



Project Completion Report

East Timor Health Study

Deliverable Item 7 (Phase 2)

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Approvals

This document requires the following approvals:

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Signed approval forms are filed in the Management section of the project file.

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Abbreviations/Definitions

Abbreviation	Description
ADF	Australian Defence Force
ADHREC	Australian Defence Human Research Ethics Committee
AHA	Annual Health Assessment
AUDIT	Alcohol Use Disorder Identification Test
BMI	Body Mass Index (calculated as weight (kg) / [height (m)] ²)
CDU	Charles Darwin University
CI	Confidence Interval
CIDI	Composite International Diagnostic Interview
CMR	Central Medical Record
CMVH	Centre for Military and Veterans' Health
CPHE	Comprehensive Preventive Health Examination
CRUfAD	Clinical Research Unit for Anxiety and Depression
DCO	Defence Community Organisation
DHSD	Defence Health Services Division
DHSP	Deployment Health Surveillance Program
DMAC	Data Management and Analysis Centre
DSM-IV	Diagnostic and Statistical Manual Version 4
DVA	Department of Veterans' Affairs
DVA HREC	Department of Veterans' Affairs Human Research Ethics Committee
EM	East Timor
ESO	Ex-Service Organisation
InterFET	International Force in East Timor
K10	Kessler Psychological Distress Scale
MEC	Medical Employment Classification
NCSCCH	National Cancer Statistics Clearing House
NDI	National Death Index
NHMRC	National Health and Medical Research Council
OR	Odds Ratio
PCL-C	Post Traumatic Stress Disorder Check List - Civilian
PMB	Program Management Board
PMO	Program Management Office
POPS	Post Operational Psychological Screen
PRTG	Psychology Research and Technology Group
PTSD	Post Traumatic Stress Disorder
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy
RR	Relative Risk (ratio of risk of disease or death among the exposed to the risk among the unexposed)
RtAPS	Return to Australia Psychological Screen
SAC	Scientific Advisory Committee

Abbreviation	Description
SESAHA	Specialist Employment Stream Annual Health Assessment
SMR	Standardised Mortality Ratio ((ratio of number of deaths observed to number expected in a population with the same specific rates) x 100)
SOP	Standard Operating Procedure
SRT	Scientific Research Team
TSES-R	Traumatic Stress Exposure Scale Revised
UA	University of Adelaide
UMR	Unit Medical Record
UQ	University of Queensland
UQ BSSERC	University of Queensland Behavioural & Social Sciences Ethical Review Committee

Executive Summary

Introduction

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a series of studies that aim to research the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service overseas. It was conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).

Study aims

2. The aim of the East Timor Health Study was to conduct an investigation of the health status of a random sample of Australian Defence Force serving and ex-serving members who deployed to East Timor between June 1999 and May 2005 on Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE, relative to an appropriate comparison group who were ADF members at the time, but did not deploy on these operations.

3. The key research questions examined were:
- a. Do East Timor veterans have different rates of negative mental health outcomes relative to an ADF comparison group who did not deploy to East Timor?
 - b. Do East Timor veterans have different general health problems from an ADF comparison group who did not deploy to East Timor?
 - c. Do East Timor veterans have different health behaviours relative to an ADF comparison group who did not deploy to East Timor? For example, were there different rates of tobacco smoking and alcohol consumption?
 - d. What deployment issues and hazards were reported by East Timor veterans?
 - e. Do East Timor veterans have different rates of mortality or cancer from an ADF comparison group who did not deploy to East Timor?

4. The first four research questions are addressed in the current report. Additionally, deployments to East Timor varied greatly in their overall nature. At the most fundamental level some deployments were considered warlike and others non-warlike. Accordingly, an additional brief examination of the impact of early versus later deployments is included in this report.

5. The study is of retrospective, cross-sectional design with a comparison group matched across strata of age, gender, Service (Navy, Army and Air Force) and service type (regular or reserve). The CMVH self-report questionnaire data and the Defence Health and psychological screens were collected throughout 2008. The collection of the data was described in the East Timor Defence Owned Data Completion Report¹ and the East Timor Completion of Self-reported Data Collection Report².

6. This report is a Project Completion Report for internal Defence information. It is not intended to convey all study results and analysis is ongoing. With agreement from Joint Health Command we aim to provide an oral presentation of key findings. Further data analyses will be conducted to answer additional research questions

including combined analyses of data from the Near North studies and an examination of any associations between various exposures and particular symptom groupings. The aim is for study results to be disseminated in a timely manner through peer-reviewed journal publications so that they are publicly available. A summary of findings will be provided to participants and via media release to the general public in due course.

The study population and methods

7. A Nominal Roll of individuals who had deployed to East Timor between June 1999 and May 2005 as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE was compiled. There were 19710 identified East Timor veterans and these were frequency-matched to other ADF members who had not deployed to East Timor on the basis of sex, age group, Service and service type (comparison group n= 17501). Members of both the veteran and comparison groups may have deployed to other locations as well; details of other deployments are included in Table 1.4 and 1.5. The mortality and cancer incidence comparisons were based on the entire Nominal Roll and comparison group.
8. A random sample of 3999 individuals on the Nominal Roll and 2501 individuals from the comparison group were invited to complete a general health questionnaire, with the East Timor veterans also asked to complete a questionnaire specific to their deployment to East Timor. Consent was requested from respondents to link questionnaire data to Defence Health and Psychological screening records.
9. Response to the CMVH self-report health questionnaire was obtained from 43% of the living sample. Those who had died since deployment (29 deceased) are not included in this calculation. However, 23% of the living sample could not be located and contacted in the time available. The largest proportion of those who could not be located were ex-serving. When those who could not be located are excluded from the denominator an overall response rate of 55% was achieved.
10. The Psychology Research and Technology Group (PRTG) had 2304 (58%) Return to Australia Psychological Screens (RtAPS) available in their database. There were very few Post Operational Psychological Screens (POPS) available. Two hundred and eighty-two individuals who responded to the questionnaire consented to linkage of their self-report data with their psychological screening records and had an RtAPS containing measures used in this analysis.
11. Collection of Defence Health records from Unit Medical Records (UMRs) (or Central Medical Records (CMRs) if UMRs were not available) was intended for all 3999 East Timor veterans and the 2501 comparison group individuals selected to be part of the East Timor Health Study. However, early difficulties in obtaining the UMRs for serving personnel led to a reduction in the sample size to 25% of serving Army members' records and 50% of serving Navy members' records. The number of Air Force UMRs collected was not reduced.
12. Data were analysed using SAS 9.2., Stata 10.0 and SPSS v17. Throughout the report percentages are imported directly from analysis output and due to rounding, may not add to exactly 100%.

Study Findings

Do East Timor veterans have different rates of negative mental health outcomes relative to an ADF comparison group who did not deploy to East Timor?

13. Data from the CMVH self-report questionnaire and Defence Health and Psychological screening records were used to address this research question.

14. Data from the self report questionnaire revealed the proportion of respondents reporting in the highest distress category on the K10 and the PCL-C was slightly higher for the East Timor veterans, although this result was not statistically significant. The mean scores on both these measures of mental health was greater in the East Timor veterans relative to the comparisons.

15. Comparing matched outcomes of East Timor veterans from the CMVH self-report questionnaire with those from the Return to Australia Psychological Screens (RtAPS), conducted immediately post-deployment, both the K10 and the PCL-C showed increasing rates of distress on the self-report questionnaire. The difference in outcomes from the two sources, as measured by scores on the K10 and PCL-C, may be attributable to variety of underlying reasons including: variations in the timing of the data collections and development of symptoms over time; differences in the environment in which the data are collected; changes in operational tempo; influence of other deployments or intervening events.

Do East Timor veterans have different general health problems from an ADF comparison group who did not deploy to East Timor?

16. Data for this chapter were drawn solely from CMVH self-report data in the health questionnaire, which was completed by both East Timor veterans and the comparison group.

17. The percentage of respondents who perceived their general health to be 'very good' or 'excellent' was 38% in the East Timor veterans and 47% in the comparison group. Forty-one percent of veterans reported that their health was good, 18% that it was fair and 3% reported 'poor' general health. Similarly, 37% of the comparison group reported that their health was good, 15% reported fair health and 2% reported poor health. Over all, the mean rating of general health was significantly lower for the East Timor veterans compared with the comparison group ($p < .001$). The majority of East Timor veterans (61%) reported that their health was the same as one year ago, with 16% reporting improved health and 23% reporting worse health. These percentages were comparable to those in the comparison group ($p = 0.11$).

18. The most common symptoms reported by respondents were fatigue, sleeping difficulties and feeling unrefreshed after sleep, with approximately 60% of respondents recording these events. The prevalence of the top 15 symptoms was generally higher in East Timor veterans, and the odds of reporting the symptoms was significantly higher in 10 of the 15 symptoms presented. The mean total number of self-reported symptoms was approximately 15% higher for East Timor veterans ($p < 0.001$).

19. More detail is provided in Chapter 3

Do East Timor veterans have different health behaviours relative to an ADF comparison group who did not deploy to East Timor? For example, were there different rates of tobacco smoking and alcohol consumption?

20. Data on tobacco smoking and alcohol consumption was obtained from both CMVH self-report and Defence Health records. BMI data was sourced from Defence Health records only, where the most recently collected health assessments provided the data. Details on the collection of Defence Health data are available from the East Timor Defence Owned Data Completion Report¹.

21. The CMVH self-report data (2008) showed that East Timor veterans were more likely to report risky drinking behaviours (as measured by AUDIT) than the comparison group (OR 1.63, 95% CI (1.04, 2.57)). This finding was confirmed by the Defence Health data, with proportionally more East Timor veterans in the highest risk category for alcohol consumption (2%, n=20), compared with the comparison group (1%, n=4).

22. There were no differences in smoking behaviour between the study arms from either data source, although the reported level of smoking for both groups in the Defence Health data was around 36%, compared with less than 20% in the self-report data.

23. Defence Health records indicated 33% of East Timor veterans and 36% of the comparison group were in the healthy weight range of the BMI. The proportion with BMI greater than 25 did not differ significantly between veterans and the comparison group (OR 1.05, 95% CI (0.87, 1.27)).

What deployment issues and hazards were reported by East Timor veterans?

24. Data were drawn from the CMVH self-report Deployment questionnaire and from Defence Health records to address this question.

25. Analysis of vaccinations from the Defence Health records showed that approximately one third of individuals, for whom we were able to collect data, required four or more vaccinations in the three months prior to deployment. It is currently unclear whether any specific combination of vaccinations required for deployment to East Timor has a relationship to any particular health effects.

26. Most respondents used some form of insect repellent at least daily or weekly, and over half had their clothing and tent treated with pesticide. Ninety-four percent of respondents reported using some form of antimalarial medication, and 67% reported taking Primaquine on return to Australia. Most of these (98%) reported good compliance with the regimen. Very few (n = 16) reported a reaction to Primaquine.

27. Fifty-five percent of participants reported their health was the same at the time of the survey compared with their recollection of their general health, and 40% reported that it was worse now.

28. A wide variety of exposures to hazards on deployment were reported by East Timor veterans. Most respondents reported: being close to loud noises (81%); living

in an area recently treated with pesticides (80%); and being bitten by a variety of insects (79%).

29. The major stressors reported by East Timor veterans included risk of vehicle accidents (71%) and separation from family and friends (70%), but most felt that they had made a useful contribution to the local population (82%) and the military mission (95%).

Does deployment on early versus late operations (i.e. Warden vs Tanager) affect outcome measure of physical and mental health?

30. An initial comparison of differing effects depending upon the time of deployment to East Timor shows a consistent trend demonstrating that those who deployed during the first warlike operations have slightly worse physical (perceptions of general health and symptoms) and mental health (K10 psychological distress and PCL-C symptoms) outcomes in comparison with those who deployed later, including later deployments still classified as warlike.

31. It is apparent that the changing face of deployments, in addition to deployment location, may affect outcomes. It will be important to consider the nature of different operations within the same deployment location in further studies on the consequences of deployment.

Do East Timor veterans have different rates of mortality or cancer from an ADF comparison group who did not deploy to East Timor?

32. Both the Mortality Study and the Cancer Incidence Study (all 37211 personnel) compared the mortality/cancer rate for East Timor veterans with that of the comparison group and with the general Australian population.

33. The point estimate for the all-cause death rate in the East Timor veteran group was slightly higher than that observed in the comparison group; this difference was not significant (Hazard Ratio 1.18, 95% CI (0.80, 1.73)). ADF personnel who deployed to East Timor also had a slightly, but not significantly higher mortality rate from external causes than the comparison group (Hazard Ratio 1.41, 95% CI (0.83, 2.39)). East Timor veterans and the frequency-matched comparison group both had lower all-cause mortality rates than those observed in the general population of the same age (Standardised Mortality Ratios 43.7 and 35.1 respectively).

34. The overall cancer incidence rate in the East Timor veteran group was similar to that observed in the comparison group (Relative Rate 0.88, 95% CI (0.63, 1.23)). East Timor veterans and the frequency-matched comparison group both had similar overall cancer incidence rates to those observed in the general population of the same age (Standardised Incidence Ratios 106.8, 95% CI (84.6, 133.1) and 103.7, 95% CI (81.0, 130.8) respectively).

35. More detail can be found in the Mortality Study Report (Annex C) and the Cancer Incidence Study Report (Annex D).

Summary

36. A lower response rate was achieved for the East Timor Health Study than for either the Bougainville or Solomon Islands studies, although reasons for these differences are unclear. Longer follow-up times and additional alternative methods

for contacting, particularly ex-serving, members have the potential to increase response rates in future studies. The data collected to date offer many further opportunities to explore questions of interest to both the Defence and scientific communities. In particular, research is planned in the areas of the impact of multiple deployments, associations between specific exposures and particular health outcomes, and comparisons of health outcomes between the different Services and the Australian public.

37. It is clear that many participants have deployed to locations other than East Timor. Exposure measures relevant to these other deployments may need to be collected.

Chapter 1 – Introduction, Sample, Response

Background

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a research program that aims to assess the health and well-being of Australian Defence Force (ADF) veterans who have deployed on operations overseas. It was conducted by the Centre for Military and Veterans' Health (CMVH) during 2008 as part of the Deployment Health Surveillance Program (DHSP).
2. The East Timor Health Study includes data gathered from mortality and cancer incidence registries, a comprehensive self-reported health status questionnaire, a deployment experiences questionnaire, and Health records and Psychological screening information retained by the ADF. The East Timor Health Study is part of a health surveillance system which will provide comprehensive and longitudinal monitoring of ADF veterans to investigate any links between deployment and the subsequent development of adverse health effects.
3. This report presents data from the CMVH self-report questionnaire, Defence Health records and Defence Psychological screening records for the East Timor Health Study. The design component of the study presented here is a retrospective and cross-sectional design.

The East Timor Operations

4. East Timor is located in the eastern part of Timor, an island in the Indonesian archipelago that lies between the South China Sea and the Indian Ocean.
5. East Timor had been administered by Portugal until 1974 when civil war broke out between those who favoured independence and those who advocated integration with Indonesia³.
6. A “popular consultation” was organised to determine whether the East Timorese people accepted or rejected a special autonomy for East Timor within the unitary Republic of Indonesia. In June 1999 the United Nations Mission in East Timor (UNAMET) was established, which would oversee the transition period pending implementation of the decision of the East Timorese people⁴.
7. The proposed autonomy was rejected by a margin of 78% in favour of undertaking a process of transition towards independence. Following this result, pro-integration militias launched a campaign of violence, looting and arson throughout East Timor.
8. Following the outbreak of violence, the Indonesian Armed Forces and police began a drawdown from the territory, eventually leaving completely along with Indonesian administrative officials.
9. A unified multinational force (InterFET) was authorised under the command of Australia to restore peace and security in East Timor, to protect and support UNAMET in carrying out its tasks and, within force capabilities, to facilitate humanitarian assistance operations.
10. After newly independent East Timor swore in its first government, the United Nations Mission of Support in East Timor (UNMISET) was established to

provide assistance to core administrative structures critical to the viability and political stability of East Timor, to provide interim law enforcement and public security, and to contribute to the maintenance of external and internal security.

11. The East Timor Operations began in June 1999. It was anticipated that a two-phased operation may be required, with the first phase being an emergency evacuation of Australians and other nationals authorised by the Australian Government from East Timor. The second phase of initial operations was anticipated to involve reinforcing evacuation forces, in order to establish protected areas in East Timor until public safety was restored under a United Nations international force⁵.

12. The six Operations in East Timor spanned a period from June 1999 to May 2005, including a combination of 'warlike' and non-warlike' operations. Operations WARDEN, TANAGER and CITADEL were warlike, while Operations SPITFIRE and SPIRE were non-warlike. Operations FABER and CITADEL had both warlike and non-warlike periods. Chapter 6 contains a brief examination of differing impact on health depending upon the dates of deployment.

Main hazards and characteristics

13. There were a number of potential harms that ADF personnel were exposed to during the East Timor Operations. Physical harm could result from battle casualties, such as enemy action, fragmenting munitions, chemical and biological weapons, and fratricide. Non-battle casualties, such as exposure to asbestos⁶ and hazardous chemicals⁷, road safety⁸, and unsafe waste management processes⁹ could also result in physical harm.

14. The natural environment was also a potential threat, with harmful flora and fauna such as wild pigs, dogs (rabies) and mosquitoes, and known diseases such as malaria and dengue, which thrive in the hot, humid conditions of East Timor.

15. Other factors that may affect the health of personnel deployed to East Timor include psychological harm, such as post traumatic stress disorders¹⁰, and social harm, those aspects of deployment that prohibit personnel from participating in events considered usual practise during peacetime service. Events that can contribute to social harm include isolation from family and friends, inability to maintain supportive relations with partners/spouses, and inability to participate in cultural and sporting interests as normal.

Study Aims

16. The overall aim of the East Timor Health Study was to examine whether the health of the veterans of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL & SPIRE differs significantly from similar Defence Force personnel who were not deployed as part of these Operations. The specific research questions were:

- a. Do East Timor veterans have different rates of negative mental health outcomes relative to an ADF comparison group who did not deploy to East Timor?
- b. Do East Timor veterans have different general health problems from an ADF comparison group who did not deploy to East Timor?

- c. Do East Timor veterans have different health behaviours relative to an ADF comparison group who did not deploy to East Timor? For example, were there different rates of tobacco smoking and alcohol consumption?
 - d. What deployment issues and hazards were reported by East Timor veterans?
 - e. Do East Timor veterans have different rates of mortality or cancer from an ADF comparison group who did not deploy to East Timor?
17. The examination of the final research question was completed in 2007. Consequently, only a summary of this study is included in the final report. More information is provided in the East Timor Mortality Study Report (Annex C) and the East Timor Cancer Incidence Study Report (Annex D).
18. A secondary aim of the research was to evaluate and comment on access to, completeness and quality of the various sources of data for the East Timor Health Study, and more generally for the purposes of epidemiological research and long-term health surveillance of Defence personnel.
19. These data sources include not only self-reported data, but also Defence Health records (Unit Medical Records) and deployment-related psychological screening data from the Psychology Research and Technology Group (PRTG) within Defence. These records are collected for clinical purposes and some components are entered into internal Defence databases maintained by various sections within Defence for internal purposes.

Ethics Approvals

20. All study protocols were approved by the Australian Defence Human Research Ethics Committee (# 475/07), the University of Queensland Behavioural and Social Sciences Ethical Review Committee (# 2007000231) and the Department of Veterans' Affairs Human Research Ethics Committee (# E07/007).

Methods

Sampling frame

21. Defence personnel were eligible for inclusion on the East Timor Health Study Nominal Roll if they deployed to East Timor as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL or SPIRE (the "East Timor Operations"), conducted between 19 June 1999 and 13 May 2005.
22. Individuals were eligible for inclusion in the East Timor Health Study comparison group if they had not deployed as part of the East Timor Operations, were not included on the East Timor Health Study Nominal Roll, and were a member of a Defence Service in the period 19 June 1999 and 13 May 2005. Comparison individuals were randomly selected from the PMKeyS database, and frequency-matched to the veteran group on Service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986).
23. The East Timor Health Study Nominal Roll included 19710 individuals, and the comparison group 17501 individuals.

24. Three thousand nine hundred and ninety-nine individuals from the East Timor Health Study Nominal Roll and 2501 comparison were randomly selected for inclusion in the East Timor Health Study.

