UK Armed Forces psychiatric morbidity:

Assessment of presenting complaints at MOD DCMHs and association with deployment on recent operations in the Iraq/Afghanistan theatres of operation

April – June 2007

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Executive Summary

Introduction

1. This is the second publication in a new series of statistical information on psychiatric morbidity among the UK Armed Forces. The report covers the period April – June 2007 for all referrals of Service personnel to the MOD's Departments of Community Mental Health (DCMHs) and for admission to the MOD's in-patient contractor. It also updates some of the information published in the previous report as further information, covering the period January – March 2007, has been received.

2. The DCMHs are specialised psychiatric services based on community mental health teams closely located with primary care services at 15 medical services in the UK, and satellite sites abroad. **It is important to note that information on cases seen in the Primary care system, without onward referral to the DCMHs, is not currently available.**

Methods

3. The Defence Analytical Services Agency (DASA) receives mental health returns covering **all** Service personnel seen at the DCMHs, and for those admitted for in-patient care. A rigid pseudo-anonymisation process of all records is at the root of a robust quality assurance, enabling the removal of duplicate records, including those who may have been seen during an earlier period. Information on deployment is obtained by linking to a deployment database.

Key findings

4. During the 3-month period, April – June 2007, 1,380 UK Armed Forces personnel attended a first assessment at one of the DCMHs. Psychiatric staff supplied information on presenting complaints for 1,299 personnel. Of these, 996 were identified as having a mental disorder, representing a rate of 5.0 per 1,000 strength during this three month period. Although this represents an apparent overall decrease (14%) compared to January – March 2007, not too much should be read into this finding. It could be due to a combination of factors, including possible seasonal variations and a small overcount in the data previously released for January – March 2007.

5. There were 155 new cases seen of mental disorder in the Royal Navy, 22 in the Royal Marines, 543 in the Army, and 211 in the RAF. The remaining 65 could not be identified for confidentiality reasons which are explained further in the body of this report.

6. Among the 996 personnel with a mental disorder there were some statistically significant results:

- Royal Marines had statistically significantly lower rates than Army personnel;
- Females had statistically significantly higher rates than males;
- Other ranks had statistically significantly higher rates than officers.

These findings are consistent with those reported in the first report.

7. 432 patients with a mental disorder were identified as having deployed to the Iraq/Afghanistan theatres of operation (390 to Iraq, 83 to Afghanistan, and 41 to both

operations) compared to 499 who had not deployed to either Iraq or Afghanistan**. In line with the first report, there were no statistically significant differences in the rates of overall mental disorder between those identified as deployed to recent operations in Iraq or Afghanistan and those not identified as having deployed.** This was equally true when looking at the major groupings of mental disorder, with one noticeable exception. For PTSD, there was a statistically significantly higher rate among those identified as deployed to the Iraq/Afghanistan theatres of operation compared with those not identified as deployed there. **It is not possible at this stage to ascertain whether the higher rate of PTSD seen amongst those deployed is due to the deployment, or whether GPs exercise a lower threshold of referral to the DCMHs, knowing their patient had been deployed.** However, PTSD has remained a rare condition, affecting 26 cases of those who had deployed and 7 of those who had not.

8. During the 3-month period April - June 2007, 69 patients were admitted for the first time to the MOD's in-patient care contractor, of which 44 had previously been seen at a DCMH. The 25 other patients may have been seen at a DCMH before January 2007, or referred directly (eg. GPs can admit Service personnel directly to the Priory). Of the 69 patients admitted, 11 were Naval Service personnel, 45 were Army personnel and 13 were RAF personnel.

9. The findings on Service personnel admitted to the in-patient contractor in this series of reports differ from information previously released by the MOD. The latter covered all episodes of care, including readmissions, to give a picture of healthcare usage. This report focuses instead on the number of individuals affected, and thus presents a more accurate picture of psychiatric morbidity.

Conclusions

10. Interpretation of the results requires caution. The findings reported here may not cover the full picture of all mental disorder in the UK Armed Forces. This report is based solely on cases seen at DCMHs and at the MOD's in-patient contractor. It does not include cases seen in Primary care by the general practitioner and treated without the need for further referral. In addition, some personnel with mental disorder may feel a stigma attached to their condition, which inhibits them from seeking care, either in the Primary care sector, or by going to the DCMHs. On the other hand, it is also possible that the manner in which Service personnel support each other in close knit units may serve to minimise the number and severity of symptoms in some cases. It is important, therefore, to view the results presented here alongside independent academic research, such as that conducted by the Kings Centre for Military Health Research (KCMHR), who collect subjective information on mental health through the use of confidential surveys. KCMHR publish their findings in the peer-reviewed medical literature and are listed at http://www.kcl.ac.uk/kcmhr/information/publications.html.

Introduction

11. This is the second publication in a new series of statistical information on psychiatric morbidity among the UK Armed Forces. The report covers the period April-June 2007 for all referrals of Service personnel to the MOD's Departments of Community Mental Health (DCMHs). It also updates some of the information published in the previous report[a] as further information, covering the period January – March 2007, has been received.

12. The statistical series presented here has been made possible by the introduction of a rigid pseudo-anonymisation process and other measures preserving patient confidentiality. This has enabled full verification and validation of the information returned, together with linkage to deployment databases to ascertain measures of the potential effects of deployment on psychiatric morbidity. An important feature is the ability to identify duplicate records, many of which refer to repeat attendances of some patients. Full details are available in the first publication in this series.

[a] "UK Armed Forces psychiatric morbidity: Assessment of presenting complaints at MOD DCMHs and association with deployment on recent operations in the Iraq/Afghanistan theatres of operation January – March 2007".

Data, Definitions and Methods

13. The previous report in this series provided important background information on data governance - datasets accessed, data definitions, standards, methods of recording and collection, methods for ensuring ethical and legal compliance, statistical analysis and methods for assessing "statistical significance". The information is reproduced here at **ANNEX A**. The following paragraphs provide a summary of the main points.

The MOD's DCMHs

14. In 2004, the MOD established fifteen military DCMHs across the UK, with satellite centres in Germany and Cyprus, to provide an out-patient service by Community Mental Health Teams comprising psychiatrists and mental health nurses, with access to clinical psychologists and mental health social workers. Referrals are made by the patient's general practitioner (GP). As DCMH staff are located close to primary care staff at unit medical centres, this may have encouraged referral at a lower threshold than would be the case in civilian practice. The patient casemix and the severity of presenting conditions are therefore likely to differ from what is usually seen in NHS facilities, making direct comparisons with the general population unreliable.

Previous Reporting System

15. During 2006, the MOD collected aggregated anonymised counts of mental disorders among Service personnel seen at the DCMHs, considered by psychiatric staff to be attributed to deployment on Op TELIC. This gave rise to difficulties with interpretation and has been replaced by a more comprehensive and robust method of data recording, together with analyses based on statistical associations with deployment records, rather than attribution as such (see **ANNEX A** for details). Note that this earlier system did not report on other deployments or personnel not deployed.

Presenting complaints and psychiatric assessments at the DCMHs

16. DCMH staff record their initial psychiatric assessment during a patient's first appointment, based on presenting complaints. The assessment is recorded as one of a list of broad mental disorder groupings described below. The information is provisional. Final diagnoses may differ as some patients do not present the full range of symptoms, signs or clinical history during their first appointment. To ensure timely reporting of the findings, confirmed diagnostic information is not being collected centrally. Records sent without a recorded presenting complaint have been excluded from the analyses in this report.

