

The mental health of serving and ex-Service personnel

A review of the evidence and perspectives of key stakeholders



**A report prepared by the Mental Health
Foundation on behalf of the Forces in Mind Trust**

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Foreword

Around twenty thousand soldiers, sailors and airmen leave the United Kingdom's Armed Forces each year. Many have had their lives enriched by their service, and they transition into civilian life, together with their families, without significant difficulty. For some, however, this transition is brought to the point of failure by mental health issues which range in complexity and severity, and which are caused by factors before, during and after military service.

Whilst the last two decades have seen the Armed Forces exposed to the most intensive and sustained combat conditions, and the highest casualty rates since the First World War (and in some instances even exceeding those), they have also seen a great increase in mental health research both within the United Kingdom and overseas, notably in the United States. This is timely: the prevailing economic conditions require every pound spent on addressing mental health issues to be spent where it can achieve greatest effect. The generosity of the British public in donating and supporting the Armed Forces does not lessen this imperative. Indeed, as the UK's front-line involvement in the campaign in Afghanistan concludes over the next couple of years, a reduction in financial donations would seem inevitable. But it is far from certain as to which path the mental health and wellbeing of the Armed Forces, and especially those in transition to civilian life, will follow.

This Report was commissioned by the Forces in Mind Trust, and very ably conducted by the Mental Health Foundation, to provide a broad and deep perspective on what is known about the mental health of serving and ex-Service personnel, and so identify where further research should be targeted. Research has been included which meets academic standards for a review of this nature and which has been published and usually been subject to external peer review.

This Report can make no comment on interventions such as Third Location Decompression, Trauma Risk Management, Screening, or Voluntary-sector services, where there is a lack of evidence as to their efficacy. Filling these gaps in evidence is a key goal of the Forces in Mind Trust, and by commissioning further work, we expect to deliver a far greater understanding in the three key areas the Report suggests: alcohol misuse; services, interventions and support; and families, children and social support. These areas affect many different organisations, and so an open, transparent and collaborative approach will be essential to success.

We share but one aim, and that is to improve the likelihood of successful transition by military personnel, and their families, into civilian life, unhindered by the prospect or the reality of mental health issues. Knowing where we lack sufficient knowledge to make such improvements is a first, and a fundamental, step towards achieving our goal.



Professor David Kingdon MD FRCPsych,
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Forces in Mind Trust

The Forces in Mind Trust was founded in 2012 to improve the transition of military personnel, and their families, at the end of a period of service in the Armed Forces back into the civilian world. That world comprises many facets: employment; housing; health and wellbeing; social networks; and a sense of identity and worth each contribute to a 'successful' transition. Recognising early on that ex-Service personnel suffering mental health or wellbeing issues are particularly vulnerable to failed transition, the Forces in Mind Trust, established through an endowment from the Big Lottery Fund, committed itself to gaining a better understanding of the causes and effects of such issues on transition.

Working with partner charities, notably the Mental Health Foundation and the Centre for Mental Health, and being mindful of the considerable existing body of research built up in The King's Centre for Military Health Research, as well as the practical experience of statutory and charitable providers such as Combat Stress, the Forces in Mind Trust commissioned this report in order to identify gaps in existing research and so support the development of its own research strategy and plan.

In addition to mental health, the Forces in Mind Trust has also commissioned research into supported housing, employment and the whole transition process itself. Grants have been awarded to programmes as diverse as mentoring ex-offenders through to challenge projects for wounded, injured and sick ex-Service personnel in partnership with the Royal Foundation. Full details can be found on our website www.fim-trust.org

Looking ahead, the Forces in Mind Trust will continue to initiate research and award grants to programmes that provide evidential output thus improving the transition process as well as directly supporting ex-Service personnel. Applications are welcome from any organisation engaged in such activity either through our website or by contacting enquiries@fim-trust.org.

Mental Health Foundation

The Mental Health Foundation is the UK's leading mental health research, policy and service improvement charity. We are committed to reducing the suffering caused by mental ill-health and to help us all lead mentally healthier lives by helping people to survive, recover from and prevent mental health problems.

We are unique in the way we work, bringing together research, information and advice, service development and policy in one organisation. We use research and evidence-based best practice to identify the key issues affecting the nation's mental health and wellbeing and use this knowledge to:

- improve policy and practice in mental health;
- campaign to raise awareness and remove stigma;
- provide high quality advice and information to help people better manage their mental health and wellbeing;
- provide practical solutions to improve the quality of and access to mental health services.

Our knowledge, informed by rigorous research and practical based study, has been pioneering change for over 60 years and we are not afraid to challenge the status quo or tackle difficult or under-researched issues. We deliver change and help empower people to make real changes in their lives.

Executive summary

This report is a review of the research evidence to date on the mental health of serving and ex-Service military personnel in the UK. It was commissioned in September 2012 by the Forces in Mind Trust.

The mental health of military personnel has received considerable public, political and media attention given the involvement of the British Armed Forces in a number of military operations over the past 20 years – particularly recent conflicts in Iraq and Afghanistan. Concern about the mental health of serving and ex-Service personnel has mounted over this time and led to a huge surge in research conducted on UK military personnel.

The total strength of the UK Armed Forces in October 2012 was 180,000 personnel (Berman and Rutherford 2012). The Strategic Defence and Security Review (2010) has recommended that by 2015 the number of full-time trained strength should reduce. The ex-Service population has been estimated to be around 3.8 million (Woodhead 2009). Between 2011–2012, 21,370 military personnel left the Armed Forces; 3720 of whom were untrained (DASA 2013).

Serving and ex-Service personnel are highly heterogeneous populations who differ across trades, rank, exposure to risk and service. Yet, existing research has not fully described or considered these differences.

Much of the research on UK military personnel has been generated by the King's Centre for Military Health Research (KCMHR; previously the Gulf War Illnesses Research Unit). The unit has generated large prospective cohort studies of military personnel, which are longitudinal. These enable robust epidemiological, follow-up studies using random samples to examine the prevalence and risk factors for mental health problems and social issues in UK military populations.

The primary aim of the review was to identify the main gaps and recommend key areas for future research. The review covers a number of important domains including:

- Prevalence of mental health problems in serving and ex-Service personnel;
- Treatment needs and barriers to seeking help;
- The most appropriate services for those with mental health problems;
- Issues concerning transition and resettlement to civilian life;
- Impact on families and the support available to them.

The review was conducted through:

1. A systematic search of bibliographic databases for literature published between 2002 and November 2012 (although a number of publications published up until 21 April 2013 were also included);
2. Internet and website searches for relevant grey or unpublished literature (e.g. Government reports, policy documents or briefings);
3. Interviews with a total of 13 key experts from research units, Government departments and selected veterans' charitable organisations.

Studies that reported findings on UK military personnel published after 2009 were prioritised to avoid duplicating the comprehensive efforts of two previous literature reviews by Fear et al (2009) and Dandeker et al (2003). Studies published before 2009 and some of the international literature (mainly from the US and Australia) have been included where relevant. However, transferring these findings to the UK context should be avoided.

Main findings of the review

Mental health problems in UK serving and ex-Service personnel

Almost all studies by KCMHR have measured mental health problems in UK military personnel using screening checklists/ tools that measure symptoms only, and not through structured clinical interviews to establish a diagnosis. Much of the data gathered for these studies was through telephone interviews and postal questionnaires which can be problematic.

The majority of serving and ex-Service personnel have relatively good mental health. Much of the existing evidence is focused on a minority of serving and ex-Service personnel who experience mental health problems; the most frequent being common mental health problems (e.g. depression or anxiety; Iversen et al 2009). The rates for these are broadly similar to the general population.

Many personnel deployed to Iraq between Dec 2008 to Jun 2009 reported having good to excellent health (Mullighan et al 2010).

Deployed Reservists were found to be at higher risk for mental health problems compared to deployed Regulars and non-deployed Reservists (Iversen et al 2009; Fear et al 2010; Harvey et al 2011).

Early Service Leavers show high rates of heavy drinking, report suicidal thoughts or have self-harmed in the past compared to longer serving ex-Service personnel (Woodhead et al 2011), although self-harm is based on extremely small numbers.

Alcohol misuse in UK military personnel represents a significant and well-known health concern. Recent studies confirm relatively high levels of heavy drinking in deployed personnel having a combat role (Knight et al 2011), and a few have been found to have psychiatric comorbidity (Rona et al 2010).

The prevalence of post-traumatic stress disorder (PTSD) in UK military personnel returning from Iraq is low, between 4–6%, contrasting with figures from the US (between 8–15%) (Sundin et al 2010).

Emerging evidence confirms the existence of delayed-onset PTSD, with a prevalence of 3.5% (Goodwin et al 2012). Life stress in the preceding 12 months is common but not said to be the main cause (Andrews et al 2009).

There are lower suicide rates among UK serving personnel in all three UK Services (Royal Navy, Army and Royal Air Force) than in the general population. The exception to this is in Army males (serving between 1984–2007) under the age of 20 years (Fear et al 2009b). The prevalence of self-harm, though, is lower than that in the general population (Pinder et al 2011).

Recent findings on mild traumatic brain injury (mTBI) and post-concussional syndrome (PCS) in UK personnel – claimed as a ‘signature’ injury from the Iraq war – suggest PCS is associated with reported psychological distress, mTBI with current symptoms of PTSD, that mTBI and PCS are not linked, and mental health problems predated the onset of mTBI (Fear et al 2009a; Rona et al 2012b).

There appears to be an increasing trend in the reporting of non-specific symptoms (e.g. fatigue) that is not explained by psychological problems in two samples of serving personnel not deployed to the Gulf conflict (1990) and Iraq war (2003; Horn et al 2010).

Evidence on violent behaviour in personnel returning from deployment to Iraq is emerging which shows a strong association with pre-enlistment antisocial behaviour (MacManus et al 2012b); and where having a combat role in deployed personnel appeared to be an additional risk factor for violent behaviour, as was self-reported aggressive behaviours, increased exposure to traumatic events, post-deployment alcohol misuse and symptoms of post-traumatic stress disorder (particularly hyperarousal symptom cluster; MacManus et al 2013).

Help-seeking, barriers to care and stigma

Recent research shows that the majority of military personnel (80%) who perceived they had a mental health problem sought some type of help, often not medical. Rates for seeking help are broadly similar to those of the general population.

Reasons for not seeking help may be attributable to ‘internal stigma’ (Langston et al 2010), not knowing where to go, or concern about being blamed for their problems by their employer (Iversen et al 2011).

Use of mental health services

An overall treatment rate of 13% was found in a sample of UK personnel (Iversen et al 2010), lower than rates found for the general population (26%). Common treatments received were medication and counselling/psychotherapy.

In-services and support for serving personnel

Patient and staff satisfaction with ‘in-service’ mental health provision is high (Finnegan and Finnegan 2007).

Programmes to prevent post-deployment mental health problems in military personnel, such as TRiM (Trauma risk management) or BATTLEMIND (to manage post-deployment stress) do not appear to reduce symptoms of traumatic stress or affect mental health status (Greenberg et al 2010; Mulligan et al 2012). However, one study evaluating Third Location Decompression (TLD) found that military personnel undergoing this post-deployment programme reported significantly less PTSD symptoms and harmful levels of alcohol use, but not better readjustment (Jones et al, 2013).

Screening for mental health problems

At present there is limited evidence on the usefulness of screening programmes prior to deployment, which do not appear to predict psychological morbidity (KCMHR 2010; Rona et al 2006).

NHS specialist services

An evaluation of the six enhanced pilot mental health services for veterans found favourable and unfavourable aspects of these services (Dent-Brown et al 2010). However, no data were available on the impact of these pilots and their assessment or treatment outcomes.

There is little robust evidence to demonstrate the effectiveness of other specialist mental health services for veterans provided by both National Health Service (NHS) and voluntary-sector services such as Combat Stress.

Transition and resettlement to civilian life

After leaving military service the majority of ex-Service personnel have favourable outcomes (Iversen et al 2005b).

Some evidence suggests Reservists experience difficulties with transition, finding it harder to resume social activities. Many of these experiences were associated with a common mental health problem, although some of the psychological and social consequences of deployment in Reservists appear transient (Harvey et al 2012).

Mental health impact of deployment on families of Service personnel

There is very little UK evidence examining the impact of deployment on families, although recent research suggests deployment to Iraq is not associated with relationship breakdown (Rowe et al 2013).

Support specifically for families of UK serving personnel appears to be provided mainly by voluntary sector services, although the Ministry of Defence has stated its commitment to supporting families (MOD 2011).

Key stakeholder views for further research

Thirteen interviews with key experts specialising in policy, service delivery (both statutory and voluntary sector services) and research in the field were conducted. Some of the topics proposed by experts for future research on serving and ex-Service personnel include (in no specific order):

- Understanding what resettlement packages attempt to do and when should they be delivered.
- The need to explore through qualitative research what function(s) alcohol provides during and after service, both at an individual and group level; the relationship between alcohol misuse and mental health problems; the long-term consequences.
- An understanding of why some families are more resilient than others when partners deploy on operations, leave the Service and return to being civilians/civilian citizens (and ways of enhancing resilience); and whether Reservists differ from Regulars.
- Examination of the prevalence of Attention Deficit Hyperactive Disorder (ADHD), Autistic Spectrum Disorders, specific learning disabilities in those enlisted.
- Where PTSD is unrelated to deployment it is important to examine its aetiologies and whether fabrication is part of this.

- It is important to assess whether mild traumatic brain injury and its relationship with PTSD leads to increasing iatrogenic illness and inappropriate health anxiety.
- Much of the research on UK serving and ex-Service personnel has used screening measures rather than diagnostic interviews – accurate diagnosis is needed.

Main gaps in research

Little is known about:

- why particular military personnel, such as deployed Reservists, appear more susceptible to health problems and how these can be prevented;
- drug misuse and comorbid mental illness in UK serving and ex-Service personnel;
- the prevalence of diagnosed mental health problems in UK serving personnel (this is relatively unknown);
- the role and function of alcohol in the military;
- what would improve help-seeking rates to primary care services for ex-Service personnel with mental health problems;
- the benefits and impact of specialist mental health services for veterans and how these compare with generic NHS mental health services;
- resettlement and the most appropriate support required for ex-Service personnel on leaving the Service and sometime after;
- what social, family and peer support enables an ex-Service man/woman to do well in terms of transition and resettlement, and how this can be transferred to the minority who have poor health and social outcomes;
- the impact of deployment on families of UK personnel and what can be done to support families with mental health problems.