Data collection

CMVH Self-report

25. The CMVH self-report data component of the study involved the completion of a web-based or hard copy questionnaire by individuals in the study sample. A two-stage approach for contacting potential participants and obtaining self-reported study data was used. The first contact (the invitation package – Appendix 1) was made via email where an address was available or otherwise by posted hard copy. The invitation provided an introduction to the study, informed individuals about the study and invited them to participate, and requested information on preferred mode of completion of the questionnaire (mail or internet) and deployment history. The second stage involved provision of the questionnaire to participants via their indicated preferred mode of delivery.

26. All individuals (excluding those known to be deceased) were asked to complete a general health questionnaire (Appendix 2). The health questionnaire asked various questions about their current health status. Those who had deployed to East Timor as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL or SPIRE were additionally asked to complete a questionnaire specific to these deployments (Appendix 3). Reminder cards/emails were sent to individuals who had not responded to the invitation within a specified time frame. Follow-up calls were then made to individuals who had not yet responded, or to those who had returned their consent form but had not yet completed the questionnaire. Enhanced contact tracing was also conducted by the Department of Veterans' Affairs where individuals were unable to be contacted by CMVH.

27. In the East Timor Health Study consent form, participants were asked to provide separate consent to several items :

- a. Completing the Defence Health Study Questionnaire;
- b. Being contacted periodically for follow-up studies;
- c. Allowing linkage of information contained in their Defence Health records to questionnaire data provided in the study;
- d. Allowing linkage of information contained in their Defence Psychological screening records to questionnaire data provided in the study.

Defence Health records

28. The Defence Health data component of the study involved the collection of information from Health and Psychological screening records owned by the Department of Defence. Selected health assessment documents — the Annual Health Assessment (AHA) (Annex H), Comprehensive Preventive Health Examination (CPHE) (Annex I), Pre-Deployment Medical Checklist (Annex K), the Post-Deployment Health Screen (Annex L) and the vaccination record (Yellow book) (Annex N) — were collected from the Unit Medical Record (UMR) (or the Central Medical Record (CMR) if the UMR was not available) for individuals in the East Timor Health Study. All records were de-identified before the information was captured and analysed. No clinical notes were collected from the health records. The

most recent AHA and the most recent CPHE were collected as this increased the likelihood that measures were taken after exposure and provided equivalent times of collection for the veteran and comparison groups. Further, the most recently available AHA and CPHE were extracted from the Health files. A detailed description of the methods used and the data extracted is available in the East Timor Defence Owned Data Completion Report¹.

Defence Psychological screening data

29. Defence operation-related Psychological screening data included data from the Return to Australia Psychological Screen (RtAPS), completed on leaving theatre, and the Post Operational Psychological Screen (POPS), completed six months after return from theatre. These were sourced from the electronic files managed by the Psychology Research and Technology Group (PRTG), who are the custodians of the electronic database containing the RtAPS and POPS data. PRTG provided the data of those participants who had consented to this process and had a relevant screen recorded in the database. Additionally, PRTG conducted analyses of relevant data for all members of the study group.

Data analysis

30. Data were analysed using SAS 9.2, Stata 10.0 and SPSS17. Due to rounding percentages may not add to exactly 100%. Throughout the report specific analyses have been adjusted for age, gender, Service (Navy, Army or Air Force) and rank (Officer or enlisted) to account for differences in these demographics between the veteran and comparison group when assessing the effect of the East Timor deployment. The demographic variables adjusted for were chosen *a priori*. We chose not to adjust for service status (regular or reserve) as this is a variable that changes over time – as people leave the regular Defence Force and join the reserves. It was not clear which time point for service status would be most appropriate and accordingly it was not included.

Communications Strategy

31. A communication and media strategy was designed and implemented prior to contact with potential study participants and at various times during the recruitment and data collection process. The aim of this strategy was to alert individuals to the study to increase response rates. The communication and media strategy involved advertisements and editorials in various Defence, ex-Serving and non-Defence publications (a list is provided at Appendix 4) and media releases.

Response

32. Table 1.1 provides information on overall data collection; that is, the denominators used in various parts of the report. For Defence Health data some information, for example the measures of alcohol consumption are only available on the CPHE. Other information analysed is available from both the AHA and the CPHE, for example BMI measurements. Similarly, those in the comparison group did not complete a deployment questionnaire as, by definition, they had not deployed to East Timor.

Table 1.1: Summary of denominators used in the report

		Veterans	Comparisons
		<i>n</i>	<i>n</i>
<i>Total Sample</i>		3999	2501
<i>Defence Health data*</i>	<i>AHA or CPHE</i>	1362	884
	<i>CPHE</i>	1265	826
<i>Defence Psychology data</i>	<i>RtAPS</i>	2304	n/a
	<i>POPS</i>	1644	n/a
<i>Self-report data</i>	<i>Health and Demographics questionnaire</i>	1833	951
	<i>Deployment questionnaire</i>	1593	n/a

*3075 medical record paper files were accessed for this study (one per person)

CMVH Self-report

33. CMVH Self-report data (a Health and Demographics questionnaire and/or Deployment questionnaire) was collected from 43% (n=2784) of the study sample. Table 1.2 details the characteristics of respondents and non-respondents.

Table 1.2: Characteristics of questionnaire respondents and non-respondents at the time of the study

Characteristic		Respondents n (%)	Non respondents n (%)	p-value ¹
Study arm	Veteran	1833 (66)	2166 (58)	<.001
	Comparison	951 (34)	1550 (42)	
Sex	Male	2457 (88)	3416 (92)	<.001
	Female	327 (12)	300 (8)	
Age group	20-29	477 (17)	1123 (30)	<.001
	30-39	1261 (45)	1665 (45)	
	40+	1046 (38)	928 (25)	
Service	Navy	373 (13)	409 (11)	<.001
	Army	2126 (76)	2995 (81)	
	RAAF	285 (10)	312 (8)	
Employee status ²	Active	2464 (89)	2535 (68)	<.001
	Ex-serving	320 (11)	1181 (32)	
Service type ²	Regular/Permanent	1882 (68)	2491 (68)	0.580
	Reserve	877 (32)	1196 (32)	
Rank ²	Officer	756 (27)	697 (19)	<.001
	Enlisted	2028 (73)	3017 (81)	

¹Chi-square test for association

²These data were not obtained for all the participants

NB – In tables throughout the report percentages may not total 100% as a result of rounding to whole numbers

34. A significantly higher percentage of questionnaire respondents were in the veteran arm compared with the comparison arm, possibly reflecting increased motivation or willingness to participate by those who had deployed to East Timor. A lower response rate by controls is not an unexpected finding in case-control studies. The significance level of this difference at least in part reflects the magnitude of the study numbers, and the consequential increase of power.

35. As in the Solomon Islands Health Study, response also differed significantly according to sex (higher response by women), age group (higher response by older individuals), Service (lower response by Army), employee status (higher by currently active members than ex-serving), and rank (higher by officers). Service type was not associated with response.

Table 1.3: Characteristics of veteran and comparison group questionnaire respondents

<i>Characteristic</i>		<i>Veterans n (%)</i>	<i>Comparisons n (%)</i>	<i>p-value¹</i>
<i>Sex</i>	Male	1624 (89)	833 (88)	0.434
	Female	209 (11)	118 (12)	
<i>Age group</i>	20-29	253 (14)	224 (24)	<.001
	30-39	917 (50)	344 (36)	
	40+	663 (36)	383 (40)	
<i>Service</i>	Navy	239 (13)	134 (14)	0.396
	Army	1414 (77)	712 (75)	
	RAAF	180 (10)	105 (11)	
<i>Employee status</i>	Active	1614 (88)	850 (89)	0.298
	Ex-serving	219 (12)	101 (11)	
<i>Service type²</i>	Regular/Permanent	1197 (66)	685 (72)	<.001
	Reserve	615 (34)	262 (28)	
<i>Rank</i>	Officer	472 (26)	284 (30)	0.021
	Enlisted	1361 (74)	667 (70)	

¹Chi-square test for association

²These data were not obtained for all the participants

36. There were no significant differences between the responding veteran and comparison group members in sex, Service or employee status. Responding East Timor veterans were significantly different in age structure (higher percentage aged 30-39), more likely to be reserve versus regular members, with a slightly lower percentage of enlisted individuals than in the comparison group.

Table 1.4: Self-reported number of deployments since 1997

<i>Number of deployments</i>	<i>Veterans n (%)</i>	<i>Comparisons n (%)</i>
0	7 (0)	360 (48)
1	770 (54)	251 (33)
2	416 (29)	80 (11)
3	156 (11)	27 (4)
4	42 (3)	5 (1)
5 or more	25 (2)	32 (4)
Not specified	287	120

37. As part of the consent process participants were asked to complete a table detailing the locations of any of their deployments. This included locations such as Afghanistan, Iraq, East Timor, Cambodia, and Vietnam. Not included in the list were

deployments such as Operation Sumatra Assist or Operation Pakistan Assist, although there was opportunity for participants to list these deployment in the ‘other, please specify’ section.

38. Table 1.4 shows a rudimentary presentation of the number of deployments East Timor veterans and the comparison group had completed since 1997. Not included in this table are deployments listed in the ‘other’ section, or the possibility of multiple deployments to the same location. While it is reasonable to expect that no East Timor veterans would have indicated that they had been on no deployments, it is plausible that while the sources consulted indicated that an individual officially deployed, participants may have believed that they did not deploy for enough time or under such conditions or circumstances as to define it as a deployment. Alternatively, it is possible that there was an error in one of the data sources. For example, this might occur if an individual was scheduled for deployment but was withdrawn immediately prior to departure.

39. Examination of Table 1.4 reveals that East Timor veterans had roughly one more deployment than the comparison group, which is exactly what would be expected, with the additional deployment being to East Timor. This is an indication that the majority of the comparison group (65%) has been fit to deploy.

Table 1.5: Number of deployments by members of the East Timor study group to MEAO, after 2001

	<i>Veterans</i>	<i>Comparisons</i>
<i>Number of deployments</i>	<i>n (%)</i>	<i>n (%)</i>
<i>Did not deploy to MEAO</i>	1268 (74)	645 (74)
<i>Deployed to MEAO at least once</i>	435 (26)	230 (26)

40. Table 1.5 shows the number of people in each arm of the study who have deployed to the Middle East Area of Operations (Iraq, Afghanistan, Persian Gulf, Kuwait, and Middle East) since 2001. Again, the table is rudimentary as it has not considered: deployments written in the ‘other, please specify’ section; multiple deployments; and, those who have deployed but not specified a location. What the table clearly shows is that a very similar proportion of both the East Timor veteran group and the comparison group have deployed to the MEAO.

Defence Health records

Table 1.6 shows details for the Defence Health records collected.

Table 1.6: Defence Health record data collection according to characteristics of study sample

<i>Characteristic</i>		<i>File collected n (%)</i>	<i>File not collected³ n (%)</i>	<i>p-value¹</i>
<i>Study arm</i>	Veteran	1451 (61)	2546 (62)	0.694
	Comparison	920 (39)	1581 (38)	
<i>Questionnaire</i>	Respondent	1039 (44)	1745 (42)	0.228
	Non respondent	1332 (56)	2382 (58)	
<i>Sex</i>	Male	2108 (89)	3763 (91)	0.003
	Female	263 (11)	364 (9)	
<i>Age group</i>	20-29	645 (27)	955 (23)	<.001
	30-39	1077 (45)	1848 (45)	
	40+	649 (27)	1324 (32)	
<i>Service</i>	Navy	443 (19)	338 (8)	<.001
	Army	1687 (71)	3433 (83)	
	RAAF	241 (10)	356 (9)	
<i>Employee status</i>	Active	1317 (56)	3682 (89)	<.001
	Ex-serving	1054 (44)	445 (11)	
<i>Service type²</i>	Regular/Permanent	1828 (78)	2545 (62)	<.001
	Reserve	521 (22)	1552 (38)	
<i>Rank</i>	Officer	437 (18)	1016 (25)	<.001
	Enlisted	1934 (82)	3111 (75)	

¹Chi-square test for association

²These data were not obtained for all the participants

³ See Annex F for a complete explanation of the collection of the Defence Health records

41. Table 1.6 compares those for whom the study did and did not retrieve Defence Health records. Defence Health record collection differed only marginally according to study arm and sex of the Defence member. Record collection did differ significantly ($p < 0.001$) according to questionnaire response (higher for non-respondents), age group (higher for younger), Service (higher for Army), employee status (much higher for ex-serving), service type (higher for regular than reserve) and rank (higher for enlisted than officers).

42. Many of these differences reflect study strategy for obtaining reduced targets of Army (25%) and Navy (50%) records for actively serving members. The most notable difference was the higher retrieval rate for ex-serving members, which reflects the central storage location of their UMRs compared with UMRs for serving members, which were situated in hundreds of different locations including at sea and on current overseas deployment.

Table 1.7: Study characteristics of veteran and comparison group members for whom Defence Health records were retrieved

<i>Characteristic</i>		<i>Veterans n (%)</i>	<i>Comparisons n (%)</i>	<i>p-value¹</i>
<i>Questionnaire</i>	Respondent	705 (49)	334 (36)	<.001
	Non respondent	746 (51)	586 (64)	
<i>Sex</i>	Male	1297 (89)	811 (88)	0.351
	Female	154 (11)	109 (12)	
<i>Age group</i>	20-29	320 (22)	325 (35)	<.001
	30-39	733 (51)	344 (37)	
	40+	398 (27)	251 (27)	
<i>Service</i>	Navy	256 (18)	187 (20)	0.259
	Army	1047 (72)	640 (70)	
	RAAF	148 (10)	93 (10)	
<i>Employee status</i>	Active	832 (57)	485 (53)	0.027
	Ex-serving	619 (43)	435 (47)	
<i>Service type²</i>	Regular/Permanent	1079 (75)	749 (82)	<.001
	Reserve	355 (25)	166 (18)	
<i>Rank</i>	Officer	257 (18)	180 (20)	0.257
	Enlisted	1194 (82)	740 (80)	

¹Chi-square test for association

²These data were not obtained for all the participants

43. Individuals with a Defence Health record retrieved in the veteran group were more likely to be in the younger age bands and reserve rather than regular members than individuals in the comparison group. Veterans with health record data were more likely than the comparison group to have been enlisted members rather than officers.

Table 1.8: Defence Health record (UMR or CMR) availability

	<i>File requested</i>	<i>File available n (%)</i>
<i>Navy</i>	751	660 (88)
<i>Army</i>	2679	2096 (78)
<i>RAAF</i>	592	319 (54)
<i>Total</i>	4022	3075 (76)

44. Health records were collected for 76% of those requested. The highest rate of collection was for the Navy personnel (88%).

Defence psychological screening records

45. All available Defence psychological screening records for the East Timor deployment were analysed by PRTG. While there were a limited number of screens available in the database (2304, 58%), the RtAPS process did not commence until 1999, the beginning of the East Timor deployments, and only standardised to its current format in 2003, a comparatively short time before the end date of 13 May 2005 for inclusion in this study. This is discussed in greater detail in Chapter 2.

Discussion

46. The aim of the East Timor Health Study was to conduct an investigation of the health status of a random sample of Australian Defence Force personnel who deployed to East Timor between June 1999 and May 2005 on Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE, relative to an appropriate comparison group who were ADF members at the time, but did not deploy on these operations.

47. The overall response to the questionnaire was adequate (43%), but there were some potential biases identified based on differential response according to characteristics. These were adjusted for as described above.

48. The modified Defence Health record retrieval strategy aimed to collect around 50% of the total numbers of records originally planned. Figures indicate a substantial number of cases where Defence Health data will be available for those who chose not to respond to the questionnaire, which is a factor supporting its collection and potential role in health surveillance. Careful comparisons need to be made between data from the different sources in the context of non-random availability and response.

49. Apart from these limitations, and the differences in the composition of data from the two sources which have been detailed in this chapter, both sources lend weight to the preliminary findings presented in the following chapters:

- a. Chapter 2 explores the mental health consequences associated with deployment.
- b. Chapter 3 discusses the impact on general health problems of deployment.
- c. Chapter 4 examines health behaviours—tobacco smoking, alcohol consumption and Body Mass Index.
- d. Chapter 5 reports on deployment-specific exposures and hazards.
- e. Chapter 6 contains a brief exploration of whether any self-reported physical and mental health outcomes differ depending upon the time of the participants' first deployment.
- f. In Chapter 7 the findings are synthesised and conclusions drawn.

50. Further research is planned to elucidate these findings and continue to build a body of knowledge in veterans' health.

Chapter 2 – Are different rates of negative mental health consequences associated with deployment?

Introduction

51. Research suggests that personnel involved in warlike operations and peacekeeping missions, such as the Operations in East Timor, may be at greater risk for increased symptoms of psychological distress¹¹⁻¹³. Clearly, maintaining a mentally fit and healthy Australian Defence Force is essential.

52. The aim of the current chapter is to analyse, compare and report on various measures of mental health collected by CMVH and Defence during their routine post-deployment psychological screens.

Methods

Data source:

53. Data for the current chapter were drawn from the Defence Health and Psychological screening records and the CMVH self-report questionnaire.

Defence Psychological screening records

54. Analysis of Defence Psychological screening records relies on their entry into the Psychology Research and Technology Group (PRTG) database. PRTG, as part of the Defence Health Services Division (DHSD), is the custodian of the electronic database containing the Return to Australia Psychological Screen (RtAPS) and Post Operational Psychological Screen (POPS) data. While psychological briefing and/or mental health screening has been administered to ADF personnel deployed on various operations from the late 1980's, the structure of the process only began to be formalised in 1999¹⁴. Between 1999 and 2003 the formal psychological screening process moved through several iterations, reaching close to its present format around the end of 2002. It was then that the Post Deployment Questionnaire (PDQ) became known as the RtAPS and the Mental Health Screen (MHS) known as POPS. Both screens contain the Kessler 10 (K10) and Post-traumatic Stress Disorder Check List – Civilian (PCL-C), which are also used in CMVH's self-report questionnaire.

55. Operations in East Timor commenced in June 1999, as the formal psychological screening process was commencing. The end date for inclusion in this health study is 13 May 2005, a comparatively short time after the screening process stabilised into its current form.

56. Due to the number of different versions of the RtAPS and POPS screening forms used over this period, CMVH has chosen to focus on the K10 and PCL-C. These scales were used more consistently than others over the relevant period, they have standard screening cut-offs used by Defence and were able to be compared with the self-report data.

57. The data set available for potential analysis is also reduced as data entered into the database for approximately 12 months, between 1999 and 2001, excluded any operational mental health data and identifying information. This makes it impossible to establish whether data collected belongs to an individual selected as part of the

study. Finally, data collected from mental health screens administered to RAN personnel deployed on board ships between 2001 and April 2003 is not held by PRTG. Nonetheless, K10 and PCL-C data for some Defence members who deployed to East Timor was available from the PRTG database.

58. Defence Psychological screening data were sourced from the electronic files managed by PRTG. Data were supplied to CMVH in two ways. In the study consent forms participants were asked to provide consent to several items, including permission to link information contained in their Defence Psychological screening records.

59. PRTG provided to CMVH the RtAPS and POPS data for those respondents who specifically consented to the linkage of their RtAPS and POPS with their self-report data. For those who had not provided explicit consent, including those who were unable to be contacted for this study, PRTG conducted analysis designed and requested by CMVH and provided the results of these analyses.

Description of RtAPS and POPS (current format)

60. The RtAPS is usually completed just prior to re-deployment to Australia. It is used to collect a number of demographic details including Service, rank, unit and sex and then asks a series of questions about the deployment experience. The current RtAPS questionnaire contains the following psychological scales and instruments:

- a. Kessler Psychological Distress Scale – 10 (K10)
- b. Post-traumatic Stress Disorder Check List – Civilian (PCL-C)
- c. Traumatic Stress Exposure Scale - Revised - TSES-R
- d. Major Stressors Checklist

61. The POPS is usually completed within three to six months of return from theatre. It is also used to collect some demographic information, the K10, PCL-C and the Alcohol Use Disorder Identification Test (AUDIT) scales. Documentation of the K10 and PCL-C is detailed in the Defence Health Bulletin No 9/2003¹⁵.

62. Some earlier iterations of RtAPS and POPS contained different psychological scales. We have chosen to analyse only screens containing at least one of the K10 or PCL-C scales. The Major Stressor Checklist and the TSES-R address exposures on deployment. These will be examined in Chapter 5.

