



KING'S
College
LONDON

University of London

K C M H R
KING'S CENTRE FOR MILITARY HEALTH RESEARCH

KING'S CENTRE FOR MILITARY HEALTH RESEARCH: A TEN YEAR REPORT

What has been achieved by a decade of research into the health of the UK Armed Forces and UK?

September 2006



contents

SUMMARY	1
INTRODUCTION	5
SECTION 1 - The health consequences of the 1991 Gulf War	6
SECTION 2 - Historical approaches to veterans' health	16
SECTION 3 - Contemporary studies on veterans' health	18
SECTION 4 - Prevention and treatment of mental health disorders	21
SECTION 5 - Peacekeeping and its consequences	26
SECTION 6 - The war in Iraq	28
SECTION 7 - Alcohol and risk taking behaviours	35
SECTION 8 - Other issues	37
SECTION 9 - What impact has KCMHR had on policy?	39
SECTION 10 - Where are we going? Work in progress	40
SECTION 11 - Monitoring health outcomes in the future	42
APPENDIX 1 - Gulf War Illness Unit and KCMHR staff 1996-2006	43
APPENDIX 2 - Funding	44
APPENDIX 3 - Publications	45



summary



INTRODUCTION

SECTION 1

The health consequences of the 1991 Gulf War

Epidemiology

- ▶ Demonstrated increase in ill health in UK Gulf veterans
- ▶ But no unique “Gulf War Syndrome”
- ▶ Picture similar to USA, Canada, Australia and Denmark
- ▶ No increase in cancer
- ▶ No increase in mortality other than suicide and/or accidents
- ▶ All three Services equally affected
- ▶ No influence of role/task/duty in theatre
- ▶ Symptoms more common in lower ranks
- ▶ Symptoms not an artefact of how questions were asked

Causes

- ▶ No evidence of damage to peripheral nervous system
- ▶ Organo phosphate pesticides or nerve agents not cause
- ▶ Subjective rather than objective neuropsychological problems, suggest that frank “brain damage” also unlikely
- ▶ Any possible cause must be a widespread exposure
- ▶ Plausible candidates for the increase in symptoms therefore include medical counter measures, stress/fear of chemical weapons, media/social influences

Medical counter measures

- ▶ Statistical link between particular pattern of medical counter measures used by UK Forces and ill health
- ▶ Interaction between biological vaccines, multiple vaccines and stress in theatre
- ▶ Some immunological changes identified in sick Gulf veterans, but unable to confirm this was due to vaccines
- ▶ Link between vaccines and symptoms may not be immunological
- ▶ Psychiatric disorders such as PTSD doubled, but overall rates not sufficient to explain all ill health
- ▶ Anxiety secondary to genuine threat of chemical weapons remains a possible factor
- ▶ Since the Gulf War and our studies UK Armed Forces vaccination policy has been changed on a precautionary basis
- ▶ Since the Gulf War health surveillance and record keeping improved

Outcome

- ▶ Gulf health effect has persisted over time

SECTION 2

Historical approaches to veterans’ health

- ▶ Medically unexplained symptoms have arisen after many previous conflicts involving the British Armed Forces
- ▶ There has been a gradual shift in the pattern of symptoms and the explanations offered since the Victorian period

- ▶ Psychological reactions to trauma are likewise not static, and have changed since the First World War
- ▶ A new MSc is offered in “War and Psychiatry”, and is approved by MOD for members of the Armed Forces

SECTION 3

Contemporary studies on veterans’ health

- ▶ UK uses a very broad definition of a veteran – one day in the Armed Forces
- ▶ Most people who leave the Armed Forces do well and get jobs quickly
- ▶ Service leavers with poor mental health in service are more likely to leave and less likely to get jobs after leaving
- ▶ Those with psychiatric problems have difficulties accessing appropriate NHS services, and rarely obtain the best psychological treatments
- ▶ For the small minority most at risk of poor social outcomes, interventions need to be broad based, and given before or as soon after separation as possible
- ▶ Still impossible to quantify the benefits versus the risks of military service

SECTION 4

Prevention and treatment of mental health disorders

- ▶ Mental health screening prior to deployment does not work and will cause significant problems for the individual and the Armed Forces
- ▶ Mental health screening after deployment is practiced in other countries, but is not supported by evidence of benefit and is costly
- ▶ The reasons include numbers of false positives, natural history of condition, and stigma
- ▶ Current stress briefing/education is patchy, often forgotten, and of unproven benefit
- ▶ Single session psychological debriefing does not reduce psychological problems after trauma
- ▶ A new system (TRIM) that is anchored in military culture may reduce stigma and encourage help seeking
- ▶ A randomised controlled trial is currently testing this – we need to wait for the results before deciding policy

SECTION 5

Peacekeeping and its consequences

- ▶ Peacekeeping creates as many psychological problems as war fighting
- ▶ Some of these are related to complex rules of engagement
- ▶ Watching TV programmes containing personally relevant and powerful scenes does not worsen mental health

SECTION 6

The war in Iraq

“Iraq War Syndrome”

- ▶ No “Iraq War Syndrome”
- ▶ Makes it unlikely that factors common to both conflicts, such as DU, anthrax vaccine, pesticides, NAPS tablets, or general stress, were a main cause of the “Gulf War Syndrome” problems

Mental health outcomes

- ▶ No increase in psychiatric problems in Regular Forces who have participated in Op TELIC compared to rest of Armed Forces
- ▶ No increase in psychiatric problems with change from war fighting to counter insurgency
- ▶ No increase in mental health problems when personnel return home, unlike US data
- ▶ Doubling of mental health problems in UK Reserve Forces, although overall rate remains low.
- ▶ Explanations unlikely to be due to events in theatre
- ▶ More likely is family issues before deployment, support to families during deployment, and experiences of home coming
- ▶ Medical reservists particularly at risk

US/UK differences

- ▶ Rates of psychiatric problems in Iraq Service personnel are lower for the UK than the US
- ▶ The US have higher combat casualties and exposure to fighting
- ▶ They are also younger, have less previous deployment experience, are more likely to be Reservists, spend longer in theatre and have different health care systems when they leave the Armed Forces

Vaccinations

- ▶ No medium/long term side effects detected from exposure to anthrax vaccine
- ▶ Side effects are related to perception of consent
- ▶ Developing special consent procedures for anthrax vaccine alone has not increased confidence
- ▶ No evidence of significant exposure to DU in UK personnel deployed to Iraq

Others

- ▶ Deploying on Op TELIC is associated with an increased desire to continue in the Armed Forces for the majority.

SECTION 7

Alcohol and risk taking behaviours

- ▶ Background levels of alcohol intake in Armed Forces higher than in civilian population, but only in younger age groups
- ▶ Levels of binge drinking also increased
- ▶ Little influence of deployment on alcohol
- ▶ Increase in other risk behaviours related to driving is related to deployment
- ▶ May explain increased rate of accidents and be amenable to intervention

SECTION 8

Other issues

- ▶ Medical downgrading for long term physical illness hides a burden of psychological problems
- ▶ Partners have different views about the impact of deployment on family life and functioning
- ▶ Informal networks of social support (“military family”) remain strong
- ▶ Imbalance in both formal and informal support between Regulars and Reserves
- ▶ Data protection laws and laws on confidentiality permit a more liberal approach to using personal data than previously

SECTION 9

What impact has KCMHR had on policy?

- ▶ Identified the Gulf War illness problem, leading to changes in health surveillance, health communication and record keeping
- ▶ Showed that pesticides, DU and the anthrax vaccine were not to blame – thus allowing them to remain available for use within the operational environment as required
- ▶ New vaccination policy utilized during Op Telic on a precautionary basis.
- ▶ Extending mental health care after demobilisation to Reservists with operational psychiatric injuries
- ▶ Facilitated resource to be spent on improving community mental health services rather than mental health screening
- ▶ Work on increasing support of the families of Reservists.
- ▶ Supported the overarching review of operational stress management and implementing the lessons of the PTSD Class Action.
- ▶ Identified possible mechanism to explain the increased risk of accidents associated with post deployed personnel that could be used in prevention
- ▶ Facilitated release of MOD data to support medical audit and research.

SECTION 10

Where are we going? Work in progress

- ▶ On going study on who needs mental health treatment, who wants it, who gets it, and if they don't, why not
- ▶ Will provide data for Defence Medical Services and NHS on any gaps in service provision
- ▶ Another study will assess how social adversity before military service is influenced by, and influences, a person's career in the Armed Forces and beyond
- ▶ Both studies will report in 2007

SECTION 11

Monitoring health outcomes in the future

- ▶ Follow up of main cohort is planned for 2007/2008
- ▶ Main outcomes will be any new “Iraq War Syndrome”, psychological outcomes, downgrading and injuries, alcohol, risk taking behaviour, side effects/confidence in medical counter measures, and use/non use of health care services
- ▶ Secondary outcomes will be premature service leavers, health and adjustment of ex service personnel, legacy issues
- ▶ The cohort will continue to be representative of all the Armed Forces

APPENDIX 1

Gulf War Illness Unit and KCMHR staff 1996-2006

APPENDIX 2

Funding

APPENDIX 3

Publications

introduction



IN THE MID 1990s there was an upsurge of interest into the health of UK service personnel, or more specifically UK service veterans. There were various reasons for this. First, the 50 year commemorations of D Day and then the end of the Second World War focussed attention on a generation coming to the end of their lives. Second, increasing recognition of the psychological costs of trauma in general extended to the ex Services population, such as those of the Falklands War. This was reflected by a large class action brought by many veterans against the MOD for failing to address the issue of post traumatic stress disorder (PTSD). But perhaps the most important driver was the increasing concerns and controversy over the health of those who had taken part in the 1991 Gulf War, many of whom came to be labelled by the media as suffering from “Gulf War Syndrome”.

Starting in 1996, we began to study the health and well being of UK Gulf War veterans. We also looked at those who had been involved in peace keeping operations in the Former Yugoslavia, and then at health and social problems of ex Service populations in general. At the same time we carried out historical studies on the health of veterans going back to the Crimean War. Finally, in 2003 we started a new large scale study into the physical and psychological health of those who have and continue to serve in Iraq and elsewhere.

These studies have been wide ranging, and have brought together researchers from a wide variety of disciplines, including anthropology, biochemistry, dermatology,

epidemiology, genetics, immunology, neurology, nursing, psychology, psychiatry, public health and sociology.

We began as the Gulf War Illness Research Unit, founded in 1996. As our work expanded, this was reflected in a change of name, to the King’s Centre for Military Health Research (KCMHR), launched in 2004. KCMHR is a collaboration between three parts of King’s College London (KCL) – the Institute of Psychiatry, the Department of War Studies, and the Medical School.

Our work is published in the scientific literature, as KCL is an academic institution, and publication in the peer reviewed scientific literature remains the way in which science is, and should be, reported. However, that literature is not easily accessible to the general public. And even when people do access the literature, it is not always written in an easily digestible or lay friendly manner.

In this report we provide a guide to a decade’s worth of research from our Centre concerning the health of UK veterans. We will refer to research from other institutions where directly relevant, but emphasise that our intention is to provide an overview of our contribution.

Professor Simon Wessely
Professor Christopher Dandeker
September 2006

section 1

THE HEALTH CONSEQUENCES OF THE 1991 GULF WAR



THE 1991 GULF WAR was a military success. It was also a medical success. Traditionally, fighting in hostile environments such as the desert has been associated with disease and death from causes not related to enemy action such as heat stroke, dehydration and infectious disease. Yet none of this happened during the Gulf campaign, partly due to the improvements in medical care and health protection.

Now few will remember the medical achievements of the campaign, and instead most people when asked about the Gulf War and health, will answer “ah yes, that’s where Gulf War Syndrome began”.

It was shortly after the cessation of hostilities that reports started to emerge from the United States of clusters of unusual illnesses occurring amongst Gulf War veterans. Claims were made that previously fit veterans had developed unusual diseases, illnesses and symptoms. Reports also emerged of children with birth defects being born to Gulf War veterans. All of these were grouped under the popular term “Gulf War Syndrome”.

THE UNITED KINGDOM

The same sequence of events happened in the UK as in the US, even if we don’t know if they happened at the same time. One of the reasons that we don’t know, and will never know, exactly when problems started is because there was no systematic monitoring of the health of the Armed Forces on either side of the Atlantic after 1991. We know that newspaper reports started to

accumulate about health problems in UK Service personnel towards the end of 1992, and gathered pace after that. By 1994 the Ministry of Defence (MOD) had established the Medical Assessment Programme (MAP) to assess individual veterans, confirming that increasing numbers of Gulf veterans were seeking help.

But what was missing was fundamental information on the rates of illness in Gulf veterans. 53,000 UK personnel served in the Gulf, and with the passage of time it was inevitable that some would develop serious illnesses, and even die prematurely. But unless one knows the rate of illness, and is able to compare with the rate of illness in an appropriate comparison group, it is impossible to draw any conclusions from the fact that some Gulf veterans were presenting with health complaints on both sides of the Atlantic. That would not be the case if there was something exceptional about the illnesses affecting veterans, but the kind of complaints being brought to doctors were not in themselves unusual or novel.

So the answer was to look at a large, randomly chosen, representative sample of UK Gulf veterans. Large so that relatively small changes in health could be detected, and randomly chosen so that the results could be generalised to the rest of those who served in the Gulf. Simply studying small groups of veterans who had been identified by doctors as having cancer, or neurological conditions, would tell us nothing, since Armed Forces personnel are no more immune from these problems than anyone else. But by taking a large random sample we are

able to draw conclusions that can be extended to all those who served in the Gulf.

The next question was the choice of a comparison group, since one must compare like with like. There was no point in comparing Gulf veterans with civilians, since the Armed Forces differ from civilians in numerous ways, but most importantly on health. People with poor health are largely prevented from joining the Armed Forces, which means that Service personnel are healthier than the rest of the population.

We decided to compare the Gulf veterans with two groups. First, British Service personnel who had deployed to Bosnia in 1992 on peace enforcement duties (Op GRAPPLE). This was a particularly dangerous and unpleasant deployment. We felt that those who had deployed to Bosnia were directly comparable to those who had deployed to the Gulf in terms of fitness, training and so on. We also compared both groups to Service personnel who had been in the UK Armed Forces in 1991 but had not served in either the Gulf or Bosnia, whom we labelled the “Era” group.

Research needs money. Back in 1995 the UK government was not convinced of the need for the study we proposed, so we applied to the US government for funding, under an open peer reviewed call for proposals. This was successful, so the first set of studies we performed was funded by the US Department of Defense.

The study took three years to complete – largely due to the problems of finding people, many of whom had left the Armed Forces since the Gulf War. The military had undergone a significant “down sizing” immediately after the end of the Gulf War, under a process known as “Options for Change”.

Finally over 7,000 male and female serving and ex-serving personnel agreed to give us information about their health and well being via a mailed questionnaire.

MAIN RESULTS: 1991 GULF WAR

Figure 1 gives the key results¹. Each point on the figure represents a single symptom – common symptoms such as fatigue or headache are on the left, uncommon

symptoms on the right. Looking first at the Bosnia and Era men, indicated by the (add colour scheme) dots, it is clear that both groups can and do develop symptoms. Because there is no difference between the two groups, so there is no evidence that veterans of the Bosnia mission have any worse health than the rest of the Armed Forces.

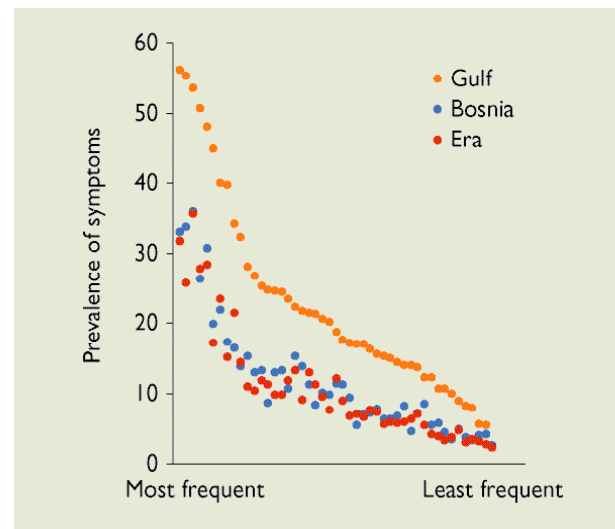


Figure 1: Symptoms are increased in UK Gulf veterans compared to Bosnia and Era veterans (Unwin et al 1999)

But there is a clear and substantial difference between these two groups and those who served in the Gulf. The Gulf veterans are more likely to report each and every one of the 50 symptoms we asked about. They also report them at greater intensity. These graphs give the results for the males, but it was just the same for females². So given that this is a random sample, and given that it is unlikely that there were important differences between, for example, the Bosnia and Gulf veterans before they were deployed to either conflict, this is conclusive evidence that something has affected the subjective health of the UK Gulf veterans.

IS THERE A GULF WAR SYNDROME?

No one is sure where the phrase “Gulf War Syndrome” came from. Perhaps it is a pity that it ever did, since the term itself has caused confusion from the start. A syndrome is a new group of signs and/or symptoms, not previously seen in medicine. AIDS was such a new syndrome. But as the last sections have shown, the problem that affected Gulf War veterans was not a new syndrome – the symptoms they complain of were not

new to medicine. Likewise the pattern of symptoms between the three groups is not that different. The problem is that Gulf veterans report more symptoms than expected, and at greater intensity. Figure 1 shows that the shapes of the three lines representing Gulf, Bosnia and Era are the same, but the Gulf line is higher. The types and pattern of symptoms remain the same, so a symptom that is common in the comparison groups is common in the Gulf group, whilst unusual symptoms in the comparison groups are unusual in the Gulf as well. But the Gulf veterans have more of each and every symptom. We subsequently published several statistical studies confirming that there is no unique syndrome associated with Gulf service^{3,4}, which have been replicated by numerous other studies across the world, but you can draw the same conclusion by simply looking at figure 1.

So statistically speaking we are not dealing with a “Gulf War Syndrome”. The correct term should be “Gulf War Illness”, or even better “Gulf War Illnesses”. But whilst this is technically correct, there are dangers in even writing that “Gulf War Syndrome” is a misnomer, since it can be all too easily interpreted as saying there is no such thing, or worse, that nothing untoward has happened to any Gulf War veteran, which is clearly not the case. Furthermore, “Gulf War illnesses”, or the “Gulf War health effect” just doesn’t sound the same. It is perhaps for that reason that in 2005 MOD finally accepted the term “Gulf War Syndrome” for the purpose of awarding war pensions, whilst declaring that the term was basically an umbrella, or short hand label covering various problems and outcomes. For better or worse, “Gulf War Syndrome” is going to remain the popular term.

CANCER AND MORTALITY

Yet despite this clear evidence of poorer health amongst Gulf veterans, this has not been accompanied by any increase in “hard” outcomes, such as death, cancer or physical disease. Of course some Gulf veterans have died since the end of the conflict, but the important question is whether or not that would have been the case if they had not served in the Gulf War. And the answer is yes. The mortality rate of both US and UK Gulf veterans is monitored on a regular basis, and we know that it is not increased compared to non Gulf

veterans, with the exception of suicide and accidental death^{5,6}. Likewise, our colleagues in Manchester have shown that the cancer rate of UK veterans is no higher than expected⁷.

SUMMARY

- ▶ Demonstrated increase in ill health in UK Gulf veterans
- ▶ No unique “Gulf War Syndrome”
- ▶ Picture similar to USA, Canada, Australia and Denmark
- ▶ No increase in cancer
- ▶ No increase in mortality other than suicide and/or accidents

WHO WAS AT RISK?

The main risk factor for ill health experienced after serving in the Gulf was the fact that the troops went to the Gulf, as opposed to Bosnia, Northern Ireland or elsewhere. But what else differentiated those who did from those who did not have problems?