Recommended research priorities

The following recommended research priorities are based on gaps in the UK evidence base. Although difficult, employing suitable comparators (e.g. groups to compare any differences or similarities) is crucial to any future research work. In order of importance, the areas recommended are:

1. **Alcohol misuse.** This is an area of great importance and a major public health issue. There is a need to understand the role of alcohol use in military personnel and the long-term effects this has on health, and which ex-Service personnel continue to drink hazardously after leaving the military, how many start after leaving and what were their drinking habits prior to joining. It is also important to identify the effective alcohol programmes suitable for use in the military that help moderate drinking levels and prevent hazardous drinking and long-term alcohol misuse/dependency.
2. **Services, interventions and treatments.** A second priority for further research includes determining what mental health services work for ex-Service personnel with adjustment disorders, common mental health problems and PTSD. There are a large number of voluntary sector organisations providing health and social care for ex-Service personnel. It is important to ensure that these services are well coordinated and targeted so that resources are used effectively.

Evaluation of services delivering mental health care to ex-Service personnel is an essential next step in any future research programme. It is necessary to understand the number of referrals and patterns over time, the characteristics of those who present to them, the treatments/interventions provided and the outcomes of those interventions. Randomised controlled trials are the 'gold standard' for assessing 'what works and for whom'. Other forms of service evaluation methods, however, should not be overlooked, but do require appropriate comparison groups.

Evidence-based mental health interventions are important to deliver to serving and ex-Service personnel who experience mental health problems. Would newly emerging interventions such as support via the internet, tele-medicine, mobile phone support and self-management improve help-seeking behaviour in serving and ex-Service personnel?

3. **Families, children and social support.** There is little knowledge about the experiences and impact on families and children of deployed and post-deployed UK personnel and the support that a minority of families may need. What social, family and peer support enables ex-Service personnel to do well during transition and resettlement into civilian life, and how this can be transferred to the minority who have poor health and social outcomes? How can families be best supported, particularly those caring for ex-Service personnel with mental and/or physical health problems? What are the health and social needs of these carers?

Conclusion

Over the past 15 years there has been an impressive surge in the amount of research conducted on UK military personnel. Much of what we know about mental health problems in UK personnel is based on large prospective cohort studies using self-report measures, administered through telephone interviews and postal questionnaires which tell us about possible symptoms of mental illness or social problems. Future research work needs to improve the existing methods for data collection so that more accurate conclusions can be drawn about the health and social problems in this population. Services attempting to meet the health and social needs of military personnel should be evaluated to determine their impact and effectiveness so as to ensure positive outcomes and better use of available resources.

Scope of the review

The following report is a review of the existing evidence concerning the mental health of the UK military personnel to identify the main gaps and areas for further research. Part of the review includes information gathered from interviews with key stakeholders from relevant voluntary sector organisations providing health and welfare services, research and Government departments (Department of Health [DH] and Ministry of Defence [MOD]). The key issues emerging from these interviews are summarised.

The review was commissioned in September 2012 by the Forces in Mind Trust (FiMT). The FiMT has received funding to support the psychological wellbeing and successful and sustainable transition of ex-Service personnel and their families into civilian life. The review covers a number of important domains from the prevalence of mental illness in UK serving and ex-Service personnel to its impact and the support available for families.

Introduction

The mental health of military personnel has received considerable public and political attention and concern given the involvement of the British Armed Forces in a number of military operations over the past 20 years. Attention has been focused on the health and social needs of serving and ex-Service personnel following recent conflicts in Iraq and Afghanistan. Subsequently, levels of mental ill-health in ex-Service personnel have been heavily researched in countries such as the US and the UK. Post-traumatic stress disorder (PTSD) has been of particular interest due to media coverage over the past decade. This coverage has presented a distorted picture of the impact of military deployment based on a minority of personnel who have experienced problems since leaving the military. The majority (over 90%) who have done well after service received far less publicity.

For serving and ex-Service personnel experiencing mental health problems, questions around how best to support and treat these have been debated. Recent Governments have recognised ex-Service personnel as a group needing support for potential mental health problems as set out in the Department of Health's New Horizons mental health strategy (DH 2009) and its replacement 'No health without Mental Health' (DH 2011). The Ministry of Defence in a recent covenant introduced proposals for improving mental health care provision, extended access to mental health care to six months after discharge, increased the number of mental health nurses for veterans and established a 24-hour helpline and website for support and advice (MOD 2011).

In a briefing paper published by the Mental Health Foundation (MHF; 2010) further suggestions for improving mental health support for veterans included: the provision of evidence-based interventions/treatments for a range of conditions, including alcohol misuse; veterans to be involved in awareness training for health and social care professionals to increase their understanding of the culture of the Armed Forces; veterans to recognise the importance of seeking help for mental health issues; and targeting groups at greater risk of developing mental health problems such as Reservists and Early Service Leavers.

Early Service Leavers (ESL) are defined as Service leavers who are discharged either (a) compulsorily from the trained strength or untrained strength and lose entitlement to resettlement provision in accordance with JSP 534 they would otherwise have because of the circumstances of their discharge; or (b) at their own request from the trained or untrained strength, having completed less than 4 years' service (Joint Service Publication 575, 2010).

Defining what is meant by terms such as 'veterans', ex-Service personnel and those in service is important to clarify early on. For the purposes of this report we use the same definitions as Fear et al (2009). They employ the term 'ex-Service personnel' for those who have left the Armed Forces; and use 'veterans' for those who served in one or more conflicts with additional information regarding the name of the conflict to identify those who served in a particular conflict. The definition of 'Service', as Fear et al (2009) point out, is fundamental to defining the ex-Service population. It must be stressed that the definition of 'veteran' adopted widely in the UK, and in particular by the MOD and military charities sector, includes anyone who has spent one day or more in the Armed Forces, regardless of their involvement in conflicts.

Having defined these terms it is essential to emphasise that serving and ex-Service military personnel are an extremely heterogeneous population, who differ across trades, ranks, exposure to risks and Service. This helps contextualise experiences. As Palmer (2012) explains:

“There are over 140 trades in the British Army and, in most armed forces, an individual's job is integral to their identity. It is therefore important to contextualise ESP [ex-Service personnel] narratives. Different trades put different individuals and groups into differing brackets of risk. Each operational theatre provides unique physical and psychological threats, which vary across the geographical area of an operation and change with time. Those most frequently in dangerous situations are the combat arms and combat service arms. These are the infantry soldiers, tank crews and their direct supporting arms such as artillery, medics, signallers, engineers and air support at 'the sharp end'. They are serviced by combat service support arms that include logistics, administrative, transport, electrical and mechanical engineers. The combat arms form about 25% of the Army but less in the Royal Navy and the Royal Air Force (RAF). Although members of UK Armed Forces are frequently 'in harm's way', only a minority 'close with the enemy'” (pg 267).

Similarly, the definition of deployment is also important to clarify. In the existing literature, deployment is defined simply in terms of the specific conflict or campaign an individual has participated in. Very little description is given on a person's experience of deployment and it is likely that this means different things to different personnel. For instance, a serving soldier who is single may be enthusiastic about being deployed to an active conflict compared to a married soldier with young children who may be more concerned. Implicit is that deployment involves a period of duty away from home base, and to an operational (not training) assignment.

Armed Forces statistics

According to recent figures the total strength of the UK Armed Forces was 180,000 personnel in October 2012 (Berman and Rutherford 2012). Of these, 166,000 (92.2%) were trained and 13,860 (7.7%) were untrained. Almost 60% of the UK Armed Forces serve in the Army (58%), 22% serve in the Royal Air Force (RAF) and 20% in the Royal Navy. The overall number of Regular serving personnel (trained and untrained) has fallen by 44% from April 1980 to April 2012. In April 2011, the number of volunteer Reserves was 37,070; less than half that in April 1980 when the total was 77,100 Reserves.

The proportion of women in the UK Regular Forces, on the other hand, has been increasing in all three Services. In 1980, less than 5% of Regulars were female and by October 2012 this had risen to 12.5% of officers and 9.1% of other ranks. The highest proportion of female officers is in the RAF at 16.4%. The proportion of Black and Minority Ethnic (BME) personnel currently stands at 7.1%, the highest ever recorded. BME Regular forces are mostly in the Army (10.1%), with 3.5% in the Navy and only 2.0% in the RAF.

In terms of future numbers the Strategic Defence and Security Review (2010) has recommended that by 2015 the number of full-time trained strength should reduce by 5000 to 30,000 for the Navy; 7000 to 95,000 for the Army and by 5000 to 33,000 for the RAF. In addition, Army 2020 (MOD 2012) envisages a Regular strength of 82,000.

Aim

The aim of this review is to consolidate the existing research literature on the mental health of and service provision for serving and ex-Service personnel and their families. It aims to identify the areas in need of further research by highlighting gaps in the available evidence base or the barriers to research in this field. The review begins to define a research strategy for the FiMT.

Key questions

The scope of this review is guided by the following key questions:

- What is the prevalence of mental health problems in serving and ex-Service personnel (including PTSD, drug and alcohol use, suicide and self-harm and severe mental illness)?
Are there multiple or complex diagnostic needs in serving and ex-Service personnel?
- What are the treatment needs and barriers to seeking help (e.g. issues concerning stigma)?
- What are the most appropriate services for those with mental health/dual diagnosis needs (Specialist vs. generic NHS mental health services)?
- What are the issues concerning transition/resettlement to civilian life? What are the differences between those who experience problems with transition/resettlement compared to those who do not? What adjustment support is needed?
- What is the impact of deployment on families and peers (Mental health issues, quality of life, impact on children)?
- What services and/or support exist for families?
- What are the gaps in the evidence base and the areas in need of further research (as identified by the key experts interviewed and described in the existing literature)?
- What are the barriers to research in the field? (e.g. funding, methodological issues, etc.)?
- What are the research priorities identified by this review and what would be an appropriate research strategy?

Methods of literature review

1. Systematic search of the literature

A systematic search of the published literature was conducted to identify the existing evidence on serving and ex-Service personnel. A search strategy was defined by an Information Specialist and used to search seven bibliographic databases for literature published between 2002 and 1st November 2012, although there is a focus on the relevant literature published since 2009 which follows on from extensive evidence reviews of military veterans conducted by Fear et al (2009) and Dandeker et al (2003). A number of newly published references was also included up until 21 April 2013.

The inclusion criteria were:

- Veterans or ex-Service personnel, serving military personnel and Reserves; and
- English language literature only (UK, US, Canada, Israel and Australia, New Zealand).
Much of the literature selected for this report is from the UK. International literature is included to address the aims of the review only where there are gaps in the UK evidence base. Given the economic, social and cultural differences between countries interpreting findings from the international literature to the UK context was avoided and is simply described.

The literature not meeting the inclusion criteria were excluded (see Appendix 1 for details of search strategy).

2. Unpublished or 'grey' literature

Internet and website searches for relevant grey literature were conducted to gather relevant reviews, reports or policy documents (See Appendix 2 for details of websites searched). Experts in the field were also asked to provide recent publications. Key papers were cross referenced to identify other literature not identified by database searches.

3. Interviews with key stakeholders

A number of key experts were identified by the FiMT and MHF for interview. A total of thirteen interviews were carried out with experts from selected veterans' charitable organisations, Government departments and research centres to explore salient issues and areas for further research (see Appendix 3 for the complete list of interviewed stakeholders).

Overview of the literature

National and international research in this area has grown considerably over the past decade, bringing with it an increased understanding of the impact on health and social issues of pre-deployment, during deployment and post-deployment of military personnel. Issues relating to mental health and social exclusion have and continue to be of particular concern for a minority of ex-Service personnel, Reservists and Early Service Leavers. It is worth noting early on the differences in research findings between UK and US serving and ex-Service personnel, particularly the prevalence rates for PTSD and excessive alcohol use, which caution against interpreting international findings into a UK context.

Interestingly, KCMHR and the Academic Centre for Defence Mental Health (ACDMH) have, unusually, generated much of the evidence concerning UK serving and ex-Service military personnel. KCMHR was founded in 2004, although it began in 1996 as the Gulf War Illnesses Research Unit to research the health of the British Armed Forces and veterans. The ACDMH works directly with KCMHR. In 2003, KCMHR initiated a prospective cohort study of the physical and mental health of over 10,000 personnel serving in the Iraq War (Operation TELIC). The cohort has been expanded to include those who have served in Afghanistan (Operation HERRICK) and personnel joining the UK Armed Forces after 2003 (Pinder et al 2012; Hotopf et al 2006). Their research comprises almost exclusively epidemiological research to examine prevalence and risk factors, and a few randomised controlled trials (RCTs) to assess the effectiveness of interventions or programmes.

A major strength of the KCMHR studies is that they are based on large, randomly selected military cohorts that are prospective and longitudinal. However, one of the main methodological limitations concerns the measurement of mental health symptoms. The majority, if not all, KCMHR research studies report symptom levels using self-report measures and not diagnostic or clinical interviews to formally establish a psychiatric diagnosis. Another limitation is the predominant focus on the medical issues and less on social factors, although some work includes social exclusion (e.g. unemployment, homelessness, involvement in the criminal justice system) and social integration. What is missing from this discourse/research is a deeper understanding or qualitative analysis of how problems emerge or indeed what contributes to successful outcomes.

Summary of the evidence prior to 2003

Prior to 2003 the literature on the mental health outcomes of UK ex-Service personnel was very limited and almost exclusively from the US. Some of the key emerging themes, according to Dandeker et al (2003, pg viii), suggested that:

- Most do not develop mental health problems as a result of serving.
- The minority who do fare badly.
- Some individuals are more likely to run into difficulties and social exclusion than others. Pre-military factors are important here.
- Active service has well described (and easily anticipated) influences on family dynamics and marital health.
- For many (indeed most) personnel, military life is a positive experience (especially for disadvantaged youths who enter Service early) allowing them to enjoy a more favourable life trajectory.
- The socio-economic context of a war is important in determining what happens to people when they come home both in terms of health and economic outcomes.
- Combat and war change the lives of people who serve.

In many respects these earlier themes continue to be of relevance.