Defence Health records

63. Some analysis reported in the current chapter is based on data from the AHA and the CPHE, which have been previously described. Some data items are contained on only the AHA or only the CPHE. The stress items relevant to the current issue are contained on both forms. Accordingly, data from the most recent of either the AHA or the CPHE were used.

CMVH Self-report

64. Methods of CMVH self-report data collection have been previously described. The particular items used and their source is described below.

Items

K10 (Defence Psychological screening records and CMVH self-report questionnaire)

65. The K10 is a scale measuring non-specific psychological distress. It consists of 10 questions and aims to measure the level of anxiety and depressive symptoms a person may have experienced in the four weeks prior to questionnaire completion. The scores for each question are added to produce a score between 10 and 50.

66. A set of cut-off scores for the K10 was developed by the Clinical Research Unit for Anxiety and Depression (CRUfAD), School of Psychiatry, University of New South Wales to determine the prevalence of anxiety and depressive disorders ¹⁶.

a. People who score 10-15 report a low level of psychological distress. They have one quarter the population risk of meeting criteria for an anxiety or depressive disorder as identified by the Composite International Diagnostic Interview (CIDI) ¹⁷. There is a remote chance of these individuals reporting a suicide attempt in their lifetime.

b. People who score 16-29 report a medium level of psychological distress. They have a one in four chance (three times the population risk) of having a current anxiety or depressive disorder. They have a 1% chance (three times the population risk) of ever having made a suicide attempt.

c. People who score 30-50 report a high level of psychological distress. They have a three out of four chance (20 times the population risk) of ever having made a suicide attempt.

PCL-C (Defence Psychological screening records and CMVH self-report questionnaire)

67. PCL-C is a self-report rating scale for assessing the 17 Diagnostic and Statistical Manual Version 4 (DSM-IV) ¹⁸ symptoms of PTSD.

68. The PCL-C is a 17 item scale that has 5 response categories for each item. The total score is calculated by adding the scores on the 17 items and ranges from 17 to 85. In the Vietnam Veterans' Health Study, a cut-off of 50 on the PCL was found to be a good predictor of a PTSD diagnosis ¹⁵. Additionally, where appropriate, we evaluated outcomes on the PCL-C using the specific definition of caseness on the PCL-C, which required subjects to report at least one intrusion symptom, three avoidance symptoms, and two hyperarousal symptoms that were categorised as the moderate level and to score at least 50 ¹⁹.

Stress questions (Defence Health records, AHA/CPHE)

69. Two questions were asked on stress:

a. How often do you feel that your lifestyle is putting you under too much stress? (Frequency of stress question – response options: often; sometimes; seldom; never.)

b. During the past two weeks how much stress have you experienced? (Quantity of stress question – response options: a lot; a moderate amount; relatively little; almost none at all).

Statistics

70. Associations between East Timor deployment and high scores on the K10 and the PCL-C scales were assessed using logistic regression. Logistic regression was also used to compare the proportion of people who reported they were put under too much stress ‘often’ and those who reported ‘a lot’ of stress in the last two weeks between the study groups. Adjusted and unadjusted odds ratios associated with deployment to East Timor were calculated. These results were similar, so only the adjusted ratios were presented. The scores on the psychological scales between RtAPS and POPS and between RtAPS and the self-report questionnaire were compared using the paired t-test. The categorical outcomes from the PCL-C and K10 scales were compared between different sources using McNemar’s test and the asymptotic test for symmetry respectively.

Results

Participation

71. The data presented in this chapter include data drawn from CMVH’s self-report questionnaire and Defence Health and Psychological screening records. The participation rates associated with each type of data collection have been previously described in Chapter 1.

Stress questions from the Defence Health data

Table 2.1: Stress questions from Defence Health records

		Veterans	Comparisons	Odds Ratio ¹	95% CI	p-value
		n (%)	n (%)			
<i>Stress from present lifestyle</i>	Often	149 (11)	97 (11)	0.99 ²	(0.75, 1.30)	0.934
	Sometimes	523 (39)	325 (37)			
	Seldom	485 (36)	326 (37)			
	Never	191 (14)	126 (14)			
	Not specified	14	10			
<i>Stress in the past 2 weeks</i>	A lot	140 (10)	95 (11)	0.95 ³	(0.72, 1.25)	0.701
	A moderate amount	393 (29)	298 (34)			
	Relatively little	518 (38)	304 (35)			
	Almost none at all	296 (22)	176 (20)			
	Not specified	15	11			

¹Adjusted for sex, age (20-29, 30-39 and 40+), Service and rank

² Often v Sometimes, seldom or never

³ A lot v A moderate amount, relatively little or almost none at all

72. Table 2.1 shows that there was little or no difference in the number of East Timor Veterans or comparison group members reporting stress from their present lifestyle as ‘often’ (OR 0.99, 95% CI (0.75, 1.31)) or ‘a lot’ of stress in the last two weeks (OR 0.95, 95% CI (0.72, 1.25)). Overall, 49% of all personnel felt stress

‘sometimes’ or ‘often’ and the amount of stress was either ‘moderate’ or ‘a lot’ for 42% of personnel.

K10 and PCL-C from the CMVH self-report questionnaire

Table 2.2: K10 and PCL-C categories for East Timor veterans and the comparison group (source – self-report questionnaire)

		Veterans <i>n</i> (%)	Comparisons <i>n</i> (%)	Odds Ratio (95% CI) ^a	<i>p</i> -value
<i>K10</i>	10-15	932 (54)	571 (64)		
	16-29	679 (39)	275 (31)		
	30-50	121 (7)	48 (5)	1.28(0.90,1.82) ^b	0.162
	Not specified	101	57		
<i>PCL-C</i>	0-49	1515 (93)	804 (94)		
	50-85	118 (7)	48 (6)	1.24(0.87,1.76) ^c	0.231
	Not specified	200	99		

^aAdjusted for sex, age group (20-29, 30-39 and 40+), Service and rank

^bK10 30-50 v 10-29

^cPCL-C 50-85 v 17-49

73. The distribution of the K10 categories was different between the East Timor veterans and the comparison group ($\chi^2 = 24.4$, $p < 0.001$). The odds of scoring in the highest K10 category (30-50) were higher among the East Timor veterans, although this result was not significant (OR 1.28, 95% CI (0.90, 1.82)).

74. The proportion of respondents in the self-report questionnaire who recorded scores over 50 on the PCL-C was similar for the East Timor veterans and the comparison group (7% and 6%, respectively, Table 2.2). After adjusting for demographic characteristics the odds of scoring in the 50-85 category was slightly, but not significantly higher in the East Timor veteran group compared with the comparison group (OR 1.24, 95% CI (0.87, 1.76)).

75. Using the specific criteria of the PCL-C (requiring meeting symptom criteria in addition to a score of 50 or above), the total number of respondents who scored in the highest risk category was reduced very slightly to 112 in the East Timor veterans and to 46 comparison group (OR 1.23, 95% CI (0.86, 1.76)).

76. The K10 score in the veteran group was higher 17.2 (Mean = 17.2, Median = 15, SD = 7.2), higher than the score recorded in the comparison group (Mean = 15.9, Median = 14, Median = 14, SD = 6.6). A Wilcoxon-Mann Whitney test indicated a significant difference between these scores (median difference = 1 $p < 0.001$). Similarly, the PCL-C was higher in East Timor veterans than the comparison group (veterans Mean = 27.3, Median = 23, SD = 12.0 and comparison group Mean = 25.2, Median = 21 SD = 10.7, $p < 0.001$).

RtAPS data

77. RtAPS data corresponding to the East Timor deployment were extracted for 2304 of the East Timor veterans (58%). A K10 or PCL-C score was available on 1040 and 1035 RtAPS records respectively.

78. Seven hundred and fifty-one veterans (72%) scored in the low level distress category of the K10 scale, 278 (27%) at the medium level of distress, and 11 (1%) individuals in the high level distress bracket. The mean K10 total score was 14.1 (SD 4.2).

79. Five of the East Timor veterans had a PCL-C score above 50. The largest PCL-C was 64, the mean being 20.4 (SD 5.2).

RtAPS and POPS

80. There were 388 East Timor veterans who had an RtAPS record and corresponding POPS record which both contained a completed K10 and 395 who had an RtAPS and POPS with a completed PCL-C scale.

Table 2.3: K10 scores from RtAPS and from POPS matched by person

<i>K10 from RtAPS</i>	<i>K10 from POPS</i>						
	<i>10-15</i>		<i>16-29</i>		<i>30-50</i>		<i>Total</i>
	<i>n</i>	<i>(%)</i>	<i>n</i>	<i>(%)</i>	<i>n</i>	<i>(%)</i>	
<i>10-15</i>	232	(60)	40	(10)	2	(1)	274
<i>16-29</i>	62	(16)	48	(12)	2	(1)	112
<i>30-50</i>	1	(0)	1	(0)	0	(0)	2
<i>Total</i>	295		89		4		388

81. The mean K10 score on the RtAPS was 14.3 (Median = 13, SD = 4.0), higher than the mean of 13.6 (Median = 12, SD = 4.5) recorded on the POPS. A Wilcoxon signed rank test indicated a significant difference between these scores (median difference 1, $p < 0.001$). Seventy-two percent scored in the same K10 category at both screens. Sixteen percent scored in a higher K10 category on RtAPS than on POPS, whereas 12% had a higher K10 category on POPS. The test for symmetry failed to show evidence of a difference of the K10 categories at the two screens ($p = 0.14$).

Table 2.4: PCL-C scores from RtAPS and from POPS matched by person

<i>PCL-C from RtAPS</i>	<i>PCL-C from POPS</i>				<i>Total</i>
	<i>17-49</i>		<i>50-85</i>		
	<i>n</i>	<i>(%)</i>	<i>n</i>	<i>(%)</i>	
<i>17-49</i>	390	(99)	2	(1)	392
<i>50-85</i>	3	(1)	0	(0)	3
<i>Total</i>	393		2		395

82. For people who had a PCL-C on both RtAPS and POPS, the mean scores were similar (20.4 (SD = 5.2) and 20.8 (SD = 6.0) respectively). The Wilcoxon signed rank test failed to show a strong difference between these scores (median difference -1, $p = 0.828$). Only 1% scored above 50 on the PCL-C at either screen, and no one recorded a score above 50 on both screens.

RtAPS and CMVH self-report questionnaire

Table 2.5: K10 scores from RtAPS and from self-report questionnaire matched by person

<i>K10 from RTAPS</i>	<i>K10 from self report questionnaire</i>			<i>Total</i>			
	<i>10-15</i>		<i>16-29</i>				
	<i>n</i>	<i>(%)</i>	<i>n</i>		<i>(%)</i>		
<i>10-15</i>	126	(45)	68	(24)	7	(2)	201
<i>16-29</i>	33	(12)	39	(14)	6	(2)	78
<i>30-50</i>	0	(0)	1	(0)	2	(1)	3
<i>Total</i>	159		108		15		282

83. There were 282 East Timor veterans who completed the CMVH self-report questionnaire, consented to linkage with their Defence Psychological screening records and who had RtAPS K10 data corresponding to an East Timor deployment. The mean K10 score was higher on the self-report questionnaire (Mean = 16.7, SD = 6.6) than on RtAPS (Mean = 14.4, SD = 4.3). A Wilcoxon signed rank test indicated that this difference was statistically significant (median difference = 1, $p < 0.001$). Twenty-nine percent scored in a higher K10 category on the self-report questionnaire than at RtAPS, whereas 12 % were higher at RtAPS (Table 2.5). The test for symmetry indicated that there was a significant difference in the K10 categories collected from these different sources ($p < 0.001$).

84. The pattern of higher total K10 score on the self-report questionnaire is also illustrated in Figure 2.1, where the majority of data points lie above the line of equality plotted.

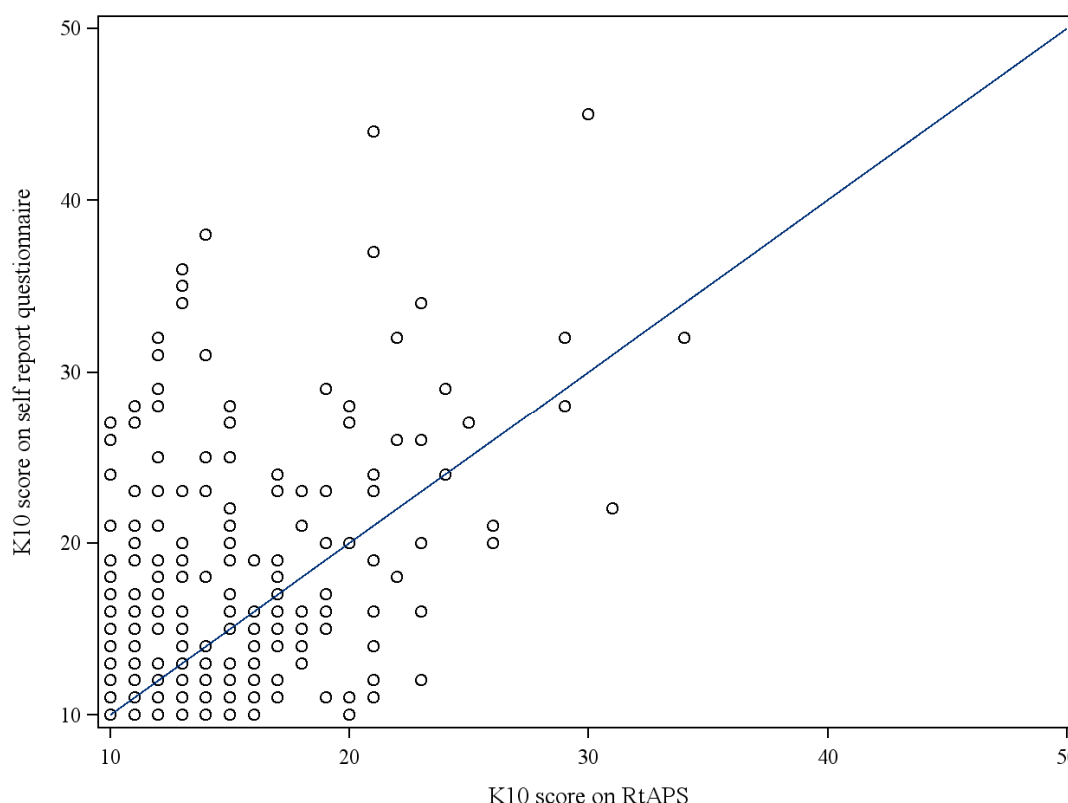


Figure 2.1: Scatterplot comparing K10 scores from the self-report questionnaire with those from the RtAPS assessment.

Table 2.6: PCL-C scores from RtAPS and from self-report questionnaire matched by person

<i>PCL-C from RTAPS</i>	<i>PCL-C from self report questionnaire</i>		<i>Total</i>
	<i>17-49</i>	<i>50-85</i>	
	<i>n (%)</i>	<i>n (%)</i>	
<i>17-49</i>	256 (94)	16 (6)	272
<i>50-85</i>	0 (0)	0 (0)	0
<i>Total</i>	256	16	272

85. Two hundred and seventy-two East Timor veterans completed the self-report questionnaire, consented to linkage with their Defence Psychological screening records and had RtAPS PCL-C data corresponding to an East Timor deployment. Consistent with the K10 results observed, the mean PCL-C score was higher on the self-report questionnaire (26.3, SD = 10.7) than on the RtAPS (Mean = 20.4, SD = 4.3) (Table 2.6 and Figure 2.2). This difference was statistically significant (median difference = 3, $p < 0.001$). Ninety-four percent scored below a cut-off of 50 on both the self-report questionnaire and RtAPS. Six percent of respondents changed to scoring above the cut-off on the self-report questionnaire compared with their score at RtAPS. McNemars’ test indicated that the change in responses across the sources was significant ($p = 0.001$).

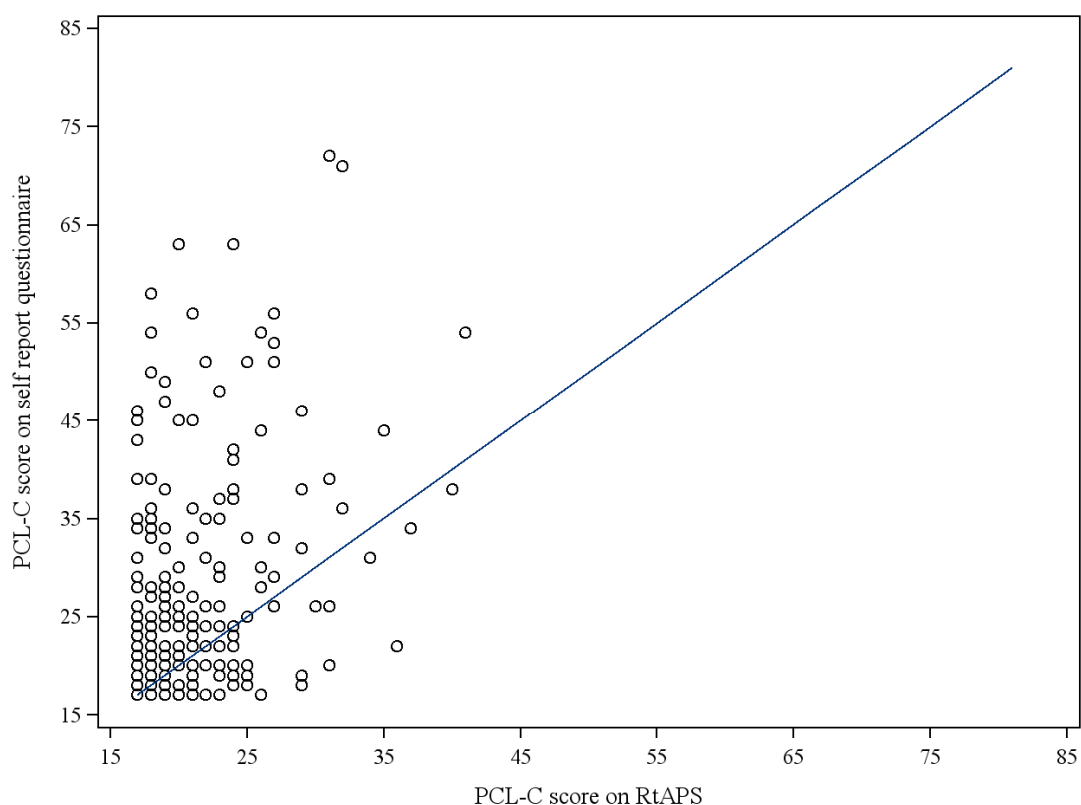


Figure 2.2: Scatterplot comparing PCL-C scores from the self-report questionnaire with those from the RtAPS assessment.

Discussion

86. Data from the Defence Health records showed that in the two weeks prior to the individuals' most recent AHA or CPHE, 51 % of all Defence personnel from whom records were collected had felt stressed at least sometimes. For almost 46 % of personnel the amount of stress was moderate or more.

87. Data from the CMVH self-report questionnaire revealed no significant difference in the proportions scoring in the highest categories of the K10 and PCL-C although on both these scales the proportion of respondents reporting in the highest (more distress) category was slightly greater for the East Timor veterans. The mean score on the K10 and PCL-C scales was significantly greater in the East Timor veterans relative to the comparison group.

88. Seven percent of all respondents scored above 50 on the PCL-C, a cut-off score that has been found to be a good predictor of PTSD and is the cut-off referred to in many similar international studies¹⁹⁻²².

89. CMVH self-report data showed 46% of East Timor veterans had K10 scores in the medium or high level categories and 7% scored above the cut-off of 50 on the PCL-C (Table 2.2). The outcomes from the grouped RtAPS data showed a smaller proportion of people in these higher categories (28% and 0.6% respectively), representing quite different proportions of people who may have been recommended for further assessment based on the guidance on follow-up in Health Bulletin No 9/2003 – Australian Defence Force Mental Health Screen¹⁵. It should be remembered that the comparison group is not included in these comparisons as, by definition, they did not have the RtAPS or a POPS screens associated with deployment to East Timor.