The answers were unexpected and informative. First, it did not matter which branch of the Armed Forces you served with, nor what your job or task was. Thus the Royal Navy was just as affected as the Army or the RAF. Likewise, it did not matter whether people were in the combat “teeth” arms, combat support or combat services support—those at the sharp end were no more or less at risk than those involved in logistics, intelligence, medical support and so on. Reserves also had the same risk as regulars, as did women compared to men⁸.

All of this gives some clues. For example, exposure to depleted uranium (DU) munitions is often cited as the cause of ill health in Gulf personnel. But exposure is largely restricted to those in Armoured Brigades (tanks and mechanised infantry), yet this was not a risk factor for illness. In order for any single risk factor to be a plausible candidate for what has been observed in all the studies of Gulf health, then a very large number of people would have to have been exposed to that factor. So what the epidemiology suggests is that we need to look for risk factors that could potentially affect large numbers of personnel, in all three services, and who served at either the front and the rear. This narrows the possibilities.

At the same time, we also showed that the health of the Armed Forces is influenced by many of the same factors that influence the health of everyone else. Most studies confirm that socio economic status is strongly related to health –physical and psychological health is worse for those at the lower end of the social scale than those at the upper end. The Armed Forces are little different, irrespective of serving in the Gulf, the higher the rank, the better then general health and well being. Trying to narrow these social inequalities is an important part of the government’s public health strategy, although achieving this is not easy.

SUMMARY

- ▶ All three Services equally affected
- ▶ No influence of role/task/duty in theatre
- ▶ Symptoms associated with rank
- ▶ Any possible cause must be a widespread exposure
- ▶ Possible candidates include medical counter measures, stress/fear of chemical weapons, media/social influences

WHAT DO WE KNOW ABOUT THE NATURE OF ILL HEALTH AFTER THE GULF WAR

So far we have shown that many UK Gulf veterans feel worse as a result of having served in the 1991 conflict, that they experience more symptoms, and that they feel their health has been affected. However, there is no evidence of any change in what doctors called “hard” outcomes such as cancer or death. So what is the nature of this ill health?

PHYSICAL HEALTH

The large population based epidemiological studies have shown that apart from suicide and accidental death, there is no increase in death from any particular physical illnesses in those who served in the Gulf War. We also know that cancer rates are not higher. And most studies have failed to show any excess of other well known physical diseases.

There are exceptions. For example, in our study we found an excess of hypertension in ill Gulf veterans compared to well Gulf veterans. They were also more likely to be overweight, and had higher levels of a

particular enzyme (gamma GT) which is to be associated with alcohol intake, but is also a marker for obesity. It is possible that all of these reflect the influence of problems such as fatigue and lack of exercise, which may be part of a vicious circle of ill health, fatigue, lack of exercise, and hence increased weight, more fatigue and even less exercise.

We also showed that there was an excess of a particular skin disease, seborrheic dermatitis⁹, which whilst not particularly serious itself, is intriguing because of its associations with immune dysfunction (see later).

Finally, one study from the USA reports that US Gulf veterans are more likely to be suffering from a rare neurological condition known as amyotrophic lateral sclerosis (ALS), called motor neuron disease (MND) in this country¹⁰. However, this finding is controversial, since as MND is a terrible disease that is usually and fairly rapidly fatal, one would expect this to be reflected in higher death rates, which have not been found. Our neurological studies, to be discussed below, have also not found any evidence of disease in the peripheral nervous system. Whether or not the American data is correct, MND is still a very rare condition in Gulf veterans, and cannot account for the large health effects that have been found.

NEUROLOGY

Another possible cause of illness was exposure to organophosphate (OP) pesticides. Like most chemicals these are very useful when given in the right place and right doses, and highly dangerous if taken in overdose. During the Gulf campaign these were used to reduce the threat of insect born diseases. But did they also cause damage to health?

The best way to look for evidence of OP toxicity is by detailed studies of the nervous system. So we asked a sample of those identified in the main study as having poor health and symptoms that might indicate neurological damage to come to King’s for two days of intensive neurological testing. We also asked a random group of well Gulf veterans who had also filled in the questionnaire to come to King’s for the same tests. It was remarkable how many agreed to this, given that there was nothing wrong with them, but they were keen to help those who less fortunate.

We then examined virtually every aspect of their nervous system, using a variety of electrophysiological tools that record the activity and integrity of the nerves and muscles. In particular we used a technique called single fibre electromyography (SFEMG), which can record activity of individual neurons. This is a very sensitive test for neuropathy (nerve damage).

The results were largely normal. Although the ill veterans reported symptoms that might indicate damage to the peripheral nervous system, this could not be confirmed on the sophisticated tests¹¹. The SFEMG results made it very unlikely indeed that poisoning by organophosphate pesticides or any other OP agents had occurred. Overall there was no evidence of any damage to the peripheral nerves, neuromuscular junction or muscles. Two years later a much larger study of US Gulf veterans and their families have confirmed these results¹².

We also looked at how the muscles worked in sick and well gulf veterans. We found that sick veterans were able to do physical exercise, but it required more effort than the well controls¹³. During exercise their muscles produced more sodium lactate, which indicates that the mitochondria in the muscle cells are not working as efficiently as they should. There are several possible explanations for this. Subtle damage to the mitochondria from a variety of toxins is one possibility, although one might then expect other signs of muscle damage which were not found. Alternatively this could be the response of the muscles to unfitness, particularly in people who have previously been very fit, as is the case with many Service personnel, in which case the changes we detected would be the consequence, not the cause, of symptoms.

NEUROPSYCHOLOGICAL STUDIES

In the preceding section we looked at the integrity of the peripheral nervous system. But what about the central nervous system (CNS)? There are many ways of studying the CNS, but one of the most sensitive is to use standardised tests of neuropsychological functions, such as memory, attention, coordination, sequencing and concentration.

Using the same design as before, we compared sick and well Gulf veterans, using a battery of neuropsychological testing. The sick veterans reported far more symptoms

indicating difficulties in memory or concentration but when these functions were tested the results were surprisingly normal¹⁴. Although sick veterans felt that their thinking, concentration and memory were impaired, this was not reflected in the test results. There is thus a difference between subjective complaints and objective tests. This is not unique to Gulf veterans, with similar findings being reported in civilians with chronic fatigue syndrome (CFS). Another finding which overlaps to CFS was the strong correlation between measures of psychological distress (such as depression or PTSD), and the subjective reports of poor memory, concentration and difficulties in thinking.

Only on one particular test, called the Purdue Pegboard, a test of motor skills, were sick Gulf veterans impaired, suggesting an impairment of motor dexterity, which might indicate some subtle neurotoxic damage.

So the conclusion of this and other studies was that there is little evidence of major neuropsychological impairment in Gulf veterans, and hence little evidence to suggest serious brain damage¹⁵. It is important to remember that whilst complaints such as poor memory and concentration can reflect direct damage to the nervous system, as might happen after exposure to neurotoxic chemicals, the same symptoms can also be associated with psychological distress such as depression or PTSD.

PSYCHOLOGICAL STUDIES

War is stressful. It always has been, and most likely always will be. But did this contribute to the Gulf War Syndrome story? We showed that rates of every symptom were increased in Gulf War veterans, so it was inevitable that many of those in our studies fulfilled criteria for conditions such as depression, anxiety and PTSD, just as they also fulfilled criteria for CFS, chemical sensitivity and irritable bowel syndrome. But when we interviewed these people, using standardised interviews that are the “gold standard” for making diagnoses, many did not have formal psychiatric disorders. We found that although the rate of true psychiatric disorders had doubled in Gulf veterans, the actual level was not particularly high. So whilst people were twice as likely to get PTSD if they went to the Gulf (a figure confirmed by many other studies¹⁶, most Gulf veterans, even those with increased levels of physical symptoms, did not have mental health

disorders¹⁷. Psychiatric disorders per se could not account for all Gulf War ill health.

But that does not mean that psychological factors played no role in their health problems. Classic psychiatric disorders such as PTSD are not the only outcome of prolonged stress or fear. Virtually any stressful situation may result in an increase in physical symptoms. In particular, there was a real threat posed by chemical weapons before the Gulf campaign, which are as much, if not more, weapons of psychological as physical warfare. During the campaign there were several thousand documented chemical alarm alerts, and many veterans would have experienced several such alerts in the course of a single day. Subsequently the consensus of opinion is that all were false positives (not true detections), and Iraq did not use its chemical arsenal – but at the time each one had to be assumed to be genuine. One doesn't need much imagination to accept just how stressful that must have been. We know from our study and many others that those who latterly believed that they had been exposed to chemical weapons (a belief much more common in the USA than amongst UK personnel) were considerably more likely to report symptoms. So it is possible that a part of the ill health experienced after the Gulf campaign was triggered by anxiety caused by chemical weapons.

SUMMARY

- ▶ No evidence of damage to peripheral nervous system
- ▶ Organo phosphate pesticides or nerve agents not the cause
- ▶ Subjective rather than objective neuropsychological problems, suggest that frank “brain damage” also unlikely
- ▶ Psychiatric disorders such as PTSD doubled, but overall rates not sufficient to explain all ill health
- ▶ Cannot exclude role of anxiety caused by genuine threat of chemical weapons

IS THE REPORTING OF ILL HEALTH BY GULF VETERANS RELATED TO HOW YOU ASK THE QUESTION?

One problem that we and every other research group has encountered is that Gulf War veterans cannot help

but be aware of the controversy that has developed on both sides of the Atlantic about these issues. A few sceptical commentators have suggested that veterans who have been to the Gulf have been sensitised by the media furore to answer questionnaires in a particular way, even perhaps encouraged by the hope of compensation. In our main studies, people know they are being contacted because they are Gulf veterans, and the accompanying information about the study, not to mention the kind of questions everyone asks, make the purpose of the study clear. Like everyone else, we have found it easier to get responses from Gulf veterans than from personnel involved in other campaigns, because the opposite happens to the latter –no matter how diplomatically worded, they know that they are not the main interest.

In 2002 we did a large study that was nothing to do with the Gulf, but concerned health screening in the Armed Forces. No mention was made of Gulf service, and there was nothing in the questionnaire to remind anyone about the events of 1991 and subsequently. However, the symptoms that we recorded were similar to those that we had used in our Gulf studies. When the study was complete, we were then able to determine who had served in the Gulf by checking the data base.

Once we compared those who we knew had served in the Gulf against those who had not, the excess of symptoms remained. This was a particularly rigorous test, since everyone in the study was serving in 2002, so they were a particularly robust and healthy sub group of Gulf veterans (most of those with obvious health problems would have long since left) – yet the differences remained. We concluded that an overt response bias was unlikely to explain the Gulf health effect¹⁸.

WHAT HAS HAPPENED TO UK GULF VETERANS OVER TIME?

At some time between 1991 and 1996, when we started data collection, we can be sure that the health of many Gulf veterans worsened. But what has happened to them since? We followed up most of the same people about four years later. The differences between the Gulf cohort and the two comparison groups (Bosnia and

Era) remained, and there had been only very slight improvements in symptoms such as fatigue or psychological distress. We also looked at what factors seemed to contribute to a worse outcome. Perhaps predictably those who had more symptoms when first assessed did worse, as did those who were older, and those who had experienced depression or anxiety. Those who believed that they had Gulf War Syndrome also do less well, even taking into account the fact that they had worse health.

SUMMARY

- ▶ Gulf health effect not an artefact of how the questions are asked
- ▶ Gulf health effect has persisted over time

THE PICTURE ELSEWHERE

Does the work on UK Gulf veterans, and more specifically the contribution from King's College London, fit in with work carried out elsewhere? The answer is yes. Soon after we started our work, our colleagues at the University of Manchester began a similar study. Likewise, colleagues at the London School of Hygiene and Tropical Medicine launched a study of the reproductive health of Gulf War veterans, which also looked at general health. Both studies confirmed the same general health effect that we found, whilst failing to report a unique Gulf War Syndrome^{19,20,21}.

The picture is the same in the USA, where numerous studies came to the same conclusions, and likewise Australia, Canada and Denmark. On the other hand one centre, based in Dallas under the leadership of Professor Robert Haley, has produced a series of studies whose conclusions are at variance not just with our own, but with the conclusions of the other large scale studies. On the basis of what are mainly small studies drawn from a single reserve construction battalion, Professor Haley continues to argue that Gulf veterans have been affected by the long term side effects of exposure to very low levels of the nerve gas Sarin. He has stated that this was a consequence of an unnoticed attack by the Iraqi forces early in the ground campaign. However, military and intelligence sources do not support this view, and the scientific community has not been convinced by this argument.

PROTECTION AGAINST CHEMICAL AND BIOLOGICAL WARFARE

Back in 1991 there was no denying that Saddam possessed both chemical and biological weapons. He had used them in the Iran-Iraq war, as well as against the Kurdish people. So there was no option but to try and protect British Service personnel against these threats. Various measures were taken, collectively known as Medical Counter Measures (MCMs).



UK soldiers wearing NBC suits during the Gulf War

To counter the threat from biological warfare the main line of defence is vaccination. Before any overseas deployment vaccinations are routinely given to protect against diseases such as cholera or typhoid. However, before the Gulf War they were also all offered vaccination against plague and anthrax, both of which are potentially lethal biological weapons. The anthrax vaccine was also given with pertussis vaccine, the whooping cough vaccine. This is not a biological weapon, but was given as an “adjuvant”, in order to enhance the development of immunity against the anthrax agent. The Canadians did something similar, but the Americans chose to use a different anthrax vaccine and also immunise their personnel against Botulinum

As health complaints started to emerge after the war, attention was focussed on the programme of vaccination used. Could that have been responsible for ill health?

EPIDEMIOLOGICAL EVIDENCE

It was known that vaccination uptake had varied – in some Units coverage had been near 100%, but in others, particularly where the Commanding Officer had expressed

some scepticism, it was far less. So could we find a link between receiving the vaccines and later symptoms?

It proved a hard task, largely because of the difficulties in finding any accurate records. In general we had to rely on medical records kept by the Service personnel themselves, which were only available for about one third of people. With that information we failed to find any convincing links between the individual vaccines and ill health. There was a small relationship between anthrax/pertussis and symptoms, but was unlikely to account for much ill health. Individual vaccines seemed not to be the answer.

But many people had told us that they had received what they considered to be a lot of vaccines in a brief period of time, and that this had “overloaded” their system. There were in total seven biological warfare vaccines, and 13 “normal” vaccinations, so a person could have received up to 20, although most received nothing like that. Most experts do not think that vaccination can “overload” the immune system, but what we did find was a clear link between the number of vaccines that people received and health. Nevertheless, the more they had received, the more likely they were to have symptoms²².

But even that was not enough, because it is not unusual for Service personnel to receive a lot of vaccines in a short space of time – the same had happened before the Bosnia deployment as well. But there we found no link between numbers of vaccines and symptoms. So there was something special about the Gulf. Indeed, we also found (although we would be the first to admit that the data is not conclusive) that the link occurred mainly when multiple vaccines were given in theatre, as opposed to before deployment in the UK or Germany.

So single vaccines alone are not associated with subsequent symptoms, but multiple vaccines, including the anthrax/pertussis combination, can be linked. Since then our colleagues in Manchester and Australia have reported the same link.

IMMUNOLOGICAL EVIDENCE

What might be the reasons for these associations? Two scientists, Rook and Zumla, at University College Hospital put forward a theory that the specific circumstances on the

UK vaccination programme - the use of anthrax/pertussis combination, the multiple vaccines and the high stress setting (which is how we interpret the finding that the link was strongest for vaccines given in theatre) – would cause a shift in the balance of the immune system towards production of a particular class of cytokines, the chemicals that regulate the immune system²³. This is known as a “Th 2” shift, and reflects the pattern found in some allergic diseases and that we have already reported in CFS, a condition with substantial overlaps to Gulf related illness²⁴. And whilst we do not claim that our epidemiological evidence was conclusive, it lent support to the Rook/Zumla hypothesis.

However, to cut a complex story short, using the latest immunological techniques, we were unable to confirm the Rook/Zumla hypothesis²⁵. This involved studies of immunological function in sick Gulf veterans themselves, as well as lab studies of how the immune system reacts to anthrax and plague vaccine^{26,27}.

So what are we left with? Yes, there is a link between multiple vaccination and ill health, but we have not confirmed that this operates via the immune system. Perhaps it is mediated by stress, or there remains an outside possibility that despite every effort, it is still a question of bias in memory or records. We probably cannot take this story any further in studies of Gulf War veterans, but new animal studies, and US studies in new recruits, may still shed further light. In the meantime, although MOD has not accepted any link between vaccinations and ill health, they decided on the basis of precaution to drop the pertussis vaccine, spacing out the remaining vaccines, and give personnel more information and choice than before. Later in this report we will consider how successful this has been.

EVIDENCE FROM ELSEWHERE

In this report we are concentrating on the health of UK Forces, and the contributions made to research by KCMHR. However, a word is necessary on the picture elsewhere. One of the most striking findings after the 1991 Gulf War was that reports of similar symptoms first surfaced in the USA, then the UK and Canada, and finally both Denmark and Australia. Studies of all these countries have found a very similar picture of ill health. But the patterns of health protection differed between the five countries. For example, the USA did not offer pertussis

vaccine, but its Forces had similar health problems to the UK. In the Royal Canadian Navy some ships took pyridostigmine “anti nerve gas” tablets (“NAPS”), another did not, but all had similar rates of illness. And most telling of all, Danish Gulf War veterans have remarkably similar elevated rates of ill health as elsewhere, yet the Danes deployed to the Gulf region only after the end of the war, and they did not take any medical counter measures such as vaccinations or anti nerve gas pills²⁸. That also means that they were not exposed to the numerous chemical alarms and alerts either.

SUMMARY

- ▶ Statistical link between particular pattern of medical counter measures used by UK Forces and ill health
- ▶ Interaction between biological warfare vaccines, multiple vaccines, stress in theatre
- ▶ Some immunological changes identified in sick Gulf veterans
- ▶ Unable to confirm hypothesis of Th 1/Th 2 cytokine shift
- ▶ Link between vaccines and symptoms may not be immunological
- ▶ Vaccination policy has subsequently changed on a precautionary basis in consequence

REFLECTIONS ON GULF WAR ILLNESS

This is not the first time that veterans of a foreign war have voiced health concerns. In 1945 Australian veterans of the campaign against the Japanese in Papua New Guinea believed that malarial prophylaxis had caused both

problems with infertility and an increased rate of congenital handicap in their offspring. However, it was the Vietnam War, and more specifically the legacy of Agent Orange, that triggered a major political crisis on a scale that equalled or even surpassed that associated with Gulf War illness.

There are parallels between the experiences of Gulf War veterans and those of Vietnam veterans²⁹. The perceived legacy of government misinformation or even betrayal around Agent Orange was used to claim similar cover ups and conspiracies, as was the Cold War legacy of experiments carried out on Service personnel, often without consent. Governments on either side of the Atlantic have made misinformed statements on Gulf issues – the US government misjudging the Khamisayah incident, whilst the UK government made an inadvertently inaccurate statement to Parliament about the use of organophosphate pesticides. Both episodes fuelled further suspicion and occasional paranoia, neither of which has helped the situation of Gulf veterans.

We conclude that it is difficult to see how further direct research on Gulf veterans will provide much more in the way of relevant information concerning what happened back in 1991. Likewise, after 15 years we don't expect to learn very much more about the direct causes of ill health³⁰. Much relevant information simply wasn't collected, and is not going to be found now. However, researching other populations may still shed some light. For example, we are collaborating on a randomised controlled trial of different vaccine regimes to test the multiple vaccination hypothesis currently underway within the US Navy. Likewise, animal studies will continue to provide controlled data in a way that human studies cannot match.