17. The data captured cover all regular and mobilised reservist personnel from the three Services seen at a DCMH.

18. The psychiatric assessment data were categorised into three standard groupings of common mental disorders used by the World Health Organisation's International Statistical Classification of Diseases and Health-Related Disorders 10th edition (ICD-10), as shown in **Table 1** below. In this report, owing to the low numbers of patients assessed with "Organic mental disorders" or "Schizophrenia, schizotypal and delusional disorders", data on these disorders have been included in the category "Other mental and behavioural disorders", to avoid potential disclosure.

DCMH staff were asked to highlight four particular specific conditions of specific interest: “Disorders due to use of alcohol”, “Depressive episode”, “Post-traumatic stress disorder”, and “Adjustment disorder”. Individuals with post-traumatic stress symptoms, not fulfilling the full diagnostic criteria for PTSD, are included amongst the “Adjustment disorders”. This category also includes individuals whose symptoms may be due to other life stresses, such as family problems[b].

Table 1: Mental and behavioural disorder standard groupings by ICD-10 code

ICD-10 Code	**ICD-10 Description**
F10 – F19	Psychoactive substance use
F10	Disorders due to use of alcohol
F30 – F39	Mood disorders
F32 – F33	Depressive episode
F40 – F48	Neurotic disorders
F43.1	PTSD
F43.2	Adjustment disorders
F00 – F09, F20 – F29, F50 – F69	Other mental and behavioural disorders

19. Some patients have been recorded as having been assessed at a DCMH more than once between 1 April and 30 June 2007. Where no mental disorder was recorded at the first visit, we have based our analyses on the first disorder recorded at a subsequent visit.

20. Some patients recorded as having an initial assessment between April and June 2007, were found to have already had an assessment in the previous 3 months. By convention, we assume that these April to June attendances were repeat, rather than initial, appointments, in the same episode of care. These records have been excluded from the analyses reported here.

21. A number of patients present to the DCMHs with symptoms that require the treatment skills of DCMH staff, whilst not necessarily having a specific and identifiable mental disorder. Often, this will concern issues related to the necessary adjustments Service personnel are required to make concerning their relationships and families, for instance due to circumstances raised by their deployment on operations overseas, and their return to their home areas. The cut-off point between recording their presentation as a probable adjustment disorder or “no mental disorder” might sometimes be unclear and appear arbitrary. This report includes all cases stated as a mental disorder in the analyses below and those recorded as having no disorder.

In-patient psychiatric assessments

22. The MOD does not maintain in-patient facilities for psychiatric care in the UK. Patients presenting with mental disorders requiring in-patient care are referred to the MOD’s in-patient contractor. DASA receive records of these admissions, although information on presenting complaint is currently inadequate for analysis. These records have been subjected to the same quality assurance processes as the DCMH records. As this report is focussed on the number of personnel suffering a mental disorder rather than healthcare usage, duplicate records due to repeat referrals have

[b] Anecdotally, it is estimated that about one-half of military personnel presenting with symptoms associated with PTSD are given a PTSD diagnosis, the other half are usually given an Adjustment Disorder diagnosis, and some a Depressive Disorder diagnosis.

been excluded from analysis. Additionally, as the number of referrals in April - June 2007 was low, the breakdown of specific conditions is not presented here to avoid risking disclosure of individual cases.

Denominator data: strengths

23. A denominator dataset to enable calculations of rates was compiled from the single Service strengths data held by DASA, for regular personnel in the Royal Navy, Royal Marines, Army[c], and the RAF, as at 1 May 2007. In addition, an estimate was made of reservists, comprising members of the Full Time Reserve Service and Mobilised Reservists (including mobilised members of the Volunteer Reserves, such as the Territorial Army).

Deployment data

24. DASA have compiled a deployment database, derived from a number of separate data systems, covering several operational deployments since November 2001. This includes deployments to the theatres of operation for the conflicts in Iraq and Afghanistan. These may include some personnel located in neighbouring countries, for instance Kuwait and Qatar for operations in Iraq.

25. The time periods covered by the deployment data and by the psychiatric data are not identical, owing to time lags in the supply of the deployment data and DASA's requirement for time to cleanse and validate the records. The deployment data were valid up to 31 March 2007, although individual record deployment data for Afghanistan between 1 January 2003 and 14 October 2005 were not available. Note that following the publication of the first report covering January – March 2007, DASA have identified further records of personnel who had deployed to the Iraq theatre of operation. The previously published figures have therefore been updated here (**Table 3**). Their inclusion, however, has not had an impact on the overall findings of the first report.

26. About 4 per cent of the deployment records were not successfully validated against the "gold standard" personnel records held by the Service Personnel and Veterans Agency[d]. To be accurate, this report compares those who have *been identified* as having deployed with those who have *not been identified* as having deployed.

27. During the period, April - June 2007, one DCMH was only able to send fully anonymised records for 105 patients seen. Whilst no link could be established between these records and the deployment database, we have been reliably informed that most of these patients were from the Army and from regiments that had not deployed to the Iraq/Afghanistan theatres of operation. The information based on these records appears under the rubric "Demographic characteristics not known" in **Table 2** and 'Deployment status not known' in **Table 4**.

[c] Including the Royal Irish Regiment and the Gurkha Regiment.