90. When comparing K10 scores at RtAPS with those at POPS matched by person (Table 2.3), there was some evidence of a difference in the scores as the K10 at RtAPS was slightly above that at POPS.
91. For those individuals who had records with PCL-C data in the PRTG database for both the RtAPS and POPS screens, only five individuals scored above 50 at either screen and no individual scored above 50 at both screens (Table 2.4). The mean scores on this scale were at a level that does not suggest distress.
92. However, when comparing K10 and PCL-C category scores from the self-report data and RtAPS (for those who had consented to linkage of their data) the difference in the score suggests either lower levels of reporting during collection of data by Defence sources, or higher levels of reporting on the self-report questionnaire (Tables 2.5 and 2.6, Figures 2.1 and 2.2).
93. When interpreting outcomes as measured by RtAPS and POPS in the military environment, there could be a bias towards the under-reporting of symptoms, particularly as the setting is one where the member is keen to get home, where identity is not anonymous, and where outcomes may be perceived as influencing later career progression. Consequently, it is difficult to establish appropriate screening cut-off points²³⁻²⁵. Further, information gained from community samples and non-occupational settings is likely to be inappropriate when used in a military setting. However, given the relatively small sample size for whom completion of RtAPS and POPS is documented, it is difficult to draw any conclusions. There are also other potential factors that may contribute to overall differences between the self-report data and the Defence-collected screens including:
- a. Data collected as part of the RtAPS process were, by the location and circumstance of data collection, explicitly linked to the particular deployment. In responding to the self-report questionnaire, this link was more tenuous and respondents may have considered issues that caused them distress that occurred outside a military environment or attributable to other deployments.
 - b. The variations in the timing of the data collections and the possibility that time (e.g. opportunity for impact to develop) or events since the collection of the Defence Health data, have exacerbated (or mitigated) the outcomes.
 - c. The Defence environment has changed since the deployment to East Timor commenced. For example, an increase in operational tempo may have impacted on these measures.
 - d. Some individuals may have changed their serving status since the Defence data were collected; current outcomes may reflect factors associated with ex-serving rather than serving status.
 - e. Increasing awareness of mental health issues and the military compensation system may also influence reporting.

Strengths and limitations

94. Several limitations are associated with this evaluation of the reported levels of mental distress in current and ex-serving members of the ADF. As described earlier, changes in policy and process in the ten years since the RtAPS and POPS formally commenced have been significant. The screens that are least likely to

include either a K10 or a PCL are screens that are from the earlier parts of the East Timor deployment. Those personnel who were amongst the first to deploy to East Timor potentially faced the most uncertainty and deployed on an operation classified as warlike. If K10 and PCL-C data were available for these personnel perhaps higher levels of distress might have been noted.

95. We know from the evaluation of demographic differences between respondents (see Chapter 1) that there are systematic differences between those who responded and those who did not. For example, it was more difficult to contact ex-serving members of the ADF and consequently a smaller proportion of these individuals participated in the study. A proportion of people who leave Defence do so for reasons of ill-health, which again may bias the results.

96. Finally, within the self-report data 8% of K10 category scores and 14% of PCL-C scores were categorised as missing. If a participant had accidentally neglected to answer even one question that formed part of the scale then their summary score on that scale was coded as missing. Hence, the number of missing PCL-C scores is greater than the number of K10 scores, as in order to create a summary PCL-C score the participant must respond to 17 separate items, compared with only 10 on the K10.

Further Research

97. CMVH has collected the same data (self-report and Defence psychology measures of mental health) in two other studies (the Bougainville Health Study and the Solomon Islands Health Study). The general pattern of results has been similar, with an increased level of reporting of distress on the self-report questionnaire compared with the data collected at RtAPS and POPS.

98. Clearly further research exploring the reasons for these differences is warranted. Areas for exploration may include closer evaluation of all data from the Near North Area of Influence (NNAI) studies; evaluating free text comments associated with responses to the PCL-C for descriptions of events that are causing distress; and, further evaluation of data collected during the new research due to commence in 2009, the Middle East Area of Operations Health Study. In the future, the research conducted by CMVH on data from multiple sources (Defence Health records, Defence RtAPS and POPS and CMVH self-report data) will enable individuals, both with and without disorders, to be tracked longitudinally to monitor outcomes.

Chapter 3 – Do East Timor veterans have different general health problems from an ADF comparison group who did not deploy to East Timor?

Introduction

99. This chapter investigates whether there was a relationship between deployment to East Timor and ill health using the symptoms checklist, subscales of the SF-36 and reproductive health outcomes.

Methods

Data Source:

100. Data for this chapter were drawn exclusively from self-report data collected in the health questionnaire, which was completed by both East Timor veterans and the comparison group. The methodology for self-report data collection was described in detail in Chapter 1.

CMVH Self-report

101. The health questionnaire included topics covering various aspects of physical health, mental health and various demographics.

Items

General Health Questions

102. The general health question is the first question of the SF-36. This question can be used to measure the respondents' perception of their general health (excellent, very good, good, fair or poor). A question was also included which asked the respondents to rate their health now compared to one year ago.

Subscales of SF-36

103. Three subscales of the SF-36 were included in the health questionnaire: General Health (GH), Role Physical (RP), and Social Functioning (SF). GH assessed how general personal health is perceived by the respondent; RP assessed limitations in work and other daily activities as a result of physical health; and SF assessed interference with normal social activities caused by physical or emotional problems²⁶. The responses to these questions provided a score between 0 and 100 for each subscale (where 100 represents the most positive health score on each scale).

Symptoms

104. The 67 item self-report symptom list was used to ask about the occurrence of symptoms in the past month, and whether the severity of those symptoms was "mild", "moderate", or "severe". This list of items, adapted from the Australian Gulf War Study, is an expanded version of the 50 item list used in the Op TELIC study of UK Gulf War Veterans, which was based on the Hopkins Symptom Checklist. The items are analysed by the frequency of symptoms and the total number of symptoms.

Pregnancy and Child illnesses

105. This section was included to investigate any associations between deployment exposures and attempted or actual pregnancies for female veterans or male veterans' partners. The items were used to compare presence of abnormal reproductive outcomes (live birth, miscarriage, etc) or congenital abnormalities. The questions are adapted from King's College Op TELIC study of UK Gulf War Veterans.

106. To assess the effect of deployment to East Timor on the number of living children and their gender distribution, events since 19 April 2000 were analysed. This date, applied to the veteran and comparison groups, was 10 months from the start date of Operation FABER. This meant that all pregnancies conceived before the start date of the first deployment to East Timor were excluded.

Statistics

107. The average scores on the subscales of the SF-36 were compared using a t-test. The prevalence and total number of symptoms were calculated for respondents. People who did not respond to any of the symptoms questions were excluded from this comparison. The prevalence of the symptoms was compared using logistic regression and the total number of symptoms modelled using negative binomial regression, which allowed for a greater dispersion of counted values than Poisson regression. Likelihood ratio tests were used to compare the effect of deployment on a variety of measures across age, sex, Service and rank. Adjusted and unadjusted ratios associated with deployment to East Timor were calculated. These results were similar so only the adjusted ratios were presented.

Results

108. The percentage of respondents who perceived their general health to be 'very good' or 'excellent' was 38 % in the East Timor veterans and 47 % in the comparison group. The number reporting 'poor' general health was 3.2 % in the East Timor veterans and 1.6 % in the comparison group.

Table 3.1: Perception of general health for the East Timor study group

<i>Response</i>	<i>Veterans Comparisons</i>	
	<i>n (%)</i>	<i>n (%)</i>
<i>Excellent</i>	140 (8)	87 (9)
<i>Very good</i>	551 (31)	353 (38)
<i>Good</i>	737 (41)	345 (37)
<i>Fair</i>	317 (18)	139 (15)
<i>Poor</i>	57 (3)	15 (2)
<i>Not specified</i>	12	3

109. The majority of East Timor veterans (61%) reported that their health was the same as one year ago, with 16 % reporting improved health and 23 % reporting worse health. These percentages were comparable to those in the comparison group ($p = 0.11$).

110. The mean scores associated with the SF-36 subscales general health, role physical and social functioning were lower in the East Timor veterans than the comparison group (Table 3.1).

Table 3.2: SF-36 scales for the East Timor study group

<i>Scale</i>	<i>Veterans (n=1814) Mean (SD)</i>	<i>Comparisons (n=942) Mean (SD)</i>	<i>Difference Δ (95% CI)</i>	<i>p-value¹</i>
<i>General Health</i>	63.3 (21.4)	66.3 (20.4)	3.0 (1.3, 4.7)	<.001
<i>Role limitation due to physical health</i>	72.2 (35.2)	75.2 (35.1)	3.1 (0.2, 5.9)	0.034
<i>Social functioning</i>	76.9 (25.4)	79.9 (24.3)	3.1 (1.1, 5.1)	0.003

¹t-test for difference between means

111. The most common symptoms reported by respondents were fatigue, sleeping difficulties and feeling unrefreshed after sleep, with approximately 60% of respondents recording these events (Table 3.3). The prevalence of the top 15 symptoms was generally higher in East Timor veterans, and the odds of reporting the symptoms was significantly higher in 10 of the 15 symptoms presented. The odds ratios displayed in Table 3.3 have been adjusted for sex, age group, Service (Navy, Army or RAAF) and rank.

112. Figure 3.1 shows almost all of the 67 symptoms were reported more commonly in the East Timor veterans. The mean total number of self-reported symptoms was significantly higher for East Timor veterans (Table 3.4). The effect of deployment to East Timor on the total number of symptoms was slightly greater in enlisted ranks than in officers.

Table 3.3: Top 15 symptoms reported by people deployed to East Timor

Symptom	Veterans n (%)	Comparisons n (%)	Odds Ratio ¹ (95% CI)
<i>Fatigue</i>	1170 (64.1)	533 (56.2)	1.34 (1.14, 1.58)
<i>Feeling unrefreshed after sleep</i>	1101 (60.3)	505 (53.2)	1.29 (1.10, 1.52)
<i>Sleeping difficulties</i>	1098 (60.2)	497 (52.4)	1.32 (1.13, 1.56)
<i>Low back pain</i>	1028 (56.3)	481 (50.7)	1.21 (1.03, 1.42)
<i>Headaches</i>	933 (51.1)	473 (49.8)	1.03 (0.88, 1.21)
<i>Irritability / outbursts of anger</i>	981 (53.8)	394 (41.5)	1.58 (1.34, 1.85)
<i>General muscle aches or pains</i>	860 (47.1)	417 (43.9)	1.10 (0.93, 1.29)
<i>Flatulence or burping</i>	754 (41.3)	395 (41.6)	0.98 (0.83, 1.15)
<i>Difficulty finding the right word</i>	794 (43.5)	352 (37.1)	1.29 (1.10, 1.52)
<i>Joint stiffness</i>	772 (42.3)	374 (39.4)	1.09 (0.92, 1.28)
<i>Forgetfulness</i>	749 (41.0)	321 (33.8)	1.34 (1.13, 1.58)
<i> ringing in the ears</i>	706 (38.7)	329 (34.7)	1.15 (0.97, 1.36)
<i>Loss of concentration</i>	722 (39.6)	296 (31.2)	1.41 (1.19, 1.67)
<i>Avoiding doing things or situations</i>	645 (35.3)	259 (27.3)	1.42 (1.20, 1.70)
<i>Feeling distant or cut off from others</i>	657 (36.0)	246 (25.9)	1.56 (1.31, 1.86)

¹Adjusted for sex, age (20-29, 30-39 and 40+), Service and rank

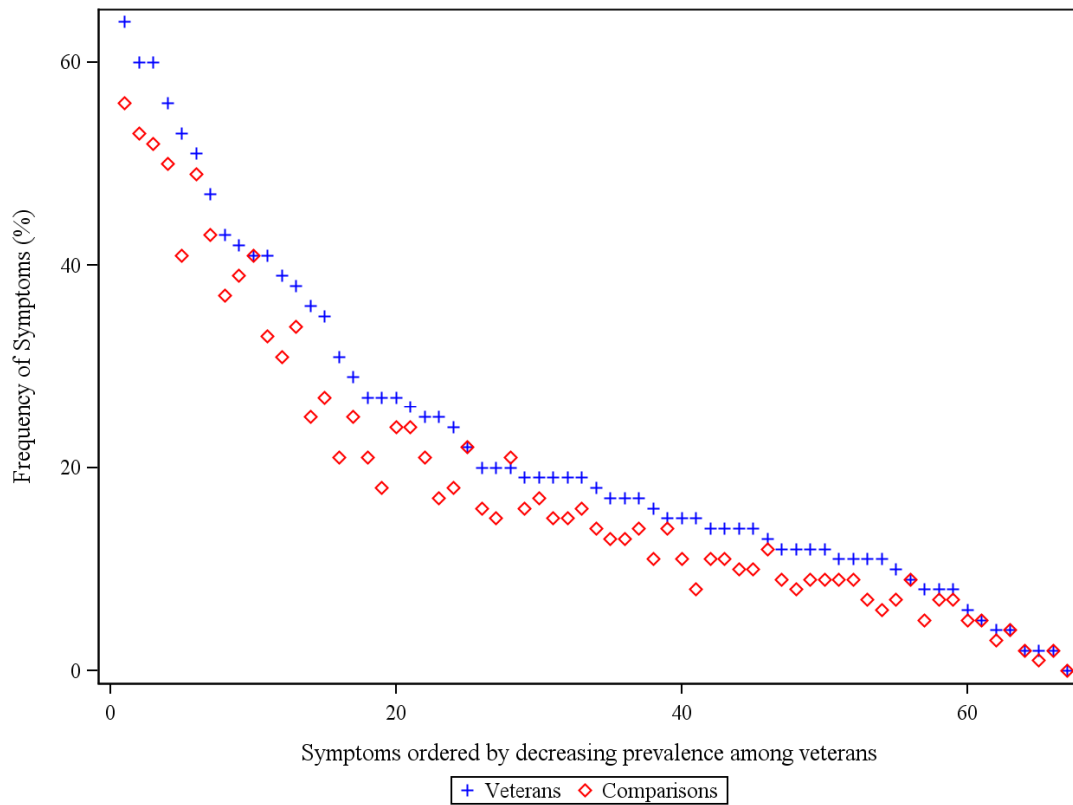


Figure 3.1: Frequency of common symptoms in East Timor veterans and in the comparison group who did not deploy.

Table 3.4: Association between total number of self-reported symptoms and sex, age, Service and rank

		Veterans (n=1825) Mean (SD)	Comparisons (n=949) Mean (SD)	Adjusted ratio of means Ratio (95% CI) ¹	p-value ²
<i>Total study population</i>		15.1 (12.1)	12.6 (11.1)	1.15 (1.07, 1.24)	<.001
Sex	Male	15.2 (12.2)	12.5 (11.0)	1.17 (1.08, 1.26)	0.367
	Female	14.6 (11.1)	13.5 (11.6)	1.06 (0.87, 1.29)	
Age group	20-29	11.7 (10.2)	10.4 (10.1)	1.08 (0.92, 1.27)	0.609
	30-39	14.8 (11.9)	12.8 (11.2)	1.15 (1.03, 1.28)	
	40+	16.9 (12.7)	13.7 (11.4)	1.20 (1.07, 1.34)	
Service	Navy	14.3 (11.2)	13.4 (11.2)	1.05 (0.87, 1.27)	0.509
	Army	15.3 (12.4)	12.6 (11.0)	1.16 (1.07, 1.26)	
	RAAF	14.4 (10.7)	11.5 (11.1)	1.23 (0.99, 1.52)	
Rank	Officer	11.8 (10.1)	11.4 (10.6)	1.02 (0.89, 1.16)	0.025
	Enlisted	16.2 (12.6)	13.1 (11.3)	1.21 (1.12, 1.32)	

¹Ratios of the means were estimated using negative binomial regression with adjustment for sex, age group (20-29, 30-39 and 40+), Service and rank

²P-values shown for sex, age group, Service, and rank result from a test of whether the ratio of the mean total number of symptoms between veterans and the comparison group are the same at each level of sex, age group, Service and rank.

Table 3.5: Pregnancy and children

		Veterans (n=1814)	Comparisons (n=942)
<i>Number of pregnancies per person^{a1}</i>		1.5 (1.6)	1.4 (1.5)
<i>Number of living children per person^{a2}</i>		1.6 (0.7)	1.5 (0.7)
<i>Sex of living children^{b2}</i>	Male	476 (50)	199 (48)
	Female	473 (50)	217 (52)

^a Mean (SD)

^b n (%)

¹ Lifetime number of pregnancies

² Children born after 19 April 2000

113. The lifetime number of pregnancies for women respondents and partners of male respondents was similar between the study arms, with 1.5 in the East Timor veterans and 1.4 in the comparison group, per person. The number of living children born since 19 April 2000 (10 months from the start date of OP FABER) was also 1.6 and 1.5 per person respectively, in these study groups.

114. The proportion of female offspring was slightly higher than 50% in the comparison group (52%). Accounting for families of children recorded by the same respondents, there was no evidence of a difference in the distribution of males and females born between the study groups ($p = 0.455$).

115. The proportion of veterans (30%) who had never tried to have a child was slightly lower than the comparison group (34%). In both arms of the study, approximately 9% of the participants who had tried to have children reported being under investigation for infertility.

Table 3.6: Number of people reporting adverse birth outcomes in the East Timor study group

	Veterans <i>n</i> (%)	Comparisons <i>n</i> (%)
<i>Pre-partum death</i> (respondents [†] =1978)	55 (4)	30 (5)
<i>Post-partum death</i> (respondents [†] =1943)	14 (1)	3 (0)
<i>Chromosomal or physical abnormality</i> (respondents [†] =1898)	21 (2)	13 (2)

[†]Responded "Yes" or "No" to at least 1 question.

116. Table 3.6 shows an historical tally of the number and proportion of adverse reproductive events occurring in the veteran and comparison groups prior to completing the Health Questionnaire. These events may have occurred before or after the veteran group deployed. Consequently, they are not necessarily an outcome associated with deployment to East Timor. There appeared to be no apparent differences between the veteran and comparison groups.

117. Pre-partum deaths included termination of pregnancies due to foetal abnormalities, miscarriages, and stillbirths. Post-partum deaths refer to death of a child at some point after birth. Chromosomal abnormalities and birth defects collect respondents' free-text responses to questions about these issues. The responses encompassed a wide range of conditions such as Trisomy 21 (Down's syndrome), autism, cardiac septal defects (hole in the heart), syndactyly (webbed fingers) as well as less specific descriptions such as "learning difficulties".

Discussion

118. East Timor veterans perceived their general health in 2008 to be worse than the comparison group and reported lower health scores on the SF-36 subscales, which measured general health, limitations in work and other activities as a result of physical health and social functioning. Although these differences between the study groups were relatively small (between 3 and 4 units lower on scales on 0 to 100 for East Timor veterans), there was clear evidence of a difference in these measures.

119. Participants who deployed to East Timor reported significantly more symptoms in 2008 than ADF personnel who did not deploy to East Timor, and

prevalence of almost all of the 67 symptoms was greater in the East Timor veterans than the comparison group.

120. The deployment to East Timor included both warlike and non-warlike operations. Potential harmful exposures on these operations include the physical threat from militia and the psychological impact of deployment to a “warlike” environment (such as isolation, loneliness and stress). Consistent with these exposures, the symptoms with the largest difference between the veteran and comparison groups were irritability/outbursts of anger, feeling cut off from others, loss of concentration and avoiding doing things (all with OR >1.40).

121. These results are different from those obtained in both the Bougainville and Solomon Islands Health Studies, in which there was no difference in the prevalence of the symptoms between the study arms. However, the percentage of all respondents from the Bougainville and Solomon Islands studies reporting symptoms was very similar to the percentage of East Timor veterans reporting symptoms. One possible reason for this finding is that respondents in the Bougainville group were slightly older (mean age 40.6 SD = 8.3) than East Timor respondents (mean age 38.2 SD = 8.3), consistent with the earlier start dates of operations to Bougainville. Detailed investigation into the characteristics and deployment profile of the study groups in the Bougainville and East Timor studies is necessary to ascertain reasons for these findings.

122. Of interest, the three most common symptoms — fatigue, feeling unrefreshed after sleep, and sleeping difficulties — have been the same for all three Near North Area of Influence Health Studies. Further, these three symptoms appear to consistently make the top five in similar symptom checklists used in other studies such as the Australian Gulf War Study^{27, 28}.

123. Some reproductive outcomes could not be analysed from the reproductive health section of the health questionnaire because the sequence of deployment and reproductive events (e.g. miscarriages and stillbirths) could not be determined. This section of the questionnaire should be redesigned for future studies. In addition, careful thought of how to collect corresponding data for the comparison (non-deployed) group is necessary.

