other Americans. This report serves as a foundation for informing and evaluating suicide prevention efforts inside the VHA health care system and for developing lifesaving collaborations with community health care partners" (US Dept of Veterans Affairs 2016, p.3)*

The key findings were that in 2014:

- Veterans accounted for 18% of all suicide deaths or 7.403 deaths in the US adult population.

- An average of 20 Veterans died by suicide each day. Six of the 20 deaths every day were users of VHA (Health) services.

- Veterans accounted for 18 percent of all deaths by suicide among U.S. adults and constituted 8.5 percent of the U.S. adult population (ages 18+). In 2010, Veterans accounted for 20.2 percent of all deaths by suicide and represented 9.7 percent of the U.S. adult population.

- The burden of suicide resulting from firearm injuries remains high with about 67 percent of all Veteran deaths by suicide were the result of firearm injuries.

- There is continued evidence of a high burden of suicide among middle-aged and older Veterans with about 65 percent of all Veterans who died by suicide were age 50 or older.

- After adjusting for differences in age and gender, risk for suicide was 21 percent higher among Veterans when compared with U.S. civilian adults.

- After adjusting for differences in age, risk for suicide was 18 percent higher among male Veterans when compared with U.S. civilian adult males.

- After adjusting for differences in age, risk for suicide was 2.4 times higher among female Veterans when compared with U.S. civilian adult females.

- Rates of suicide among users of VHA services have remained relatively stable in recent years at around 39/100,000 persons

- Rates of suicide were highest among younger Veterans (ages 18–29) and lowest among older Veterans (ages 60+). Furthermore, rates of suicide among Veterans age 70 and older were lower than rates of suicide among civilians in the same age group.
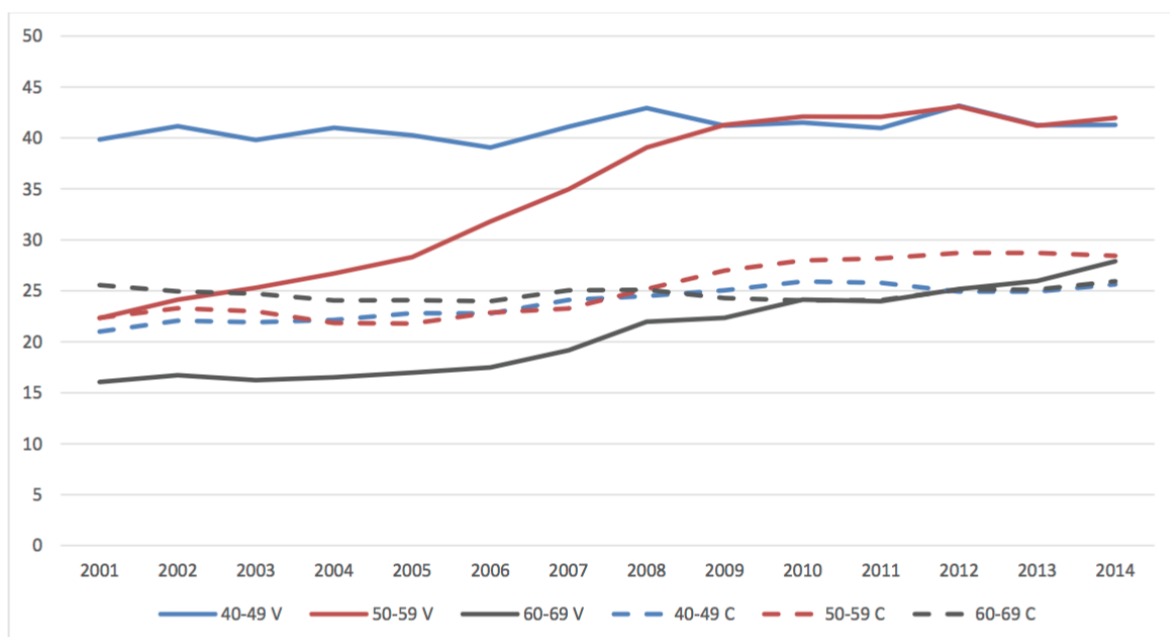
In the UK between 1996 and 2015 the suicide rate per 100,000 for military personnel was 9, with 8 in the Navy, 10 in the Army and 6 per 100,000 in the Air Force (Ministry of Defence 2016). Figure 13 displays the suicide rate per 100,000 longitudinally up to 2015 against the general population.

In Canada the suicide rate in the armed forces has not statistically increased since 1995 (Rolland-Harris et al. 2015), there was a significant difference in the rate observed between males in the combat arms trade (30.35) and males in the non-combat regular armed forces (18.21).

In the 2013 Life After Service studies (LASS) of the health and wellbeing of Canadian Armer Forces veterans, Thompson et al. (2014) reported that among the regular force veterans 24% reported a mental health disorder 7% had past-year suicide ideation. These were signficiantly higher than the same age general Canadian population.
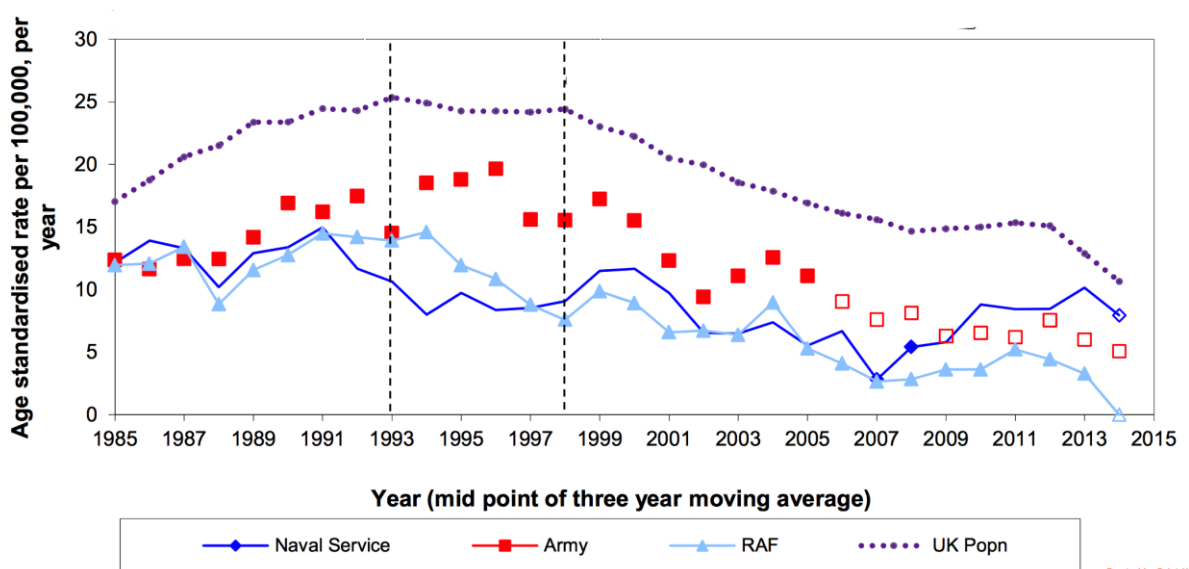


**FIGURE 13** Suicide among UK Defence Forces 1985-2014

In the Netherlands, an examination of suicide mortality among deployed military personnel and the general Dutch population was recently undertaken (Rijs and Bogers, 2015). This study examined:

- the total mortality rate and suicide mortality rate amongst veterans (defined in this study as military personnel who were deployed for at least 30 consecutive days).

- how these rates compared with the total mortality and suicide mortality rates in the general population and how suicide rates among veterans were additionally compared with non-veterans (defined as 'never been deployed' or 'deployed for less than 30 consecutive days);

- whether suicide mortality rates differed depending on the missions on which military personnel had been deployed to.

The study did not examine whether deployment was the cause of suicide. The findings show no evidence that suicide mortality rates in the period 2004–2012 among veterans deployed for more than 30 consecutive days exceeded the suicide mortality rates in the general working population or among non-veterans. The results of the Dutch study are summarised in Table 10.

It is worth noting that the Dutch general population rates of suicide mortality in 2012 are similar to the national rates in Australia (viz. 11.4 and 11.2 respectively)

It is important to remember that the prevalence rates of suicide are in most cases underestimated due to issues with data collection, classification and reporting (Katz et al. 2015).

**TABLE 10** Dutch study on suicide mortality in military and general population 2004-2012

| | General working population N=165,154 | Veterans (N=40,444) | Non-veterans (N=33,364) |
|---|---|---|---|
| **Died (including suicide mortality), n (%)** | 1,388 (0.84%) | 252 (0.62%) | 199 (0.60%) |
| **Suicide mortality, n (%)** | 156 (0.09%) | 22 (0.05%) | 27 (0.08%) |
| **Follow-up time (person-years, median [25–75%])** | 8.99 [6.5– 8.99] | 8.66 [4.8– 8.99] | 4.14 [2.2– 7.7] |
| **Follow-up time (sum of person-years)** | 1,364,667 | 276,510 | 240,351 |
| **Incidence rate of suicide** | 11.4 | 8.0 | 11.2 |
| **Study entry = Date of entry into the study. Study exit = Date of exit from the study (i.e. date of censoring). Note: Mortality that took place between 1-1-2004 and 31-12-2012 was examined. Mortality that took place after 1-1-2004 during the first deployment (n=11) was excluded as military personnel were considered to be exposed after 30 days of deployment.** | | | |

## Risk factors: International perspectives

Other noted risk factors for suicide in international military personnel include family distress, separation and divorce (Thoresen et al. 2006), sexual trauma (Kelly et al. 2011) and disability associated with physical injury and threats to capacity (Hoge et al. 2006). Strong in the literature is the association of suicide ideation and suicide with a diagnosis of PTSD, depression and substance misuse (McFarlane 2010; Pietrzak et al. 2010; AISRAP 2015). Delays in onset of PTSD are not unusual (Ikin et al. 2010) and continue to deteriorate for years after military experience (O'Toole et al. 2010; Magruder et al. 2016). One systematic review (Andrews et al. 2007) found that 38.2% of military cases of PTSD had delayed onset (i.e. beyond five years of exposure to trauma).

Some contemporary research asserts that American veterans have significantly higher risk for suicide than the general population (Kaplan et al. 2007; Sundararaman et al. 2008). In one study (Bell et al. 2010) data indicated that suicide among US Army soldiers was increasing and significantly associated with both mental ill-health and physical injury. Within sub-groups (Operation Iraqi Freedom and Enduring Freedom) veterans presenting with mental health concerns had increased risk for suicide when compared to the general population (Kang and Bullman 2008). Elsewhere, findings suggest that suicide attempts were less common in military personnel than in the civilian population (Belik et al. 2010), but correlates with trauma and traumatic events were clearly stronger than socio-demographic, mental disorders, and physical disorders (Belik et al. 2007). Mansfield et al. (2011) found that being involved in combat was not in and of itself a predictor of suicidal ideation, but is mediated by the experience of depression and/or PTSD.

The Study to Assess Risk and Resilience in Service-members program (STARRS-LS 2016), is a research project funded by the U.S. Department of Defense (DoD) designed to contribute practical, actionable material on suicide risk reduction, resilience-building, and inform other mental health issues in the military. A recent publication from the project suggest some predictors of suicide attempts and offer some opportunities for early intervention.

One such study (Ursano et al. 2016) suggests that while the deployment context was important in identifying suicide attempt risk, deployment may not be a singular determining factor. The highest rates of suicide attempt were found in the second month of service among those never deployed, the

sixth month for those 'currently deployed' and fifth month after returning from deployment. Ursano et al (2016 state deployment status, mental health and the transition periods (recruit training, mid-deployment and post-deployment re-adjustment) should be areas for prevention and early intervention.

Another study of U.S. Army personnel from the Iraq and Afghanistan theatres (Ursano et al. 2015) indicated enlisted female soldiers had a higher risk for suicide attempt, the risk being highest in the early stages of deployment. The study also indicated that enlisted soldiers who were never deployed, or had been previous deployed were at greater risk than those on current deployment. Again, the associated transitions are important considerations.

Conway et al. (2016) examined US Army personnel as to whether being treated for mental health or non-battle physical injury during combat deployment was associated with higher risk for post-deployment mental disorders. More than half of those treated for mental disorders in combat were treated for 1 or more mental disorders post-deployment and ended their enlistment prematurely.

Over 50,000 US soldiers have been wounded in military operations in Iraq and Afghanistan in the past 15 years. A systematic review found the prevalence of moderate to severe pain for more than 3 months amongst US military veterans from these conflicts was 27% (Vandenkerkhof et al. 2014). The association between chronic pain and suicidal behaviour is well established (Radcliffe et al. 2008) and evident in studies of veterans (Thompson 2014). In a recent study of Canadian Veterans who transitioned to civilian life between 1998-2007, Vandenkerkhof et al (2014) found over 95% of those with a mental health condition had a chronic physical health condition and many reported chronic pain.

Access to firearms and the functional training they have received is likely to influence their choice by veterans as a suicide method (Kaplan et al. 2007; Rozanov and Carli 2012). The influence of instruction and intimate knowledge of firearms suggests the occurrence in both male and female veterans at higher rates than the general population (Kaplan et al. 2009). The use of violent means (especially firearms and hanging) was noted in a recent report to government for the UK armed services (Ministry of Defence UK 2016). This report also indicated a generally declining suicide rate over the past 20 years in the regular Armed Services, but the group with a statistically increased risk of suicide compared to the general population were Army males younger than 20 years of age, with a 57% increased risk. In a study of young men leaving the UK Armed Services, increased suicide risk was noted, particularly in the early transition period. It was postulated that this was a factor of (a) the stress of the transition, (b) adverse experiences while in the military, and (c) personal vulnerability. Importantly, it was noted that only one in five of ex-military personnel who died by suicide had any contact with specialist mental health care (Kapur et al. 2009). The risk for suicide in the military is more acute by the likelihood of exposure to trauma and the possibility of Post-Traumatic Stress (PTS) and in some cases a diagnosis of PTSD. PTSD is an important underlying disorder, especially when comorbidity exists with other psychological (e.g. depression, anxiety, pain syndrome, and panic disorder) (Pfeiffer et al. 2009; Ilgen et al. 2010), physical health problems and alcohol abuse (Hawthorne et al. 2014).

Adjustment disorders are a recognised mental disorder, and are a risk factor for suicide in the general population (Casey and Bailey 2011) and among military personnel (USACHPPM 2006, Na et al 2013). Adjustment disorder is characterised by the development of behavioural and/or emotional symptoms in response to an identifiable stressor(s) or stressful life event. A US report on health and military deployment noted that adjustment disorder was the most common behavioural health diagnosis identified in the military deployed setting (USACHPPM 2006), and in a review of military suicides in the US (2003-2009), adjustment disorder had been diagnosed in 26% of the completed suicides where there was a diagnosed behavioural health disorder (USACHPPM 2012). Adjustment issues are often not formally diagnosed, with the same US study identifying difficulty coping with

stressors as a contributing factor in 82% of active duty military suicidal deaths over a two-year period.

Finally in this discussion on risk factors for military populations, a recent Canadian study examined the association between adverse childhood experiences (ACEs) and mental health in Canadian Armed Forces (CAF) (Lee et al. 2016). The earlier discussion (Part A) addressed the link between ACEs and later life suicidal behaviours and mental health problems including PTSD. Earlier work by Cabrera et al. (2007) showed that those military service personnel with a history of ACEs were more likely to screen positively for PTSD and depression. The study by Lee et al. (2016) therefore examined the possible mediating roles of social support, mastery, and combat stressors in that relationship – areas that may provide clues for military organisations to mediate or ameliorate the effects of ACEs and combat exposure. The authors screening for ACEs and then providing opportunities for social support, personal mastery (control over one's life) and managing combat exposure.

## Key Points

- The suicide rate amongst US military populations have increased significantly since the early part of this century

- Suicide rates among Australian Defence Force personnel have not followed this trend, but remain constant in recent years

- Between 2001 and 2014 292 ADF personnel died by suicide, comprising of 142 ex-serving personnel, 84 full time serving personnel and 66 reservists

- For those aged 18-24 in the ADF, the suicide rate is significantly higher when compared with the general population

- Risk factors for suicide, much like the general population, are many and complex, however homelessness in ex-serving personnel is a major concern

- Co-morbidity of homelessness, mental illness, and drug and alcohol abuse greatly increase the risk of suicide ideation and behaviours

- Specific to military populations are the feelings of guilt, shame and moral injury experienced due to involvement in traumatic experiences whilst deployed

- Moral injury refers to the guilt and shame felt when one has taken actions, or witnessed actions, against the deep moral code they were brought up with

- The ordered and predictable nature of Australian Military culture is heavily ingrained in recruits, serving members and veterans

- As a consequence of this culture, personnel may feel the need to show no signs of weakness, which can prevent help-seeking in response to mental illness

- Stigma is also associated with such a high pressure cultural environment such as the ADF.

# 13. Self-Harm in the ADF and Other Military Populations

There is considerable variability in rates of self-harm in military and veteran populations worldwide.

In the US, lifetime prevalence rates of self-harm in US military personnel and veterans have been observed between 4% (Klonsky et al. 2003) and 12.3% (Bryan et al. 2014), and 3.3% within the last 12 months (Bryan and Bryan 2014). In an outpatient mental health care military sample self-harm lifetime prevalence rates have been reported at 30% (Bryan et al. 2015), with a high rate of co-occurrence with social anxiety and borderline personality disorder.

More robust studies with larger samples can be found in the UK. A cross-sectional survey conducted with over 9,000 UK military personnel found a lifetime prevalence rate of self-harm of 2.3%, lower than the general population rate of 4.9% (Hines et al. 2013). In line with some local and international research (McFarlane and Hodson 2010; Bryan et al. 2015; Kang et al. 2015), deployment was not a predictor of self-harm in this large sample. Rather, being discharged, going through divorce or separation, being female and being of younger age were all independently associated with self-harm.

In the 2009 review of ADF transition services Dunt (2009) identified several cases of self-harm, aligning with this UK research. Also significant, after adjusting for covariates, were social isolation and partaking in few social activities (Hines et al. 2013). As such, major transition points in career and life, along with interpersonal instability and a lack of social contacts appear to be predictors of self-harm in military personnel, and mirror the risk factors associated with suicide ideation, attempts and deaths.

Evidence on self-harm prevalence within the ADF is scarce as most research has focussed on suicidal ideation and suicide rates. Whilst suicidal behaviour (encompassing self-harming behaviours) has been broadly scoped (AISRAP 2015), empirical evidence of either non-suicidal self-harm or deliberate self-harm within the ADF is unavailable.

There is, however, evidence in the form of submissions to the 2016 Mental Health of Australian Defence Force and Veterans inquiry. In one submission received from the partner of an ADF member an incident was described where the partner returned home to find the ADF member engaging in serious self-harm by cutting in the middle of a dissociative state. The ADF member described first hand in the submission his denial of his ill-mental health, concomitant alcohol abuse and the fear of not being able to continue the work he loved if he sought help. Dunt (2009) also identified in a review of transition services for ADF personnel incidents of self-harm, however prevalence was undocumented.

The impact of suicide related thinking and behaviour also has a significant negative impact on family members, and the consequent pressure on the family structure is profound (Cerel et al. 2008). Furthermore, family members of Australian Vietnam veterans have themselves found to be at higher risk of suicidal ideation, planning and attempts (O'Toole et al. 2015).

