



LOST VOICES

*A Royal British Legion report on hearing problems
among Service personnel and veterans*



About The Royal British Legion

The Royal British Legion was created as a unifying force for the military charity sector at the end of WWI, and still remains one of the UK's largest membership organisations. We are the largest welfare provider in the Armed Forces charity sector, providing financial, social and emotional support, information, advice, advocacy and comradeship to hundreds of thousands of Service personnel, veterans and their dependants every year. In 2013, we provided services and grants to over 200,000 Service personnel, veterans and dependants – more than ever before – and spent £10k per hour on welfare support.

The Legion offers services to assist Service personnel, veterans and their dependants with claiming disability benefits, managing their finances, accessing military compensation, adapting their homes, and finding jobs through our online training and employment resource, Civvy Street. We offer support for carers, including seaside respite breaks; run six care homes, and offer immediate needs grants and other forms of help for those in crisis. In conjunction with the MOD and other Service charities, we pledged £50m over ten years to the development and operation of Personnel Recovery Centres and the Battle Back Centre (Lilleshall), as part of the Defence Recovery Capability programme. Battle Back, in which we invested £27m, provides sports and adventurous training activities for wounded, injured and sick Service men and women, to promote self-confidence and improve motivation to aid recovery.

The Legion works with politicians across the political spectrum to improve the lives of the Armed Forces community. We have been campaigning to further the cause of serving personnel, ex-Service men and women and their families since 1921. In recent years our campaigning work has resulted in a number of significant changes to public policy, including the enshrinement of the principles of the Armed Forces Covenant into statute; the introduction of the post of Chief Coroner to oversee the military inquest process; and substantial improvements to military compensation and welfare benefits for veterans.

The Legion also plays a leading role in holding the Government to account on its Armed Forces Covenant commitments, and is represented on the Covenant Reference Group, which oversees progress against these commitments. We have also produced two best practice guides to Community Covenants – voluntary statements of mutual support between civilian and Armed Forces communities – and have been instrumental in encouraging almost every local authority in England and Wales to sign a Community Covenant.

For further information, please visit www.britishlegion.org.uk

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Foreword



Chris Simpkins
Director General

Over centuries, the sacrifices made by members of the UK Armed Forces have been colossal. This year, we honour the memory of those who fell in WWI one hundred years ago. We also see UK forces withdraw from Afghanistan, whilst the plight of those injured there and in Iraq remain, for the time being, at the forefront of public attention.

Those who leave Service without suffering serious injury often count themselves very lucky. Many of those who served in Iraq and Afghanistan have seen friends suffer life-changing injuries, or have mourned the loss of one or more of the hundreds of Service personnel who never made it home.

It may be for that reason that hearing damage, one of the less visible effects of warfare, has received very little attention to date. Nevertheless, hearing difficulties are one of the standout health issues affecting the Armed Forces community. Regardless of whether they serve for five, 12 or 22 years, almost all who enlist in the UK Armed Forces are likely to find themselves exposed to a vast amount of noise from small arms fire, artillery, engines and other machinery and, in some cases, blasts from explosive devices. This will inevitably take its toll on the auditory system. As a result, veterans under the age of 75 are around three and a half times more likely than the general population to report difficulty hearing.

As outlined in further detail in Part III of this report, efforts to prevent hearing damage through the provision of adequate hearing protection have been stepped up in recent years. We welcome these developments. Quite rightly, the need to protect 'life and limb' will take precedence over the prevention of hearing damage, but there is no doubt that the

Armed Forces were somewhat 'slow off the mark' in taking this issue sufficiently seriously in decades past. It is for this reason that, in our view, the compensation arrangements for Service personnel and veterans with hearing damage are unduly restrictive.

This report aims to increase the profile of Service related hearing problems – outlining all that we've come to know about them to date – and to kick-start a debate about the best policy response to this issue. It provides a background on the prevalence and causes of military noise-induced hearing problems; describes the results of a Royal British Legion survey of Service personnel and veterans with hearing problems; outlines efforts made in recent years to prevent such damage occurring; and makes a number of recommendations for Government on how support for the large number of individuals affected could be improved, including sustainable, long term investment in a new centre for research and clinical expertise in military noise induced hearing problems.

Hearing problems can have a profound effect on an individual's career prospects, family relationships, social life and mental health. Many of us take our ability to communicate with other people for granted, but it is crucial to so many aspects of a healthy, productive and fulfilling life. We hope that the Government will recognise the importance of good hearing to all Armed Forces personnel and veterans, and take forward our recommendations in full.

CHRIS SIMPKINS DMA, HON.DUNIV, FIOD, DLS
DIRECTOR GENERAL
THE ROYAL BRITISH LEGION



INTRODUCTION

Legion research indicates that UK veterans under the age of 75 are about three and a half times more likely than the general population to report difficulty hearing.

This report argues that working-age veterans with Service induced hearing loss should be eligible for 'special treatment', in accordance with the underlying principles of the Armed Forces Covenant.

Our three main recommendations are for the Government to:

- Enable working-age veterans to access higher grade hearing aids, including 'in the ear' aids, and ensure that all veterans can have their MOD-issued aids serviced and replaced at no cost;
- Compensate Service personnel and veterans properly for the harm caused by military Service to their hearing, accounting not only for the damage caused during Service, but also for the difference between the hearing abilities of a veteran of a particular age compared with their non-veteran counterparts; and
- Commit to long term, sustainable investment in the EARSHOT Centre, to enable a comprehensive programme of research on Service-related hearing loss to be set up.

The Armed Forces Covenant

In 2011, the Armed Forces Covenant, which sets out the relationship between the nation, the Government and the Armed Forces, was enshrined in statute. The Covenant is a way of recognising the sacrifices made by the Armed Forces community, and establishes how they should be treated.

Two key principles underpin the Covenant: no disadvantage due to military Service and 'special treatment':

*"Those who serve in the Armed Forces, whether Regular or Reserve, those who have served in the past, and their families, should face no disadvantage compared to other citizens in the provision of public and commercial services. Special consideration is appropriate in some cases, especially for those who have given most such as the injured and the bereaved."*¹

The Armed Forces Covenant

One example of 'special treatment' in action is the provision of enhanced prosthetics to Service personnel who have lost limbs in the line of duty. The current Government has made available additional funding for prosthetics not usually available on the NHS, and for nine centres of excellence around England, so that those leaving Defence Medical Rehabilitation Units (such as Headley Court) with high grade prosthetics can have them serviced and replaced on the NHS.²

How common are hearing problems within the Armed Forces community?

All Service personnel will have been required to pass a hearing test in order to enter the Armed Forces. Many causes of hearing loss in the general population – such as birth complications, infectious

diseases, genetic predispositions and head injuries – would render an individual unsuitable for military Service. It would therefore be reasonable to assume that Service personnel and veterans' pre-enlistment rates of hearing loss would have been lower than the general population. Compared to the general population, then, hearing loss in veterans is probably more likely to have been caused by environmental noise.

"The speech of children and many females (higher pitch) is often unintelligible to me. For much of my children's childhood I was unable to hear them clearly, an irreplaceable loss for which there can be no compensation."

The findings of a recent Legion household survey of the ex-Service community are outlined in Part II of this report. In summary, 11 per cent of surveyed veterans reported having problems hearing and six per cent reported tinnitus (ringing in their ears).³ Based on our latest estimates on the size of the veteran population, this amounts to over 300,000 ex-Service personnel living with hearing loss. If we compare different age groups, veterans under the age of 75 are about three and a half times more likely than the UK population to report difficulty hearing. Those who have served in more recent conflicts may be at even greater risk: audiometric tests on infantry troops returning from Afghanistan in 2007/08 indicated that up to 14 per cent had suffered from hearing loss.⁴

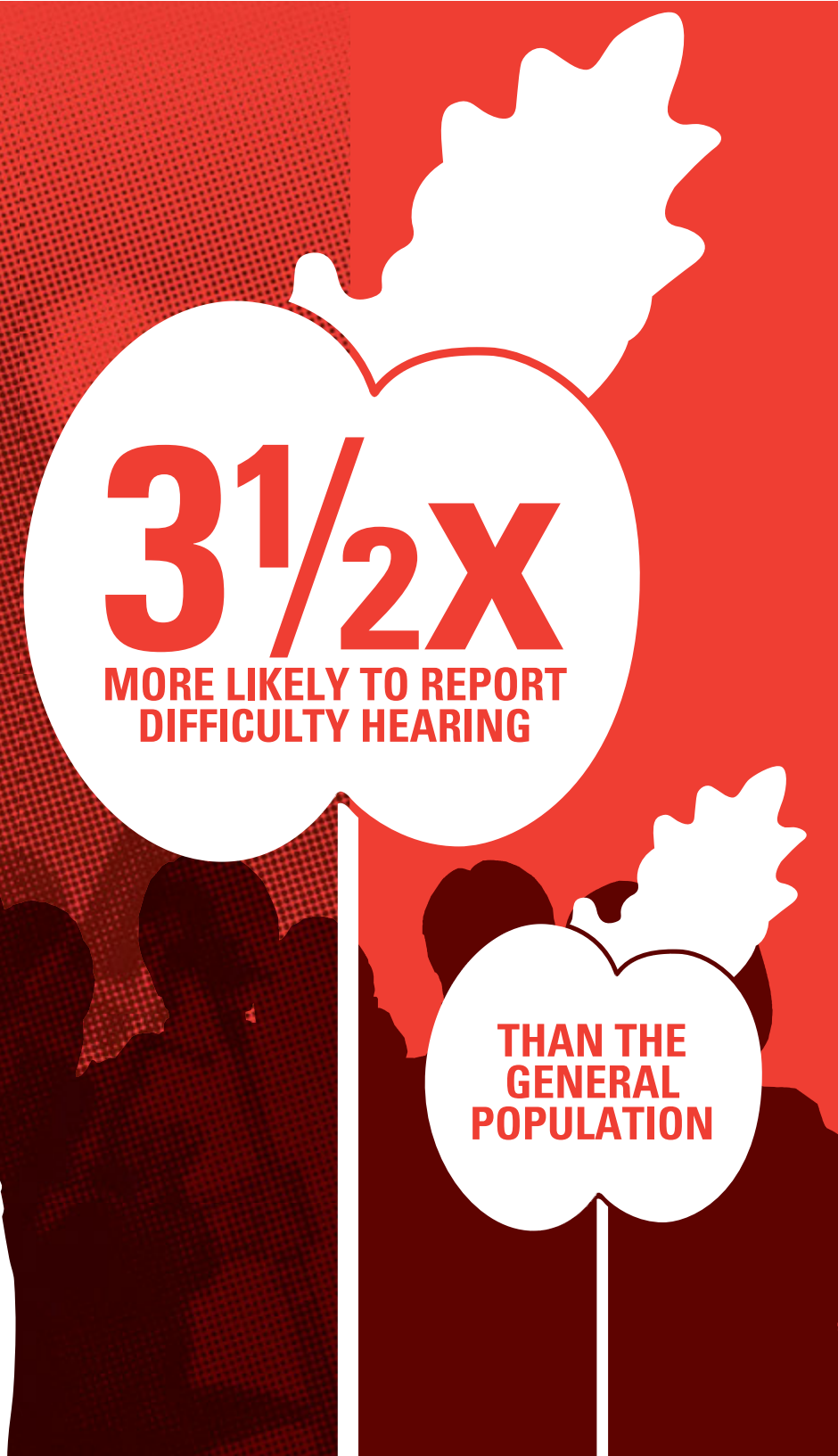
Clearly, some of the hearing problems experienced by Service personnel and veterans will not be fully attributable to Service. Some individuals may be more genetically susceptible to hearing loss than others, and other types of environmental noise, such as loud music, will also take their toll. Nevertheless, as

**VETERANS
UNDER THE AGE OF**

75

ARE...