Summary of the evidence prior to 2009

Fear et al (2009) summarised the main research on the health and social outcomes of UK ex-Service personnel since 2003. Based on the cohort studies generated by KCMHR and other studies, including those from the US, Fear et al (2009) found that:

- The existing generation of UK military personnel (both serving and ex-Service) have higher rates of alcohol use compared to the general population.
- Alcohol problems, depression and anxiety disorders are the most frequent mental health issues for ex-Service personnel.
- Similar rates of mental illness are found for ex-Service personnel and their still serving equivalents, which are broadly similar to the general population.
- Military personnel with mental health problems are more likely to leave their Service over a given period compared to those without these problems, and are at higher risk of poorer outcomes post-Service.
- Those who leave military service due to mental ill-health are a minority and are at increased risk of social exclusion (e.g. unemployment and homelessness) and continuing poor health.
- The overall suicide rate for UK ex-Service personnel is similar to the general population, but younger male ex-Service personnel (under the age of 24 years) have higher rates of suicide than their general population equivalent.
- Early Service Leavers are at higher risk for adverse outcomes such as suicide, mental health problems and risk-taking behaviours (e.g. heavy drinking, suicidal thoughts) compared to longer serving veterans.
- Studies on delayed-onset PTSD are based on small samples and mostly retrospective and should be treated with caution.
- Poor mental health outcomes are associated with deployment to Iraq or Afghanistan for personnel with pre-Service vulnerabilities, those exposed to high levels of combat and Reservists compared with Regulars.

The following sections summarise the recent evidence published on UK serving and ex-Service personnel since 2009, but include literature published since 2002 and international literature where relevant. However, transferring findings from the international literature to the UK context should be avoided given the substantial differences that exist between countries.

Mental health issues in UK serving and ex-Service personnel

Prevalence of mental illness and risk factors

The overall prevalence of mental health problems in the UK Armed Forces has remained fairly stable between 2003–2009 (Fear et al 2010). As described above depression and anxiety disorders are the most common mental health problems among serving and ex-Service personnel (Fear 2009). The prevalence figures for these conditions vary slightly across the different study cohorts depending on the samples and measures used. However, using a structured diagnostic instrument, the Patient Health Questionnaire (PHQ) in a random sample of 821 personnel, Iversen et al (2009) found a prevalence of 27.2% for common mental disorders for both Regular and Reserve UK Army personnel deployed to Iraq, and 4.8% for PTSD. Alcohol abuse (18.0%) and neurotic disorders (13.5%) were the most commonly diagnosed mental health problems. Direct comparisons with the general population are difficult given the PHQ has not been used in large scale surveys of this kind in the UK (Iversen et al 2009).

A study by Scott (2005) found adjustment reaction a common diagnosis in deployed personnel. Psychiatric referrals to a Field Hospital Mental Health Team during Operation TELIC from March to July 2003 were assessed, where 170 cases were documented by the team (13 were seen on more than one occasion). Of these, the most common diagnosis was adjustment reaction found in 68% (or 116) cases, and predominately theatre-related in 77 cases or home-related for 39 cases. For the majority (94%) of those with adjustment reaction, they were deemed suitable for safe return to unit in theatre. Cases diagnosed with depressive episode were less frequent by comparison (13.5% or 23 cases) and were evacuated. Return to unit rate was similar for both Regular and Reservist personnel.

The increased rates of post-deployment mental ill-health in UK Reservists have been reported in other studies (Hotopf et al 2006; Fear et al 2010). In deployed Reservists to Iraq/Afghanistan the prevalence of symptoms of common mental health problems was 19.9% (19.6% for Regulars); 5.0% for possible PTSD (4.2% for Regulars); and 9.5% for alcohol misuse (15.7% for Regulars); the number of deployments was not associated with any outcome examined (Fear et al 2010). Self-reported symptoms of common mental health problems were not linked to deployment status for either Regulars or Reservists. PTSD however, although low in terms of prevalence, was associated with being a deployed Reservist, and alcohol misuse was highly associated with being a Regular even after taking into account socio demographic and military factors (Fear et al 2010). PTSD symptoms were strongly associated with problems at home both during and following deployment (Browne et al 2007). Reservists, compared to Regular personnel, appear more likely to report feeling poorly supported by the military in the weeks following their return from deployment, and are associated with an increase in the reporting of possible PTSD (Harvey et al 2011). These authors also found that Reservists were more likely to feel that ‘people did not understand what they had been through’ following deployment and this was associated with the increased reporting of common mental health problems, possible PTSD and alcohol misuse (Harvey et al 2011).

The prevalence rates for common mental health problems and probable PTSD are low overall and similar to rates found in the UK general population. The 2007 Adult Psychiatric Survey found a prevalence of 23.0% for at least one psychiatric disorder in the general population, and an overall prevalence of 3.0% for adults screening positive for current PTSD – 2.6% for men and 3.3% for women (McManus et al 2009).

The prevalence of mental health problems in post-National Service veterans is similar, if not better, than their general population counterparts. Woodhead et al (2011) found no differences in terms of mental health, social disadvantage or treatment seeking behaviour between ex-Service personnel and the general population. This was also the case for physical health problems (cancer, cardiovascular disease, Alzheimer's, diabetes) and drug and alcohol use (Woodhead et al 2011b). In this latter study, National Service ex-Service personnel were significantly less likely to have any mental disorder compared to their general population equivalents, even after adjusting for their age.

Those that leave the Services early, as well as Reservists, are considered to be another vulnerable group. Early leavers (defined by the authors as having served <4 years) were over 4 times more likely to be heavy drinkers, twice as likely to report suicidal thoughts or have self-harmed in the past than longer serving ex-Service personnel (Woodhead et al 2011). Buckman et al (2012) examined the characteristics associated with being an Early Service Leaver and compared them to non-ESLs. A total of 845 Service leavers were included in a representative sample, of which 9.5% were ESLs. Leaving the Service early was associated with being of a younger age, female gender, not being in a relationship, lower rank and serving in the Army. There was trend towards reporting more childhood adversity in ESLs. Deployment to Iraq was not associated with being an ESL.

Mulligan et al (2010) examined the mental health of personnel during deployment to Iraq between Dec 2008 to Jun 2009 (Operation TELIC). The majority of respondents, 92.6% (564 out of 609), reported having good to excellent health. The GHQ 12-item questionnaire was used to measure psychological distress. Symptoms of PTSD were assessed using the National Center for PTSD Checklist (civilian version; PCL-C). 20.8% (or 162) of the 602 respondents who completed the GHQ-12 scored above the cut-off point for 'caseness', and 3.4% (or 20) of the 588 respondents completing the PCL-C were identified as possible PTSD cases or had PTSD symptoms. Those at higher risk of psychological distress included personnel who were young, female, in a weaker unit in terms of cohesion, poorer perceived leadership and not receiving a pre-deployment stress brief.

Horn et al (2010) examined trends over time in the reporting of non-specific symptoms in the UK Armed Forces (both physical and psychological symptoms ranging from chest pain to distressing dreams) in random samples of two cross-sectional studies of personnel not deployed to the Gulf conflict (1990) and Iraq war (2003). The authors found a large and consistent increase in the reporting of non-specific symptoms over the 7-year period examined which appeared not to be explained by psychological distress. Reported symptoms of fatigue were particularly marked, suggesting that the threshold for reporting symptoms has declined. In other words, personnel are more willing to report symptoms than previously. The implications of these findings, as the authors argue, may present challenges to healthcare professionals as this increased willingness to report non-specific symptoms may have an impact on health service utilisation and become difficult for professionals to evaluate the meaning of such symptoms.

Alcohol misuse

Alcohol misuse among UK military personnel is a significant health concern given the high level of problem drinking in this group. One of the first UK studies found that 67% of men and 49% of women (in a representative sample of 8686 Regular personnel) serving in the UK Armed Forces scored above the threshold for hazardous drinking (having a score of 8+ on the Alcohol Use Disorders Identification Test, AUDIT; Fear et al 2007). The prevalence of hazardous drinking compared with the age and gender-specific general population sample (using the Office for National Statistics National Psychiatric Morbidity Survey) was found to be far less at 38% for men and 16% for women (Fear et al 2007). Demographic characteristics associated with heavy drinking included lower rank, being young, single, in the Naval Service or Army, deployed to Iraq, not having children, being a smoker, having a combat role and having a parent with a drug or alcohol problem. Heavy alcohol consumption was also associated with current military service, being unmarried or separated/divorced (Iversen et al 2007).

Rates of self-reported hazardous drinking are much lower in the US military personnel by comparison, ranging from 25–41% (Calhoun et al, 2008; Fear et al 2007; Hawkins et al, 2010).

In a longitudinal study of UK Armed Forces personnel, alcohol use increased over the 3-year period examined (Hooper et al 2008). These increases were higher in deployed personnel, those who thought they might be killed or experienced hostility from civilians during deployment. Cigarette smoking however declined.

More recently, Knight et al (2011) explored changes in alcohol consumption during two phases of data collection (between 2004–2006 and 2007–2009) from a cohort of UK military personnel. Factors that predicted new-onset alcohol misuse were also examined. At phase 2, some 13% of personnel reported alcohol misuse; again this was associated with deployment to Iraq and Afghanistan and having a combat role.

Rona et al (2010) looked at the association between binge drinking, alcohol related-harm and dependence and five types of functional impairment (e.g. reduced work time and other activities). The researchers also examined whether any relationships found were explained by psychiatric comorbidity. A random sample of 8585 UK Armed Forces Regulars, 3936 of whom deployed on TELIC 1 and the remainder serving but not deployed in TELIC 1, was used. Binge drinking and AUDIT scores below 20 were not linked to an increase in functional impairment, but those scoring 20 or above (around 10% of the sample) had perceived impairment problems. Possible psychiatric comorbidity was found in nearly half of those scoring 20 or above. Data from this study are based on self-reported alcohol use and perceived impairment rather than actual levels which could lead to either an under- or over-reporting of alcohol use and functioning.

Heavy alcohol consumption has been long recognised as an issue in the mental health of Service personnel. Jones and Fear (2011) conducted an extensive literature review of alcohol use and misuse in the military dating back to World War One. In one example, a study of 100 alcoholics who had served in both WWI and WWII attributed their excessive use to family pressures and in some cases to relieve depression and anxiety rather than their active service (Barrett 1943 cited in Jones and Fear 2011). Recent research, described above, demonstrates that excessive alcohol use among serving personnel continues to be an issue. The consequences and potential long-term impact of heavy drinking on health and social outcomes are an important concern. There is scope for public health interventions (prevention and promotion) for all personnel, with interventions to target alcohol dependence and alcohol-related harm.

Given its role in the military, a balance needs to be struck between responsible and harmful levels of alcohol consumption, which is not an easy task (Jones and Fear, 2011). It is still not understood how alcohol consumption in serving personnel changes over time and on exit from the Armed Forces.

Drug misuse

Traditionally, drug misuse is less common in serving personnel. No research per se on drug misuse in UK military personnel was identified. Some UK literature is available on ex-Service personnel in relation to homelessness and drug use and those convicted of an offence while under the influence of alcohol or drugs (Fear et al 2009).

There is a more extensive US literature, largely concerning comorbid drug misuse and mental illness, particularly PTSD, in veterans (which should not be extrapolated to a UK context). In terms of prevalence, for example, Petrakis et al (2011) found that of the US ex-Service personnel who had served in Iraq and Afghanistan diagnosed with a selected mental illness, 21.0% had a comorbid substance misuse diagnosis. For those with severe mental illness, bipolar disorder and schizophrenia, the rates of comorbidity were higher still.

In predicting alcohol and drug use in US ex-Service personnel during a 6-year period following deployment to the Persian Gulf War, Shipherd et al (2005) found that these were significantly correlated with demographic characteristics and symptoms of PTSD. Drug but not alcohol consumption appeared to be associated with 'self-medication' for mental health problems.

There is, however, a growing concern regarding the increase of prescription drug abuse among US military personnel. Data from the 2008 population-based Department of Defense Health Related Behavior Surveys found this had tripled between 2005–2008 (Bray et al 2010).

Post-traumatic Stress Disorder (PTSD)

Combat-related PTSD is a subject of great controversy in serving and ex-Service personnel. Its prevalence varies enormously between numerous studies conducted in this area. Prevalence estimates of PTSD in UK and US personnel deployed to Iraq range from 1.4–31% (Sundin et al 2009).

In UK personnel returning from Iraq, the prevalence of PTSD varies between 4–6%; in the US it is between 8–15% (Sundin et al 2010). Here we reiterate that much of the evidence on the prevalence of PTSD and other mental health problems is derived from self-report questionnaires that identify symptoms and not a full clinical assessment leading to a diagnosis.

Recent work by Rona et al (2012) examined the risk factors associated with persistent and partially remitted PTSD compared to those who had fully remitted. In two phases of data collection possible PTSD (using PCL-C scores and not a clinical diagnosis) was identified at phase 1 in 3.9% (or 230) of a randomly selected sample of UK service personnel (n=6427). By phase 2, the majority of people (66%) with possible PTSD remitted or partially remitted. The most significant association with persistent PTSD symptoms included feeling unsupported on return from deployment, deployed away from the parent unit, and multiple physical symptoms. These findings should be interpreted with caution as the numbers in these analyses are very small.

Forbes et al (2012) found also that being medically evacuated during deployment for an injury was also shown to increase the risk of possible post-deployment PTSD; unexpectedly so too was being evacuated for an illness. These findings were based on a relatively small number of personnel – 89 who were medically evacuated during deployment, attending emergency departments in military hospitals in Iraq and Afghanistan between 2007–2009 (as recorded on the Operational Emergency Department Attendance Register).

The huge discrepancy in prevalence, particularly between the US and UK rates, is mostly explained by the considerable heterogeneity across studies. Sundin et al (2010) found that the factors associated with PTSD rates included: stage of deployment (pre-deployment samples had lower levels of PTSD compared to those still serving and in post-deployment samples); methodological factors (the highest prevalence (between 10–17%) was found in studies that carried out non-random anonymous surveys of line infantry units [using the PCL screening tool]). Studies with random and population samples, representative of all deployed forces, found lower rates between 2.1–11.6%. The rate of PTSD in US studies has also been found to increase in the 12 months following return from deployment; symptoms that may emerge after the initial relief/joy of returning home (Sundin et al 2010).

The considerable variability in the rates of PTSD are due largely to differences in sampling strategies, measurement (structured psychiatric interviews vs. self-report measures), inclusion of clinical diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV), latency of assessment and the possibility of recall bias, and type of combat experience (Richardson et al 2010). Other influencing factors, according to Richardson et al (2010), include socio-political and cultural factors which heavily influenced the introduction of PTSD to the DSM in 1980 to address the challenges of war-related disorders that were not just physical injuries. There are now concerns that veterans seeking disability status/compensation/welfare could be influencing their clinical presentation by exaggerating, misrepresenting or falsifying their combat experiences. There is growing evidence to demonstrate this (described in a review by Richardson et al 2010; Jones and Wessely 2007). The media and popular stereotypes have also contributed to inaccurate memories and beliefs which may well have influenced the increasing inflation of traumatic memories to fit in with these views (Jones and Wessely 2007).