## Key Points

- There is considerable variability in rates of self-harm in military and veteran populations worldwide

- Social connections and support may be protective factors preventing self-harm

- Self-harming behaviours not only affect the individual, but also those around them, suggesting support for families is also important

- Family members of Australian Vietnam veterans have been shown to have a higher risk of suicidal ideation, planning and attempts

# 14. Responding to Suicide and Self-Harm in Military Contexts and Veterans

## 14.1 ADF and International Suicide Prevention and Mental Health Programs: Evaluation in Military Populations

A great deal has been explored regarding the incidence of suicide and the accompanying risk factors in military personnel (e.g. Belik et al. 2007; AISRAP 2015; Bryan et al. 2015), less is known about effective programs of suicide prevention and intervention (Arensman et al. 2016; Hom et al. 2016).

While concerns remain about increases in suicide in the military (Kuehn 2009), particularly in returned veterans (Kang and Bullman 2010); best-practice suicide prevention programs recognise the complexity of the problem. While tempting, there is no compelling evidence to indicate that 'off the shelf' suicide gatekeeper programs are effective (Gunnell1994); however, they may form an important part of a wider more comprehensive strategy (Hegerl et al. 2009). For example, a multi-layered intervention focus of a US Air Force program, initially showed promising results (Knox et al. 2003). This program involved a *"… radical change in social norms to decrease stigma around help-seeking behaviours for all members of the community, and subsequently worked to sustain these newly stated values"* (Knox et al. 2003, p.1377).

A more recent study of the U.S. Air Force (Langhinrichsen-Rohling et al. 2011) recommended increased attention to depressive symptoms, alcohol use, relationships, job satisfaction, and social support as part of an integrated program.

Meta-analysis of a range of suicide prevention programmes (Mann et al. 2005) recommended physical education in depression, restriction of lethal methods (particularly firearms) as important additions to interventions. A more recent systematic review (Zalsman et al. 2016), concluded that no single clear strategy was effective, and that programs should combine individual and population based strategies. They concluded that gatekeeper training, GP training, and social media applications all lacked the necessary evidence base.

Nevertheless, the Israeli Defence Force Suicide Prevention Program demonstrated a 57% decrease in the suicide rate following its administration. It is a population-based program and includes a broad range of strategies including reducing weapon availability. There is a multi-level approach to de-stigmatizing help-seeking behaviour, and to integrate mental health officers into service units. Training commanders and soldiers to recognize suicide risk factors and warning signs is included (Shelef et al. 2016).

The US Department of Defense has created the Defense Suicide Prevention Office (DSPO) to provide advocacy, program oversight, and policy for the department's efforts to reduce suicidal behaviours in Service members, civilians and their families (US Department of Defense 2016). Programs for each of the service arms are described, in addition to more general information on suicide prevention, intervention and postvention.

In particular, the US Air Force Suicide Prevention Program is an integrated network of policy and education to reduce suicide by the early identification of those at risk. It uses leaders as role models, and establishes behavioural expectations for gatekeepers, and uses a wide range of educational tools. It represents a "… fundamental shift from viewing suicide and mental illness solely as medical problems and instead seeing them as larger service-wide community problems" (Knox et al. 2010, p. 2457). The US Air Force Suicide Prevention Program is widely regarded as a 'best practice' model. Recently Analytical 'mechanical modelling' has attracted attention regarding predictors of suicide using military outpatient data (Kessler et al. 2016). The modelling in this study had good predictive stability and, more importantly, offered insights into preventative interventions.

A number of programs embrace a public health framework of primary, secondary and indicated interventions (Haggerty and Mrazek 1994). The identification of constellations of risk then allows prevention activities (i.e. universal, selective, and indicated) to be introduced, e.g.

1. Universal: broad based interventions to increase the awareness of suicide risk, providing information about risk factors, dispelling myths about suicide, teaching appropriate responses when in contact with someone who may be suicidal.

2. Selective: focus on the sub-population who may be at higher risk for engaging in suicidal behaviour. For example, those with identified mental health issues; those for whom contextual understanding is required (e.g. returning from deployment)

3. Indicated: for those already showing signs of suicidal behaviour, or suicide ideation. Often, indicated programs aim to reduce the current crisis and explore alternative solutions.

These considerations are important when dealing with particular groups (or populations) where investment in a particular intervention strategy is being promoted. Programs or models of suicide prevention should focus on a range of strategies including:

1. reducing exposure to social and contextual risk;

2. increasing personal protective factors through activities and training;

3. promoting self-care, building resilience, and developing support networks;

4. providing navigable pathways to appropriate care, and support;

5. addressing risk events and reducing immediate personal risk

More recently others (Schoenbaum et al. 2009) have expanded the model to describe a continuum, and a dimension of self-care and context. The authors also comment on a common factor in suicide deaths being the breakdown of the continuity of care for the individual when transitions and mental health were involved (Schoenbaum et al. 2009). In the military context this includes the chain of command in a wide range of transitions, including deployment (Ramchand et al. 2011). In addition, care needs to be taken to ensure that any generic models of suicide prevention provide for the unique conditions of service and the barriers to seeking help (Schell and Marshall 2008).

**TABLE 11** BARRIERS TO MENTAL HEALTH CARE IN THE GENERAL POPULATION AND AMONG FORMERLY DEPLOYED MILITARY PERSONNEL (SCHELL AND MARSHALL 2008)

| In the General Populations (Kessler et al. 2001) | Among Formerly Deployed Military Personnel (Schell and Marshal 2008) |
|---|---|
| Lack of perceived need | Negative career repercussions |
| Unsure about where to go for help | Inability to receive a security clearance |
| Cost (too expensive) | Concerns about confidentiality |
| Perceived lack of effectiveness | Concerns about side effects of medications |
| Reliance on self | Preferred reliance on family and friends |
| | Perceived lack of effectiveness |

## 14.2    Transitions for the ADF

Transition refers to an awareness of and response to change over time and has been defined as "…the capacity to navigate change" (Gale and Parker, 2011, p.25). William Bridges (1991) distinguishes change from transition. Change is situational and external: transition is internal.  Transition begins with an ending or *letting go*. He contends that it is a three-part process involving the abandonment of the old patterns, a period of limbo, and a new beginning (Bridges 1991).

The transition from the ADF to civilian life has been a focus for reform, however the processes have been mostly administrative. The guiding website (Australian Government 2016) directs personnel to 'transition seminars'; and a comprehensive handbook, and seminar booklet. However, for ADF service personnel, the transition to civilian life involves the complete abandonment of their accustomed environment and network of support. It is often complicated by complex social and emotional needs that sometimes result in behaviour difficulties (Hatch et al. 2013). For some, transitioning to civilian life can precipitate several health and social difficulties (Iverson et al. 2005; MacManus and Wessely 2013). The training and group identification inculcated within the military are key to understanding the transformation of civilian to soldier (McGurk et al. 2006), and important to understanding the transition back to civilian life.

By contrast, the return to civilian life involves a sense of loss, removal of financial security, changes in social connection, and the loss of identity (Brunger et al. 2013; Castro and Kintzle 2014). The social transition of ex-service personnel continues to be an area of concern in both empirical research and policy (Li et al. 2011). Morin's (2011) longitudinal American research describes the contributing factors in these difficult constellations. Those that had the most difficulty adjusting were more likely to have experienced a traumatic event, were seriously injured, served after 9/11, served in combat, or knew someone who was killed or injured. Mitigating factors included higher education (university graduate), an understanding of the missions, being an officer, and having a religious belief system. Inevitably, the "…*multiple intersecting identities* (Veteran/Civilian) *are sometimes in stark contrast to each other and this can pose many potential problems with transitioning to civilian life*" (Ray and Heaslip 2011, p.199).

Indeed, the concept of a successful transition is difficult to define; transitions often take extended periods of time, and may not ever be fully resolved (MacLean et al. 2010). The Australian Korean War veterans had poorer health, were more isolated, with a higher risk for PTSD, anxiety, and depression than men in the general population, 50 years after transition (Ikin et al. 2009; Ikin et al. 2007). Peacekeepers deployed in 1989–2002 had a higher prevalence of mental disorder (particularly PTSD) than serving ADF personnel (Hawthorne et al. 2014).

More generally, Selder (1989) describes transition as a situation where there is a disruption of an existing reality that requires reconstruction, and consequently the resolution of uncertainty that "… bridges from a reality which has been disrupted to a newly constructed or surfacing reality" (p. 437). In this context, uncertainty is important, because it acknowledges the need for order and the *leap of faith* required to bridge from the old reality to the new one; and the possibility of relinquishing aspects of self that had previously been defining. For ADF service personnel in transition, this is more acutely felt as they may well feel "…as if he were a stranger; he feels cut off from his environment and his usual connectedness with other human beings… (and) may fail to grasp what is actually occurring" (Selder 1989, p.438). The consequent *sense-making* is the individual's attempt to regain the equilibrium state, and provides meaning to the experience and a frame of reference for interpreting and understanding events in the new environment. Transitions with this kind of vulnerability and exposure to the new interactions, environments and experiences, are often associated with poor coping strategies (Meleis et al. 2000).

Schlossberg (1981) describes the importance of the individual's perception of their transition and the resources available to the individual to cope effectively with the experience. This experience is

characterised by "…a change in assumptions about oneself and the world and this requires a corresponding change in one's behaviour and relationships" (Schlossberg 1981, p.5). Sargent and Sargent and Schlossberg (1988) propose that "…first, the person will see whether he or she has enough resources to get through a particular transition successfully: and second, he or she will discover how to strengthen areas of weakness" (p. 60). The challenge for ADF service personnel in transition is the absence of markers of familiarity and lack of frames of reference to allocate resources.

Correspondingly, the *thriving* literature (e.g. O'Leary and Ickovics 1995; Ickovics and Park 1998; Spreitzer et al. 2005) describes a successful adaptation as one framed by the process of learning rather than a passage of time. Transitions are associated with vulnerability and exposure to the new interactions, environments and experiences, and the problems associated with poor coping strategies (Meleis et al. 2000). We are motivated to learn (and hence the ability to thrive) by our constant need to control, master, renew and take stock (Sargent and Schlossberg 1988). From this perspective, the successful transition is a product of situational aspects including the nature of the transition (e.g. welcome, unwelcome, expected, unexpected), dispositional factors, previous experiences, openness to experience and the ability to deal with ambiguity. It also includes supports including dedicated program and organisations, social networks, and friends and family. It is highly dependent on the nature of that support, strategies for coping including a plan of action, and the availability of resources to cope.

The experience of success is a powerful motivator, and the opportunity to thrive an effective driver. Thriving is defined as a positive response to a challenge (Carver 1998) where gains occur, rather than the minimisation of loss (O'Leary and Ickovics 1995). Thriving can be described as a response to challenging circumstances rather than adversity, with a focus on learning and growth. It is concerned with situations that are adequately destabilising to demand the individual to re-assess the self, and the means through which the individual is motivated to function at a higher level (Spreitzer et al. 2005).

Bergland and Kirkevold (2001) describe the concept of thriving as developing physical and psychological well-being in difficult circumstances, and where an individual acquires new skills and is able to reflect and apply these skills to future, similar challenges. This is similar to O'Leary's (1998) description of thriving as the "… the ability to go beyond the original level of psychosocial functioning" (p. 429). Carver (1998) draws some finer distinctions where those who are able to thrive (a) are desensitised (i.e. the challenge did not worry them as much); (b) have enhanced recovery potential (i.e. they learn new strategies); and (c) achieve at a higher level as a consequence of engagement with the challenge (i.e. they learn from the experience). Together these are also markers for well-being (Ryff and Singer 2006).

Those that thrive (a) gain experience and knowledge that can be used to the next stage of a challenge (Nicholson 1987; Carver and Scheier 1999), (b) grow confidence in future decision making based on the reflective awareness of what worked (Aldwin and Revenson 1987), (c) develop stronger social networks of support (Moos and Schaefer 1986), and (d) master strategies to deal with the difference between expectations and experience (Bergland and Kirkevold 2001).

Thriving is consistent with personal growth, where there is an expanded capacity for well-being enhanced by self-knowledge (Spreitzer et al. 2005), and is a move away from a vulnerability/deficit model, to one that recognises the adaptive processes of recovery. In that regard, thriving is the product of individual resources, social resources and the developmental process; managed by the individual to produced positive outcomes (O'Leary 1998); and resulting in value-added growth and enhanced well-being (O'Leary and Ickovics 1995; Park 1998). Thriving is apparent when individuals' "…feel progress and momentum, marked by a sense of learning" (Spreitzer et al. 2005).
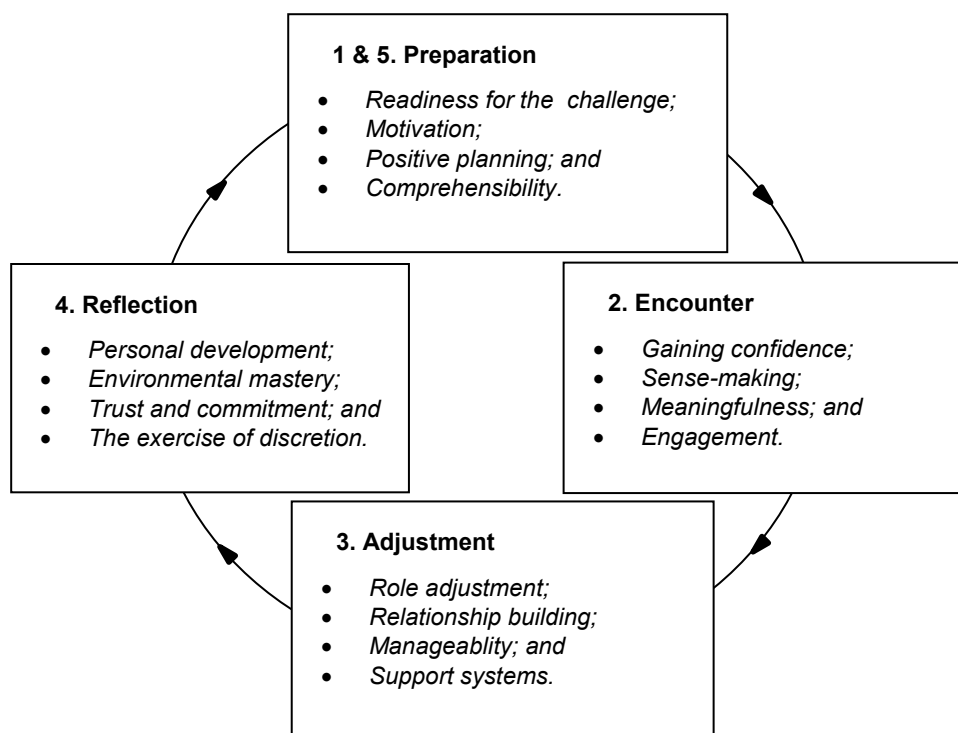
There has been an increased need to move away from a linear model to a more holistic view of transition and the capacity to thrive in challenging circumstances. Nicholson (1990) describes a complex, comprehensive model for the investigation of transition in four stages – preparation, encounter, adjustment and stabilisation. Based on Nicholson's model, Harris and colleagues (2012) developed the *Thriving Transition Cycle* that focused on transitions *well resolved* rather than problems associated with the change. They extend that concept where the pressure of the challenge becomes the catalyst for change where three outcomes are possible: thriving, surviving, or languishing. In this model, thriving is a process that is forward focussed, clear, ordered, and purposeful and where individuals are confident, pro-active and self-assured (Harris et al. 2012; Harris and Barnett 2013).

## The Thriving Transition Cycle

The transition from the ADF to civilian life has traditionally been seen as a linear journey, and the failure to thrive (reflected in poor health outcomes) has not been adequately explained. The *Thriving Transition Cycle (Figure 14)* is a recurrent process of 4 stages (i.e. preparation, encounter, adjustment and reflection), and 16 components where three guiding principles hold true. The transition has (1) recursive qualities with one stage leading to the next through the cycle; (2) disjunctive qualities/characteristics at each stage; (3) interdependent and dynamic antecedent qualities with the resolution of one stage defining the next.

The application of this model may provide an innovative, staged and cyclic approach to ADF transition, and provide many more opportunities to identify issues of concern.

The *Thriving Transition Cycle* provides a developmental/sequential model for thriving in challenging transitions. This model ascribes the 16 components to the stages of the cycle and provides evidence for the identification of participants within the cycle. The opportunities for timely and focussed intervention are identifiable within the themes, especially when the individual transition is examined. The cycle becomes the lens through which the particular transition is observed. The ability to *populate* the components with the ADF *experience* provides the scaffolding for early interventions and proactive strategies to resolve the stages successfully. The recursive, disjunctive and interdependent nature of the model allows an examination of the transition as it unfolds, rather than being crisis driven.



**1 & 5. Preparation**
- *Readiness for the challenge;*
- *Motivation;*
- *Positive planning; and*
- *Comprehensibility.*

**4. Reflection**
- *Personal development;*
- *Environmental mastery;*
- *Trust and commitment; and*
- *The exercise of discretion.*

**2. Encounter**
- *Gaining confidence;*
- *Sense-making;*
- *Meaningfulness; and*
- *Engagement.*

**3. Adjustment**
- *Role adjustment;*
- *Relationship building;*
- *Manageablity; and*
- *Support systems.*

FIGURE 14 THE THRIVING TRANSITION CYCLE (HARRIS AND BARNETT 2013)

## 14.3 Barriers to Mental Health Care in the General Population and Among Formerly Deployed Military Personnel

There are several armed forces suicide prevention programs currently undergoing implementation and evaluation outside Australia. One key program that began implementation in 2009 is the Master Resilience Training (MRT) in the US Army, led by Professor Martin Seligman.

The MRT program is a 10-day training course facilitated by a mix of civilian and army personnel, and underpinned by a 5-day preparation and learning stage, a 3-day implementation stage (teaching soldiers to teach others) and finally 2 days on reinforcing and strengthening the skills learned throughout the program (Reivich et al. 2011). The program garnered strong positive reviews from the non-commissioned officers who originally undertook the program.

Running in concert with the MRT program is the Comprehensive Soldier Fitness (CSF) program, designed to 'increase psychological strength and positive performance and to reduce the incidence of maladaptive responses of the entire U.S. Army' (Cornum et al. 2011, p.4). The program is designed to target the entire US Army population, and encompasses comprehensive emotional, social, familial and spiritual components, individualised training modules and resiliency programs. The focus of the program was to shift away from a primarily reactive and treatment focused model of mental health to a prevention model, promoting resilience and protecting against negative outcomes of military service.

Evaluations of the MRT and CSF programs are ongoing, with a few studies reporting initial positive results. Griffith and West (2013) reported that the majority of those partaking in MRT programs (from a sample of 411 Army National Guard Soldiers and civilians) reported improved resilience competencies and ability to respond to stressors, the continued use of skills learned in MRT in army and civilian life and a significant buffering effect against negative outcomes for those experiencing an increased number of stressful life events. These findings would be strengthened with greater detail on the specific roles the sample engaged in while serving in the army. While there is evidence to suggest that the MRT has had a positive impact upon resilience and psychological pathology within the US armed forces (Lester et al. 2011) the program's effect on suicide prevention is unknown.

Research on programs with a stronger focus on suicide prevention exists in the Israeli Defence Force and shows promising signs. The program aimed to target the whole defence force population focussing on "weapon availability, de-stigmatizing help-seeking behaviour, integrating mental health officers into service units, and training commanders and soldiers to recognize risk factors and warning signs" (Shelef et al. 2016, p.37). The authors conducted a trend analysis on suicide rates before and after implementation of the program, finding that death by suicide within the Israeli Defence Force had reduced by 57%.

Intervention strategies have also been employed to boost the capacity for resilience in armed forces families and children of serving personnel. The 'Families Over Coming Under Stress' program targeted toward US military families undertook a two-time point evaluation between 2008 and 2010 with 331 matched time point family units (Lester et al. 2011). While there was an absence of a control group, the study found that the program had a positive effect on parent-child relationship indicators including reduced parental distress and unhealthy family functioning and a reduction in total difficulty scores for both boys and girls in the study. The researchers argued for implementation of strengths based, trauma-informed military family prevention programs. Building resiliency within families of defence force and military personnel may be a beneficial and proactive measure to reduce mental

illness and suicide behaviour often observed in transition between active service and entry back into civilian life.