124. The response rate for the self-report questionnaire was 43%, with 1833 veterans and 951 comparison group individuals participating in the study. Although currently serving personnel were well represented in the study (49% response rate), the response rate among persons no longer in the ADF was lower (21%). Some bias may result if the ex-serving group (who were over-represented in the non-respondents) were more or less healthy than those currently serving, although this bias is likely to be non-differential between the study groups (Chapter 1).

125. Another possible source of bias is the ‘healthy warrior effect’, as personnel who undertake operational deployments are required to be at the highest level of fitness. Those on the Nominal Roll must have been fit to deploy to East Timor at the time of their deployment. It is not known whether the comparison group members were fit to deploy over the same time period. Defence aims for all personnel to be deployable. Medical classification was not used as a stratification variable in the generation of the comparison group because of difficulties in obtaining data from the PMKeyS records as far back as 1999. This may be a potential confounder as the comparison group may have been ‘less healthy’ at the time the veterans deployed and

more susceptible to negative health outcomes than the group who deployed to East Timor. If such a difference persisted to the present, the effect of such a bias would be an underestimation of the poorer health outcomes reported by the East Timor veterans compared to the comparison group. However, as the preliminary analysis presented in Tables 1.4 and 1.5 of Chapter 1 showed, members of the comparison group have been deployed to a variety of other locations. East Timor veterans have deployed roughly one more time (to East Timor) than the comparison group and the same proportions of participants in each arm of the study had deployed to the Middle East Area of Operations.

126. Finally, there may also be differences between East Timor veterans who deployed early in the conflict when the deployment was considered warlike and those who deployed later. This will be explored in Chapter 6, examining differences in physical and mental health outcomes depending upon the time of deployment.

127. Comparisons with civilian populations will be made in subsequent papers.

Chapter 4 – Do East Timor veterans have different health behaviours relative to an ADF comparison group who did not deploy to East Timor? For example, were there different rates of tobacco smoking and alcohol consumption?

Introduction

128. Excessive or inappropriate consumption of tobacco and alcohol are established health risks²⁹⁻³². For Defence Force personnel, increased access to cigarettes and alcohol, including reduced costs, may contribute to a greater uptake of these behaviours.

129. Excess body weight is also associated with a range of adverse health outcomes. Body Mass Index (BMI) is commonly used to assess the level of risk; however, it should be noted that BMI is only moderately correlated with fatness and very muscular individuals may have a high BMI.

130. This chapter investigates whether there was an association between deployment to East Timor and high risk health behaviours.

Methods

Data Source:

131. Data on tobacco smoking and alcohol consumption was obtained from both self-report and Defence Health records. Measures of alcohol consumption are also collected during the Post Operational Psychological Screen (POPS). However, because POPS data is only collected for those who deploy there is no equivalent measure for the comparison group. Accordingly, only measures of alcohol consumption collected from the Defence Health records and self-report data are used.

132. BMI data were sourced from Defence Health records only.

CMVH Self-report

Alcohol Use Disorders Identification Test (AUDIT)

133. The AUDIT screening test was developed by the World Health Organization (WHO) as a method of screening for hazardous and harmful alcohol use and assisting in the formulation of brief interventions.

134. The AUDIT consists of ten scored questions and two additional non-scored questions which provide an indication of readiness to change, and are designed to assist in determining the levels of intervention.

- a. Questions 1-3 ask about frequency and quantity of drinking in the past year.
- b. Questions 4-6 ask about impairment of control over drinking, salience of drinking and morning drinking.

- c. Questions 7-10 ask about feelings of guilt, blackouts, injury and concern by others.

135. The total AUDIT score was calculated according to the instructions in the document 'The Alcohol Use Disorders Identification Test: Guidelines for use in Primary Care'³³. The total score was calculated for each subject. If a participant responded that they 'never' have a drink containing alcohol then the total AUDIT score was set as zero. AUDIT scores were categorised into four groups with 0-7 representing low risk, scores of 8-15 representing a medium level of alcohol problems and scores above 15 representing a high level of alcohol problems. The scores above 15 have been split into 16-19 and 20+ categories, as the guidelines recommend that the 20+ category warrants further diagnostic evaluation for alcohol dependence.

Smoking

136. These questions were based on the Australian Gulf War Study. They measured smoking status (current, ex, never), pack years of smoking and change in smoking status since deployment. Smoking status was assigned based on the following definitions:

- a. Current smoker: Subject had smoked at least 100 cigarettes in their lifetime and currently smoked at least one cigarette per day or one cigar per week or one ounce of tobacco per month.
- b. Former smoker: Subject had smoked at least 100 cigarettes in his lifetime, did not currently smoke at least one cigarette per day or one cigarette per day or one cigar per week or one ounce of tobacco per month, but had smoked as much as this in the past.
- c. Never smoker: Subject had never smoked as much as one cigarette per day or one cigar per week or one ounce of tobacco per month or the subject never smoked as much as 100 cigarettes in their lifetime.

Defence Health records

AUDIT

137. The AUDIT scale (already described in this chapter) was also sourced from the most recent CPHE. In some versions of this form the time period used in the AUDIT questions was three months rather than the standard one year. In these instances no adjustment was made to the scale.

Smoking

138. Current smoking status (Yes / No) was drawn from the most recent routine health assessment form present in the Defence Health record, either the AHA or CPHE.

BMI

139. Height and weight are used to determine Body Mass Index (BMI). Height and weight were obtained from Defence Health data as recorded at the latest routine health assessment, either the AHA or the CPHE. BMI findings should be interpreted with caution as the suitability of population-based BMI categories is questionable for muscular males.

Statistics

140. Health outcomes were defined as current smoker, high risk drinker (20-40 on AUDIT) and being overweight (BMI > 25). The prevalence of outcomes was compared using logistic regression. Adjusted and unadjusted ratios associated with deployment to East Timor were calculated. These results were similar so only the adjusted ratios were presented.

Results

141. All odds ratios displayed in the following tables have been adjusted for sex, age group, Service (Navy, Army or RAAF) and rank (officer or enlisted).

Self-report

142. Only 16-19% of respondents were smokers in 2008 (Table 4.1). There was no difference between the veterans and the comparison group. A number of respondents who reported smoking as many as 100 cigarettes (or equivalent) in their lifetime did not respond to the question about current smoking. These people are labelled 'not specified' in Table 4.1.

Table 4.1: Self-report: AUDIT categories and smoking status for East Timor veterans and comparison group

		Veterans <i>n</i> (%)	Comparisons <i>n</i> (%)	Odds Ratio (95% CI) ^a	<i>p</i> -value
<i>AUDIT</i>	0-7	1094 (63)	603 (68)		
	8-15	478 (28)	230 (26)		
	16-19	78 (4)	33 (4)		
	20-40	84 (5)	26 (3)	1.63(1.04,2.57) ^b	0.035
	Not specified	99	59		
<i>Smoking</i>	Never/occasional smoker	899 (57)	488 (61)		
	Former smoker	375 (24)	179 (23)		
	Current smoker	293 (19)	128 (16)	1.14(0.90,1.44) ^c	0.280
	Not specified	266	156		

^aAdjusted for sex, age group (20-29, 30-39 and 40+), Service and rank

^b20-40 v 0-19

^cCurrent smoker v Non-current smoker

143. There was evidence that East Timor veterans were more likely than comparison group members to score in highest AUDIT category (OR 1.63, 95% CI (1.04, 2.57)). The median AUDIT score was 6 in the East Timor veterans and 5 in the comparison and a Wilcoxon-Mann Whitney test of the difference between these median scores was significant ($p < 0.001$). The percentage who scored zero on the AUDIT scale was 3% and 4% in the veteran and comparison groups respectively.

144. After adjusting for demographic characteristics the proportion of current smokers was slightly higher in the East Timor veterans relative to the comparison group (OR 1.14, 95% CI (0.90, 1.44)); however, this result was not statistically significant.

Defence Health records

145. Body Mass Index (BMI) was collected from Defence Health records. Thirty-three percent of East Timor veterans and 36% of comparison group members were in the healthy weight range of the BMI. Full details are in Table 4.2. The proportion recording a BMI greater than 25 did not differ significantly between veterans and the comparison group (OR 1.05, 95% CI (0.87, 1.27)).

Table 4.2: Defence Health records: Smoking status and AUDIT and BMI categories for East Timor veterans and the comparison group

		Veterans <i>n</i> (%)	Comparisons <i>n</i> (%)	Odds Ratio (95% CI) ^a	<i>p</i> -value
<i>AUDIT</i>	0-7	921 (81)	626 (83)		
	8-15	174 (15)	119 (16)		
	16-19	17 (2)	7 (1)		
	20-40	20 (2)	5 (1)	2.76(1.01,7.50) ^b	0.047
	Not specified	133	69		
<i>Smoking</i>	Non-current smoker	923 (69)	601 (69)		
	Current smoker	413 (31)	272 (31)	1.04(0.86,1.26) ^c	0.697
	Not specified	26	11		
<i>BMI</i>	0-18.5	4 (0)	2 (0)		
	18.5-25.0	444 (33)	315 (36)		
	25.0-30.0	641 (48)	394 (45)	1.05(0.87,1.27) ^d	0.587
	30+	245 (18)	157 (18)		
	Not specified	28	16		

^aAdjusted for sex, age group (20-29, 30-39 and 40+), Service and rank

^b20-40 v 0-19

^cCurrent smoker v Non-current smoker

^dBMI 25+ v BMI 0-25

146. The Defence Health data (Table 4.2) confirmed the finding from the self-report data that a greater proportion of East Timor veterans report problematic alcohol consumption. Two percent (n=20) of veterans were in the highest risk category of the AUDIT scale, compared with 1% (n=5) of the comparison group, a statistically significant difference. Regardless of deployment to East Timor, over 95% of the sample had AUDIT scores of less than 16.

147. For current smoking, Defence Health data revealed no differences associated with exposure status, but the reported level of smoking for both groups was around 31%, compared with less than 20% in the self-report data.

Discussion

148. Both the CMVH self-report data and the Defence Health data show that veterans of the East Timor deployment are more likely to report risky drinking behaviours as measured by AUDIT. However, there were no differences in smoking

behaviour between the study groups from either data source. Similarly, BMI did not differ significantly between the two groups.

149. The findings for alcohol consumption for East Timor deployment differ from the findings for both the Bougainville and Solomon Islands studies, where there was no difference between the veteran and comparison groups. Whether this may be attributable to the warlike nature of some East Timor operations, or other factors, is currently unclear.

150. Respondents in the East Timor study appeared to have a higher level of current smoking, on average, than respondents in the Bougainville study. Data from the two sources are not directly comparable as the demographic composition differed (see Chapter 1 of both reports). Accordingly, more detailed analyses of these comparisons will be needed.

151. Defence Health records for the East Timor study confirmed the findings from the self-report data. There were, however, some differences between the two sources, for example, the proportion of current smokers was higher. However, the self-report and the Defence Health data may not be directly comparable because:

- a. There were differences in demographic composition of data from the two sources. In particular, ex-serving personnel were over-represented in the Defence Health data (44%) and underrepresented among self-report respondents (11%). This also impacted on the age of available records—the latest health assessment for ex-ADF members may have been up to 10 years old.
- b. The AHAs and CPHEs in the Defence Health data were collected at varying time points, rather than within a single period, and could potentially include times prior to the individual's deployment to East Timor. This is particularly the case for AUDIT data which are only available on the CPHE collected every five years.
- c. The actual questions differed slightly in some instances, for example some versions of the AUDIT on the CPHE used a time scale of three months rather than the WHO version which uses a time period of one year; however, all AUDIT scores were included. In addition, skip patterns in the online questionnaire may have caused a number of current or former smokers to be classified in the 'not specified' category.
- d. Differences may also be due to the clinical and occupational context in which the health assessment is conducted.

152. Current work by Defence to convert health records to an electronic format will improve ease of access and comparability of data. The inclusion of AUDIT, smoking history, height and weight in Defence Health data will be useful for future surveillance, particularly in prospective studies when researchers may be sure that the measurement was taken before exposure. This will also enable further research comparing health behaviours recorded in the health records with surveys and other sources.

Chapter 5 – What deployment issues and hazards were reported by East Timor veterans?

Introduction

153. ADF personnel face a number of issues during deployment, which may affect physical and mental health outcomes. These include the use of health countermeasures such as vaccinations and pesticides, chemical and environmental exposures, exposure to traumatic events, organisational issues, and stressors experienced while on deployment, such as separation from family.

154. The aim of the current chapter is to analyse and report in brief on the issues experienced by ADF personnel while on deployment to East Timor.

Methods

Data Source:

155. Data for the current chapter were drawn from the self-report questionnaire and from Defence Health records.

156. Participants who had deployed to East Timor between 19 June 1999 and 13 May 2005 were asked to complete an East Timor Deployment Questionnaire. Some vaccination data were also obtained from Defence Health records.

Health Countermeasures

Defence Health records

International Certificates of Vaccination

157. The International Certificates of Vaccination booklet, referred to as the 'yellow book', is a document used to record vaccines approved by the World Health Organization. The yellow book is only located in the member's Unit Medical Record (UMR) and provides the greatest detail on all vaccinations received by date and dose.

CMVH Self-report

Vaccinations

158. Questions were used to describe vaccination history; they were modified from questions used in the Australian Gulf War Study.

Insecticides and pesticides

159. These questions asked about the use of pesticides and insecticides in the environment and in the treatment of personal items while on deployment to East Timor.

Antimalarial medications

160. These questions asked about the type and dose of antimalarial medication taken as part of the deployment to East Timor.

General Health

CMVH Self-report

Current versus pre-deployment health

161. This question was drawn from the King's College London Deployment questionnaire and asks respondents to rate their general health now, compared to before they deployed to East Timor.

Hazards

CMVH Self-report

162. Questions included general exposures to food, water, insects and pests, and other chemical and environmental risks identified from hazard reports and the literature review as potential exposures. Additional questions on asbestos and pesticide exposure were included. The questions were modified from the Australian Gulf War Study.

Major Stressors

163. The 'Major Stressors' section in the self-report questionnaire was copied from the Defence Return to Australia Psychological Screening (RtAPS) instrument. It lists 36 potentially stressful factors. People are asked to rate each factor on a 5-point Likert scale ranging from "No Stress = 1" to "Extreme Stress = 5". Possible scores range from 0 to 144. The ADF typically reports results on the Major Stressors by listing the most frequently recorded stressful events and those which were recorded with the highest stress level.

Traumatic Stress Exposure Scale – Revised (TSES-R)

164. The TSES-R is also drawn from RtAPS and is designed to measure the frequency and severity of traumatic events. Twelve events are presented. For each event participants are asked 'How often did you experience the event?'. Then people are asked 'How did it affect you at the time?' and 'How does it affect you now?'. Three scales are computed from these questions³⁴.

165. The first of these three scales ("How much did you experience the event?") is coded by assigning the following values to each of the responses: 0 – "Never", 1 – "Rarely", 2 – "Occasionally", 3 – "Often"; and 5 – "Very Often"³⁴. However, the Psychology and Research Technology Group (PRTG) have used the value 4 rather than 5 for the response of "Very Often". The second ("How did it affect you at the time?") and third ("How does it affect you now?") scales are scored as follows: 0 – "Not at all", 1 – "A little", 2 – "A moderate amount"; and 3 – "A great deal". The TSES-R score is calculated by summing the values of the three scales for each of the twelve questions, with higher scores indicating more exposure to traumatic events, more distress at the time and more distress currently.

Organisational commitment

166. This section consists of two questions asking about the perceived usefulness of tasks while on deployment and level of morale in the team during deployment. These questions were drawn from the King's College London questionnaire and the RtAPS.

Results

167. Most deployment data was self-reported in the East Timor Deployment Questionnaire. This questionnaire was provided only to the veterans of the East Timor deployments. One thousand five hundred and sixty-three participants completed the Deployment Questionnaire. The respondents reported on a mean of 1.7 (SD = 4.4) deployments to East Timor, with a mean total time deployed of 167 days (SD = 120.7).

168. Some vaccination data were also obtained from Defence Health data via 'yellow book' records. This process was new to the program and consequently new database components and coding rules were designed for entry of yellow book data. At the beginning of April 2009 entry was ongoing.

Health Countermeasures

Vaccinations – Defence Health Data

Table 5.1: Number of vaccinations before first deployment to East Timor

Number of vaccinations	0-3 months before deployment	0-12 months before deployment
	n (%)	n (%)
0	48 (27)	17 (9)
1-3	66 (37)	48 (27)
4-6	45 (25)	57 (32)
7 or more	20 (11)	57 (32)

169. Of the veterans who we could access a yellow vaccination book for, 11% had seven or more vaccinations in the three months prior to their first deployment to East Timor (Table 5.1). Twenty-five percent had between four and six vaccinations in the same interval. Only nine percent had no vaccinations recorded in their yellow book in the 12 months prior to their first East Timor deployment.

Insecticides and Pesticides – CMVH Self-report

170. Table 5.2 shows the frequency of use of insect repellent (ADF issue or respondent's own repellent) while on the deployment. The table was compiled from responses to three questions: whether repellent was used, whether it was ADF issue or the person's own repellent, and how often it was used. Most participants who responded to these items appeared to use some form of repellent at least daily or weekly. Of the 355 missing responses, 29 did not respond to the question at all, and 327 responded that they used insect repellent but did not specify how often.

Table 5.2: Frequency of personal insect repellent use while on deployment

	<i>Frequency</i> <i>n (%)</i>
<i>Daily</i>	617 (54)
<i>At least once a week</i>	234 (20)
<i>At least once a month</i>	39 (3)
<i>Less than monthly</i>	6 (1)
<i>Not at all</i>	193 (17)
<i>Don't know</i>	64 (6)
<i>Used but frequency not specified</i>	327
<i>No response</i>	28

171. Table 5.3 shows frequency of pesticide treatment of items in personal contact or the immediate environment. Participants who believed they had been exposed to pesticide reported the level of exposure (“Daily”, “At least once a week”, “At least once a month”, and “Less than monthly”). The first three categories were combined into “At least monthly” because the recommendation was for these countermeasures to have been employed monthly. Other categories were as in the questionnaire response options.

172. Over half the respondents had their clothing or uniform, and tent or mosquito net treated with pesticide, with between 37% and 45% of these being treated at least monthly. Most (71%) did not have their sleeping bag or bivi bag treated with pesticide.

Table 5.3: Frequency of pesticide treatment of personal items during deployment

		<i>Frequency</i>	
		<i>n</i>	<i>(%)</i>
<i>Clothing or uniform treated with pesticide</i>	At least monthly	665	(45)
	Less than monthly	399	(27)
	No	310	(21)
	Don't know	111	(7)
	Not specified	23	
<i>Tent or mosquito net treated with pesticide</i>	At least monthly	541	(37)
	Less than monthly	292	(20)
	No	466	(32)
	Don't know	177	(12)
	Not specified	32	
<i>Sleeping bag or bivi bag treated with pesticide</i>	At least monthly	189	(13)
	Less than monthly	95	(6)
	No	1035	(71)
	Don't know	149	(10)
	Not specified	40	

Antimalarial medication – CMVH Self-report

173. The use of antimalarial medication reported by East Timor veterans is shown in Table 5.4. Most participants (94%) reported using some form of antimalarial medication, the most common type being Doxycycline (88%). Reported compliance with the drug regimen was mostly good (96% reporting complying 'all of the time' or 'most of the time'). However, due to the high non-response rate to this question, these percentages should be interpreted with caution.

Table 5.4: Self-reported use of antimalarial medication

		<i>Frequency</i>	
		<i>n</i>	<i>(%)</i>
<i>Used antimalarial medication</i>	Yes	1437	(94)
	No	50	(3)
	Don't know	34	(2)
	Not specified	17	
<i>Type of antimalarial medication</i>	Doxycycline	894	(88)
	Mefloquine	47	(5)
	Malarone	3	(0)
	Don't know	57	(6)
	Other	12	(1)
	Not specified	424	
<i>Compliance with regimen of antimalarial medication</i>	Good	961	(96)
	Poor	35	(4)
	Not specified	441	

174. Table 5.5 shows reported use of Primaquine as post-exposure prophylaxis on return to Australia. Sixty-seven percent of participants reported taking Primaquine on their return to Australia, with 98% compliance ('all of the time' or 'most of the time'). Again, caution is required in interpreting the compliance results due to the low response to this question.