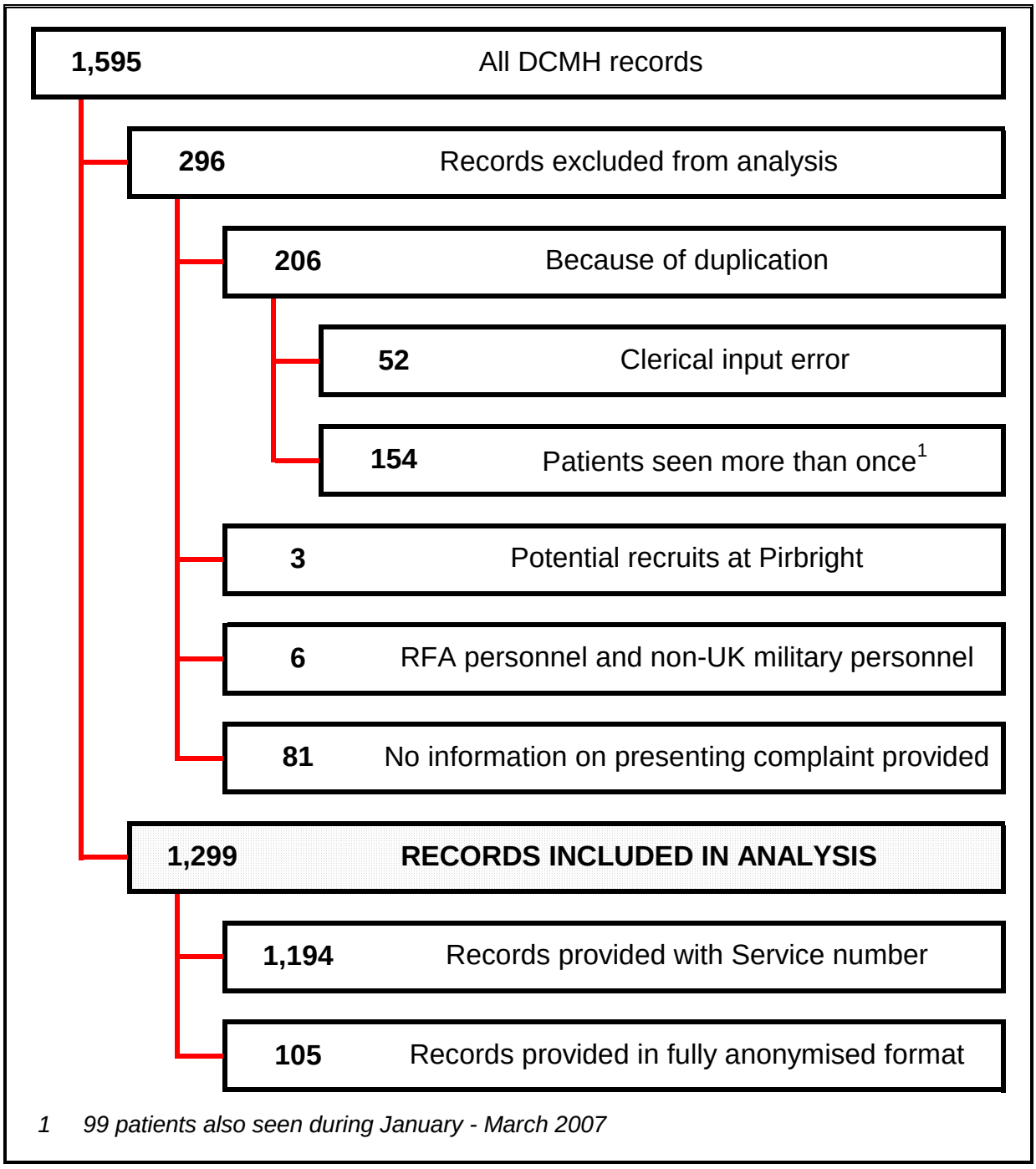
[d] It is reassuring that the research carried out by the Kings Centre for Military Health Research on a large tri-Service sample of personnel deployed during the first phase of Op TELIC in 2003, who were identified from DASA's deployment database, reported a cohort error rate of less than 0.5 per cent[4]

Findings

Data quality assurance

28. A total of 1,595 records, covering the 3-month period April - June 2007, were sent to DASA for analysis. These were subjected to a range of validation and verification quality assurance procedures. **Figure 1** presents a breakdown of the findings, explaining why certain records were excluded from subsequent analysis.

Figure 1: Quality assurance results of all records provided by DCMHs, April – June 2007



1 99 patients also seen during January - March 2007

29. In total, 296 of the 1,595 records submitted were excluded from the main analysis as they applied to duplicates and repeat attendances in the same episode of care, as civilian or non-UK military personnel not covered by this report, or because no information on the presenting complaint was provided.

30. A further 105 records had to be excluded as their fully anonymised format could not allow for verification or linkage with other information (such as demographic details or deployment status). As these records contained valid mental disorder data they have been included in the overall presentation of mental disorder groupings (**Table 4**), but excluded from the analyses of socio-demographic and military characteristics (**Table 2 and Table 3**) and of deployment on operations (**Table 5**).

31. Of the 206 records excluded because they were duplicates, 99 referred to patients who had already been seen in the previous quarter, January – March 2007. Although, 30 patients were found to have more than one attendance record during April – June, and would therefore have been picked up by the quality assurance programme, the remaining 69 patients would not have been. This suggests that DASA's previous report may also have included personnel seen prior to January 2007 who could not have been picked up as duplicates, as the quality assurance system built up around the pseudo-anonymisation process only operates from 1 January 2007. Hence there may have been a minor amount of over-reporting in the previous report in this series.

32. This finding suggests a small number of patients seen between April and June 2007, who have been listed here as initial assessments, may have also been seen earlier, in 2006. Without access to verifiable individual record data for 2006, it is not possible to quantify this number. However, the findings here for those seen in both quarters suggest this number is likely to be small and unlikely to affect the overall findings.

33. The 81 records, excluded because of no recorded presenting complaint, were examined to verify whether their exclusion had introduced a deployment bias or not. Thirty-four (34) records (42%) were identified as having deployed to the Iraq/Afghanistan theatres of operation. This represents a similar proportion of personnel deployed as for the 1,194 records included in the analysis. (See paragraph 41 and **Table 5** below). Their exclusion from subsequent analysis is unlikely to have introduced a significant bias.

34. In summary, during the 3-month period April - June 2007, a total of 1,380 UK Service personnel are recorded as having been seen for assessment as new patients at the MOD's DCMHs and overseas satellites, representing a rate for the period of 7.0 per 1,000 strength[e]. Removing the 81 records received without presenting complaint information has left 1,299 for detailed analysis.

[e] Based on a combined strength of approximately 194,000 Regulars and 3,000 Mobilised Reservists in Service on 1 May 2007.

Main analysis

35. **Table 2** provides details of the key socio-demographic and military characteristics of the 1,299 records available for detailed analysis. 996 patients were assessed with a mental disorder. No mental disorder was recorded at the initial assessment for the remaining 303 cases (see paragraph 20). Note that 81 records (6% of the 1,380 cases seen described above) have been excluded as information on the presenting complaint was not provided. The numbers and rates given below for those presenting with a mental disorder may therefore slightly undercount the true picture.

Table 2 - New attendances at the MOD's DCMHs: demographic and military characteristics, numbers and rates (per 1,000 strength), April – June 2007

			Patients assessed with a mental disorder			
Characteristic	**Strength[1]**	**All patients seen**	**Number[2]**	**Rate**	**95% confidence interval**	**Patients not assessed with a mental disorder**
All	197,400	1,299	996	5.0	(4.7 - 5.4)	303
Service						
Royal Navy	31,800	193	155	4.9	(4.1 - 5.6)	38
Royal Marines	7,600	30	22	2.9	(1.8 - 4.4)	8
Army	112,700	683	543	4.8	(4.4 - 5.2)	140
RAF	45,200	288	211	4.7	(4.0 - 5.3)	77
Gender						
Males	179,300	961	748	4.2	(3.9 - 4.5)	213
Females	18,100	233	183	10.1	(8.7 - 11.6)	50
Rank						
Officers	33,100	68	61	1.8	(1.4 - 2.3)	7
Other ranks	164,300	1,126	870	5.3	(4.9 - 5.6)	256
Deployment						
Iraq or Afghanistan theatres of operation[3]	98,500	539	432	4.4	(4.0 - 4.8)	107
Of which, Iraq	88,500	488	390	4.4	(4.0 - 4.8)	98
Of which, Afghanistan[3]	23,400	102	83	3.5	(2.8 - 4.3)	19
Not deployed to Iraq or Afghanistan theatres of operation[3]	99,000	655	499	5.0	(4.6 - 5.5)	156
Demographic and military characteristics not known[4]		105	65			40

1. Strengths data rounded to the nearest 100 so subtotals may not sum to the total.
2. 81 records have been excluded for lack of assessment details.
3. Does not include personnel deployed to Afghanistan during the period January 2003 to October 2005.
4. Records supplied without identifiers (see paragraph 30).