More recently there have been calls to develop programs and strategies to reduce suicide prevention by including participatory design principles with the key stakeholders in suicide prevention in military and armed forces. Involving service personnel in the design of preventative measures is being seen as increasingly important in the creation of context and locality specific suicide prevention measures (Thomas and Taylor 2015; Thomas and Taylor 2016). These calls echo many in the civilian mental health and suicide prevention space that have built a strong evidence base for participatory and co-design principles in mental health service delivery (Hagen et al. 2012; Collin and Swist 2016).

## 14.4    Specific Programs for the ADF

The ADF has addressed concerns for suicide by adopting an occupational mental health and wellbeing approach, recognising a shared responsibility for mental health and wellbeing between command, individual ADF personnel and the health care system. Within the overarching strategy, individual components include:

- Psychological Resilience training (BattleSMART);

- Induction presentation on suicide prevention given to all ADF personnel;

- The Keep Your Mates Safe Suicide Prevention Training

- MHRAT (Suicide Risk Assessment Training)

- ASIST gatekeeper training;

- Reviews of health records, Commissions of Inquiry and statistical analysis

Evaluation of these programs is limited to the BattleSMART (Moss 2012) and ASIST (McKay et al. 2012; Rodgers 2010) training programs. The ASIST evaluation provides findings based on a US Air Force personnel sample. The BattleSMART evaluation is largely focussed on assessing the quality of the training from the perspective of those who undertook the program, rather than specifically analysing the effect of the program on self-harm and suicide prevention. Moss (2012) found that those who undertook the program at an RAAF Air Base showed an increase in knowledge of the key BattleSMART principles and how to assist fellow personnel when in need, a greater knowledge of coping techniques and an increased intention to utilise coping techniques in the future.

In the US, the ASIST program was found to increase air force personnel's ability to identify risk factors and evaluate level of risk regarding mental health in others, however, found no significant increase in intervention behaviours (Rodgers 2010). While the above programs set a path for awareness raising and gatekeeper strengthening, there appears to be a lack of rigorous evaluation of programs with suicide prevention as a key outcome and measure of success within the ADF. For veterans of the ADF, participants in ASIST Suicide Prevention workshops have expressed positive experiences with the program, increased capabilities of dealing with an individual who is suicidal and increased knowledge of suicide issues, however replication of these findings is required (McKay et al. 2012).

Further to these face-to-face prevention strategies there are also a number of key mobile and online prevention, intervention and monitoring initiatives being used with ADF personnel and veterans. For veterans the Operation Life suite of resources was developed in response to the 2009 Dunt review, and affords a number of avenues to promote awareness and educate veterans about how to prevent suicide in self and others. The suite includes face-to-face workshops run nationally, a website through the veterans At Ease portal containing resources and information about suicide and associated risks, and a mobile application designed to assist those in an immediate crisis by connecting them with trusted sources and emergency services, coaching in how to manage incidences of heightened distress

and how to take action to keep safe. The Operation Life application is designed to be used in concert with a clinician.

The ADF and DVA have collaborated on a number of other mobile application initiatives including PTSD Coach Australia, On-track with the Right Mix and HighRes (High Resilience). These apps cover identified risk factors for suicide and can be both self-directed and utilised with the guidance of a clinician. PTSD Coach Australia aims to assist individuals in managing their symptoms of PTSD, On-Track prompts the user to track his or her alcohol consumption over time and HighRes is a stress management application addressing transition, deployment and everyday stressors associated with working in the ADF and being a veteran.

Distinct policy documents exist within the ADF related to self-harm and suicide prevention, assessment and management. These include the following:

- HD 294 Risk assessment and management of Defence members at risk of suicide, self-harm or harm to others (17 Mar 2015)

- DI(G) Pers 16-26 Management of a Defence member at risk of suicide (21 May 2014).

- HD 289 Coordinated care and management of Defence members receiving mental health services in Garrison

# Key Points

- Suicide prevention programs and their effectiveness within military populations is lacking evidence

- 'Off the shelf' programs may not address the complexity of suicidal ideation and behaviour in such a specialised population

- The Israeli Defence Force has shown significant drops in their suicide rates, seeing a 57% decrease

- A key measure of the Israeli Defence Force program was reducing weapon availability

- The period of transition out of the ADF is a critical time to provide high quality prevention and intervention strategies

- Returning to civilian life can be a difficult process as an individual must construct a new identity outside of the defence force

- Adding to this pressure is the need to find further employment and maintain family relationships which may have been strained through their time in the Defence Force

- Incidence of mental illness and alcohol and other drug abuse may make the transition process more difficult

- The Thriving Transition Cycle offers a model to identify where an individual may be in the process of transitioning into civilian life and what can be done to support them through the experience

- Several programs have been initiated within the ADF to address resilience, mental wellbeing, and military culture regarding mental health including BattleSMART, the Keep Your Mates Safe Suicide Prevention Training, ASIST Gatekeeper Training and Suicide Risk Assessment Training

- Evidence for the effectiveness of these programs is lacking

# 15.	Risk Assessment and Screening

## 15.1	Risk Assessment and Screening – overview

Screening for suicidal ideation and other mental and physical characteristics of recruits for military is a standard practice for most defence and military bodies globally. It is often argued that the generally lower suicide rates observed in military personnel can be attributed to the screening protocols in place (Gordana and Milivoje 2007). Despite this, the relative utility of screening in the civilian population has been questioned (Zalsman et al. 2016), and the practice within military populations remains contentious (Zamorski 2011). Furthermore, there are significant problems associated with post-deployment screening tools including personnel fabricating responses to the various measures involved (Harrell and Berglass 2011). Issues with post-deployment screening tools will be discussed. Of critical import is that regular screening takes place, particularly as 'suicidal ideation and intent are episodic states' (Ramchand et al. 2011, p. 45). Furthermore, screening should always be followed up by quality mental health care should significant risk is identified (Ramchand et al. 2011).

In 2014 the US Preventative Services Task Force released their recommendation with regard to screening for suicide and self-harm in youth, adult and older adult general populations. The task force concluded that there was "insufficient evidence to conclude that screening adolescents, adults, and older adults in primary care adequately identifies patients at risk for suicide who would not otherwise be identified on the basis of an existing mental health disorder, emotional distress, or previous suicide attempt." (Lefevre 2014, p. 719). Furthermore, evidence of any benefits derived from screening were determined to be insufficient, whilst evidence of increased harm to the individual as a result of screening for suicide and self-harm was also inconclusive. Unfortunately, this position remained unchanged since the last review by the task force in 2004 (USPSTF 2004), indicating that screening tools had failed to develop a sound evidence base for their use in general populations.

In the same year Horowitz et al. (2014) made the assertion that all young people entering into a medical care setting, irrespective of the reason, should be screened for suicidality. It was argued that developmentally appropriate screening tools needed to be developed, and that depression screening tools were not robust enough to detect suicidal thoughts and/or behaviours. Other research into screening tools for use with adolescents remains optimistic, with a prospective study on screening for suicidal thoughts and behaviours in adolescents in primary care finding that screening successfully identified suicidal behaviours, prompting referral onto a mental health care provider (Wintersteen 2010). Furthermore, youth in juvenile detention centres in the US are routinely screened for suicide risk, a practice recommended by the National Action Alliance for Suicide Prevention (2013).

## 15.2	Risk Assessment and Screening in the ADF

## 15.3	Screening tools

There are several key screening tools used throughout the ADF to assess risk upon return of personnel from active duty and deployments. Currently, the Kessler Psychological Distress Scale (K10), Posttraumatic Stress Disorder Checklist (PCL) and the Alcohol Use Disorders Identification Test (AUDIT) are used immediately before or after returning to Australia from deployment. These screens form the Return to Australia Psychological Screening tool (RtAPS). Three to six months' post-deployment a Post-Operational Psychological Screening (POPS) is conducted and is available to both service personnel and their families, each with separate protocols (McFarlane and Hodson 2010)

Collectively these tools are used to provide psycho-education about reintegration into civilian life, an opportunity for early intervention for low level psychological concerns, early identification of

heightened risk requiring a more extensive assessment and surveillance of trends over time related to the wellbeing of service personnel.

## 15.4    Utility and efficacy of screening tools

There appears to be some conjecture as to the utility and efficacy of suicide screening tools. In the ADF, screening at various points in a service personnel's career take place assessing a range of physical and mental health states.

In 2014 a report was released by the Australian Centre for Posttraumatic Mental Health reviewing the ADF screening tools. The aim of this report was to identify optimal frameworks for screening protocols to reduce administrative burden whilst maintaining screening and risk assessment efficacy. A framework encompassing the availability of anonymous, self-directed online screening; identifiable online screening; and a triennial face-to-face interview was endorsed by the review. These protocols were endorsed in addition to implementation of RtAPS and POPS (O'Donnell et al. 2014)

In reviewing the consultative contributions and findings of this report one key issue stood out for the present review when considering risk assessment, and in particular, the identification of individuals at risk of self-harm, suicidal ideation and suicidal behaviours. The document asserts that "… members who are suicidal are likely to be identified by the standardised screening instrument battery and a suicide screen is highly unlikely to return a positive result if all other measures are below threshold" (p. 58), in other words, the existing screening tools (K10, PCL and AUDIT) should be sufficient in alerting the ADF to potential mental health risk, leading to a required interview with a trained professional to investigate further whether a suicide risk is present. Of concern, however, was a passage outlined later in the report detailing that many "… interviewees acknowledged that most members knew how to score below threshold, adding weight to the notion of a face-to-face interview to assist with identifying areas of concern" (p. 64). This presents a potential weakness in screening measures whereby members experiencing significant distress may intentionally avoid screening high on the various risk assessment tools and as such, not be referred onto the more extensive interview where suicide risk is explicitly assessed. This is exacerbated by the fact that interviews occur once every three years, a significant amount of time in which to develop potentially harmful suicidal thoughts and behaviours.

## 15.5    Risk Assessment and Screening in other armed services

Screening, whether pre- or post-deployment elsewhere in the world also shows inconsistent results according to the extant literature. From a historical perspective, pre-deployment screening for vulnerability to mental health disorders in UK military populations during World Wars I and II did not successfully predict incidence of mental health disorders post-deployment, and was found to have a negative effect in precluding potential recruits from military deployment (Jones et al. 2003). During the post-world war period, similar deficiencies were found to exist (Jones et al. 2003). A similar conclusion was reached in a longitudinal cohort study of over 2,000 UK armed forces personnel partaking in the 2003 Iraq war, with pre-deployment screening not being able to accurately predict PTSD or reduce mental health morbidity (Rona et al. 2006).

Despite challenges with reliable responses by military personnel, post-deployment screening is looked upon favourably if implemented correctly and appropriately resourced (Bull et al. 2015). Important is the timing and repetition of screening. In the US returning military personnel will undergo a self-report screening 1-2 weeks' post-deployment, along with further screening 3-6 months later. This serves to effectively identify those at risk of various mental health disorders which may fluctuate over time immediately upon return through to settling back into a non-operational role (Gates et al. 2012).

Screening at multiple time points is also beneficial due to the different progression pathways that varied mental health concerns can take (Reijnen et al. 2015).

Rona et al (2005, p. 1257-1259) have highlighted key considerations for any military screening procedures, in part to bring consistency, quality, and evidence base to these procedures. Key considerations include:

- Identified conditions should be important health problems;

- Screening tests should be clinically, socially, and ethically acceptable;

- Screening tests should be simple, precise, and validated;

- High quality research evidence should demonstrate the effectiveness of screening in reducing psychiatric morbidity;

- Adequate staffing and facilities for all aspects of psychological screening programs are critical;

- Benefits from the screening program should outweigh the potential harms; and

- Alternative approaches to mass screening should be provided

Screening for suicide risk in foreign military organisations, much like in Australia, is not done explicitly in the first instance. Rather, screening for traumatic experiences (Gradus et al. 2013) and mental health problems (Zamorski 2011) is commonplace. This places great importance on following up effectively with those who screen for significant mental health concerns, with specific inquisition on suicidality and associated behaviours. Some research has shown that this may be problematic, notwithstanding the issues identified earlier concerning screening tools being easily falsified by military personnel.

In a retrospective study of veterans who had died by suicide in the US state of Oregon between 2000 and 2005, who had seen a health care professional in the year prior to their suicide, and had been assessed for suicide risk, 72% had denied any suicidal ideation (Denneson et al. 2010). A similar study by Smith et al. (2013) observed similar results, with 75% of veterans denying any suicidal ideation in the 7 days prior to their suicide. In many cases, suicide risk assessments were infrequently administered, and significant practice changes were asserted by the authors.

These practice changes may come in the form of how suicide assessments are conducted with personnel and veterans. In order to overcome failure to disclose suicidality by veteran populations, a clinical sample of veterans receiving care felt that a pencil and paper suicide screening tool was 'perfunctory and disrespectful' (Ganzini et al. 2013, p. 1215). Developing interpersonal assessments between the veteran and a health clinician based on trust, genuiness and empathy were posited as an effective method of assessing suicide risk. This invariably may be a challenge given resourcing, capacity and inconsistency of procedures often observed between VA facilities (Dobscha et al. 2012).

It is, however, recognised that clinician and expert suicide risk assessment is invariably prone to errors, misjudgement and inaccuracies (Kessler et al. 2015). When faced with challenges of resourcing and capacity, the most accurate means of assessing risk is required. One innovative method for risk assessment emerging is the use of machine learning of combined pre-existing risk factor data to accurately predict risk of suicide, with the view to provide targeted intervention for those identified. Kessler et al. (2015) systematically studied pre-existing risk factor data of 53,769 hospitalisations of US active duty soldiers between 2004 and 2009. The aim was to identify a constellation of risk factors that could accurately predict the risk of suicide death following the 12 months after hospitalisation. The constellation of risk factors that most accurately predicted those at high risk of suicide in the 12 months after being discharged from hospital included being male, enlisting at an older age, criminal offences, prior suicidality, attributes of prior psychiatric treatment and diagnosed disorders during hospitalisation. The highest risk group accounted for over 50% of post-hospitalisation suicide deaths at

a rate of 3,824 per 100,000 persons. Furthermore, these risk factors predicted other negative outcomes including unintentional injury deaths, suicide attempts and re-hospitalisations (Kessler et al. 2015). A similar study analysing the prediction of suicide risk following outpatient mental health visits also offers novel findings (Kessler et al. 2016).

## Key Points

- Suicide risk screening within military populations is common practice worldwide

- Evidence for the effectiveness of such screening tools varies, and often mirrors that of evidence related to the general population

- The ADF currently employ the Kessler Psychological Distress Scale, Posttraumatic Stress Disorder Checklist and the Alcohol Use Disorders Identification test when personnel return from deployment

- Personnel are then subject to a Post Operational Psychological Screening assessment

- Personnel are cognisant of how to score below risk thresholds on the screening tools used within the ADF. This may be done to avoid being discharged or ensure they can be re-deployed in the future

- Risk assessment is most effective when it is properly resourced (e.g. conducted by clinical psychologists or psychiatrists), done comprehensively (screening tools and interviews), and when members feel comfortable to provide honest responses, without fear of persecution (e.g. loss of job)

# 16.  Emerging Technologies and Innovation

Nobel Laureate neuroscientist, Cowan and Kandel (2001) wrote that following the completion of the genome project:

> *"…progress, not only in neuroscience, but in neurology and psychiatry, will proceed at an unprecedented pace. So rich will this harvest be that it is not too rash to state that it will completely transform both clinical disciplines and put them on the sound scientific foundation that has so long been one of their principal goals" (Cowan and Kandel 2001, p. 596)*

Unprecedented scientific advances over the last decade are leading to the growing view that we are on the cusp of a neuroscience revolution that will dominate scientific effort and societal change in this century. Indeed, there are three concurrent revolutions relevant to any discussion on mental health and suicide prevention. Insel (2016) defines these as the 1) genomic revolution; 2) neuroscience revolution; and 3) digital revolution. This convergence of engineering in a range of technologies, human biology and the explosion in knowledge of mind science offers new hope and new opportunities for transforming mental health care and suicide prevention.

A major pursuit among psychiatrists and researchers is the discovery of biological means of recognizing and diagnosing mental illness or *biomarkers*. All of this points to a more scientific basis to psychiatry and the responses available to disorders of the brain and mind with significant implications for mental health and suicide prevention within the ADF and veteran communities.

## 16.1  Neuro-Scientific Research Relevant for ADF Suicide Prevention

Already there is an emerging line of literature exploring neurobiological, neurophysiological and neuropsychological determinants of suicide in defence and military personnel is sketching detailed and complex drivers of suicide and self-harm within this particular population group. Importantly, leading neuro-psychiatrists recognise that advances of knowledge within this field rely on interdisciplinary teams. Rather than being solely based in the neurological and/or medical field, there is recognition that "a comprehensive history of the personal life, context and life trajectory of a patient, which will help inform potential psychotherapeutic and social interventions" (Looi 2016, p. 523) should be complemented by "structured neurological examination and cognitive testing, as well as electrophysiology and brain imaging, where necessary" (Looi 2016, p. 523). This is important given the extremely unique contexts within which military personnel are embedded within.

Early studies into deployment effects on neurological functioning laid the groundwork for deeper exploration into this field. Vasterling et al. (2006) observed a clear association between deployment to the Iraq war and decreased levels of sustained attention, verbal learning and visual-spatial memory. There were also increases in negative state affect such as confusion and tension. Whilst it was made clear that these declines did not significant clinical levels, they were large enough to have some impact on day-to-day functioning of an individual (Vasterling et al. 2006).

In more recent research, our understanding of how 'pre-traumatic stress reactions' can affect an individual's post-deployment experience. Bernsten and Rubin (2015) sought to reconceptualise the current understanding of PTSD, where combat was seen as the key driver of post-deployment PTSD symptoms. The authors posited that it was not the experience of a stressful event itself, but rather the individual's pre-deployment or 'pretraumatic' reactions to stressful events that could predict onset of PTSD after deployment. The study was able to reliably predict post-deployment PTSD symptoms from pre-traumatic stressful reactions, independent of baseline measures of PTSD and combat experience. Importantly, this finding aligns closely with other research that shows strong similarities in neuronal pathways between episodic remembering and future simulations. (Bernsten and Rubin 2015).

Sussman and colleagues (2016) examined the neuro-anatomical features of US soldiers with PTSD. They found changes in the brain's cortical thickness, both thinning in some regions and thickening in others, changes to the hippocampus and other anatomical features. The study's findings on these changes to the cerebellum was consistent with results from an earlier study of rape victims with PTSD.

Another recent study on the cerebellum and mild Traumatic Brain Injury (mTBI) found that the more blasts a soldier is exposed to, the more likely that soldier is to show chronic changes in the neuron activity of the cerebellum. This same dose response has been shown in American Football players. Meabon, Huber and colleagues (2016) found that in mild blast-exposed mice, Purkinje cells are lost in the same region of the cerebellum as in combat veterans who have been exposed to blasts.

Interestingly, there remains debate within the field as to the mechanisms underlying disorders such as PTSD, and behaviours like suicide, with regard to neurological damage to the brain. Stein et al. (2016, p. 1108) state that:

> "TBI severity further suggest that extent of injury to the brain moderates the likelihood of the development of mental health sequelae. This is hardly a radical notion, as considerable neuroimaging and neuropsychological research supports a model wherein TBI impairs functioning of prefrontocortical and networked systems that are believed to be integral for inhibiting fear responses and promoting fear extinction"

However, they also assert an oppositional theory, whereby

> "concussions increase risk for mental disorders not by virtue of their mechanical impact on the brain, per se, but rather by their emotional impact on the individual's psyche as a result of their occurrence within a potentially life-threatening and otherwise stressful context (i.e., military combat)"

The extent to which these 'mechanical' or psychological origins of traumatic brain injury explain the phenomenon is still under question, particularly as the ability to parse out these two aetiological forms is methodologically difficult (Stein et al. 2016). Further complications arise when considering the temporality of injurious effects on brain neurology and/or psychological states. For example, Kristman et al. (2014) recommend follow up in longitudinal studies of at least 12 months or more for reliable analysis of outcome measures post mild traumatic brain injury.

