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ORIGINAL ARTICLE



# Cost of post-deployment screening for mental illness in the UK military: findings from a cluster randomised controlled trial

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**ABSTRACT**

**Background:** Little is known about the economic impact of military mental health screening.
**Aims:** To investigate (a) whether post-deployment screening of military personnel affects use and cost of services and (b) the impact of psychiatric morbidity on costs.
**Methods:** Participants were recruited from UK Royal Marine and Army platoons and randomised to an intervention group (which received tailored advice predicated upon mental health status) or a control group (which received general advice following assessment of mental health status). The intervention costs were calculated while service use and associated costs were assessed at 12-month follow-up.
**Results:** Data were available for 6323 participants. Mean screening cost was £34. Service costs were slightly higher in the control group compared to the intervention group (£1197 vs. £1147) which was not statistically significant (bootstrapped 95%CI, −£363 to £434. In both groups, screening and control, costs were significantly higher for those who screened positive for mental health problems.
**Conclusions:** Costs were not affected by screening. In countries that have already implemented post-deployment screening, the political cost of disinvestment needs careful consideration. Those who develop psychiatric morbidity have substantially higher care costs than those who do not.

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**KEYWORDS**
Costs; economic evaluation; screening; military

## Introduction

The probable prevalence of post-traumatic stress disorder (PTSD), common mental disorders and alcohol misuse among UK military personnel deployed to military operations in Afghanistan and Iraq between 2003 and 2009 has been shown to be 4, 20 and 16%, respectively (Fear et al., 2010). For military personnel who are aware that they have a mental disorder, the rate at which they seek professional help varies between 30 and 50%, reaching 75% for US personnel in a recent study (Hines et al., 2014; Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004, 2014; Iversen et al., 2005). Suggested barriers to help-seeking include internal and external stigma, the practicality of consulting (e.g. scheduling an appointment or having time off for treatment), not knowing the type of help available and concern that employers might blame an individual for their problems (Iversen et al., 2011; Murphy & Busuttil, 2015).

Post-deployment screening for mental health problems has been introduced in several countries including the United States, Australia, Canada, New Zealand and the Netherlands to help direct individuals who screen positive to appropriate care (Searle et al., 2015; Vermetten, Greenberg, & Boeschoten, 2014; Zamorski, Rusu, & Garber, 2014). Screening is understood as the presumptive identification of a previously unrecognised disorder using tests to distinguish those who probably had a disorder from those who probably do not so that those people who probably had a disorder could be referred and be treated if the disorder is confirmed (Porta, 2014). Screening is not merely the use of a test related to a disorder. Little is known about the financial costs associated with post-deployment screening, in terms both of the screening itself and the costs of helping services subsequently accessed. In the UK, although structured support is available, there is currently no routine post-deployment screening for personnel returning from deployment. The first randomised controlled trial (RCT) of the effectiveness of post-deployment screening has recently been conducted and shown to be ineffective, as there were not differences in prevalence between the screened and the control groups in relation to the psychiatric outcomes of interest (PTSD, depression or anxiety and alcohol misuse) or help seeking for mental disorders (Rona et al., 2017). This paper aims to (a) compare service use and costs for those randomised to receive tailored advice about help seeking following screening with those who received general advice and (b) compare costs for those that screened positive for mental health problems.

## Methods

### Study design

Eligible personnel had recently returned from a tour of duty in Afghanistan at the time of assessment (October 2011 to