Delayed-onset PTSD

Fear (2009) reported there was no convincing evidence on delayed-onset PTSD. This is defined by DSM-IV as the onset of PTSD symptoms 6 months after the traumatic event. Since this time, Goodwin et al (2012), in a study of 1397 UK personnel found a prevalence of 3.5% and concluded that delayed-onset PTSD does exist. It was associated with comorbid psychological ill-health, but not relationship breakdown or leaving the military.

A series of retrospective studies on UK war pensioners have been published in recent years, albeit with relatively small sample sizes. Andrews et al (2009) compared two groups of UK military personnel with immediate- and delayed-onset PTSD. A total of 142 ex-Service personnel were recruited to the study, 63 with delayed-onset PTSD, 40 with immediate-onset and 39 with no PTSD. For the delay-onset sample the criteria for PTSD were met between 2–3 years following their traumatic event; the most common time was shortly after discharge from service. On the whole, immediate- and delayed-onset groups had similar numbers and types of PTSD symptoms, except the latter group revealed a gradual accumulation of symptoms that began earlier and persisted throughout their military service. The delay-onset group were more

likely to report major depressive disorder and alcohol abuse prior to onset of PTSD. Life stress 12 months preceding onset was evident in the majority of those with delayed-onset (77%) and less for those with no PTSD (32%). These intervening life stresses were not deemed to be the main cause of PTSD as re-experiencing of symptoms had to relate to the original trauma. This study used structured clinical interviews to establish PTSD in study participants rather than screening measures such as the PCL which only indicate possible symptoms.

In attempting to understand the underlying mechanisms of delayed-onset PTSD, Horesh et al (2011) looked at the role of stressful life events throughout the life cycle. In a sample of 675 Israeli veterans from the 1982 Lebanon War, 369 with antecedent combat stress reaction (CSR) and 306 without were assessed prospectively in 1, 2 and 20 years after the war. Delayed-onset PTSD was found in 16.5% of participants. The strongest predictor was CSR and that post-, peri- and pre-traumatic life events are associated with time of PTSD onset. PTSD with shorter-delayed onset was associated with a higher risk of CSR, more pre- and post-war life events, more severe subjective battle exposure, higher perceived danger during combat, and having a more stressful post in the military.

Suicide, attempted suicide and self-harm

There are lower suicide rates among UK serving personnel in all three UK Services (Royal Navy, Army and RAF) than in the general population. The exception to this is in Army males (serving between 1984–2007) under the age of 20 years where the suicide rate was higher than expected (Fear et al 2009b), and, a 2–3 times higher risk of suicide in men aged 24 or under who have left the Armed Forces (usually Early Service Leavers) compared to their counterparts in the general population and those still serving (Kapur et al 2009).

More recent research is beginning to confirm that Early Service Leavers are more likely to have had suicidal thoughts and to have self-harmed than longer serving veterans (Woodhead et al 2011). The latter finding is based on a very small sample and so must be treated with caution.

Evidence on the prevalence of self-harm among UK military personnel is virtually absent except for a study by Pinder et al (2011) who found an overall lifetime prevalence of 5.6% for intentional self-harm (self-harm or attempted suicide) among 821 UK serving and ex-Service personnel. In UK serving and ex-Service personnel this was associated with psychological problems, particularly PTSD (assessed using a screening tool developed for primary care), shorter service, adverse childhood experiences, and being younger. Ex-Service personnel reported a higher lifetime prevalence of 10.5% vs. 4.2% for serving personnel. Comparisons with the general population reveal a lifetime prevalence of attempted suicide between 4.4–5.6% and self-harm of 4.9% (Bebbington et al 2010; Nicholson et al 2009). Hence a combined total of between 9.3–10.5% for self-harm or attempted suicide, suggesting that serving personnel have notably lower rates and ex-Service personnel similar rates to the general population.

In an earlier study, Hawton et al (2009) compared 166 Armed Forces personnel who presented with self-harm to a general hospital during a 15-year period between 1989 and 2003. Most were male (72.3%) and under the age of 35 years (95.2%); 62.7% were younger than 25 years. Relationship (62%) and employment problems (43.9%) were common, as was alcohol misuse (40.5%). Increases in the numbers presenting to hospital were found over the study period: 31 personnel between 1989–1993; 56 between 1994–1998 and 79 between 1999–2003. This was partly explained by simultaneous increase in self-harm in the general population during this

time. Armed Forces personnel were compared with a civilian sample presenting with self-harm matched for age, gender, area of residence, receipt of psycho-social assessment in hospital and date of episode to within 6 months. Fewer personnel were found to have current or past psychiatric disorders/treatment or a history of self-harm and the men had less suicidal intent.

Mild traumatic brain injury and post-concussional syndrome

Mild traumatic brain injury (mTBI) and post-concussional syndrome (PCS) are gaining increased attention and claimed as a 'signature' injury from the Iraq war. This is not unlike previous debates concerning shell shock from WWI (Jones et al 2007).

mTBI is defined as an 'acute brain injury resulting from mechanical energy to the head from external physical forces'. PCS is believed to be the cause of long-term symptomatic ill-health. The symptoms of mTBI include: headache, fatigue, dizziness, memory loss, visual disturbance and other such symptoms. These symptoms are also common in the general population (often referred to as 'medically unexplained symptoms') but not necessarily pathognomonic (Fear et al 2009b).

Recent evidence based on UK military personnel suggests that PCS is associated with reported psychological distress, mTBI with current symptoms of PTSD, that mTBI and PCS are not linked, and mental health problems predated the onset of mTBI.

In a representative sample of 5869 UK military personnel (4928 Regulars and 941 Reservists) deployed to Iraq, Fear et al (2009b) examined associations with 'PCS symptoms' and 'PCS symptom severity' as an indication of the presence of mTBI. Overall, 67% reported at least one symptom of PCS and 42% at least one moderate/severe symptom. PCS symptoms were significantly more common in women. With regards to in-theatre experiences, 52% were exposed to blasts, 24% aided the wounded and 21% were exposed to depleted uranium. All three in-theatre experiences were associated with PCS symptoms and symptom severity, with exposure to depleted uranium being the strongest association. These findings suggest that PCS symptoms are not specifically related to head injury. Those reporting PCS symptoms were also likely to report psychological distress; which raises the question of whether PCS symptoms form part of a complex expression of psychological problems.

Rona et al (2012b) attempted to assess the prevalence of mTBI in UK military personnel deployed to Iraq and/or Afghanistan, and identify what risk factors were associated with it and the relationship between mTBI and subsequent PCS. Using the Brief Traumatic Brain Injury Screen questionnaire, mTBI was found in 4.4% of personnel. This is considerably lower than the prevalence found in US studies which ranges from 12% to as high as 22.8% (e.g. Hoge et al 2008; Pietrzak et al 2009). mTBI was associated with current symptoms of PTSD, alcohol misuse, and multiple physical symptoms. Most PCS were not associated with mTBI and mental disorder predated the occurrence of mTBI.

Violent behaviour

Violent behaviour in military personnel returning from deployment to Iraq and Afghanistan is another area which has gained attention. In examining 4928 Regular personnel, MacManus et al (2012) found a prevalence of violence of 12.6%. Violent behaviour was identified through self-report questionnaires (leaving it open to misclassification error) and included questions on homecoming experiences such as 'in the weeks after I came home... I was involved in physical fights ...' Violence was categorised if participants answered 'agree'. Pre-enlistment antisocial

behaviour was strongly associated with self-reported violent behaviour. After accounting for this and other important factors, violence was still linked to having a combat role and self-reported multiple traumatic events during deployment. Post-deployment mental health problems such as PTSD and alcohol misuse were also associated with violence. Pre-enlistment antisocial behaviour is an important consideration in its own right when exploring the basis of aggression in military personnel (MacManus et al 2012b).

These findings based on self-reported data for violence were confirmed in a subsequent analysis of data drawn from the Police National Computer database and linked to a randomly selected cohort of serving and ex-Service UK military personnel with a criminal record. This revealed a lifetime prevalence of 17.0% (2139 of 12, 359 males) for any offence (MacManus et al. 2013). The most common offence was violent behaviour (1369 or 11% of the overall cohort); 20.6% (521) of whom were aged 30 years or under. The prevalence of lifetime violent offenders for men in the same age group in the general population is 6.7% and 8.7% for those aged 46 years (England and Wales in 2001; Prime et al 2001). The rate of any type offending was found to be higher during the post-deployment period examined compared to in-service pre-deployment and pre-military periods. Having a combat role in deployed personnel was found to be an additional risk for violent offending even after taking into account pre-military violent offending, socio-demographic characteristics and military factors for violence (rank, service, engagement status and serving status). Other notable risk factors were high levels of self-reported aggressive behaviours, increased exposure to traumatic events, post-deployment alcohol misuse and symptoms of PTSD (particularly hyperarousal symptom cluster). MacManus et al (2013) conclude that interventions to target alcohol misuse and aggressive behaviour may be appropriate, but need to be evidence based. Although symptoms of PTSD were less prevalent these may also be a risk factor for violence.

Help-seeking, barriers to care and stigma

Military personnel who delay or do not seek professional medical help for mental health problems is another area of concern. Some studies show that nearly half of those returning from combat with mental health problems do not seek help (Hoge et al 2004; Iversen et al 2005).

More recently, Iversen et al (2010) showed that the majority of military personnel (80%) who perceived they had a mental health problem sought some type of help, preferring informal support through a spouse or friend (between 72.6–84.6%). Only a quarter of those with a diagnosed mental health problem accessed medical help. Similarly, just under a quarter (23%) with alcohol problems had sought professional help, which was lower than those with depression and anxiety where 50% sought help. Regulars and Reservists did not differ in their help-seeking behaviours (Iversen et al 2010).

Help-seeking rates in UK military personnel are broadly similar to those found in the general population. For example, of the people screening positive for PTSD, 22% had received some form of community care in the previous year compared with rates of 20% for Regulars, 14% of Reservists and 24% for veterans (Iversen et al 2010).

This was also the case when comparing veterans with non-veterans; no differences were found on a range of treatment seeking measures (Woodhead et al 2011).

Similar help-seeking rates were found in a study by Brewin et al (2012) when examining contact with mental health services during military service for mental health problems and alcohol misuse. They studied the medical records of 132 veterans receiving a war pension comparing those who had developed PTSD, depression and alcohol abuse while in service with those who had not. Most of the veterans with PTSD (81%) or depression (71%) had been in contact with 'in-house' medical services for psychological problems; with 41% of those with PTSD and 35% with depression having self-referred, the remainder were identified by Service. Only 8% of those with alcohol abuse received an in-service diagnosis for this problem; but this was markedly higher for those with comorbid alcohol abuse and PTSD at 50%.

Barriers to care in military populations have been well documented. Stigma and lack of trust or confidence in providers of mental health services represent some of the main barriers to seeking help in serving personnel (Britt 2000; Greene-Shortridge et al 2007). This is also evident in the general population, particularly among men. Stigma concerning mental health problems is particularly problematic for military forces who are required to be physically and psychologically resilient during times of adversity (Rona et al 2004). Strong masculine norms among military personnel can make it difficult to report or seek help for a psychological problem for fear of being labelled a psychiatric patient which may have an adverse effect on their career (Britt 2000; Langston et al 2007). In a comparative study, Gould et al (2010) found that concerns about stigma and barriers to care were similar across the Armed Forces of all five nations studied.

Internal or self-stigma is another significant barrier to care. Langston et al (2010) surveyed 1599 Naval personnel to examine the prevalence of stigma regarding mental illness. Levels of reported external stigma (negative beliefs about mental illness) and internal stigma (where these negative attitudes become salient to an individual) in distressed vs. non-distressed personnel were compared. There was a significant difference between the two groups. External stigma was minimal, but internal stigma was more prevalent for all ranks. Distressed personnel reported internal stigma 2 to 3 times more than those who were not distressed. Results from the qualitative data collected revealed that Junior Non-Commissioned Officers felt more uncomfortable discussing emotional issues with their peers compared to senior staff.

Iversen et al (2011) noted a number of practical reasons why military personnel do not seek help for mental health problems, which included not knowing where to go or concern about being blamed for their problems by their employer. The reasons for not seeking care persisted even after leaving the Armed Forces. Those with mental health problems, especially symptoms of PTSD, reported considerably more barriers to care than personnel without a diagnosis of mental illness (Iversen et al 2011).

Use of mental health services

A few studies have examined the use of mental health services among military personnel after deployment. One of the first by Hoge et al (2006) in the US found a high utilisation of mental health services among US personnel a year after returning from deployment to Iraq (35% of personnel) which was significantly associated with combat duty. Of these, 12% were diagnosed with a mental health problem. Seal et al (2010) found that among US ex-Service personnel deployed to Iraq and Afghanistan newly diagnosed with PTSD a small proportion of 9.5% attended the recommended 9 or more follow-up sessions in less than 15 weeks, and 27.0% attended the same number of sessions within 1 year.

In the UK, Iversen et al (2010) found an overall treatment rate of 13% in a sample of UK Armed Forces personnel. This was lower than rates found for the general population at 26% (based on a European study by Wittchen et al 2005). For those who had received treatment, 55.8% received medication, 50.6% counselling/psychotherapy, 3.2% in-patient treatment and relatively few received Cognitive Behavioural Therapy (CBT; 12.6%). The types of psychotherapy were not specified. For those with alcohol problems 84% were in receipt of treatment; almost half undergoing counselling (47%), a quarter was in receipt of medication and the remainder in-patient care (25%). No differences were found between Regulars, Reservists and ex-Service personnel, although the numbers receiving treatment were small.

Services and support for serving and ex-Service personnel

In 2011, the MOD published the tri-Service Armed Forces Covenant (MOD 2011). The principles underpinning this Covenant are that members of the Armed Forces Community should not be disadvantaged by their service and be provided special treatment where appropriate and based on clinical need.

Prior to this a mental health plan was published in 2010 to provide additional support for the mental health needs of serving and ex-Service personnel. The plan entitled 'Fighting Fit' sets out a series of 4 main recommendations and 13 action points (Murrison 2010). The recommendations include:

- Incorporation of a structured mental health systems enquiry into existing medical examinations performed whilst serving.
- An uplift in the number of mental health professionals conducting veterans outreach work from Mental Health Trusts in partnership with a leading mental health charity.
- A Veterans Information Service (VIS) to be deployed 12 months after a person leaves the Armed Forces.
- Trial of an online early intervention service for serving personnel and veterans.