## 16.2    Bio-makers and PTSD

As in the developments in neuroscience, the focus of research has been in relation to PTSD. Several reviews summarise the most prominent findings on potential imaging, psychological, endocrinal and molecular biomarkers for PTSD (Schmidt et al. 2013; Michopoulus et al. 2015) and Lehmer and Yehuda (2014) examine the application and implications for military populations.

The consensus in these reviews, is that it is most likely that a battery of biomarkers will when combined with behavioural and clinical information increase the specificity of diagnosis and treatment.  This is consistent with development in sports' anti-doping programs more than a decade ago and the development of 'athlete passports' that contain routine bio-metric data (Mendoza, 2001).

## 16.3    Digital Communications Technologies

In 2016, the Young and Well CRC lead by Jane Burns, prepared a suite of papers set out the case and strategy for the application of innovative and emerging technologies to support the mental health and wellbeing of Veterans and their families (Burns et al. 2015; Burns and Grey 2016; Liacos and Feder 2015).

Over the last decade, particular focus has been given to exploring and using technology to deliver mental health support and interventions, with Australia a clear world leader in the e-mental health field. The work already undertaken within DVA, has laid out a sound basis for the application of emerging technologies with both the serving and ex-service communities. It is not necessary to re-run that analysis here, given the recent Young and Well CRC work.

The recommendations from the Young and Well reports have been given consideration in the framing of the recommendations of this Review.

# Key Points

- Emerging technologies and innovation will contribute significantly to the understanding of suicide in the general population and specific populations, such as the Australian Defence Force, in the near future.

- Early studies on deployment effects on neurological functioning found that those deployed to the Iraq war showed signs of decreased levels of sustained attention, verbal learning and visuo-spatial memory upon return from overseas.

- Evidence suggests 'pre-traumatic experiences' can affect an individual's post-deployment experience.

- Development in neuro-science and biological testing offer significant opportunities for improved assessment and treatment of military populations affected by mTBI and PTSD and at elevated risk of suicidal behaviours.

- Digital technologies present another area of innovation which includes the development and use of online and mobile technologies to promote mental wellbeing, prevent suicide, monitor emotional states, intervene in a crisis and provide postvention support to individuals

- Digital technologies will enable serving and former ADF members and the their families clear pathways to care

# 17. Conclusion

Suicide and self-harming behaviour is a significant global problem, responsible for many lives lost in Australia and abroad. Deaths by suicide have remained stagnant, or increased, over recent years despite suicide prevention efforts. The circumstances that lead an individual to consider suicide as a solution are complex and multi-faceted. No one risk factor can accurately predict whether an individual will die by suicide, and in most cases, it will be a combination of social, contextual and individual risk and protective factors that will determine suicidality in any given person. Thus, a checklist or stand-alone measure cannot accurately predict suicidal behaviour.

Strong evidence suggests that the availability of high quality multi-levelled and integrated care can prevent suicide deaths. Those with lived experience of suicide point to a deficiency or shortage of professional care for suicidal behaviour, which may be exacerbated in rural and remote communities. In workplaces, the collective culture, organisational structure and social supports play integral roles in the wellbeing of employees. In the Australian Defence Force (ADF) many of these factors are amplified, and others are unique to the armed services. At present, evidence for the effectiveness of suicide prevention programs within the ADF and in international military organisations is lacking. Several wellbeing and resilience programs have been implemented, however high quality research on their effectiveness could not be identified by the review.

Before changes can be made to suicide prevention strategies in the ADF and former serving personnel it is essential that good data are available. Ideally, data should be stratified by age, gender, service type, location, and deployment history. Suicide in the ADF is generally lower when compared with the general population. However, younger ADF members, particularly males, are at increased risk of dying by suicide. There are many unique factors that may influence suicide within the ADF and ex-serving personnel including exposure to traumatic events whilst deployed and access to firearms and lethal weapons. This becomes more complex when adjustment disorders, moral injury, adverse experiences prior to recruitment, and alcohol and other drug abuse are considered. Help-seeking is made difficult because of the stigma associated with mental health, together with increased uncertainty in regard to career paths, and capacity to be deployed. Treatment options for serving personnel are limited and timeframes around mental illness are affectedly compartmentalised.

Importantly, the experience of current serving members, those transitioning out of the ADF, and those who are ex-serving personnel, should be considered as distinct. The risk and protective factors for these three groups do overlap but remain unique, and to address suicide in these groups their unique experiences must be considered.

For current serving members, important areas for consideration include the ability to easily access high quality mental health care without fear of persecution, losing one's job or ability to deploy, or being stigmatised for seeking help. The social support provided by fellow personnel at all levels of the ADF is critical to an individual's continued wellbeing, particularly in an occupation characterised by high stress environments and highly structured, ordered hierarchies.

For those transitioning out of the ADF, the return to civilian life can cause significant distress. The review identified transitioning out of the ADF as a clear period of heightened suicide risk. Transitioning out of the ADF can result in a loss of identity and purpose for an individual who has lived their life within the ADF culture. The ability to gain employment in civilian life can be hindered, and pressures upon family units can build during this time. The successful transition of personnel can predicate positive experiences after service. It requires an extensive and personalised program to manage individuals back into civilian life, including post-discharge support, clear thinking in regard to vocational training, and monitoring of health status.

For ex-serving personnel, risk of dying by suicide can arise from several complex areas. The guilt and shame associated with enacting or viewing moral transgressions in combat can be mentally debilitating. Post-traumatic stress disorder and other closely associated mental disorders increase the risk of suicide for ex-serving personnel. Unfortunately, perceptions persist that the process for eligibility for support is adversarial, and that the claims procedures are unnecessarily complex and slow. Of note is the significant number of ex-serving personnel who have been identified as homeless across the country. Without access to shelter, food and social support the risk for suicide is heightened considerably. It is clear from the literature that isolation and the disconnect from caring networks of peers, family and professionals will increase risk for suicide.

# Glossary of Terms

**Adverse Childhood Experiences (ACEs):** ACEs are one or more traumatic experiences in a person's life occurring before the age of 18 that the person remembers as an adult. There are 9 ACEs: physical abuse; sexual abuse; emotional abuse; mental illness of a household member; problematic drinking or alcoholism of a household member; illegal street or prescription drug use by a household member; divorce or separation of a parent; domestic violence towards a parent; and incarceration of a household member.

**Australian Defence Force (ADF):** The ADF in this Review refers to the three service arms, Army, Navy and Air Force and those uniformed personnel within the Department of Defence. It includes regular service personnel and reservists.

**Contagion:** A phenomenon whereby persons are influenced towards suicidal behavior through knowledge of another person's suicidal acts.

**Crisis Counselling:** Brief counseling focused on minimising stress, providing emotional support and improving immediate coping strategies. Like psychotherapy, crisis counseling involves assessment, planning and treatment, but the scope of service is much more specific.

**Crisis line:** A phone number people can call to get immediate emergency crisis counseling.

**Disability-Adjusted Life Year** (**DALYs):** The DALY is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death. It was developed in the 1990s as a way of comparing the overall health and life expectancy of different countries.

**e-Mental Health:** (or digital mental health) refers to that form of e-health concerned with mental health... e-mental health services provide treatment and support to people with mental health disorders through telephone, mobile phone, computer and online applications, and can range from the provision of information, peer support services, virtual applications and games, through to real time interaction with trained clinicians.

**Gatekeepers:** Those individuals in a community who have face-to-face contact with large numbers of community members as part of their usual routine; they may be trained to identify persons at risk of suicide and refer them to treatment or supporting services as appropriate.

**Imminent Risk:** A situation where a person's current risk status is believed to indicate actions that could lead to his or her suicide.

**Mental Health:** Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. In this positive sense, mental health is the foundation for individual well-being and the effective functioning of a community (WHO, 2010).

**Mental (health) disorder / psychiatric disorder / mental illness:** A mental (health) disorder or psychiatric disorders a diagnosable illness characterised by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress that significantly interferes with an individual's cognitive, emotional or social abilities.

**Mental health problem:** Diminished cognitive, social or emotional abilities but not to the extent that the criteria for a mental disorder are met.

**Moral Injury:** Within the context of military service, particularly regarding the experience of war, "moral injury" refers to the emotional and spiritual impact of participating in, witnessing, and/or being victimised by actions and behaviors which violate a service member's core moral values and behavioral expectations of self or others. Moral injury almost always pivots with the dimension of

time: moral codes evolve alongside identities, and transitions inform perspectives that form new conclusions about old events. (http://moralinjuryproject.syr.edu/about-moral-injury/)

**Non-fatal suicidal behavior:** A non-habitual act with non-fatal outcome that the individual, expecting to, or taking the risk, to die or to inflict bodily harm, initiated and carried out knowing or expecting a potentially fatal outcome (De Leo et al., 2004). Non-fatal suicidal behaviour can include attempted suicide, deliberate self-harm and deliberate self-poisoning, with our without injuries.

**Non-Suicidal Self-Harm:** The various methods by which individuals injure themselves such as self-cutting, self-battering, taking overdoses or exhibiting deliberate recklessness without an intent to cause death to themselves.

**Peacekeepers:** Generally, these are military forces deployed to a conflict zones to keep opposing groups separated or abiding by the terms of a peace agreement. Since the early 1990s the ADF has undertaken peacekeeping missions including those to Somalia, Rwanda and Solomon Islands.

**Post-traumatic Stress Disorder (PTSD):** A particular set of reactions that can develop in people who have been through a traumatic event which threatened their life or safety, or that of others around them. This could be a car or other serious accident, physical or sexual assault, war or torture, or disasters such as bushfires or floods. As a result, the person experiences feelings of intense fear, helplessness or horror (beyondblue.org.au)

**Postvention:** A strategy or approach that is implemented after a crisis or traumatic event has occurred. Prevention. A strategy or approach that reduces the likelihood of risk of onset, or delays the onset of adverse health problems or reduces the harm resulting from conditions or behaviors.

**Protective factors (for suicidal behaviour):** Factors that make it less likely that individuals will develop suicidal thoughts and/or attempt suicide. Protective factors may encompass biological, psychological or social factors in the individual, family and environment.

**Reservists:** In the ADF, reservists serve in all force arms – Army, Navy and Air Force. Reservists come from all walks of the Australian community and are trained to work along side full-time or regular ADF personnel. Reservists are expected to serve a minimum of 20 days per year. (http://www.defencejobs.gov.au/reserves/)

**Resilience:** The ability of individuals, families and neighbourhoods to cope positively with change, challenge, adversity or shock (Foot 2012).

**Risk assessment:** The process of quantifying the probability of an individual harming himself or others.

**Risk factors (for suicidal behaviour):** Those factors that make it more likely that individuals will develop suicidal thoughts and/or attempt suicide. Risk factors may encompass biological, psychological or social factors in the individual, family and environment.

**Screening Tools:** Instruments and techniques (questionnaires, check lists, self-assessment forms) used to evaluate individuals for increased risk of certain health problems.

**Self-destructive behavior/self-injury:** As for Self-Harm and Deliberate Self harm

**Self Harm, Deliberate Self Harm (DSH) or Intentional Self Harm (ISH):** The various methods by which individuals injure themselves, such as self-cutting, self-battering, taking overdoses or exhibiting deliberate recklessness.

**Social Determinants:** The social determinants of health outcomes (including mortality due to suicide) are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The key determinants of health morbidity and mortality are: Income and Social Status; Social Support Networks; Education and Literacy; Employment/Working Conditions; Social Environments; Physical

Environments; Personal Health Practices and Coping Skills; Healthy Child Development. ([www.who.int/social_determinants/sdh_definition/en/](www.who.int/social_determinants/sdh_definition/en/) and Marmot, 2005)

**Stigma:** Stigma refers to the social disapproval of individuals or groups due to a discredited characteristic that distinguishes them from others. Corrigan (2004) and Thornicroft et al. (2007) map stigma as a problem of knowledge (ignorance), attitudes (prejudice) and behaviour (discrimination).

**Suicidal Ideation and behaviours:** A complex process that can range from suicidal thoughts, through planning of suicide, to attempting suicide and ending in suicide. Suicidal behaviour is the consequence of interacting biological, genetic, psychological, social, environmental and situational factors (Hawton and van Heeringen, 2009).

**Suicidal intent.** Subjective expectation and desire for a self-destructive act to end in death.

**Suicidality:** Includes suicide ideation, planning, suicide attempts and fatal suicide behaviour.

**Suicide (or 'fatal suicidal behaviour'):** An act with a fatal outcome which the deceased, knowing or expecting a potentially fatal outcome, has initiated and carried out knowing or expecting a potentially fatal outcome (De Leo et al., 2004).

**Suicide attempt:** A non-fatal self-inflicted potentially injurious behaviour with any intent to die as a result of the behaviour.

**Suicide attempt survivors:** Individuals who have survived a prior suicide attempt.
Suicide risk. The degree of danger to self an individual faces based on the absence or presence of suicidal behaviors and factors associated with the likelihood of suicide.

**Suicide Prevention:** This includes a broad range of strategies and activities to prevent suicidal behaviours. It includes:

- 'Universal interventions' that target whole populations, with the aim of reducing risk factors and enhancing protective factors across the entire population. Typically, such approaches include (but are not restricted to) reducing access to means of suicide, improving media reporting of suicide and providing community education about suicide prevention.

- 'Selective interventions' that target subgroups whose members are not yet manifesting suicidal behaviours, but exhibit proximal or distal risk factors that predispose them to do so in the future. These may include gatekeeper training or programs that involve screening those thought to be at elevated risk.

- 'Indicated interventions' designed for people who are identified through screening programs or by clinical presentation as already beginning to exhibit suicidal thoughts or behaviours, and may include psychological or pharmacological treatment of underlying mental disorders. (Department of Health, NSPS website).

**Suicide (loss) survivors:** Family members, significant others, or acquaintances who have experienced the loss of a loved one due to suicide. Sometimes the term 'suicide survivors' is also used to mean suicide attempt survivors.

**Suicide Risk Assessment:** This refers to the mechanisms used to assess an individual's risk of suicidal behaviour. It includes screening tools, checklist (often based on mnemonic strategies) and guidelines.

**Suicide warning signs:** Indications that an individual is at risk for suicide.

**Technology Based Suicide Prevention (TBSP):** Technology-based suicide prevention (TBSP) programmes are programmes designed for the prevention of suicide which can be used by different types of advanced technologies such as the Internet, smartphones and tablets. Technology-based programs include educational and interactive websites, serious games, online treatment, etc

**Veteran**: In this report, veterans are any former members of the ADF or where specified, other military services. It includes those for have served in any capacity – those deployed and those not deployed to conflict zones, peacekeeping missions and humanitarian missions.

**GLOSSARY SOURCES:**

- http://www.euregenas.eu/wp-content/uploads/2014/01/EUREGENAS-General-Guidelines-on-Suicide-Prevention-F.pdf

- National Strategy for Suicide Prevention: Goals and Objectives for action. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, 2001

- Brenner, L. and Centres for Disease Control and Prevention (2010). Self-directed violence classification system.

- http://www.suicidepreventionlifeline.org/learn/glossary.aspx

- http://www.stopasuicide.org/glossary.aspx

# References

100kHomes (2014). "Making PIT Counts Work for Your Community. Integrating the Registry Week Methodology into Your Point-in-Time Count." Retrieved November 24, 2016.

100kHomes (2014). "The Vulnerability Index - Service Prioritization Decision Assistance Tool (VI-SPDAT)." Retrieved November 24, 2016.

Afifi, T. O., et al. (2016). "Association of child abuse exposure with suicidal ideation, suicide plans, and suicide attempts in military personnel and the general population in Canada." JAMA psychiatry **73**(3): 229-238.

Agerbo, E., et al. (2007). "Suicide and occupation: the impact of socio-economic, demographic and psychiatric differences." Psychological medicine **37**(08): 1131-1140.

AIHW (2016). Incidence of suicide among serving and ex-serving Australian Defence Force personnel 2001–2014. Cat. no. PHE 212. Canberra, AIHW.

Ainslie, N. (2016). "Homeless Veterans: United States." Retrieved Novermber 16, 2016, from https://www.ebscohost.com/assets-sample-content/Homeless_Veterans_US.pdf.

Aldwin, C. M. and T. A. Revenson (1987). "Does coping help? A reexamination of the relation between coping and mental health." Journal of Personality and Social Psychology **53**(2): 337.

Aleman, A. and D. Denys (2014). "A road map for suicide research and prevention." Nature **509**(7501): 421-423.

Alliance to End Homelessness (2016). Ruah Perth Registry Week Data, Centre for Social Impact, University of Western Australia.

Althaus, D. and U. Hegerl (2003). "The evaluation of suicide prevention activities: state of the art." The World Journal of Biological Psychiatry **4**(4): 156-165.

American Psychological Association (2014). "What is Resilience?". Retrieved Novermber 23, 2016, from https://psychcentral.com/lib/what-is-resilience/.

Andersen, K., et al. (2010). "Suicide in selected occupations in Queensland: evidence from the State suicide register." Australian and New Zealand Journal of Psychiatry **44**(3): 243-249.

Andrews, B., et al. (2007). "Delayed-onset posttraumatic stress disorder: a systematic review of the evidence." American Journal of Psychiatry **164**(9): 1319-1326.

Andriessen, K. (2014). "Suicide bereavement and postvention in major suicidology journals." Crisis **35**: 338-348.

Arensman, E., et al. (2016). "Effectiveness of Depression–Suicidal Behaviour Gatekeeper Training among police officers in three European regions: Outcomes of the Optimising Suicide Prevention Programmes and Their Implementation in Europe (OSPI-Europe) study." International Journal of Social Psychiatry **62**(7): 651-660.

Artenie, A. A., et al. (2015). "Associations of substance use patterns with attempted suicide among persons who inject drugs: Can distinct use patterns play a role?" Drug and alcohol dependence **147**: 208-214.

Auger, N., et al. (2016). "Suicide in Canada: impact of injuries with undetermined intent on regional rankings." Injury prevention **22**(1): 76-78.

Austin, A. E., et al. (2012). "Head impalement–an unusual form of suicide." Journal of forensic and legal medicine **19**(5): 264-266.

Australian Bureau of Statistics (2008). National Survey of Mental Health and Wellbeing 2007. Canberra, Commonwealth of Australia.

Australian Bureau of Statistics (2015, 2015). "3303.0 - Causes of Death, Australia, 2015." Retrieved October 12, 2016, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3303.0Main+Features12015?OpenDocument.

Australian Bureau of Statistics (2016). "Australia's leading causes of death, 2015." Retrieved October 5, 2016, from http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/bySubject/3303.0~2015~MainFeatures~Australia'sleadingcausesofdeath 2015~3.

Australian Defence Force (2016). "Special operations Command." Retrieved Novermber 27, 2016, from https://www.army.gov.au/our-people/units/special-operations-command.

Australian Institute for Suicide Research Prevention (2015). Suicidal behaviour and ideation among military personnel: Australian and international trends. Technical report prepared for the Department of Veterans' Affairs.

Australian Institute of Health and Welfare (2009). Hospital Separations Data. Canberra, AIHW.