31 1/2X
**MORE LIKELY TO REPORT
DIFFICULTY HEARING**

**THAN THE
GENERAL
POPULATION**

demonstrated by the figures outlined in this report, by the time they leave the military, many Service personnel will have levels of hearing loss that they might not otherwise have experienced until much later in life. A 30 year old may, for example, have the hearing of the average 50 year old. They won't be eligible for compensation, but by the time they reach 50, their hearing will have further deteriorated with age, becoming as deficient as that of the average 70 year old.⁹ This may have a significant impact on their career prospects and their earning potential.

For successive decades, hearing loss has been a standard occupational hazard of Service in the UK Armed Forces and a hidden injury of war. Proper recognition of this sacrifice is long overdue.

"I'm limited as to where I can go safely on my own. I can't go out to places I'm not used to; I can't travel to new places and ask directions as I can't hear the reply; I can't go out shopping on my own on a bad day when my balance is affected as I stumble or even fall over; I simply lack confidence when going to any place where I'm likely to need to hear others speaking; I can't go to pubs or clubs as even if I go with friends who 'look after' me, I can't take part in the conversation that is going on and I can't go to a bar to buy drinks when it's my round - all because my hearing has been taken."

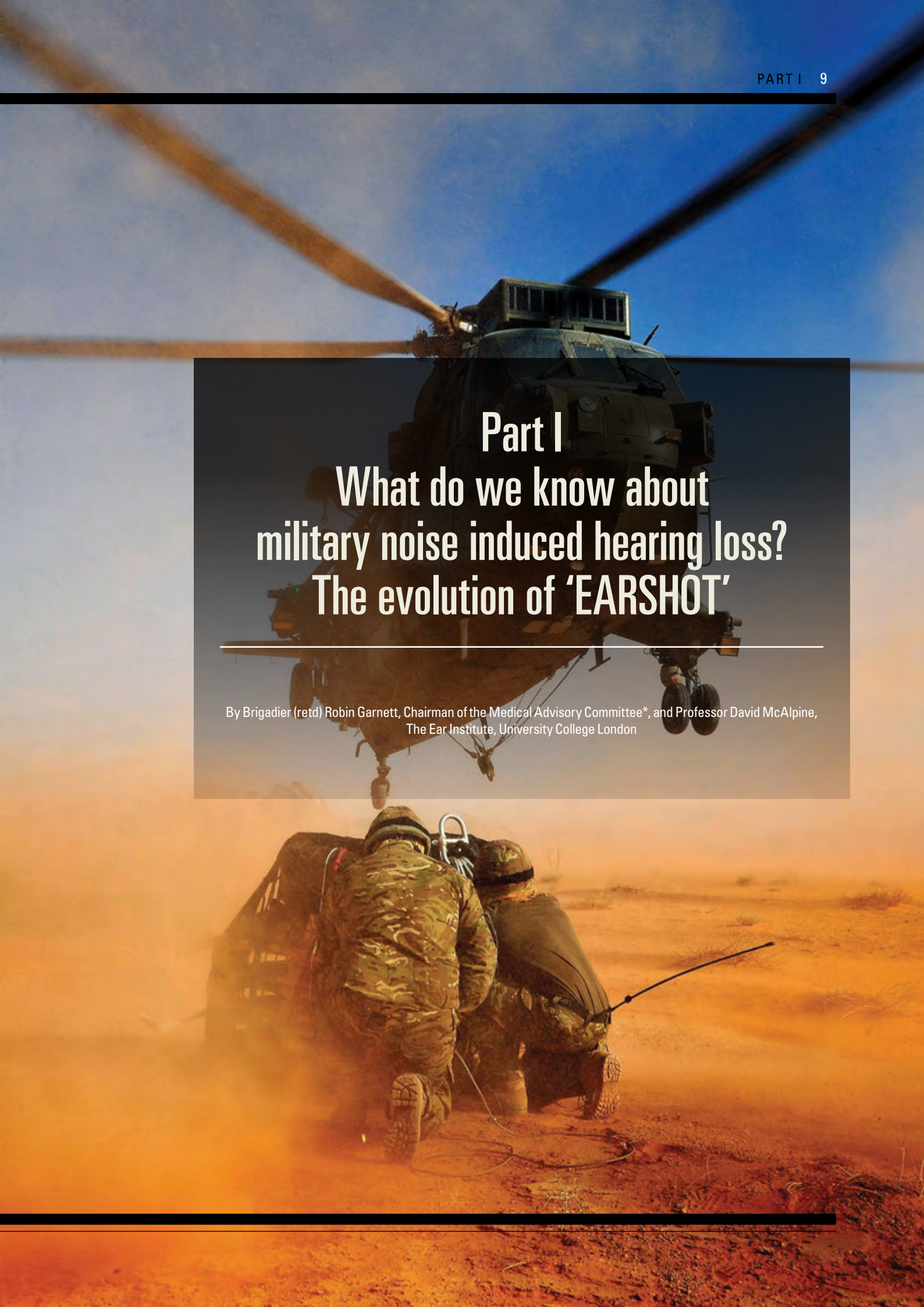
Summary of Recommendations

In order to better support Service personnel and veterans with hearing loss and tinnitus, and to encourage a healthier attitude to hearing protection amongst younger members of the Armed Forces, this report recommends that:

- The Government recognises the sacrifices made by Service personnel and veterans with hearing loss by properly compensating them for their injuries, accounting not only for the damage caused during Service, but also for the difference between the hearing abilities of a veteran of a particular age compared with their non-veteran counterparts;
- The MOD introduces more sophisticated tests of communication impairment when assessing eligibility for military compensation, rather than relying solely on pure tone audiograms;
- Military compensation is awarded for tinnitus in isolation (with appropriate limitations) where the impact on communication and quality of life is significant;

“At times you just want to bang your head against a brick wall to try and stop the noise inside your head, or even as I have done worn headphones and turned the sound up just to stop it for a while. It makes you bad tempered and very irritable with everybody and all around you which stops you from enjoying what should be a pleasant time.”

- The Government commits to long term, sustainable investment in the EARSHOT Centre, to enable a comprehensive programme of research on Service-related hearing loss, and associated clinical service, to be set up;
- The Government makes available specific funding for veterans with Service-related hearing problems, to ensure that their military-issued hearing aids can be serviced and replaced on the NHS, and to ensure that working age veterans can access in the ear aids to reduce any embarrassment and stigma they may experience as a result of their hearing loss (granting them ‘special treatment’ if necessary, in accordance with the principles of the Armed Forces Covenant);
- The MOD recruits young veterans with noise induced hearing loss to address young Service personnel (particularly those most at risk of hearing damage) about their hearing problems, including the impact that these problems have had on their career and quality of life;
- Epidemiological research is commissioned and published on the prevalence and impact of tinnitus on UK military personnel, to ascertain the scale of the problem;
- The National Institute for Health and Care Excellence (NICE) develops guidelines on best practice treatment and support for patients with tinnitus, to ensure that it is of more consistent quality, in recognition of the distress experienced by many individuals with this condition (including veterans);
- Questions to assess the presence of tinnitus become a routine part of occupational health assessments for all Service personnel; particularly for those who have sustained blast injuries; and
- A clear pathway to access support for tinnitus within the MOD referral pathway is established, connecting Service personnel to audiologists who are trained to support tinnitus patients.



Part I

What do we know about military noise induced hearing loss? The evolution of 'EARSHOT'

By Brigadier (ret'd) Robin Garnett, Chairman of the Medical Advisory Committee*, and Professor David McAlpine,
The Ear Institute, University College London

Introduction

We have been fighting wars for centuries. Last century, we fought two world wars. This century, we have fought major wars in Iraq and Afghanistan that have lasted over a decade. Over the last 20 years or so, we have maintained a force of about 200,000 Service personnel, with an average length of service of about eight to nine years. Almost all will have been exposed to small arms fire training and most to major weapons being fired. Many will have been exposed to significant explosions. Yet how much do we know about military noise induced hearing loss (NIHL)?

One of the most widely known and highly regarded publications in the field of audiology is 'Noise and its Effects'.⁶ At 784 pages, the chapter (one of 33!) on military NIHL is one of the shortest. Most of the information contained is from Israel, America, Germany and France – very little is from the UK, despite this country having been at the forefront of a range of recent military endeavours.

Many people have experienced the temporary hearing loss that can accompany a nearby gun shot. The noise produced, like that from blast and artillery, or major Naval guns, is different from industrial noise, against which regulated noise exposure is assessed. Whilst industrial noise is rarely measured at more than 90-100 decibels (dB) (see Table 1), noise from gunshot ('impulsive' noise) can reach 200 dB, and rise to a maximum level in less than a millisecond. Industrial noise is much more constant and lacks such major, intense pressure wave changes.

Although impulsive noise can damage the middle and outer ear, it is the inner ear damage that has much more long-lasting effects. Only over the last few years have significant studies been carried out to discover exactly what sort of damage is done.

The inner ear or 'cochlea' is a fluid-filled chamber resembling a snail's shell. When sound waves enter the cochlea, the waves move through the fluids, activating tiny sensory cells called hair cells. These cells pick up the movement and trigger an electrical signal in the auditory nerve, carrying the message to the brain. There are more than 15,000 hair cells in the cochlea, and the name comes from the hair-like tufts ('stereocilia') that protrude from each cell. Different hair cells pick up different parts of the sound spectrum – low pitched to high pitched, depending on their position in the cochlea. Damage to the hair cells or damage to the nerves carrying their messages can cause deafness or tinnitus. This type of hearing problem is called 'sensorineural' hearing loss (sometimes, although not completely accurately, referred to as nerve deafness).