36. **Table 2** shows that there were some statistically significant differences in the initial assessment rates between various sub-groups of the patients seen:

- During the 3-month period, April – June 2007, the Royal Navy, the Army, and the RAF had similar rates of mental disorder assessment at 4.9, 4.8 and 4.7 per 1,000 strength respectively, whereas the Royal Marines had a lower rate of 2.9 per 1,000 strength. The rate for the Royal Marines was statistically significantly lower than for the Army.
- Female personnel had a statistically significantly higher rate of mental disorder assessment at 10.1 per 1,000 strength (95%CI: 8.7-11.6, N=183) than male personnel, at 4.2 per 1,000 (95%CI: 3.9-4.5, N=748);
- The rate for the other ranks was statistically significantly higher than for officers: 5.3 per 1,000 (95%CI: 4.9-5.6, N=870) compared to 1.8 per 1,000 (95%CI: 1.4-2.3, N=61);

- There was no statistically significant difference in the overall rates for those identified as deployed to the Iraq/Afghanistan theatres of operation compared to those who were not identified as deployed there.

37. **Table 3** provides details of the new attendances at the MOD's DCMHs who were assessed with a mental disorder, for both the first and the second quarter of 2007[f].

Table 3 - New attendances at the MOD's DCMHs: comparison of demographic and military characteristics (per 1,000 strength), January 2007 – March 2007 and April – June 2007

	January - March 2007				April - June 2007			
	Patients assessed with a mental disorder							
Characteristic	Number[1]		Rate	95% confidence interval	Number[2]		Rate	95% confidence interval
All	1,158	(100)	5.8	(5.4 - 6.1)	996	(100)	5.0	(4.7 - 5.4)
Service								
Royal Navy	149	(13)	4.6	(3.9 - 5.4)	155	(16)	4.9	(4.1 - 5.6)
Royal Marines	22	(2)	2.8	(1.8 - 4.3)	22	(2)	2.9	(1.8 - 4.4)
Army	676	(58)	5.9	(5.5 - 6.4)	543	(55)	4.8	(4.4 - 5.2)
RAF	244	(21)	5.2	(4.6 - 5.9)	211	(21)	4.7	(4.0 - 5.3)
Gender								
Males	890	(77)	4.9	(4.6 - 5.2)	748	(75)	4.2	(3.9 - 4.5)
Females	201	(17)	11.0	(9.5 - 12.5)	183	(18)	10.1	(8.7 - 11.6)
Rank								
Officers	82	(7)	2.5	(1.9 - 3.0)	61	(6)	1.8	(1.4 - 2.3)
Other ranks	1,009	(87)	6.0	(5.7 - 6.4)	870	(87)	5.3	(4.9 - 5.6)
Deployment[3]								
Iraq/Afghanistan theatres of operation[4]	518	(45)	5.1	(4.7 - 5.6)	432	(43)	4.4	(4.0 - 4.8)
Of which, Iraq	480	(41)	5.3	(4.8 - 5.8)	390	(39)	4.4	(4.0 - 4.8)
Of which, Afghanistan[4]	93	(8)	3.9	(3.1 - 4.8)	83	(8)	3.5	(2.8 - 4.3)
Not deployed to Iraq or Afghanistan theatres of operation[4]	573	(49)	5.7	(5.3 - 6.2)	499	(50)	5.0	(4.6 - 5.5)
Demographic and military characteristics not known[5]	67	(6)			65	(7)		

1. *156 records have been excluded for lack of assessment details.*
2. *81 records have been excluded for lack of assessment details.*
3. *Deployment data updated for January - March 2007 since first report (see paragraph 25).*
4. *Does not include personnel deployed to Afghanistan during the period January 2003 to October 2005.*
5. *Records supplied without identifiers (see paragraph 30).*

38. Overall, there was a 14 per cent decline in the number of patients assessed with a mental disorder during April to June, compared to January to March 2007 (996 compared to 1,158). The breakdown of the rates for each sub-grouping shown appear however to be largely consistent between the two periods. The decline is probably accounted for by a combination of factors including:

- A 1.5% fall in the number of regular personnel in the UK Armed Forces (approximately 3,000 less in May 2007 than in February 2007);
- The data for January to March 2007 may contain a small overcount of records of personnel also seen in 2006 (see paragraphs 31 and 32);

[f] The number of personnel seen at DCMHs during January – March 2007 who had deployed to Operation TELIC have been updated since the previous report (see paragraph 26).

- Roulements to Iraq and Afghanistan have mostly occurred during March/April and September/October. It is not known if this has had a greater impact on the data for the first quarter than for the second. The reasons for this would require further investigation;
- Possible seasonal variations.

39. **Table 4** provides details of the types of presenting complaints, by ICD-10 grouping, for the 1,299 patients where information was provided and compares with the data for the previous quarter.

Table 4 - Initial mental disorder assessments: ICD-10 grouping, numbers and rates (per 1,000 strength), January – March 2007 and April – June 2007

	January - March 2007			April - June 2007		
ICD-10 description	**Patients seen[1]**	**Rate**	**95% confidence interval**	**Patients seen[2]**	**Rate**	**95% confidence interval**
All patients where data on presenting complaint was provided	1,495			1,299		
All patients assessed with a mental disorder	1,158	5.8	(5.4 - 6.1)	996	5.0	(4.7 - 5.3)
Psychoactive substance use	101	0.5	(0.4 - 0.6)	121	0.6	(0.5 - 0.7)
of which disorders due to use of alcohol[3]	- -	- -	- -	115	0.6	(0.5 - 0.7)
Mood disorders	264	1.3	(1.2 - 1.5)	241	1.2	(1.1 - 1.4)
of which Depressive episode	208	1.0	(0.9 - 1.2)	207	1.0	(0.9 - 1.2)
Neurotic disorders	712	3.5	(3.3 - 3.8)	580	2.9	(2.7 - 3.2)
of which PTSD	55	0.3	(0.2 - 0.3)	38	0.2	(0.1 - 0.2)
of which Adjustment disorders	399	2.0	(1.8 - 2.2)	365	1.8	(1.7 - 2.0)
Other mental and behavioural disorders	81	0.4	(0.3 - 0.5)	54	0.3	(0.2 - 0.3)
No mental disorder	337			303		

1. 156 records have been excluded for lack of assessment details.
2. 81 records have been excluded for lack of assessment details.
3. Specific data not available for disorders due to use of alcohol during January - March 2007.

40. During the 3-month period April-June 2007, 996 patients were assessed as having a mental disorder, representing an overall rate for new cases of mental disorder of 5.0 per 1,000 strength. 303 patients were assessed as not having a mental disorder (see paragraph 20). Rates for specific diagnostic groupings were similar for the patients seen in April – June 2007 as they were for those seen during January – March 2007, with the exception of the Neurotic disorders.

41. **Table 5** provides details of the types of mental disorder by the patients' past deployment on recent operations in the Iraq/Afghanistan theatres. The rate ratios presented provide a comparison of cases seen between personnel identified as having deployed and those who have not been identified as having deployed to the region.