Australian Institute of Health and Welfare (2016). Incidence of suicide among serving and ex-serving Australian Defence Force personnel 2001–2014. Cat. no. PHE 212. Canberra, AIHW.

Awan, S., et al. (2015). "Integrated Care Pathway (ICP), an Inter-professional Outline of Evidence Informed Care in Mental Health and Addictions: an Innovative Treatment Approach From Concept to Results." European Psychiatry 30(Supplement 1): 1934.

Bakst, S. S., et al. (2016). "The accuracy of suicide statistics: are true suicide deaths misclassified?" Social psychiatry and psychiatric epidemiology 51(1): 115-123.

Bale, J. (2014). PTSD and Stigma in the Australian Army - Research Paper No 3. Canberra, Australian Defence Force.

Barton, N. and K. Johnson (2007). Project Lazer–Longitudinal ADF Study Evaluating Retention, Directorate of Strategic Personnel Planning and Research.

Batterham, P. J., et al. (2013). "The stigma of suicide scale." Crisis 34: 13-21.

Baumeister, R. F. (1990). "Suicide as escape from self." Psychological review 97(1): 90.

Baumeister, R. F. and T. F. Heatherton (1996). "Self-regulation failure: An overview." Psychological inquiry 7(1): 1-15.

Beaton, S., et al. (2013). "Suicide and Language: Why we shouldn't use the 'C' Word." InPsych: The Bulletin of the Australian Psychological Society Ltd 35(1).

Beautrais, A. L. (2000). "Risk factors for suicide and attempted suicide among young people." Australian and New Zealand Journal of Psychiatry 34(3): 420-436.

Beautrais, A. L., et al. (2010). "Postcard intervention for repeat self-harm: randomised controlled trial." The British Journal of Psychiatry 197(1): 55-60.

Beck, A. T., et al. (1985). "Hopelessness and eventual suicide: a 10-year prospective study of patients hospitalized with suicidal ideation." American Journal of Psychiatry 142(5).

Belik, S.-L., et al. (2007). "Traumatic events and suicidal behavior: Results from a national mental health survey." The Journal of nervous and mental disease 195(4): 342-349.

Belik, S.-L., et al. (2010). "Are Canadian soldiers more likely to have suicidal ideation and suicide attempts than Canadian civilians?" American journal of epidemiology 172(11): 1250-1258.

Bell, C. C. and D. F. McBride (2010). "Affect regulation and prevention of risky behaviors." JAMA 304(5): 565-566.

Bell, N. S., et al. (2010). "Prior health care utilization patterns and suicide among US Army soldiers." Suicide and Life-Threatening Behavior 40(4): 407-415.

Bender, T. W., et al. (2012). "Affective and behavioral paths toward the acquired capacity for suicide." Journal of Social and Clinical Psychology 31(1): 81-100.

Bennett, M. (2009). Neuropsychiatry of Suicidal Diathesis: Submission tot he Senate Community Affairs Committee Inquiry into Suicide in Australia. Canberra, Commonwealth of Australia.

Bennett, M. (2009). "Stress and anxiety in schizophrenia and depression: glucocorticoids, corticotropin–releasing hormone and synapse regression." Australia and New Zealand Journal of Psychiatry 42: 995-1002.

Bergland, Å. and M. Kirkevold (2001). "Thriving–a useful theoretical perspective to capture the experience of well-being among frail elderly in nursing homes?" Journal of advanced nursing **36**(3): 426-432.

Berntsen, D. and D. C. Rubin (2015). "Pretraumatic stress reactions in soldiers deployed to Afghanistan." Clinical Psychological Science **3**(5): 663-674.

Blakely, T. A., et al. (2003). "Unemployment and suicide. Evidence for a causal association?" Journal of Epidemiology and Community Health **57**(8): 594-600.

Bollinger, M. J., et al. (2015). "Erosion of the healthy soldier effect in veterans of US military service in Iraq and Afghanistan." Population health metrics **13**(1): 1.

Bolton, J. M., et al. (2012). "Predicting suicide attempts with the SAD PERSONS scale: a longitudinal analysis." The Journal of clinical psychiatry **73**(6): e735-741.

Borges, G., et al. (2010). "Twelve month prevalence of and risk factors for suicide attempts in the WHO World Mental Health Surveys." The Journal of clinical psychiatry **71**(12): 1617.

Bowlby, J. (1988). A secure base: The origins of attachment theory, London: Routledge.

Bridges, W. and S. Bridges (2017). Managing transitions: Making the most of change, Da Capo Press.

Britton, P. C., et al. (2015). "Comorbid depression and alcohol use disorders and prospective risk for suicide attempt in the year following inpatient hospitalization." Journal of Affective Disorders **187**: 151-155.

Brodsky, B. S. (2016). "Early childhood environment and genetic interactions: the diathesis for suicidal behavior." Current Psychiatry Reports **18**(9): 86.

Brown, C. J. (2013). "Fifty shades of grey: Officer culture in the Australian Army." Culture **10**(3): 244.

Brown, M. Z., et al. (2002). "Reasons for suicide attempts and nonsuicidal self-injury in women with borderline personality disorder." Journal of abnormal psychology **111**(1): 198.

Bruce, M. L. (2010). "Suicide risk and prevention in veteran populations." Annals of the New York Academy of Sciences **1208**(1): 98-103.

Brunger, H., et al. (2013). ""No man's land": the transition to civilian life." Journal of Aggression, Conflict and Peace Research **5**(2): 86-100.

Bryan, A. O., et al. (2014). "Moral injury, suicidal ideation, and suicide attempts in a military sample." Traumatology **20**(3): 154.

Bryan, A. O., et al. (2015). "Self-forgiveness, posttraumatic stress, and suicide attempts among military personnel and veterans." Traumatology **21**(1): 40.

Bryan, C. and A. Bryan (2014). "Nonsuicidal self-injury among a sample of united states military personnel and veterans enrolled in college classes." Journal of clinical psychology **70**(9): 874-885.

Bryan, C. J., et al. (2015). "Trajectories of Suicide Ideation, Nonsuicidal Self-Injury, and Suicide Attempts in a Nonclinical Sample of Military Personnel and Veterans." Suicide and Life-Threatening Behavior **45**(3): 315-325.

Bryan, C. J., et al. (2015). "Combat Exposure and Risk for Suicidal Thoughts and Behaviors Among Military Personnel and Veterans: A Systematic Review and Meta-Analysis." Suicide and Life-Threatening Behavior **45**(5): 633-649.

Bryan, C. J., et al. (2013). "Guilt, shame, and suicidal ideation in a military outpatient clinical sample." Depression and anxiety **30**(1): 55-60.

Bryan, C. J., et al. (2013). "Guilt is more strongly associated with suicidal ideation among military personnel with direct combat exposure." Journal of Affective Disorders **148**(1): 37-41.

Bryan, C. J., et al. (2013). "Shame, pride, and suicidal ideation in a military clinical sample." Journal of Affective Disorders **147**(1): 212-216.

Bryan, C. J., et al. (2015). "Guilt as a mediator of the relationship between depression and posttraumatic stress with suicide ideation in two samples of military personnel and veterans." International Journal of Cognitive Therapy **8**(2): 143-155.

Bryan, C. J., et al. (2015). "Nonsuicidal self-injury as a prospective predictor of suicide attempts in a clinical sample of military personnel." Comprehensive psychiatry **59**: 1-7.

Bull, S., et al. (2015). "Medical and Welfare Officers beliefs about post-deployment screening for mental health disorders in the UK Armed Forces: a qualitative study." BMC Public Health **15**(1): 1.

Burns, J. and M. Blanchard (2014). International Literature Review on Mental Wellbeing & Resilience Relating to Young People and Communities: A report to VicHealth. Melbourne, Young and Well CRC.

Burns, J. and J. Grey (2016). Research Methodology to Measure the DVA's Online Mental Health Resources. Melbourne, Young and Well CRC.

Burns, J., et al. (2015). Future Proofing: The role of technologies in supporting the mental health and wellbeing of veterans. Abbotsford, Melbourne, Young and Well CRC.

Burón, P., et al. (2016). "Reasons for attempted suicide in Europe: prevalence, associated factors, and risk of repetition." Archives of Suicide Research **20**(1): 45-58.

Cabrera, O. A., et al. (2007). "Childhood adversity and combat as predictors of depression and post-traumatic stress in deployed troops." American journal of preventive medicine **33**(2): 77-82.

Caldbick, S., et al. (2014). "Globalization and the rise of precarious employment: the new frontier for workplace health promotion." Global health promotion **21**(2): 23-31.

Caldwell, T. M., et al. (2004). "Suicide and mental health in rural, remote and metropolitan areas in Australia." Medical Journal of Australia **181**(7): S10.

Campbell, A., et al. (2016). "Rising Indigenous suicide rates in Kimberley and implications for suicide prevention." Australasian Psychiatry **24**(6): 561-564.

Cantor, C. and K. Neulinger (2000). "The epidemiology of suicide and attempted suicide among young Australians." Australian and New Zealand Journal of Psychiatry **34**(3): 370-387.

Capoccia, L. and M. Labre (2015). Caring for Adult Patients With Suicide Risk: A Consensus-Based Guide for Emergency Departments. Education Development Center, Inc,. Waltham, MA, Suicide Prevention Resource Center.

Carli, V. (2015). "Identifying inmates that will actually die by suicide." Evidence Based Mental Health **18**(1): 13-13.

Carlier, I. V., et al. (2016). "Characteristics of suicidal outpatients with mood, anxiety and somatoform disorders: The role of childhood abuse and neglect." International Journal of Social Psychiatry **62**(4): 316-326.

Carter, G. L., et al. (2005). "Postcards from the EDge project: randomised controlled trial of an intervention using postcards to reduce repetition of hospital treated deliberate self poisoning." Bmj **331**(7520): 805.

Carver, C. S. (1998). "Resilience and thriving: Issues, models, and linkages." Journal of Social Issues **54**(2): 245-266.

Carver, C. S. (1999). Optimism. Coping: The psychology of what works. C. Snyder. New York, Oxford University Press.

Casey, P. and S. Bailey (2011). "Adjustment disorders: the state of the art." World Psychiatry **10**(1): 11-18.

Castro, C. A. and S. Kintzle (2014). "Suicides in the Military: The Post-Modern Combat Veteran and the Hemingway Effect." Current Psychiatry Reports **16**(8): 460.

Centers for Disease Control and Prevention (2016). "Injury Prevention and Control." Retrieved November 20, 2016, from https://www.cdc.gov/violenceprevention/suicide/prevention.html.

Centre, S. P. R. (2015). Caring for adult patients with suicide risk: A consensus guide for emergency departments. Waltham, MA, SPRC.

Centres for Disease Control and Injury Prevention (2016). "About the CDC-Kaiser ACE Study." Retrieved Novermber 24, 2016, from https://www.cdc.gov/violenceprevention/acestudy/about.html.

Cerel, J., et al. (2006). "Consumer and family experiences in the emergency department following a suicide attempt." Journal of Psychiatric Practice® **12**(6): 341-347.

Cerel, J., et al. (2008). "The impact of suicide on the family." Crisis **29**(1): 38-44.

Chan, M. K. Y., et al. (2016). "Predicting suicide following self-harm: A systematic review of risk factors and risk scales." British Journal of Psychiatry **209**(4): 277-283.

Chang, S.-S., et al. (2013). "Impact of 2008 global economic crisis on suicide: time trend study in 54 countries." British Medical Journal **347**.

Chen, J., et al. (2012). "Recession, unemployment, and suicide in Japan." Japan Labor Review **9**(2): 75-92.

Christensen, H. (2016). "Suicide prevention in Australia: Where to from here." InPsych: The Bulletin of the Australian Psychological Society Ltd **38**(1): 8.

Coll, J. E., et al. (2011). "No one leaves unchanged: Insights for civilian mental health care professionals into the military experience and culture." Social work in health care **50**(7): 487-500.

Collin, P. and T. Swist (2016). "From products to publics? The potential of participatory design for research on youth, safety and well-being." Journal of Youth Studies **19**(3): 305-318.

Comans, T., et al. (2013). "Cost effectiveness of a community-based crisis intervention program for people bereaved by suicide." Crisis **34**: 390-397.

Comiford, A. L., et al. (2016). "Predictors of intimate partner problem-related suicides among suicide decedents in Kentucky." Journal of injury & violence research **8**(2).

Connecting for Life: Ireland's National Strategy to Reduce Suicide (2015). Department of Health.

Conway, T. L., et al. (2016). "Treatment of mental or physical health problems in a combat zone: comparisons of postdeployment mental health and early separation from service." Journal of traumatic stress **29**(2): 149-157.

Coope, C., et al. (2015). "Characteristics of people dying by suicide after job loss, financial difficulties and other economic stressors during a period of recession (2010–2011): A review of coroners' records." Journal of Affective Disorders **183**: 98-105.

Corcoran, P., et al. (2015). "Impact of the economic recession and subsequent austerity on suicide and self-harm in Ireland: an interrupted time series analysis." International journal of epidemiology **44**(3): 969-977.

Cornum, R., et al. (2011). "Comprehensive soldier fitness: building resilience in a challenging institutional context." American Psychologist **66**(1): 4.

Corrigan, P. (2004). "How stigma interferes with mental health care." American Psychologist **59**(7): 614.

Cowan, W. M. and E. R. Kandel (2001). "Prospects for Neurology and Psychiatry." Journal of the American Medical Association **285**(5): 594-600.

Crawford, A. (2015). "A National Suicide Prevention Strategy for Canadians—From Research to Policy and Practice." Canadian journal of psychiatry. Revue canadienne de psychiatrie **60**(6): 239.

Darvishi, N., et al. (2015). "Alcohol-related risk of suicidal ideation, suicide attempt, and completed suicide: a meta-analysis." PLoS One **10**(5): e0126870.

De Leo, D. (2004). Suicide in Australia: What we know and are seeking to discover. Canberra, Commonwealth of Australia.

De Leo, D., et al. (2010). "Achieving standardised reporting of suicide in Australia: rationale and program for change." Medical Journal of Australia **192**(8): 452-456.

De Leo, D. and J. Sveticic (2010). Suicide in Queensland 2005-2007: Mortality rates and related data. A report to Queensland Health. Brisbane, Queensland, Australian Institute for Suicide Research and Prevention.

DeLisi, M. and M. G. Vaughn (2015). "The vindication of Lamarck? Epigenetics at the intersection of law and mental health." Behavioral sciences & the law **33**(5): 607-628.

Denneson, L. M., et al. (2010). "Suicide risk assessment and content of VA health care contacts before suicide completion by veterans in Oregon." Psychiatric Services **61**(12): 1192-1197.

Department of Defence (2016). "Moving back to civilian life." Retrieved Novermber 14, 2016, from http://www.defence.gov.au/DCO/Moving_back_into_civilian_life.htm.

Department of Defense (2015). Suicide Event Report - Calendar Year 2014 Annual Report. Washington, DC, Department of Defense.

Department of Health (2010). A systematic evidence review for the Clinical practice guidelines for emergency departments and mental health services project. Melbourne, Victoria, Government of Victoria.

Department of Health and Ageing (2008). LiFE: A framework for prevention of suicide in Australia. Canberra, Commonwealth of Australia.

Department of Health and Human Services (2016). Tasmanian Suicide Prevention Strategy (2016-2020): Working together to prevent suicide. Hobart, Tasmania, Tasmanian Government.

Department of Veteran Affairs (2015). Technical Report: Australian Gulf War Veterans' Follow Up Health Study. Canberra, Department of Veteran Affairs.

Dillon, L., et al. (2015). Suicide prevention: An evidence review 2015. Dublin, Health Research Board.

Dobscha, S. K., et al. (2013). "Brief assessment for suicidal ideation in OEF/OIF veterans with positive depression screens." General Hospital Psychiatry **35**(3): 272-278.

Doessel, D., et al. (2009). "The appropriate measure of suicide for policy analysis: a comparison of headcount and PYLL rates in Australia 1907–2005." Archives of Suicide Research **13**(1): 87-99.

Doessel, D. P., et al. (2009). "A Reassessment of Suicide Measurement: Some Comparative PYLL-Based Trends in Queensland, Australia, 1920–2005." Crisis **30**(1): 6-12.

Dokoupil, T. (2012). A new theory of PTSD and veterans: moral injury. The Daily Beast.

Donoghue, J. (2015). "Homeless Australian veterans." Parity **28**(6): 29.

Du Roscoät, E. and F. Beck (2013). "Efficient interventions on suicide prevention: a literature review." Revue d'epidemiologie et de sante publique **61**(4): 363-374.

Dube, S. R., et al. (2001). "Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study." JAMA **286**(24): 3089-3096.

Dufort, M., et al. (2015). "Physical domestic violence exposure is highly associated with suicidal attempts in both women and men. Results from the national public health survey in Sweden." The European Journal of Public Health **25**(3): 413-418.

Dunt, D. (2009). Review of mental heath care in the ADF and transition through discharge, Australian Government: Department of Veteran Affairs.

Dunt, D. R. (2009). Independent study into suicide in the ex-service community, Dunt Health Evaluation Services.

Durkheim, E. (1897). Suicide: A sociological study. Paris, Alcan.

Edith Cowan University (2012). Life Suicide Prevention Strategy Research report. Western Australia, Sellenger Centre for Research in law, Justice and Social Change, Construction Site Employees.

Eggertson, L. (2015). "Canada lacks national suicide prevention strategy." The Lancet **385**(9987): 2562-2563.

Erlich, M. D. (2016). "Envisioning zero suicide." Psychiatric Services **67**(3): 255-255.

Ewing, J. (2016). Consultation with Queensland Neuropsychology. J. Mendoza.

Fairweather-Schmidt, A. K., et al. (2012). Suicidality in the Australian Defence Force: Results from the 2010 ADF Mental Health Prevalence and Wellbeing Dataset - Report for Joint Health Command. Canberra, Department of Defence.

Ferguson, M., et al. (2016). "Understanding suicide among aboriginal communities." Australian nursing and midwifery journal **23**(8): 36.

Fergusson, D., et al. (2005). "Association between suicide attempts and selective serotonin reuptake inhibitors: systematic review of randomised controlled trials." Bmj **330**(7488): 396.

Fishbain, D. A. (1999). The association of chronic pain and suicide. Seminars in clinical neuropsychiatry.

Flamenbaum, R. and R. R. Holden (2007). "Psychache as a mediator in the relationship between perfectionism and suicidality." Journal of Counseling Psychology **54**(1): 51.

Flatau, P., et al. (2015). "The Australian youth homeless experience: Evidence from a longitudinal survey of homeless youth." Parity **28**(3): 4.

Flett, G. L., et al. (2016). Perfectionism, worry, and rumination in health and mental health: A review and a conceptual framework for a cognitive theory of perfectionism. Perfectionism, health, and well-being, Springer**:** 121-155.

Fliege, H., et al. (2009). "Risk factors and correlates of deliberate self-harm behavior: A systematic review." Journal of psychosomatic research **66**(6): 477-493.

Foot, J. (2012). "What makes us healthy: The asset approach in practice: evidence, action, evaluation." Retrieved November 23, 2016, from http://www.thinklocalactpersonal.org.uk/_assets/Resources/BCC/Evidence/what_makes_us_healthy.pdf.

Franklin, J. C., et al. (2016). "Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research." Psychological Bulletin **143**(2): 187-232.

Franklin, K. (2016). Department of Defense Quarterly Suicide Report. Washington, DC, Department of Defense.

Frey, L. M., et al. (2016). "An Interpretive Phenomenological Inquiry of Family and Friend Reactions to Suicide Disclosure." Journal of Marital and Family Therapy **43**(1): 159-172.

Friedkin, N. E. (2004). "Social cohesion." Annu. Rev. Sociol. **30**: 409-425.

Friedkin, N. E. (2004). "Social Cohesion." Annual Review of Sociology **30**: 409-425.