Subsequent to this, The Big White Wall (the online toolkit and facilitated support network to customise mental wellbeing) is now available to people leaving the Service and ex-Service personnel. The VIS is due to be introduced by the DH in the near future.

In-service provision

In-service mental health services are provided by the Defence Mental Health Services (DMHS) for serving personnel who require them either on deployment or at home. For serving personnel deployed on combat operations a Field Mental Health Team (FMHT) provides specialist mental health services (including clinical assessment and psychotherapeutic interventions (McAllister et al 2004). Using an approach called 'forward psychiatry' the FMHT seeks to maintain the combat effectiveness of the fighting force by providing healthcare to distressed personnel ideally where they are located (Jones et al 2010). Referral to the FMHT can be either through the in-service medical system or via the Trauma Risk Management (TRiM) described below. Awareness of the FMHT by these systems is important to ensuring that they work effectively and in partnership (Whybrow et al 2013). An audit of the FMHT, according to six pre-agreed care governance standards, found that 94% (149/159) of TRiM personnel and 100% (82/82) of medical personnel were aware the team operated close to the front line. Satisfaction with the support provided by the FMHT during deployment was also high.

For ex-Service personnel the provision of mental health services is largely the responsibility of the NHS. However, given the higher rates of mental health problems in Reservists, the MOD established the Reserves' Mental Health Programme (RMHP), which has now been merged with the MOD's Medical Assessment Programme (MAP) to become the Veterans' and Reservists' Mental Health Service. This programme assesses those who have been deployed overseas on an operational tour and attribute any mental health problems to their deployment, and if eligible are entitled to care at a military department of community mental health (DCMH) (McAllister et al 2011). Currently there are 15 DCMHs in the UK with other units based in Germany, Cyprus and Gibraltar, and comprise 150–200, mostly uniformed, mental health professionals (with approximately 75% nurses). These services include primary care, community and in-patient care. The latter is provided by two NHS Foundation Trusts. In assessing DCMH services, Finnegan and Finnegan (2007) found high rates of patient (94%) and staff satisfaction (72%), with 97% of patients receiving appointments that were compatible with their duties. The RMHP was assessed in a later study by comparing a treatment group of recently deployed Reservists with operationally attributable mental health problems (37 individuals) and a non-treatment group with non-operationally attributable problems (16 individuals) (Jones et al 2011b).

Trauma risk management programmes

Reducing the risk or prevention of mental illness attributable to operational exposure for Regulars and Reservists has been a predominant theme for military services. TRiM (Trauma Risk Management) is a peer support programme carried out by serving military personnel, not medical or psychiatric, following a brief training period. It seeks to identify anyone in need of treatment but not to provide treatment per se. As it is an extension of management and chain of command, it fits in well with military culture, unlike other forms of psychological debriefing with mental health professionals. An RCT to evaluate TRiM in the Royal Navy found that it neither reduced traumatic stress symptoms nor did any harm unlike other forms of early mental health interventions following exposure to traumatic events (Greenberg et al 2010). In light of these findings, TRiM has been extended to all three Services. It is argued that its benefits may lie in changing military culture to make it easier for personnel to acknowledge distress and seek help (KCMHR report 2010).

Third Location Decompression (TLD) is another popular programme (like TRiM, not a mental health treatment), based in Cyprus lasting between 24 to 36 hours which allows UK personnel following deployment to Iraq and Afghanistan to unwind psychologically (Hacker Hughes et al 2008). The programme is an initial part of a comprehensive post-operational stress management (POSM) process (JSP 2013). Some emerging evidence suggests that 91% of troops, despite 80% of respondents being ambivalent or not wanting to go through TLD, report TLD to be useful (Jones et al 2011). In the same study, around 12% of troops were concerned about re-establishing relationships or settling down to 'normal life' and appeared to find TLD helpful with these adjustment concerns. However, TLD was not found to promote better readjustment in a study by Jones et al (2013). Their sample of 3071 UK military personnel; 45.8% (1407) of whom had attended TLD and a control group of 54.2% (1664) who had not, found that those attending TLD were less likely to report symptoms of PTSD (3.0% of TLD attendees compared with 4.5% of controls). Also, TLD attendees reported significantly less harmful levels of alcohol use (16.8% vs 19.5% of controls). TLD was mandatory during the time of the study and so could not be a prospective RCT.

BATTLEMIND, the US programme for managing post-deployment stress, was adapted for the UK military personnel. An RCT to assess its effectiveness was carried out which found that it had no effect on the mental health status but had a small reduction in the likelihood of binge drinking compared to those receiving the standard brief (Mulligan et al 2012). Given the high level of alcohol consumption in military personnel this may be an important finding.

Fertout et al (2011) reviewed the evidence on preventing post-deployment mental health problems in Armed Forces personnel and found little. They emphasise the lack of high quality evidence in interventions such as peer- or unit-led psycho-education covering topics such as normal deployment stress, depression, PTSD, alcohol use etc. The authors add that although considerable preventive activity is being carried out by coalition nations, there remains a large gap in knowing what works and what does not.

Screening for mental health problems

Evidence determining the effectiveness of screening for psychological problems before or after deployment is limited. Mental health screening of UK military personnel prior to deployment was first attempted as far back as WWI. Jones et al (2003) reviewed the studies evaluating attempts to conduct mental health screening since WWI. Screening for any health problem before it becomes apparent is intuitively appealing; identifying those unlikely to complete their training, who may develop health problems, or are vulnerable to breakdown under stress has the potential to save a person distress and reduce costs to the military and society (Jones et al 2003; KCMHR 2010). Although appealing, Jones et al (2003) showed that follow-up studies of screening programmes, particularly efforts during WWII, failed to reduce the number of new psychiatric casualties and became counter-productive as those who would have made good soldiers were rejected.

In more recent conflicts, mental health screening before the beginning of the Iraq war in 2003 would not have predicted morbidity or PTSD, as Rona et al (2006) found. In a longitudinal follow-up study of a randomly selected sample, 2820 UK Armed Forces personnel completed an initial questionnaire to screen for psychological morbidity. For every psychological assessment used (the General Health Questionnaire-12, the SF-36, the WHO alcohol use identification questionnaire and the PTSD symptom checklist) both the positive and negative predictive values were low. The positive predictive value (i.e. the proportion of positive test results) for PTSD was low (explained by the low prevalence of this disorder in the period before the Iraq war), but the positive likelihood ratio (i.e. testing positive for a disorder) was relatively high. The key message from these findings is that it would be unwise to implement a screening programme.

Post-deployment screening is not routinely carried out in the UK, but is in the US and Australia. To date, screening following deployment has not been shown to reduce mental health problems after trauma in the military or civilian sectors (KCMHR 2010). Instead, until there is better evidence to show that screening is effective, “it is better to spend limited resources on improving access to and acceptability of military health services” (KCMHR 2010, page 37).

Since this time a cluster RCT, funded by the US Department of Defense until September 2014, is currently underway to assess a sample of 6000 military personnel in the UK Armed Forces returning from deployment in Afghanistan. The trial is being conducted by the KCMHR research unit. Its aims are twofold: to assess whether a post-deployment screening programme for PTSD, depression, anxiety and alcohol misuse is effective in reducing the morbidity from these; and subsequent health-seeking behaviour in those identified as having any of the conditions, comparing those in the intervention group with controls.

Beliefs about screening for mental health problems in UK personnel returning from deployment to Afghanistan were explored in a qualitative study of 21 Army personnel returning three months after deployment in Afghanistan. Keeling et al (2012) found that although respondents were positive about a screening programme for mental illness, they expressed a reluctance or unwillingness to receive advice and preferred to deal with any problems themselves. They also felt that one way to overcome this barrier would be to make screening compulsory. However, as cautioned above, until there is sufficient evidence to demonstrate the effectiveness of screening it is better to direct efforts into improving help-seeking behaviour.

NHS specialist services

In response to concerns about ex-Service personnel not feeling understood due to the potential cultural differences that may prevent veterans seeking help (Iversen and Greenberg 2009), the MOD and NHS piloted and evaluated six enhanced NHS mental health services across England (South Staffordshire, London, Tees, Esk & Wear Valley and Cornwall), Scotland (Lothian) and Wales (Cardiff) comparing them with three other veterans' services. The evaluation, largely descriptive, was conducted by Dent-Brown and colleagues (2010) from Sheffield. Data were collected on routine service activity, on all clients seen by each pilot service, from questionnaires sent to clients, diary activity from staff, annual reports or audit results, and telephone interviews with a lead clinician or manager from each service.

The evaluation found that successful aspects of the pilot services, as described by veterans, included the option for self-referral; availability of staff who were also veterans; group work with other veterans; multi-agency 'clinics' with advice on pensions, employment, housing, physical health; teams/buildings being badged for veterans; a service providing both assessment and treatment with no waiting time in between; joint work and information sharing with other relevant agencies such as NHS/Combat Stress to avoid duplication and to support each other's input; and access to Armed Forces service records for new referrals. Less favourable features of the pilots included staff who had little or no experience of working with veterans; assessment only with treatment by generic NHS services; having to travel long distances to access the service; a service where only one practitioner was available and not able to be in post at all times. The authors of the evaluation report add that, *"raising the sensitivity of all NHS mental health staff to veterans' issues is helpful. However, veterans' experience of generic NHS mental health services, even where staff had received some brief training, was not ideal and did not appear to be the best way forward"* (pg 9).

Fabrication was found to be an issue in a small but significant number of referrals who were not veterans as claimed, or for those who were, some had reported greatly exaggerated stories of their military experiences. One priority recommendation to check for fabrication/exaggerated experiences was for mental health services to routinely access veterans' service records to ensure a complete picture of a client's service history was obtained (Dent-Brown et al 2010).

NHS services for veterans prior to the pilot services included the Humber Traumatic Stress Service, provided by the Humber NHS Foundation Trust – a community based trauma service open to civilians but prioritising veteran cases (approximately 22% of all cases). Referrals are either from a client's GP, a community mental health team or via an Improving Access to Psychological Therapies (IAPT)/counselling service. The service aims to work in an integrated way with other NHS services and Combat Stress. They offer psychological interventions recommended by the National Institute for Health and Clinical Excellence (NICE), including CBT, Eye Movement Desensitization and Reprocessing (EMDR), psychoanalytic techniques,

Transactional Analysis (TA) and elements of Cognitive Analytic Therapy (CAT). The team sees younger ex-Service personnel (20+ years) who have recently left the Armed Forces having served in Iraq; previously those serving in Northern Ireland were commonly seen. Evaluation findings were not reported for this particular service.

Voluntary-sector mental health services for ex-Service personnel

There are a number of charities currently providing health and welfare services for ex-Service personnel (and their families). They are too numerous to document here but it is noteworthy that few report any service evaluation findings, and there is a need to investigate the effectiveness of all specialist services for ex-Service personnel.

Combat Stress (CS) is among the largest charity for ex-Service personnel with mental illness. Operating since 1919 it provides services which include a 24-hour helpline; outpatient clinics; 14 Community Outreach teams delivered by a team of multi-disciplinary mental health practitioners, community psychiatric nurses and regional welfare officers; specialist clinical treatment in short-stay residential centres; a six-week veterans' PTSD treatment programme; and a wellbeing and rehabilitation programme which includes employment mentoring, life skills workshops etc. CS offer trauma-focused treatments (e.g. CBT, EMDR, art therapy), psycho-educational groups (e.g. anxiety management, anger management, social skills), and rehabilitation groups (e.g. physical exercise, occupational therapies).

In terms of service activity, in October 2010 CS had 4380 cases (which are broadly defined). In 2009, CS received 1257 new referrals (an increase of two-thirds since 2005) and 1303 in 2010 (Murrison 2010; Dent-Brown et al 2010). The current age profile of ex-Service personnel receiving CS services is around 42 years, with an average 14-year gap between someone leaving the Service and contacting CS. This, however, does not mean that ex-Service personnel have not received help from other health services, such as NHS mental health services. CS collects psychometric and clinical audit data to describe the population of ex-Service personnel accessing their treatment services, their treatment outcomes and satisfaction with services. These have been detailed in a series of internal reports (obtained via personal communication). A clinical audit of three residential treatment centres conducted between June 2008 and November 2009 aimed to establish levels of satisfaction with various aspects of their care. There were 2023 admissions to CS treatment centres during the audit period with 1681 (83%) patients completing the satisfaction questionnaire prior to leaving. The satisfaction questionnaire was divided into seven domains and scored using a five-point Likert Scale (scores from 1–5 with 3 being a neutral point). Positive mean scores were found for admission and discharge procedures, the treatment centre environment/facilities and staff, patient involvement and recreation but not for symptoms (e.g. anxiety levels, mood, concentration, sleep, etc) which was explained by poor sleep patterns in patients (Bellwood and Busuttill 2009).

A preliminary internal assessment of CS treatment outcomes compared 57 ex-Service personnel admitted to one treatment centre to another group of 47 personnel who had not received their first admission. A measure of psychological distress (General Health Questionnaire, GHQ – 28 items) was administered at three time points (before admission, at discharge and at one-month follow-up). The 57 clients in the treatment group had a mean age of 50 years, an average of four previous admissions; with 75% of whom serving in the Armed Forces. No significant differences were found in GHQ-28 scores at the first and follow-up time points, although these scores were significantly lower for the treatment group at discharge compared to controls which was anticipated (Hart and Lyons 2007). The findings of this investigation need to be treated with

caution due to several methodological limitations; mainly that it was underpowered (lacking sufficient numbers of participants to detect any statistical differences between groups) and the design did not ensure that clients in the treatment and control groups were similar in terms of demographic and other characteristics.

A recent scoping exercise describes a local service in Kent & Medway to establish existing levels of service provision, to identify gaps in this provision and investigate other models of services across the country that may be worth introducing in the future (Tonks 2013). No data were reported on the service's activities or client characteristics.