But does that mean that we should abandon research into Gulf veterans? Not at all. There is still a pressing need to try and understand the causes of disability and disadvantage in Gulf veterans. We have suggested that we need now to look at Gulf War illness in a similar fashion to the way we think about illnesses such as CFS, irritable bowel syndrome and other unexplained syndromes, and in particular to think more about why veterans are either staying ill or not getting better, and put to one side the vexed question of what started the problem in the first place³¹. If we could understand better what factors are associated with continuing ill health in Gulf veterans, then we might be able to devise better rehabilitation strategies.



reproduced with permission

REFERENCES

- 1 Unwin C, Blatchley N, Coker W, et al. The health of United Kingdom Servicemen who served in the Persian Gulf War. *Lancet* 1999;353:169-178.
- 2 Unwin C, M; Hull L; Ismail K; David A; Wessely S. Women in the Persian Gulf: Lack of Gender Differences in Long-Term Health Effects of Service in United Kingdom Armed Forces in the 1991 Persian Gulf War. *Military Medicine* 2002;167:406-413.
- 3 Ismail K, Everitt B, Blatchley N, et al. Is there a Gulf war syndrome? *Lancet* 1999;353:179-182.
- 4 Everitt B, Ismail K, David A, Wessely S. Searching for a Gulf War Syndrome Using Cluster Analysis. *Psychological Medicine* 2002;32:1371-1378.
- 5 MacFarlane G, Thomas E, Cherry N. Mortality amongst United Kingdom Gulf War Veterans. *Lancet* 2000;356:17-21.
- 6 Gray G, Kang H. Healthcare utilization and mortality among veterans of the Gulf War. *Philosophical Transactions of the Royal Society* 2006;361:553-569.
- 7 Macfarlane G, Biggs A, Maconochie N, Hotopf M, Lunt M. Incidence of cancer among UK Gulf War Veterans: cohort study. *BMJ* 2003;327:1373-1375.
- 8 Ismail K Blatchley N, Hotopf M et al. Occupational risk factors for ill health in UK Gulf war veterans. *J Epidemiology Community Health* 2000;54:834-838.
- 9 Higgins E, Ismail, K., Kant, K., Harman, K., Mellerio, J., du Vivier, A., Wessely, S. Skin disease in Gulf War Veterans. *Quarterly J Medicine* 2002;95:671-676.
- 10 Homer R et al. Occurrence of amyotrophic lateral sclerosis among Gulf War veterans. *Neurology* 2003;61:742-749.
- 11 Sharief M, Pridden J, Delamont R, Rose M, Unwin C, Hull L, David A, Wessely S. Neurophysiologic evaluation of neuromuscular symptoms in UK Gulf War veterans. A controlled study. *Neurology* 2002;59:1518-1525.
- 12 Davis L et al. Clinical and laboratory assessment of distal peripheral nerves in Gulf War veterans and spouses. *Neurology* 2004;63:1070-1077.
- 13 Rose M et al. Evaluation of Neuromuscular Symptoms in UK Gulf War Veterans. A Controlled Study. *Neurology* 2004;63:1681-1687.
- 14 David A, Farrin, L, Hull L, Unwin C, Wessely S, Wykes T. Cognitive functioning and disturbances of mood in UK veterans of the Persian Gulf War: A comparative study. *Psychological Medicine* 2002;32:1357-1360.
- 15 Vasterling J, Bremner D. The impact of the 1991 Gulf War on the mind and brain: findings from neuropsychological and neuroimaging research. *Philosophical Transactions of the Royal Society* 2006;361:593-604.
- 16 Stimpson N et al. Psychiatric disorders in veterans of the Persian Gulf War of 1991. Systematic review. *Br J Psychiatry* 2003;182:391-403.
- 17 Ismail K, Kent K, Brugha T, et al. The mental health of UK Gulf war veterans: phase 2 of a two-phase cohort study. *BMJ* 2002;325:576-579.
- 18 Murphy D, Hooper C, French C, Jones M, Rona R, Wessely S. Is increased reporting of symptomatic ill health in Gulf War veterans related to how one asks the question? *J Psychosom Res* 2006;in press.
- 19 Cherry N, Creed F, Silman A, et al. Health and exposures of United Kingdom Gulf war veterans. Part I: The pattern and extent of ill health. *Occup Environmental Medicine* 2001;58:291-298.
- 20 Cherry N, Creed F, Silman A, et al. Health and exposures of United Kingdom Gulf war veterans. Part II: The relationship of health to exposure *Occup Environmental Medicine* 2001;58:299-306.
- 21 Simmons R, Maconochie, N., Doyle, P. Self-reported ill health in male UK Gulf War veterans: a retrospective cohort study. *BMC Public Health* 2004;4(no 27).
- 22 Hotopf M, David A, Hull L, Ismail K, Unwin C, Wessely S. The role of vaccinations as risk factors for ill-health in veterans of the Persian Gulf War. *BMJ* 2000;320:1363-1367.
- 23 Rook G, Zumla A. Gulf war syndrome: is it due to a systemic shift in cytokine balance towards a Th2 profile? *Lancet* 1997;349:1831-1833.
- 24 Skowera A, Cleare A., Blair D., Bevis L, Wessely S, Peakman M. High levels of type 2 cytokine-producing cells in chronic fatigue syndrome. *Clin Experimental Immunol* 2004;135:294-302.
- 25 Skowera A, Hotopf M, Sawicka E, Unwin C, Nikolau V, Hull L, Ismail K, David A, Wessely S, Peakman M. Cellular Immune activation in Gulf War veterans. *J Clinical Immunology* 2004;24:60-73.
- 26 Skowera A et al. Analysis of anthrax and plague bio-warfare vaccine interactions with human monocyte-derived dendritic cells. *J Immunology* 2005;175:7235-7243.
- 27 Allen J, Skowera A, Rubin J, Hotopf M, Wessely S, Peakman M. Long-lasting T cell responses to biological warfare vaccines in human vaccinees. *Clin Infect Dis* 2006;43:1-7.
- 28 Ishoy T et al. State of health after deployment in the Persian Gulf: The Danish Gulf War Study. *Danish Medical Bulletin* 1999;46:416-419.
- 29 Zavestoski S et al. Patient activism and the struggle for diagnosis: Gulf War illness and other medically unexplained physical symptoms in the US. *Soc Science Medicine* 2004;58:161-175.
- 30 Hotopf M, Wessely S. Can epidemiology clear the fog of war? Lessons from the first Gulf War. *Int J Epidemiology* 2005;34:791-800.
- 31 Iversen A, Chalder T, Wessely S. "Gulf War Syndrome": Lessons from Medically Unexplained Symptoms. *Clinical Psychology Review* 2006;in press.

section 2

HISTORICAL APPROACHES TO VETERANS' HEALTH



HAVE THERE BEEN PREVIOUS “GULF WAR SYNDROMES”?

SCHOLARS IN THE UNITED STATES found various old publications, some dating back to the American Civil war, that described illnesses that seemed to have a lot of similarities with so called Gulf War Syndrome³², although different names were given to these conditions, such as Soldier's Heart, effort syndrome, neurasthenia or shell shock. We investigated the medical records of British Service personnel who had been awarded war pensions for these conditions and systematically recorded symptoms from their notes. The records dated from Victorian colonial wars, the Boer War, the First and Second World Wars, and finally Korea. We then added the symptoms of 400 Gulf War veterans who had been investigated at the Medical Assessment Programme (MAP) at St Thomas' Hospital and tried to see if statistical tests could find differences between the various groups, according to where they had served³³.

We found that all these wars had been linked to unusual syndromes involving physical symptoms, and for which doctors were generally unable to come up with a clear cut reason. But they weren't all the same, and over the last hundred years the pattern of these syndromes had subtly changed. Back in the Victorian period and during the Boer War, soldiers complained more of general fatigue and weakness, and to a lesser extent symptoms such as shortness of breath, rapid heart rate, headaches and dizziness. In the two World Wars it was these symptoms, such as chest pain, breathlessness, dizziness

and fatigue that were most prominent, and with headaches and anxiety starting to appear as well. But by the end of the century, the picture had changed again, and now fatigue, headache, depression and anxiety were the main complaints.

So many wars have been associated with their own post conflict syndrome, but the pattern of symptoms had shifted. We have witnessed the rise of neuropsychiatric symptoms such as depression and anxiety, which were notably absent at the end of the 19th century. At the same time, symptoms such as “flashbacks”, in which a person suddenly and unpleasantly remembers a previous traumatic event as if it is happening all over again –as when a Vietnam veteran becomes very disturbed by the sound of a helicopter many years after the end of the conflict - seemed almost absent from the war pension records of the First World War, but very common in those from the 1991 Gulf War³⁴. It has been argued that post-traumatic stress disorder (PTSD) is a timeless disorder, which has always existed, but was only recognised by the psychiatrists in 1980 when it became listed in the classification system produced by the American Psychiatric Association. However, we suggest that PTSD may not be a timeless disorder that has always been there, but instead trauma, memory and culture can and do change over time.

So our reactions to stress, trauma and war are not static, but have changed. The names we use to describe these experiences have also changed, along with the explanations given by both soldiers and doctors. A

hundred years ago chest pain, as exemplified by the condition known as “Soldier’s Heart” was blamed on the equipment straps pressing on a soldier’s chest. During the First World War the so called “effort syndrome” was often blamed on physical exertion or alternatively infections, such as trench foot. It was unusual until the modern era for psychological explanations to be given by either soldiers or doctors, but on the other hand some of the toxic explanations favoured by Gulf War veterans had no historical equivalent.

Further research has been conducted into the relationship between physical and psychiatric casualties sustained on the battlefield³⁵ and into war pensions and the extent to which their award is related to changing models of psychological understanding³⁶. We brought this research together in a textbook³⁷, which in part was written as a guide to the MSc in War and Psychiatry set up jointly by the IOP and Department of War Studies in September 2005. The course is approved by the MOD for members of the Armed Forces.

More recent research initiatives include a study of the impact of the Vietnam War on the practice of military psychiatry and the conceptualization of trauma³⁸, an investigation of a First World War ‘PIE’ unit to identify those most likely to breakdown in battle and to test whether the opportunity to kill served as a protector against psychological disorders³⁹. Work is currently proceeding into the psychological effects of chemical weapons and will compare the symptoms of those known to be exposed during the First World War with those who believe that they were exposed during the Gulf War.

SUMMARY

- ▶ Medically unexplained symptoms have arisen after many previous conflicts involving the British Armed Forces
- ▶ There has been a gradual shift in symptoms since the Victorian period
- ▶ Psychological reactions to trauma are likewise not static, and have changed since the First World War
- ▶ A new MSc is offered in “War and Psychiatry”, and is approved by MOD for members of the Armed Forces

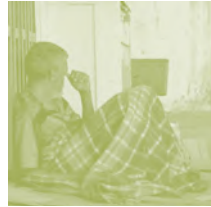


REFERENCES

- 32 Hyams K, Wignall F, Roswell R. War syndromes and their evaluation: from the US Civil War to the Persian Gulf War. *Ann Intern Med* 1996;125:398-405.
- 33 Jones E, Hodgins-Vermaas, R., McCartney, H., Everitt B, Beech, C., Poynter, D., Palmer, I., Hyams, K., Wessely, S. Post-combat syndromes from the Boer War to the Gulf: a cluster analysis of their nature and attribution. *BMJ* 2002;324:324-327.
- 34 Jones E, R. V, McCartney H, et al. Flashbacks and post-traumatic stress disorder: the genesis of a 20th-century diagnosis. *Br J Psychiatry* 2003;182:158-163.
- 35 Jones E, Wessely S. Psychiatric Casualties of War: An Inter and Intra War Comparison. *Br J Psychiatry* 2001.
- 36 Jones E, Palmer I, Wessely S. War Pensions (1917-1945): a barometer of health beliefs and psychological understanding. *Br J Psychiatry* 2002;180:374-379.
- 37 Jones E, Wessely S. From Shell Shock to PTSD: A History of Military Psychiatry. London: Psychology Press, 2005.
- 38 Wessely S, Jones E. Psychiatry and the Lessons of Vietnam: What were they and are they still relevant? *War and Society* 2004;22:89-103.
- 39 Jones E. The Psychology of Killing: The Combat Experience of British Soldiers during the First World War. *J Contemporary History* 2006; 41: 229-246

section 3

CONTEMPORARY STUDIES ON VETERAN'S HEALTH



DESPITE THE PUBLIC RECOGNITION and regular celebrations of the UK's distinguished military history and the well known role of ex-Service charities such as the Soldiers, Sailors, Airmen and Families Association (SSAFA) and the Royal British Legion (RBL) in looking after ex Service personnel, we know relatively little about the health and well being, views, expectations and needs of British veterans. Some of this has started to change, and for example for the first time the MOD now has a dedicated Veterans Policy Unit with its own Minister. KCMHR played an important role in scoping the neglected problem of how best to identify the needs of veterans and to suggest ways in which an improved cross departmental delivery of services by government might best be provided⁴⁰.

The definition of what is a veteran used in the UK is anyone who has received a day's pay in the services. This is rather different, and broader, than that used in several other countries, some of which require people to have either completed training, or being deployed. We considered why the UK has developed this inclusive definition, and what that meant for the allocation of resources and the role of veteran's charities⁴¹.

LEAVING THE ARMED FORCES

Not everyone who joined the Armed Forces serves their expected term. Some leave early, for many reasons. Such early Service leavers represent a significant drain in manpower as well as a loss of trained personnel. So improving retention is an important priority.

Asking people who have left the Services about their reasons, as we have done, is one strategy. But only in a prospective study can one see how various factors measured during service predict premature separation from the Armed Forces. We started to look at this in the follow up of the Gulf cohort, but the best data will come from the follow up of the new large cohort. Already we can say that mental health measures taken during service are a powerful predictor of premature separation, results which are very similar to US data. As our study continues, and more people leave either at the end of their term of service or prematurely, we will be able to look more closely at the different ways of exiting the Forces, their associations and subsequent outcomes.

WHAT HAPPENS TO PEOPLE AFTER THEY LEAVE THE ARMED FORCES?

We looked at what had happened to about 4,000 people who had left the Armed Forces at some time between 1991 and 2001. The good news was that most had done well. Nearly 90% had for example got a job⁴². Perhaps surprisingly, having served in the Gulf War increased one's chance of getting a job – providing one remained well. The reason is probably what is known as the "healthy worker" effect – and also the impact of a campaign medal on employers.

But not everyone does well. First, there are those who leave prematurely. We found that leaving early is not random, and that early Service leavers have worse

mental health in service than those who stay. Furthermore, one of best predictors of whether or not leavers get jobs is mental health. So poor mental health in service gives a double disadvantage – you are more likely to leave, and less likely to get a job after you leave.

We wanted to know more about this particularly vulnerable group – either those who had mental health problems in service, or those who couldn't get jobs after leaving. We therefore made direct contact with nearly 500 of these vulnerable leavers⁴³.

When interviewed, nearly half had a psychiatric diagnosis. The commonest diagnosis was not PTSD, but depression, together with alcohol problems. Of those who had psychiatric disorders, half were seeking help. The remainder either did not want help, or felt that they could deal with their problems on their own. The most common source of help was the general practitioner. Many were receiving medication, chiefly antidepressants, but very few had received any psychological treatment, such as cognitive behavioural therapy (CBT), which we know to be effective, and is recommended in the recent NICE guidelines. About a quarter were in contact with the service charities such as the Royal British Legion or Combat Stress.

This work confirmed what has been shown in the studies from the USA; serving in the Armed Forces may have a positive effect on the life path of most of those who serve. A minority do not do so well in service, and these are the most vulnerable after they leave.

In that study we looked at a sub set of ex service personnel who had served in the 1991 Gulf War, but in the next study we deliberately focussed on a group whom we believed to be at greatest risk of poor outcomes – those who were at the time at the Military Correctional Training Centre (MCTC) (informally referred to as “the military prison”) and who would be leaving the military at the end of their sentence.

Pre-discharge, three quarters of those leaving MCTC had risk factors that made them vulnerable to poor outcomes such as debt, relationship instability and lack of permanent housing. Many had unrealistic and oversimplified expectations of the resettlement process. As

with our studies of other service personnel, there was a strong preference for informal support networks, turning to friends and family for help with a wide range of resettlement issues. But beyond that many participants lacked an understanding and knowledge of the appropriate avenues through which to find suitable help, and only half had basic internet competence. So fear of the unknown, lack of understanding and lack of skills to access available support services acted as barriers to getting help

Six months post-discharge, over half had indeed not done well, as might have predicted from the factors identified at MCTC. Half were in debt and half did not have proper housing. 10% had experienced homelessness. Just over half had a mental health problem, the commonest being alcohol dependence. Looking back, participants reported that they now recognised the need for targeted advice and guidance at the point of transition so that immediate assistance could be given to tackling the multitude of resettlement difficulties they faced.

The reasons for poor outcomes in this admittedly atypical and selected group are multiple and inter related, and that if one wanted to improve outcomes, a broad approach is needed. Any attempts to intervene must be done swiftly, since otherwise those most in need will be inaccessible.

HOMELESSNESS AND SOCIAL EXCLUSION

Some ex-Servicemen end up homeless on the streets of London and elsewhere, and it is often said that up to 25% of London's homeless, for example, have a services background. Finding out exactly how many, and what role Service life plays in those who become subsequently homeless, is not easy, and 25% seems to be an exaggeration, less than 10% being a more likely estimate. We were asked to carry out a feasibility study on how best to answer these questions. We recommended changes in the ways in which data on ex-Service homelessness are recorded and analysed by central and local government agencies⁴⁴. We also outlined how such studies could be done, and various strategies to reduce the effects of social exclusion on ex-Service personnel. Our recommendations were taken into account by MOD and further work is underway.

THE RISKS VERSUS BENEFITS OF MILITARY LIFE

Our research on veterans' health has shown that although most people leave the Armed Forces and do well, some do not. But what we don't know is just how much being in the military contributed to these outcomes? Some people are already disadvantaged before they join the Services, particularly in the Army, which has for many years recruited from areas of social deprivation. So even if we can be sure that there are veterans who cannot find jobs, get into trouble with the law and so on, we cannot be sure what are the relative contributions of service and pre service life.

The Iraq studies described below have started to address this. We have collected data on various indicators of pre-service social vulnerability and/or deprivation. That will permit analysis of how social adversity before military service is influenced by, and influences, a person's career in the Armed Forces. We do not just want to study those who are damaged by their service but those who gain from it.

SUMMARY

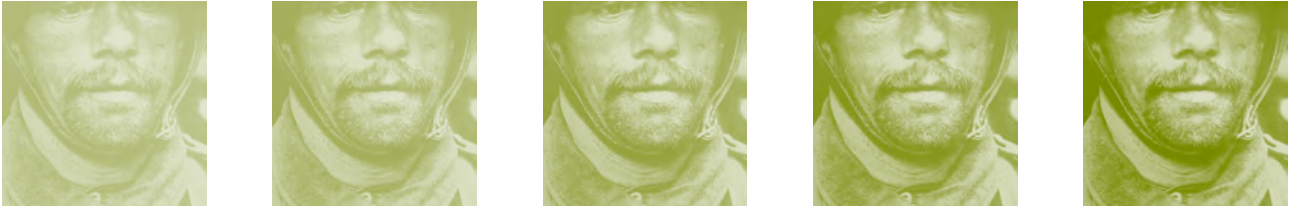
- ▶ UK uses a very broad definition of a veteran – one day in the Armed Forces
- ▶ Most people who leave the Armed Forces do well and get jobs quickly
- ▶ Premature service leavers have worse mental health in service
- ▶ Those with psychiatric problems have difficulties accessing appropriate NHS services, and rarely obtain the best psychological treatments
- ▶ For the small minority most at risk of poor social outcomes, interventions need to be broad based, and given as soon after separation as possible
- ▶ Still impossible to quantify the benefits versus the risks of military service

REFERENCES

- 40 Dandeker C, Iversen S, Ross J, Wessely S. Improving Cross Departmental Support for Veterans. London: HMSO, 2003.
- 41 Dandeker C, Iversen A, Ross J, Wessely S. What is a veteran? *Armed Forces & Society* 2006;32:161-177.
- 42 Iversen A, Nicolaou V, Greenberg N, Dandeker C, Ross J, Wessely S. What happens to UK veterans when they leave the Armed Forces? *European J Public Health* 2005;15:175-184.
- 43 Iversen A, Dyson C., Smith N, Greenberg N., Walwyn R, Unwin C. Hull L., Hotopf M, Dandeker C, Ross J, Wessely S. "Goodbye and Good Luck"; the mental health needs and treatment experiences of British Veterans. *Br J Psychiatry* 2005;186:480-486.
- 44 Dandeker C, Thomas S, Dolan M, Chapman F, Ross J. Feasibility study on the extent, causes, impact and costs of rough sleeping and homelessness amongst ex service personnel in a sample of Local Authorities in England. London: MOD, 2004.

section 4

PREVENTION AND TREATMENT OF MENTAL HEALTH PROBLEMS



MENTAL HEALTH SCREENING.