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October 2014) (Rona et al., 2017). Personnel were recruited from Royal Marine and Army platoon sized groups (comprising approximately 35 people). The letter sent to participants is included as an Appendix. Platoons were the unit of randomisation with two arms: the screening group, which received tailored advice following an offline computer self-administered assessment of mental health status, and the control group, which received general advice to seek help if they felt it necessary following the same procedure as the screening group. The initial assessment of personnel was carried out between six and 12 weeks post-deployment and reassessment took place 15.0 (SD 3.3) months for the screening group and 15.4 (SD3.6) months the control group after the initial assessment. This variation was due to the need to adjust our schedule to match the duties of a highly mobile population. We adjusted for this difference in the analyses assessing effectiveness and help seeking behaviour. The study followed Zelen's randomisation design where individuals in the intervention group are asked to consent before receiving tailored advice related to their mental health status, but that option was not given to those receiving general advice in the control group (Torgerson & Roland, 1998). For both the intervention and control groups, a letter reiterating the specific or general advice received at the end of the mental illness assessment was posted within two weeks of the initial assessment. The study was approved by the Ministry of Defence Research Ethics Committee (MODREC) Ref. Protocol 187/Gen/10 and King's College Research Policy and Ethics Ref PNM10/11-112. We needed to contact these two ethics committees annually as well as to report to Human Research Protection Office Continuing Review Submission Checklist (USAMRMC) that our study received approval from these two committees every year during the durations of the project. Details of the study design and outcome results have been described in detail elsewhere (Rona et al., 2017), including how we dealt with non-response in the reassessment stage in our intention to treat analyses. In summary, potential risk of bias in the estimated screening effect, because of missing data, was handled under missing at random assumption by making additional adjustments for rank, age and date of deployment, which were associated with probability of missingness.

## Service use and costs

### Intervention cost

The cost of the screening intervention was based on staff time required to deliver it and time taken by the participant to complete. It was assumed that the intervention delivery would require 5.5 full-time staff and the total annual salary costs plus overheads were estimated to be £417,019. Given the numbers deploying at the time of the study, it was estimated that 20,000 returnees would be screened in a year at a cost per person of £21. Finally, we assumed that the time costs of those being screened, assuming a duration of 45 minutes, amounted to £13. The overall cost per person screened therefore amounted to £34. We have excluded travel costs from these calculations. These would depend on location of staff and personnel. Screening of control participants took place but this was without tailored advice and costs were not assigned to this group. The cost of assessment of the control group was zero, as there is no requirement to assess mental disorder status following deployment in the UK Armed Forces.

### Use of health services

The economic analyses adopted a healthcare perspective. Health service use specific to military and non-military health services was collected as part of the follow-up assessment. For both military and non-military settings, services included GP consultations, contacts with mental health nurses, psychologists, psychiatrists, social workers, other medical professionals, in-patient stays and prescribed medication. Services that are specific to military health include contacts with padres, Trauma Risk Management (TRiM), welfare officers and use of a telephone helpline provided by the military. Services specific to non-military health services include accident and emergency visits, contacts with military charities and use of alternative therapies. Data were collected on services used and the number of contacts. For inpatient care, data were collected on the number of days spent in hospital for psychiatric, physical and rehabilitation treatments. Where a service had been used but the number of contacts was missing, the median values from those who had this information were used.

### Costs of services used

Costs of military health services were provided by the Military Capability Output Costing team based at Army Headquarters in Andover. Costs of non-military health services were taken from the University of Kent annual compendium from 2014 and the National Health Service (NHS) schedule of reference costs for 2013/2014 (Curtis, 2014; Department of Health, 2015). Exceptions to these were: costs for military charities which was taken as the national average wage rates (Office for National Statistics, 2013); and costs for certain other military professionals (e.g. medics and physiotherapists) which was taken as the mean ratio of military and non-military health service unit costs (estimated at £0.74 per minute of contact). Data on duration of mental health nurse costs and psychiatrist costs were taken from Bauer et al. (2015). The list of all costs is provided in Table 1. Service costs were calculated by combining the service use data with appropriate unit costs. Medication costs were estimated using prescription costs taken from the Prescription Cost Analysis for England 2014 (NHS Digital, 2015). All costs, in UK pounds, were estimated at 2013–2014 prices except for medication costs which were estimated at 2014 prices.