Table 5 - Initial mental disorder assessments: ICD-10 groupings by deployment to the Middle East, 1 April – 30 June 2007

		Deployment - Theatres of operation										
		Iraq or Afghanistan[1]			Iraq			Afghanistan[1]			Neither Iraq nor Afghanistan	Not known[2]
ICD-10 description	All patients seen	Patients seen[3]	Rate ratio[4]	95% confidence interval	Patients seen[3]	Rate ratio[4]	95% confidence interval	Patients seen[3]	Rate ratio[4]	95% confidence interval	Patients seen	Patients seen
All patients where data on presenting complaint was provided[5]	**1,299**	**539**			**488**			**102**			**655**	**105**
All patients assessed with a mental disorder	**996**	**432**	0.9	(0.8 - 1.0)	**390**	0.9	(0.8 - 1.0)	**83**	0.7	(0.6 - 0.9)	**499**	**65**
Psychoactive substance use	121	58	1.0	(0.7 - 1.5)	54	1.1	(0.7 - 1.6)	11	0.8	(0.4 - 1.6)	56	7
of which disorders due to use of alcohol	115	54	1.0	(0.7 - 1.5)	50	1.0	(0.7 - 1.5)	11	0.9	(0.5 - 1.6)	54	7
Mood disorders	241	94	0.7	(0.5 - 0.9)	85	0.7	(0.5 - 0.9)	16	0.5	(0.3 - 0.8)	136	11
of which Depressive episode	207	81	0.7	(0.5 - 0.9)	74	0.7	(0.5 - 1.0)	14	0.5	(0.3 - 0.9)	116	10
Neurotic disorders	580	266	1.0	(0.8 - 1.1)	237	1.0	(0.8 - 1.1)	54	0.8	(0.6 - 1.1)	277	37
of which PTSD	38	26	3.7	(1.6 - 8.6)	23	3.7	(1.6 - 8.6)	6	3.6	(1.2 - 10.8)	7	5
of which Adjustment disorders	365	167	1.0	(0.8 - 1.2)	150	1.0	(0.8 - 1.2)	35	0.8	(0.6 - 1.2)	176	22
Other mental and behavioural disorders	54	14	0.5	(0.2 - 0.9)	14	0.5	(0.3 - 1.0)	2	0.3	(0.1 - 1.2)	30	10
No mental disorder	303	107			98			19			156	40

1. *Does not include personnel deployed to Afghanistan during the period January 2003 to October 2005.*
2. *Records supplied without identifiers (see paragraph 30).*
3. *Some patients had deployed to both Iraq and Afghanistan; 41 of those assessed with a mental disorder who had deployed to at least one of these theatres.*
4. *Rate ratio compares personnel identified as deployed to these theatres of operation with those not identified as deployed to either theatre of operation.*
5. *Excludes 81 records where data on presenting complaint was not provided.*

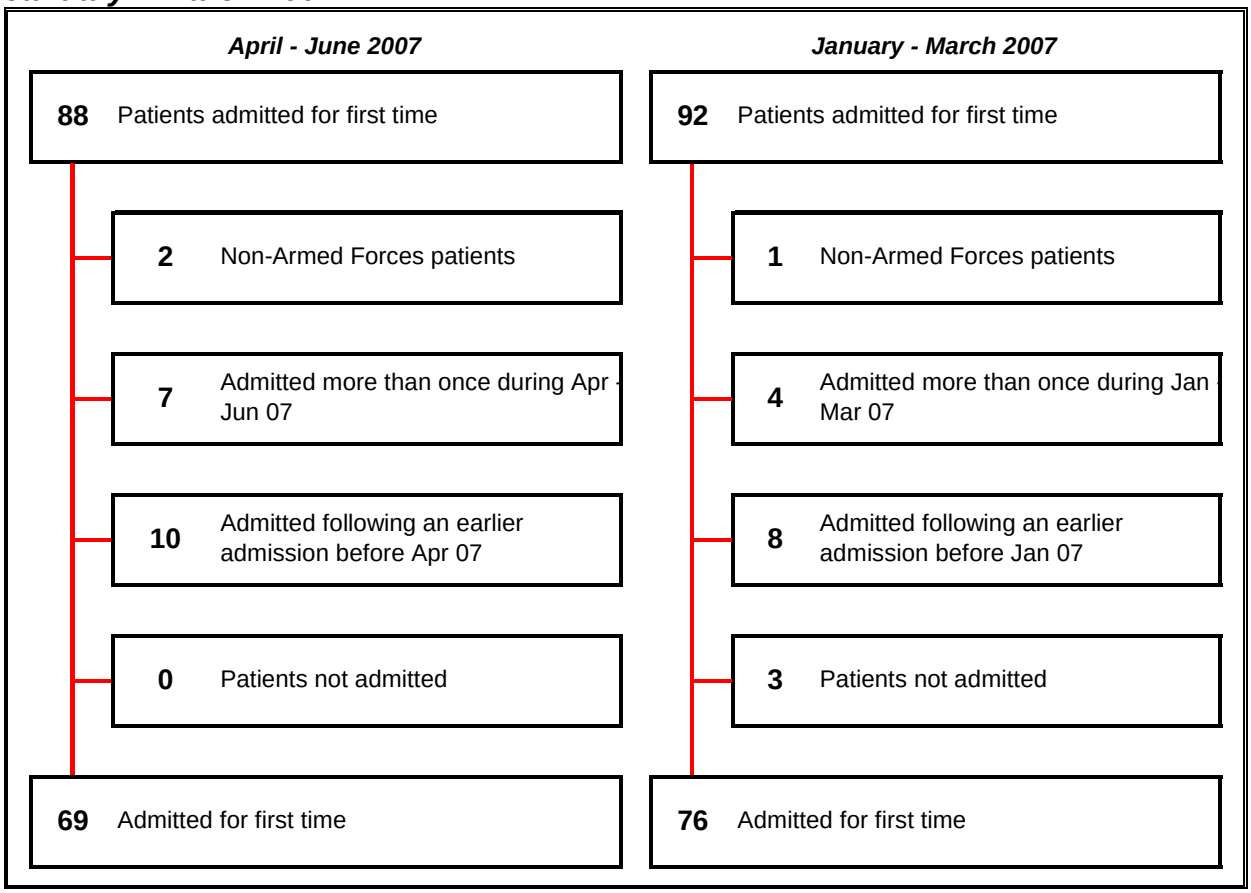
42. Of the 996 patients initially assessed during April - June 2007 as having a mental disorder, 432 were identified as having deployed recently in the Iraq/Afghanistan theatres of operation, of which 390 to Iraq, 83 to Afghanistan, and 41 to both. 499 were not identified as having deployed to these operational theatres.

43. **Table 5** shows that, during the 3-month period April – June 2007, there were no statistically significant differences in the rates of overall mental disorder, or of the major mental disorder groupings, between those deployed to recent operations in the Iraq/Afghanistan theatres and those not identified as having deployed there, with one noticeable exception. For PTSD, there was a statistically significantly higher rate among those deployed to the Iraq/Afghanistan theatres of operation compared with those not deployed there: the rate ratio was 3.7 (95%CI 1.6-8.6). However, although personnel who had deployed to the Iraq/Afghanistan theatres of operation were at nearly a four-fold increased risk for PTSD compared to those who had not, PTSD has remained a rare condition. The numbers involved were low, with 26 cases seen amongst those identified as having deployed, and 7 among those not identified as having deployed. These findings are consistent with those in the previous report for the quarter January – March 2007.

In-patient admissions to the MOD's contractor

44. **Figure 2** describes the findings of the quality assurance process for patients admitted to the MOD's contractor for in-patient psychiatric care during April – June 2007, and to a recent download of the earlier data published for January – March 2007. This report includes revised figures for admissions to the in-patient contractor during January – March 2007, following confirmation that 9 of the 85 patients originally reported, had been admitted previously.