The service itself comprises mental health peer support provided on a monthly basis at two locations in Kent in collaboration with CS and The Royal British Legion (TRBL). CS delivers an outreach service with three outreach staff carrying out home-based assessment, together with a limited level of treatment. Generic primary and secondary mental health services are tasked with providing services to ex-Service personnel (e.g. via IAPT services to deliver psychological therapies via primary care and secondary mental health care through community mental health services), although access to these is said to be limited and staff have reported anecdotally that they lack sufficient specialist knowledge when dealing with veteran cases. In addition, the Counselling Team Ltd in Shepway has had a higher number of ex-Service personnel seen (29 over the past 12 months) compared to other IAPT providers in the region (Tonks 2013). The other national models described are those that were part of the original six pilot services for ex-Service personnel described above.

Medical Assessment Programme (MAP)

Since 1993 MAP has been a national service offering telephone advice and guidance free of charge. The service provides a mental health assessment and actively listens to ex-Service personnel who believe their mental health problems have been the result of their military service since 1982 (Palmer 2012). Referral is via a health professional (GP) and not self-referral. In a description of the first 150 ex-Service personnel to use the service, 97% were white males, with a mean age of 45 years, an average length of service of 16 years, just under half were married (47%), 27% reported having involvement with the criminal justice system, 80% used alcohol and an average time from leaving the Service to assessment was 12 years. In terms of diagnosis, 65% had two or more mental illnesses. The most common diagnosis was neurotic, stress-related and somatoform disorders (48%). PTSD was present in 15% of the sample and was similar to the rate of 16.3% reported by Iversen et al (2005).

Two thirds of the sample was currently receiving help from the NHS (primary and secondary care services) or voluntary sector organisations; 23% had been offered CBT/EMDR and 52% antidepressants.

Interestingly, the study points to the relevance of obsessional traits which were present in up to 30% of the sample, with 11% diagnosed with obsessional compulsive disorder. This prevalence is higher than the lifetime prevalence in the UK general population of 2% (see Palmer 2012). The study also notes that at least 10% either fabricated or exaggerated their mental health symptoms, and this has been noted before in this UK military population (Baggaley 1998) and observed in UK pilot studies and the US military (Freuh et al 2005; 2007). As Poyner (2010) points out, it is important to assess for malingering during any psychological/psychiatric assessment/consultation where there is an incentive to feign or exaggerate mental illness. This is a concern in the US where some ex-Service personnel may 'over-report' symptoms of mental illness to receive service-related disability benefits (Poyner 2010).

Treatment outcomes

No studies were found reporting treatment outcomes for UK serving or ex-Service personnel. There are some studies that examine occupational outcomes. One example is by Jones et al (2009) who examined occupational outcomes in 384 soldiers admitted to hospital with mental health problems. The retention rate in the Service was low and no soldier returned to long-term military employment. The authors found that those reported receiving a non-specific individual intervention rather than group-based therapy or CBT during their hospital stay appeared to do significantly better (e.g. were less likely to leave the Service prematurely).

By contrast, there is more US literature on treatment outcomes which is focused largely on PTSD. Goodson et al (2011), for example, in a meta-analytic review examined 24 studies with a combined sample size of 1742 participants. Their analyses revealed that Veterans Affairs (VA) hospital treatments that included exposure-based intervention had the highest effect sizes, suggesting that those that seek treatment for combat-related PTSD in VA settings do better. In an earlier report, the Institute of Medicine in the US reviewed the evidence for the effectiveness of treatments for PTSD (Institute of Medicine 2007) and concluded that intervention modalities other than exposure treatments are problematic and more scientific evidence is needed for every modality.

Transition and resettlement to civilian life

Transition and Resettlement – Definitions and Distinctions

Transition: The Forces in Mind Trust uses the term ‘transition’ to cover preparation for leaving the Armed Forces, and the subsequent return to civilian life, of a Service man or woman and their immediate family, known as a Veteran and his/her family.

Resettlement: The formal in-service process of exiting the Armed Forces is termed ‘resettlement’; this is a programme graduated in terms of scale and support according to the number of years served, and includes for example: periods of leave; administrative, financial, career and housing advice; access to approved training courses; employment consultancy. Resettlement is currently delivered by the Career Transition Partnership; full details of provision and eligibility can be found at <https://www.gov.uk/information-for-service-leavers>

Veteran: A veteran is defined here as a civilian who has previously served (i.e. received pay) in the Armed Forces for one day or more. This definition is not shared by all COBSEO (The Confederation of Service Charities) members. The Reserve Forces’ place within the Veterans’ community is less well defined.

The term veteran, however, is problematic as it has ageist overtones and its definition is over-inclusive. Unlike other nations the definition of veteran in the UK is anyone who has received a day’s pay in the services (KCMHR 2010 report).

The ex-Service population has been estimated to be around 3.8 million (Woodhead 2009). Between 2011–2012, 21,370 military personnel left the Armed Forces; 3720 of whom left before they completed their training and began active military service (between 2006–2007 this was 6430) (DASA 2013). Ensuring that those leaving the military are registered with a GP is therefore essential. Transition to civilian life for the majority of military personnel is smooth; only a minority experience difficulty. Nevertheless, the Defence Medical Services (DMS)-Connecting for Health Connectivity Programme was launched in 2010 to improve the NHS

support for veterans by ensuring those who are leaving are registered with a civilian GP and that medical records can be transferred easily and reliably where required (Murrison 2010).

No studies were identified that looked specifically at the resettlement of UK ex-Service personnel. There is some evidence on transition and the health and social outcomes of personnel after they leave the Armed Forces. The military provide significant provision for transition on leaving the forces, more than any other employer. Levels of support by the MOD vary and depend usually on length of service. Medically discharged personnel receive a comprehensive range of specialist services to assist with transition to civilian life. For those with psychiatric illnesses follow-up care by the defence mental health social work service is provided for up to 12 months to ensure appropriate levels of care from NHS services (Fossey 2010).

A study by the National Audit Office (2007) on military personnel who left the Service two years prior to October 2006 found that almost three-quarters (of 4997 individuals) reported finding return to civilian life as expected or easier; that only 6% of the Service leavers in the study were unemployed; and many who were eligible for a full resettlement package were generally satisfied with this, but that the bureaucracy could be improved. The response rate in this study was particularly low.

However, similar findings were found by Iversen et al (2005b) in a longitudinal cohort of 8195 Service personnel who served in the Forces between 1991–2001 (some deployed to the Gulf, to Bosnia and an 'Era' control group employed but not deployed), where the majority had favourable outcomes; 87.5% were in full-time employment after leaving the Service. Serving in the Gulf war predicted employment, although it was associated with poorer psychological health (explained by the 'healthy worker' or 'medal effect'). Psychological health was also an indicator for whether a person stayed in the military or not. Those who left early because of persistent mental health symptoms did slightly worse. In essence, those who do well stay well; those who do not may often remain symptomatic.

Iversen et al (2005) interviewed 315 so called 'vulnerable leavers' (defined as those most at risk of long-term psychological and/or social problems). Almost half (43.8%) had a psychiatric diagnosis (following a structured interview), usually depression together with comorbid alcohol problems. A common source of help was from a GP and many were prescribed antidepressants, but very few received talking therapies such as CBT which is known to be effective. A quarter received help from Service charities (TRBL or CS). Those who did particularly badly were a group who had spent time in a Military Corrective Training Centre (MCTC) and, after leaving the MCTC, 50% were in debt, had housing problems (10% were homeless) and over half had a mental health problem (van Staden et al 2007).

Reservists also experience difficulties with transition. In a sample of 4991 UK military personnel, Harvey et al (2011) found Reservists compared to Regulars had a much harder time resuming social activities, accessing social support and participation after deployment, did not wish to talk to family and friends about their experiences and felt let down by people. Many of these experiences were associated with a common mental health problem. A 5-year study by Harvey et al (2012) confirmed that deployment among Reservists is associated with higher symptom levels of common mental health problems, PTSD and poorer general health. However, the risk of psychiatric problems in the years post-deployment did not increase, except for symptoms of PTSD which were more chronic in deployed Reservists compared to those not deployed (Harvey et al 2012).

Pinder et al (2011) attempted to identify a group of ex-Service personnel that was ‘socially excluded’. Using employment measures they identified 215 ex-Service personnel; 7.5% were unemployed and 29.3% were categorised as socially excluded. Those found to be at highest risk of social exclusion were ex-Service personnel who left the Service after a shorter period of service, and personnel who completed a full service term. Ex-Service personnel with PTSD were less likely to become socially excluded. And, fewer ex-Service personnel participated in social activities outside work compared to serving personnel which partially accounted for an increased risk of common mental health problems (Hatch et al 2013).

A briefing paper, the Howard League for Penal Reform (2011) describes the findings of a qualitative study to explore why some ex-Service personnel end up in the criminal justice system. Following interviews with 29 ex-Service personnel in English prisons, the paper highlights how for some leaving the military is daunting and a few find transition back to civilian life difficult. The military make significant provision for transition on leaving the forces, more so perhaps than any other employer. Resettlement, managed by the Career Transition Partnership (CTP), includes one-to-one interviews, providing tailor made advice, information and training about what is available. The issue, however, as the paper explains is that many ex-Service personnel who are incarcerated actually need help many years later. And, although there are many military charities to support ex-Service personnel, respondents in this study were unaware of these (Howard League 2011). An inquiry into the Former Armed Service personnel in prison led by the Howard League (2011b) found that:

“One of the problems in this sphere, highlighted on a number of occasions in the evidence which we heard, was the problem resulting from the reluctance of the ex-Serviceman to take advantage of the help available. Not only do some servicemen see little value in the information they receive on leaving, but they fail to recognise that the information may be needed a significant time after they have left” (page 4).

This reluctance to seek help and information is also compounded by issues of literacy and specific learning difficulties (e.g. dyslexia) in the ex-Service population.

Mental health impact of *deployment* on families of Service personnel

The following sections review the international literature given the dearth of UK studies on impact of deployment on families and children of serving military personnel. The usual caveats therefore apply and any attempts to translate the international literature into a UK context must be avoided.

According to the literature from the US and Australia, the majority of families function and adapt well to the cycle of deployment (McGuire et al 2012; Weins and Boss 2006). However, for a minority the impact of deployment, re-deployment, transition, and/or post-deployment can be negative; disrupting the family dynamic, lifecycle, marital relationship, Service spouses’ life satisfaction and psychological wellbeing, and lead to increased mental health problems in children.

Impact on children

Interestingly, much earlier US studies published in the 1980s to mid-1990s found no differences in mental health between children of military families and those of civilian samples. Even where mental health problems were observed in spouses and children these were explained by past history of mental health problems or had remitted spontaneously following reunions (reviewed by Verdeli et al 2011).

Recent research on the impact of deployment on military families presents a different picture. Deployments to Iraq and Afghanistan appear to be more stressful compared to operations twenty years ago; they are more unpredictable and dangerous because of counter-insurgency warfare (Spera 2009). Current deployments are also typically longer, more frequent and with shorter breaks in between (Hosek et al 2006; Rona et al 2007) which has led to a rise in concern about the impact on children.

No literature on the impact of deployment on children of UK serving and ex-Service personnel was identified. Nevertheless, White et al (2011), in a review of the literature (between 2003–2010) on the impact on children of US personnel deployed to Iraq or Afghanistan, found several studies reporting increased levels of stress and emotional/behavioural difficulties in adolescents and their caregivers at home compared to general population samples and non-deployed parents. Increased child depression and externalising behaviours (e.g. verbal or physical aggression directed towards others) were predicted by the cumulative length of parent's deployment during the child's lifetime. The authors conclude that children of deployed parents are at greater risk of psychosocial problems than their civilian counterparts.

In the US, the use of outpatient services for children of deployed parents has also risen. A large cohort study examining the outpatient medical records of 642,397 children of serving personnel aged between 3 to 8 years found that between 2006–2007 the proportion of visits for mental and behavioural health problems had increased by 11% for children of a deployed parent (Gorman et al 2010).

Impact on spouses/partners

Issues for Service spouses such as sudden or extended separations, frequent moves, perceived partner in danger, and social hierarchy with the Army environment, have been well documented in the international literature. Earlier studies found that spouse satisfaction with military life is a strong predictor of serving personnel's attitudes to staying in the military (Segal and Harris 1993); and marital issues also predict retention (Rosen and Durand 1995). In their review of the literature, Fear et al (2009) describe US studies where increases in divorce rates have been found for each war of the 20th Century, particularly for veterans of Korea and men who entered the military in later life, and for marriages that were established before the war. The factors that appear to lead to marital problems included: disruption of the life cycle, frequent moves and long periods of separation. Neither deployment nor combat were directly associated with marital violence; but combat associated with PTSD and antisocial behaviour were indirectly associated (Fear et al 2009).

The impact of deployment to Iraq on romantic relationships among UK military personnel appears not to be associated with any positive or negative changes to a relationship even after adjustment for socio-demographic characteristics (Rowe et al 2013). Factors that were associated with relationship breakdown included: younger age, childlessness, increased length of deployment, adjustment problems post-deployment, family violence and problems resuming sexual relationships.

Feelings of lack of control, loneliness and concern about military spouses' safety during deployment can increase the burden experienced by the spouses who remain at home (Spera 2009). Regular communication with families can be beneficial when home relationships are going well, but can have adverse consequences if problems arise. A lack of communication with home can increase the risk of mental health symptoms, but too much contact can hinder occupational effectiveness during deployment (Greene et al 2010). So, it is important to establish a balance in levels of communication with home.

Evidence, largely from the US, on the psychological consequences of deployment on spouses/partners is emerging (although cannot be interpreted within a UK context). Lester et al (2010) found significantly higher levels of depression and anxiety (using the Brief Symptom Inventory) in 163 partners of serving Army or Marine Corps compared to community samples. In a much larger study of 940 spouses using both broad and strict criteria for establishing psychiatric disorder, Eaton et al (2008) found 17.4% screened positive for generalised anxiety and 12.2% for major depression according to DSM-IV diagnostic criteria. Multiple and prolonged deployments (e.g. in excess of 11 months) have also been found to be associated with increased anxiety and depression in spouses of serving personnel compared with spouses of non-deployed personnel (Mansfield et al 2010). Spouses of National Guard members have been found to be particularly vulnerable to stress associated with deployments to Iraq and Afghanistan. In a survey of 212 spouses, 22% met the criteria for minor or major depression, 17% screened positive for PTSD and 10% reported suicidal ideation (Gorman et al 2011).

By contrast, a study of 121 participants in the US, Asbury and Martin (2012) found no differences in scores between military and civilian spouses for depression and anxiety. They did find, however, significantly higher rates of marital discord among military compared to civilian couples. Although military spouses reported much higher social support (an important component of mental health and wellbeing), which may be explained by spouses accessing Department of Defense programmes for supporting families of military personnel. Length of deployment nor number of deployments did not moderate any of the factors examined in this study (depression, anxiety, social support and marital discord).