## Analysis

Descriptive statistics are presented for individual services. The significance of the difference in total costs between the

**Table 1.** Unit costs per item of military and non-military services, and prescription.

| | | Basis of estimate | | |
|---|---|---|---|---|
| | Costs per contact (£) | Duration | Costs per minutes (£) | Source of data |
| Screening Intervention | £34 | | | Calculated from data collected by study team |
| Military health and welfare services | | | | Land Environment Military Capability Output Cost Study (LEMCOCS) |
| Military Medical Officer | £49 | Surgery appointment lasting 15 mins | £3·27 | |
| Mental health nurse (MHN) | £47 | Assumed subsequent appointments lasting 30 mins | £1·55 | |
| Psychologist | £44 | Assumed MHN duration | £1·46 | |
| Social worker | £18 | Assumed MHN duration | £0·59 | |
| Psychiatrist | £104 | Assumed MHN duration | £3·48 | |
| Other professional[a] | £21 | Assumed MHN duration | £0·70 | |
| Padre | £64 | Assumed MHN duration | £2·14 | |
| TRiM personnel | £21 | Assumed MHN duration | £0·70 | |
| Welfare officer | £26 | Assumed MHN duration | £0·85 | |
| Telephone helpline | £8 | Assumed MHN duration | £0·25 | |
| Non-military health and welfare services | | | | 14–17 |
| General practitioner | £42 | Surgery appointment lasting 11.7 mins | £3·60 | |
| Mental health nurse | £58 | Appointment lasting 46.8 mins; cost | £1·23 | |
| Psychologist | £124 | Appointment lasting 54 mins; cost | £2·30 | |
| Social worker | £29 | Assumed military health service MHN duration | £0·95 | |
| Psychiatrist | £107 | Appointment lasting 45 mins | £2·37 | |
| Other professional | £22 | Assumed military health service MHN duration | £0·74 | |
| Hospital accident and emergency | £135 | Cost per bed day | | |
| SSAFA | £8 | Assumed military health service MHN duration | £0·25 | |
| Online help | £8 | Assumed military health service MHN duration | £0·25 | |
| Service charities | £8 | Assumed military health service MHN duration | £0·25 | |
| Hospital Inpatient | | | | 14, 15 |
| Inpatient psychiatric treatment | £351 | Cost per occupied bed day | | |
| Inpatient physical treatment | £603 | Average cost per episode | | |
| Regional rehabilitation unit | £603 | Average cost per episode | | |
| Medication | | | | 18 |
| Antidepressants | £5 | Antidepressant drugs | Weighted average of cost per prescription | |
| Sleeping tablets | £8 | Analgesics | | |
| Painkillers | £5 | Hypnotics and anxiolytics | | |

MHN: mental health nurse; SSAFA: Soldier, Sailors, Airmen & families association; PSSRU: Personal Social Services Research Unit; ONS: Office for National Statistics.
[a]Unit costs not available. Unit cost calculated as the mean ratio of military and non-military unit costs.

two groups was tested using a bootstrapped regression model to account for the likely skewed data (Barber & Thompson, 2000). A significance level of 5% was used and statistical analyses were performed using STATA versions 11 and 14.

The mean total costs for the intervention group and the control group were dominated by the costs of hospital inpatient care. It is rare that post-deployment screening for mental illness would lead to inpatient admission. We, therefore, tested the impact of excluding inpatient costs using one-way sensitivity analysis. Specifically, we excluded inpatient costs that were related to physical inpatient and regional rehabilitation unit care.

The randomised controlled trial showed that the outcomes were similar for those screened and those who were not. A significant and important difference in costs would indicate cost-effectiveness for one group following a cost-minimisation approach.

Service use and costs were also compared for those screening positive for mental health problems based on PTSD Checklist-Civilian (PCL-C) (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996), Patient Health Questionnaire-9 (PHQ-9) (Spitzer, Kroenke, & Williams, 1999), or Generalised Anxiety Disorder-7 (GAD-7) and alcohol misuse (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007). The cut-offs used for the screening group in the initial assessment were a score of 40 or more for the PCL-C, a score of 40 to 49 prompted the advice to consult a welfare officer and a score of 50 or more to consult a Medical Officer (MO) or General Practitioner (GP). For PHQ-9 those with 3 to 5 positive responses were advised to see a welfare officer and those with 6 or more positive answers a MO or GP, For the GAD-7 those with a score of 10 to 14 were advised to see a welfare officer and those with a score of 15 or more to consult a MO or GP. For alcohol misuse we used the Alcohol Use Disorder Identification Test (AUDIT), those with a score of 20 or more were advised to consult a welfare officer and those with a score of 5 or more on alcohol dependence or a score of 10 or more on alcohol harm were advised to see a MO or GP. The service use and cost comparison was performed for both intervention and control groups.