Figure 2: Admissions to the MOD's in-patient contractor, April – June 2007 and January – March 2007



45. **Table 6** provides details for patients admitted to the MOD's contractor for in-patient care for the first time during the 3-month period April – June 2007, by sociodemographic and military characteristics, and provides a comparison with revised data for the previously published data for January – March 2007.

Table 6 - New attendances at MOD's in-patient contractor: comparison of demographic and military characteristics, numbers and rates (per 1,000 strength), January 2007 - March 2007 and April – June 2007

	January - March 2007			April - June 2007		
	Patients assessed with a mental disorder					
Characteristic	Number	Rate	95% confidence interval	Number	Rate	95% confidence interval
All	76	0.4	(0.3 - 0.5)	69	0.3	(0.3 - 0.4)
Service						
Naval Service[1]	16	0.4	(0.2 - 0.6)	11	0.3	(0.1 - 0.5)
Army	51	0.4	(0.3 - 0.6)	45	0.4	(0.3 - 0.5)
RAF	9	0.2	(0.1 - 0.4)	13	0.3	(0.2 - 0.5)
Gender						
Males	67	0.4	(0.3 - 0.5)	57	0.3	(0.2 - 0.4)
Females	9	0.5	(0.2 - 0.9)	12	0.7	(0.3 - 1.2)
Rank						
Officers	4	0.1	(0.0 - 0.3)	6	0.2	(0.1 - 0.4)
Other ranks	72	0.4	(0.3 - 0.5)	63	0.4	(0.3 - 0.5)
Deployment[2]						
Iraq/Afghanistan theatres of operation[3]	38	0.4	(0.3 - 0.5)	31	0.3	(0.2 - 0.4)
Of which, Iraq	38	0.4	(0.3 - 0.6)	30	0.3	(0.2 - 0.5)
Of which, Afghanistan[3]	6	0.3	(0.1 - 0.6)	8	0.3	(0.1 - 0.7)
Not deployed to Iraq or Afghanistan theatres of operation[3]	38	0.4	(0.3 - 0.5)	38	0.4	(0.3 - 0.5)

1. Royal Navy and Royal Marines combined to avoid disclosure.

2. Deployment data updated for January - March 2007 since first report (see paragraph 25).

3. Does not include personnel deployed to Afghanistan during the period January 2003 to October 2005.

46 During the 3-month period April - June 2007, 69 patients were admitted for the first time to the in-patient contractor, representing an admission rate of 0.3 per 1,000 strength. This represents about 5% of the referrals to the DCMHs. Forty-four (44) of these patients had been seen for the first time at a DCMH between January – June 2007. There was no statistically significant difference in the admission rates of those deployed to the Iraq/Afghanistan theatres of operation and those who had not been deployed.

47. There are several possible reasons why the remaining 25 patients were admitted to the in-patient contractor without our records showing that they had been seen at a DCMH during the 6 month period, January – June 2007. The two most likely are:

- They may have been seen at a DCMH before 2007, and hence would not have been captured by the new system;
- In emergency situations, General Practitioners can admit patients directly to the in-patient contractor, whilst informing DCMHs by telephone.

Conclusions

48. This report is the second in a new series providing information on the overall burden of mental disorder among UK Armed Forces personnel under the care of the Ministry of Defence's (MOD) Departments of Community Mental Health (DCMHs). The data are broken down into several broad categories of mental disorder, with Disorders due to alcohol use, Depressive episodes, Post-traumatic stress disorder (PTSD) and Adjustment disorders singled out, as these conditions among Service personnel have attracted particular public interest in recent years. Some details on key socio-demographic factors, on the single Services and on rank are also given. The report also compares this burden for those who had been deployed to recent operations in the Iraq/Afghanistan theatres of operation (Iraq since 2003, and Afghanistan 2001-2002 and since October 2005) with those who have not been deployed to these theatres of operation[g].

49. Overall, there was a 14 per cent decline in the number of patients assessed with a mental disorder during April to June, compared to January to March 2007 (996 compared to 1,158). As the breakdown of the rates for each sub-grouping shown in **Table 3** appear to be largely consistent between the two periods, there does not appear to have been a new pattern of the psychiatric morbidity suffered by Service personnel. The decline may be accounted for by a combination of factors including:

- A 1.5% fall in the number of regular personnel in the UK Armed Forces (approximately 3,000 less in May 2007 than in February 2007);
- A small overcount of records for January to March 2007, as some patients, seen during this period, may also have attended a DCMH before the new system of validation was in place through the pseudo-anonymisation procedures outlined in the chapter on **Data, definitions, and methods**. These patients would not normally be included if that information were available;
- Several factors influence levels of psychiatric morbidity, including redefined expectations and better coping strategies. These cannot be explored and quantified until further data have been collected.
- The roulements to Iraq and Afghanistan have mostly occurred during April and October. It is not known if this would has had a greater impact on the data for the first quarter (starting in January) than for the second (starting in April). Further data for the following two quarters may shed some light on this;
- Possible seasonal variations that DASA will only be able to begin assessing when a full year's data are available for analysis.

50. The findings on the socio-demographic breakdowns of those assessed with a mental disorder and on deployment to Iraq and/or Afghanistan are consistent with those presented in the first report for January – March 2007:

- Females had statistically significantly higher rates of disorder than males;
- Lower ranks had statistically significantly higher rates than officers;
- Royal Marines had statistically significantly lower rates than Army personnel;

[g] Although DASA do not have individual records of deployment to Afghanistan between January 2003 and October 2005, the impact on the findings in this report are thought to be minimal, as only small numbers of personnel were deployed during this period.

- Deployment to the Iraq/Afghanistan theatres of operation has not had an effect on overall psychiatric morbidity;
- Personnel who had deployed were at nearly a four-fold increased risk of PTSD (three-fold for January - March 2007) compared to those not identified as having deployed. However, PTSD has remained a rare condition, affecting 26 and 7 cases respectively.

51. The previous report highlighted the possibility of an alternative explanation to deployment itself for the increased number of cases of PTSD seen amongst those identified as deployed to recent operations in the Iraq/Afghanistan theatres of operation. The finding is also consistent with GPs in primary care adopting a lower threshold for onward referral to DCMHs, when they are aware that their patient has returned home from Iraq or Afghanistan and is presenting with symptoms consistent with PTSD.

52. Data provided by the MOD's in-patient contractor have shown that in-patient admissions are running at around 5 per cent of the number attending DCMH outpatient care. Although the breakdown of these numbers by the major socio-demographic factors and by deployment appear to be consistent with corresponding findings for the DCMH attendances, the numbers are low and it is not currently possible to detect statistically significant differences in the admission rates by Service, by gender, by rank, or by deployment.

53. Interpretation of these results continues to require caution. The findings do not cover the full picture of all mental disorder in the UK Armed Forces. They are based solely on cases seen at DCMHs and in-patients admitted to facilities run by the MOD's in-patient contractor. Many personnel may have been seen in Primary care, who did not require, or who did not wish, onward referral to the DCMHs. Some may have felt a stigma attached to their condition which inhibited them from seeking help from a DCMH, or any other form of care. It is also possible that the manner in which Service personnel support each other, in close-knit units, through a strong culture of comradeship and bonding, may have served to minimise the number and severity of symptoms experienced by some cases. It is important therefore to view the results presented here alongside independent academic research, such as that conducted by the Kings Centre for Military Health Research, who collect subjective information on self-reported mental health, through the use of confidential surveys[h].