Types of hearing loss

There are two main patterns associated with military NIHL. The first – noise induced hearing loss from prolonged exposure to loud noise – occurs most often in an industrial context. It causes sensorineural hearing loss and is usually most severe in the higher frequencies. This sort of NIHL usually comes on gradually and worsens with continued exposure. It may be years after first exposure before any hearing problem becomes apparent (although it may still affect listening performance in earlier years).⁷

The second type of hearing damage associated with military Service is acoustic trauma, or impulsive noise damage. This occurs when an individual is exposed to a very high sound level for a short time, such as an explosion or gun shot at close range. Any resulting hearing loss is usually sensorineural, and is often worse in the ear that was closer to the sound. In cases of acoustic trauma, the outer ear itself (the pinna), the ear drum and the middle ear can be significantly damaged, although the eardrum will usually heal.⁸

Noise levels are usually measured in dB(A) a decibel scale of sound pressure that reflects the sensitivity of human ears to different levels and pitches of sound. The maximum noise levels for industrial noise exposure are usually

Decibel level:	Example
20dB(A)	A quiet room at night
40dB(A)	A quiet sitting room in the day time
60dB(A)	Ordinary spoken conversation
80dB(A)	Shouting
110dB(A)	A pneumatic drill nearby
130dB(A)	A large airliner taking off 100m away
140dB(A)	The threshold at which the noise is painful for most people. Some feel pain at lower levels

Table 1: Decibel levels for different noises

90-100 dB, whereas maximum levels for acoustic trauma, particularly military NIHL, are in the range 190-200dB.

The table above illustrates different decibel levels with real-life examples. The letter 'A' in brackets refers to an internationally recognised classification of environmentally measured sound.

Prolonged exposure to sound over 80dB(A) is likely to damage the hearing system permanently.

Effects of hearing loss

In contrast to the modest evidence generated to date in the UK, there has been considerable investment in research on military NIHL in the US. In 2009/10, the Director of the National Center for Rehabilitative (Auditory) Research (NCRAR) said that:

- Auditory dysfunction is the most prevalent Armed Forces connected disorder
- One in four Service members returning from conflicts complains of hearing loss and/or tinnitus
- As the veteran population ages, hearing loss will become more prevalent and more veterans will require rehabilitation
- Effective hearing loss prevention strategies need implementing in order to reduce the financial

and personal costs of auditory disabilities, and

- For the veteran, the most relevant cost is the reduction in "readiness for life".⁹

Although many veterans will appear to have normal hearing in simple one-to-one conversations, the picture changes dramatically with increasing background noise. Hearing mobile phone conversations on a busy high street or listening to one person while others are talking in a meeting or office often proves difficult. Hearing instructions on a building site and many similar situations can also be difficult, if not dangerous.

Increasing evidence is accumulating that NIHL has long term, progressive consequences, considerably more widespread than the effects revealed by conventional 'threshold' testing using 'pure-tone audiometry' (PTA). Audiometry is the main procedure used for hearing assessments in the Armed Forces. The nerve cell damage and loss outlined above may not be picked up by a PTA, but they will add to difficulties with hearing in noisy environments, and can contribute to tinnitus, hyperacusis (oversensitivity to certain volume ranges and frequencies) and other problems commonly associated with inner ear damage and sensorineural deafness. The effects of impulsive noise from the military environment are likely to be similar, if not greater, than the types of NIHL from which this sort of evidence is emerging.



A reduced ability to perceive certain sounds, especially speech, has been observed in individuals who have otherwise normal results on hearing threshold tests.¹⁰ Animal studies have shown that noise exposure, including loud music, can lead to ‘demyelination’ – a certain type of damage – in the fibres of the auditory nerve (which carries signals to the brain). Unfortunately, the effects of impulsive noise from the military environment have not been tested with this technique.

Blast-induced injury in mice has been studied by researchers at Stanford University, California, in an experiment which reproduced human exposure to improvised explosive devices (IEDs). This research demonstrated that the blast caused damage to and loss of outer hair cells, and led to reductions in the number of nerve cells inside the cochlea

The Armed Forces Compensation Scheme

In 2010, Lord Boyce carried out a review of the Armed Forces Compensation Scheme (AFCS) and recommended the creation of an Independent Medical Expert Group to further examine certain complex scientific issues, including hearing loss.¹¹ The Medical Advisory Committee (MAC), which provides clinical expertise to most UK Service charities, including the Confederation of British Service and Ex-Service Charities (Cobseo), The Royal British Legion and the British Members Council of the World Veterans Federation, set up a Hearing Loss Sub Group to examine the question of compensation for Service-induced hearing loss.

A report and list of recommendations was produced in 2011.¹² This bore many similarities to the earlier report of the Royal National Institute for the Deaf (RNID) in 2005.¹³ The RNID report recommended that compensation

should commence at 20 per cent disability or disablement, and that this should corresponded to a hearing threshold of 35dB (meaning that loss of hearing below that level would be compensated), and not 50dB, as the current policy dictates. The MAC echoed this view, but also argued that the frequencies of the PTA over which this was measured should be extended to include higher frequencies at four and six KHz.

The RNID report also noted that other countries were able to take age-related NIHL into account and separate it from military NIHL. It commented that age-related hearing loss added to the effects of military NIHL, such that hearing disability appeared earlier than would have occurred without the Service-induced loss. In Ireland and Australia, hearing loss compensation includes a calculation that allows for the additional disability created by normal age-related hearing loss.

In the UK, if the level of hearing loss suffered by the time of leaving the Armed Forces does not reach the threshold for compensation (50dB), any later loss to bring the veteran up to that threshold will not be accounted for nor compensated accordingly. In essence, most veterans who leave Service and then later find their hearing loss to be more pronounced than their contemporaries will not be compensated. This report makes a number of recommendations about compensation, which can be found in Part II.

The Evolution of EARSHOT

Following its deliberations over the hearing loss issues surrounding military compensation, the Hearing Loss Sub Group of the MAC decided that insufficient action was being taken to research and assist veterans

with hearing loss. This led the authors of this chapter to set about creating a centre for expertise in this area, entitled ‘EARSHOT’.¹⁴ EARSHOT has two main aims:

- To assess, advise, support and follow up veterans with hearing loss related to their time in the Armed Forces, and
- To study the nature and evolution of Service related hearing loss and the disabilities incurred.

Over the course of the last year, an EARSHOT consortium has been formed under our joint Chairmanship. The consortium includes senior consultants in audiovestibular medicine, senior academic audiologists and the former CEO of Deafness Research UK, supported by senior charity managers and The Royal British Legion’s Policy Adviser on health and social care issues.

The EARSHOT Centre is located at the Ear Institute at University College London, with links to the National Hospital for Neurology and Neurosurgery at Queen Square. It is intended that the Centre will provide:

1. A **Clinical Service** that will offer a complete and fully rounded hearing assessment service, which veterans can rely on for the highest quality. All patients will be given comprehensive reports. This service will include:
 - a. A full tinnitus advisory and treatment service, including rehabilitation, and
 - b. A comprehensive assessment and analysis of balance disorders, including accurate diagnosis of Benign Positional Vertigo (BPV), which can be associated with impulsive noise-induced deafness.





2. An **Academic Section**, consisting of an Advisory Board guiding the academic data collection, and a series of studies that will:
- a. Collate and store long term data from at least five yearly reviews of auditory function
 - b. Provide long term 'cohort' analyses of data (following two matched groups through time) to examine age-related hearing loss; how it develops and how it is related to Service-induced hearing dysfunction
 - c. Contribute to further study of the disabilities resulting from hearing loss between 25 and 50dB
 - d. Further examine how disabilities from hearing loss are improved (or not) by hearing aids
 - e. Determine the fundamental improvements to be gained from tinnitus treatments, and
 - f. Provide long term advice on hearing loss issues affecting the veteran community.

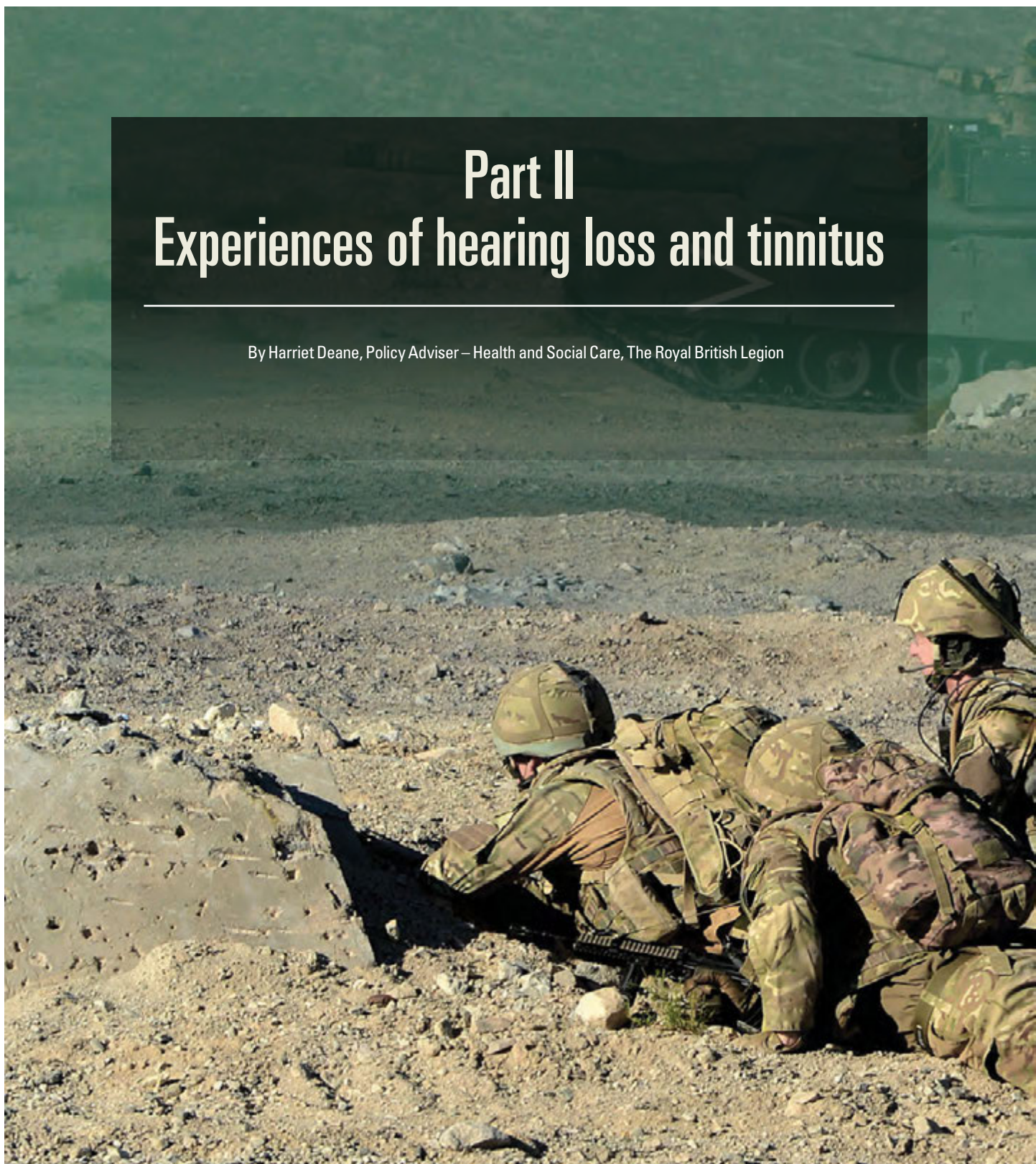
At the time of going to press, the clinical service has been planned by the EARSHOT group, and the research programme is evolving. Rapid progress has been made in the past six months. All that is needed now is start-up funding for the pilot study, and then the EARSHOT centre can move onto its next stage of development: bidding for long term, sustainable funding, to ensure that the hearing problems experienced by our veteran community are not forgotten.