## Results

### *Service use and costs*

In total 6323 participants of the 10,190 initially subjects belonging to the 434 randomised platoons were reassessed at follow-up, distributed into the intervention ($n$ = 3964) and control ($n$ = 2359) groups (Figure 1). This represented 62.4% of the original intervention group and 61.5% of the control group. Men accounted for 97% of both arms and in each the average age was 27.6 years. In both arms the distribution of rank was 46% NCO, 8% CO and 46% other. The intervention arm consisted of 87% army personnel and 13% Royal marine, while for the control arm the figures were 82% and 18%, respectively. At baseline, in the intervention and control arms respectively 4.6% and 5.3% scored positive on the PCL-C, 3.8% and 3.4% on the PHQ-9, 2.2% and 2.0% on the GAD-7, and 8.2% and 7.5% on the AUDIT. Further details are given elsewhere (Rona et al., 2017). There were few major differences between the intervention and the control group in the use of services at follow-up (Table 2). For military specific services, the most commonly used health services were GPs, other professionals and mental health nurses. For non-military specific services, the most commonly used services were GPs, accident and emergency and other healthcare professionals. For non-military health services, the mean number of contacts with social workers in the intervention group was nearly double that of the control group. Another difference was that the intervention group spent less time in psychiatric wards than the control group. Total service costs were on average £50 higher for the control group although this was not statistically significant (bootstrapped 95%CI, −£363 to £434). Mean costs excluding hospital care were £6 higher for the control group (bootstrapped 95%CI, −£29 to £43).

There were many differences in service use when comparisons were made between those screening positive for mental health problems (cases) and those who did not (non-cases) (Table 3). For almost all services, a greater proportion of cases used services than non-cases and for many services, the number of contacts by users was also higher for cases. Differences between the intervention and controls in relation to the impact of testing positive for mental health problems were not evident other than for hospital care costs. For the intervention group, being a case resulted in mean costs that were £1053 more than for non-cases (bootstrapped 95%CI, £346 to £1799). For the control group the difference in mean costs was £3099 (bootstrapped 95%CI, £1139 to £5459). These differences are statistically significant. With hospital costs excluded in a sensitivity analysis the difference in means for the intervention group is £377 (bootstrapped 95%CI, £213 to £564) and for the control group it is £523 (bootstrapped 95%CI, £229 to £928). These differences are again statistically significant.

## Discussion

The cost of mental health screening was estimated to be £34 per individual when screening is conducted on a single occasion six to 12 weeks after the end of deployment. Overall, the use of health services was similar between the intervention and the control groups. We have previously shown that clinical outcomes for those receiving screening and tailored advice were not dissimilar to those who were assessed and received generic advice (Porta, 2014). Screening, as evaluated in this study, made little difference to costs or outcomes.

We were also able to demonstrate that those who were positive on any of the measures of probable mental illness, PTSD, depression, anxiety and alcohol misuse, both in the screening and control groups incurred substantial higher costs for accessing medical and welfare systems than those who were negative for any mental health disorder, suggesting that the tools used in our study identified appropriately those who have a probable mental disorder. This also