Table 5.5: Self-reported use of post-deployment antimalarial prophylaxis

		<i>Frequency</i>	
		<i>n</i>	<i>(%)</i>
<i>Used post-deployment antimalarial prophylaxis</i>	Yes	1020	(67)
	No	237	(16)
	Don't know	260	(17)
	Not specified	21	
<i>Compliance with regimen, if used</i>	Good	698	(98)
	Poor	15	(2)
	Not specified	307	

175. Table 5.6 shows self-reported reactions to any vaccinations or medications received for deployment to East Timor. The table includes responses from only those who specified which vaccinations or medications caused them to have a reaction. Of the 1507 people who responded to the filter question asking whether they had any reaction to either vaccinations or medications, 83% reported no reaction and 11% reported some reaction. A further 6% did not know. Not all of those reporting any reactions specified what they reacted to. Free text responses were categorised into

antimalarials and vaccinations by searching for words or parts of words to maintain consistency.

Table 5.6: Self-reported reactions to health countermeasures

	Frequency	
	<i>n</i>	(%)
<i>Reported reaction to antimalarial</i>	96	(100)
Doxycycline	54	(56)
Primaquine	16	(17)
Mefloquine	16	(17)
Unknown	10	(10)
Tafenoquine	4	(4)
<i>Reported reaction to vaccine</i>	16	(100)
JEV	4	(50)
Unknown	2	(25)
Typhoid	1	(13)
MMR	1	(13)

* Four participants reported using both Doxycycline and Mefloquine

176. Where participants specifically nominated a reaction to in-country antimalarial prophylaxis, 54 (56%) named Doxycycline as the drug they reacted to. The most common reaction were 'doxy dreams' and sun-sensitivity. Sixteen (17%) specifically named Mefloquine as the antimalarial causing a reaction. Four participants named more than one antimalarial medication as producing a reaction. Malaria eradication (post exposure prophylaxis) medication nominated by participants as producing adverse reactions included Primaquine (17%) and Tafenoquine (4%).

177. Reactions to vaccinations were reported by eight participants. The most common vaccine to which reactions were reported was to Japanese Encephalitis vaccine (JE Vax™).

General Health

178. Table 5.7 shows self-assessment of general health by respondents at the time of survey compared with their recollection of their general health after deployment to East Timor. Sixty-one percent of participants reported their health was the same or better now i.e. at time of survey, compared with before they deployed to East Timor.

Table 5.7: Self-assessment of general health after deployment to East Timor

	Response	
	<i>n</i>	(%)
<i>Much better now</i>	26	(2)
<i>Somewhat better now</i>	57	(4)
<i>About the same</i>	795	(55)
<i>Somewhat worse now</i>	482	(33)
<i>Much worse now</i>	94	(7)
<i>Not specified</i>	30	

Hazards

179. The Deployment questionnaire contained a list of 20 possible chemical and/or environmental hazards experienced during the deployment, as shown in Table 5.8. The responses are ordered by frequency of daily exposure.

Table 5.8: Hazards reported by East Timor veterans

Exposure	Responses n=1472 ^a						Not specified n ^b
	Daily (%)	At least once a week (%)	At least once a month (%)	Less than once a month (%)	No (%)	Don't know (%)	
Close to loud noises	51	18	7	4	17	2	8
Bitten by flies, sand flies, fleas, mosquitoes or other insects	42	24	7	5	12	9	19
Enter buildings or areas that might have contained asbestos	32	13	5	4	7	38	3
Live or work in an area that had been recently sprayed or fogged with a pesticide	29	37	11	3	12	7	22
Solvents/degreasing agents, e.g. from cleaning, painting or hand washing	24	16	7	5	41	6	21
Exposed to engine exhaust so that it irritated your eyes	19	12	8	7	50	4	20
Refuelling	12	26	9	4	47	1	6
Exposed to intense smoke e.g. from fires	9	15	12	13	49	2	6
High pressure sprayers	5	10	21	20	32	12	27
Tent or mosquito net treated with pesticides	5	8	7	11	66	3	7
Eat locally sourced food	5	14	10	13	46	12	4
In contact with or use heavy metals such as lead paints and mercury	4	3	2	2	56	33	6
Clothing or uniforms treated with pesticides (e.g. permethrin)	4	10	31	27	21	7	18
Swim or bathe in local lakes, rivers or the sea	3	18	24	21	34	0	6
Exposed to any chemical spills/ chemically contaminated sites	3	4	3	5	50	36	28
Stung or bitten by spiders, scorpions or other "bugs"	2	3	5	8	70	12	23
Sleeping bag (Bivi bag) treated with pesticides	2	3	8	6	71	10	35
Drink water from local taps or wells	1	3	2	3	86	4	9
Involved in the cleanup of any chemicals	1	2	4	6	80	7	23
Shower in water with fuel in it (evident by visible oil film, smell or stinging eyes)	1	1	1	2	76	19	8

a Responded to at least one question

b Did not report the particular hazard

180. Frequency of exposure was variable and in some cases was high. For example, a high percentage (32%) of all respondents to the Deployment questionnaire reported entering buildings or areas that might have contained asbestos daily and an additional 13% entered them at least once a week; a further 38% were uncertain about the frequency of the event. Analysis according to job category, trade or deployment tasks will be conducted where data are available.

Major stressors

181. Table 5.9 summarises the factors that East Timor veterans reported as causing various levels of stress and the mean score associated with each stressor. Scores were: 1=no stress, 2=slight, 3=moderate, 4=a lot, 5=extreme

182. The most common stressor was 'risk of vehicle accidents' with 71% reporting stress. The 'threat of danger' (67%) was the next most common stressor. 'Separation from family and friends', the 'behaviour of others' and 'sorting out problems at home' were also recorded frequently (64-70%).

183. The most common stressors tended to have the highest mean scores – that is, they bothered the most people and, on average, bothered people the most. However, there were some instances where less common stressors reported mean scores higher than some of the more prevalent stressors, indicating more variability in the stress categories. These items included 'double standards', 'leadership', 'overload of work' and 'the Australian military hierarchy'. A score of 5 would represent extreme stress on that particular item.

Table 5.9: Stressors reported by East Timor veterans

Stressor	Reported stress		Score (out of 5)	
	<i>n</i>	(%)	Mean	(SD)
<i>Risk of vehicle accidents</i>	990	(71)	2.2	(1.0)
<i>Separation from family and friends</i>	980	(70)	2.1	(1.0)
<i>Behaviour of others</i>	971	(69)	2.1	(1.0)
<i>Threat of danger</i>	933	(67)	2.0	(0.9)
<i>Sorting out problems at home</i>	892	(64)	2.1	(1.0)
<i>Frustration generally</i>	881	(63)	1.9	(0.9)
<i>Double standards</i>	879	(63)	2.3	(1.3)
<i>Leadership</i>	864	(62)	2.1	(1.2)
<i>Risk of unauthorised discharge (UD) of weapons</i>	859	(61)	1.9	(0.9)
<i>Overload of work</i>	851	(61)	2.1	(1.1)
<i>The Australian military hierarchy</i>	783	(56)	1.8	(0.8)
<i>Contact with family/friends</i>	774	(55)	2.0	(1.2)
<i>Isolation from Australia</i>	777	(55)	1.8	(0.8)
<i>Living conditions</i>	757	(54)	1.8	(0.9)
<i>Periods of high activity then low or no activity</i>	734	(52)	1.8	(0.9)
<i>Health concerns</i>	721	(51)	1.7	(0.9)
<i>Living and working with the same people</i>	711	(51)	1.8	(1.0)
<i>Thinking about returning home</i>	713	(51)	1.8	(0.9)
<i>The deployment's rules and regulations</i>	707	(50)	1.7	(0.8)
<i>Sorting out disagreements with others</i>	671	(48)	1.7	(0.8)
<i>Personal privacy</i>	648	(46)	1.6	(0.8)
<i>Boredom</i>	633	(45)	1.7	(0.9)
<i>The overseas organisation (e.g. UN, MFO)</i>	620	(44)	1.7	(1.0)
<i>Not getting on with others</i>	570	(41)	1.7	(1.0)
<i>ADF's lack of concern with deployed troops/sailors/airmen</i>	559	(40)	1.6	(0.8)
<i>Language barriers</i>	539	(38)	1.5	(0.7)
<i>Length of deployment</i>	536	(38)	1.5	(0.8)
<i>Completing deployment's objectives</i>	520	(37)	1.5	(0.8)
<i>Lack of opposite sex company</i>	507	(36)	1.5	(0.8)
<i>Working with military of other countries</i>	500	(36)	1.5	(0.8)
<i>Living in a different culture</i>	482	(34)	1.4	(0.6)
<i>Your role in the country</i>	438	(31)	1.4	(0.7)
<i>Mail service</i>	416	(30)	1.4	(0.8)
<i>Taking leave back in Australia</i>	373	(27)	1.4	(0.8)
<i>Isolation from other deployed members</i>	298	(21)	1.3	(0.6)
<i>Taking leave other than in Australia</i>	110	(8)	1.1	(0.4)

NB – the denominator varies slightly as some participants did not respond to all items

TSES-R

184. Table 5.10 summarises the scores on the Traumatic Stress Exposure Scale – Revised (TSES-R). The mean level of exposure to 12 different types of traumatic event was 4.8 (on a scale where of 0 to 60), which is higher than reported in any previous studies conducted by CMVH. Participants did not report, on average, being greatly affected the traumatic event at the time of exposure and most participants were not affected by the events at the time of the survey. The relationship between exposure to traumatic events and later symptoms will be explored in a subsequent paper on the Near North studies.

Table 5.10: TSES-R

<i>Scale</i>	<i>Mean score</i>	<i>95% CI</i>
<i>Frequency of events</i>	4.8	(4.6, 5.1)
<i>Effect at the time</i>	2.7	(2.5, 2.9)
<i>Effect now</i>	1.2	(1.1, 1.4)

n=1444

Organisational Commitment

185. Respondents were asked to report on the usefulness of the tasks performed in East Timor. As shown in Table 5.11, the majority felt they made a useful contribution to the local population (82%) and the military mission (95%) while on deployment in East Timor.

Table 5.11: Perception of usefulness while deployed in East Timor

<i>Useful contribution</i>	<i>Agree</i>	
	<i>n</i>	<i>(%)</i>
<i>To the local population</i>	1188	(82)
<i>To the military mission</i>	1368	(95)

186. East Timor veterans were asked to rate the level of morale in their unit during deployment. As shown in Table 5.12 very few respondents (8%) rated morale on deployment as 'low' or 'very low'.

Table 5.12: Perception of the morale of the immediate workplace (or team) during deployment in East Timor

<i>Level of morale</i>	<i>Frequency</i>	
	<i>n</i>	<i>(%)</i>
<i>Very high</i>	216	(15)
<i>High</i>	640	(44)
<i>Average</i>	478	(33)
<i>Low</i>	86	(6)
<i>Very low</i>	31	(2)
<i>Not specified</i>	33	

187. Post-deployment mental health screening has been discussed in detail in Chapter 2.

Discussion

188. Reviewing the number of vaccinations received in the lead up to deployment to East Timor, it is evident that approximately one third of individuals, for whom we were able to collect data, would not have met current standards for individual readiness for deployment. It is of potential concern that a relatively large proportion of individuals required four or more vaccinations in the lead up to deployment. It is currently unclear whether any specific combination of vaccinations required for deployment to East Timor has a relationship to any particular health effects.

189. Exposure to buildings containing asbestos was of particular interest for this deployment cohort. The frequency of exposure was high and the level of uncertainty about exposure also relatively high. Swimming in local waters was very commonly endorsed, and possible exposures may relate to water quality reports. There was considerable uncertainty about some hazards, for example whether any showering water contained fuel. Common chemical exposures reported were also pesticide-related, for example Permethrin-treated clothing.

190. The operational deployments to East Timor included both warlike and non-warlike operations. Although participants in this study reported a higher average of traumatic events (based on the TSES-R) than in other deployment health studies conducted by CMVH, most of the effects of those exposures had declined by the time of the survey. However, increased reporting of traumatic events compared with other Near North deployments may be reflected in differences in mental health between veterans and comparisons reported in Chapter 2. This may provide a fruitful area of further exploration.

Current limitations

191. Data on exposures to identified hazards are limited by the unavailability of objective measures of exposures to individual ADF members. Rather they were subjective, reflecting respondents' perceptions, which are nevertheless important and of interest.

Future research

192. There are many other research questions that can be answered from the data collected for this study in combination with data from the other Near North deployment health studies, including the Solomon Islands Health Study and the Bougainville Health Study.

Chapter 6 – Does deployment on early compared with later operations (i.e. Warden vs Tanager) affect outcome measures of physical and mental health?

Introduction

193. This chapter investigates whether there was a relationship between the time of deployment to East Timor and subsequent physical or mental ill health.

194. The six operations in East Timor covered by this study spanned a period from June 1999 to May 2005 and included a combination of ‘warlike’ and non-warlike’ operations. Operations WARDEN, TANAGER and CITADEL were warlike, while Operations SPITFIRE and SPIRE were non-warlike. Operations FABER and CITADEL had both warlike and non-warlike periods. Even within these classifications some operations were considered more hazardous than others were overall. For example, Operation WARDEN saw the insertion of three infantry battalions and other units at approximately the same time. Their role under the UN mandate was to restore peace and security. The overall situation on the ground was characterised by high levels of uncertainty. In contrast, although Operation TANAGER was also classified as warlike, the level of perceived threat and uncertainty had reduced significantly (see East Timor Literature Review (Annex A) for more detail).

195. This chapter contains a brief examination of differing impact on health depending upon the dates of deployment.

Methods

196. Data from three sources was used to obtain the date of first deployment to East Timor (ADFPAY, PMKeyS and Allotment certificates). Although most data received for individuals contained a valid Operation name, other data listed only deployment to East Timor. Accordingly, an *a priori* decision was made to compare outcomes based on the commencement date of the participants’ first deployment to East Timor. The dates were chosen based on the various operations but as official dates for the operations sometimes overlapped (i.e. Operation WARDEN did not officially end until 10 April 2000) the dates chosen allowed for some variation based upon rotations due to courses or postings rather than large scale deployment of different units. The cut-offs for the three East Timor veteran groups were as follows:

- a. Group 1 = deployment commenced between 19 June 1999 and 31 January 2000
- b. Group 2 = deployment commenced between 1 February 2000 and 17 August 2003
- c. Group 3 = deployment commenced between 18 August 2003 and 13 May 2005

Data Source:

197. Data for this chapter were drawn exclusively from the CMVH self-report questionnaire data. Although some items also form part of the Defence RtAPS and POPS psychological screens, the screens collected for the earlier deployments did not always include measures collected in the later deployments, making it difficult to

compare across deployment times. Consequently, all items are drawn from data collected from the Health and Deployment questionnaires. All items have been previously described. They are:

- a. *General Health* which measures the participants' perception of their own health – previously described in Chapter 3.
- b. *Subscales of the SF-36*, Role Physical and Social functioning – previously described in Chapter 3.
- c. *Symptoms* – a 67 item self-report symptom list – previously described in Chapter 3.
- d. *The Alcohol Use Disorders Identification Test (AUDIT)* where a score of more than 20 is considered to warrant further diagnostic evaluation for alcohol dependence – previously described in Chapter 4.
- e. *K10* – a scale measuring non-specific psychological distress where those who score more than 30 are reporting a high level of distress – previously described in Chapter 2.
- f. *PCL-C* – a self-report rating scale for assessing the symptoms of PTSD. A score above 50 on the PCL-C has been found to be a good predictor of a PTSD diagnosis¹⁵ – previously described in Chapter 2.
- g. *TSES-R* is designed to measure the frequency and severity of traumatic events – previously described in Chapter 5.

Results

198. Table 6.1 describes the characteristics of participants in each of the three deployment time groups. Most differences are in the group of participants that deployed in Group 3. As described in the methods section, membership of the different deployment groups was decided *a priori* and the number of participants deploying for the first time after August 2003 is comparatively small. It would seem that proportionally more females, people in the youngest age group, Army, and officers deployed for the first time to East Timor after August 2003.

Table 6.1: Participant characteristics for East Timor veterans by time of deployment

		<i>Group 1</i> 19 June 1999 to 31 January 2000 N = 762	<i>Group 2</i> 1 February 2000 to 17 August 2003 N = 969	<i>Group 3</i> 18 August 2003 to 13 May 2005 N = 101
<i>Characteristic</i>		<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
<i>Sex</i>	Male	667 (88)	868 (90)	88 (87)
	Female	95 (12)	101 (10)	13 (13)
<i>Age</i>	20-29	73 (10)	155 (16)	25 (25)
	30-39	415 (54)	462 (48)	39 (39)
	40+	274 (36)	352 (36)	37 (37)
<i>Service</i>	Navy	146 (19)	92 (9)	1 (1)
	Army	532 (70)	788 (81)	94 (93)
	RAAF	84 (11)	89 (9)	6 (6)
<i>Employee status</i>	Active	655 (86)	864 (89)	94 (93)
	Ex-serving	107 (14)	105 (11)	7 (7)
<i>Service type</i>	Regular/Permanent	494 (65)	623 (65)	79 (80)
	Reserve	263 (35)	332 (35)	20 (20)
	Not specified	5	14	2
<i>Rank</i>	Officer	202 (27)	233 (24)	36 (36)
	Enlisted	560 (73)	736 (76)	65 (64)

199. Table 6.2 shows that there was a significant difference in perceptions of general health between the deployment groups after adjusting for demographic variables. Specifically, those in Group 1 (the earliest deployment group) their overall health as worse (i.e. a lower score on the SF-36 subscale). Twenty-four percent of participants in Group 1 compared to 19 % in Group 2 reported their health as fair or poor, which is reflected in the overall mean. There were no significant differences in measure of role limitation due to physical health or social functioning, although the pattern of means was similar.

Table 6.2: SF-36 Scales for East Timor veterans comparing the date of first deployment

Scale	Group 1	Group 2	Group 3	p-value ¹
	19 June 1999 to 31 January 2000 Mean ² (95%CI) ²	1 February 2000 to 17 August 2003 Mean ² (95%CI) ²	18 August 2003 to 13 May 2005 Mean ² (95%CI) ²	
General Health	64.3 (61.2, 67.4)	67.4 (64.7, 70.2)	70.6 (65.9, 75.3)	0.001
Role limitation due to physical health	76.3 (71.2, 81.4)	79.9 (75.2, 84.5)	80.4 (72.6, 88.3)	0.103
Social functioning	76.9 (73.2, 80.6)	78.8 (75.5, 82.1)	81.1 (75.5, 86.7)	0.154

¹P-value from a Likelihood ratio test

²Adjusted for sex, age (20-29, 30-39 and 40+), Service and rank

200. Table 6.3 shows that the mean number of reported symptoms was significantly higher in the Group 1 (earliest deployment) and very similar in Groups 2 and 3. Group 1 reported approximately 10 percent more symptoms. Figure 6.1 also reflects these differences, showing that the majority of all 67 symptoms were reported more commonly by those who participated in the earliest deployments.