AFTER THE FIRST WORLD WAR those in authority tried to understand why there had been the epidemic of psychiatric breakdowns during the war, particularly after 1916. Although they accepted that the sheer strain of the trenches could cause breakdown in nearly everyone, they felt that these conditions should be relatively short lived. And when they weren't, then the problem was not the war, but the person. Chronic breakdown was blamed more on people's pre service background and vulnerabilities⁴⁵. And if this was the case, then in theory those vulnerabilities should be spotted beforehand. And that makes sense – if one could predict those who are going to breakdown before they go into harm's way, then that person is spared the distress of psychiatric disorder, the military are spared having to deal with personnel who can no longer carry out their military duties, and the Treasury is spared having to pay their war pensions afterwards.

It sounds splendid in theory, but the problem is that it just doesn't work in practice. The Americans tried it in World War 2, and it was a disaster⁴⁶. By 1944, when General George C Marshall called a halt to the programme, nearly two million men were removed from military service because they were thought likely to break down. Many were then re enlisted, and the majority made satisfactory soldiers. There were many reasons for this, but the main one was that the methods of prediction are not accurate enough, and for every person whose breakdown was correctly predicted, half a dozen were wrongly labelled.

Not only did that deprive the military of manpower, which is why General Marshall stopped the programme, it also meant that many people went through their lives believing that they were psychologically vulnerable, and were exposed to the stigma of being labelled unfit for military service for psychiatric reasons.

But what goes around, comes around, and the belief that screening for psychological vulnerability should be possible never goes away. So we looked at it again in the context of the Iraq deployment.

First, we investigated how any mental health screening might work in practice. The answer was not very well. Many Service personnel were not keen on the system, probably because of reasons of stigma and also the frequent perception (again, whether rightly or wrongly we cannot say) that the system leaked. A considerable number made it clear that they would not give honest answers if our screening study had been "for real", and if we had been in uniform, and not independent researchers. Second, as ever, questionnaire based methods are not very accurate, and the medical officers were displeased at having to see a number of people who had been incorrectly identified (the problem of false positives). Many personnel were reasonably happy with military medical services when it came to knees, backs and so on, but preferred to get mental health care from outside the Armed Forces^{47,48,49}.

Those studies had been carried out just before the preparations started for Op TELIC, the code name

assigned to UK operations in Iraq. That meant that we now had mental health data on nearly three thousand personnel, about a third of whom then deployed to Iraq. We then attempted to follow all of them up on their return, and managed to get good data from 70% of them. Now we could repeat the Second World War studies. We knew, but no one else did, who was “vulnerable” on the basis of their answers to questionnaires- exactly the people who have been identified by a real screening programme. And we also knew what had happened to their health as a result of Iraq. The results were clear. Mental health screening before Iraq would not have prevented very much illness after Iraq, and the majority of those who would have been identified by such a programme did not develop problems⁵⁰.

What about screening after deployment? The UK does not routinely do this, unlike several other nations such as the USA and Australia. No programme has been shown to reduce mental health problems after trauma, either in the military or civilian sectors. We have outlined the reasons for this, and argued that it is better to spend limited resources on improving access to, and acceptability of, military health services as opposed to unproven interventions such as screening^{51,52}.

SUMMARY

- ▶ Mental health screening prior to deployment does not work, has side effects for the individual and will impact on operational efficiency for the Armed Forces
- ▶ There is no evidence at present to support general mental health screening after deployment
- ▶ Problems include numbers of false positives, natural history of condition, and willingness to participate in the scheme

HOW IS PSYCHOLOGICAL TRAUMA MANAGED IN THE ARMED FORCES?

Traditional military thinking, dating back to the conclusions of the “Shell Shock” commission of 1922, is that the best protection against psychological breakdown in conflict lies in training, morale, leadership and so on. But no matter how well trained, and how well led, it is incontrovertible that military personnel do get exposed to

stress and trauma, sometimes on a scale that lies beyond any comparable civilian experience. And ever since the First World War, it has been recognised that some will develop acute psychological distress as a result.

We have been interested in the way in which the Armed Forces have managed stress over the last century. For the military the basic approach to breakdown in battle has not changed much since 1917, and is known as “forward psychiatry”. That means treating the stressed Serviceman as quickly as possible, as close to the front line as possible, and doing everything to persuade him that his is a normal physiological response to the stress of battle, and that after a few days of rest, sleep, clean clothes and hot food, he will be able to resume his military duties. Because it was concluded as far back as 1916 that giving a medical label, such as shell shock, is a mistake, the problem is given names such as combat fatigue or combat stress reaction, emphasising that this is both a normal and transient reaction.

Largely because the opposite – giving personnel who have suffered a breakdown in battle a medical/psychiatric label, removing them from their comrades, and sending them far to the rear, is known to be associated with a poor long term outcome, the principles of forward psychiatry are widely accepted, and there is data that shows that, for example, Israeli soldiers treated according to the principles of forward psychiatry do better than those evacuated to the rear I⁵³. However, because there is an overwhelming tendency for commanders to retain those soldiers who are either more valued within in the unit and/or less severely stressed, and to send back those who are either seen as poor soldiers and/or more sick, then it is impossible to know if forward psychiatry really does work, and indeed whether or not it is serving the interests of the individual or the military⁵⁴.

For most of the last century there was little difference between how civilian and military psychiatrists approached the problem of trauma⁵⁵. However, with the coming of PTSD in 1980, this has now changed. Civilian mental health professionals now generally emphasise the importance of disclosure, talking about trauma and expressing emotional distress, whilst the military continue to emphasise values such as stoicism, resilience and reticence. One consequence has been the

rise of trauma counselling, including the intervention known as psychological or critical incident stress debriefing. Over the last two decades it has been common for normal people exposed to psychological trauma to be immediately encouraged to ventilate their emotions, and at the same time receive counselling and/or “psycho education” about trauma reactions, and what symptoms they may expect in the coming days and weeks. The arrival of “trained counsellors” has become as much part of the disaster scene as the emergency services themselves.

Although the military have long accepted the importance of debriefing after critical incidents, this has been to establish the facts about what happened, and seeing if lessons can be learned. Such debriefing is not intended as a psychological intervention or for emotional ventilation. But by the 1980s the climate had changed, and the UK military also started to espouse psychological debriefing.

But does it work? The only way to answer this is via a randomised controlled trial, in which people are assigned by chance to either receiving immediate debriefing, or not. And when these started to be performed, and then linked in a meta analysis, the summary of all the trials was surprising⁵⁶. In an ongoing Cochrane review, we have shown that not only does individual single session psychological debriefing not work, it in fact seems to make some people worse, especially those who are the most visibly distressed. In consequence the British Armed Forces formally abandoned psychological debriefing.

Psychological debriefing seems intuitively attractive, so why did it not work? Perhaps it happened too quickly, when people were not ready. Not everyone wants to talk about their emotions, and not everyone (indeed not many) are going to develop symptoms. Perhaps debriefing gets in the way of doing what comes naturally, which is talking to someone of your choosing, at a time and a place of your choosing – people like your family, friends, colleagues, GP or padre, and not a mental health professional who you have never met before. When we asked military personnel returning from a stressful peacekeeping mission what they would like in terms of psychological support, the answers were many and varied, but what was clear was that talking to a mental health professional was low on the list⁵⁷. Likewise, in the

immediate aftermath of the 2005 London bombs, we found that whereas nearly all ordinary Londoners had felt the need to talk to family and friends about what had happened, less than 1% wished to speak to a counsellor or mental health professional⁵⁸.

Psychological debriefing does not prevent or even reduce psychological distress after trauma. Most people can and indeed do get better using their own social resources, and do not need the help of professionals. But does that mean that we should do nothing?

Not necessarily. We are confident that we have treatments such as antidepressants or cognitive behaviour therapy to help the minority (and as our studies show in the military it is a small minority) that go on to develop recognised psychiatric disorders such as depression or PTSD. But what if anything can we do to help the majority? Is there anything we can do in the way of prevention after people have been exposed to severe trauma?

The answer is that we don't know. Stress education or stress briefings are one popular approach. However, our data suggests that these are often given in a piecemeal fashion, and that many of those who have attended such briefings later deny ever receiving such an intervention. Data on effectiveness is also lacking.

One attractive new approach has been pioneered within the Royal Marines, and is known as Trauma Risk Management (TRIM)⁵⁹. The key difference between TRIM and traditional debriefing is that TRIM is not carried out by mental health professionals such as counsellors or psychiatrists. Instead TRIM is practiced by serving military personnel themselves, after a short training. Thus it stays firmly within military culture, and is carried out within the unit itself, without any intervention by outsiders. It is also not directed towards emotional expression, but towards assessing who might be at risk of developing later problems.

TRIM fits better within military culture than psychological debriefing, and has proven popular. But just because something looks good, and is popular, does not guarantee that it is effective. The only way of deciding if an intervention does more good than harm is via a randomised controlled trial, and that is what we are now doing within the Royal Navy.

What we are not doing is hoping to prevent stress or psychiatric disorder. Military life can and often is stressful. And when people are exposed to severe stress, many will develop brief symptoms, and some, hopefully only a few, will develop psychiatric problems. The only way to prevent that is not to put people in harm's way. TRIM will not prevent such distress –claims that any intervention can prevent distress after trauma are probably far fetched. But what TRIM aims to do is change culture, and in particular to make it more acceptable for military personnel to admit to psychological distress when they experience it, and to present for treatment when they need it. So we will judge TRIM to be successful if it makes it easier for people to acknowledge distress and seek help. The problem is not stress, which is unavoidable, but stigma.

SUMMARY

- ▶ There is a general preference for informal as opposed to formal means of providing mental health support
- ▶ Single session psychological debriefing does not reduce psychological problems after trauma
- ▶ A new system (TRIM) that is more anchored in military culture may reduce stigma and encourage help seeking
- ▶ A randomised controlled trial is currently testing this – we need to wait for the results before deciding policy



What TRIM is not: Sigmund Freud and his couch



What TRIM is: Captain Richard Dorney, Grenadier Guards, who is trained in trauma risk management

REFERENCES

- 45 Jones E, Wessely S. Post traumatic stress disorder: a paradigm shift in the conceptualization of psychiatric disorder. *J Anxiety Disorders* 2006;in press.
- 46 Jones E, Hyams K, Wessely S. Screening for Vulnerability to Psychological Disorders in the Military: An Historical inquiry. *J Medical Screening* 2003;10:40-46.
- 47 French C, Rona, R, Jones M, Wessely S. Screening for physical and psychological illness in the British Armed Forces: II Barriers to screening - learning from the opinions of Service personnel. *J Medical Screening* 2004;11:153-157.
- 48 Rona R, Jones C, French C, Hooper R, Wessely S. Screening for physical and psychological illness in the British Armed Forces. The acceptability of the programme. *J Medical Screening* 2004;11:148-152.
- 49 Rona R et al. Screening for physical and psychological illness in the British Armed Forces: III The value of a questionnaire to assist a Medical Officer to decide who needs help. *J Medical Screening* 2004;11:158-161.
- 50 Rona R, Hooper R, Jones M, Hull L, Browne T, Horn O, Murphy D, Hotopf M, Wessely S. Would mental health screening of the UK Armed Forces before the Iraq War have prevented subsequent psychological morbidity? *BMJ* in press.
- 51 Rona R, Hyams K, Wessely S. Screening for Psychological Illness in Military Personnel. *J American Medical Association* 2005;293:1257-1260.
- 52 Gilbody S, Sheldon T, Wessely S. Depression, a suitable case for screening? *B M J* 2006;332:1027-1030.
- 53 Solomon Z, Benbenishty R. The role of proximity, immediacy, and expectancy in frontline treatment of combat stress reaction among Israelis in the Lebanon war. *Am J Psychiatry* 1986;143:613-617.
- 54 Jones E, Wessely S. Forward Psychiatry in the Military: Its Origins and Effectiveness. *Journal of Traumatic Stress* 2003;16:411-419.
- 55 Wessely S. Twentieth Century Perspectives on Combat Motivation and Breakdown. *Journal of Contemporary History* 2006;41:268-286.
- 56 Wessely S, Bisson J, Rose S. A systematic review of brief psychological interventions ("debriefing") for the treatment of immediate trauma related symptoms and the prevention of post traumatic stress disorder. In: *Depression, Anxiety and Neurosis Module of the Cochrane Database of Systematic Reviews*, Issue 3. Oxford Update Software, 2000.
- 57 Græenberg N, Thomas S, Iversen A., Unwin C, Hull L, Wessely S. Do military peacekeepers want to talk about their experiences? Perceived psychological support of UK military peacekeepers on return from deployment. *J Mental Health* 2003;6:565-573.
- 58 Rubin J, Brewin, C, Greenberg N., Simpson J, Wessely S. Psychological and behavioural reactions to the bombings in London on 7 July 2005: cross sectional survey of a representative sample of Londoners. *B M J* 2005;311:606-610.
- 59 Jones N, Roberts P, Græenberg N. Peer-group risk assessment: a post-traumatic management strategy for hierarchical organizations. *Occup Med* 2003;53:469-475.

section 5

PEACEKEEPING AND ITS CONSEQUENCES



RECENTLY MOST MODERN ARMIES have spent less time fighting wars, and more on peace keeping and peace enforcement duties, and this trend seems likely to continue. Although that means that they are often spared the high casualties, both physical and psychological, that resulted from some of the intense campaigns of the World Wars, peacekeeping missions generate their own particular pressures and problems. It has been suggested that because soldiers are trained and prepared for traditional war fighting, the unfamiliar role of the peacekeeper - caught between two sides, never sure who is the enemy, unclear of his or her role and often burdened with complex rules of engagement - is more stressful for the modern soldier than traditional conflicts such as the 1991 Gulf War or the 2003 invasion of Iraq.

Our investigations into the psychological effects of UK peacekeeping missions have shown that PTSD is as common after peacekeeping missions as it is after more traditional war fighting⁶⁰. We have also confirmed that the most common stressors are those that are associated with ambiguity and complex decision making such as unofficial negotiating at checkpoints or operating under restrictive rules of engagement, exposure to either being associated with poor mental health. However it is not all bad news as we also found that the many peacekeepers believed they had helped the local population and, unsurprisingly, doing so was good for their mental health. Others found it beneficial in unexpected ways, and we used a line written by one respondent to one of our studies as the title of a paper – “serving in Bosnia made me appreciate living in Bristol”⁶¹.

We believe it is incorrect to view peacekeeping as simply a “watered down” war, since undertaking such duties can have a substantial impact on military personnel.



UK peacekeepers in Sierra Leone

DO TELEVISION PROGRAMMES CAUSE DISTRESS TO UK VETERANS?

It is often said that when soldiers have been traumatised by their war experiences, seeing visual reminders of combat and conflict has a negative effect on their mental health, leading to general distress, flashbacks and the like. However, most of these reports come from the particular experiences of US Vietnam veterans.

In November 1999 the BBC showed a powerful TV drama called “Warriors”, which was a dramatic

reconstruction of the experiences of a group of British peacekeepers who were deployed on “Op Grapple” at the start of the Bosnian war. It won several awards. One of the themes of the drama was the adverse psychological impact of peacekeeping duties on the mental health of several of the key characters.

By coincidence we had studied a large group of genuine British veterans of the same operation before the programme was shown. As we were about to follow this group up, we added a few questions on the impact of the programme.

Half of our large sample, all of whom had served in Bosnia, saw the programme, and nearly all agreed it was accurate and moving. But in contrast to the received wisdom, those who before the programme had psychological distress did not avoid the programme because of its traumatic memories – if anything they were more likely to have watched. Furthermore, there was no evidence that the programme caused further psychological distress in any of the soldiers who watched it. In this group, watching dramatic reconstructions of traumatic events did not cause any psychological problems, even in those who were affected by the events in question⁶².

SUMMARY

- ▶ Peacekeeping creates as many psychological problems as war fighting
- ▶ Watching TV programmes containing personally relevant and powerful scenes does not worsen mental health



REFERENCES

- 60 Hotopf M, A. Hull, L. Ismail, I. Unwin, C. Wessely, S. The health effects of peace-keeping in the UK armed forces: Bosnia 1992-1996. *Military Medicine* 2003;168:408-413.
- 61 Wessely S, Thomas S, Dandeker C, Greenberg N, Kelly V. "Serving in Bosnia made me appreciate living in Bristol": Stressful Experiences, Attitudes, and Psychological Needs of Members of the United Kingdom Armed Forces. *Military Medicine* 2006;171:376-380.
- 62 Hull L, Hotopf, M., David, A, Unwin, C., Wessely, S. "Warriors": Lack of Impact of a Powerful TV drama on the Psychological Health of United Kingdom Bosnia Peacekeepers. sub 2007.

section 6

THE WAR IN IRAQ



ONE CRITICISM THAT COULD be laid at the door of the MOD was the delay in carrying out systematic research into the health of Gulf War veterans. Our study, the first of its kind, did not start until five years after the end of the conflict, with the first results not being available until 1999. That delay probably means that will always be gaps in our knowledge about Gulf related illness. Perhaps other avenues of research will provide more answers with time, but we doubt it.

So one of the many lessons learned in the aftermath of the Gulf conflict was the need to have improved health surveillance and/or research in place after another major deployment, especially if it was in similar territory against the same opponent, and, so it seemed at the time, requiring similar protective measures against chemical or biological warfare.

We were asked to carry out such a study soon after the end of the initial operations, Op TELIC 1 (the 2003 Iraq War). Figure 2 outlines what we did. It was not dissimilar to the general strategy of the previous Gulf War programme, but with some differences. First, we decided to compare those who had taken part in the invasion of Iraq with the rest of the Armed Forces, and not two comparison groups as before, to make things easier. Second, we decided not to over sample women, as we had done before, but this time to study extra numbers of reservists, to be able to detect smaller changes in health outcomes.



Royal Marines prepa re for action during the invasion of Iraq

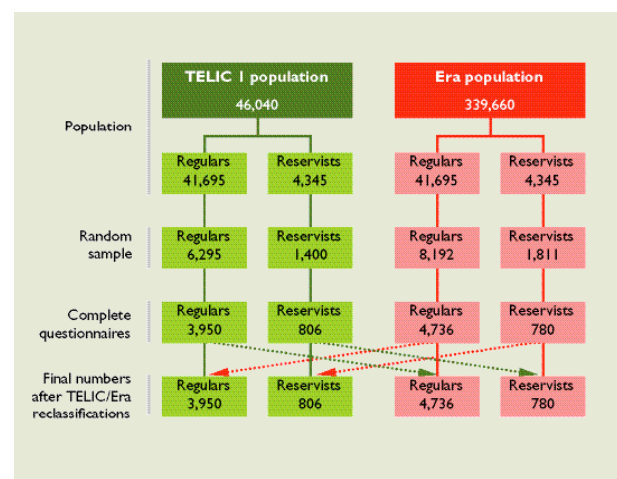


Figure 2: Study outline (Hotopf et al 2006)

As before, the sample was large, and was randomly chosen. The results can therefore be generalised either to all of those who have served in Iraq, or, if we include the comparison group, to the whole of the Armed Forces as constituted in 2003. We attempted to contact over 17,000

personnel for the study, which involved visiting over 50 military bases in the UK and Germany, and sending out seemingly countless postal questionnaires. Eventually over 10,000 personnel completed the questionnaire- a response rate of 60%. The main reason for non response was that either we could not find the person, despite considerable efforts, or they were too busy to complete the questionnaire. Importantly, there was no evidence that non-responders differed from responders on any of the important outcomes that we studied.