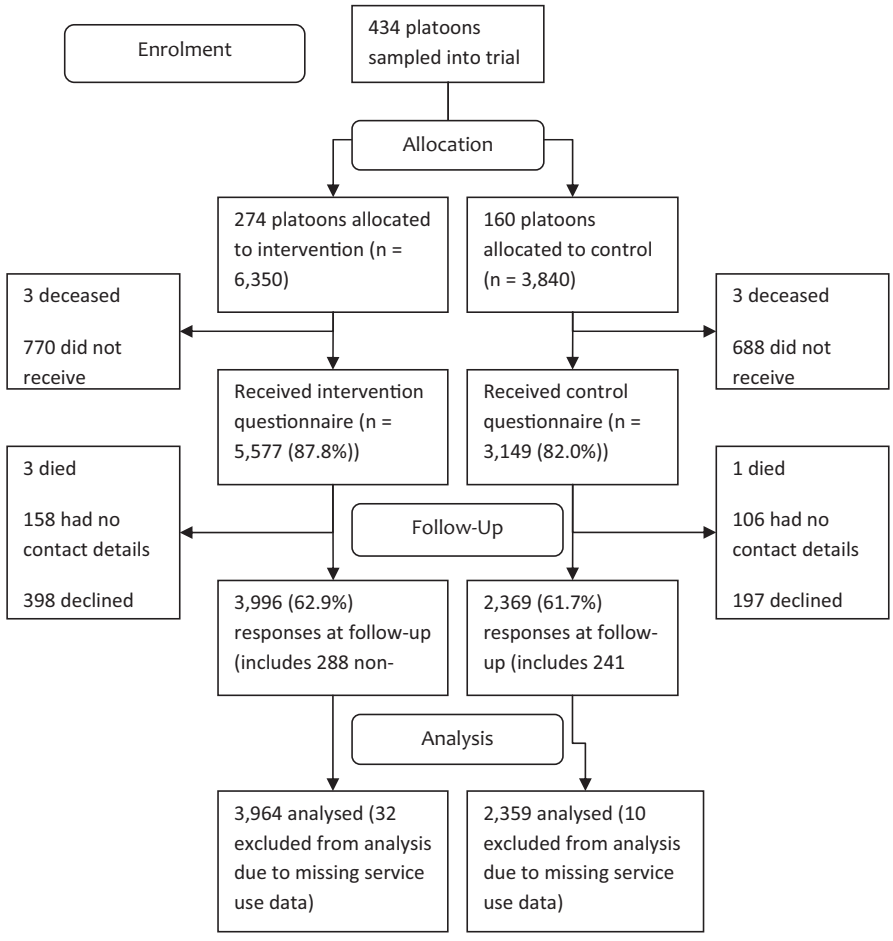


**Figure 1.** Participants, percentage rates and numbers leaving the study at each stage by arm of the trial. Percentages estimated from total service personnel in each arm at enrolment.

provides evidence for the cost impact of "common" mental disorders in the Armed Forces.

In the US, screening is recommended at different time points after the end of deployment (Lee, Warner, & Hoge, 2014). A face-to-face component would have increased the cost of screening substantially. The responsibility for the face-to-face interview falls on the primary care provider. Most of the assessments are completed by the units military primary care provider so the assessment team does not need to travel. Most of the face-to-face assessments are carried out by medical personnel already recruited and working within military healthcare, although there are bases where personnel are contracted specifically for this role. In this context, the US has flexibility to provide a post-deployment screening service and the marginal cost investment of the screening programme would be small (Dr DJ Lee personal communication). The face-to-face interview would take 10 min, but it can take longer if service personnel have endorsed symptoms for a mental disorder and a decision to refer has been taken (Dr DJ Lee personal communication).

In contrast to the US, the UK system would be peripatetic. It would be impractical to carry out the questionnaire completion in a primary care, as fewer service personnel would be prepared to travel to a primary care setting to complete the questionnaire. We have argued that a face-to-face element might not be desirable, as participants might modify their knowing that a subsequent interview with healthcare staff would ensue should they screen positive for suspected mental illness; such an interview might well result in adverse occupational consequences. If the screening system were to be implemented it may be difficult to recruit or re-deploy medical officers solely to undertake the face-to-face element of the screening programme. The most feasible approach would be to recruit personnel who would be trained specifically for the tasks related to screening and who would facilitate the contact of subjects with a confirmed psychiatric disorder to appropriate services. Details of screening programmes in other Armed Forces have been published elsewhere (Vermetten et al., 2014).