Fu, Q., et al. (2002). "A twin study of genetic and environmental influences on suicidality in men." Psychological medicine **32**(1): 11.

Fuller, A. (1998). From surviving to thriving: Promoting mental health in young people, Australian Council for Educational Research.

Fuller-Thomson, E., et al. (2016). "Arthritis and suicide attempts: findings from a large nationally representative Canadian survey." Rheumatology international **36**(9): 1237-1248.

Fuller-Thomson, E., et al. (2016). "The association between adverse childhood experiences (ACEs) and suicide attempts in a population-based study." Child: Care, Health and Development **42**(5): 725-734.

Galdas, P. M., et al. (2005). "Men and health help-seeking behaviour: literature review." Journal of advanced nursing **49**(6): 616-623.

Gale, T. and S. Parker (2011). Good practice report: Student transition into higher education. NSW, Australian Learning and Teaching Council.

Ganzini, L., et al. (2013). "Trust is the basis for effective suicide risk screening and assessment in veterans." Journal of general internal medicine **28**(9): 1215-1221.

Gates, M. A., et al. (2012). "Posttraumatic stress disorder in veterans and military personnel: Epidemiology, screening, and case recognition." Psychological services **9**(4): 361.

Gaziano, J. M., et al. (2015). "Epidemiologic approaches to veterans' health." Epidemiologic Reviews **37**(1): 1-6.

Gilbert, J. H., et al. (2010). "A WHO report: framework for action on interprofessional education and collaborative practice." Journal of Allied Health **39**(3): 196-197.

Gisler, K. and N. Sadler (2000). "Suicide in the ADF (1985-2000)." Australian Military Medicine **9**(3): 138-142.

Glowinski, A. L., et al. (2001). "Suicide attempts in an adolescent female twin sample." Journal of the American Academy of Child & Adolescent Psychiatry **40**(11): 1300-1307.

Goldsmith, S., et al. (2002). "Reducing Suicide: A National Imperative (Committee on Pathophysiology and Prevention of Adolescent and Adult Suicide, Board on Neuroscience and Behavioral Health, Institute of Medicine of the National Academies)." National Academy of Sciences.

Goldstein, G., et al. (2012). "Medical, psychiatric and demographic factors associated with suicidal behavior in homeless veterans." Psychiatry Research **199**(1): 37-43.

Gordana, D. J. and P. Milivoje (2007). "Suicide prevention program in the Army of Serbia and Montenegro." Military medicine **172**(5): 551-555.

Gradus, J. L., et al. (2013). "Suicide Attempts and Suicide among Marines: A Decade of Follow-up." Suicide and Life-Threatening Behavior **43**(1): 39-49.

Gradus, J. L., et al. (2013). "Treatment of posttraumatic stress disorder reduces suicidal ideation." Depression and anxiety **30**(10): 1046-1053.

Gratz, K. L. (2003). "Risk factors for and functions of deliberate self-harm: An empirical and conceptual review." Clinical Psychology: Science and Practice **10**(2): 192-205.

Greden, J. F., et al. (2010). "Buddy-to-Buddy, a citizen soldier peer support program to counteract stigma, PTSD, depression, and suicide." Annals of the New York Academy of Sciences **1208**(1): 90-97.

Green, G., et al. (2010). "Exploring the ambiguities of masculinity in accounts of emotional distress in the military among young ex-servicemen." Social science & medicine **71**(8): 1480-1488.

Greenberg, N., et al. (2007). "Peer responses to perceived stress in the Royal Navy." Occupational medicine **57**(6): 424-429.

Griffith, J. and C. West (2013). "Master resilience training and its relationship to individual well-being and stress buffering among Army National Guard soldiers." The journal of behavioral health services & research **40**(2): 140-155.

Grigg, K. and J. R. Ogloff (2016). "Considerations for suicide prevention in Australia's prisons." InPsych: The Bulletin of the Australian Psychological Society Ltd **38**(1): 13.

Gullestrup, J., et al. (2011). "MATES in construction: impact of a multimodal, community-based program for suicide prevention in the construction industry." International journal of environmental research and public health **8**(11): 4180-4196.

Gunderson, J. G. (2009). Borderline personality disorder: A clinical guide, American Psychiatric Pub.

Gunnell, D. and S. Frankel (1994). "Prevention of suicide: aspirations and evidence." BMJ: British Medical Journal **308**(6938): 1227.

Gusmão, R., et al. (2013). "Antidepressant utilization and suicide in Europe: an ecological multi-national study." PLoS One **8**(6): e66455.

Hagen, P., et al. (2012). Participatory Design of evidence-based online youth mental health promotion, intervention and treatment. Melbourne, Young and Well Cooperative Research Centre.

Hamilton, J. (2013). The Price of Valour. Australia, Pan Macmillan Australia.

Hanschmidt, F., et al. (2016). "The Stigma of Suicide Survivorship and Related Consequences—A Systematic Review." PLoS One **11**(9): e0162688.

Harrell, M. C. and N. Berglass (2011). Losing the battle: The challenge of military suicide, Center for a New American Security Washington, DC:.

Harris, K., et al. (2013). "Military retirement: Reflections from former members of special operations forces." Australian Army Journal **10**(3): 97.

Harris, M. and R. Baba (2012). "Increasing numbers of suicide within the Army has been a growing problem for the last ten years paralleling the Wars in Iraq and Afghanistan." Military medicine **177**(5): i-i.

Harris, M., et al. (2013). Thriving in transition: A model for student support in the transition to Australian higher education. Tasmania, Office for Learning and Teaching, University of Tasmania.

Harris, M., et al. (2012). "Thriving in the challenge of geographical dislocation: A case study of elite Australian footballers." International Journal of Sports Science **2**(5): 51-60.

Hassanian-Moghaddam, H., et al. (2011). "Postcards in Persia: randomised controlled trial to reduce suicidal behaviours 12 months after hospital-treated self-poisoning." The British Journal of Psychiatry **198**(4): 309-316.

Hatch, S. L., et al. (2013). "Life in and after the Armed Forces: social networks and mental health in the UK military." Sociology of Health & Illness **35**(7): 1045-1064.

Hatcher, S. (2016). "Indigenous suicide: a global perspective with a New Zealand focus." The Canadian Journal of Psychiatry **61**(11): 684-687.

Haw, C. and K. Hawton (2015). "Suicide is a complex behaviour in which mental disorder usually plays a central role." Australian and New Zealand Journal of Psychiatry **49**(1): 13-15.

Hawthorne, G., et al. (2014). Australian peacekeepers: Long-term mental health status, health service use, and quality of life. Department of Psychiatry, University of Melbourne, Australia.

Hawton, K., et al. (2003). "Suicide following deliberate self-harm: long-term follow-up of patients who presented to a general hospital." The British Journal of Psychiatry **182**(6): 537-542.

Health Canada (2016). "First Nation & Inuit Health." Retrieved Novermber 24, 2016, from http://www.hc-sc.gc.ca/fniah-spnia/promotion/suicide/index-eng.php.

Hegerl, U., et al. (2013). "Fast versus slow onset of depressive episodes: A clinical criterion for subtyping patients with major depression." European Psychiatry **28**(5): 288-292.

Hegerl, U., et al. (2013). "Alliances against depression - A community based approach to target depression and to prevent suicidal behavior." Neuroscience Behavioural Review **37**(10): 2404-2409.

Hegerl, U., et al. (2009). "Optimizing suicide prevention programs and their implementation in Europe (OSPI Europe): an evidence-based multi-level approach." BMC Public Health **9**(1): 428.

Heller, T. S., et al. (2007). "Correlates of suicide in building industry workers." Archives of Suicide Research **11**(1): 105-117.

Her Majesty's Government (2012). Preventing suicide in England: A cross-government outcomes strategy to save lives. United Kingdom.

Himalaya Consulting (2016). A place to call home - a review of veteran homelessness for the RSL Queensland, Alliance of Defence Service Organisations.

Hines, L. A., et al. (2013). "Self-harm in the UK military." Occupational medicine **63**(5): 354-357.

Hofstede, G., et al. (1991). Cultures and organizations: Software of the mind (Vol. 2), Citeseer.

Hoge, C. W., et al. (2006). "Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan." JAMA **295**(9): 1023-1032.

Hollingshead, A. B. and F. C. Redlich (1958). Social class and mental illness: Community study. Hoboken, NJ, John Wiley and Sons Inc.

Holt-Lunstad, J., et al. (2015). "Loneliness and social isolation as risk factors for mortality a meta-analytic review." Perspectives on Psychological Science **10**(2): 227-237.

Hom, M. A., et al. (2016). "Limitations of a single-item assessment of suicide attempt history: Implications for standardized suicide risk assessment." Psychological Assessment **28**(8): 1026.

Hom, M. A., et al. (2017). "Exploring the association between exposure to suicide and suicide risk among military service members and veterans." Journal of Affective Disorders **207**: 327-335.

Horowitz, L. M., et al. (2014). "Screening youth for suicide risk in medical settings: time to ask questions." American journal of preventive medicine **47**(3): S170-S175.

Hübner-Liebermann, B., et al. (2010). "Reducing suicides through an alliance against depression?" General Hospital Psychiatry **32**(5): 514-518.

Hunter, E. and H. Milroy (2006). "Aboriginal and Torres Strait Islander suicide in context." Archives of Suicide Research **10**(2): 141-157.

Huntington, S. P. (1957). The soldier and the state: The theory and politics of civil-military relations, Harvard University Press.

Ickovics, J. R. and C. L. Park (1998). "Paradigm shift: Why a focus on health is important." Journal of Social Issues **54**(2): 237-244.

Ijadi-Maghsoodi, R., et al. (2016). "Undertsanding the unique mental health experiences and needs of homeless veteran families: A qualitative analysis." Journal of the American Academy of Child & Adolescent Psychiatry **55**(10): S233-S234.

Ikin, J. F., et al. (2010). "Comorbidity of PTSD and depression in Korean War veterans: Prevalence, predictors, and impairment." Journal of Affective Disorders **125**(1): 279-286.

Ikin, J. F., et al. (2009). "Life satisfaction and quality in Korean War veterans five decades after the war." Journal of Epidemiology and Community Health **63**(5): 359-365.

Ikin, J. F., et al. (2007). "Anxiety, post-traumatic stress disorder and depression in Korean War veterans 50 years after the war." The British Journal of Psychiatry **190**(6): 475-483.

Ilgen, M. A., et al. (2010). "Severe pain predicts greater likelihood of subsequent suicide." Suicide and Life-Threatening Behavior **40**(6): 597-608.

Insel, T. R. (2016). "Is There a Better Way to Diagnose Psychosis?" Scientific American Mind **27**(2): 20-21.

Ioannidis, J. (2016). "The Mass Production of Redundant, Misleading, and Conflicted Systematic Reviews and Meta-analyses." The Milbank Quarterly **94**(3): 485-514.

Isohookana, R., et al. (2013). "Adverse childhood experiences and suicidal behavior of adolescent psychiatric inpatients." European Child & Adolescent Psychiatry **22**(1): 13-22.

Iversen, A., et al. (2005). "'Goodbye and good luck': the mental health needs and treatment experiences of British ex-service personnel." The British Journal of Psychiatry **186**(6): 480-486.

Jobes, D., et al. (2006). "Assessing suicidal risk: clinical impressions vs. objective risk variables." Psychiatria Danubina **18**(Suppl. 1): 54-54.

John, A. (2013). "From institution to occupation: Australian Army culture in transition." Australian Army Journal **10**(3): 187.

Johnson, R. J. (2016). "A literature review of medical aspects of post-cold war UN peacekeeping operations: trends, lessons learnt, courses of action and recommendations." Journal of the Royal Army Medical Corps **162**(4): 250-255.

Johnson, S. (2013). "Crisis resolution and home treatment teams: an evolving model." Advances in psychiatric treatment **19**(2): 115-123.

Joiner, T. E., et al. (2005). "The psychology and neurobiology of suicidal behavior." Annu. Rev. Psychol. **56**: 287-314.

Jones, E., et al. (2003). "Review: Screening for vulnerability to psychological disorders in the military: an historical survey." Journal of Medical Screening **10**(1): 40-46.

Jones, N., et al. (2013). "Mental health, stigmatising beliefs, barriers to care and help-seeking in a non-deployed sample of UK Army personnel." Journal of Psychology & Psychotherapy **3**(5): 1.

Jordan, J. R. (2015). "Grief after suicide: The evolution of suicide postvention." Death, dying and bereavement: Contemporary perspectives, institutions and practices: 349-362.

Juhnke, G., et al. (2007). IS PATH WARM? A suicide assessment mnemonic for counselors (ACAPCD-03). Alexandria, VA: American Counseling Association.

Kang, H. and T. Bullman (2008). "Risk of suicide among US Veterans after returning from the Iraq or Afghanistan war zones." Journal of the American Medical Association **300**(6): 652-653.

Kang, H. and T. Bullman (2010). The risk of suicide among US war veterans: Vietnam War to Operation Iraqi Freedom. Presentation at the 2nd Annual Departments of Defense (DoD) and Veterans Affairs (VA) joint Suicide Prevention Conference, Washington, DC.

Kang, H. K., et al. (2015). "Suicide risk among 1.3 million veterans who were on active duty during the Iraq and Afghanistan wars." Annals of epidemiology **25**(2): 96-100.

Kaplan, M. S., et al. (2007). "Suicide among male veterans: a prospective population-based study." Journal of Epidemiology and Community Health **61**(7): 619-624.

Kaplan, M. S., et al. (2009). "Firearm suicide among veterans in the general population: findings from the national violent death reporting system." Journal of Trauma and Acute Care Surgery **67**(3): 503-507.

Kaplan, M. S., et al. (2012). "Suicide risk and precipitating circumstances among young, middle-aged, and older male veterans." American Journal of Public Health **102**(S1): S131-S137.

Kapur, N., et al. (2016). "Mental health service changes, organisational factors, and patient suicide in England in 1997–2012: a before-and-after study." The Lancet Psychiatry **3**(6): 526-534.

Kapur, N., et al. (2009). "Suicide after leaving the UK Armed Forces—A cohort study." PLoS Med **6**(3): e1000026.

Karatsoreos, I. N. and B. S. McEwen (2013). "Annual research review: the neurobiology and physiology of resilience and adaptation across the life course." Journal of child psychology and psychiatry **54**(4): 337-347.

Karekla, M. and G. Panayiotou (2011). "Coping and experiential avoidance: Unique or overlapping constructs?" Journal of Behavior Therapy and Experimental Psychiatry **42**(2): 163-170.

Karklins, L. and J. Mendoza (2016). Literature Review: Architects and mental health. Prepared for the NSW Architects Registration Board. Caloundra, Qld, ConNetica.

Katz, C., et al. (2016). "The prevalence rates of suicide are likely underestimated worldwide: why it matters." Social psychiatry and psychiatric epidemiology **51**(1): 125-127.

Kawachi, I. and L. F. Berkman (2001). "Social ties and mental health." Journal of Urban health **78**(3): 458-467.

Kelly, U. A., et al. (2011). "More than military sexual trauma: interpersonal violence, PTSD, and mental health in women veterans." Research in nursing & health **34**(6): 457-467.

Kelty, R., et al. (2010). "The military and the transition to adulthood." The Future of Children **20**(1): 181-207.

Kessler, R., et al. (2016). "Predicting suicides after outpatient mental health visits in the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)." Molecular psychiatry.

Kessler, R. C., et al. (2001). "The prevalence and correlates of untreated serious mental illness." Health services research **36**(6): 987.

Kessler, R. C., et al. (1994). "Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey." Archives of General Psychiatry **51**(1): 8-19.

Kessler, R. C., et al. (2015). "Predicting US Army suicides after hospitalizations with psychiatric diagnoses in the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)." JAMA psychiatry **72**(1): 49.

Keyes, C. L. (2007). "Promoting and protecting mental health as flourishing: a complementary strategy for improving national mental health." American Psychologist 62(2): 95.

Kilham, W. (2003). The Department of Veterans' Affairs mental health strategy and 'veterans at risk. 3rd National Homelessness Conference. Brisbane, Queensland.

Kim, T. J. and O. von dem Knesebeck (2015). "Is an insecure job better for health than having no job at all? A systematic review of studies investigating the health-related risks of both job insecurity and unemployment." BMC Public Health 15(1): 985.

Kimura, T., et al. (2016). "Educational Levels and Risk of Suicide in Japan: The Japan Public Health Center Study (JPHC) Cohort I." Journal of epidemiology 26(6): 315-321.

King, A. (2006). "Towards a European military culture?" Defence studies 6(3): 257-277.

Kirke, C. (2009). "Group cohesion, culture, and practice." Armed Forces & Society 35(4): 745-753.

Klonsky, E. D. (2007). "The functions of deliberate self-injury: A review of the evidence." Clinical psychology review 27(2): 226-239.

Klonsky, E. D. and A. M. May (2015). "The three-step theory (3ST): A new theory of suicide rooted in the "ideation-to-action" framework." International Journal of Cognitive Therapy 8(2): 114-129.

Klonsky, E. D., et al. (2016). "Suicide, suicide attempts, and suicidal ideation." Annual review of clinical psychology 12: 307-330.

Klonsky, E. D., et al. (2003). "Deliberate self-harm in a nonclinical population: Prevalence and psychological correlates." American Journal of Psychiatry 160(8): 1501-1508.

Knox, K. L., et al. (2003). "Risk of suicide and related adverse outcomes after exposure to a suicide prevention programme in the US Air Force: cohort study." Bmj 327(7428): 1376.

Knox, K. L., et al. (2010). "The US Air Force suicide prevention program: implications for public health policy." American Journal of Public Health 100(12): 2457-2463.

Kristman, V. L., et al. (2014). "Methodological issues and research recommendations for prognosis after mild traumatic brain injury: results of the International Collaboration on Mild Traumatic Brain Injury Prognosis." Archives of physical medicine and rehabilitation 95(3): S265-S277.

Kuehn, B. M. (2009). "Soldier suicide rates continue to rise." JAMA 301(11): 1111-1113.

Kuehner, C. A. (2013). "My military: a navy nurse practitioner's perspective on military culture and joining forces for veteran health." Journal of the American Academy of Nurse Practitioners 25(2): 77-83.

Kuipers, P., et al. (2016). "Front-line worker perspectives on Indigenous youth suicide in Central Australia: initial treatment and response." Advances in Mental Health 14(2): 106-117.

Langhinrichsen-Rohling, J., et al. (2011). "Risk for suicidal ideation in the US Air Force: an ecological perspective." Journal of consulting and clinical psychology 79(5): 600.

Langner, T. S. and S. T. Michael (1963). Life stress and mental health: II. The midtown Manhattan study. Oxford, England, Free Press Glencoe.

Large, M. M. and O. B. Nielssen (2009). "Untreated psychotic illness in the survivors of violent suicide attempts." Early Intervention in Psychiatry 3(2): 116-122.

Large, M. M. and C. J. Ryan (2014). "Suicide risk categorisation of psychiatric inpatients: what it might mean and why it is of no use." Australasian Psychiatry 22(4).

Larsen, M. E., et al. (2016). "A Systematic Assessment of Smartphone Tools for Suicide Prevention." PLoS One 11(4): e0152285.

Leahy, P. (2013). "Australian Army Journal: Culture Edition." Australian Army Journal.

Lee, J. E., et al. (2016). "Psychosocial pathways linking adverse childhood experiences to mental health in recently deployed Canadian military service members." Journal of traumatic stress **29**(2).

Leenaars, A. A. and E. S. Shneidman (1999). Lives and deaths: Selections from the works of Edwin S. Shneidman, Psychology Press.

LeFevre, M. L. (2014). "Screening for suicide risk in adolescents, adults, and older adults in primary care: US Preventive Services Task Force recommendation statement." Annals of internal medicine **160**(10): 719-726.