The main study started in 2004, and the first set of results were published in 2006 with more reports to follow.

IS THERE AN IRAQ WAR SYNDROME?

It is no secret that one of the principal reasons why the “TELIC” study was launched was because of fears of a repeat of the Gulf War Syndrome episode, which had adversely affected the health of a proportion of UK veterans, as well as causing harm to the general reputation of the Armed Forces, whom, whether rightly or wrongly, were seen by many people to have failed in some of their “duty of care” to personnel.

And there were many reasons to suspect that history might indeed repeat itself. First, we had already shown that syndromes similar to the Gulf War Syndrome had been seen after many previous conflicts (see above), and hence there was reason to believe that the next conflict would cause a similar problem. Second, the causes of the Gulf War Syndrome saga itself remained controversial. Third, although changes had been made in the measures to be used to protect the Armed Forces against the threat of chemical and biological weapons, it was still intended to offer both the anthrax vaccine and pyridostigmine prophylaxis. Finally, the war was to be fought against the same enemy and on much the same terrain.

However, what we found was not what we expected⁶³. Figure 3 shows first of all the results from the first Gulf War study, and then the same comparisons, but this time for the Iraq study. Remember that we were asking exactly the same questions, in exactly the same way. It is clear that this time there has been no repetition of the substantial increase that we saw in symptoms after the first Gulf War.

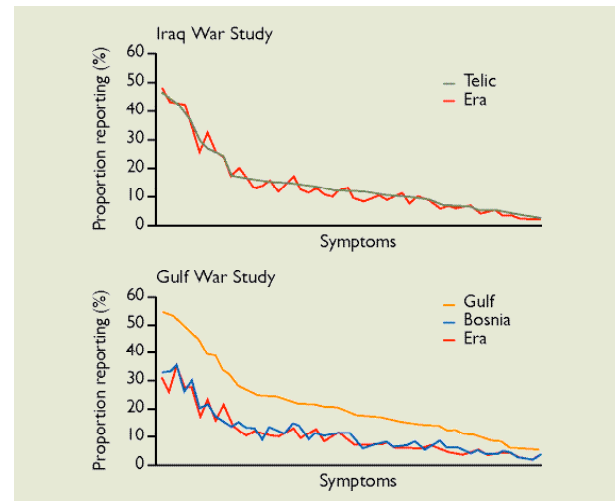


Figure 3: ????

SUMMARY

- ▶ No “Iraq War Syndrome”
- ▶ Makes it unlikely that factors common to both conflicts, such as DU, anthrax vaccine, pesticides, NAPS tablets, or general stress, were a main cause of the “Gulf War Syndrome” problems
- ▶ But it is still early days

MENTAL HEALTH CONSEQUENCES

There has been considerable and understandable concerns expressed about the mental health impact of the war in Iraq on UK Service personnel, and there is no doubt that some are coming back with psychological problems such as PTSD. But just how large is the problem? (see table below).

Distribution of main outcomes by original cohort

	Era	Telic 1	Unadjusted OR	Adjusted OR
Common mental disorder (GHQ-12)	1,071 (20%)	953 (20%)	10.2 (0.92-1.12)	1.03 (0.92-1.15)
PTSD (PCL-C)	193 (4%)	201 (4%)	1.18 (0.96-1.45)	1.20 (0.95-1.50)
Multiple physical symptoms	546 (10%)	575 (12%)	1.22 (1.08-1.39)	1.33 (1.15-1.54)
Case on AUDIT	1,159 (22%)	1,183 (26%)	1.28 (1.17-1.41)	1.10 (0.99-1.22)
Fair or poor general health	673 (12%)	537 (11%)	0.89 (0.79-1.01)	1.00 (0.86-1.15)

The answer is not as large as some might have predicted. Table 6 gives the technical results, as it is important for people to see both the absolute values and the odds ratios. Odds ratios are a measure of how much commoner are problems in one group compared to another

Looking at the absolute values first, about 20% of those coming back from Iraq show some symptoms of what are called common mental health problems. These mean symptoms such as stress, poor sleep, unhappiness, worry and anxiety. It does not mean that 20% of the Armed Forces have mental disorders, although some of those in this category will have significant depression or anxiety. The figure is also lower than the levels of common mental health problems one finds in the general population – these symptoms are very common. Furthermore, not all of those will have a psychiatric disorder when interviewed by a professional (something we are doing now), but a proportion will.

Even so, for any member of the Armed Forces to have depression or PTSD is undesirable. But what is the contribution of serving in Iraq? The answer to that comes by looking again at the odds ratio (Table 6 from Lancet paper). – in this case comparing those who deployed to Iraq to those who did not. If the odds ratio is one, then there is no difference. The results are clear – there is no increase in psychiatric disorders in TELIC regular personnel compared to the rest of the British Armed Forces.

Our study was based on TELIC 1, the original invasion of Iraq, under the assumption that this would be not dissimilar to the invasion of Kuwait – a short, high intensity but limited conflict. As everyone knows, things have not turned out as expected. Traditional war fighting has given way to counter insurgency and peace enforcement duties. As already discussed, these produce their own pressures and problems. Based on the Vietnam experience, many commentators were predicting that it would be these duties that would lead to greater psychological problems for Service personnel.

Although our original design compared TELIC 1 personnel with the rest of the Armed Forces, more and more people from the “comparison” non Iraq group have subsequently deployed to Iraq. Although not perfect, we had sufficient numbers to be able to look for trends in

later operations compared to TELIC 1 personnel. The results that so far these later deployments have not been associated with any worsening of mental health consequences compared to the initial TELIC 1 group.

Some may be surprised with these results, which are at odds with the situation often portrayed in the media. But it is important to emphasise that our results do not mean that no one has been affected. The data shows that some have. Those who have experienced combat, for example, have more PTSD than those who have not. But what it does reflect is that many of our Servicemen and women are very experienced when it comes to deployments, and that 70% of our comparison group had also seen active service.

What we also find is that the experience of deployment, even to Iraq, is not solely negative. In the interviews that we did before we started the main study, many personnel reported positive experiences associated with the deployment. A small study of an admittedly elite unit (16 Air Assault Brigade) before and after the original invasion of Iraq (Op TELIC 1) found that some measures of mental health had improved during that period⁶⁴, a finding replicated in a similar study of British forces before and after the 2001 Afghanistan deployment⁶⁵. In our main Iraq study two thirds of those contacted reported that going on Op TELIC had made it more likely that they would continue their career in the Armed Forces.

We conclude that there are substantial differences between the reactions of large national service or conscript armies facing the prolonged stressors of World Wars, and the reactions of far smaller, all volunteer forces exposed to lesser degrees of danger for shorter durations.

WHO GETS PROBLEMS?

In the preceding section we showed that there was no overall increase in mental health problems as a result of serving in Iraq, at least compared to other deployments. But as we were at pains to point out, some people have developed problems. What do we know about the risk factors for this?

First, it is clear that there are factors about any deployment that increase the chances of developing subsequent mental health problems. So it is not a

surprise that our preliminary analyses confirm that people were more likely to have subsequent problems if they spent time in forward areas, in combat, were exposed to enemy fire or spent time seeing or handling the dead and wounded.

Equally important were chain of command issues such as supply of information, comradeship, mismatch of trained ability and deployed role, confidence and trust in the leadership, perceived usefulness of post-deployment briefs and support by the military (and the media) both for troops in theatre and their families at home. No one can tell the future, but this latter factor is clearly a cause for concern if the political climate changes significantly in the UK.

There are also personal factors but still relevant to the mission, such as negative expectations about the perceived length and danger of the mission, low confidence in the adequacy of training and kit and general lack of pride in the deployment. In recent times contemporary trauma experts tend to overlook these issues such as morale, leadership and group cohesion, but none of this would have come as a surprise to a previous generation of military psychiatrists⁶⁶.

RESERVISTS

So far we have been talking about the outcomes for regular forces, or “active duty” as the Americans call it. But what about our Reserve Forces, largely the Territorial Army (TA), but also the Army Regular Reserve, the Royal Navy and Marines Reserves and the Royal Auxiliary Air Force? Here the picture was more problematic.

Unlike the Regulars, we did find an increase in mental health problems in Reservists who had served in Iraq. They were twice as likely to have symptoms suggestive of common mental health problems (depression, stress, anxiety and so on) than fellow Reservists who had not been to Iraq, and six times as likely to have symptoms suggestive of PTSD. However, whilst this is a substantial increase in risk, it was still the case that the actual rate was relatively low, at 6%, and was far lower than the comparable rate for US forces⁶⁷.

Why are the Reserves more affected than the Regulars? We don't think it is because the Reserve Forces had a

more dangerous time in Iraq. Once the initial invasion was complete (ie after the end of TELIC 1) Reserves and Regulars have been used in similar ways. Furthermore, the majority of Reserve Forces that we contacted as part of an in depth study of Op TELIC 5 (see later) reported that they had not encountered problems in their military role in theatre, and a previous concern about discrimination or being treated differently by Regular forces was no longer an issue. The majority reported that they had derived professional satisfaction from their tour of duty.



So the answer may lie in differences before the Reservists deploy, and after they come home. When Regulars return from a tour of duty, by and large they continue to spend time with the same people they have served with, and have ample opportunity to talk about experiences, reminisce and generally wind down either with people who have shared the same experience, or others who at least know what it is all about, and value it. By contrast, after only a couple of days Reservists return to a civilian environment, apart from their military colleagues. Family, friends and employers may have little understanding of the Reservists' experience, and Reservists may be subject to more open criticism of the war in Iraq.

Furthermore, when we did the study, as soon as they take off the uniform Reservists no longer have access to military medical services. Any health problems they develop would be the responsibility of the NHS. The number of NHS doctors who have personal experience

of the military is now extremely small, and many either lack knowledge, or perhaps interest, in the problems that people may encounter after deployment. It is unlikely that this difference in medical care is the reason for the higher prevalences of mental health problems in reservists, but it may have made it more difficult for reservists to engage with appropriate services when they do have problems. When our results were published, MOD addressed this gap with an announcement that Reservists would now be entitled to access to military mental health care after for two years after deployment, even when they have returned to civilian life.

On the other hand, we also showed that unlike Regulars, Reservists did not show an increase in risky driving behaviour after Iraq. Returning to an exclusively civilian environment and culture may also have some protective benefits as well.

SUMMARY

- ▶ No increase in psychiatric problems in Regular Forces who have participated in Op TELIC compared to rest of Armed Forces
- ▶ Results different to 1991 Gulf War, and to US Forces in Iraq
- ▶ Doubling of mental health problems in UK Reserve Forces, although overall rate remains low
- ▶ No change with change from war fighting to counter insurgency
- ▶ No increase in mental health problems when personnel return home, unlike US data
- ▶ Again, early days

HOW DOES THIS COMPARE WITH THE UNITED STATES?

These results are different from the results of similar American studies. The rates of PTSD reported by the US Forces on returning from Iraq are considerably higher than those we found⁶⁸. And because this time we were using the same measure of PTSD as the US researchers, we can be confident that these are true differences.

There are many reasons for this. There is no doubt that the US Forces are doing more fighting and taking more

casualties than the UK Forces. And as we have shown, the level of physical casualties remains a good guide to the level of psychiatric casualties.

But as everyone also knows, the UK Forces have taken significant casualties and deployment in the South of Iraq is also associated with real and substantial risks. The total numbers of casualties experienced by the US forces are far greater than those of the UK Forces, but there are also about 12 to 15 times more US personnel in Iraq. So as a proportion of the total number deployed, the US casualties are still higher than the UK, but not sufficient to explain all the differences in psychological outcomes.

We know that exposure to combat does predict PTSD, but we know that many other factors are involved. For example, UK personnel are significantly older than US personnel, and have more in the way of previous deployment experience, although perhaps surprisingly our data suggests that previous deployments do not protect against ill health, not just in Iraq but also looking back at those who deployed to Bosnia during the 1990s⁶⁹.

British Service personnel also spend less time in Iraq – the average tour of duty is six months for the UK but one year for the US. The US also uses far more of its reserve forces in Iraq than the UK. There are also differences when people return home, especially if they are planning to leave the Armed Forces. In the UK there is universal health care, and at least in theory it should make no differences to access to care whether or not someone sustained an injury in the military – it might affect that person's war pension, but not right to treatment. But that is not true in the USA, where having a service related disability may make a considerable difference to your entitlement to later health care. All of these may also play a part in the differences that we have observed in psychiatric casualties.

SUMMARY

- ▶ Rates of psychiatric problems in Iraq Service personnel are lower for the UK than the US
- ▶ The US have higher combat casualties and exposure to fighting
- ▶ They are also younger, have less previous deployment experience, are more likely to be Reservists, and spend twice as long in theatre

MEDICAL COUNTER MEASURES AND OP TELIC

After the problems with Gulf War illness, and influenced by some of the work reviewed above, MOD decided to alter its methods of protection against biological warfare on a precautionary basis before the war in Iraq. One of our tasks was to see how effective these changes had been.

First of all, and despite the WMD saga, uptake of the anthrax vaccination was high at the start of the conflict (72%). 79% of the army accepted the vaccine, with slightly lower proportions of the Royal Navy and RAF (59% and 58% respectively). We found that before they deployed nearly all thought that they were somewhat or very likely to be exposed to chemical or biological agents.

We have already shown that after Iraq there has been no repeat of the Gulf War Syndrome saga, at least not yet. Likewise, so far we have not found any link between receiving anthrax vaccination (now given on its own) and ill health. There was no risk of more long-term symptoms in those who received the vaccine. But that does not mean there were no side effects – the medical intervention that is both successful and entirely free of side effects probably does not exist.

What we found was that the rate of side effects was related to how people perceived the vaccine, and in particular whether or not they felt that they had been under pressure to accept the vaccine. We do not know whether or not people really were pressurised – but people who felt that they had been under pressure from Command to accept the vaccine, then they were more likely to report side effects.

IMPROVING CHOICE AND CONFIDENCE

One consequence of the experiences of the Gulf War was to move towards a policy of explicit informed consent around the anthrax vaccination. Before the Iraq War Service personnel were again offered anthrax vaccination, but this time were required to watch an information video, read a glossy brochure, and then sign a consent form.

But did these new measures improve either confidence or uptake in the vaccine? Not necessarily. We found that over 20% of personnel continued to be worried about the effectiveness and safety of the vaccine. For at least some people, the special arrangements made for the anthrax vaccination programme, as opposed to all the other vaccines that people are offered, had backfired, since they reported that “there must be something really wrong with the anthrax vaccine, otherwise they wouldn’t go to all this trouble”, or as someone else put it - “If it is really as safe as the other vaccines, how come we only have to watch a video and sign a consent policy for this one alone?”⁷⁰.

What this suggests is that in future the information given and/or consents obtained should be the same for all vaccinations, and no “special cases” made for any single one.

SUMMARY

- ▶ No medium/.long term side effects detected from exposure to anthrax vaccine
- ▶ Side effects are related to perception of consent
- ▶ Developing special consent procedures for anthrax vaccine alone has not increased confidence

DEPLETED URANIUM

Depleted uranium (DU) munitions have also proved controversial, and have been blamed by some for the Gulf War Syndrome problems. Putting to one side the lethal effects of DU when used as a weapon (its primary purpose), what are the side effects of its use? Despite the word “uranium”, DU is not in fact an important radioactive hazard. Instead its toxic properties are similar to those of lead because it is “heavy” metal. A team in the United States continue to carry out intensive surveillance of soldiers who received DU fragments in their bodies as a result of so called “friendly fire” or “blue on blue” incidents. Those affected continue to excrete DU particles 15 years later. There is also subtle changes in renal function and also some evidence of increased chromosome mutation in those most heavily exposed⁷¹. But importantly there is no evidence of any health problems.

What is the UK situation? We have not studied any veterans from the first Gulf War who received DU shrapnel fragments. All we have been able to show is that a small proportion of Gulf veterans have requested screening for DU, but most of those did not come from those at risk of DU contamination⁷². Surprisingly some of the veterans who believed that they had breathed in DU dust did not want to be screened, which suggests that there may be multiple factors, including denial, influencing who wants to be screened for DU.



“Cleaning up” a destroyed Iraqi tank is another potential source of DU contamination

After the conclusion of the 2003 invasion of Iraq, we were able to launch a direct study looking for evidence of DU exposure, concentrating particularly on those most at risk, which were those in the armoured brigades and those involved after the end of active war fighting in cleaning up knocked out Iraqi tanks. DU is excreted by the kidneys, but we found no traces of DU in 341 at-risk Army and Royal Marines personnel who had taken part in the invasion of Iraq.

SUMMARY

- ▶ No evidence of significant exposure to DU in UK personnel deployed to Iraq

REFERENCES

- 63 Horn O, Hull L, Jones M, Murphy D, Browne T, Fear N, Hotopf M, Rona R, Wessely S. Is there an "Iraq War Syndrome"? Comparison of the health of UK service personnel after the Gulf and Iraq wars. *Lancet* 2006;367:1742-1746.
- 64 Hacker Hughes J et al. Going to war does not always have to hurt: preliminary findings from the British deployment to Iraq. *Br J Psychiatry* 2005;186:536-537.
- 65 Campion B, Hacker-Hughes J, Devo M, Fear N. Psychological audit of British Deployment to Afghanistan. *J Royal Army Medical Corps* 2006;152:in press.
- 66 Wessely S. Twentieth Century Perspectives on Combat Motivation and Breakdown. *J Contemporary History* 2006;41:268-286.
- 67 Hotopf M, Hull L, Fear N, Browne T, Horn O, Iversen A, Jones M, Murphy D, Bland D, Earnshaw M, Greenberg N, Hacker-Hughes J, Tate R, Dandeker C, Rona R, Wessely S. The health of UK military personnel who deployed to the 2003 Iraq War. *Lancet* 2006;367:1731-1741.
- 68 Hoge C, Castro C, et al. Combat Duty in Iraq and Afghanistan, Mental Health Problems, and Barriers to Care. *New England J Medicine* 2004;351:13-22.
- 69 Hotopf M et al. The health effects of peace-keeping in the UK Armed Forces: Bosnia 1992-1996. Predictors of psychological symptoms. *Psychological Medicine* 2003;33:1-8.
- 70 Murphy D, Dandeker C, Horn O, Hotopf M, Hull L, Jones M, Manceau T, Rona R, Wessely S. UK Armed Forces response to an informed consent policy for anthrax vaccination: A paradoxical effect? *Vaccine* 2006;24:3109-3314.
- 71 Squibb K, McDiarmid M. Depleted uranium exposure and health effects in Gulf War veterans. *Philosophical Transactions of the Royal Society* 2006;361:639-648.
- 72 Greenberg N, Iversen A, Unwin C, Wessely S. Screening for depleted uranium in members of the UK Armed Forces: Who wants it and why? *J Epidemiol Community Health* 2004;58:558-561.

section 7

ALCOHOL AND RISK-TAKING BEHAVIOURS



ALCOHOL

From the days of rum rations to drinking in the mess, alcohol has long been part of military life. Alcohol is often part of time honoured military rituals and traditions, and can play an important part in socialisation, bonding and group cohesion.

But the Armed Forces are not impervious to the harmful effects of alcohol. Whilst alcohol use and its consequences have been studied extensively in the general population, there is a surprising lack of research into its use by the UK military population.