Part II

Experiences of hearing loss and tinnitus

By Harriet Deane, Policy Adviser – Health and Social Care, The Royal British Legion





Introduction

In October 2013, a 'call for evidence' appeared in Legion magazine, asking those affected by Service-related hearing problems to get in touch with us. We were inundated with responses over the following weeks, including over 40 emails, numerous letters and around 50 phone calls. In order to capture better the information we were receiving, we carried out a number of face-to-face interviews and launched an online survey, which ran through February and March 2014.

The survey was drafted in consultation with Action on Hearing Loss, the EARSHOT consortium, those who were interviewed about their hearing loss and a number of other stakeholders. After promoting it online, including via social media and email bulletins, we received over 1,100 responses from serving and ex-Service personnel.

The survey consisted of 25 multiple-choice questions about the type of hearing problems experienced, their effect on various aspects of quality of life, and on issues such as compensation and attitudes towards the Government and the Armed Forces.

We have also collated results on hearing from the Legion's latest household survey of the ex-Service community, which is due for publication later this year. We surveyed a representative sample of 1,943 individuals in UK households, which included 1,120 veterans and a further 823 individuals eligible for Legion services (including spouses, widows and over-16 dependent children of veterans). By asking a question on ill health which also appeared on the latest Labour Force Survey, we have been able to compare self-reported difficulty hearing in the UK veteran population with the rates reported within the general population.¹⁵

How common are hearing problems in UK veterans?

Our household survey found that 11 per cent of veterans reported having difficulty hearing, and 6 per cent reported experiencing tinnitus (ringing in their ears).¹⁶ Based on our latest estimates on the size of the veteran population, this amounts to over 300,000 ex-Service personnel living with hearing loss. According to the latest general population figures, around three per cent of UK adults report having difficulty hearing.¹⁷ If we control for age, we see that differences between veterans and the wider population are stark amongst younger groups (although the number of veterans surveyed in the youngest two age groups were small), but that the older age groups appear to experience similar rates of hearing loss.

By grouping together all respondents under the age of 75, we have found that veterans under the age of 75 are significantly more likely to report hearing problems than all UK adults under 75. Our findings suggest that the prevalence of hearing problems among veterans under the age of 75 is around three and a half times that of the UK population of adults under 75.

There are no easily comparable self-report statistics on tinnitus in the general population. Figures range from 1 per cent, for those who experience severe annoyance due to tinnitus, to seven per cent presenting to GPs with the condition.¹⁸ The British Tinnitus Association reports that ten per cent of British adults have tinnitus, but this is based on audiograms rather than self-report data (in which tinnitus was listed as one of many possible health problems).

Interestingly, as demonstrated by the first of the two tables above, 12 per cent of 65-74 year old veterans report hearing loss and 13 per cent

	All	16-34	35-44	45-54	55-64	65-74	75-84	85-94
VETERANS¹⁹								
Difficulty hearing	11	4	4	7	6	12	11	28
Tinnitus	6	6	1	4	7	13	7	3
UK POPULATION²⁰								
Difficulty hearing	2.9	0.7	0.9	1.7	4.5	6.8	12.7	25.9 (85+)

Age	Number of surveyed veterans	Veterans difficulty hearing %	UK population difficulty hearing %
16-74	611	7	2
75+	668	15	16

report tinnitus, but these figures drop to 11 per cent (hearing loss) and seven per cent (tinnitus) for 75-84 year olds. These findings differ from patterns of hearing loss within the general population, in which both hearing loss and tinnitus tend to increase with age. The difference may be linked to length of Service: within the surveyed veterans, 65-74 year olds were three times as likely as 75-84 year olds to have served in the military for 10-15 years, and four times as likely to have served for 20-25 years (although the absolute numbers are small, so should be treated with caution). In total, around one in four veterans with difficulty hearing believed that their condition was attributable to their military Service.

What about serving personnel?

In 2009, the press reported the results of MOD research which found that 69 per cent of Royal Marine Commandos who served in Afghanistan had suffered "severe and permanent hearing damage" (based on audiograms from 181 Royal Marine 42 Commandos).^{21,22} In the same year, research on infantry soldiers found that up to 14 per cent of those returning from Afghanistan in 2007/08 had hearing loss.²³ Given that rates of audiogram-measured hearing loss amongst those aged 31-40 in the general population are 1.2 per cent for women and 1.7 per cent for men, these figures are quite astounding.²⁴

Noise induced hearing loss was the principal cause for 62 individuals' medical discharge from the Army during 2007-2012. The total figure doubled between 2010/11 and 2011/12, from 14 to 33 individuals. Between April 2005 and September 2013 alone, there were 2,460 claims for deafness and hearing loss under the Armed Forces Compensation Scheme (AFCS), but only 295 were successful (12 per cent – although some may not yet have received the outcome of their claim).²⁵ The AFCS only covers illness or injuries occurring (or becoming apparent) on or after April 2006. Figures for claims under the War Pension Scheme, covering injuries sustained before that date, could not be provided by the Government.



National Memorial Arboretum





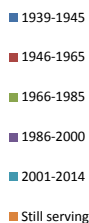
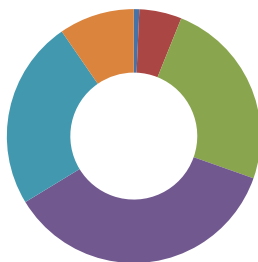


A survey of veterans and Service personnel with hearing problems

Participants

Around one in ten respondents to our online survey of hearing problems reported that they were still serving in the Armed Forces; 24 per cent had left in the past four years and 77 per cent had left Service between 2000 and 2014. The distribution across branches of the Armed Forces was broadly similar to that of the current serving population, but with the RAF slightly overrepresented. Over half of all respondents were aged 46-65 years of age; 22 per cent were under the age of 46 and 24 per cent were aged 66 or over. The vast majority were male, at 95 per cent, so female Service personnel and veterans were under-represented.

Between which dates did you leave Regular or Reservist Service in the UK Armed Forces (or are you still serving)?



Limitations

Not all respondents answered every question. Unless stated otherwise, percentages are given as a proportion of responses, not accounting for non-responses to the question concerned. The full data set can be made available on request.

Clearly, there are limitations to this style of research, which was by no means scientific. Respondents' Service history cannot be verified, and they are highly unlikely to be representative of all Service personnel and veterans with hearing problems. Those who feel aggrieved by their experiences of hearing loss may have been more motivated to complete a survey on the issue. Computer literacy and internet access will have resulted in a much younger sample than we would expect from a representative survey, and will be likely to exclude 'hidden groups' such as homeless veterans and those in care homes. Only 24 per cent of respondents were over the age of 66, whereas approximately 60 per cent of the UK veteran population are 65+.²⁶

Nevertheless, the results give an interesting insight into the impact that hearing problems can have on serving personnel and veterans, and reflect themes which also emerged during the qualitative interviews.

What did the respondents tell us about hearing loss and tinnitus?

Only 18 respondents (less than two per cent) reported complete hearing

loss in one or both ears. 69 per cent reported partial hearing loss, 49 per cent reported tinnitus "a lot of the time"; 32 per cent reported tinnitus "some of the time", and 18 per cent reported balance problems or dizziness since their hearing loss started. Over half of the respondents said that, without the use of hearing aids or cochlear implants, they either couldn't hear anything (less than one per cent); could only hear sounds, and not what is being said (eight per cent); or have some difficulty hearing what is being said, even in quiet situations (44 per cent). The remaining respondents selected the option "I have some difficulty hearing what is being said, mainly in noisy situations".

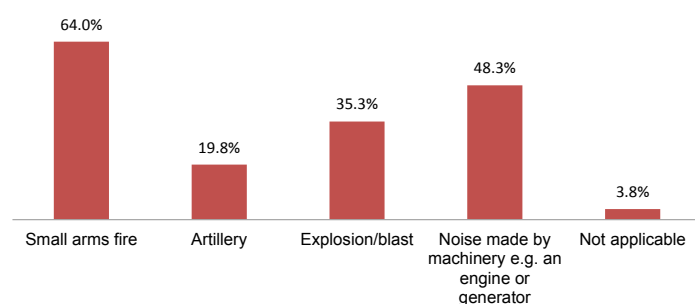
Origins of hearing damage

Most respondents (69 per cent) believed that their hearing problems had "definitely" been caused primarily by their Service, and 29% thought that their problems were "probably" caused by Service. Of those who said that Service was definitely the cause, 46 per cent reported that this had been verified by a medical expert.

The vast majority of respondents (89 per cent) responded to a question asking them to identify a potential cause for their hearing problems (selected from a list). These responses are illustrated in the graph below.

Almost half of the respondents reported that they first noticed their hearing loss and/or tinnitus whilst still serving in the Armed Forces, and a third noticed it within seven years of leaving.

Do you think that your hearing was damaged, and/or your tinnitus caused, by any or all of the following? Please check all that apply:



Impact of hearing problems on quality of life

One in ten respondents said that their hearing loss/tinnitus had a “very big” effect on their quality of life and 43 per cent said it had a “significant effect.”

Of those who provided comments, social isolation emerged as a common theme. Respondents spoke of being unable to function properly in social situations, such as at the pub or at parties, and of feelings of shame at these developments:

“Embarrassment, repetition, interpreting some words as they sound but the true words are completely different! It distances you from conversation and leads to some isolation.”

“I’m limited as to where I can go safely on my own... I can’t go out to places I’m not used to; I can’t travel to new places and ask directions as I can’t hear the reply; I can’t go out shopping on my own on a bad day when my balance is affected as I stumble or even fall over; I simply lack confidence when going to any place where I’m likely to need to hear others speaking; I can’t go to pubs or clubs as even if I go with friends who ‘look after’ me, I can’t take part in the conversation that is going on and I can’t go to a bar to buy drinks when it’s my round - all because my hearing has been taken.”

“Feel left out in conversations, tend to isolate myself to avoid embarrassment”

“Sometimes I cannot hear a conversation with another person, this makes me embarrassed and appear to act like I am on drugs or medication which indeed I have not, I find myself trying to lip read in most situations”

“Frankly, it limits my enjoyment of social occasions, makes it impossible to participate easily in group activities and on occasions leaves me feeling very left out. I am often told I’m ignoring people when I quite simply haven’t realised I’m being talked to. Very frustrating.”