The cost per individual in a screening programme was not excessive at £34 per individual. Although this cost is low, the intervention was not effective. Decisions as to whether a new programme should be implemented need to be made in the specific context of healthcare arrangements and availability in each participating country. The start-up and maintenance cost of such a service would be difficult to justify, particularly as it would have to compete with programmes that seek to develop effective welfare services, primary care services and liaison mental health specialities, all of which might help to reduce the percentage of individuals who are referred to defence mental health services, those

**Table 2.** Service use and costs (2013/14 £s) at follow-up assessments by intervention or control group.

| | Intervention group ($n = 3964$) | | | Control group ($n = 2359$) | | |
|---|---|---|---|---|---|---|
| Service | % Using | Mean number of contacts | Mean Cost (£) | % using | Mean number of contacts | Mean Cost (£) |
| Intervention | | | 34 | | | 0 |
| Military health and welfare services | | | | | | |
| Military Medical Officer | 49 | 3·5 | 85 | 51 | 3·6 | 90 |
| Mental health nurse | 10 | 4·8 | 22 | 11 | 5·1 | 26 |
| Psychologist | 2 | 4·5 | 4 | 2 | 5·0 | 5 |
| Social worker | 1 | 3·4 | 1 | 1 | 4·4 | 1 |
| Psychiatrist | 2 | 5·8 | 11 | 2 | 5·1 | 13 |
| Other professional | 27 | 5·8 | 33 | 31 | 6·4 | 42 |
| Padre | 4 | 2·2 | 5 | 4 | 3·4 | 9 |
| TRiM personnel | 4 | 1·5 | 1 | 5 | 2·3 | 2 |
| Welfare officer | 8 | 2·3 | 5 | 9 | 3·1 | 7 |
| Telephone helpline | 1 | 5·0 | <1 | 1 | 3·3 | <1 |
| Non-military health and welfare services | | | | | | |
| General practitioner | 14 | 2·6 | 16 | 16 | 2·6 | 17 |
| Mental health nurse | 2 | 2·8 | 3 | 2 | 6·1 | 6 |
| Psychologist | 1 | 5·8 | 5 | 1 | 6·8 | 7 |
| Social worker | <1 | 10·4 | 1 | <1 | 5·3 | 1 |
| Psychiatrist | 1 | 5·3 | 3 | 1 | 7·4 | 6 |
| Other professional | 5 | 4·6 | 5 | 6 | 5·2 | 7 |
| Hospital A&E | 9 | 1·6 | 19 | 9 | 1·8 | 21 |
| SSAFA | 1 | 2·1 | <1 | 1 | 3·5 | <1 |
| Online help | 1 | 3·1 | <1 | 1 | 4·4 | <1 |
| Service charities | 1 | 2·9 | <1 | 1 | 4·2 | <1 |
| Hospital inpatient | | | | | | |
| Inpatient psychiatric treatment | 1 | 15·6 | 48 | 1 | 29·4 | 114 |
| Inpatient physical treatment | 4 | 8·3 | 202 | 4 | 11·3 | 258 |
| Regional rehabilitation unit | 5 | 21·4 | 616 | 5 | 16·4 | 538 |
| Medication | | | | | | |
| Antidepressants | 3 | | 1 | 3 | | <1 |
| Sleeping tablets | 13 | | <1 | 7 | | 1 |
| Painkillers | 65 | | 27 | 64 | | 27 |
| Total non-hospital cost | | | 282 | | | 288 |
| Total cost | | | 1147 | | | 1197 |

SSAFA: Soldier, Sailors, Airmen & families association; Hospital A&E: Hospital Accident and Emergency department; TRiM: Trauma risk management.

who fail to attend after initial mental health assessment, or who subsequently stop treatment prematurely.

In countries that have already implemented screening for mental disorders, a value judgement could be made that the cost of the programme might be a fair trade-off for a slight reduction in the ability of the Armed Forces to care for service personnel. There is also a political and public opinion consideration where it might be difficult to withdraw a screening service even if it were to be proven ineffectual.