Lehrner, A. and R. Yehuda (2014). "Biomarkers of PTSD: military applications and considerations." European journal of psychotraumatology **5**: 1-11.

Lester, P., et al. (2011). The Comprehensive Soldier Fitness Program Evaluation. Report 3: Longitudinal Analysis of the Impact of Master Resilience Training on Self-Reported Resilience and Psychological Health Data. United States, Department of the Army.

Lester, P., et al. (2012). "Evaluation of a family-centered prevention intervention for military children and families facing wartime deployments." American Journal of Public Health **102**(S1): S48-S54.

Li, B., et al. (2011). "Longitudinal health study of US 1991 Gulf War veterans: changes in health status at 10-year follow-up." American journal of epidemiology **174**(7): 761-768.

Liacos, G. and R. Feder (2015). Measuring the DVA's Online Mental Health Resources. Melbourne, Young and Well CRC.

Lin, E. and S.-J. Tsai (2016). Genetics and Suicide. Understanding Suicide, Springer**:** 85-95.

Lineberry, T. W. and S. S. O'connor (2012). Suicide in the US Army. Mayo Clinic Proceedings, Elsevier.

Linehan, M. (1993). Cognitive-behavioral treatment of borderline personality disorder, Guilford press.

Litz, B. T., et al. (1997). "Posttraumatic stress disorder associated with peacekeeping duty in Somalia for US military personnel." American Journal of Psychiatry **154**(2): 178-184.

Litz, B. T., et al. (2009). "Moral injury and moral repair in war veterans: A preliminary model and intervention strategy." Clinical psychology review **29**(8): 695-706.

Logan, J., et al. (2016). "Suicidal ideation among young Afghanistan/Iraq War Veterans and civilians: Individual, social, and environmental risk factors and perception of unmet mental healthcare needs, United States, 2013." Psychiatry Research **245**: 398-405.

Logan, J. E., et al. (2015). "Precipitating circumstances of suicide among active duty US Army personnel versus US civilians, 2005–2010." Suicide and Life-Threatening Behavior **45**(1): 65-77.

Looi, J. C. (2016). "Neuropsychiatry: a synthesis of clinical and scientific fields for disorders of mind and body." Australasian Psychiatry **24**(6): 523-524.

Lorant, V., et al. (2003). "Socio-economic differences in psychiatric in-patient care." Acta Psychiatrica Scandinavica **107**(3): 170-177.

Luo, F., et al. (2011). "Impact of business cycles on US suicide rates, 1928–2007." American Journal of Public Health **101**(6): 1139-1146.

Luxton, D. D., et al. (2013). "Suicide risk among US Service members after psychiatric hospitalization, 2001–2011." Psychiatric Services **64**(7): 626-629.

Macarthur Foundation Network on Mental Health Policy Research (2007). Development and process for the New Mexico Behavioural Health Local Collaboratives: Improvements, impediments and opportunities.

MacLean, M. B., et al. (2010). Life After Service Study: Data Collection Methodology for the Income Study and the Transition to Civilian Life Surveys. Ottowa, Canada, Research Directorate, Veterans Affairs Canada/Director General, Military Personnel Research and Analysis, Department of National Defence.

Macmanus, D. and S. Wessely (2013). Veteran mental health services in the UK: Are we headed in the right direction?, Taylor & Francis.

Magruder, K. M., et al. (2016). "Prevention and public health approaches to trauma and traumatic stress: a rationale and a call to action." European journal of psychotraumatology **7**: 1-9.

Mann, J. J., et al. (2005). "Suicide prevention strategies: a systematic review." JAMA **294**(16): 2064-2074.

Mann, J. J., et al. (1999). "Toward a clinical model of suicidal behavior in psychiatric patients." American Journal of Psychiatry **156**(2): 181-189.

Mansfield, A. J., et al. (2011). "Suicidal or self-harming ideation in military personnel transitioning to civilian life." Suicide and Life-Threatening Behavior **41**(4): 392-405.

Marmot, M. (2005). "Social determinants of health inequalities." The Lancet **365**(9464): 1099-1104.

Martin, G. and A. Page (2009). National Suicide Prevention Strategies: A Comparison. Brisbane, Queensland, Centre for Suicide Prevention Studies, Discipline of Psychiatry.

Masters, C. (2012). Uncommon Soldier. Australia, Allen & unwin.

Matarazzo, B. B., et al. (2013). "The Self-Directed Violence Classification System and the Columbia Classification Algorithm for Suicide Assessment: A Crosswalk." Suicide and Life-Threatening Behavior **43**(3): 235-249.

Matsubayashi, T. and M. Ueda (2011). "The effect of national suicide prevention programs on suicide rates in 21 OECD nations." Social science & medicine **73**(9): 1395-1400.

Matthieu, M. M., et al. (2014). "Using a service sector segmented approach to identify community stakeholders who can improve access to suicide prevention services for veterans." Military medicine **179**(4): 388-395.

McClymans, S. (2016). "Understanding Australian Military Culture." Retrieved October 24, 2016, from http://survivor.org.au/news/understanding-military-culture/.

McFarlane, A. (2010). Submission to the inquiry into the care of ADF personnel wounded and injured on operations. Canberra, Joint Standing Committee on Foreign Affairs and Defence and Trade.

McFarlane, A. (2016). "Accountability for the Psychological Costs of Military Service A Benchmark Set by the Canadian Armed Forces." The Canadian Journal of Psychiatry **61**(1): 7S-9S.

McFarlane, A. and S. Hodson (2010). Mental Heath of the Australian Defence Force: ADF Mental Health Prevalence and Wellbeing Study. Canberra, Department of Defence.

McGorry, P., et al. (2013). "Designing youth mental health services for the 21st century: examples from Australia, Ireland and the UK." The British Journal of Psychiatry **202**(s54): s30-s35.

McGorry, P., et al. (1998). Suicide in early psychosis: could early intervention work. Suicide prevention: The global context. J. Kosky, Plenum**:** 103-110.

McGurk, D., et al. (2006). "Joining the ranks: The role of indoctrination in transforming civilians to service members." AB Adler, CA Castro, & TW Britt (Eds.), Military life: The psychology of serving in peace and combat **2**: 13-31.

McKay, K. (2010). Suicide in veterans: a psychological autopsy study. Brisbane, Australia, Australian Institute for Suicide Research and Prevention.

McKay, K., et al. (2012). A Review of the Operation Life Suicide Awareness Workshops: Report to the Department of Veterans' Affairs. Brisbane, Australian Institute for Suicide Research and Prevention.

McLean, J., et al. (2008). Risk and protective factors for suicide and suicidal behaviour: A literature review, Scottish Government.

Meabon, J. S., et al. (2016). "Repetitive blast exposure in mice and combat veterans causes persistent cerebellar dysfunction." Science translational medicine **8**(321): 321ra326-321ra326.

Meleis, A. I., et al. (2000). "Experiencing transitions: an emerging middle-range theory." Advances in Nursing Science **23**(1): 12-28.

Mendoza, J. (2001). "The war on drugs in sport: a perspective from the front-line." Cinical Journal of Sports Medicine **12**(4).

Mendoza, J., et al. (2016). The Integrated Mental Health Atlas of Brisbane North, ConNetica and Mental Health Policy Unit, Brain and Mind Centre, University of Sydney.

Mendoza, J., et al. (2010). Suicide and Suicide Prevention in Australia: Breaking the Silence. Caloundra, QLD, ConNetica Consulting.

Mental Health Psychology and Rehabilitation (MHP&R) Branch of Joint Health Command (2012). ADF Mental Health and Wellbeing Plan 2012-2015. Canberra, Australian Defence Force.

Mercier, G. and D. Saint-Laurent (1998). Help for Life. Quebec (QC), Gouvernement du Québec.

Meyer, E. G. (2015). "The importance of understanding military culture." Academic Psychiatry **39**(4): 416-418.

Michopoulos, V., et al. (2015). "Diagnostic biomarkers for posttraumatic stress disorder: promising horizons from translational neuroscience research." Biological psychiatry **78**(5): 344-353.

Milner, A., et al. (2013). "Treatment priority for suicide ideation and behaviours at an Australian emergency department." World journal of psychiatry **3**(2): 34.

Milner, A., et al. (2016). "The effectiveness of suicide prevention delivered by GPs: A systematic review and meta-analysis." Journal of Affective Disorders **210**: 294-302.

Milner, A. J., et al. (2015). "Occupational class differences in suicide: evidence of changes over time and during the global financial crisis in Australia." BMC psychiatry **15**(1): 223.

Ministry of Defence (2016). Suicide and Open Verdict Deaths in the UK Regular Armed Forces 1984-2015. Bristol, Defence Statistics (Health).

Moos, R. H. and J. A. Schaefer (1986). Life transitions and crises. Coping with life crises, Springer**: 3-28.

Morin, R. (2011). The Difficult Transition from Military to Civilian Life. Washington, DC, Pew Research Center, Social and Demographic Trends.

Mościcki, E. K. (1997). "Identification of suicide risk factors using epidemiologic studies." Psychiatric Clinics of North America **20**(3): 499-517.

Moss, A. (2012). Evaluation of the Ab Initio Officer BattleSMART Module at the RAAF Officer Training School. Canberra, Commonwealth of Australia.

Mrazek, P. and R. Haggerty (1994). Institute of Medicine Committee on Prevention of Mental Disorders. Reducing Risks for Mental Disorders: Frontiers for Preventive Intervention Research, Washington, DC: National Academies Press.

Mueller, A. S. and S. Abrutyn (2016). "Adolescents under pressure: a new Durkheimian framework for understanding adolescent suicide in a cohesive community." American Sociological Review **81**(5): 877-899.

Na, K.-S., et al. (2013). "Alexithymia and low cooperativeness are associated with suicide attempts in male military personnel with adjustment disorder: A case–control study." Psychiatry Research **205**(3): 220-226.

National Mental Health Advisory Council (2009). Fourth National Mental Health Plan—An agenda for collaborative government action in mental health 2009–2014. Canberra, Commonwealth of Australia.

National Mental Health Commission (2013). A Contributing Life: The 2013 National Report Card on Mental Health and Suicide Prevention. Canberra, Commonwealth of Australia.

National Mental Health Commission (2014). The National Review of Mental Health Programmes and Services. Sydney, NMHC.

National Office for Suicide Prevention (2015). Report from the Policy Advisory Group. Dublin, Health Service Executive.

Nazarov, A., et al. (2015). "Role of morality in the experience of guilt and shame within the armed forces." Acta Psychiatrica Scandinavica **132**(1): 4-19.

NHMRC Centre for Research Excellence in Suicide Prevention and Black Dog Institute (2015). Proposed Suicide Prevention Framework for NSW. Sydney. Sydney, NSW, Mental Health Commission of NSW.

Nicholson, N. (1987). "The transition cycle: A conceptual framework for the analysis of change and human resources management." Research in personnel and human resources management **5**: 167-222.

Nicholson, N. (1990). The transition cycle: Causes, outcomes, processes and forms. Chichester, UK, Wiley.

Nielsen, M. B. and S. Knardahl (2016). "The healthy worker effect: Do health problems predict participation rates in, and the results of, a follow-up survey?" International Archives of Occupational and Environmental Health **89**(2): 231-238.

Nixon, M. K., et al. (2002). "Affect regulation and addictive aspects of repetitive self-injury in hospitalized adolescents." Journal of the American Academy of Child & Adolescent Psychiatry **41**(11): 1333-1341.

Nock, M. K. (2016). "Recent and needed advances in the understanding, prediction, and prevention of suicidal behavior." Depression and anxiety **33**(6): 460-463.

Nock, M. K., et al. (2008). "Suicide and suicidal behavior." Epidemiologic Reviews **30**(1): 133-154.

Nock, M. K., et al. (2016). "Risk factors for suicide ideation differ from those for the transition to suicide attempt: The importance of creativity, rigor, and urgency in suicide research." Clinical Psychology: Science and Practice **23**(1): 31-34.

Noël, F., et al. (2016). "A longitudinal study of suicidal ideation among homeless, mentally ill individuals." Social psychiatry and psychiatric epidemiology **51**(1): 107-114.

O'Brien, K. J. (2011). The lived experience of PTSD for children of Australian Vietnam veterans in Australia. Creative Industries Facility. Brisbane, Queensland University of Technology. **PhD**.

O'Connor, E., et al. (2013). "Screening for and treatment of suicide risk relevant to primary care: a systematic review for the US Preventive Services Task Force." Annals of internal medicine **158**(10): 741-754.

O'Connor, M., et al. (2015). ""What can psychiatrists do to better support victims of Family violence?"." Australiasion Psychiatry **1**(4).

O'Connor, M., et al. (2015). "Constructing the Suicide Risk Index (SRI): does it work in predicting suicidal behavior in young adults mediated by proximal factors?" Archives of Suicide Research **19**(1): 1-16.

O'Connor, M., et al. (2016). Suicide, family, and domestic violence in Australian immigrant women. Australian and New Zealand Journal of Psychiatry, London, UK.

O'Donnell, M. L., et al. (2014). The Australian Defence Force Mental Health Screening Continuum Framework: Full Report. Canberra, Department of Defence.

O'Leary, V. E. (1998). "Strength in the face of adversity: Individual and social thriving." Journal of Social Issues **54**(2): 425-446.

O'Leary, V. E. and J. R. Ickovics (1994). "Resilience and thriving in response to challenge: an opportunity for a paradigm shift in women's health." Women's health (Hillsdale, NJ) **1**(2): 121-142.

O'Toole, B. I., et al. (2015). "Suicidality in Australian Vietnam veterans and their partners." Journal of psychiatric research **65**: 30-36.

O'Toole, B. I., et al. (2010). "The mental health of partners of Australian Vietnam veterans three decades after the war and its relation to veteran military service, combat, and PTSD." The Journal of nervous and mental disease **198**(11): 841-845.

O'Connor, R. C. (2011). The integrated motivational-volitional model of suicidal behavior, Hogrefe Publishing.

O'Connor, R. C. (2011). Towards an integrated motivational–volitional model of suicidal behaviour. International handbook of suicide prevention: Research, policy and practice. R. O'Connor, S. Platt and J. Gordon, Wiley-Blackwell**:** 181-198.

OECD (2013). Finland's falling mental health spending and high suicide rates concerning, says OECD.

Oexle, N., et al. (2016). "Self-stigma and suicidality: a longitudinal study." European archives of psychiatry and clinical neuroscience: 1-3.

Ono, Y., et al. (2008). "A community intervention trial of multimodal suicide prevention program in Japan: a novel multimodal community intervention program to prevent suicide and suicide attempt in Japan, NOCOMIT-J." BMC Public Health **8**(1): 315.

Oquendo, M. A., et al. (2014). "Toward a biosignature for suicide." American Journal of Psychiatry **171**(12): 1259-1277.

Owens, D., et al. (2002). "Fatal and non-fatal repetition of self-harm." The British Journal of Psychiatry **181**(3): 193-199.

Page, A., et al. (2013). "The role of under-employment and unemployment in recent birth cohort effects in Australian suicide." Social science & medicine **93**: 155-162.

Park, C. L. (1998). "Stress-related growth and thriving through coping: The roles of personality and cognitive processes." Journal of Social Issues **54**(2): 267-277.

Perl, L. (2011). Veterans and homelessness: Report for Congress. Washington, DC, Congressional Research Service.

Peters, K., et al. (2016). "'People look down on you when you tell them how he died': Qualitative insights into stigma as experienced by suicide survivors." International journal of mental health nursing.

Pettigrew, S. and R. Donovan (2009). "Older audiences responses to mental health promotion messages." Internaitonal Journal of Mental Health Promotion **11**: 23-31.

Pfeiffer, P. N., et al. (2009). "Comorbid anxiety as a suicide risk factor among depressed veterans." Depression and anxiety **26**(8): 752-757.

Pickett, K. E., et al. (2006). "Income inequality and the prevalence of mental illness: a preliminary international analysis." Journal of Epidemiology and Community Health **60**(7): 646-647.

Pietrzak, R. H., et al. (2010). "Risk and protective factors associated with suicidal ideation in veterans of Operations Enduring Freedom and Iraqi Freedom." Journal of Affective Disorders **123**(1): 102-107.

Pitman, A. L., et al. (2016). "Bereavement by suicide as a risk factor for suicide attempt: a cross-sectional national UK-wide study of 3432 young bereaved adults." BMJ open **6**(1): e009948.

Platt, S. (2000). "Suicidal Behavior and the Labour Market." The international handbook of suicide and attempted suicide: 309.

Platt, S. and K. Hawton (2000). Suicidal Behavior and the Labour Market. The international handbook of suicide and attempted suicide. K. Hawton and K. v. Heeringen. Chichester, UK, John Wiley and Sons Ltd.

Plener, P. L., et al. (2015). "The longitudinal course of non-suicidal self-injury and deliberate self-harm: a systematic review of the literature." Borderline personality disorder and emotion dysregulation **2**(1): 1.

Portes, A. and E. Vickstrom (2011). "Diversity, social capital, and cohesion." Annual Review of Sociology **37**: 461-479.

Posner, K., et al. (2011). "The Columbia–Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults." American Journal of Psychiatry **168**(12): 1266-1277.

Preti, A., et al. (2009). "Risk of suicide and suicidal ideation in psychosis: results from an Italian multi-modal pilot program on early intervention in psychosis." Schizophrenia research **113**(2): 145-150.

Queensland Mental Health Commission (2015). Early Action: Queensland Mental Health Promotion, Prevention and Early Intervention Action Plan 2015-17 Summary. Qld, Queensland Government.

Rachiotis, G., et al. (2015). "What has happened to suicides during the Greek economic crisis? Findings from an ecological study of suicides and their determinants (2003–2012)." BMJ open **5**(3): e007295.

Ramchand, R., et al. (2011). The war within: Preventing suicide in the US military, Rand Corporation.

Ramchand, R., et al. (2015). Suicide Postvention in the Department of Defense: Evidence, Policies and Procedures, and Perspectives of Loss Survivors, Rand Corporation.

Ramchand, R., et al. (2015). "Prevalence of, risk factors for, and consequences of posttraumatic stress disorder and other mental health problems in military populations deployed to Iraq and Afghanistan." Current Psychiatry Reports **17**(5): 1-11.

Ratcliffe, G. E., et al. (2008). "Chronic pain conditions and suicidal ideation and suicide attempts: an epidemiologic perspective." The Clinical journal of pain **24**(3): 204-210.

Ray, S. L. and K. Heaslip (2011). "Canadian military transitioning to civilian life: A discussion paper." Journal of Psychiatric and Mental Health Nursing **18**(3): 198-204.

Reavley, N. J. and A. F. Jorm (2011). National Survey of Mental Health Literacy and Stigma. Melbourne, university of Melbourne.

Reid, R. (2016). "'That famous army of generous men': some stories and reflections for Remembrance Day." Retrieved January 10, 2017, from http://honesthistory.net.au/wp/that-famous-army-of-generous-men-some-stories-and-reflections-for-remembrance-day/.

Reijnen, A., et al. (2015). "The effect of deployment to a combat zone on testosterone levels and the association with the development of posttraumatic stress symptoms: a longitudinal prospective Dutch military cohort study." Psychoneuroendocrinology **51**: 525-533.

Reijnen, A., et al. (2015). "Prevalence of mental health symptoms in Dutch military personnel returning from deployment to Afghanistan: a 2-year longitudinal analysis." European Psychiatry **30**(2): 341-346.

Reivich, K. J., et al. (2011). "Master resilience training in the US Army." American Psychologist **66**(1): 25.

Reme, S. E., et al. (2015). "Work-focused cognitive–behavioural therapy and individual job support to increase work participation in common mental disorders: a randomised controlled multicentre trial." Occupational and Environmental Medicine **72**(10): 745-752.