Over a third of all respondents said that their hearing loss or tinnitus had resulted in them being unable to get a good night’s sleep (in the past year). One in five said that they had been unable to attend meetings related to work, and almost one in ten had been unable to eat out in a restaurant or have a drink in a pub. This reflects the results of research on the wider hearing impaired community, which has found that hearing loss results in withdrawal from social activities involving large groups of people.²⁷

Around one in ten respondents said that their hearing problems had a significant effect on relationships with family and friends (including partners and spouses). Most either stated that it had caused “some problems” (36 per cent), or that they had had a few difficulties, but it had not affected those relationships adversely (34 per cent). Those who offered comments frequently referenced misunderstandings which caused arguments; usually because their spouse or partner assumed they were deliberately ignoring them, when their poor hearing was to blame:

“My wife does get fed up with having to repeat herself or me not hearing her at all, or just catching part of a sentence and getting the wrong message!”

“It contributed, amongst my military service & other matters, to my divorce from my first marriage. My ex-wife would feel I deliberately did not listen; I felt she shouted at me all the time - we laugh about it now...!”
“I sometimes can’t hear what my partner says, and she thinks I’m ignoring her.”

One respondent explained poignantly how his hearing loss had affected his family life:

“The speech of children and many females (higher pitch) is often unintelligible to me. For much of my children’s childhood I was unable to hear them clearly, an irreplaceable loss for which there can be no compensation.”

Others spoke of similar frustrations when trying to communicate with grandchildren:

“I feel that I have missed so much with my grandchildren when they were younger (and to some degree today) due to not being able to hear their ‘small’ voices and thus bond with them as much as I would have liked to.”

“I’m having difficulty building solid relationships with my grandchildren (all under 6 years old) because I have difficulty working out what they are saying when I’m wearing my aids.”





Tinnitus appeared to have a significant impact on respondents' wellbeing. Of those who reported experiencing tinnitus, almost a quarter (23%) said that the noises "severely" worry, annoy or upset them when they are at their worst. Around 40 per cent said the noises "moderately" affected them, and 24 per cent selected "slightly".

Around a third of those who said that the effect of their tinnitus was severe went on to comment on their experiences. Some gave the impression that they were driven to despair by the condition:

"The noise is constant, with no relief or escape."

"Feel like climbing walls, happens mostly at night whilst trying to sleep."

"Constant white noise in both ears heard through almost any environmental noise. This has caused considerable emotional stress."

"I have struggled with my tinnitus to the point where I considered ending my days numerous times! I get it all day every day."

"Makes me feel like vomiting when it's bad."

"At times you just want to bang your head against a brick wall to try and stop the noise inside your head, or even as I have done worn headphones and turned the sound up just to stop it for a while. It makes you bad tempered and very irritable with everybody and all around you which stops you from enjoying what should be a pleasant time."

Others seemed to have grown accustomed to the sounds and were no longer distressed by them (perhaps partly because they were less severe):

“I’ve had tinnitus for years now and I have managed to get use to the constant ringing sound!”

“I have got semi-used to the noise over the last twenty years or so but have to listen to the radio at night in order to sleep.”

“Tinnitus can drive one to despair but I have found a way to cope. I have convinced myself that I am aboard ship and that I can hear all the background noises of generators, steam turbines, comms, etc.”

“At first I would have selected severely but as time has passed it has become a way of life.”

Sleep deprivation appeared to be a common issue amongst those who provided comments:

“Never goes away, keeps me awake and if I wake up I can’t get back to sleep. I get up for work at 0545hrs so this additional loss of sleep makes me tired most the time.”

“It is worst when it’s quiet as there is no other noise to drown out the ringing. I find it hard to sleep in a quiet room too.”

“It affects my sleep and concentration at work.”

“Very hard to sleep at night with the buzzing”

“My sleep is severely affected when it is at its worst”

Impact on career

Less than three per cent of respondents (26 individuals) reported that they had been medically discharged from the Armed Forces due to hearing loss, but 12 per cent reported having been medically downgraded and eight per cent said that they had been categorised as ‘P7’ in their ‘PULHHEEMS’ (occupational health) assessment due to their hearing problems. Around a third of respondents reported that, after they had completed their basic training, they never had their hearing tested whilst serving in the Armed Forces. Most of those individuals had left Service before 1986, although a substantial proportion (37 per cent) left between 1986 and 2000.

PULHHEEMS is a system of medical classification used by the Armed Forces, and is designed to provide an assessment of an individual’s fitness to work. The “HH” stands for hearing acuity in both ears. A grading of P7 means that an individual is “medically fit for duty with major employment limitations”.²⁸ This can limit their ability to carry out certain types of work in particular environments, including deployment to theatre.

Many of those who had been graded P7 attested to the impact that they believe this had on their military career, with 40 per cent responding that their hearing problems had “definitely” had a detrimental effect (compared to eight per cent overall):

“I was told that I would not be able to Squadron Lead, and would need to change cap badge in order to remain in the military. This is something I wasn’t prepared to do, so left.”



Picture by Alison Baskerville



"I cannot promote as I cannot attend career courses. I am now being PAP10 on medical grounds (hearing loss)."

"Loss of earnings – total loss of submarine pay. And sea pay. Due to [being] unfit for submarine at sea"

"I believe that it is due to being medically downgraded which limits operational deployment and postings and therefore not allowing me mainstream jobs that increase my profile for promotion."

Over a quarter of respondents stated that their hearing problems had a detrimental effect on their civilian career. Under a quarter said that it had "no effect". Some had been forced to give up on using very technical skills, such as musical direction or translation, because of their hearing problems. Others reported that they had been turned down for promotion, had their employment limited in some way, or had been forced to change jobs:

"I was removed from a specialist team in the Police Service when my hearing dropped below the acceptable H & S [health and safety] standard."

"I had to give up my second career as a teacher as I could not really make out what the pupils were saying in class as my hearing deteriorated. I had to give up teaching after 23 years."

Some respondents reported that their hearing problems had restricted their ability to enter many jobs:

"I have failed medicals for jobs at Harrods, BAA, Thames Valley Police and the Metropolitan Police because of my hearing loss."

“As soon as most employers see you have an aid, it’s usually goodbye!”

“Failed the railway medical. Only allowed to go trackside when accompanied. Cannot carry out some rail industry duties.”

Recent research by Action on Hearing Loss found that eight out of ten respondents with hearing loss felt that the attitude of employers was one of the main barriers to employment, and under half felt that their employer had been “helpful” at providing support for their hearing problems.²⁹

Compensation

Military compensation for hearing loss is primarily awarded under two schemes. The War Disablement Pension compensates for injuries sustained (or conditions caused) by events prior to 6th April 2005, and the Armed Forces Compensation Scheme (AFCS) covers harm caused from that date onwards. Differences between the two schemes include the ability to claim whilst still serving (AFCS only), the burden of proof and the manners in which compensation awards are calculated and paid.

Under the War Pension, the award is calculated according to the assessed percentage ‘disablement’ (with compensation awarded only for disablement of 20 per cent or more), whereas the AFCS is more prescribed, detailing different conditions under various ‘tariff tables’, according to their perceived severity. Under the AFCS, hearing loss is only compensated for if it reaches a threshold of 50dB, averaged over three different frequencies. The threshold for acoustic trauma (e.g. from a blast injury) is lower. As outlined in Part I of this report:

“[...] if the level of hearing loss suffered by the time of leaving the Armed Forces does not reach the threshold for compensation (50dB), any later loss to bring the veteran up to that threshold will not be accounted for nor compensated accordingly.”

At present, the thresholds for medical discharge and compensation are not aligned. The MOD has argued that some individuals are discharged to hearing when they appear to be particularly sensitive to harm. As a result, some individuals may sustain significant hearing damage in Service, be issued with a hearing aid whilst still serving, and be medically discharged from the Armed Forces, but still won’t reach the threshold for financial compensation. Our research found this to be a cause of significant resentment amongst some veterans.

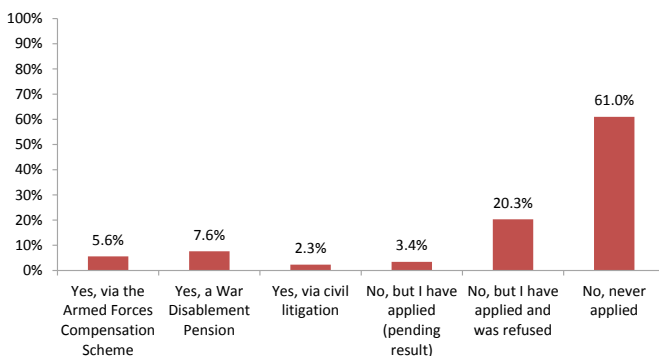
The majority of respondents to the Legion’s survey (61 per cent) had never applied for any compensation, which is perhaps surprising given that 63 per cent believed that their problems had “definitely” been primarily caused by their Service. One in five had applied and been refused, leaving just 8 per cent in receipt of a War Disablement Pension and 6 per cent with an AFCS award. A small proportion of individuals (two per cent) had sued and received compensation, and three per cent were awaiting the outcome of their compensation claim.

Of the 74 survey respondents who said that their hearing problems had “definitely” had a detrimental effect on their Service career, almost a third (30 per cent) had applied for compensation and been refused, and almost a quarter (24 per cent) had never applied for compensation. Half of those who had never applied were still serving, so may have been waiting until they left Service in order to apply for a War Pension. A quarter of those who reported being downgraded to P7 as a result of their hearing also stated that they had applied for compensation and been refused. Only a small number of respondents (37) had been issued with a hearing aid whilst still serving, over three quarters of whom were under the age of 46, and almost a third had applied for compensation and been refused.

Support and treatment

Around a third of respondents had been issued with one or two hearing aids, the majority of whom (67 per cent) had their aids issued by the NHS. Twelve per cent had paid for their aids themselves, and 11 per cent had received them whilst still serving in the Armed Forces (MOD-funded). Over three quarters (28) of those with MOD-funded aids were under the age of 46, and almost a third (12) was under the age of 35.

Have you received any compensation from the state for your hearing loss/tinnitus (excluding PAX insurance)?



The majority of those with an aid said they wore it “all the time, or almost all the time”, but less than one in five was “very satisfied” with their aid. Almost half of those with aids said that they were “quite satisfied”, and 30 per cent were “dissatisfied” with their aids. Of those, less than half wore it “all the time, or almost all the time”. Of those under the age of 56, over a third was dissatisfied with the size or appearance of their aids:

“Dislike the behind the ear hearing aid and currently trying to finance some in the ear ones to be able to do other employments and for vanity reasons.”

Several respondents had been issued with aids by the MOD whilst serving in the Armed Forces, but had been unable to get them serviced or replaced on the NHS:

“I’d prefer in ear aids but these are not issued by the NHS for understandable reasons. However, I much preferred the MOD issued ones which were in ear and somewhat more effective than the behind the ear NHS ones. Unfortunately, once broken I could not get them repaired, only replaced and this was too expensive.”