It is worth keeping in mind that the evaluation of the cost of post-deployment screening in the current study considered only one episode of assessment. The US screening programme consists of several assessments undertaken at various times following deployment (Lee et al., 2014). The cost of such an approach is multiplied with each additional assessment. In addition, there is the issue of the potential for additional costs associated with each false-positive or false-negative screening outcome. Any screening programme would need to be carefully assessed for overall validity, precision and reliability.

There was no significant difference in the costs between the intervention and control group. If those with a mental health disorder had followed the advice that they received then the demand for health care services would have increased in the screening group in comparison to the control group and this would have increased the overall cost of the screening programme. Hopefully this would have been coupled with improved outcomes.

## Limitations

Service use data were obtained via participant self-report. Recalling healthcare and welfare service contact episodes may not always have been done with full accuracy. However, to facilitate a comprehensive costing approach, this was the only option as healthcare records would not contain this breadth of information. In other healthcare studies, it has been demonstrated that patient self-report is an acceptable method of assessing help seeking (Caslyn, Allen, & Morse, 1993; Goldberg, Seybolt, & Lehman, 2002). A further limitation is that we do not formally link costs to outcomes. Many outcomes were measured and there were no major differences between the groups. Cost-effectiveness analyses can still be conducted in such circumstances, but the clear lack of effect led us to focus here just on the costs of service delivery.

## Implications

The screening intervention at £34 per person is relatively inexpensive. If mental health screening and the provision of help seeking advice had been effective in encouraging

**Table 3.** Service use and costs (2013/14 £s) at follow-up assessments by group and caseness.

| | Intervention group | | | | | | Control group | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Case | | | Non-case | | | Case | | | Non-case | | |
| | % using | Mean number of contacts | Mean cost (£) | % using | Mean number of contacts | Mean cost (£) | % using | Mean number of contacts | Mean cost (£) | % using | Mean number of contacts | Mean cost (£) |
| Intervention | | | 34 | | | 34 | | | 0 | | | 0 |
| Military health and welfare services | | | | | | | | | | | | |
| Military Medical Officer | 58 | 4·6 | 129 | 48 | 3·5 | 82 | 64 | 5·1 | 160 | 50 | 3·5 | 85 |
| Mental health nurse | 26 | 7·2 | 87 | 9 | 4·5 | 18 | 32 | 8·1 | 119 | 9 | 4·3 | 19 |
| Psychologist | 7 | 6·4 | 21 | 2 | 4·0 | 3 | 10 | 6·0 | 26 | 2 | 4·6 | 3 |
| Social worker | 4 | 5·2 | 3 | 1 | 2·9 | <1 | 2 | 11·0 | 4 | 1 | 2·5 | <1 |
| Psychiatrist | 8 | 9·9 | 81 | 2 | 4·4 | 7 | 12 | 4·9 | 62 | 2 | 5·4 | 10 |
| Other professional | | 5·3 | 31 | | 5·8 | 33 | | 6·8 | 53 | | 6·4 | 41 |
| Padre | 9 | 2·5 | 52 | 3 | 2·2 | 5 | 14 | 3·4 | 62 | 3 | 2·1 | 14 |
| TRiM personnel | 8 | 1·9 | 3 | 4 | 1·5 | 1 | 13 | 4·0 | 11 | 4 | 1·6 | 1 |
| Welfare officer | 18 | 3·6 | 17 | 7 | 2·1 | 4 | 19 | 3·9 | 20 | 8 | 2·8 | 5 |
| Telephone helpline | 2 | 19·7 | 4 | 1 | 1·8 | <1 | 3 | 2·0 | 1 | 1 | 3·6 | <1 |
| Non-Military health and welfare services | | | | | | | | | | | | |
| General practitioner | 20 | 5·3 | 44 | 14 | 2·4 | 14 | 23 | 3·2 | 31 | 15 | 2·6 | 16 |
| Mental health nurse | 5 | 5·3 | 15 | 1 | 2·2 | 2 | 6 | 11·9 | 41 | 1 | 4·2 | 3 |
| Psychologist | 3 | 6·6 | 24 | 1 | 6·0 | 5 | 3 | 9·3 | 31 | 1 | 7·9 | 5 |
| Social worker | 2 | 19·3 | 14 | <1 | 5·7 | <1 | 1 | 19·0 | 7 | <1 | 2·2 | <1 |
| Psychiatrist | | 9·4 | 29 | | 2·8 | 1 | | 13·2 | 47 | | 5·0 | 3 |
| Other professional | 6 | 12·9 | 17 | 4 | 4·0 | 4 | 8 | 8·8 | 16 | 6 | 4·3 | 5 |
| Hospital A&E | 13 | 1·6 | 28 | 9 | 1·5 | 19 | 15 | 2·8 | 58 | 8 | 1·7 | 18 |
| SSAFA | 1 | 1·0 | <1 | 1 | 2·2 | <1 | 2 | 13·3 | 2 | 1 | 1·9 | <1 |
| Online help | 2 | 7·6 | 1 | 1 | 1·9 | <1 | 5 | 7·4 | 3 | 1 | 2·6 | <1 |
| Service charities | 4 | 2·7 | 1 | 1 | 2·3 | <1 | 2 | 14·7 | 2 | 1 | 2·4 | <1 |
| Hospital inpatient | | | | | | | | | | | | |
| Psychiatric | 3 | 19·1 | 221 | 1 | 15·5 | 38 | 5 | 33·5 | 631 | 1 | 18·7 | 50 |
| Physical | 5 | 9·8 | 315 | 4 | 6·9 | 168 | 7 | 13·3 | 538 | 4 | 9·4 | 213 |
| RRU | 9 | 16·8 | 873 | 4 | 19·5 | 528 | 14 | 24·8 | 2108 | 5 | 14·9 | 439 |
| Medication | | | | | | | | | | | | |
| Antidepressants | 13 | | 2 | 3 | | <1 | 13 | | 3 | 2 | | <1 |
| Sleeping tablets | 23 | | 3 | 6 | | <1 | 19 | | 2 | 6 | | <1 |
| Painkillers | 72 | | 37 | 65 | | 27 | 80 | | 43 | 62 | | 25 |
| Total non-hospital costs | | | 260 | | | 637 | | | 247 | | | 771 |
| Total cost | | | 994 | | | 2047 | | | 950 | | | 4049 |