It is difficult to draw any firm conclusions about the impact on families in relation to deployment using the existing international literature, much of which is relatively dated. However, these studies do help raise awareness about the small minority of families who experience marital problems and whether family members are affected by mental health problems, attributable to deployment or not. As Verdelli et al (2011) point out, spouses or partners with mental health problems may find it difficult to provide the supportive role needed to ensure a smooth transition back into civilian life for returning personnel. It also merits attention because of the potential long-term impairment of depression in spouses of serving personnel (Verdelli et al 2011).

Mental health needs and services/support for families and carers

Fossey (2012) provides an important overview of the needs of families and children of returning UK Service personnel. Very recent data on the number of married personnel are not available by the MOD. In 2007, 64.2% of male vs. 32.5% of female officers in the UK Armed Forces were married. The numbers of children of serving personnel are also unknown and estimated to be between 90,000 and 186,000 (House of Commons Defence Committee 2006; cited in Fossey 2012). As noted above very few studies have been conducted in the UK on the impact on families of deployed personnel. KCMHR are currently undertaking the 'Kids Study' to examine the impact of military life on UK Service children and so far 850 military fathers from existing cohorts have been identified. This study has been funded by the US Department of Defense and is due for publication in 2013. An on-going study by Shelton and colleagues at Cardiff University is examining a sample of Service personnel who have adopted children through the Soldiers, Sailors, Airmen and Families Association (SSAFA) adoption agency; looking at the relationship between the mental health of children and parents over time. A small pilot study by Pexton is aiming to develop an understanding of the experience of deployment on children and families and what evidence-based support services are most appropriate to deliver during deployment itself (cited in Fossey 2012).

Existing support for families in the UK

The Ministry of Defence's position on family support is set out in the Armed Forces Covenant (MOD 2011). This covers areas relating to healthcare, housing and education, and emphasises that the Armed Forces community should not be disadvantaged in any way or treated unfairly. Families are expected to access statutory services for healthcare, for example, but should be able to do so easily even if moving between bases or for other reasons concerning the serving personnel's role.

Specific services for families of UK serving personnel to address their emotional needs appear to be provided mainly by voluntary sector services. Cruse Bereavement Care, for example, provides bereavement support; SSAFA provide community support through Community, Carer Support and Victim Support Volunteers for families and children of Service personnel experiencing stress, major life changes, and bereavement. In 2010, volunteers supported more than 1200 people in all three Armed Forces with the majority of referrals relating to families and children (McRedmond, 2012 cited in Fossey 2012). The Big White Wall also provides support for psychological problems, although awareness of this initiative is said to be very low among family members of personnel (McCafferty, 2012, cited in Fossey 2012).

Key stakeholder views for further research

Thirteen interviews with key experts specialising in policy, service delivery (both statutory and voluntary sector services) and research in the field were conducted. (The complete list of interviewed stakeholders is shown in Appendix 3.) The following provides highlights of some of the topics for future research:

- There is a need to redefine the term veterans and understand who it is referring to and what it means – should Early Service Leavers be regarded as ex-Service personnel, particularly if they have not completed their basic training or been deployed?
- What is resettlement trying to do? When should resettlement packages be offered – is immediately after leaving military service too soon?

- Need for qualitative research to explore what function(s) alcohol provides during (and after) service for the individual and group, its benefits and costs. What is positive about the use of alcohol in the military? How has alcohol use after service changed over time, what steps have been used (e.g. Army General & Administrative Instructions; AGAIs) and why they have or have not worked? Could the forces run without it? Does alcohol use lead ex-Service personnel to drink heavily on exit? Do ex-Service personnel use the Service to exculpate their drinking?
- Research on alcohol use and misuse is required to elucidate the relationship between alcohol misuse and mental health problems in serving and ex-Service personnel presenting to mental health services and criminal justice services. Also, to elucidate drinking patterns of Service personnel during and after service and compared to age- and sex-matched civilian samples.
- Long-term health consequences of alcohol misuse in ex-Service personnel (compared to civilian populations) requires further work.
- The need for qualitative work to understand why some families are more resilient than others when partners deploy on operations, leave the Service and return to being civilians/ civilian citizens (and ways of enhancing resilience). How, if at all, Reservists differ from Regulars, taking into account that Reservists, like Regulars, are not a homogenous group and some will have served as Regulars – do they cope better, for example? Do children of serving personnel cope differently from non-Service children with bereavement? Mode of death may be important but attention to relationships and civilian controls must be present.
- The advantages and disadvantages of screening for mental health problems in those about to leave the Service – not appropriate unless it meets standard public health screening guidelines and practical problems can be addressed.
- Examination of the prevalence of ADHD, Autistic Spectrum Disorder, specific learning disabilities in those enlisted – there is an assumption that these individuals are more likely to have problems on exit – and a better way of targeting resources. Currently the prevalence of these disorders is unknown.
- An audit of the number of veterans attending primary care services, matched with age-sex controls who are not veterans may help establish what types of physical and mental health issues veterans actually experience, and how and whether significantly different from non-veterans.
- What does being understood mean in practice? What professional skills are needed to treat veterans given there is no evidence any special skills other than professionally acceptable competence in treating diagnosed mental illness properly? Whilst desirable, there is no need for veterans to treat veterans (just as there is no need for firemen to treat firemen, for example). There is some need for veterans to be assessed by veterans possibly to minimise fabrication and fraud in a societal group who are perceived as having ‘special’ access to services, welfare, pensions etc.
- Better information systems need to be put in place to inform ex-Service personnel where to seek help – some concern expressed about the lack of appropriate clinical trained staff/ support provided by voluntary sector services. Also a lack of coordination of voluntary sector services – how can this be improved?
- Mild traumatic brain injury and its link with PTSD needs further exploration. It is important to assess whether this could lead to increasing iatrogenic illness and inappropriate health anxiety, more misattribution in the criminal justice system and mental health services and greater welfare costs.

- What are the reasons for delayed access to services for some? This research needs to include a full assessment of the individual to exclude issues such as literacy and dyslexia to explain why a specific minority have problems. This is to ensure that a person's input can be better tailored to their needs.
- Need further research on Reservists, for example, why do they join up (what is their motivation, their social support networks, any relationship issues, substance misuse). Existing research has been focused on their home coming but not enough is known about them – e.g. their increased rates of PTSD but lower rates of alcohol use.
- There is no trial of alcohol treatment in the military, although there has been years of experience in this area, each Service previously had an alcohol treatment programme.
- More social psychological research as the Forces are groups par excellence and an individual's behaviour in groups differs, yet much of our understanding is based on individuals, hence behaviours need contextualisation through group understanding.
- Great need to understand ex-Service personnel's informal support networks and systems both for Regulars and Reservists.
- Of those with PTSD, 50% is unrelated to deployment – there is a need to understand this. Fabrication is important to examine as part of this and has many aetiologies from fraud to delusion. Apart from forensic practitioners many mental health professionals shy away from this, although research needs to determine who makes the diagnosis and how. Additionally, how patients self-diagnose (using the internet) and/or are diagnosed by other veterans they come into contact with.
- Need for long-term follow-up research to further understand what happens to ex-Service personnel on leaving the Forces.
- What services are appropriate for veterans and how can engagement and access to them be improved?
- No need for a dedicated service for ex-Service personnel as the number who require these is so low.
- Need to understand how mental illness is being identified – much of the research on UK serving and ex-Service personnel has used screening measures rather than diagnostic interviews – accurate diagnosis is needed.
- Stigma and mental illness is an issue, but PTSD is a 'badge of honour' which can lead to abnormal illness behaviours and impact negatively on family systems – how can ex-Service personnel be empowered to seek help.
- Broader context is important – cultural and societal factors. There are many myths and stereotypes that have been circulated by the media and public attitudes are distorted.
- Many lessons and advances have been made in military health – it is worth sharing these with the wider community (e.g. advances in prosthesis technology).
- How do spirituality and faith help?

Gaps in the research evidence

Prevalence of mental health problems

Further research is needed to examine the groups that are at higher risk of mental health problems and other adverse health outcomes. These include Early Service Leavers, Reservists, women and young military personnel. A better understanding of why they appear more susceptible to health problems and how these can be prevented/avoided would be useful.

Little is known about drug misuse and comorbid mental illness in UK military serving and ex-Service personnel. In the US, this has been gaining more attention and is a relatively under-explored area in the UK military. The KCMHR do not collect data on drug use.

Most if not all research on the prevalence in UK serving and ex-Service military personnel has been measured using screening tools to identify symptoms (administered through telephone interviews or postal surveys). But these tools do not establish a diagnosis which is obtained through face-to-face structured clinical interviews. There is a gap therefore in establishing more formal psychiatric diagnoses in this population. It is likely that the prevalence rate will be lower than those reported in the present literature. This applies to PTSD in particular.

There is emerging evidence suggesting the existence of delayed-onset PTSD. This requires further research to understand its relationship with comorbid psychological problems. Further work needs to include what happens to individuals after leaving the military and what life-events (pre- and post-military service) have occurred, and whether any social, economic and political factors have influenced the presentation of PTSD and its delayed onset.

There is a need for further research to understand the role of alcohol use in the military, particularly in vulnerable groups, using more qualitative research techniques (also recommended by Fear et al 2009 review), and to identify the onset of alcohol misuse in serving and ex-Service personnel and its impact using more formal measures rather than perceived use/impairment.

Help seeking and use of mental health services

More research is needed to understand the barriers to medical care given the importance of receiving treatment, particularly for serving personnel, and whether this differs from equivalent civilian populations. Do primary care services need improving to encourage serving and ex-Service personnel to access these?

What would promote better help seeking and access to services for treatment? An exploration of access routes to in-service mental health services is needed to understand what pathways ensure better access (e.g. via non-medical services such as chaplains or padres within the military)? Access to NHS mental health services for ex-Service personnel is equally important to explore.

Services and treatment outcomes

There are few evaluations of mental health services for both serving and ex-Service military personnel in the UK. The limited evidence on in-house services appears very favourable in terms of service coverage and user and staff satisfaction. Medical discharge may well be a positive intervention for some. It is also worth remembering that the majority of psychiatric diagnoses in service are adjustment disorders (see Scott 2005, for example) and post-service would be treated in primary care services. Assessing the impact of the Reserves Mental Health Programme may be useful if it enhances access to care for those who need it.

Specialist NHS and voluntary sector mental health services are in place. The six NHS facilities for ex-Service personnel have been evaluated in terms of service development and process, but not impact. However, the treatments offered in these services are usually evidence-based. Many ex-Service personnel who develop mental health problems will not necessarily meet the criteria for secondary services. More research on access to and use of primary services by ex-Service personnel would be important to carry out. Also, it needs to be clarified whether IAPT and treatment for PTSD need any additional modifications or considerations to take account any particular military experiences.

Nothing is known about the effectiveness, benefits or impact of treatment provided by the numerous voluntary sector services (e.g. CS) for ex-Service personnel. Understanding the needs of their particular client group, who appear different to those presenting at other statutory services, is needed (e.g. why there is such a long gap between leaving the Service and contacting CS, when many of whom will have been, or continue to be, in receipt of support from the NHS and other voluntary sector organisations).

Fabrication requires further investigation as none has been undertaken in the UK. This has clinical and financial implications given the current status of ex-Service personnel in UK society. There may be a need to understand why some people presenting to specialist veterans' services fabricate or exaggerate their stories to obtain these services.

Resettlement and transition

There appears to be no specific research on the resettlement of UK ex-Service personnel. And, research on the transition of military personnel to civilian life is limited. This could focus on both the health, social and family outcomes (for those who have successful transitions/resettlement and those who do not). Particular groups could also be examined, for example Reservists and Early Service Leavers.

Little is known about what the most appropriate support by NHS services or other agencies is for Early Service Leavers given they are likely to experience persistent mental health problems and are not eligible for graduated resettlement support by the military. How they differ from other military and non-military population equivalents also needs to be explored.

Again there is very limited qualitative data/evidence to explore the needs and perspectives of the minority of ex-Service personnel who have poor outcomes, the reasons for leaving the Service early, and transition to civilian life.

Further research is needed on the types of social, family and peer support that enables an ex-Service man/woman to do well in terms of transition and resettlement, and how this can be transferred to the minority who have poor health and social outcomes.

Post-deployment prevention programmes need further research to determine what works. Also, what is the best way to provide information to military personnel leaving the Forces and when is best time to do this?

Impact of deployment in families and children

There is a considerable gap in the UK literature examining the impact on families and children. Almost all the existing evidence comes from the US. There is an urgent need for more systematic research in this area to establish the prevalence of mental health problems in spouses, children and carers of UK personnel; their needs for treatment and mental health services, and to understand what factors can prevent marital conflict and poor mental and behavioural health in children.

Previous recommendations for further research

Fear et al in their 2009 review of the literature for the Department of Health recommend that:

1. The **long-term outcomes of ex-Service personnel** need to be investigated through prospective studies. Existing cohorts of modern military personnel held by the KCMHR are too small to draw reliable conclusions. Data based on large scale samples, such as the Adult Psychiatric Morbidity Survey or Census data, are required to answer questions such as:
 - Any regional variations in outcomes across the UK;
 - Specific risk factors for persistent, rather than transient, unemployment;
 - The number of ex-Service personnel in prison;
 - Whether it is possible to establish an appropriate general population comparison group which takes account of the non-random way of recruitment into the military, in order to estimate the risks and benefits of military life.
2. **Pre-service, in-service and post-service factors** include the role of childhood adversity as a determinant of outcomes among ex-Service personnel. This type of information is often collected during service which could be distorted by military experiences and so best gathered perhaps on entry into military service. More specific questions, highlighted in Dandeker's 2003 review, concern the appropriateness of recruiting people who have been in Local Authority care and whether they would have fared worse had they not joined the military. Help seeking, barriers to care and the impact of in-service factors on post-deployment outcomes were also flagged up as priority research areas which have been examined since 2009 and the evidence outlined above.
3. Further research is needed on **screening** to determine its usefulness. Screening appears to be of little or no benefit in terms of predicting for those who are likely to fail to complete their training or are at risk of mental illness. Screening on leaving the military for actual mental illness is something that has been adopted by the US Post Deployment Health Screening programme, but to date there is insufficient evidence of its usefulness.