“My digital hearing aids, provided in-service by MOD, were excellent when brand new. Their quality has degraded over time – hence the quality of my hearing. Now that I have left the Service I need to budget over £300 per pair for servicing.”

“My MOD issued hearing aids are coming to the end of their life. Now I have left the service, my civilian practitioner is unable to give me an equivalent standard of aid given while serving. I will now have to use a larger, lower standard hearing aid. (NHS Issue)”

Action on Hearing Loss report that around two million people in the UK have hearing aids, but only 1.4 million use them regularly.³⁰

Attitudes to hearing loss

Only 15 per cent of respondents reported feeling satisfied with the level of support they had received from the Government (e.g. MOD or NHS) for their hearing problems. Over half disagreed with the statement “I am satisfied with the level of support that I have received from the Government (e.g. MOD/NHS) for my hearing loss/tinnitus”, and 70 per cent disagreed with the statement “I think that the Government takes the impact of hearing loss/tinnitus seriously”.

The overwhelming majority of respondents – 95 per cent – were glad that they had served in the UK Armed Forces, and only 17 per cent agreed with the statement “My hearing loss/tinnitus has affected the way that I view the UK Armed Forces (including my Unit)”. In contrast, 44 per cent said that their hearing problems affected the way that they viewed the Government (including the MOD), and 71 per cent agreed with the statement “I don’t feel that the Government appreciates the sacrifices that I made during my time in Service”.

Discussion

These results give some insight into the experiences of Service personnel and veterans with hearing loss and tinnitus. Those who we interviewed expressed no regret at joining the Armed Forces. Many of those who served in conflict zones, including Iraq and Afghanistan,

have seen friends sustain injuries far more devastating and life-changing than their hearing problems will ever be.

Nevertheless, the high threshold for hearing loss compensation has caused resentment towards the Government amongst a significant number of veterans. Many were, quite rightly, shocked to find that they could be medically downgraded due to their hearing loss; have their Service career shortened; require a hearing aid in their 20s or 30s; suffer the effects of their hearing problems on their relationships and civilian careers; and yet be deemed ineligible for compensation.

We recognise that the Independent Medical Expert Group (IMEG), which advises the Government on medical aspects of the Armed Forces Compensation Scheme (AFCS), strongly recommended that a study be undertaken of Service personnel with a hearing threshold of 35-50dB, and that the results of this research should inform whether the threshold for compensation should be reduced.³¹ Given the size of the impaired group, however, we would argue that this recommendation does not go far enough. We argue that the compensation regime should account not only for the damage caused to hearing during Service, but also for the difference between the hearing abilities of a veteran of that age when compared to their non-veteran counterparts. It should also take into account the impact of tinnitus by compensating for it in isolation, and a more comprehensive and sophisticated range of tests should be performed on veterans being assessed for Service-induced hearing loss. Part I of this report outlines the justifications for this recommendation in further detail.

Several veterans who we spoke to had recently left the Armed Forces and visited an NHS audiologist, to be informed that the hearing aid issued to

them by the military was not available on the NHS. There is no doubt that the quality of NHS hearing aids has improved substantially in the past decade, but we are informed that in the ear (ITE) models are rarely fitted due to the higher associated costs. In May 2013, the IMEG recommended that ITE digital aids should be supplied “whenever possible, as advised by the clinician in charge”.³² Unfortunately, this does not appear to be the case (at least in some parts of the country), meaning that veterans are forced to choose between ‘downgrading’ their aids or funding the servicing and replacement of aids themselves.

Those individuals who have had their applications for compensation turned down undoubtedly feel particularly unhappy about these additional costs, which would appear to undermine the Covenant principle of ‘no disadvantage’ due to military Service. Indeed, as they have been injured in the line of duty, we would argue that veterans with hearing loss – particularly those who leave the Armed Forces with hearing aids – should be eligible for ‘special treatment’.

Finally, we believe that Service-related hearing loss is a problem of sufficient scale to merit significantly more investment in research. The UK lags far behind the USA in this respect. We recommend that the Government should commit to long term, sustainable investment in the EARSHOT Centre described in Part I of this report. This would enable a comprehensive programme of research on Service-related hearing loss to be set up, accompanied by a first class clinical service to attract research participants and ensure consistently high standards of treatment.

Recommendations

In order to better support Service personnel and veterans with hearing loss and tinnitus, and to encourage a healthier attitude to hearing protection amongst younger members of the Armed Forces, The Royal British Legion recommends that:

- The Government recognises the sacrifices made by Service personnel and veterans with hearing loss by properly compensating them for their injuries, accounting not only for the damage caused during Service, but also for the difference between the hearing abilities of a veteran of a particular age compared with their non-veteran counterparts;
- The MOD introduces more sophisticated tests of communication impairment when assessing eligibility for military compensation, rather than relying solely on pure tone audiograms;
- Military compensation is awarded for tinnitus in isolation (with appropriate limitations) where the impact on communication and quality of life is significant;
- The Government commits to long term, sustainable investment in the EARSHOT Centre, to enable a comprehensive programme of research on Service-related hearing loss to be set up;
- The Government makes available specific funding for veterans with Service-related hearing problems, to ensure that their military-issued hearing aids can be serviced and replaced on the NHS, and to ensure that working age veterans can access ITE aids to reduce any embarrassment and stigma they may experience as a result of their hearing loss; and

- The MOD recruits young veterans with noise induced hearing loss to address young Service personnel (particularly those most at risk of hearing damage) about their hearing problems, including the impact that these problems have had on their career and quality of life.

In recognition of the distress that tinnitus clearly causes to many veterans, the Legion also endorses recommendations on support, treatment and compensation for this condition, provided by the British Tinnitus Association in Part IV of this report.

A silhouette of a person playing a trumpet is set against a warm, golden sunset background. The person's profile is on the right, and the trumpet is held across the center. The lighting is soft and directional, coming from the right, which creates the silhouette effect.

Part III Preventing hearing problems in the Armed Forces

By Rob Burley, Head of Public Affairs, Action on Hearing Loss

Introduction

Action on Hearing Loss, formerly RNID, has been working on issues around hearing loss in the Armed Forces for a number of years. The demographics of our membership means that many of our members undertook National Service or are active combat veterans, making it an issue close to their hearts. Most recently, this work has seen us teaming up with The Royal British Legion to push for improvements in the Armed Forces Compensation Scheme for Service personnel who incur noise induced hearing loss or tinnitus, and we have also been calling for better hearing protection for Service men and women.

In 2008, the issue of hearing loss within the Armed Forces received renewed attention, as reports began to suggest that the conflict in Afghanistan was beginning to lead to an increase in the number of personnel experiencing noise induced hearing loss. At that year's Labour Party conference, we met with then Secretary of State for Defence, Bob Ainsworth MP, to raise the issue directly with him. As a result of this, we were invited to attend the newly created Defence Hearing Working Group, a tri-service group tasked with exploring solutions to the growing problem of noise-induced hearing loss amongst Service personnel.





Protection

Despite promising advances over recent years, there is, at present, no cure for hearing loss. This means that effective hearing protection is essential. In civilian industries, significant reductions have been achieved in the number of people experiencing noise induced hearing loss, through factors such as Noise at Work regulations, a culture change around health and safety and protective equipment, and a decline in the kinds of industry that involve prolonged exposure to noise, such as coalmining.

Whilst it is clear the military would struggle to adopt best practice standards for civilian work settings, there are some

areas in which similar approaches can be taken.

An issue that is often highlighted during discussions about hearing loss in the Armed Forces is the impracticality of some forms of hearing protection on the front line. Whilst the use of equipment such as industrial-style ear defenders may be appropriate whilst operating heavy machinery on bases or in secure locations, it is clearly unrealistic to think that a soldier will go on patrol wearing such equipment, as it will inevitably reduce their ability both to detect threats in their vicinity and to communicate with colleagues. Efforts have been made over recent years to develop systems that tackle this problem, by providing protection from sudden exposure to damaging noise levels whilst ensuring that situational awareness can be retained.

Equipment such as the Personal Integrated Hearing Protection system (PIHP) and the Tactical Hearing Protection System (THPS) are designed to ensure that personnel can protect their hearing whilst still being able to hear radio communications and noise generated around them. It is crucial that developments in this kind of technology are continued, so that UK Armed Forces personnel have access to hearing protection that does not put them at increased risk when on operation.

Training and awareness

Alongside the development of suitable equipment, it is vital that processes are put in place to allow personnel to train with this equipment and become comfortable and confident in using it. Initially, reports suggested that this protective equipment was only being provided upon personnel's arrival in theatre, making it highly unlikely that they would be willing or able to use it. It is a very positive step that more units have been rolled out, so that they can be used in training. As new equipment continues to be developed and introduced, it is essential that it is made available as early in the training process as possible.

At present, the Combat Arms Earplug is provided early on in the training process, which at least begins to normalise the wearing of protective equipment, (hopefully) embedding a recognition of the importance of hearing protection. This is an important start. We appreciate that the challenges of Service life are unique, and that risks of injury to life and limb are inevitably prioritised over hearing damage. Nevertheless, all branches of the Armed Forces must ensure, from day one of military life, that Service personnel are encouraged to value their hearing and to recognise the importance of effective protection. The Army has produced a powerful training DVD which highlights the impact of



hearing loss, not just on professional development within the Services and the risk of being discharged, but also on personal lives, including the ability to engage fully with social networks and the potential strain on their personal relationships. The Action on Hearing Loss report 'In it Together' has shown the strain that hearing loss can place on relationships, and this is reflected in the DVD.

There are many parallels between the challenges involved in educating young Armed Forces recruits on this topic and those that we have faced when speaking to young music lovers about their hearing. A characteristic of lower-level noise induced hearing loss is that it can appear to have caused little damage shortly after exposure to noise, but the cumulative impact of sustained low-level damage intensifies age related hearing loss later in life. As with a whole host of conditions, it can be challenging to engage someone in their 20s about a condition that may affect them in their 50s or 60s.

As such, as outlined in Part II, Action on Hearing Loss and The Royal British Legion recommend that the MOD should recruit young veterans with noise induced hearing loss to address young Service personnel (particularly those most at risk of hearing damage) about their hearing problems, including the impact that these problems have had on their career and quality of life. This face-to-face contact may encourage a more significant change in attitudes towards hearing protection.

Detection

If we can't guarantee 100 per cent protection from hearing damage, then early detection of hearing loss plays a key role. Picking up problems earlier can reduce the risk of further damage and decrease the impact that the condition may have on an individual, by helping them to address it and adapt to it as soon

as possible. Thorough audiology testing is, however, unrealistic in forward operating areas, where a soldier may return from patrol having been exposed to gunfire noise or the sound of an explosion.