We included a well known measure of alcohol use in our main Iraq study. This allowed us to look at the general patterns of alcohol intake across the Services, as well as the specific impact of the Iraq deployment, and to make comparisons with the UK civilian population.

Looking across the Armed Forces, the younger age groups, those under 35, the total alcohol intake for both men and women was twice that of the UK population of the same age and gender. Within the Armed Forces people were more likely to drink if they were male, in the Army, single, of junior rank, and had a parent with a drink or drug problem. The situation is similar for US Forces.

Drinking did decrease considerably with increasing age, until by 35 the levels now were similar to the UK population norms. The pattern of drinking also differs in the younger age groups– the military population are more

than twice as likely to indulge in binge drinking than the rest of the population. Within the Armed Forces the highest rates are to be found in the Royal Navy and Army, with the RAF slightly lower.

Figure 4: Prevalence of high risk drinking (AUDIT score >16)



Because most of the heavy drinking is concentrated in the early years, alcohol related problems such as dependence are less common, although if the pattern of heavy drinking were to continue in any particular individual or group at the same level, then this would definitely change.

What role does deployment and/or operational stress play in this? The answer is probably not much. At first sight deployment to Iraq is associated with a increase in drinking, as indeed was the 2002 deployment to Afghanistan and the Bosnia peacekeeping missions⁷³. But this is partly accounted for by the fact that deployed

personnel tend to be younger, and once adjustment is made for the crucial age factor, the increase in drinking is on the borders of statistical significance.

RISK TAKING

It has been noted before that after any major deployment, such as Vietnam or the 1991 Gulf War, there is an unexplained increase in accidental death. Whilst this is not a major increase, it is still of concern. Many have also observed that when people come back from major operations they often continue to exist on an “adrenalin rush” for some time, and talking to individuals it is clear that some miss the “buzz” of a real deployment.

On operations people take risks, and it will never be otherwise. But do some people continue to take risks even when they return? We therefore asked about various behaviours that were associated with risk taking, such as driving too fast, driving without wearing a seat belt, and driving under the influence of alcohol.

Whereas we had not found an impact of Iraq on standard mental health measures, we did find an impact on these behaviours. There was a definite increase in reporting risky driving behaviours, for example, in those who had been to Iraq. It was particularly marked in the Army. It is too early to see if this is reflected in higher rates of physical injury, but we think that is likely.

We think there are two reasons for this. First, it may reflect part of a general tendency for sensation seeking after the “buzz” of deployment. Second, whilst on deployment it is often necessary for operational reasons for people to drive fast and without a seat belt. It is possible that this style of driving, which is of course essential in danger zones, then becomes a habit.

These are important results, since they do suggest a possible intervention. At the moment some American units include information on better driving as part of the homecoming package for some units. We are interested in seeing any evidence that this reduces risky driving, and by implication accidents and injuries.

SUMMARY

- ▶ Background levels of alcohol intake in Armed Forces higher than in civilian population, but only in younger age groups
- ▶ Levels of binge drinking also increased
- ▶ Little influence of deployment
- ▶ Increase in other risk behaviours related to driving is related to deployment

REFERENCE

- 73 Campion B, Hacker Hughes, J., Devo, M., Fear, N. Psychological audit of British Deployment to Afghanistan. *J Royal Army Medical Corps* 2006;152:in press.

	Males	Females
Overall AUDIT Score		
Mean	10.2	7.8
(95% CI ^a)	(10.1-10.3)	(7.5-8.1)
Royal Naval Service^b		
Mean	10.6	7.7
(95% CI ^a)	(10.3-10.9)	(6.9-8.3)
Army		
Mean	10.4	7.9
(95% CI ^a)	(10.3-10.6)	(7.5-8.3)
RAF		
Mean	9.0	7.6
(95% CI ^a)	(8.8-9.2)	(6.9-8.3)
<i>a 95% CI = 95% confidence interval</i>		
<i>b Includes the Navy and Marines</i>		

section 8

OTHER ISSUES



MEDICAL DOWNGRADING

Another area of hidden psychological morbidity are those who are medically downgraded, and thus unable to perform their usual duties, which at any one time consists of between 7 to 10% of the total strength of the Armed Forces. Being downgraded was associated with a doubling of the risk of having psychological problems, and this was particularly marked in those with chronic physical illness⁷⁴. This is in keeping with the civilian literature, which consistently reports the hidden psychological burden of chronic physical illness. Given that we also know that psychological disorder is a major factor determining prognosis, functional impairment and treatment outcome, this is an area where the military need to explore the role of psychological treatments.

SUMMARY

- ▶ Medical downgrading for long term physical illness hides a burden of psychological problems

FAMILIES

Everyone acknowledges the importance of families to the health and well being of serving personnel, but surprisingly little is known about how families cope with the stressors of deployment. To investigate this further we carried out some in depth interviews with service personnel and their partners before, during and after deployment to Iraq (Op TELIC 5).

The first thing this showed was that there was a difference in the way in which the deployed person and their partner viewed the stressors of separation and deployment. Put simply, those in Iraq tended to over estimate the impact on their partners who had to remain at home, and to under estimate their resilience. Partners back home were often prepared to put up with rather more than the person out on deployment thought. There was acknowledgement of the tensions that Army life brought on by what is often called “work life balance”, but in the opinion of these personnel, this was off set by the additional financial security of Army life.



We also looked at what support was available for spouses during the separation of deployment. For those linked with regular personnel there was a variety of both informal and formal networks of support – informal being the so called “military family” and its networks, formal being the support from padres, voluntary organisations and welfare departments. In general people preferred to use the informal networks, but the formal networks were also valued as a “safety net” or “insurance” in case things went seriously wrong. The concept of the “military family” remains alive and well in 2006.

SUMMARY

- ▶ Partners have different views about the impact of deployment on family life and functioning
- ▶ Informal networks of social support (“military family”) remain strong
- ▶ Imbalance in both formal and informal support between Regulars and Reserves

DATA PROTECTION AND CONFIDENTIALITY

Protecting personal information in the electronic age is clearly something that everyone sees as important. Confidentiality is at the heart of trust between patient and doctor. But personal health data can also be used for the public good without betraying that trust or confidence – otherwise we would not know that smoking causes lung cancer. Personal health information remains vital to study the survival from cancer, the effectiveness of treatments, to protect against infectious diseases, and to discover the causes of numerous illnesses, just to name a few. Usually such data can and should be obtained by informed consent, but this is not always possible or practical- for example if people cannot be contacted to ask their permission, a common situation with ex-Service personnel.

In order to manage the twin demands of personal privacy versus medical research, there is both the Data Protection Act and also a series of court judgements on confidentiality. These all act to ensure a system of checks and balances to safeguard the rights of the individual versus the needs of society.

Because our work involves contacting large numbers of a population that is often hard to reach, namely serving and ex-serving personnel, we have gained a lot of experience and knowledge about issues around data protection over the decade that we have been conducting our research programme. We used these to illustrate significant problems in the interpretation of the Data Protection Act, and argued that excessive caution and/or lack of awareness of the legal framework was impeding the collection of data and/or medical research that was necessary to help understand health issues in serving and ex-Service personnel⁷⁵. As a result MOD has changed the advice it gives to staff on data protection issues.

SUMMARY

- ▶ Data protection laws and laws on confidentiality permit a more liberal approach to using personal data for ethically approved medical research than many believe

REFERENCES

- 74 Rona R, Hooper R, Greenberg N, Jones M, Wessely S. Medical downgrading, self-perception of health and psychological symptoms in the British Armed Forces. *Occupational Environmental Medicine* 2006;63:250-254.
- 75 Iversen A, Liddell K, Fear N, Hotopf M, Wessely S. Consent, Confidentiality and the Data Protection Act: Epidemiological research and hard-to-engage cohorts. *BMJ* 2006;332:165-169.

section 9

WHAT IMPACT HAS KCMHR HAD ON POLICY?



- Shown the existence and extent of the Gulf War Illness problem
- Showed that pesticides, DU and anthrax vaccination was not to blame – thus allowing them to remain available for use within the operational environment as required
- Identified a possible link between speed of vaccination and the possible use of the anthrax/pertussis combination. This led to a major policy change in the pattern and schedule of vaccinations prior to the Iraq War.
- Provided evidence to improve future vaccination uptake and confidence, identifying that information given and/or consents obtained should be the same for all vaccinations, and no “special cases” made for any single one such as anthrax.
- Demonstrated that psychological screening was not a solution for post deployment mental health problems, either pre or post each operational deployment. KCMHR research has allowed the UK not follow the (expensive and unproven) examples of other countries, which would consume considerable resources, overwhelm existing mental health services but has not been shown to reduce psychological morbidity.
- Clearly identified an increase in mental health problems in Reservists after Iraq, which influenced the ministerial announcement of an extension of mental health support to Reservists after demobilisation, and identified the need for further support for Reservists’ families, currently been studied by Director Reserve Forces
- Was able to give strong reassurance that there had been no repeat of the “Gulf War Syndrome” episode
- Provided robust evidence that permitted MOD to alter data protection policies to permit important data collection/research to continue.
- Showed that psychological symptoms are common among personnel medically downgraded for physical disorders
- Showed a possible mechanism to explain the increased risk of accidents associated with post deployed personnel that could be used in prevention
- Has shown that single session psychological debriefing does not reduce post traumatic stress, and is now evaluating a new approach more acceptable to serving personnel

section 10

WORK IN PROGRESS



1. IMPROVING SERVICES, OVERCOMING STIGMA

Although we did not find an increase in mental health problems in Regular forces as a result of serving in Iraq, we did find many who had such problems, even if the rates were no higher than after other deployments. We are now making direct contact with several hundred people who have indicated that they are having problems, and a smaller number of those without problems. We are interviewing them to determine what problems they have, and whether or not they have accessed medical or other services. The aim is to determine exactly what disorders they have, whether or not they either want or need treatment, and whether or not they have been able to access treatment. So this study will tell us whether either the Defence Medical Services for serving, or the NHS for non serving personnel, are aware of those who have mental health problems, and what is being done for them.

2. PRE-SERVICE AND IN-SERVICE RISK FACTORS

Some people leave the military and do badly, but what role did their time in the Armed Forces play in the eventual poor outcome? Likewise, not all mental health problems arising during service, even after deployments, are related to the deployment itself. Some people join the Armed Forces already vulnerable to adverse outcomes, particularly in the Army which has often accepted new recruits from socially disadvantaged backgrounds. It is often said that most of these recruits

do well, and even when some do not, perhaps this might have happened anyway, but we do not know of any data that balances the risks and benefits of military service, nor which takes into account the fact that many “risky” people join the Services.

We obtained data in our main study on pre service vulnerabilities. This will allow us to carry out this type of analysis, and hence quantify the influence of pre service and in service risk factors on military careers and post service adjustment. We will study those who are damaged by their service but those who gain from it.

SUMMARY

- ▶ On going study will give true prevalence of psychiatric disorders
- ▶ Will assess wishes for mental health treatment, access to treatment and barriers to care
- ▶ Will provide data for DMS and NHS on any gaps in service provision
- ▶ Another study will assess how social adversity before military service is influenced by, and influences, a person’s career in the Armed Forces and beyond
- ▶ Both studies will report in 2007

NEW TREATMENTS

Psychological management of post traumatic stress disorder (PTSD) often uses “exposure” techniques, in which the person is asked to revisit sights, sounds or memories

associated with distress. But sometimes this is difficult when the memories relate to military experiences. We are engaged in a joint project with Birmingham University to use new computer “virtual reality” technology to use as part of exposure treatments for post-traumatic and other anxiety and mood disorders”.

ACADEMIC CENTRE FOR DEFENCE MENTAL HEALTH

In September 2004, a new military mental health research team, the Academic Centre for Defence Mental Health (ACDMH) was established within KCMHR. The team consists of a military psychologist, military psychiatric nurse and a senior lecturer in epidemiology..

The mission of ACDMH is to develop a research culture within Defence Mental Health. This involves collating and disseminating information on research related to military mental health, and initiating, stimulating and supervising relevant research and audit activities within the 20 Departments of Community Mental Health (DCMH) across UK, Germany and Cyprus. The team organises an annual Defence Mental Health Research Conference which last year attracted 16 papers from across UK Defence Mental Health and which this year forms part of the International Military Mental Health Conference. Some 150 participants from some 15 nations are expected.

Team members also maintain international links with other military mental health researchers from NATO, PfP, Mediterranean Dialogue and TTCP countries, contribute to NATO and TTCP research task groups and a number of joint research projects are being carried out on Military Leaders’ Attitudes to Military Mental Health Care and Psychological aspects of Contact with Child Soldiers.

ACDMH contributes to a number of KCMHR studies described above. ACDMH also initiates and conducts its own military mental health research activities including analysis of repatriations from theatre on mental health grounds, studies on the efficacy of Pre- and Post-Deployment Education on Op HERRICK, analysing referrals to operational FMHTs, comparing referral and occupancy rates for DKPH and the ISPs and analysing Reservists’ data from RTMC.

Team members sit on a number of military and other committees and working groups and carry military clinical case loads as well as contributing to military mental health management, training and supervision including planning a new Diploma in Military Mental Health.

section 11

MONITORING HEALTH OUTCOMES IN THE FUTURE



The first results of the Iraq studies do provide some reassurance. So far there has been no repeat of the Gulf War Syndrome saga, and neither are we facing an epidemic of psychiatric injury. But it is early days. No one can be sure when the health of a proportion of those who served in the Gulf started to change. Likewise, no one can foresee the eventual outcome of the war in Iraq, and it would be premature and ill advised to conclude that there will be no long term health consequences of that conflict. So over the next three years we will be following up all those who took part in the first Iraq study to monitor changes over time, as well as recruiting a new sample who joined the Armed Forces after 2003 and have subsequently deployed to Iraq or elsewhere.

For the follow up the main agreed outcomes will be multi-symptom illness, psychological illness and injury, physical injury and downgrading, side effects and confidence in medical counter measures, risk taking behaviour, alcohol misuse and use/ non-use of health services. At the same time it will be possible to analyse secondary issues such as operational and non-operational stress and satisfaction, predictors and associations of premature separation, influences on career satisfaction and retention, family stressors, evaluation of policy changes, and the influence of pre-service vulnerabilities on military careers and health

In order to ensure that the cohort remains representative of all the Armed Forces, not just those serving in 2003 or just those who have served in Iraq, it will be

“replenished” with new personnel who have joined the Armed Forces since 2003.

EVALUATING POLICIES

One advantage of a follow up study is that it allows evaluation of new policies introduced between the two waves of the study. Thus we will provide some evaluation of the impact of new policies on stress, alcohol, vaccination and decompression, and no doubt others.

SUMMARY

- ▶ Follow up of main cohort is planned for 2007/2008
- ▶ Main outcomes will be any new “Iraq War Syndrome”, psychological outcomes, downgrading and injuries, alcohol, risk taking behaviour, side effects/confidence in medical counter measures, and use/non use of health care services
- ▶ Secondary outcomes will be premature service leavers, health and adjustment of ex service personnel, legacy issues
- ▶ The cohort will continue to be representative of all the Armed Forces

GULF WAR ILLNESS UNIT AND KCMHR STAFF 1996-2006

- ▶ Cate Birtles
- ▶ Duncan Bland
- ▶ Tess Browne
- ▶ Trudie Chalder
- ▶ Christopher Dandeker
- ▶ Anthony David
- ▶ Clare Dyson
- ▶ Mark Earnshaw
- ▶ Brian Everitt
- ▶ Lydia Farrin
- ▶ Nicola Fear
- ▶ Claire French
- ▶ Neil Greenberg
- ▶ Jamie Hacker Hughes
- ▶ Liz Higgins
- ▶ Richard Hooper
- ▶ Oded Horn
- ▶ Matthew Hotopf
- ▶ Lisa Hull
- ▶ Khalida Ismail
- ▶ Amy Iversen
- ▶ Edgar Jones
- ▶ Margaret Jones
- ▶ Kate Kent
- ▶ Vicky Kelly
- ▶ Kate Kent
- ▶ Susie Kilshaw
- ▶ Vicky Langston
- ▶ Katie Lye
- ▶ Dominic Murphy
- ▶ Vasilis Nikalaou
- ▶ Ian Palmer
- ▶ Mark Peakman
- ▶ Stephanie Pisarki
- ▶ Julie Pridden
- ▶ Steven Reid
- ▶ Randle Roberts
- ▶ Roberto Rona
- ▶ Michael Rose
- ▶ John Ross
- ▶ James Rubin
- ▶ Mohammed Sharief
- ▶ Anna Skowera
- ▶ Rosemary Tate
- ▶ Sam Thomas

- ▶ Catherine Unwin
- ▶ Lauren Van Staden
- ▶ Simon Wessely
- ▶ Ed White
- ▶ Til Wykes

COLLABORATORS

- ▶ Col Phil Bolton
- ▶ Maj Caroline Caldicott
- ▶ Prof David Coggan
- ▶ Dr Simon Cohn
- ▶ Prof Brad Doebberling
- ▶ Col Dougie Gamble
- ▶ Brig John Graham
- ▶ Dr Craig Hyams
- ▶ Dr Noreen Maconochie
- ▶ Prof Theresa Marteau
- ▶ Gp Capt Frank McManus
- ▶ Dr Leigh Neal
- ▶ Prof Pat Doyle
- ▶ Prof Gary McFarlane
- ▶ Gp Capt Geoff Reid
- ▶ Surg Comm John Sharpley
- ▶ Prof John Weinman
- ▶ Dr Robin Woolvern
- ▶ Army Benevolent Fund
- ▶ Army Families Federation
- ▶ Dr Anne Braidwood and colleagues at DWP
- ▶ AFPAA
- ▶ Nick Blatchley, Lisa Baird, Alison Richards and colleagues at DASA
- ▶ BFPO Mill Hill
- ▶ Commander Toby Elliot and colleagues at Combat Stress
- ▶ Defence Medical Services Directorate
- ▶ ESAG
- ▶ Single Service Medical Directorates
- ▶ Capt Debs Skennerton and colleagues at 4th Armd Brigade

- ▶ Col Brian Eadon, Major Roger Morton and colleagues at Army Land HQ
- ▶ Oswald Stoll Foundation
- ▶ SSAFA
- ▶ Staff at MCTC
- ▶ Colonel Terry English, Ms Sue Freeth and colleagues at the Royal British Legion
- ▶ Veterans Agency
- ▶ Daniel Applegate, Chris Baker, Clare Caldin, Dr Paul Howarth, Jonathan Iremonger, Piers Jones, Malcolm Lingwood, Lee Mansfield, Christine Paxton, Jim Plato, Dr Brigid Rodgers, John Royle, Tim Taylor, John Tesh, Mike Tonnison, Stephen Trout, Rosie Wane and colleagues at the Veterans Policy Unit
- ▶ War Widow's Association

WE WISH TO ACKNOWLEDGE THE FOLLOWING FUNDING BODIES:

US DEPARTMENT OF DEFENCE

- ▶ Clinical and epidemiological studies into Persian Gulf War Illness
- ▶ The role of Th1/Th2 cytokine balance in Gulf war related illness
- ▶ War syndromes from 1900 to the present: symptom patterns and long term outcomes
- ▶ A comparison of self referred and epidemiologically defined Gulf war veterans
- ▶ Mechanisms and consequences of vaccine effects on TH 1/TH2 balance in UK Gulf War Veterans.
- ▶ Development of a common data base for shared analysis between US and UK studies

UK MINISTRY OF DEFENCE

- ▶ Neurophysiological studies of Gulf related illnesses
- ▶ Treatment of Post traumatic Stress Disorder: A Historical Analysis
- ▶ Improving cross departmental support and Services to Veterans
- ▶ Monitoring the physical and psychological health of veterans of the recent deployment to Iraq
- ▶ Establishing a Centre for Defence Psychiatry
- ▶ Post discharge Mentoring for vulnerable early service leavers.