Returned Services League of Australia (2015). Mental Health of Serving ADF Personnel: Submission 19. Canberra, Australia, Foreign Affairs, Defence and Trade Committee.

Richardson, R. (2013). "Culture matters for the ADF." Retrieved Novermber 27, 2016, from https://www.aspistrategist.org.au/culture-matters-for-the-adf/.

Rijs, K. and R. Bogers (2015). Suicide mortality among deployed male military personnel compared with men who were not deployed. RIVM rapport 2015-0155, National Institute for Public Health and the Environment.

Rimkeviciene, J., et al. (2015). "Personal stigma in suicide attempters." Death studies **39**(10): 592-599.

Robinson, J., et al. (2013). "A systematic review of school-based interventions aimed at preventing, treating, and responding to suicide-related behavior in young people." Crisis **34**: 164-182.

Robinson, J., et al. (2010). "Suicide attempt in first-episode psychosis: a 7.4 year follow-up study." Schizophrenia research **116**(1): 1-8.

Rodgers, M., et al. (2016). "Integrated Care to Address the Physical Health Needs of People with Severe Mental Illness: A Rapid Review." Health Services and Delivery Research **4**(13).

Rodgers, P. (2010). Review of the Applied Suicide Intervention Skills Training Program (ASIST), Livingworks Education.

Rolland-Harris, E., et al. (2015). 2015 Report on Suicide Mortality in the Canadian Armed Forces (1995 to 2014). Canada, Her Majesty the Queen in Right of Canada.

Rona, R. J., et al. (2006). "Mental health screening in armed forces before the Iraq war and prevention of subsequent psychological morbidity: follow-up study." British Medical Journal **333**: 991.

Rona, R. J., et al. (2005). "Screening for psychological illness in military personnel." JAMA **293**(10): 1257-1260.

Ross, V., et al. (2017). "Beyond psychopathology: A case–control psychological autopsy study of young adult males." International Journal of Social Psychiatry: 0020764016688041.

Rozanov, V. and V. Carli (2012). "Suicide among war veterans." International journal of environmental research and public health **9**(7): 2504-2519.

Ryan, C. J., et al. (2015). "Assessing and managing suicidal patients in the emergency department." Australasian Psychiatry **23**(5).

Ryan, C. J. and M. M. Large (2013). "Suicide risk assessment: where are we now." Med J Aust **198**(9): 462-463.

Ryff, C. D. and B. H. Singer (2006). "Best news yet on the six-factor model of well-being." Social Science Research **35**(4): 1103-1119.

Sachs-Ericsson, N. J., et al. (2016). "In my end is my beginning: developmental trajectories of adverse childhood experiences to late-life suicide." Aging & mental health **20**(2): 139-165.

Samra, J. and D. Bilsker (2007). Working with the Suicidal Patient: A Guide for Health Care Professionals, Simon Fisher University.

SANE Australia (2014). "Research Bulletin: Emergency Services and Mental Illness." Retrieved November 24, 2016, from https://www.sane.org/images/PDFs/130611_rb17em.pdf.

Sargent, A. G. and N. K. Schlossberg (1988). "Managing adult transitions." Training & Development Journal **42**(12): 58-61.

Sartorius, N., et al. (1986). "Early manifestations and first-contact incidence of schizophrenia in different cultures: A preliminary report on the initial evaluation phase of the WHO Collaborative Study on Determinants of Outcome of Severe Mental Disorders." Psychological medicine **16**(04): 909-928.

Scarr, E. (2016). Changing attitudes to mental illness in the Australian Defence Force: a long way to go Canberra, Parliamentary Library Service.

Schein, E. H. (1985). Organisational culture and leadership: A dynamic view. San Francisco, Wiley.

Schell, T. L. and G. N. Marshall (2008). "Survey of individuals previously deployed for OEF/OIF." Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery: 87-115.

Schinka, J. A., et al. (2015). "Increased mortality among older veterans admitted to VA homelessness programs." Psychiatric Services **67**(4): 465-468.

Schlossberg, N. K. (1981). "A model for analyzing human adaptation to transition." The Counseling Psychologist **9**(2): 2-18.

Schmidt, U., et al. (2013). "Biomarkers in posttraumatic stress disorder: overview and implications for future research." Disease markers **35**(1): 43-54.

Schoenbaum, M., et al. (2009). Opportunities to Improve Interventions to Reduce Suicidality: Civilian 'Best Practices' for Army Consideration. Bethesda, Md, National Institute of Mental Health.

Schomerus, G., et al. (2015). "Collective levels of stigma and national suicide rates in 25 European countries." Epidemiology and psychiatric sciences **24**(02): 166-171.

Scott, A. and B. Guo (2012). For which strategies of suicide prevention is there evidence of effectiveness. Denmark, WHO.

Selby, E. A., et al. (2010). "Overcoming the fear of lethal injury: Evaluating suicidal behavior in the military through the lens of the Interpersonal–Psychological Theory of Suicide." Clinical psychology review **30**(3): 298-307.

Selder, F. (1989). "Life transition theory: the resolution of uncertainty." Nursing & health care: official publication of the National League for Nursing **10**(8): 437.

Shallcross, S. L., et al. (2016). "Social causation versus social erosion: comparisons of causal models for relations between support and PTSD symptoms." Journal of traumatic stress **29**(2): 167-175.

Shattell, M. M., et al. (2014). "A recovery-oriented alternative to hospital emergency departments for persons in emotional distress:"The living room"." Issues in Mental Health Nursing **35**(1): 4-12.

Shaw, T. W. (2013). The Legality and Morality of Killing in War: Just War Theory and Its Implications for Understanding the Psychological Toll of Combat. Sydney, Australia, University of Sydney. **Doctor of Philosophy**.

Shea, S. C. (2009). "Suicide assessment." Psychiatric Times **26**(12): 1-6.

Shelef, L., et al. (2014). "Characteristics of Soldiers with Self-Harm in the Israeli Defense Forces." Archives of Suicide Research **18**(4): 410-418.

Shelef, L., et al. (2016). "An effective suicide prevention program in the Israeli Defense Forces: A cohort study." European Psychiatry **31**: 37-43.

Shellenbarger, S. (2001). Impact of Colleague's Suicide Is Strongly Felt in Workplace. The Wall Street Journal. US.

Shneidman, E. S. (1993). "Commentary: Suicide as psychache." The Journal of nervous and mental disease **181**(3): 145-147.

Siebold, G. L. (2007). "The essence of military group cohesion." Armed Forces & Society **33**(2): 286-295.

Sjølie, H., et al. (2010). "Crisis resolution and home treatment: structure, process, and outcome–a literature review." Journal of Psychiatric and Mental Health Nursing **17**(10): 881-892.

Skegg, K. (2005). "Self-harm." The Lancet **366**(9495): 1471-1483.

Skinner, K. and C. Diggins (2013). "Family friendly army-first class policy, second class implementation." Australian Army Journal **10**(3): 172.

Skopp, N. A., et al. (2012). Relations between suicide and traumatic brain injury, psychiatric diagnoses, and relationship problems, active component, US Armed Forces, 2001-2009, DTIC Document.

Smith, B. W., et al. (2008). "The brief resilience scale: assessing the ability to bounce back." International journal of behavioral medicine **15**(3): 194-200.

Smith, E. G., et al. (2013). "Suicide risk assessment received prior to suicide death by Veterans Health Administration patients with a history of depression." The Journal of clinical psychiatry **74**(3): 226-232.

Sokolowski, M., et al. (2015). "Polygenic associations of neurodevelopmental genes in suicide attempt." Molecular psychiatry **21**: 1318-1390.

Soloman, P. and V. Patch (1974). Handbook of Psychiatry. Los Altos, California, Lange Medical Publications.

Spreitzer, G., et al. (2005). "A socially embedded model of thriving at work." Organization science **16**(5): 537-549.

STARRS-LS (2016). "Study to Assess Risk and Resilience in Service members." Retrieved October 18, 2016, from http://starrs-is.org/.

Stein, M. B., et al. (2015). "Prospective longitudinal evaluation of the effect of deployment-acquired traumatic brain injury on posttraumatic stress and related disorders: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)." American Journal of Psychiatry **172**(11): 1101-1111.

Stuckler, D. and S. Basu (2013). The Body Economic: Why Austerity Kills, Basic Books.

Substance Abuse and Mental Health Services Administration (2014). Crisis Services: Effectiveness, Cost- Effectiveness, and Funding Strategies. Rockville, MD, Substance Abuse and Mental Health Services Administration.

Sundararaman, R., et al. (2008). Suicide prevention among veterans. CRS Report for the US Congress, RL34471.

Suominen, K., et al. (2004). "Completed suicide after a suicide attempt: a 37-year follow-up study." American Journal of Psychiatry **161**(3): 562-563.

Sussman, D., et al. (2016). "Neuroanatomical features in soldiers with post-traumatic stress disorder." BMC neuroscience **17**(1): 13.

Sveticic, J. and D. De Leo (2012). "The hypothesis of a continuum in suicidality: a discussion on its validity and practical implications." Mental Illness **4**(2): 15.

Székely, A., et al. (2013). "How to decrease suicide rates in both genders? An effectiveness study of a community-based intervention (EAAD)." PLoS One **8**(9): e75081.

Szumilas, M. and S. Kutcher (2011). "Post-suicide intervention programs: a systematic review." Canadian Journal of Public Health/Revue Canadienne de Sante'e Publique **102**(1): 18-29.

Taliaferro, L. A. and J. J. Muehlenkamp (2015). "Risk factors associated with self-injurious behavior among a national sample of undergraduate college students." Journal of American college health **63**(1): 40-48.

Tatz, C. (2004). "Aboriginal, Maori, and Inuit youth suicide: avenues to alleviation?" Australian Aboriginal Studies(2): 15.

Tatz, C. (2016 in press). "Suicide and Sensibility." Death studies.

Taylor, R., et al. (2004). "Socio-economic differentials in mental disorders and suicide attempts in Australia." The British Journal of Psychiatry **185**(6): 486-493.

Tempier, R. (2016). Suicide among Aboriginals: A "Burning" Public Health Issue in Need of Solutions, SAGE Publications Sage CA: Los Angeles, CA.

Terra, J. (2008). "Suicide risk and depression." La Revue du praticien **58**(4): 385-388.

The Aspen Foundation (2016). ESO Mapping Project Final Report. Canberra Australia, The Aspen Foundation.

The Scottish Government (2013). Suicide Prevention Strategy 2013-2016. Edinburgh, The Scottish Government.

Thomas, K. H. and S. P. Taylor (2015). "Beyond Trauma Treatment: Mindfulness Instruction in the Training Environment to Prevent Depression, Lower Suicide Rates and Improve Resilience in the Military and Veteran Communities." Journal of Trauma and Stress Disorder Treatmeant **2**: 2.

Thomas, K. H. and S. P. Taylor (2016). "Bulletproofing the Psyche: Mindfulness Interventions in the Training Environment to Improve Resilience in the Military and Veteran Communities." Advances in Social Work **16**(2): 312-322.

Thompson, J., et al. (2014). "Health and well-being of Canadian armed forces veterans: Findings from the 2013 life after service survey." Charlottetown PE: Research Directorate, Veterans Affairs Canada. Research Directorate Technical Report **3**: 2.

Thompson, J. M., et al. (2014). "Roles of physical and mental health in suicidal ideation in Canadian Armed Forces Regular Force veterans." Canadian Journal of Public Health **105**(2): 109-115.

Thomson Goodall Associates (2009). RE: Veterans at Risk Research Project Report. Canberra, Department of Veterans Affairs.

Thoresen, S., et al. (2003). "Suicide in peacekeepers." Social psychiatry and psychiatric epidemiology **38**(11): 605-610.

Thoresen, S., et al. (2006). "Risk factors for completed suicide in veterans of peacekeeping: repatriation, negative life events, and marital status." Archives of Suicide Research **10**(4): 353-363.

Thornicroft, G., et al. (2007). "Stigma: ignorance, prejudice or discrimination?" The British Journal of Psychiatry **190**(3): 192-193.

Ting, I. (2011). "Deaths in custody: mental health assessments fail suicidal inmates." Retrieved November 20, 2016, from https://www.crikey.com.au/2011/05/04/deaths-in-custody-mental-health-assessments-fail-suicidal-inmates/.

Tøllefsen, I. M., et al. (2012). "The reliability of suicide statistics: a systematic review." BMC psychiatry **12**(1): 9.

Tran, T., et al. (2013). An integrated framework for suicide risk prediction. Proceedings of the 19th ACM SIGKDD international conference on Knowledge discovery and data mining, ACM.

Tsai, J., et al. (2013). "Homeless veterans who served in Iraq and Afghanistan: Gender differences, combat exposure, and comparisons with previous cohorts of homeless veterans." Administration and Policy in Mental Health and Mental Health Services Research: 1-6.

Tsai, J. and R. A. Rosenheck (2015). "Risk factors for homelessness among US veterans." Epidemiologic Reviews **37**(1): 177-195.

Turecki, G. (2016). Epigenetics. Understanding Suicide: From Diagnosis to Personalized Treatment. P. Courtet. Cham, Springer International Publishing**:** 97-110.

U. S. Preventive Services Task Force (2004). Screening for suicide risk: a systematic evidence review for the US Preventive Services Task Force, RTI International Evidence-Based Practice Center, North Carolina.

U.S. Department of Health and Human Services (HHS) Office of the Surgeon General and National Action Alliance for Suicide Prevention (2012). 2012 National Strategy for Suicide Prevention: Goals and Objectives for Action. Washingotn, DC, HHS.

Ursano, R. J., et al. (2015). "Suicide attempts in the US Army during the wars in Afghanistan and Iraq, 2004 to 2009." JAMA psychiatry **72**(9): 917-926.

Ursano, R. J., et al. (2016). "Risk factors, methods, and timing of suicide attempts among US Army soldiers." JAMA psychiatry **73**(7): 741-749.

US Army Center for Health Promotion and Preventative Medicine (2006). Medical Service Monthly Report. Aberdeen Proving Ground, MD, USACHPPM. **12**.

US Army Center for Health Promotion and Preventive Medicine (2012). "Analyses of Army Suicides, 2003–2009. Epidemiological Report No. 14-HK-0BW9-10c." Retrieved January 21, 2012, from http://www.docstoc.com/docs/87818159/Epidemiological-Studies-of-HealthOutcomes-among-Troops-Deployed.

US Army Center for Health Promotion and Preventive Medicine (2016). Redeployment Health Guide Series (January). USA, US Army.

USA Department of Defense (2016). "Department of Defense Suicide Prevention Office." Retrieved November 24, 2016, from http://www.dspo.mil/.

Van der Feltz-Cornelis, C. M., et al. (2011). "Best practice elements of multilevel suicide prevention strategies." Crisis **32**: 319-333.

Van Heeringen, C. (2001). "The suicidal process and related concepts." Understanding suicidal behaviour: the process approach to research and treatment/van Heeringen C.(ed).-Chichester: John Wiley & Sons, 2001: 1-15.

van Heeringen, K. (2012). "Stress-diathesis model of suicidal behavior." The neurobiological basis of suicide **51**: 113.

Van Orden, K. A., et al. (2010). "The interpersonal theory of suicide." Psychological review **117**(2): 575.

van Veen, M., et al. (2015). "Structured assessment of suicide risk in a psychiatric emergency service: Psychometric evaluation of the Nurses' Global Assessment of Suicide Risk scale (NGASR)." International Journal of Social Psychiatry **61**(3): 287-296.

VanDenKerkhof, E. G., et al. (2014). "Prevalence of chronic pain and related risk factors in military veterans: a systematic review protocol." JBI Database of Systematic Reviews and Implementation Reports **12**(2): 46-55.

Vasterling, J. J., et al. (2006). "Neuropsychological outcomes of army personnel following deployment to the Iraq war." JAMA **296**(5): 519-529.

Ward, W. (1997). "Psychiatric morbidity in Australian veterans of the United Nations peacekeeping force in Somalia." Australian and New Zealand Journal of Psychiatry **31**(2): 184-193.

Wasserman, D., et al. (2015). "School-based suicide prevention programmes: the SEYLE cluster-randomised, controlled trial." The Lancet **385**(9977): 1536-1544.

Wenzel, A. and A. T. Beck (2008). "A cognitive model of suicidal behavior: Theory and treatment." Applied and Preventive Psychology **12**(4): 189-201.

Westphal, R. J. and S. P. Convoy (2015). "Military culture implications for mental health and nursing care." Online journal of issues in nursing **20**(1): 1.

Wexler, L., et al. (2015). "Why an alternative to suicide prevention gatekeeper training is needed for rural Indigenous communities: presenting an empowering community storytelling approach." Critical Public Health **25**(2): 205-217.

While, D., et al. (2012). "Implementation of mental health service recommendations in England and Wales and suicide rates, 1997–2006: a cross-sectional and before-and-after observational study." The Lancet **379**(9820): 1005-1012.

WHO Europe (2009). Mental Health, Resilience and Inequalities. Copenhagen, Denmark, WHO.

Wilkinson, R. G. (1997). "Commentary: Income inequality summarises the health burden of individual relative deprivation." Bmj **314**(7096): 1727.

Willging, C. E., et al. (2007). "State Mental Health Policy:" We Never Used to Do Things This Way": Behavioral Health Care Reform in New Mexico." Psychiatric Services **58**(12): 1529-1531.

Windfuhr, K. (2009). "Issues in designing, implementing, and evaluating suicide prevention strategies." Psychiatry **8**(7): 272-275.

Wintersteen, M. B. (2010). "Standardized screening for suicidal adolescents in primary care." Pediatrics **125**(5): 938-944.

Witte, T. K., et al. (2005). "Variability in suicidal ideation: a better predictor of suicide attempts than intensity or duration of ideation?" Journal of Affective Disorders **88**(2): 131-136.

Woodhams, E. and J. D. Smith (2004). Memories are not silence: the trauma of witnessing and art making. A Phenomenological exploration of my lived experience as an artist, Queensland University of Technology.

Woosley, J. A. (2015). Insomnia and suicide risk, The University of Alabama TUSCALOOSA.

World Health Organisation (2012). Public health action for the prevention of suicide: A framework. Geneva, World Health Organisation.

World Health Organisation (2014). "Mental Health-Suicide Prevention." Retrieved October 12, 2016, from http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/.

Woznica, A. A., et al. (2015). "The insomnia and suicide link: toward an enhanced understanding of this relationship." Sleep medicine reviews **22**: 37-46.

Wray, M., et al. (2011). "The sociology of suicide." Annual Review of Sociology **37**: 505-528.

Wray, M., et al. (2011). "The Sociology of Suicide." Annual Review of Sociology **37**: 505-528.

Yanos, R. C. (2004). Perceptions of transition to civilian life among recently retired Air Force officers.

Yin, H., et al. (2016). "A pilot integrative genomics study of GABA and glutamate neurotransmitter systems in suicide, suicidal behavior, and major depressive disorder." American Journal of Medical Genetics Part B: Neuropsychiatric Genetics **171**(3).

Youth in Contact with the Juvenile Justice System Task Force (2013). Screening and assessment for suicide prevention: Tools and procedures for risk identification among juvenile justice youth. Washington, DC, National Action Alliance for Suicide Prevention.

Yuodelis-Flores, C. and R. K. Ries (2015). "Addiction and suicide: a review." The American Journal on Addictions **24**(2): 98-104.

Zalsman, G., et al. (2016). "Suicide prevention strategies revisited: 10-year systematic review." The Lancet Psychiatry **3**(7): 646-659.

Zamorski, M. A. (2011). "Suicide prevention in military organizations." International Review of Psychiatry **23**(2): 173-180.