Action on Hearing Loss has developed a hearing check that can be taken online or over the phone, to provide people with an accessible way to assess their hearing without taking the potentially intimidating step of visiting their GP. The test works by asking people to enter a series of three-number sequences using their keypad or keyboard. These are played to them over a soundtrack of background noise that gets progressively louder, making the numbers increasingly difficult to hear.

This hearing check has been scientifically developed and accredited to ensure that it can accurately detect hearing problems that need further investigation. This is an excellent triage tool, and we are pleased to be working with the Ministry of Defence on trialling a version of the check on specially modified laptops that can be used on operations. This provides a capability to quickly assess any potential damage that may have been incurred. A judgment can then be made as to whether an individual needs to be protected from further exposure until a more detailed audiological examination can take place.

Conclusions

It is clear that hearing protection is an issue that has moved up the Ministry of Defence's agenda in recent years. Efforts that have been made to improve hearing protection equipment, policies and general culture are very welcome, and should be applauded. It is essential, however, that the momentum that has started to gather continues to grow, and is effectively utilised to ensure that fewer personnel experience the potentially serious effects of noise induced hearing loss.

Action on Hearing Loss offers a variety of services and products to support people with hearing loss. More details can be found at www.actiononhearingloss.org.uk/supporting-you.aspx

You can take the hearing check mentioned in this article at www.actiononhearingloss.org.uk or on **0844 800 3838**. If you are having difficulty hearing despite getting a normal result, it's a good idea to go along to your GP and ask for a hearing assessment with audiology.

A full-page photograph of an elderly man in a dark blue naval officer's uniform, including a peaked cap and a jacket with medals. He is standing on a sandy beach with the ocean and waves in the background. A semi-transparent grey box is overlaid on the center of the image, containing the title and author information.

Part IV The not so silent epidemic – understanding tinnitus

By David Stockdale, Chief Executive, and Nic Wray, Communications Manager, the British Tinnitus Association

The nature of warfare has changed dramatically over the last century, bringing with it fresh challenges for those managing the health and wellbeing of serving military personnel and veterans. Recent military actions have largely been counterinsurgency operations, where explosive mechanisms of injury (with improvised explosive devices (IEDs) being the most common) resulted in over 75% of all combat casualties.³⁴

The auditory system is particularly susceptible to damage due to noise and blast exposure.³⁵ Indeed, ear injuries are the most common single injury following blast exposure, occurring in 23% of personnel, and the incidence of combat related hearing loss and tinnitus is high.³⁶

What is tinnitus?

The word 'tinnitus' comes from the Latin word for 'ringing' and is the perception of sound in the absence of any corresponding external sound. This noise may be heard in one ear, in both ears or in the middle of the head, or it may be difficult to pinpoint its exact location. The noise may be low, medium or high-pitched. There may be a single noise or two or more components. The noise may be continuous or it may come and go. It is often described as a ringing, hissing, buzzing or whooshing noise, but merely describing the noises does not fully explain the impact that tinnitus can have on a person's life.

Tinnitus is not a disease or an illness, it is a symptom generated within a person's own auditory pathways. Experiences of tinnitus are very common in all age groups and walks of life. About 10 per cent of the population has tinnitus all the time and, in up to one in ten of these people, tinnitus may affect their quality of life. Whilst the

"No matter what, it is always there [...] Piercing, searing, pulsing"

Kevin Bell, Household Division³³





precise cause of tinnitus is still not fully understood, the condition can be associated with hearing loss, stress and anxiety, ear infections, balance disorders, and exposure to loud noise. It is the latter of these which probably has the biggest impact upon serving and past military personnel.

Impact

Tinnitus can impact on sleep, concentration (and therefore work) and relationships with others, and can cause further stress, anxiety and depression. The testimonies of Service personnel with the condition illustrate these effects:

“My tinnitus began after an accident in 1986. I was attending an Army course, a part of which was live firing. We were using specialist equipment and firing on maximum charge. I was hit by the overpressure and the double ear protection I was using failed to prevent the blast. I have had tinnitus ever since. Initially it was very aggravating, I found it difficult to sleep and the noise was distracting.”

Rupert F, serving soldier³⁸

Part II of this report gives details of the results of The Royal British Legion’s survey of Service personnel and veterans with tinnitus and hearing loss, including the self-reported impact of tinnitus on their quality of life.

Incidence

There has been no academic research on the impact of tinnitus on UK Service personnel, although the Legion’s survey findings report give some indication of the distress it can cause. Work undertaken in the US, by the Veterans Health Administration and American Tinnitus Association, found that tinnitus has a huge impact on returning personnel. It is not unreasonable to assume many parallels exist between the challenges experienced by British and American Service personnel and veterans; especially those stationed in or returning from the same theatres of war.

“After all those hours in such deafening noise, I now suffer from deafness and tinnitus. . . we did all we could to help the lads on the beaches”

**Squadron Leader
William Stoneman,
a rear gunner on D-Day³⁹**

From World War II onwards, tinnitus has been one of the two most common disabilities experienced by US veterans in all conflicts, except for the Vietnam War, when it was the fourth most common. This has had a huge impact on military personnel’s quality of life. Unlike the UK, disability payments are awarded by the US Veterans’ Administration for tinnitus in isolation, and not just as part of hearing loss. As a result, tinnitus has a significant financial impact on the US Government. The cost of Service-connected disability payments for tinnitus 2011 was \$1.28 billion, and is projected to rise to \$2.75 billion by 2016.

Tinnitus is now the number-one Service connected disability for all US veterans, and is particularly prevalent amongst Service men and women returning from Iraq and Afghanistan.⁴² For US veterans who began receiving compensation during fiscal year 2011 (the last one for which figures are available), 10.9 per cent of those claims were for tinnitus.

In the UK, we know that 53 per cent of audiograms performed on evacuated servicemen who had sustained blast injuries in Iraq and Afghanistan produced abnormal findings (based on individuals returning from Iraq and Afghanistan between 2006 and 2009)⁴³. Tinnitus in isolation (without significant accompanying hearing loss) is not compensated for by the War Disablement Pension or the Armed Forces Compensation Scheme, so there are no figures on UK military compensation claims for this condition. As outlined earlier in this report, recent research by The Royal British Legion found self-reported tinnitus rates from around three per cent (amongst 85-94 year old veterans) to up to 13 per cent (amongst 65-74 year old veterans), but the numbers surveyed were too small to break these figures down according to combat exposure or deployment to Iraq and Afghanistan.

According to data collected by the Occupational Surveillance Scheme for Audiological Physicians (OSSA), non-commissioned officers and other ranks were the professions with the highest incidence of work-related audiological ill-health.⁴⁴ Further research on prevalence rates of hearing problems amongst Service personnel and veterans is outlined in the introduction to this report. Some studies have shown that tinnitus is reported in at least 25 per cent, and up to 40 per cent, of those who have some hearing impairment,^{45,46} so it seems likely that the incidence

of tinnitus is high amongst hearing-impaired Service personnel and veterans. According to one study, hearing impairment roughly doubles the odds of having tinnitus, and triples the odds of having 'annoying' tinnitus.⁴⁷

Management

Information about the help and support available to serving military personnel with tinnitus is difficult to come by. It is possible to obtain a Ministry of Defence (MOD) referral for tinnitus support, via one of the four Audiologists trained to support UK military personnel (two of whom are based at Portsmouth and the other two overseas), but their capacity will be limited. We have no idea how many of the thousands of patients who go through the various NHS tinnitus pathways each year do so because of tinnitus induced by military service, either past or present.

So what ongoing support do people with tinnitus require? Typically, following referral from a GP, a tinnitus patient will attend an initial appointment with an ENT specialist. A full medical history will be taken and any diagnostic tests will be performed, including a hearing test. The patient will then be referred to the Audiology service for further support. Within the Audiology department, there are several options available to help the patient to manage the condition:

- Information – it can often be helpful for patients to find out more about tinnitus and have an opportunity to ask questions (for example, discovering that tinnitus is a common condition can reduce feelings of isolation)
- Correction of any hearing loss – if tinnitus is caused by noise induced hearing loss or 'typical' hearing loss, then attempts to correct the





- hearing loss with hearing aids (if appropriate) can often help
- Sound therapy – introducing background sounds (e.g. using environmental or natural sounds from a CD, a sound generator, a combination hearing device or even a fan or ticking clock) can help some people to cope with tinnitus
 - Relaxation – many people tell the BTA that learning to relax is key to being able to effectively manage their condition, saying it helps reduce the volume of their tinnitus
 - Counselling – techniques such as Cognitive Behavioural Therapy (CBT) can be helpful, either as a standalone therapy or combined with sound therapy.

Unfortunately, many people are unaware that such help is available, and we receive frequent reports that individuals suffering from tinnitus are simply told that nothing can be done to help them.



What about prevention?

“We had a radio on, you need to keep in communication with everyone as you do the exercise in case anything goes wrong. I was quite senior so had the radio and had to give my orders to the younger ones. . . Normally you wear the yellow ear protection, the squidgy ones. We got told to put them in from the off but because of the radio they said, ‘Right take them out your left ear so you can hear us clearly.’ So I was just following orders and took it out and as soon as we started firing I knew there was a problem. . .”

Chris Barker, former Trooper, The Queen's Royal Hussars, Royal Armoured Corps⁴⁸

As the above example illustrates, and even more so in an active war scenario, there will be times when there is a conflict between needing to use hearing protection and the need to be fully aware of surroundings. However, the above example led to Chris cutting short his Army career as a tank driver and ended with him leaving Service earlier than intended. As outlined by Rob Burley in Part III of this report, advancements in hearing protection now mean that more sophisticated, customisable

options are available. These could have allowed Chris both to hear the radio and achieve adequate levels of protection. The BTA believes that all active military personnel should be issued high quality hearing protection, and receive training in how and when to use it.

Recommendations

Tinnitus amongst Service personnel and veterans is poorly understood, and it is likely that many are suffering in silence, unaware of the support that may be available to them. We recommend for:

- All branches of the Armed Forces to provide better education to Service personnel on the importance of using effective hearing protection; and
- The MOD to introduce more sophisticated tests of communication impairment when assessing eligibility for military compensation, rather than relying solely on pure tone audiograms, and to award compensation for tinnitus in isolation (with appropriate limitations),⁴⁹ where the impact on communication and quality of life is significant.
- Epidemiological research to be commissioned and published on the prevalence and impact of tinnitus on UK military personnel, to ascertain the scale of the problem;
- Government funding to be provided to increase the amount of research on the prevention, treatment and possible cures for tinnitus, including on related researchable conditions, such as traumatic brain injury;
- The National Institute for Health and Care Excellence (NICE) to develop guidelines on best practice treatment and support for patients with tinnitus;
- Questions to assess the presence of tinnitus to become a routine part of occupational health assessments for all Service personnel; particularly for those who have sustained blast injuries;
- A clear pathway to access support for tinnitus within the MOD referral pathway to be established, connecting Service personnel to audiologists who are trained to support tinnitus patients;

CONTRIBUTORS

Professor David McAlpine

David McAlpine is Professor of Auditory Neuroscience at UCL, and Director of the UCL Ear Institute. Following undergraduate studies at the University of Western Australia, he was awarded a Wellcome Prize Studentship to read for his doctorate at Oxford University. He then moved to the MRC Institute of Hearing Research, Nottingham for 3 years as a MRC Training Fellow, before taking up a lectureship at Sheffield University in 1997. In 1999, he moved to UCL and was appointed Professor in 2005 and Director of the newly-established Ear Institute in 2006. Since then, he has overseen the development of a translational research programme, designed to ensure that basic scientific findings find their way to the clinic. His own research interests include investigations into brain mechanisms underlying spatial hearing, cochlear implantation and biological advances in hearing therapies including tinnitus. In 2012 he successfully led a consortium of four partners, including the cochlear implant company Neurelec, in the EU FP7 'Health Innovation Technologies' call, securing €4M to help advance new hearing technologies towards clinical fruition.