[h] Their findings are published in the peer-reviewed medical literature and are freely available in the public domain.

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ANNEX A

Introduction

i. All major armed conflicts of the past hundred years and more have been associated with psychiatric casualties as well as with physical injury and disease[1,2]. Recent investigations into the health of US troops fighting in the current conflict in Iraq have reported elevated rates of psychological disorders, particularly post-traumatic stress disorder (PTSD)[3]. Independent academic research on UK troops deployed to the first phase of Op TELIC in South Eastern Iraq has also found elevated rates of common mental disorders amongst reservists, although not to the US levels[4]. In 2005, in order to monitor the situation among UK Service personnel and provide information to Parliament and the public, the UK Ministry of Defence (MOD) began collecting aggregated anonymised counts of mental disorders among Service personnel seen at the MOD's Departments of Community Mental Health (DCMHs), which could, in the professional opinion of Service and contracted psychiatrists, be attributed to deployment on Op TELIC.

ii. During 2006, DASA were asked to take over the collation of this information and ensure its accuracy and completeness. As this was not a research-based exercise, there was no formally agreed protocol for determining attribution. The conclusions reached could not be verified by reference to potential exposure data recorded in official records, particularly for conditions associated with traumatic events such as PTSD. There were added difficulties with determining attribution for other disorders not commonly associated with traumatic events, and with disorders that can be multi-causal. Furthermore, at a time of multiple deployments, it is becoming increasingly difficult to attribute specific mental disorders to a particular operation or to specific tours of duty. In short, the approach raised issues of potential ascertainment bias.

iii. Numbers alone can seldom tell the full story. A suitable baseline is needed for comparisons and a method of working out whether any differences found represent a real problem or not. Here, the focus was exclusively on personnel deployed on Op TELIC. The incidence of mental disorders among UK Service personnel in general was not known. Neither the MOD, nor the public, could establish whether the numbers seen were different from the usual burden of psychiatric morbidity seen among Service personnel.

iv. To resolve these difficulties, DASA proposed a more comprehensive and robust method of data recording, together with analyses based on statistical associations with deployment records, rather than attribution as such. The proposed analysis would examine the outcome of initial assessments made of the presenting complaints for all Service personnel seen at the DCMHs, regardless of deployment history. This approach had the added advantage that it would enable a wider range of questions to be addressed than had previously been envisaged, with less biased results.

v. Key to this proposal was the ability to verify individual records of mental disorder and to link with other datasets. This would enable DASA to enhance the information on potential risk factors. It would also minimise the data collection burden

on pressed medical staff. However, following the introduction of the Data Protection Act 1998, in 2000-2001 the GMC issued guidelines to the medical profession concerning the use of medical records for research and audit. MOD staff held several discussions about the preservation of confidentiality when using individual Service personnel patient records in statistical analyses and whether or not informed consent should be obtained beforehand. Several views and interpretations of legal opinion were put forward that would permit or prevent such analytical techniques. As no consensus emerged, DASA's Caldicott Guardian, a medical practitioner, proposed a system that would enable these techniques to be used for analysing our casualty data without breaching confidentiality. The General Medical Council (GMC) was consulted. A favourable response was received, enabling DASA to develop the system outlined later in the section on Ethical issues: pseudo-anonymisation (see paragraph 30).

Data, Definitions and Methods

The MOD's DCMHs

vi. Recognising the seriousness of mental health issues for Service personnel, the MOD reconfigured their mental health services in 2004 in line with best practice to provide community-based mental healthcare. Fifteen military DCMHs were established across the UK, with satellite centres in Germany and Cyprus, to provide an out-patient service by Community Mental Health Teams to all Service personnel within their catchment area. The teams are staffed by psychiatrists and mental health nurses, with access to clinical psychologists and mental health social health social workers.

vii. Referrals are made by the patient's general practitioner (GP). The teams will see patients at their unit medical centre and, with the patients' permission, aim to engage with GPs and the chain of command to help manage any mental disorders identified. They have particular expertise in treating mental health problems in general, and psychological injury in particular, and are able to provide a wide range of treatments as appropriate. GPs may also refer a patient to a DCMH for specialist occupational mental health opinion, regarding suitability to undertake particular duties for instance, even if they could otherwise manage the treatment.

viii. DCMH staff have been located close to primary care staff at unit medical centres in recognition of the unique occupational stressors of Service life and to facilitate access to specialist mental healthcare. This may have also encouraged referral at a lower threshold than would be the case in civilian practice. The patient casemix and the severity of presenting conditions are therefore likely to differ from what is usually seen in NHS facilities, making direct comparisons with the general population unreliable.

Presenting complaints and psychiatric assessments at the DCMHs

ix. Following a successful pilot undertaken in December 2006, DASA established a monthly system for receiving individual records of first appointments for all Service personnel seen at the DCMHs. From 1 January 2007, DCMH staff were asked to record their initial psychiatric assessment in the broad mental disorder groupings described at paragraph 22 below, based on the presenting complaints, for all patients during their first appointment. This information was provisional and should not be confused with the final diagnosis which might be made for each patient. Final diagnoses may differ from the initial assessment, particularly in the case of patients who do not present during their first appointment all the symptoms, signs or clinical history on which the psychiatrist may base their diagnosis. As this may only emerge some time after the first appointment, and given the need for rapid reporting of findings, confirmed diagnostic information is not being collected centrally. Records sent without a recorded presenting complaint have been excluded from the analyses in this report (see also paragraph 24).

x. The data captured cover all regular and mobilised reservist personnel from all three Services seen at a DCMH. Cases referred who did not attend have not been reported to DASA. Exceptionally, following a Ministerial decision in May 2006, reservists who have been demobilised since January 2003, following overseas operational deployment, are also eligible for treatment at a DCMH, under the

Reserves Mental Health Programme (RMHP), if they are assessed as having a mental health condition related to operational service. Personnel discharged from the regular Armed Forces are not eligible for treatment at the DCMHs. Information on their morbidity is therefore not available to the MOD. However, an important random sample of personnel serving in 2003 who may have subsequently been discharged were the subject of a major independent epidemiological research programme carried out by the Kings Centre for Military Health Research (KCMHR). Some of the findings from this research, including self-reported mental health outcomes, have already been published in the peer-reviewed medical literature, and further papers are at various stages of preparation[5].

xi. The psychiatric assessment data were categorised into three standard groupings of common mental disorders used by the World Health Organisation's International Statistical Classification of Diseases and Health-Related Disorders 10th edition (ICD-10), as shown in Table 1 below. In this first report, owing to the low numbers reported for patients with "Organic mental disorders" and those with "Schizophrenia, schizotypal and delusional disorders", and issues of potential disclosure of individual identities, the data have not been presented separately. They have been included in the category "Other mental and behavioural disorders". In addition, the DCMHs were asked to highlight three particular specific conditions of specific interest: "Depressive disorder", "Post-traumatic stress disorder", and "Adjustment disorder". The category "Psychoactive substance misuse" includes alcohol-related conditions as well as conditions related to illegal substance abuse. Note that individuals with post-traumatic stress symptoms, not fulfilling the full diagnostic criteria for PTSD, are included amongst the "Adjustment disorders". This category also includes individuals whose symptoms may be due to other life stresses, such as family problems.