UK MEDICAL RESEARCH COUNCIL

- ▶ Specimen collection and storage, Gulf related illness
- ▶ Gulf War Illness Programme, King's College London,. Proposal for Third and Final Stage of Gulf related research

DEFENCE SCIENCE AND TECHNOLOGY

LABORATORY

- ▶ Defence Medical Services Health Surveillance Study
- ▶ Development and Evaluation of a Military Health Screening Programme

LEVERHULME TRUST

- ▶ Gulf War Syndrome in the UK: A qualitative study of veterans' accounts

OFFICE OF THE DEPUTY PRIME MINISTER (ODPM)

- ▶ Feasibility study into ex-Service homeless.

ECONOMIC AND SOCIAL RESEARCH COUNCIL

- ▶ The Family and Military as Greedy Institutions: Negotiating a Work-Life Balance

ECONOMIC AND SOCIAL RESEARCH COUNCIL/ MOD

- ▶ Psychological Effects of Chemical Weapons: the impact of World War One on UK servicemen

JOSEPH ROWNTREE TRUST

- ▶ The British Army: sensible drinking in the work place

ROYAL NAVY

- ▶ A cluster randomised trial of trauma management in the Royal Navy

PUBLICATIONS LIST

King's Centre for Military Health Research and Academic Centre for Defence Mental Health: July 2006

1991 GULF WAR

- ▶ Unwin C, Blatchley N, Coker W, Ferry S, Ismail K, Hotopf M, Palmer I, David A, Wessely S. The health of United Kingdom Servicemen who served in the Persian Gulf War. *Lancet* 1999;353: 169-178
First study to show that service in the 1991 Gulf War had affected the subjective health of part of the UK Armed Forces.
- ▶ Ismail K, Everitt B, Blatchley N, Hull L, Unwin C, David A, Wessely S. Is there a Gulf war syndrome? *Lancet* 1999; 353: 179-182
There is a health problem, but no single syndrome
- ▶ Hotopf M, David A, Hull L, Ismail K, Unwin C, Wessely S. The role of vaccinations as risk factors for ill-health in veterans of the Gulf War: cross sectional study. *BMJ* 2000;320:1363-1367
Reported a link between the very particular vaccination programme used to protect the Armed Forces against biological warfare and subsequent ill health. Led to important policy changes in UK forces health protection
- ▶ Ismail K, Blatchley N, Hotopf M, Hull L, Palmer I, Unwin C, David A, Wessely S. Occupational risk factors for ill health in UK Gulf war veterans. *J Epi Comm Health* 2000; 54:834-838
Outlined main risk factors for ill health – showed could not be DU for example
- ▶ Reid S, Hotopf M, Hull L, Ismail K, Unwin C, David A, Wessely S. Chronic fatigue syndrome and multiple chemical sensitivity in UK Gulf war veterans. *Am J Epidemiology* 2001;153:604-609
Increase in multi symptom conditions
- ▶ Chalder T, Hull L, Unwin C, David A, Hotopf M, Wessely S. Prevalence of Gulf war veterans who think they have Gulf War Syndrome *Br Med J* 2001; 323:473-476
Social networks play a role
- ▶ Wessely S et al. Ten Years On: What Do We Know About the Gulf War Syndrome? *Clinical Medicine (JRCPL)* 2001; 1: 28-37
General review of Gulf War illness
- ▶ Ismail K. A review of the evidence for a 'Gulf War Syndrome'. *Occupational and Environmental Medicine* 2001;58:754-9
- ▶ Ismail K. New challenges facing ill health in Gulf war veterans. *Occupational and Environmental Medicine* 2001;58:389-90.
- ▶ Reid S, Hull K, Unwin C, Hotopf M, David A, Wessely S. Reported chemical sensitivities in a health survey of UK military personnel. *Occupational & Environmental Health* 2002; 59: 196-198
- ▶ David A, Farrin L, Hull L, Unwin C, Wessely S, Wykes T. Cognitive functioning and disturbances of mood in UK veterans of the Persian Gulf War: a comparative study. *Psychological Medicine* 2002; 32: 1357-1370
Found no evidence for brain damage
- ▶ Skowera A, Stewart E, Davis E, Cleare A, Hossain G, Unwin C, Hull L, Ismail K, Wessely S, Peakman M. Antinuclear antibodies (ANA) in gulf war related illness and chronic fatigue syndrome (CFS) patients. *Clin Exp Immunology* 2002;129:354-358
Failed to replicate an earlier claim from USA.
- ▶ Hotopf, M, Hull L, Unwin, C, David, A, Hyams K, Wessely, S. Self-Reported Health of Persian Gulf War Veterans: A Comparison of Help-Seeking and Randomly Ascertained Cases. *Military Medicine* 2002: 167:747-752
- ▶ Unwin C, Hull L, Hotopf M, Ismail K, David A, Wessely S. Women in the Gulf: Lack of a Gender Difference in Long Term Health Effects in UK Armed Forces. *Military Medicine* 2002: 167: 406-413
No gender differences - women affected much the same as men
- ▶ Wessely S, Chalder T, David A, Hotopf M, Ismail L, Jones E, Palmer I, Reid S, Unwin C. Ten Years On: What Do We Know About Gulf War Syndrome? In: *Toxic Turmoil: Psychological and Societal Consequences of Ecological Disasters* (ed Havenaar. Cwikel, Bromet), Plenum 2002: 101-128

- ▶ Everitt B, Ismail K, David A, Wessely S. Searching for a Gulf War Syndrome Using Cluster Analysis. *Psych Med* 2002; 32: 1371-1378
Different analysis to confirm no syndrome
- ▶ Ismail K, Kent K, Brugha T, Hotopf M, Hull L, Seed P, Palmer I, Reid S, Unwin C, David A, Wessely S. . The mental health of UK Gulf war veterans: phase 2 of a two-phase cohort study. *British Medical Journal* 2002; 325: 576-579.
Doubling of psychiatric disorder, but PTSD not main issue. Alcohol and depression more important
- ▶ Wessely, S. The Gulf War and its aftermath. *Horizons in Medicine* 2002; 13: 229-246.
- ▶ Sharief M, Pridden J, Delamont R, Unwin C, Rose M, David A, Wessely S. Neurophysiological evaluation of neuromuscular symptoms in UK Gulf War veterans. A controlled study. *Neurology* 2002; 59: 1518-1525
No evidence for peripheral neurological damage – no role for OP pesticides. Confirmed by other studies since
- ▶ Higgins E, Ismail K, Kant K, Harman K, Mellerio J, du Vivier A, Wessely S. Skin disease in Gulf War Veterans. *Quart J Med* 2002; 95: 671-676
- ▶ Famin L, Hull L, Unwin C, Wykes T, David A. Effects of Depressed Mood on Objective and Subjective Measures of Attention. *J Neuropsychiatry Clin Neurosci* 2003;15: 98-104
- ▶ Hull L, Farrin L, Unwin C, Everitt B, Wykes T, David A. Anger, psychopathology and cognitive inhibition: A study of UK servicemen. *Personality and Individual Differences* 2003; 35: 1211-1226
- ▶ Greenberg N, Iversen A, Hull L, Unwin C, DeStrange M, Wessely S. Vaccination records in Gulf War veterans. *J Occupational and Environmental Medicine* 2003; 45: 219
Ended the “prepped but not deployed” issue – only one valid record was found
- ▶ Wessely S, Unwin C, Hotopf M, Hull L, Ismail K, Nikolaou V, David A. Is recall of military hazards stable over time? Evidence from the Gulf War. *Br J Psych* 2003; 183:314-322
No it isn't. Self report of exposure to some military hazards unreliable over time
- ▶ Hotopf M, Mackness I, Nikolaou V, Collier D, David A, Dunnington P, Hull L, Ismail K, Peakman M, Unwin C, Wessely S, Mackness B. Paraoxonase in Persian Gulf War veterans. *Journal of Occupational and Environmental Medicine* 2003; 45:668-675.
Failed to replicate claim that sick Gulf veterans have a particular variant of the enzyme that deals with organophosphates, but did show that the levels of this enzyme in the blood were lower in Gulf veterans than controls
- ▶ Hotopf, M, David, A, Hull, L, Nikalaou, V, Unwin, C, Wessely, S. Gulf War illness - better, worse or just the same? A cohort study *Br. Med J.* 2003;327:1370.
Just the same – not getting worse, not getting better
- ▶ Hotopf M, David A, Hull L, Nikalaou V, Unwin C, Wessely S. Risk factors for continued illness among gulf war veterans: a cohort study. *Psychological Medicine* 2004; 34: 1-8
Emphasised that social/psychological factors were important in prognosis
- ▶ Macfarlane G, Biggs A, Maconochie N, Hotopf M, Lunt M. Incidence of cancer among UK Gulf War Veterans: cohort study. *BMJ* 2004; 327: 1373-1375.
No increase in cancer
- ▶ Wessely S, Hotopf M. Something Old, Something New, Something Borrowed, Something Blue: The Story of “Gulf War Syndrome”. In: *Medical and Psychiatric Comorbidity over the Course of Life*. Ed Eaton W. APPI, Washington., 2005:213-251
One more review
- ▶ Wessely S. The Long Aftermath of the 1991 Gulf War. *Annals Int Med* 2004; 141: 155-156
US editorial on treatment
- ▶ Hotopf, M Treating Gulf War Veterans' illnesses: are more focussed studies needed? *JAMA* 2003; 289: 1436-1437
- ▶ Rose, M. R., Sharief, M. K., Priddin, J., Nikolaou, V., Hull, L., Unwin, C., Ajmal-Ali, R., Sherwood, R. A., Spellman, A., David, A., Wessely, S. Evaluation of Neuromuscular Symptoms in UK Gulf War Veterans. A Controlled Study. *Neurology* 2004; 63: 1681-1687
Ill gulf veterans found physical exercise more demanding than controls. Found evidence that the mitochondria in muscle cells were working less efficiently, but unable to say if this was cause or effect.
- ▶ Dyson C, Cohn S, Wessely S. UK Gulf War Veterans: What do they think about Gulf War Syndrome? *Medical Anthropology Quarterly*, in press
- ▶ Nisenbaum R, Wessely S, Unwin C, Hull L, Ismail K, Reeves W. Dichotomous factor analysis of symptoms reported by UK and US veterans of the Gulf War. *Population Health Metrics* 2004; 2: 8

- ▶ Hotopf M, Wessely S. Can epidemiology clear the fog of war? Lessons from the first Gulf War. *Int J Epidemiology* 2005; 34: 791-800
Review of the problems in carrying out this kind of research after deployments
- ▶ Curtis C, Breen G, Cleare A, Peakman M, Wessely S. Short Association Report: Lack of Association between Persian Gulf War Illness and Apolipoprotein e4 Status. *Psychiatric Genetics*, in press
Failed to replicate US study
- ▶ Marfarlane G, Hotopf M, Maconochie N, Blatchley N, Richards A, Lunt M. Long-term mortality amongst Gulf War Veterans: is there a relationship with experiences during deployment and subsequent morbidity? *Int J Epidemiology* 2005; 34:1403-1408.
No there isn't.
- ▶ Wessely S, Hotopf M. Gulf War Syndrome. In : *Chemical Warfare Agents: Toxicology and Treatment* (ed Maynard, Marrs, Sidell). London, John Wiley, in press
Another contribution to deforestation
- ▶ Murphy D, Hooper C, French C, Jones M, Rona R, Wessely S. Is increased reporting of symptomatic ill health in Gulf War veterans related to how one asks the question? *J Psychosom Res* 2006; 61: 181-186
No it isn't – important confirmation that the gulf health effect is not an artefact of knowing you went to the gulf
- ▶ Wessely S (editor). *Gulf War Illness*. *Philosophical Transactions of the Royal Society*, in press.
Arguably best single volume account of the Gulf health issue; international authors, multi disciplinary, in the world's oldest scientific journal
- ▶ Wessely S, Freedman L. Reflections on Gulf Illness. *Philosophical Transactions of the Royal Society* 2006; 361: 721-730
A brief summing up of what we know, and what we don't know
- ▶ Iversen A, Chalder T, Wessely S. "Gulf War Syndrome": Lessons from Medically Unexplained Symptoms. *Clinical Psychology Review*, in press.
A review paper proposing that we need now to look at Gulf War illness in a similar fashion to the way we think about illnesses such as chronic fatigue syndrome, irritable bowel syndrome and other unexplained syndromes to think more about why veterans are either staying ill or not getting better, and put to one side the vexed question of what started the problem in the first place.

- ▶ Stimpson N, Hull L, Unwin C, Lewis G, David A, Wessely S. Prevalence of reported pain, widespread pain and pain symmetry in veterans of the Gulf War. The use of pain manikins in Gulf Health research. *Military Medicine*, in press

MEDICAL COUNTER MEASURES

- ▶ Hotopf M, David A, Hull L, Ismail K, Unwin C, Wessely S. The role of vaccinations as risk factors for ill-health in veterans of the Gulf War: cross sectional study. *BMJ* 2000;320:1363-1367
Reported a link between the very particular vaccination programme used to protect the Armed Forces against biological warfare and subsequent ill health. Led to important policy changes in UK forces health protection
- ▶ Skowera A, Hotopf M, Sawicka E, Varela-Calvino R, Unwin C, Nikolau V, Hull L, Ismail K, David AS, Wessely S, Peakman M. Cellular Immune activation in Gulf War veterans. *J Clin Immunology* 2004; 24: 60-73
Found persistence immunological changes in Gulf vets
- ▶ Skowera A, de Jong E, Schuitemaker J, Wessely S, Griffiths G, Kapsenberg M, Peakman M. Impairment of dendritic cell maturation and effector function by vaccines used for protection against anthrax and plague. *J Immunology* 2005; 175: 7235-7243.
Important paper in leading journal on how anthrax /plague combination works
- ▶ Allen J, Skowera A, Rubin J, Hotopf M, Wessely S, Peakman M. Long-lasting T cell responses to biological warfare vaccines in human vaccinees *Clin Infect Dis* 2006; 43:1-7
Anthrax immunity can be detected 10 years after vaccination, but failed to confirm the Th 1/ Th 2 hypothesis of Gulf war illness
- ▶ Peakman M, Skowera A, Hotopf M. Immunological dysfunction, vaccination and Gulf War Illness. *Philosophical Transactions of the Royal Society* 2006; 361: 681-687.
- ▶ Murphy D, Dandeker C, Horn O, Hotopf M, Hull L, Jones M, Marteau T, Rona R, Wessely S. UK Armed Forces response to an informed consent policy for anthrax vaccination: A paradoxical effect? *Vaccine* 2006; 24: 3109-3114
Changing to informed consent for anthrax vaccine in Armed Forces has caused confusion and not increased confidence
- ▶ Murphy D, Hull L, Horn O, Jones M, Browne T, Marteau T, Rona R, Hotopf M, Wessely S. Anthrax vaccination in a military population before the war in Iraq: acceptance, side effects and choice.

CBW AND TERRORISM ARTICLES

- ▶ Bartholomew R, Wessely S. Epidemic Hysteria in Virginia: The case of the Phantom Gasser of 1933-34. *Southern Med J* 1999; 92: 762-769
Account of early episode of mass hysteria triggered by fear of terrorism
- ▶ Wessely S, Hyams K, Bartholomew R. The Psychological Effects of Biological and Chemical Warfare. *BMJ* 2001; 323: 878-879.
- ▶ Bartholomew R, Wessely S. The protean nature of mass sociogenic illness: From possessed nuns to chemical and biological terrorism fears. *Br J Psychiatry* 2002; 180: 300-306
Linked changing illness beliefs to outbreaks of mass hysteria in the age of terrorism
- ▶ Durodie W, Wessely S. Resilience or panic: the public's response to a terrorist attack. *Lancet* 2002; 360: 1901-1902
Editorial on how risk communication can influence public reaction to terrorism
- ▶ Hyams K, Murphy F, Wessely S. Combating terrorism: recommendations for dealing with the long term consequences of a chemical, biological attack. *J Health Politics, Policy & Law* 2002;27: 273-291
Short term effects will be well managed, long term problems will be difficult
- ▶ Jones E, Woolven, R, Durodié B, Wessely S. Civilian Morale during World War Two: responses to air-raids re-examined, *Social History of Medicine* 2004; 17: 463-79.
Shows how fears of mass panic/social disintegration were exaggerated before the Blitz
- ▶ Clauw D, Engel C, Kipen H, Jones E, Kroenke K, Ratzan S, Sharpe M, Wessely S. Unexplained symptoms after terrorism and war: an expert consensus statement. *J Occup Environ Med* 2003; 45: 1040-1048.
- ▶ Wessely S. What should mental health professionals do, and not do. In: Neria Y, Gross R, Marshall R, Susser E, eds. *9/11: Mental Health in the Wake of a Terrorist Attack*. New York: Cambridge University Press, 2005.
- ▶ Wessely S. When being upset is not a mental health problem. *Psychiatry* 2004; 67: 153-157
Why it is important to distinguish between normal symptoms of distress and psychiatric disorder
- ▶ Richie E, Friedman M, Watson P, Ursano R, Wessely S, Flynn B. Mass violence and early mental health intervention: a proposed application of best practice guidelines to chemical, biological and radiological attacks. *Military Medicine* 2004; 169: 575-579
- ▶ Wessely S, Krasnov V (eds). *Psychological Aspects of the New Terrorism: A NATO Russia Dialogue*. IOS Press, 2005
- ▶ Iversen, A. & Greenberg, N. (2004). Food for thought: Participating and managing the psychological aspects of food chain contamination and terrorism. *Psychiatric Annals*, 34, 720.
Food chain terrorism has the potential for being a cause of serious public anxiety but is fortunately hard to achieve.
- ▶ Wessely S. Don't Panic!: Short and Long Term Psychological Reactions to the New Terrorism: The Role of Information and the Authorities. *J Mental Health* 2005; 14: 1-6
Developing themes of civilian resilience and communication
- ▶ Jones E, Woolven R, Durodie W, Wessely S. Public Panic and Morale: World War Two civilian responses re-examined in the light of the current anti-terrorist campaign, *Journal of Risk Research* 2006; 9: 57-73
Links population reactions to terror over 50 years
- ▶ Shephard B, Rubin J, Wardman J, Wessely S. Terrorism and dispelling the myth of a panic prone public. *Journal of Public Health Policy*, in press
Extends the arguments and evidence from the Blitz to the present day
- ▶ Rubin J, Brewin C, Greenberg N, Simpson J, Wessely S. Psychological and behavioural reactions to the bombings in London on 7 July 2005: cross sectional survey of a representative sample of Londoners. *British Medical Journal* 2005. 311: 606-610
Demonstrated emotional and behavioural reactions in ordinary Londoners ten days after July 7th attacks – 6 month follow up now completed including current intentions and knowledge of terrorism/CBRN terrorism

MENTAL HEALTH SCREENING

- ▶ Jones E, Hyams K, Wessely S. Screening for Psychological Vulnerability in the Military: A historical analysis. *J Med Screening* 2003, 10: 40-46
Don't do it – was done in World War II and was a disaster
- ▶ Rona R J, Jones M, French C, Hooper R, Wessely S. Screening for physical and psychological illness in the British Armed Forces: I The acceptability of the programme. *J Medical Screening* 2004; 11: 148-153
It is not acceptable for many reasons, and therefore will not work