4. **Alcohol** use and its role during and after military life remain to be understood. Alcohol consumption in vulnerable leavers also requires further exploration and its relationship with social exclusion. This area was highlighted as an important area for further research in the Dandeker 2003 review.
5. Also highlighted by Dandeker et al (2003) was the need to understand more about the outcomes for **special populations** such as those who have served in Northern Ireland and those who have been to the Military Corrective Training Centre at Colchester.
6. **Interventions** to improve the outcomes of ex-Service personnel who become homeless; mentoring those that are vulnerable service leavers; and determining the most appropriate time for resettlement activities all need further research. Service evaluation of the Community Mental Health pilot schemes (reported above) and the Reservists Mental Health programme have been conducted (although the results of the latter have not been found).

Fossey (2012) lists four recommendations for further UK research to inform policy making. This includes:

1. **Alcohol use** and the impact of irresponsible drinking on families of Service personnel; the drinking habits of families who remain at home during deployment; and the long-term consequences of excessive alcohol consumption;
2. Larger studies to examine the rates of **domestic violence** compared to a civilian cohort in order to plan for appropriate support services;
3. Examination of the impact of **mental health problems** in returning personnel on their families and children;
4. Examination of the emotional and psychological needs of families alongside the recent focus on providing **family support** as set out in the Armed Forces Covenant.

Recommended research priorities

The following research priorities are based on gaps in the UK evidence base. These represent an important next step for research in this field. Although difficult to do, employing suitable comparators (e.g. groups to compare any differences or similarities) is crucial to any future research work. In order of importance, the areas recommended are:

1. **Alcohol misuse.** This is an area of great importance and a major public health issue. There is a need to understand the role of alcohol use in military personnel and the long-term effects this has on health, and which ex-Service personnel continue to drink hazardously after leaving the military, how many start after leaving and drinking habits prior to joining. It is also important to identify the effective alcohol programmes suitable for use in the military that help moderate drinking levels and prevent hazardous drinking and long-term alcohol misuse/dependency.
2. **Services, interventions and support.** A second priority for further research includes determining what mental health services work for ex-Service personnel with adjustment disorders, common mental health problems and PTSD. There are a large number of voluntary sector organisations providing health and social care for ex-Service personnel. It is important to ensure that these services are well coordinated and targeted so that resources are used effectively.

Evaluation of services delivering mental health care to ex-Service personnel is an important next step in any future research programme. It is necessary to understand the number of referrals and patterns over time, the characteristics of those who present to them, the treatments/interventions provided and the outcomes of those interventions. RCTs are the 'gold standard' for assessing 'what works and for whom'. Other forms of service evaluation methods, although not as robust for investigating the impact of an intervention, should not be dismissed. Suitable comparison groups are essential.

Evidence-based mental health interventions are important to deliver to serving and ex-Service personnel who experience mental health problems. Would newly emerging interventions such as support via the internet, tele-medicine, mobile phone support and self-management work improve help seeking behaviour in serving and ex-Service personnel?

3. **Families, children and social support.** There is little knowledge about the experiences and impact on families and children of deployed and post-deployed UK personnel and the support that some families may need. What social, family and peer support enables ex-Service personnel to do well, during transition and resettlement into civilian life; and how this can be transferred to the minority who have poor health and social outcomes? How can families be best supported, particularly those caring for ex-Service personnel with mental and/or physical health problems? What are the health and social needs of these carers?

Conclusion

Over the past 15 years there has been an impressive surge in the amount of research conducted on UK military personnel. This has increased our understanding of the impact of military service and to some extent what happens after leaving service. For the most part, rates of mental health problems are similar to the general population, affecting a minority of serving and ex-Service personnel. More serious problems such as symptoms of PTSD are even less frequent, despite this attracting a great deal of public and media attention. Interestingly, UK military personnel differ in many ways from their US counterparts in terms of rates for PTSD and alcohol use in particular.

Much of what we know about mental health problems in UK personnel is based on large prospective cohort studies using self-report measures, administered through telephone interviews and postal questionnaires. These at best tell us about possible symptoms of mental illness, violent behaviour and so forth. For this reason it pays to be cautious when interpreting these findings. Future research work needs to concentrate more on formally diagnosing problems using structured face-to-face interviews. This will lead to more accurate conclusions about the health and social problems in this population. Services attempting to meet the health and social needs of military personnel should be evaluated to determine their impact and effectiveness so as to ensure positive outcomes and better use of available resources.

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Appendices

Appendix 1: Search strategy

Search terms and search strategy

Cochrane Library Issue 9 of 12, 2012 (CENTRAL, CDSR & DARE)

- #1 MeSH descriptor: [Military Personnel] this term only
- #2 MeSH descriptor: [Veterans] this term only
- #3 veteran*:ti,ab,kw (Word variations have been searched)
- #4 “armed forces”:ti,ab,kw (Word variations have been searched)
- #5 “service personnel” or “ex-Service personnel”
- #6 “armed services”:ti,ab,kw (Word variations have been searched)
- #7 (servicemen or servicewomen):ti,ab,kw (Word variations have been searched)
- #8 “forces personnel”:ti,ab,kw (Word variations have been searched)
- #9 #1 or #2 or #3 or #4 or #6 or #7 or #8
- #10 MeSH descriptor: [Mental Health] this term only
- #11 MeSH descriptor: [Substance-Related Disorders] this term only
- #12 MeSH descriptor: [Alcohol-Related Disorders] this term only
- #13 MeSH descriptor: [Stress Disorders, Traumatic] explode all trees
- #14 PTSD:ti,ab,kw (Word variations have been searched)
- #15 (post-traumatic stress disorder* or combat disorder*):ti,ab,kw
(Word variations have been searched)
- #16 ((drug* or substance* or alcohol) near/3 (abus* or misus* or depend* or addict*)):ti,ab,kw
(Word variations have been searched)
- #17 MeSH descriptor: [Mental Disorders] explode all trees
- #18 (mental* near/3 (ill* or disorder* or health)):ti,ab,kw
(Word variations have been searched)
- #19 “combat exposure”:ti,ab,kw (Word variations have been searched)
- #20 “symptomatic ill health”:ti,ab,kw (Word variations have been searched)
- #21 “war syndrome”:ti,ab,kw (Word variations have been searched)
- #22 MeSH descriptor: [Self-Injurious Behavior] explode all trees
- #23 (suicid* or self-harm* or self-injur* or self-mutilat*):ti,ab,kw
(Word variations have been searched)

#24 (depress* or anxiety or bi-polar or schizophren* or psychotic or psychosis or bipolar or personality disorder*):ti,ab,kw (Word variations have been searched)

#25 #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24

#26 #9 and #25

MEDLINE and EMBASE (OVID)

- 1** Military Personnel/
- 2** Veterans/
- 3** veteran\$.tw.
- 4** "armed forces".tw.
- 5** ("service personnel" or "ex-Service personnel").tw.
- 6** "armed services".tw.
- 7** (servicemen or servicewomen).tw.
- 8** "forces personnel".tw.
- 9** or/1-8
- 10** Mental Health/
- 11** substance-related disorders/ or alcohol-related disorders/
- 12** stress disorders, traumatic/ or combat disorders/ or stress disorders, post-traumatic/ or stress disorders, traumatic, acute/
- 13** PTSD.tw.
- 14** (post traumatic stress disorder\$ or combat disorder\$).tw.
- 15** ((drug\$ or substance\$ or alcohol) adj3 (abus\$ or misus\$ or depend\$ or addict\$)).tw.
- 16** exp Mental Disorders/
- 17** (mental\$ adj3 (ill\$ or disorder\$ or health)).tw.
- 18** combat exposure.tw.
- 19** "symptomatic ill health".tw.
- 20** "war syndrome".tw.
- 21** self-injurious behavior/ or self mutilation/ or suicide/ or suicide, attempted/
- 22** (suicid\$ or self-harm\$ or self-injur\$ or self-mutilat\$).tw.
- 23** (depress\$ or anxiety or bi-polar or schizophren\$ or psychotic or psychosis or bipolar or personality disorder\$).tw.
- 24** or/10-22

- 25 24 and 9
- 26 limit 25 to yr="2002 -Current"
- 27 limit 26 to english language
- 28 north america/ or canada/ or united states/ or australia/
or exp great britain/ or exp australasia/
- 29 27 and 28

PsycINFO (OVID) (NB- country limiters are not available in this database)

- 1 Military Personnel/
- 2 Veterans/
- 3 veteran\$.tw.
- 4 "armed forces".tw.
- 5 "service personnel".tw.
- 6 "armed services".tw.
- 7 (servicemen or servicewomen).tw.
- 8 "forces personnel".tw.
- 9 or/1-8
- 10 Mental Health/
- 11 drug abuse/ or alcohol abuse/
- 12 posttraumatic stress disorder/
- 13 PTSD.tw.
- 14 (post traumatic stress disorder\$ or combat disorder\$).tw.
- 15 ((drug\$ or substance\$ or alcohol) adj3 (abus\$ or misus\$ or depend\$ or addict\$)).tw.
- 16 exp Mental Disorders/
- 17 (mental\$ adj3 (ill\$ or disorder\$ or health)).tw.
- 18 combat exposure.tw.
- 19 "symptomatic ill health".tw.
- 20 "war syndrome".tw.
- 21 self-injurious behavior/ or self mutilation/ or suicide/ or suicide, attempted/
- 22 (suicid\$ or self-harm\$ or self-injur\$ or self-mutilat\$).tw.
- 23 (depress\$ or anxiety or bi-polar or schizophren\$ or psychotic or psychosis or bipolar or personality disorder\$).tw.

24 or/10-22

25 24 and 9

26 limit 25 to yr="2002 -Current"

27 limit 26 to english language

CINAHL (EBSCO)

S34 S29 and S33

S33 S30 or S31 or S32

S32 (MH "New Zealand") OR (MH "Australia")

S31 (MH "Great Britain+")

S30 (MH "North America") OR (MH "Canada") OR (MH "United States")

S29 S28 Limiters - Published Date from: 20020101-20121231; English Language

S28 S10 and S27

S27 S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21
or S22 or S23 or S24 or S25 or S26

S26 (depress* or anxiety or bi-polar or schizophren* or psychotic or psychosis
or bipolar or personality disorder*)

S25 (suicid* or self-harm* or self-injur* or self-mutilat*)

S24 (MH "Suicide") OR (MH "Suicide, Attempted")

S23 (MH "Self-Injurious Behavior")

S22 "war syndrome"

S21 "symptomatic ill health"

S20 "combat exposure"

S19 (mental* N3 (ill* or disorder* or health))

S18 (MH "Mental Disorders+")

S17 ((drug* or substance* or alcohol) N3 (abus* or misus* or depend* or addict*))

S16 ("post traumatic stress disorder*" or "combat disorder*")

S15 PTSD

S14 (MH "Stress Disorders, Post-Traumatic")

S13 (MH "Alcohol-Related Disorders+")

S12 (MH "Substance Use Disorders+")

S11 (MH "Mental Health")

S10 S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9

S9 “forces personnel”

S8 servicemen or servicewomen

S7 “armed services”

S6 ex-Service personnel

S5 “service personnel”

S4 “armed forces”

S3 veteran*

S2 (MH “Veterans+”)

S1 (MH “Military Personnel+”)

Databases searched and search results

Database searched	Date searched	Number of results
CENTRAL Issue 9 of 12, 2012 (The Cochrane Library)	3/10/12	351
DARE		7
CDSR		0
MEDLINE (OVID) 2002 to 29/9/12 2012	3/10/12	2363
EMBASE (OVID) 2002 to 2012 week 38	3/10/12	2033
PsycINFO (OVID)	3/10/12	4602
CINAHL (EBSCO)	3/10/12	1119
Total		10475
After de-duplication		7043

Appendix 2: Grey literature search

Grey literature was searched for using the following websites:

- Australian Department of Veterans' Affairs - <http://www.dva.gov.au/Pages/home.aspx>
- British Legion – annual report and other relevant publications
- Department of Health (UK) – review by Fear et al (2009)
- Centre for Mental Health – (impact on families, emotional needs reviews)
- Centre for Military Research (KCL) – reports and UK evidence
- Combat Stress – comorbidity, services provided to veterans and currently seeking to treat those who served in Bosnia , Northern Ireland, etc
- Joint Service Publication (JSP) 575 Tri-Service Early Service leavers (2010) - <https://www.ctp.org.uk/assets/x/51978>
- Mental Health America – veterans webpages
- Mental Health Foundation – Briefing paper and facts and figures webpages
- Ministry of Defence (UK) – Mental health plan (2010) and Covenant
- National Center for PTSD (PTSD Research Quarterly re veterans)
- South Atlantic Association (Falklands) – reunions (Only research in the last 10 years)
- US Dept of Veterans Affairs - <http://www.mentalhealth.va.gov/>
- Veterans Affairs Canada - <http://www.veterans.gc.ca/eng>

Appendix 3: Key stakeholders interviewed

Combat Stress

Dr Walter Busuttill MBChB MPhil MRCPG FRCPsych (RAF) Retd, Director of Medical Services & Consultant Psychiatrist

Department of Health

Dave Rutter, Head Armed Forces and Veterans' Team

Fossey (Consultancy) Ltd

Matt Fossey, Director, Innovo Consultancy Ltd. Senior Associate, Centre for Mental Health, London

King's Centre for Military Health Research, King's College London

Sir Simon Charles Wessely, Director of the King's Centre for Military Health Research; Professor of Psychological Medicine (Institute of Psychiatry, King's College London), Head of Department of Psychological Medicine, Vice Dean for Academic Psychiatry, Teaching and Training at the Institute of Psychiatry

Surgeon Captain Professor Neil Greenberg, Defence Professor of Mental Health, Co-Director of the Academic Centre for Defence Mental Health,

Dr Nicola Fear, Reader in Epidemiology and Co-Director of the King's Centre for Military Health Research

Edgar Jones, Professor of the History of Medicine and Psychiatry, Programme Leader of MSc in War and Psychiatry, King's Centre for Military Health Research, Institute of Psychiatry

Mental Health Research Network, Heart of England Hub

Carly Cooper

Gemma Borland

Ministry of Defence

Dr Anne Braidwood, Chief of Defence Personnel Medical Advisor

Derek Read, Ministry of Defence Official

Veterans Aid

Dr Hugh Milroy, Chief Executive

Ian Palmer, Professor of Military Psychiatry, Psychiatric Adviser to Veterans Aid

Patron: Admiral the Lord Boyce KG GCB OBE DL

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Mental Health Foundation

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mentalhealth.org.uk

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Scotland SC039714
Company Registration No. 2350846