Table 6.3: Mean number of symptoms reported by people who deployed to East Timor

	Mean (SD)	Ratio of means ^a	(95% CI)	p-value ^b
Group 1 19 June 1999 to 31 January 2000	16.4 (12.9)	1.1	(1.0, 1.2)	0.002
Group 2 1 February 2000 to 17 August 2003	14.3 (11.5)	1	(Reference)	
Group 3 18 August 2003 to 13 May 2005	13.2 (10.8)	1.0	(0.8, 1.2)	0.910

^a Ratios of the means estimated using negative binomial regression with adjustment for sex, age group (20-29, 30-39 and 40+), Service and rank

^b Compared with Group 2 (February 2000 to 17 August 2003)

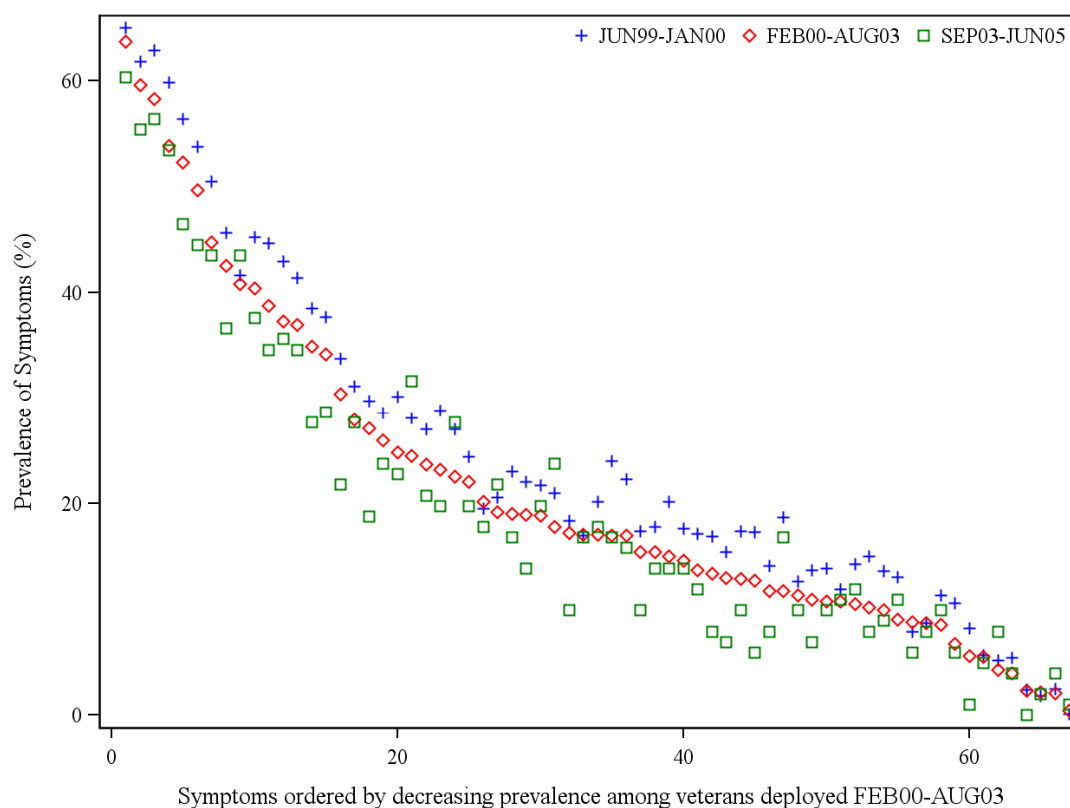


Figure 6.1: Frequency of common symptoms in East Timor veterans at different times of first deployment.

Table 6.4: AUDIT scores and percentage in the 20-40 category for different phases of the East Timor operations

	N	Mean (SD)	AUDIT 20-40		p-value
			n (%)	OR (95% CI) ^a	
Group 1 19 June 1999 to 31 January 2000	722	7.5 (5.9)	39 (5)	1.25 (0.79, 1.98)	0.334
Group 2 1 February 2000 to 17 August 2003	915	7.4 (5.4)	42 (5)	1 (Reference)	
Group 3 18 August 2003 to 13 May 2005	96	7.4 (5.4)	3 (3)	0.79 (0.24, 2.64)	0.706

^a20-40 v 0-19 Adjusted for sex, age group (20-29, 30-39 and 40+), Service and rank

201. Table 6.4 shows that there were no significant differences in the proportion of people scoring in the highest risk category for problematic drinking between the groups. Further, mean AUDIT scores for each of the three groups was relatively low. A test for differences between the means between Group 1 (earliest deployment) and Group 2 also reflected no differences (Mean difference = 0.03, 95% CI (-0.52, 0.59), p = 0.90).

Table 6.5: Evaluation of traumatic stress during different phases of the East Timor deployment, using the Revised Traumatic Stress Exposure scale

Scale	n	Frequency of events	Effect at the time	Effect now
		Median (IQ* range)	Median (IQ* range)	Median (IQ* range)
Group 1 19 June 1999 to January 2000	346	4.0 (6.0)	2.0 (5.0)	0.0 (2.0)
Group 2 1 February 2000 to 17 August 2003	490	4.0 (5.0)	2.0 (4.0)	0.0 (1.0)
Group 3 18 August 2003 to June 2005	56	1.5 (4.0)	0.0 (2.0)	0.0 (0.0)

*Interquartile

202. Table 6.5 demonstrates that the median number of traumatic events experienced by all veterans of East Timor was comparatively low. The median is reported as the scale is very skewed, with a large number of participants reporting no traumatic events. The interquartile range suggests that there was more variance in Group 1 with potentially a greater number of higher scores. Group 3 is quite homogeneous reporting very few incidents. For all three groups the traumatic experiences in East Timor are reported as having very little impact upon respondents now.

Table 6.6: K10 scores and percentage in the 30-50 category for different phases of the East Timor operations

	N	Mean (SD)	K10 30-50		p-value
			n (%)	OR (95% CI) ^a	
Group 1 19 June 1999 to 31 January 2000	727	17.6 (7.6)	55 (8)	1.16 (0.79, 1.70)	0.456
Group 2 1 February 2000 to 17 August 2003	908	16.9 (7.0)	64 (7)	1 (Reference)	
Group 3 18 August 2003 to 13 May 2005	96	16.0 (5.5)	2 (2)	0.31 (0.07, 1.28)	0.105

^a30-50 v 10-29 Adjusted for sex, age group (20-29, 30-39 and 40+), Service and rank

203. An examination of the proportion of participants scoring in the highest category (most distress) for K10 shows that there were no significant differences between the groups (see Table 6.6). However, a comparison between Group 1 and Group 2 showed some evidence of a small difference between early and middle

deployment in terms of general psychological distress (mean difference = 0.71, 95% CI (0.00, 1.44), $p = 0.05$).

Table 6.7: PCL-C scores and percentage in the 50-85 category for different phases of the East Timor deployment

	<i>N</i>	<i>Mean (SD)</i>	<i>PCL-C 50-85</i>		<i>p-value</i>
			<i>n (%)</i>	<i>OR (95% CI)^a</i>	
<i>Group 1</i> 19 June 1999 to 31 January 2000	676	28.4 (13.0)	62 (9)	1.62 (1.09, 2.39)	0.016
<i>Group 2</i> 1 February 2000 to 17 August 2003	866	26.7 (11.2)	52 (6)	1 (Reference)	
<i>Group 3</i> 18 August 2003 to 13 May 2005	90	25.7 (10.5)	4 (4)	0.81 (0.28, 2.31)	0.692

^a50-85 v 17-49 Adjusted for sex, age group (20-29, 30-39 and 40+), Service and rank

204. Table 6.7 shows mean scores and the proportion of participants scoring above a cut-off of 50 on the PCL-C. In those who deployed earliest (Group 1), 9% scored above 50 on the PCL-C. This group had a significantly higher mean score relative to those who deployed immediately afterwards (Mean difference between Group 1 and Group 2 = 1.71, 95% CI (0.48, 2.91), $p < 0.01$).

Discussion

205. This initial comparison of differing effects depending upon the time of deployment to East Timor shows a consistent trend demonstrating that those who deployed during the first warlike operations have slightly worse physical and mental health outcomes in comparison with those who deployed later, including later deployments still classified as warlike.

206. In summary, in 2008 those in the earliest deployment group report worse perception of their general health, more symptoms, slightly more psychological distress, and slightly more symptoms relating to PTSD.

207. However, there were no differences between the groups on two subscales of the SF-36 measuring “Role limitations due to physical health” and “Social functioning”. Similarly, current drinking behaviour as measured by AUDIT showed no demonstrable differences between the groups.

208. The nature of the deployment and the consequent roles and exposures, in addition to deployment location, may affect outcomes. This is consistent with findings from the US Millennium Cohort Study. It will be important to consider the nature of different operations within the same deployment location in further studies on the consequences of deployment.

Chapter 7 – Key findings, study strengths and limitations, general discussion, comparison between Near North deployment studies, further research questions and conclusions

Overview of key findings and answers to major research questions

209. This report provides analyses of data that answer the four major research questions for the study. We also plan additional analyses for publication in the peer reviewed scientific literature and seek participation of Defence making further use of these data to address questions of importance to the ADF.

210. The answers to the major research questions, at this stage are that there were:

- Data from the self-report questionnaire revealed a slight (non significant) increase in the proportions scoring in the highest categories of the mental health scales in the East Timor veteran group. The mean score on the K10 and PCL-C was also significantly greater in the East Timor veterans relative to the comparison group.
- The current self-rated health of East Timor veterans was lower than that of the comparison group, and the veterans reported significantly more current symptoms than ADF personnel who did not deploy to East Timor.
- East Timor veterans were more likely to engage in risky drinking behaviour than the comparison group, but there were no statistically significant differences in smoking behaviour between the groups.
- Slightly higher mortality rates in the East Timor veteran group than the comparison group, but no significant difference between the groups for cancer incidence (although follow up time is short) (full reports can be found in Annex C and D).

Study strengths and limitations

211. This study obtained a 43% response from among those invited to complete the self-report questionnaire. With a longer follow-up time and additional methods for contacting individuals, e.g. with mailing from ComSuper as a possibility being explored (with ADHREC support), a higher response rate may have been achieved. A higher response would increase study power to detect small to modest differences between the veteran and comparison groups. Nevertheless, the response still represents 2758 individuals. Biases will be explored and proper caution exercised in the interpretation of findings.

212. Access to Defence Health data for currently serving members was limited by many factors, necessitating a reduction in target numbers of records to be retrieved from Army and Navy (25% and 50% respectively of the original numbers). Retrieval of all Air Force records was targeted. For future studies it is recommended that alternatives be found to the use of Unit Medical Records, such as retrieval of electronic records once these become established in the ADF.

213. The long period of the East Timor Operations meant that Defence protocols for data collection changed over the period. Consequently for both Health and

Psychological screening data, there were limited comparable data for the veteran and comparison groups and before and after deployment for the veteran group. This limitation requires acknowledgment in interpretation of findings.

Comparison between Near North deployment studies

214. Self-reported exposure patterns are specific to each theatre of deployment in the Near North and concerns differ. We plan to undertake comparisons of results from all the Near North studies: the Solomon Islands Health Study, the Bougainville Health Study and the East Timor Health Study.

Further research questions

215. Many additional research questions are yet to be explored using the data. For example, using data common to all Near North studies - Do measure of mental and physical health differ between the Services? Similarly, where the same measurement tool has been used in the broader Australian population and these studies - Is the Australian Defence Force healthier than the Australian public? It is also evident from the preliminary analyses that participants in both the Veteran and comparison groups have deployed to other locations – Are multiple military deployments bad for your health? Are levels of ill-health predicted by particular Near North deployment histories? It was clear from Chapter 2 that reported levels of mental health differed between the screening taken by Defence at deployment and the survey in 2008 conducted by CMVH, an issue that warrants further detailed exploration. Participants deployed to East Timor reported exposure to a variety of perceived hazards – Does self-reported exposure to particular hazards have any association with physical and mental well being?

Clearly, there are many specific research questions that can and should be explored, to inform Defence, the Department of Veterans' Affairs and the wider public audience about potential consequences on mental and physical health of deployment. CMVH aims to engage Defence and Scientific Research Team members in identifying, analysing and preparing papers on these types of questions.

Conclusions

This is the first wave of data collection on important self-reported exposure data. Health outcome measures are short to mid-term at this wave. Further, it is clear that members of the comparison group may have deployed to locations other than East Timor and all participants may have deployed to other and in some cases many other locations. Exposure measures relevant to these other deployment may need to be collected. Longer term follow-up is warranted on the entire cohort.

Appendices

- Appendix 1 – East Timor Invitation Package
- Appendix 2 – Health Questionnaire
- Appendix 3 – East Timor Deployment Questionnaire
- Appendix 4 – Media summary

Annexes

- Annex A – EM Literature Review (Deliverable Item 2h, Phase 1b)
- Annex B – EM Sample Generation Report (Deliverable Item 1, Phase 2)
- Annex C – EM Mortality Study Report (Deliverable Item 2, Phase 2)
- Annex D – EM Cancer Incidence Study Report (Deliverable Item 2, Phase 2)
- Annex E – EM Completed Self Reported Data Collection Stage Report (Deliverable Item 5, Phase 2)
- Annex F – EM Completion of Defence Owned Data Collection Report (Deliverable Item 6, Phase 2)
- Annex G – Process for the management and transfer of relevant RtAPS and POPS data
- Annex H – Annual Health Assessment (AHA)
- Annex I – Five Yearly Comprehensive Preventive Health Examination (CPHE)
- Annex J – Specialist Employment Stream Annual Health Assessment (SESAHA)
- Annex K – Pre-deployment Medical Checklist
- Annex L – Post-deployment Health Screen
- Annex M – Health/Medical Insert Slips
- Annex N – Yellow Vaccination Booklet
- Annex O – Medical Board (MB)
- Annex P – Supplementary Health Assessment
- Annex Q – Health Assessment
- Annex R – Medical Examination Board

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East Timor Health Study Project Completion Report

Appendices

9 April 2009



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Australian Government
Department of Defence
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The Centre for Military and Veterans' Health

Dear

You are invited to participate in the Defence Health Study – East Timor

This study aims to compare the health of Australian Defence Force (ADF) members who have **deployed** to East Timor with those who **did not deploy**. The Study is being undertaken by health researchers at the University of Queensland and is funded by the Department of Defence. This study forms part of a program that will examine deployments to the Solomon Islands, Bougainville, East Timor and the Middle East Area of Operations.

Your name has been randomly selected from a list of current and past ADF members who may or may not have been deployed to these locations. In brief, participation in the Study involves completing a questionnaire about your health and your Service experiences. If you have deployed to East Timor you will also be asked to complete a questionnaire specific to this deployment. The questionnaire can be mailed to you, completed on the internet, or a researcher can talk to you about alternative methods of completion: whichever you prefer.

This package contains:

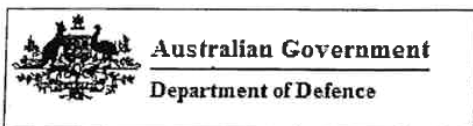
- Letter of support from the Chief of Defence Force and the Repatriation Commissioner,
- An Information Sheet explaining the procedures and requirements related to participation in the Study, and
- A Reply Forms booklet, which includes your Study Consent Form that outlines your rights as a Study participant and the obligations of the Study Investigators.

Please read the enclosed information, particularly the Information Sheet and the Consent Form. If you would like to ask any further questions, defer your participation or register your refusal please phone the Study Contact and Recruitment team on **1800 886 567**. If you would like to participate please sign the consent form, fill in the Contact Details and Deployment forms, and return the documents in the prepaid envelope provided.

Thank you for your consideration of this invitation. This study provides a rare opportunity to understand more fully the activities, experiences and associated health impacts of Australia's valued Veterans and Service personnel. We look forward to including your experience soon.

Thank you

Associate Professor Susan Treloar
Centre for Military and Veterans' Health
University of Queensland



Dear Participant

We are writing to strongly encourage you to participate in a Health Study of ADF personnel who deployed to East Timor and Bougainville.

The health of members and ex-members of the Australian Defence Force (ADF) is of great importance to both the ADF and the Department of Veterans' Affairs (DVA). It is vital that the ADF possesses the best deployment health information available so that it can effectively monitor, prepare for and lessen any adverse effects of operational deployments on its people.

In order to gather this sort of information, the ADF has commissioned a study of the long-term health and future well-being of ADF personnel who have taken part in recent deployments in the Near North Area of Influence and the Middle East Area of Operations. The plan is to compare the health of ADF personnel who **deployed** with the health of those who **did not deploy** to these locations. This stage of the study will focus on the effects of the deployment to East Timor and Bougainville.

You and more than 12,000 other serving and ex-serving personnel are invited to participate in this Health Study. Your support will assist the ADF in understanding the various health effects of operational deployments, now and into the future. With that knowledge, the ADF will be able to better protect the health of ADF members preparing for and undertaking future deployments. Clearly, the greater the response rate to the study survey, the more useful the results for us all.

The study will be run by the Centre for Military and Veterans' Health, part of a consortium jointly supported by Defence and DVA and led by the University of Queensland. The study is aimed at members and ex-members who took part in Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL, SPIRE, BEL ISI I, and/or BEL ISI II and, as a **comparison group**, members who were eligible to go to East Timor and/or Bougainville but did not deploy there.

Study participants' information will be used only for the purposes of the deployment studies and will be protected under the provisions of the Privacy Act 1988. Your response will not in any way affect your current status or future prospects within the ADF, or any pension, benefits or health services you are entitled to receive from the Department of Veterans' Affairs. Serving ADF members are encouraged to complete the survey within work time.

Thank you for your consideration of this important study.

Yours sincerely

Handwritten signature of Angus Houston in black ink.

Angus Houston, AO, AFC
Air Chief Marshal
Chief of the Defence Force

14 September 2007

Handwritten signature of Bill Rolfe in black ink.

Bill Rolfe
Brigadier (Rtd)
Repatriation Commissioner

14 September 2007

STUDY INVESTIGATORS:

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GUIDELINES FOR VOLUNTEERS

AUSTRALIAN DEFENCE HUMAN RESEARCH ETHICS

COMMITTEE

Thank you for taking part in Defence Research. Your involvement is much appreciated. This pamphlet explains your rights as a volunteer.

What is ADHREC?

- ADHREC is the Australian Defence Human Research Ethics Committee. It was established in 1988, to make sure that Defence complied with accepted guidelines for research involving human beings.
- After World War II (WWII), there was concern around the world about human experimentation. The Declaration of Helsinki was made in 1964, which provided the basic principles to be followed wherever humans were used in research projects.
- The National Health and Medical Research Council (NHMRC) in Australia published the *National Statement on Ethical Conduct in Research Involving Humans* in 1999. This Statement describes how human research should be carried out.
- ADHREC follows both the Declaration of Helsinki and the NHMRC Statement.

What Australian Defence Human Research Ethics Committee approval means

- If you are told that the project has ADHREC approval, what that means is that ADHREC has reviewed the research proposal and has agreed that the research is ethical.
- ADHREC approval does not imply any obligation on commanders to order or encourage their service personnel to participate, or to release troops from their usual workplace to participate. Obviously, the use of any particular personnel must have clearance from their commanders but commanders should not use ADHREC approval to pressure personnel into volunteering.

Voluntary participation

- As you are a volunteer for this research project, you are under **no obligation** to participate or continue to participate. You may withdraw from the project **at any time** without detriment to your military career or to your medical care.
- At no time must you feel pressured to participate or to continue if you do not wish to do so.
- If you do not wish to continue, it would be useful to the researcher to know why, but you are under no obligation to give reasons for not wanting to continue.

Informed consent

- Before commencing the project you will have been given an information sheet which explains the project, your role in it and any risks to which you may be exposed.
- You must be sure that you understand the information given to you and that you ask the researchers about anything of which you are not sure.
- If you are satisfied that you understand the information sheet and agree to participate, you should initial every page of the information sheet and keep a copy.
- Before you participate in the project you should also have been given a consent form to sign. You must be happy that the consent form is easy to understand and spells out what you are agreeing to. Again, you should keep a copy of the signed consent form.

Tracing of research participants

- Media reports of human experimentation during times of conflict, eg WWII, Vietnam War, have raised the issue of being able to trace study participants, some time in the future, should any problems arise that may be related to the

research conducted.

- To facilitate this, ADHREC requires that the researcher provide a nominal roll of study participants for safekeeping by ADHREC, where the study is a clinical trial (eg. When the researchers are trialling a new treatment or device). For trials conducted by large Defence institutions like the Defence Science and Technology Organisation (DSTO), the School of Underwater Medicine (SUMU), the Army Malaria Institute (AMI), the Institute of Aviation Medicine (AVMED), or the Centre for Military and Veterans' Health (CMVH), this role is kept by them on ADHREC's behalf. We need to know who you are, only so that we can find you in the future, if there is any suggestion that the research may have been associated with the development of any health problems. Please note that a health study is not a clinical trial, and as such does not require the researcher to provide ADHREC with a nominal roll.
- This is consistent with current Occupational Health and Safety and Health Surveillance practices, and is encouraged under the NHMRC Guidelines.
- All ADHREC protocol files are secured in a locked filing cabinet and only the Secretariat has access to these. ADHREC will not pass your contact information to a third party without your permission.
- These records will not be used to consider your medical employment standard or for compensation purposes.