SSAFA: Soldier, Sailors, Airmen & families association; Hospital A&E: Hospital Accident and Emergency department; TRiM: Trauma risk management.

treatment seeking then it may have been reasonable to recommend it for roll out. However, there was a lack of effectiveness and even with modest savings following the intervention, it cannot be seen to be a good investment in countries that have not already implemented such a programme. Disinvestment in screening may be perceived to have a higher political cost than the economic cost of post-deployment screening in countries with an active programme.

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## Appendix. A tailored advice letter in the screening arm of the study.

Dear Name of participant.

The POST Study POST-DEPLOYMENT HEALTH SCREENING OF THE UK ARMED FORCES.

Thank you again for filling out the computerised questionnaire as part of the POST Study. We hope you found the questions interesting and that they made you think actively about your mental health.

From the replies you gave, it appears you are at risk of having the mental health issue listed below: Posttraumatic Stress Disorder (PTSD).

This may cause you some significant problems if you don't get some help. We strongly recommend that you book an appointment with the medical centre to talk to a Medical Officer about the current difficulties you may be experiencing. It would help if you take this letter with you. We would ask you not to ignore this advice – instead, we strongly suggest that you make the time to discuss this letter directly with your Medical Officer.

If you are a Regular, your medical centre will be able to help you. If you are a Reservist*, you can book an appointment with either your military medical centre, the Reservist Mental Health Programme or your GP. Even if your Medical Officer cannot help directly, they will be able to refer you on to a wide range of in-house mental health professionals who will be able to provide you with a range of specialist treatments if you require them.

If you gave us consent to do so, we will contact you again in about 12 months to see how you are getting on. This will help us to understand how military personnel re-adjust after an operational tour.

Yours sincerely