Brigadier (retd) Robin Garnett OBE PhD FRCP FFSEM

Brigadier (retd) Robin Garnett is a Consultant in Rheumatology and Rehabilitation Medicine; Chairman of the Medical Advisory Committee for the British Members Council of the World Veterans Federation, Cobseo and The Royal British Legion; and Governor of the Queen Elizabeth Foundation for Disabled People. Brigadier Garnett has previously held

a number of distinguished positions in defence rehabilitation, including Director of Defence Rehabilitation, Defence Consultant Adviser in Rheumatology and Rehabilitation Medicine, and Commanding Officer of the Defence Medical Rehabilitation Centre at Headley Court. He was also appointed Queen's Honorary Physician. Brigadier Garnett served as President of the British Society of Rehabilitation Medicine; Chairman of the Royal College of Physicians' Specialty Advisory Committee for Rehabilitation Medicine; and as a Member of the Board of Trustees for the Queen Elizabeth Foundation for Disabled People. He was awarded the Smith and Nephew World Travel Scholarship in Spinal Injury Rehabilitation and the Medelec Research Fellowship in Neurophysiology at the Rayne Institute at St Thomas's Hospital, London.

Rob Burley

Rob Burley is Head of Public Affairs & Campaigns at Action on Hearing Loss (formerly RNID), the UK's largest deafness and hearing loss charity. He joined the charity in 2008 from Breakthrough Breast Cancer. Action on Hearing Loss run campaigns to ensure that people who are deaf or hard of hearing have equal access to goods and services, are able to play a full role in the workplace and have access to the best quality services and support to help them manage their hearing loss. The charity also funds medical research and provides a range of services for a wide range of people, from those who are profoundly deaf with additional needs through to hearing aid users with age-related hearing loss.

David Stockdale

David was appointed Chief Executive of the British Tinnitus Association in February 2010. He is responsible for the day to day running of the charity, and implements the strategy, as set by the Board of Trustees. The British Tinnitus Association strives to be the primary source of support and information for people with tinnitus and their carers in the UK and to advocate on their behalf. It aims to encourage prevention through its educational programme and to seek effective management of tinnitus through a medical research programme.

Nic Wray

Nic Wray is Communications Manager for the British Tinnitus Association. A graduate of the University of Sheffield, she joined the BTA in 2010, having previously worked for a variety of commercial and third-sector organisations. Nic edits the BTA's journal, *Quiet*, and is responsible for ensuring that all the BTA's information leaflets conform to the Information Standard. She also manages the design and production of all the BTA's communications, both printed and online.

Harriet Deane

Harriet Deane is a Policy Adviser for The Royal British Legion, focusing on health and social care issues affecting the Armed Forces community. Prior to joining the Legion in January 2013, Harriet worked for the Bar Council, the social care charity Turning Point and the Institute of Psychiatry.

REFERENCES

- ¹ Ministry of Defence (2011). *The Armed Forces Covenant*
- ² Department of Health (2013). "Improvements announced in NHS prosthetic care for war veterans" (press release)
- ³ Royal British Legion survey of the ex-Service community, due for publication in 2014. Based on representative survey of 1120 veterans, 602 of whom were under the age of 75.
- ⁴ Brown, D.C. and Milner, R S. (2010). A Modern Approach to Noise-induced Hearing Loss from Military Operations. *Journal of Royal Naval Medical Service, 96(1)*
- ⁵ This is a hypothetical example intended to illustrate the regressive nature of hearing loss. In fact, we know little about the long term impact of noise induced hearing loss (NIHL) – those who suffer NIHL at a young age may even find that their hearing degenerates at a faster rate than their counterparts.
- ⁶ Luxon, L. and Prasher, D. (Eds). Noise and its effects. John Wiley & Sons Ltd: 2007
- ⁷ RNID (2009). For deaf and hard of hearing people: Noise Exposure (factsheet)
- ⁸ *Ibid*
- ⁹ Fausti, S. (2009), speech to a conference organised by Deafness Research UK, The Ear Institute UCL and MOD UK, London 7 December 2009: *A Modern Approach to Noise Induced Hearing Loss from Military Operation*
- ¹⁰ Deafness Research UK, 31 Aug 2012: www.deafnessresearch.org.uk
- ¹¹ The Review of the Armed Forces Compensation Scheme (2010) CM 7798. London: TSO
- ¹² Medical Advisory Committee (2013). *Policy statement on Service related hearing loss*. Submission to IMEG, Sept 2012
- ¹³ RNID (2005). *Deafened Veterans and the Armed Forces Compensation Scheme – a scientific perspective*
- ¹⁴ Medical Advisory Committee (2013). *Proposal for the creation of a Veterans EARSHOT Centre (VEC)*
- ¹⁵ Royal British Legion survey asked: "Please look carefully at this list. Do you have any physical or mental health conditions, illnesses or disabilities lasting or expecting to last 12 months or more?". Labour Forces Survey asked: "Do you have any physical or mental health conditions or illnesses lasting or expecting to last 12 months or more? Do you have...".
- ¹⁶ Royal British Legion survey of the ex-Service community, due for publication in 2014. Based on representative survey of 1120 veterans, 602 of whom were under the age of 75.
- ¹⁷ Quarter 1 2012 Labour Force Survey
- ¹⁸ Vesterager, V (1997). Tinnitus – investigation and management. *British Medical Journal, 314: 728-31*
- ¹⁹ Royal British Legion survey of the ex-Service community, as above
- ²⁰ Quarter 1 2012 Labour Force Survey
- ²¹ *The Guardian* (2009): "Two-thirds of Afghan war veterans are suffering from hearing damage": www.theguardian.com/uk/2009/dec/20/afghan-veterans-hearing-damage (accessed May 2013)
- ²² Brown, D.C. and Milner, R S. (2010). A Modern Approach to Noise-induced Hearing Loss from Military Operations. *Journal of Royal Naval Medical Service, 96(1)*
- ²³ *Ibid*
- ²⁴ Akeroyd, M., Foreman, K. and Holman, J. (2014). Estimates of the number of adults in England, Wales and Scotland with a hearing loss. *International Journal of Audiology, 53(1): 60-61*
- ²⁵ Hansard written answers, 16 January 2014: www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140116/text/140116w0003.htm#14011687000165

- ²⁶ Royal British Legion survey of the ex-Service community, as above
- ²⁷ Action on Hearing Loss (2011). Hearing Matters: Taking action on hearing loss in the 21st century.
- ²⁸ Braithwaite, M., Nicholson, G., Thornton, R., Jones, D., Simpson, R., McLoughlin, D. and Jenkins, D. (2009). Armed Forces occupational health – a review. *Occupational Medicine*, 59(8): 528-538
- ²⁹ Action on Hearing Loss (2014). Employment Panel Survey; due for publication in 2014
- ³⁰ Action on Hearing Loss (2011). Hearing Matters: Taking action on hearing loss in the 21st century.
- ³¹ Independent Medical Expert Group (2013). Report and recommendations on medical and scientific aspects of the Armed Forces Compensation Scheme.
- ³² *Ibid*
- ³³ Bell, K. (2013). Intruder alert. *Quiet: The Journal of the British Tinnitus Association*, 20(3): 20-21
- ³⁴ Belmont PJ, Schoenfeld AJ, Goodman, G. (2010). Epidemiology of Combat Wounds in Operation Iraqi Freedom and Operation Enduring Freedom: Orthopaedic Burden of Disease. *Journal of Surgical Orthopaedic Advances*, 19(1):2-7
- ³⁵ Argyros, G.J. (1997). Management of primary blast injury. *Toxicology*, 121(1):105–115
- ³⁶ Gondusky JS, Reiter MP. (2005). Protecting military convoys in Iraq: an examination of battle injuries sustained by a mechanized battalion during Operation Iraqi Freedom II. *Military Medicine*, 170(6):546-9
- ³⁷ Davis A, El Refaie A. (2000). 'The epidemiology of tinnitus' in Tyler R (ed.) *The Handbook of Tinnitus*: 1 – 23
- ³⁸ Interview between case study and Nic Wray, British Tinnitus Association
- ³⁹ The Royal British Legion, *Four stories of unsurpassed bravery* (2014)
- ⁴⁰ American Tinnitus Association, *Most Prevalent Service-Connected Disabilities for Veterans Receiving Compensation at the End of Fiscal Year 2011*, available from www.ata.org/sites/ata.org/files/pdf/Most_common_ServiceConnectedDisabilities_FY2011.pdf. Last accessed 16 May 2014
- ⁴¹ American Tinnitus Association, *Advocacy Toolkit*, available from www.ata.org/advocacy/tool-kit. Last accessed 13 May 2014
- ⁴² *Ibid*
- ⁴³ Breeze J, Cooper H, Pearson CR, Henney S, Reid A. (2011). Ear injuries sustained by British service personnel subjected to blast trauma. *The Journal of Laryngology and Otology*, 125(1):13-17
- ⁴⁴ Money A, Carder M, Turner S, Hussey L, Aguis R. (2011). Surveillance for work-related audiological disease in the UK: 1998-2006, *Occupational Medicine*, 61:226-233
- ⁴⁵ Breeze et al. (2011), as above
- ⁴⁶ Brown, SC. (1990). *Older Americans and tinnitus: A demographic study and chartbook. GRI Monograph Series A, No. 2*
- ⁴⁷ Park RJ, Moon JD. 'Prevalence and risk factors of tinnitus: the Korean National Health and Nutrition Examination Survey 2010-2011, a cross-sectional study', *Clinical Otolaryngology*. (2014). doi: 10.1111/coa.12232. [Epub ahead of print] Last accessed 19 May 2014
- ⁴⁸ Chittenden, T. *Tinnitus - The Loud Silence* available from www.youtube.com/watch?v=cHSW1JREAM4 Last accessed 13/5/14
- ⁴⁹ e.g. To avoid fraudulent claims.



The Royal British Legion

Haig House
199 Borough High Street
London SE1 1AA

www.britishlegion.org.uk



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