Table 1: Mental and behavioural disorder standard groupings by ICD-10 code

ICD-10 Code	**ICD-10 Description**
F10 – F19	Psychoactive substance misuse*.
F30 – F39 (excluding F32)	Mood disorders excluding depressive episode.
F32	Depressive disorder
F40 – F48 (excluding F43.1 & F43.2)	Neurotic disorders excluding PTSD & adjustment disorders.
F43.1	PTSD
F43.2	Adjustment disorders
F00 – F09, F20 – F29, F50 – F69	Other mental and behavioural disorders

* includes alcohol-related mental disorders.

xii. Some patients have been recorded as having been assessed at a DCMH more than once since 1 January 2007. In some instances, no mental disorder was recorded at the first visit. For these cases we have taken the first disorder recorded at a subsequent visit as the "initial assessment".

xiii. It is important to note that a number of patients present to the DCMHs with symptoms that require the treatment skills of DCMH staff whilst not necessarily having a specific and identifiable mental disorder present. Often, this will concern issues related to the necessary adjustments Service personnel are required to make to circumstances raised by their deployment on operations overseas, and their return

to their home areas; for instance, concerning their relationships and families. The cut-off point between recording their presentation as a probable adjustment disorder or “no mental disorder” might sometimes be unclear and appear arbitrary. This report includes all cases stated as a mental disorder in the analyses below and those recorded as having no disorder.

In-patient psychiatric assessments

xiv. As the MOD does not maintain in-patient facilities for psychiatric care in the UK, patients presenting with mental disorders requiring in-patient care are referred to the MOD’s in-patient contractor. Data on admittances to the in-patient contractor during the period January - March 2007 are presented in this report. Numbers are low. To avoid risking disclosure of individual cases, the breakdown of specific conditions by deployment is not presented in this report.

Denominator data: strengths

xv. A denominator dataset to enable calculations of rates of the disorders of interest was compiled from the single Service strengths data held by DASA, for regular personnel in the Royal Navy, Royal Marines, Army, and the RAF, as at 1 February 2007. In addition, an estimate was made of reservists, comprising members of the Full Time Reserve Service (FTRS) and Mobilised Reservists (including mobilised members of the Volunteer Reserves, such as the Territorial Army).

Deployment data

xvi. DASA maintains a deployment database, derived from the single Service OPLOC systems, covering deployments on several Operations since November 2001. This includes deployments to the Iraq and Afghanistan theatres of operation: Iraq and the Gulf region (Kuwait and Qatar among others) since January 2003 (known as Op TELIC, and reported here collectively under the rubric “Iraq”) and Afghanistan since late 2001 (Op VERITAS and Op HERRICK). As there are problems with the data from each of these sources, particularly the dates of deployment and of return to the UK, it is not possible at present to work out, for each individual, the duration of the deployment. Equally, the data are unreliable for working out the number of separate tours of duty to the Iraq/Afghanistan theatres of operation that each individual may have been deployed on. This report is therefore not able to take these factors into account at present. These difficulties may be resolved for future reports, as each of these OPLOC systems is currently in the process of being replaced by the MOD’s new Joint Personnel Administration (JPA) system.

xvii. As there are time lags in the supply of the deployment data and DASA require some time to cleanse and validate the records, the periods covered by the deployment data and by the psychiatric data collected are not identical. The deployment data are valid up to 31 January 2007. Individual record deployment data for Afghanistan between 1 January 2003 and 14 October 2005 were not available in time for this report.

xviii. About 4 per cent of the records held in the deployment database have not been successfully validated against the “gold standard” personnel records held by the Armed Forces Pay and Personnel Agency. Several reasons may have led to this

situation: some may be MOD civilians, contractors, and personnel from other Government departments, some may be due to manual clerical data entry errors, and some personnel may not have passed through the system while entering Theatre for operational or security reasons. Therefore, to be accurate, this report compares those who have been identified as deployed with those who have not been identified as deployed. However, it is reassuring that the KCMHR research referred to earlier (see paragraph 19) on a large tri-Service sample of personnel deployed during the first phase of Op TELIC in 2003, who were identified from DASA's deployment database, reported a cohort error rate of less than 0.5 per cent.

Ethical issues and Pseudo-Anonymisation

xix. Patient confidentiality was preserved by a three-staged process. First, no clinical data other than the initial assessment mental disorder grouping, and additional information if the medical practitioner felt it was necessary, were sent to DASA. Second, the individual records were sent for verification to the DASA staff who prepare all the MOD's personnel records for centralised statistical analysis. Once validated, the individual identifiers were stripped and replaced by a pseudo-anonymiser, generated, effectively, by an automated sequential numbering system. The key to the system is that it recognises previous occurrences of a given Service number and allocates the same pseudo-anonymiser on each occasion. Third, it is only at this stage that the analytical staff in DASA had access to the clinical assessment data. In addition, staff had signed tailored confidentiality agreements, with strict sanctions in case of breaches. Rules, similar to those for the production of National Statistics, require that each output in this report is carefully scrutinised to ensure no individual identity has been inadvertently revealed. Finally, the pseudo-anonymisation process can only be reversed in exceptional circumstances controlled by the Caldicott Guardian under strict protocols.

xx. During the period covered by this report, January - March 2007, 14 UK DCMHs and the satellite centres abroad complied with the new system put in place. One DCMH was only able to send fully anonymised records for 132 patients. Whilst no link could be established between these records and the deployment database, we have been reliably informed that most of these patients were from the Army and from regiments that had not deployed to the Iraq/Afghanistan theatres of operation. The information based on these records appears under the rubric "Demographic characteristics not known" in Table 2 and 'Deployment status not known' in Table 4. Steps are being taken to address this issue for the future.

Statistical methods

Rates and rate ratios

xxi. This report presents the findings on mental disorders in a number of related ways. Table 2 provides information on all new cases seen during the 3-month period 1 January to 31 March 2007, with a breakdown by the main socio-demographic and military occupational characteristics. The data consist of both numbers and rates per 1,000 strength, ie the rate of all new cases seen. In addition, for each rate, we have calculated a statistical measure, known as the 95% confidence interval (CI), which provides an assessment of the difference between two different rates and whether they are "statistically significantly different". 95% CIs are explained briefly in paragraph 34 below.

xxii. Table 3 presents a breakdown of the main ICD-10 mental disorder groupings for personnel deployed to Iraq, personnel deployed to Afghanistan, those deployed on either of those two operations, and those deployed to neither. Rates have been provided for all cases. To assess the association of the specific deployments on the conditions listed, rate ratios have been calculated comparing the cases seen for those deployed to the operation shown with those who have not been deployed to any operation in the Iraq/Afghanistan theatres. 95% CIs have also been provided to assess the statistical significance of each finding.

95% confidence intervals

xxiii. 95% CIs have been calculated based on the Normal approximation where there were more than 30 cases, and on the Poisson distribution in other instances. They provide the range of values within which we expect to find the real value of the indicator under consideration in the study with a probability of 95%. Thus two rates, as in Table 2 say, where their 95% CIs do not overlap, are described as being "statistically significantly different". Similarly, a rate ratio, as in Table 4, above (or below) 1.00, whose 95% CI does not include 1.00, is described as being "statistically significant".