- ▶ French C, Rona RJ, Jones M, Wessely S. Screening for physical and psychological illness in the British Armed Forces: II Barriers to screening - learning from the opinions of Service personnel. *J Medical Screening* 2004; 11: 153-157
Problems include stigma, confidence and confidentiality
- ▶ Rona RJ, Hooper R, Jones M, French C, Wessely S. Screening for physical and psychological illness in the British Armed Forces: III The value of a questionnaire to assist a Medical Officer to decide who needs help. *J Medical Screening* 2004 ; 11: 158-161
Psychological tests not helpful for mental health screening in the context of the UK military
- ▶ Greenberg N, Iversen A, Unwin C, Wessely S. Screening for depleted uranium in members of the UK Armed Forces: Who wants it and why? *J Epi Comm Health* 2004: 58:558-561
Those who want screening are not those who have been exposed to DU, but instead are more likely to be psychologically distressed
- ▶ Rona R, Hyams C, Wessely S. Screening for psychological illness in military personnel. *JAMA* 2005: 293: 1257-1260
Response to US programme setting out reasons why UK has not followed suit
- ▶ Gilbody S, Sheldon T, Wessely S. Depression, a suitable case for screening? *British Medical Journal* 2006;332:1027-1030.
The case for screening for depression has not been made
- ▶ Rona R, Hooper R, Jones M, Hull L, Browne T, Horn O, Murphy D, Hotopf M, Wessely S. Would mental health screening of the UK Armed Forces before the Iraq War have prevented subsequent psychological morbidity? *BMJ*, in press
Using before/after data we show that mental health screening would not have prevented mental health problems after Iraq.
- ▶ Iversen A, Nicolaou V, Unwin C, Greenberg N, Dandeker C, Ross, J, Wessely S. What happens to UK veterans when they leave the Armed Forces? *Eur J Public Health* 2005: 15:175-184
Most get jobs and do well, a few don't
- ▶ Iversen A, Dyson C, Smith N, Greenberg N, Walwyn R, Unwin C, Hull L, Dandeker C, Ross J, Wessely S. "Goodbye and Good Luck"; the Mental Health Needs and Treatment Experiences of British Ex Service Personnel. *Br J Psychiatry* 2005: 186: 480-486
Many of those with continuing mental health problems do not access the best treatments once they have left the Armed Forces. Also confirmed that PTSD is not the only mental health problem affecting veterans.
- ▶ Dandeker C, Iversen A, Ross J, Wessely S. What is a Veteran? *Armed Forces and Society* 2006: 32: 161-77.
Outlines major international differences in the concept of a "veteran" and the policy implications

THE WAR IN IRAQ ("OP TELIC")

- ▶ Jones M, Rona R, Hooper R, Wessely S. The burden of psychological illness in the UK Armed Forces. *Occup Environ Med* 2006; 56: 322-328
First epidemiological paper on background levels of psychological illness in the UK Armed Forces, which forms the basis for later comparisons of the impact of the War in Iraq.
- ▶ Hacker Hughes J, Cameron F, Eldridge R, Greenberg N, Wessely S. Going to war does not always have to hurt: preliminary findings from the British deployment to Iraq. *Br J Psych* 2005: 186: 536-537
Not the best title, but showed that in elite forces (16 AA Bde) Op TELIC 1 was associated with an improvement in mental health
- ▶ French C, Dandeker C, Van Staden L, Wessely S., Deployment of British Army Reserves on Op TELIC 5: Expectations, experiences and impact on retention. Unpublished Research Report. MOD, 2006.
Reservists and regulars differ less on what they experience on deployment and more on how they are treated when they come home
- ▶ French, C. Dandeker, C. UK military families and the deployments to Iraq: Preliminary findings from a pre-, during-, and post-deployment study of the British Army. Paper presented at the 2005 Inter-University Seminar on Armed Forces and Society. Chicago, October 2005
Wives are more resilient than their service partners think they are when facing the stresses of separation due to deployment

VETERANS ARTICLES

- ▶ Dandeker C, Iversen S, Ross J, Wessely S. Improving Cross Departmental Support for Veterans. London, HMSO, 2003. http://www.mod.uk/publications/vets_svcs/
Analyses what veterans need and how gaps in what is provided by government might be filled.
- ▶ Dandeker C, Thomas S, Dolan M, Chapman F, Ross J. Feasibility study on the extent, causes, impact and costs of rough sleeping and homelessness amongst ex service personnel in a sample of Local Authorities in England. Unpublished Research Report, MOD 2004
Shows the difficulties involved in gauging the extent of homelessness amongst ex service personnel and reviews what we know about this subject.

- ▶ French, C. Dandeker, C. Birtles, C & Wessely, S. Deployment experiences of British Army wives before, during and after deployment: Satisfaction with military life and use of support networks. NATO HFM-134 Symposium, Brussels April 2006, In press.

Service wives tend to use informal networks for support when their partners are deployed rather than formal military agencies, although they appreciate the formal sources of support for their 'insurance' value.

- ▶ Hotopf M, Hull L, Fear N, Browne T, Horn O, Iversen A, Jones M, Murphy D, Bland D, Earnshaw M, Greenberg N, Hacker-Hughes J, Tate R, Dandeker C, Rona R, Wessely S. The health of UK military personnel who deployed to the 2003 Iraq War. *Lancet* 2006; 367: 1731-1741

Key paper showing that there has as yet been no increase in psychiatric problems in regular personnel who have served in Iraq, and nor has there been an increase in problems as the nature of the operation has shifted to counter insurgency, nor after the personnel return home. All of this is in contrast to the US experience. However, the Reserve forces have shown a significant increase in psychiatric disorders associated with service in Iraq.

- ▶ Horn O, Hull L, Jones M, Murphy D, Browne T, Fear NT, Hotopf M, Rona R, Wessely S. Is there an "Iraq War Syndrome"? Comparison of the health of UK service personnel after the Gulf and Iraq wars. *Lancet* 2006; 367: 1742-1746

History has not repeated itself.

- ▶ Hotopf M, Wessely S. Neuropsychological changes following military service in Iraq: case proven, but what is the significance? *JAMA* 2006; 296: 574-575

- ▶ Browne T, Fear N, Hull L, Workman L, Iversen A, Horn O, Jones M, Murphy, D, Greenberg N, Rona R, Hotopf M, Wessely S. Experiences in Iraq: how do they effect alcohol consumption among male UK military personnel? Submitted.

CURRENTLY BEING COMPLETED (IRAQ)

- ▶ Pattern of drinking across the Armed Forces, and the influence of Op TELIC
- ▶ Increase in risky behaviours and poor driving after TELIC
- ▶ Anthrax vaccine not associated with long term ill health.
- ▶ Side effects of anthrax vaccination relate to how it is given, not the vaccine itself
- ▶ DU toxicity is not found in TELIC veterans
- ▶ Military risk factors for psychiatric injury on TELIC
- ▶ Differences in welfare support offered to families between Regulars and Reserves during TELIC
- ▶ Gender effects on deployment health

- ▶ Pathways to mental health care on deployments
- ▶ Influence of previous deployments and operational tempo on morale and retention
- ▶ The health of the Defence Medical Services after operations
- ▶ Decompression and homecoming experiences
- ▶ Health consequences of an epidemic of gastro enteritis on operations
- ▶ Patterns of non-response in the Iraq War study

PEACEKEEPING ARTICLES

- ▶ Dandeker C, Gow J 'The Future of Peace Support Operations: Strategic Peacekeeping and Success', *Armed Forces and Society* 1997; 23, 327-348.

Analyses the differences between classic and more forceful kinds of peacekeeping in the post Cold War era and the factors that contribute to their success and failure.

- ▶ Dandeker C, Gow J. Strategic Peacekeeping and Military Culture. In E Schmidl, (Ed) *Peace Operations Between War and Peace*, Frank Cass, 2000, 58-79.

Discusses the extent to which military culture has to change to accommodate the demands of strategic peacekeeping and how those demands may vary by nation.

- ▶ Dandeker C, Gow J 'Strategic Peacekeeping: Military Culture and the Defining Moment', in D. S. Gordon and F. H Toase (Eds.) *Aspects of Peacekeeping*, 2001, 181-198.

- ▶ Boene, Callaghan J, Dandeker C. Warriors in Peacekeeping: An Overview of Themes and issues in Jean Callaghan, Mathias Schönborn (Editors) *Warriors in Peacekeeping: Points of tension in complex cultural encounters A comparative study based on experiences in Bosnia* : George C. Marshall European Center for Security Studies

One of the first studies of how different national contributors to a complex peacekeeping operations experienced the events and dealt with the challenges, including managing relations with local populations.

- ▶ Hotopf, M. David, A. Hull, L, Ismail I. Palmer, I. Unwin, C. Wessely, S. The health effects of peace-keeping in the UK Armed Forces: Bosnia 1992-1996. Predictors of psychological symptoms. *Psychological Medicine* 2003; 33: 1-8

Peacekeeping can be as difficult as war fighting

- ▶ Hotopf, M. David, A. Hull, L. Ismail, I. Unwin, C. Wessely, S. The health effects of peace-keeping in the UK armed forces: Bosnia 1992-1996. A cross sectional study: comparison with non-deployed military personnel. *Military Medicine* 2003; 168: 408-413

- ▶ Hull L, David A, Hotopf M, Nikolaou V, Unwin C, Wessely S. “Warriors”: Lack of effect of powerful TV drama on the mental health of UK Armed Forces who participated in peacekeeping operations in Bosnia. *Sub Soc Sci Med*
Title speaks for itself – contradicts the expectations of some PTSD experts
- ▶ Greenberg N, Thomas S, Iversen A, Unwin C, Hull L, Wessely S. Do military peacekeepers want to talk about their experiences? Perceived psychological support of UK military peacekeepers on return from deployment. *J Mental Health* 2003; 6: 565-573
Supports informal rather than formal interventions
- ▶ Wessely S, Thomas S, Dandeker C, Greenberg N, Kelly V. “Serving in Bosnia made me appreciate living in Bristol”: Stressful Experiences, Attitudes, and Psychological Needs of Members of the United Kingdom Armed Forces *Mil Medicine* 2006; 171: 376-380
Paper highlighting both the positive and negative aspects of peace keeping, and adds to the evidence that peacekeeping is associated with different psychological challenges than traditional war fighting.
- ▶ Jones E, Hodgins-Vermaas R, McCartney H, Everitt B, Beech C, Poynter D, Palmer I, Hyams K, Wessely S. Post-combat syndromes from the Boer War to the Gulf: a cluster analysis of their nature and attribution. *Br Med J* 2002; 324: 321-324.
Used war pension records to show that Gulf War Syndrome is not as new as we think it is
- ▶ Jones E, Palmer I, Wessely S. War Pensions (1900-1945): changing models of psychological understanding. *Br J Psychiatry* 2002; 180: 374-379.
Shows how the awarding of war pensions is socially influenced
- ▶ Jones E, Wessely S. Forward Psychiatry in the Military: Its Origins and Effectiveness. *J Traumatic Stress* 2003;16:411-419
Paper from PTSD case outlining the origins of what remains the standard doctrine used by the Armed Forces for treating acute psychiatric casualties, whilst concluding that we will probably never know if this is effective or not.
- ▶ Jones, E., Vermaas, R., McCartney, H. Beech, C., Palmer, I., Hyams, K. Wessely, S.. Flashbacks and post-traumatic stress disorder: the genesis of a 20th-century diagnosis. *British Journal of Psychiatry* 2003, 182, 158-163.
Paper that suggests that PTSD is not a “hard wired” response, but more culturally determined

HISTORICAL STUDIES

- ▶ Jones E, Wessely S. Chronic fatigue syndrome after the Crimean War and the Indian Mutiny. *BMJ* 1999; 319:1545-1547
First case reports of “Gulf War Syndrome” long before the Gulf War
- ▶ Jones E, Wessely S. The impact of total war on the practice of psychiatry. In: *Shadows of Total War, 1919-1939.* (Ed Forster, Chickering). Cambridge Univ Press 2003: 129-148.
It was the Second, not the First World War that changed the practice of psychiatry
- ▶ Jones E. War Syndromes: the Psychological Impact of Modern Warfare, A Study of the changing nature of pressure groups and government responses. Research Report, 1999.
- ▶ Jones E, Palmer I. Army Psychiatry in the Korea War: the experience of 1 Commonwealth Division, *Military Medicine* 2000; 165: 1-16.
- ▶ Jones E, Wessely S. Psychiatric battle casualties: an intra- and inter-war comparison. *Br J Psych* 2001; 178: 242-247
Physical and psychological casualties are closely linked – the greater the number of the former, the greater the latter.
- ▶ Jones E, Wessely S. The origins of British military psychiatry before the First World War. *War and Society* 2001; 19: 91-108
- ▶ Jones E, Hodgins-Vermaas R, Beech C, Palmer I, Hyams K, Wessely S. Mortality and post-combat disorders: UK veterans of the Boer War and World War One, *Military Medicine* 2003: 168:414-418
Shell shock, effort syndrome etc not associated with increased mortality, much like gulf war illness
- ▶ Wessely S, Jones E. Psychiatry and the “Lessons of Vietnam?”: What were they, and are they still relevant? *War and Society* 2004; 22: 89-103
Paper used in PTSD case to show that UK military could not be blamed for failing to learn the lessons of Vietnam, because no one knew what they were
- ▶ Jones E, Wessely S. Hearts, Guts and Minds: Somatisation in the Military from 1900. *J Psychosomatic Research* 2004; 56: 425-429
- ▶ Jones E. Doctors and trauma in World War One: the response of British military psychiatrists, In Gray, P. and Oliver, K. (Eds), *The Memory of Catastrophe*, Manchester: Manchester University Press, 2004: 91-105.
- ▶ Jones E. War and the practice of psychotherapy: the UK experience 1939-1960, *Medical History* 2004; 48: 493-510.

- ▶ Jones E, Wessely S. The influence of culture on the development of medically unexplained syndromes in the military. *Medical History* 2005; 49: 55-78
Broad review of unexplained syndromes in the military
- ▶ Jones E, Wessely S. From Shellshock to PTSD: Military Psychiatry from 1900 to the Gulf War. Hove: Psychology Press, 2005.
Historical account of the development of military psychiatry, and textbook for MSc in War and Psychiatry
- ▶ Wessely S. War Stories. *Br J Psychiatry* 2005; 186: 473-475
Importance of understanding recall bias – memory is a human function, and soldiers can sometimes forget things that happened to them, or remember things that didn't.
- ▶ Wessely S. Twentieth century theories on combat motivation and breakdown. *J Contemp Hist* 2006; 41: 268-286
A historical paper outlining how the military and the psychiatrists used to think in a similar fashion about why men fight, and why they cease to fight, but since the coming of PTSD these views have diverged
- ▶ Jones E, Wessely S. War Syndromes: the impact of culture on medically unexplained symptoms, *Medical History* 2005; 49: 55-78.
- ▶ Jones, E. 'LMF': the use of psychiatric stigma in the Royal Air Force during the Second World War, *Journal of Military History* 2006; 70: 439-458.
- ▶ Jones E. The Psychology of Killing: The Combat Experience of British Soldiers during the First World War, *Journal of Contemporary History* 2006; 41: 229-246
- ▶ Jones E, Greenberg N. Royal Naval Psychiatry: organisation, methods and outcomes 1900-1945, *Mariner's Mirror* 2006; 92: 190-203.
- ▶ Jones E. Historical approaches to post-combat disorders, *Philosophical Transactions of the Royal Society* 2006; 361: 533-542.
- ▶ Jones E, Wessely S. Post traumatic stress disorder: a paradigm shift in the conceptualization of psychiatric disorder. *J Anxiety Disorders*, in press
What did we think about trauma and psychiatry before we had PTSD?
- ▶ Wessely S. The Life and Death of Private Harry Farr. *J Royal Soc Medicine* 2006; 99:440-443
An account of the most poignant British military execution of the First World War. Why did it happen?

METHODOLOGY/DATA PROTECTION AND MILITARY HEALTH RESEARCH

- ▶ Iversen A, Liddell K, Fear N, Hotopf M, Wessely S. Consent, Confidentiality and the Data Protection Act: Epidemiological Research and hard-to-engage Cohorts *BMJ* 2006; 332: 165-169
Uses data from our gulf and Iraq studies to show that the main obstacle to using personal medical information in key research is faulty understanding of the Data Protection Act, and not as is often claimed the law itself
- ▶ Wood A, White I, Hotopf M. Using number of failed contacts attempts to adjust for non ignorable non response. *J Royal Statistical Society* 2006; 169: 525-542.

OTHERS

- ▶ Wessely S. Risk, psychiatry and the military. *Br J Psychiatry* 2005; 186: 459-466
Reflections on risk and the Armed Forces
- ▶ Rona R, Hooper R, French C, Jones M, Wessely S. The meaning of self perception of health in the UK Armed Forces. *Br J Health Psychology*, in press
Points out that the Armed Forces often score highly on questionnaire self reports of ill health, but this does not mean that their health is impaired
- ▶ Hooper R, Rona R, French C, Jones M, Wessely S. Unmet expectations in primary care and the agreement between doctor and patient: a questionnaire study *Health Expectations* 2005; 8: 26-33
Patients (all of them in the Armed Forces) and doctors have different views on what actions the doctor took during a consultation, and these conflicting perspectives may or may not fulfil patient's expectations
- ▶ French, C. Dandeker, C. Birtles, C. & Wessely, S. The family and military as 'Greedy Institutions': Negotiating a work-life balance in the British Armed Forces. A report prepared for the Economic and Social Research Council, November 2005.
Analyses tensions between work and family life in the military setting.
- ▶ McGeorge T, Hacker Hughes J, Wessely S. The MOD PTSD Class Action: A Psychiatric Perspective. *Occupational Health Review* 2006; 122: 21-28
Summary of the large class action brought unsuccessfully by veterans against MOD in 2003. What is the duty of care re stress/PTSD? What must MOD do in future? What does it not need to do?

- ▶ Hacker Hughes JGH, Campion BC, Cameron C and Cross CL. Psychological Morbidity in Soldiers following an Emergency Deployment. *Military Psychology*, in press.
- ▶ Campion B, Hacker Hughes J, Devon M, Fear N. Psychological audit of the 2001 British deployment to Afghanistan. *J Royal Army Medical Corp*, in press
- ▶ How do families manage the balance between family and service life?
- ▶ Smoking in the Armed Forces.
- ▶ Gender effects on deployment health
- ▶ Pathways to mental health care on deployments
- ▶ Influence of previous deployments and operational tempo on morale and retention

SUBMITTED FOR PUBLICATION

- ▶ Greenberg N, Unwin, Hull, Hotopf, Iversen, Wessely. Post traumatic stress disorder in veterans of UK Peacekeeping Operations
- ▶ Hull L, Broom A, Chalder T, Unwin C, Weinman J, Wessely S. Illness Beliefs, Perceptions and Attributions in UK Gulf War Veterans
- ▶ Iversen A, Waterdrinker A, Fear N, Greenberg N, Barker C, Hull L, Hotopf M, Wessely S. Alcohol Use in the British Military: A Quantitative Study.
First study on alcohol use in Gulf veterans – to be followed by larger studies in the TELIC cohort
- ▶ French, C. Van Staden, L. Dandeker, C. & Wessely, S. Getting beyond name rank and number: Using a mixed-methodological approach to investigate the deployment experiences of British Army personnel. *Sub Qualitative Health Research*
- ▶ French, C. Dandeker, C & Wessely, S. Deployment of British Army reservists on Op TELIC 5: Deployment related stressors and the overall affect on retention. Submitted to 9th International Military Mental Health Conference on “The Unhappy Soldier: The Management of Disenchanted Service Personnel”, RMAS 2006.
- ▶ Henderson A, Greenberg N, Langston V, Iversen A. Responses to perceived stress in the Royal Navy: A Quantitative Analysis of Case Vignettes. *Sub Occup Med*
- ▶ Langston V, Gould M, Greenberg N. Culture – what is its effect on stress in the military? *Sub Mil Med*

CURRENTLY BEING COMPLETED

- ▶ Pattern of drinking across the Armed Forces
- ▶ Influence of pre service vulnerabilities on psychological and social outcomes after military service
- ▶ Premature service leavers – who are they, and why?
- ▶ Epidemiology of mental health problems in the three Services.