Complaints

- If at any time during your participation in the project you are worried about how the project is being run or how you are being treated, then you should speak to the researchers.
- If you don't feel comfortable doing this, you can contact the Executive Secretary of ADHREC. Contact details are:

Executive Secretary Australian Defence Human Research Ethics Committee CP2-7-124 Department of Defence CANBERRA ACT 2600 Telephone: (02) 6266 3837 Facsimile: (02) 6266 4068 Email: ADHREC@defence.gov.au

More information

- If you would like to read more about ADHREC, you can look up the following references:

Internet: <http://www.defence.gov.au/dpe/dhs/research/adhrec/i-adhrec.htm>

Intranet: <http://defweb2.cbr.defence.gov.au/dpedhs/infocentre/research/adhrec/default.htm>



Your study number is:

If you **wish to participate**, please **complete and return the attached booklet** in the envelope provided (please **retain this sheet**, the **participant copy of the consent form** and the **information sheet** for your records).

You will be asked to separately consent to:

- a. completion of a Defence Health Study questionnaire;
- b. being contacted in the future so that the questionnaire can be mailed to you if follow-up studies are undertaken;
- c. linkage of your Defence medical records to your questionnaire data;
- d. linkage of your Defence psychological records to your questionnaire data.

You will also be asked to indicate how you would prefer to complete the questionnaire. If you want us to mail it to you we will send the questionnaire to you and include a reply paid envelope so that you can return it to the Deployment Health Study Team at the University of Queensland.

If you would prefer to complete the questionnaire on the internet, you can log in to the website shown below, using the unique username and password provided:

Website address: <https://www.dmac.adelaide.edu.au/mvhsp>

Your username:

Your password:

If you wish to defer your participation, or do not wish to participate, you may register this by either:

- Calling **1800 886 567** (freecall; don't forget to quote your study number), or
- Completing the "Defer Participation or Register your Refusal" form in this booklet and returning it in the prepaid envelope provided.

We will then know that you have received the Study information package, and we will flag your record to prevent you receiving reminder notices about participation. This saves you aggravation, and saves us lots of time.

Bougainville and East Timor Defence Health Study

Please detach and retain for your records



CONSENT FORM

Igive my consent to (please tick all parts
(name of participant)

of the study you wish to consent to):

- Completing the Defence Health Study Questionnaire;*
- Being contacted periodically for follow-up studies;*
- Allow linkage of information contained in my Defence medical records with the questionnaire data obtained in this study. These records are my Annual Health Assessments, five Yearly Comprehensive Preventative Health Assessments, Pre-deployment medical checklists, Post-deployment health screens, and vaccination records.*
- Allow linkage of information contained in my Defence psychological records with the questionnaire data obtained in this study. These records are my Return to Australia Psychological Screen (RTAPS) and my Post Operation Psychological Screen (POPS).*

My consent is provided on the following basis:

- I have read the information sheet provided to me about the aims of this research, how it will be conducted and my role in it.
- I understand the risks involved as described above.
- I am cooperating in this project on condition that:
 - The information I provide will be kept confidential
 - The information will be used only for the Defence Health Studies.
- I can discuss my participation at any time with the Principal Investigator, a Research Assistant or a representative of one of the relevant Ethics Committees.

I understand that:

- There is no obligation to take part in this study.
- If I choose not to participate there will be no detriment to my career, future health care, service pension, DVA pension or compensation claims.
- I am free to withdraw from the study at any time with no detriment to my career, future health care, service pension, DVA pension or compensation claims.
- My answers will be completely confidential and any personal details, which may identify me in any way, will not be passed to the Department of Veterans' Affairs or the Department of Defence. My answers will not in any way affect my pension, benefits or any health services I am entitled to from DVA. If I wish, I can discontinue my participation in this study at any time.

I have kept a copy of the information / consent sheet, signed by me for my records.

I have also been given a copy of Australian Defence Health Research Ethics Committee's (ADHREC) *Guidelines for Volunteers*.

The study report will be made available to me at my request and any published reports of this study will preserve my anonymity.

- Please forward the report to my Email address
- Please mail the report to my home address

Signature of Participant

Date

Bougainville and East Timor Defence Health Study



Please sign and return

CONSENT FORM

Igive my consent to (please tick all parts
(name of participant)

of the study you wish to consent to):

- Completing the Defence Health Study Questionnaire;*
- Being contacted periodically for follow-up studies;*
- Allow linkage of information contained in my Defence medical records with the questionnaire data obtained in this study. These records are my Annual Health Assessments, five Yearly Comprehensive Preventative Health Assessments, Pre-deployment medical checklists, Post-deployment health screens, and vaccination records.*
- Allow linkage of information contained in my Defence psychological records with the questionnaire data obtained in this study. These records are my Return to Australia Psychological Screen (RTAPS) and my Post Operation Psychological Screen (POPS).*

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 - The information I provide will be kept confidential
 - The information will be used only for the Defence Health Studies.
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- I am free to withdraw from the study at any time with no detriment to my career, future health care, service pension, DVA pension or compensation claims.
- My answers will be completely confidential and any personal details, which may identify me in any way, will not be passed to the Department of Veterans' Affairs or the Department of Defence. My answers will not in any way affect my pension, benefits or any health services I am entitled to from DVA. If I wish, I can discontinue my participation in this study at any time.

I have kept a copy of the information / consent sheet, signed by me for my records.

I have also been given a copy of Australian Defence Health Research Ethics Committee's (ADHREC) *Guidelines for Volunteers*.

The study report will be made available to me at my request and any published reports of this study will preserve my anonymity.

- Please forward the report to my Email address
- Please mail the report to my home address

Signature of Participant

Date



Bougainville and East Timor Defence Health Study

To Defer Participation or Register Your Refusal

If you would like to defer your participation, please tick the box below and provide details on when you would like to be re-contacted. Please note you can defer participation up until April 2008.

I would like to defer my participation in the Bougainville and East Timor Defence Health Study until:

Date: _____

Please contact me then on Ph (mobile preferred): _____

If you do not wish to participate, please register your voluntary refusal by ticking the box below, detaching and returning this page in the envelope provided. No other information is required from you to register your refusal.

I DO NOT wish to participate in the Bougainville and East Timor Defence Health Study

YOUR CONTACT DETAILS

To ensure that we have your current contact details, please provide your current residential address. Note: to ensure confidentiality of your information, these pages will be removed by the Study team and stored separately from the rest of the questionnaire. Your questionnaire will be identified by a unique study number only, which will be linked by a code stored securely and separately to the information.

Please fill in details of your current name

Surname

All given names

Your PMKeyS Number

Your Service Number (if applicable)

If you have changed your name, please provide details here

Previous surname

Given names if different

Years used (start / end)

Please give your current address, contact numbers and email address

Street number or PO Box _____

Street _____

Suburb / Town _____

State _____ Postcode _____

Mobile phone _____

Home phone _____ Work phone _____

Email _____

I would prefer to complete the study questionnaire by (please tick preferred option):

- Mail, to the address provided above
- Internet

ALTERNATIVE CONTACT DETAILS (OPTIONAL)

In case you move and we lose contact with you, please give us the names of up to two relatives or friends who may be able to tell us where you are. These should be people who are at long term addresses but who are not living with you. We would only use these alternative contacts in the event that we could not contact you at the address you have provided on the previous page.

Contact 1

Surname	<input type="text"/>
All given names	<input type="text"/>
Street number or P O Box	_____
Street	_____
Suburb / Town	_____
State	_____
Postcode	_____
Mobile phone	_____
Home phone	_____
Work phone	_____
Email	_____

Contact 2

Surname	<input type="text"/>
All given names	<input type="text"/>
Street number or P O Box	_____
Street	_____
Suburb / Town	_____
State	_____
Postcode	_____
Mobile phone	_____
Home phone	_____
Work phone	_____
Email	_____

DEPLOYMENTS

Have you been on an ADF operational deployment (war-like, peacekeeping, peace-monitoring or humanitarian support)?

YES NO

If you have ever been deployed, please indicate where you were actively deployed in the table below.

INSTRUCTIONS: From this list please mark the YES box for those active deployments which apply to you. Then, please write the year in which you were deployed, the approximate duration of your participation in that deployment and indicate the extent to which you wanted to deploy.

Were you deployed to:	Yes	Year First Deployed	Duration (Choose the nearest period) (If you went more than once show the total time)				I wanted to deploy				
			Less than one week	One week to less than one month	One month to less than 6 months	More than 6 months	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Afghanistan 1991-, 2003 -	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Balkans 1947-,	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bougainville 1997-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cambodia 1993 -1999	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
East Timor 1999-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Former Rep of Yugoslavia 1997-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gulf of Oman 1999	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Iraq 2003-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Korea 1953	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kuwait 1998	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Middle East 1956-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mozambique 1994 - 2002	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Namibia 1989 - 1990	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persian Gulf 1990-1991	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persian Gulf Excluding 1990-1991	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Were you deployed to:	Yes	Year First Deployed	Duration (Choose the nearest period) (If you went more than once show the total time)				I wanted to deploy				
			Less than one week	One week to less than one month	One month to less than 6 months	More than 6 months	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Rwanda 1994 -	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sinai 1982-1986, 1993-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solomon Islands 2000-, 2003-	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Somalia 1992-1994	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Forces	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vietnam 1962-1975	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Western Sahara 1991 -	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have you been on any other deployments overseas, including deployments with other nations? Please specify destination(s) below. Do not include training exercises or goodwill visits (flying the flag).

Where did you deploy?	Who did you deploy with?	Year Deployed	Duration (Choose the nearest period) (If you went more than once show the total time)				I wanted to deploy				
			Less than one week	One week to less than one month	One month to less than 6 months	More than 6 months	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Information about the Defence Health Study



The aim of this study is to better understand the long term health of ADF personnel who have deployed on operations.

We are comparing the health of those who deployed to East Timor and/or Bougainville with the health of those who did not deploy to these locations. More than 12,000 people are being invited to take part.

This is the first step in a long term program of scientific research which stems from the 1999 announcement, by the Minister for Veterans' Affairs and Minister Assisting the Minister for Defence, of the Government's commitment to conduct health reviews on future overseas deployments.

Your participation is just as important to us regardless of whether you:

- **have deployed or not deployed**
- **are a current or ex-serving member**
- **are a regular or a reservist**
- **have any health problems or are well**

Who is conducting the study?

The **Centre for Military and Veterans' Health (CMVH)** is a collaborative centre of the University of Queensland, University of Adelaide and Charles Darwin University. CMVH has been contracted by the Australian Defence Force Defence Health Services to conduct this study.

What's involved?

You may choose which parts of the study you wish to participate in by ticking the appropriate box on the Consent Form. There will be no cost to you to be involved in the study. There are two main components:

1. A questionnaire asking you about your health and your service experiences.

If you consent to this part of the study, you have a choice of completing the questionnaire by mail or internet. It is anticipated that it will take you approximately **30 minutes to one hour** to complete the study questionnaire. If you have deployed to East Timor or Bougainville, you will also receive a questionnaire specific to these deployments. The amount of time taken will depend on how many of the relevant operations you have deployed on.

Responses will be collated and analysed to determine whether the health of service personnel differs with regards to aspects of their military careers, in particular related to their deployments and the nature of those deployments.

2. Linking your questionnaire data to some of your Defence health and psychology records.

This will allow us to better understand the relationship between your health now and your experiences during your service career.

With your consent, we will link your questionnaire data with information obtained from your regular ADF health assessments and vaccinations and antimalarial drug records

If you have been deployed, we will also request access to your Return to Australia Psychological Screen (RtAPS) and your Post Operation Psychological Screen (POPS).

Separate follow-up studies may also be undertaken. You may choose to undertake all aspects of the study, or you may choose to complete the questionnaire component of the study, but not provide consent for linkage to your Defence medical or psychological records, or for participation in follow-up studies.

- Participation in the Study is entirely **voluntary**.
- If you do choose to participate, you may withdraw from the study at any time.
- If you are still serving in the Defence Force, or are in receipt of a Service-related pension, a decision not to participate, or to withdraw, will **not** lead to any detriment to your career or future health care
- If you have a claim for compensation or are in receipt of a pension from the Department of Veterans' Affairs, a decision not to participate will not **in any way** affect your pension or compensation.
- Your participation or non-participation will **not** be notified to the Department of Defence or the Department of Veterans' Affairs.

Your privacy

Your contact details have been obtained from the Department of Defence. Your details will not be forwarded to any other individual or agency or used for the conduct of any other study unless you expressly consent to being contacted again for future health studies by the University of Queensland.

To ensure your privacy you have been given a study number. All information provided by you will be treated confidentially. The information will not be passed to the Departments of Defence or Veterans' Affairs.

Any reports or published articles resulting from the study will not include any personally identifying information and will preserve your anonymity. Any personal data will be used for the Deployment Health Studies conducted by CMVH and no other, without your express permission. Data are accessed only by authorised personnel and will be stored on password protected computers and in secure storage facilities at CMVH.

Benefits and Risks of Participating

Your information will contribute to increased knowledge about Service-related health and ill-health. It may also assist the ADF in developing the most appropriate supportive and protective measures against future health threats. We cannot predict how the results of this study will impact to the advantage or disadvantage of veterans collectively; such as in any future unknown context where issues of service-related ill health might arise.

There is a theoretical risk to the confidentiality of the information from your questionnaire, however we have many stringent processes in place to guard against this risk (see under "Your Privacy").

Study findings

The results of the study will be published in the scientific literature and will also be available on the Internet. Alternatively if you wish we can email or mail you a copy. Progress and results of the study, as well as information on future studies will also be available in Service and Ex-service journals and magazines.

There may be questions you find distressing. Should you feel distressed, you may wish to discuss this with someone. A list of services is provided on the next page.

Counselling / support services:

All-hours Support Line

ADF Mental Health Strategy All-hours Support Line (ASL). The ASL is a confidential telephone triage support service for ADF members and their families that is available 24 hours a day, 7 days a week.

CALL 1800 628 036
(Outside Australia +61 2 9425 3878)

Lifeline

"Lifeline offers 24-hour telephone counselling services, by calling **13 11 14** for the cost of local call. There are also 42 Lifeline Centres across Australia, which can assist with face-to-face counselling services."

"Lifeline also has a "Just Ask" service on **1300 131114** for the cost of a local call. This is for people with mental health difficulties or friends, relatives, professionals, carers and others who look after people with mental health difficulties. "

Veterans' Affairs Network (VAN)

Phone **1300 55 1918** to call the nearest VAN office.

General inquiries number - **133 254** (which connects callers to the nearest DVA office switchboard)

1800 555 254 connects non-metropolitan callers to the nearest DVA office

1300 13 1945 connects callers to any DVA office by using voice prompts.

The directory for the DVA state offices can be found at...
<http://www.dva.gov.au/contacts/van.htm>

Department of Veterans' Affairs

General inquiries **133 254** (which connects callers to their nearest DVA state office)

National office for the Military Compensation and Rehabilitation Service

1300 550 461

Veterans and Veterans' Families Counselling Service

Call the Veterans' Line - **1800 011 046** from anywhere in Australia

A copy of the Australian Defence Health Research Ethics Committee's Guidelines for Volunteers can be found on the study website for information regarding your rights in providing consent to volunteer.

For any questions, problems or concerns about the study please contact:

The Study Team:

The Centre for Military and Veterans' Health,
Mayne Medical School Building,
University of Queensland, Herston Qld 4006
Freecall: **1800 886 567**
Email: dhsp@cmvh.uq.edu.au

Principal Investigator:

Associate Professor Susan Treloar

CMVH, University of Queensland
Ph: (07) 3346 4904
Email: s.treloar@uq.edu.au

If you prefer to speak to an independent person, please contact any of the following:

Human Research Ethics Committees:

The Australian Defence Human Research Ethics Committee:

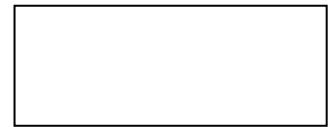
Executive Secretary
Australian Defence Human Research Ethics Committee
CP2-7-66
Department of Defence
CANBERRA ACT 2600
Telephone: 02 6266 3837
Facsimile: 02 6266 4982
Email: ADHREC@defence.gov.au

The University of Queensland Behavioural & Social Sciences Ethical Review Committee (BSSERC):

Executive Secretary
University of Queensland Behavioural & Social Sciences
Ethical Review Committee
Office of Research and Post-graduate studies,
Cumbræ-Stewart Building
Research Rd.
University of Queensland
St. Lucia QLD 4072
T: 07 336 53924
Email: humanethics@research.uq.edu.au

The Department of Veterans' Affairs Human Research Ethics Committee:

HREC Coordinator
Department of Veterans' Affairs Human Research Ethics
Committee
Department of Veterans' Affairs
PO Box 21
Woden ACT 2606
T: 02 6289 6102
Email: ethics.committee@dva.gov.au



The Centre for Military and Veterans' Health

Defence Health Questionnaire

Thank you for agreeing to participate in the Defence Health Study.

This Study aims to determine whether the health status of Australia's Veterans differs from that of Australian Defence Force personnel who were not deployed. The Study is being undertaken by medical researchers at the Centre for Military and Veterans' Health at the University of Queensland. If you have any questions about this study, or would like to talk with someone you can call our toll-free number **1800 886 567**.

There may be questions you find distressing. Should you feel distressed, you may wish to discuss this with someone. A list of contacts is provided on the next page. If there are some questions you do not wish to answer, please leave them out. There is no obligation to answer all of the questions.

Thank you for your participation.

Associate Professor Susan Treloar
Centre for Military and Veterans' Health
University of Queensland

Support Organisations

There may be some questions in the survey which you find distressing. Should you feel distressed, you may wish to discuss this with someone. A list of organisations to contact is provided below.

All-hours Support Line

ADF Mental Health Strategy All-hours Support Line (ASL). The ASL is a confidential telephone triage support service for ADF members and their families that is available 24 hours a day, 7 days per week.

CALL 1800 628 036
(Outside Australia +61 2 9425 3878)

Defweb Address: defweb2.defence.gov.au/dpedhs
Internet Address: www.defence.gov.au/dpe/dhs
Email: ADF.MHS@defence.gov.au

Lifeline

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General inquiries 133 254 (which connects callers to their nearest DVA state office)

National office for the Military Compensation and Rehabilitation Service

Phone 1300 550 461

Veterans and Veterans' Families Counselling Service

Call the Veterans' Line - 1800 011 046 from anywhere in Australia

Date you started this questionnaire:

/	/
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INTRODUCTION: This questionnaire is divided into several sections. The first section deals with your recent health.

RECENT HEALTH SYMPTOMS

1. We would like to know about your health in the PAST MONTH. Please indicate whether or not you have suffered any of the following symptoms in the PAST MONTH, and if so, please indicate whether your symptoms were mild, moderate or severe in nature.

In the past month have you suffered from	No Not at all	Yes Mild	Yes Moderate	Yes Severe
Chest pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Headaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rapid heartbeat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irritability / outbursts of anger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unable to breathe deeply enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faster breathing than normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling short of breath at rest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wheezing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sleeping difficulties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling jumpy / easily startled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling unrefreshed after sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatigue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Double vision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intolerance to alcohol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Itchy or painful eyes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rash or skin irritation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skin infections e.g. boils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skin ulcers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tingling in fingers and arms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tingling in legs and toes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Numbness in fingers/toes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling distant or cut off from others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constipation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flatulence or burping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stomach cramps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In the past month have you suffered from	No Not at all	Yes Mild	Yes Moderate	Yes Severe
Diarrhoea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indigestion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dry mouth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pain in the face, jaw, in front of the ear, or in the ear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Persistent cough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lump in throat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sore throat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forgetfulness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dizziness, fainting or blackouts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seizures or convulsions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling disorientated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loss of concentration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty finding the right word	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pain on passing urine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passing urine more often	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Burning sensation in the sex organs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loss of interest in sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Problems with sexual functioning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased sensitivity to noise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased sensitivity to light	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased sensitivity to smells or odours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ringing in the ears	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Avoiding doing things or situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pain, without swelling or redness, in several joints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joint stiffness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling that your bowel movement is not finished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changeable bowel function (mixture of diarrhoea/constipation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General muscle aches or pains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loss of balance or coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty speaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low back pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Night sweats which soak the bed sheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling feverish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In the past month have you suffered from	No Not at all	Yes Mild	Yes Moderate	Yes Severe
Tender or painful swelling of lymph glands in neck, armpit or groin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loss of, or decrease in, appetite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nausea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vomiting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distressing dreams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stomach bloating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unintended weight gain greater than 4kg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unintended weight loss greater than 4kg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. In the last 5 (five) years, have you had any serious accidents (e.g. been taken to Emergency at the hospital or similar)?

Yes No (*If NO, go to Question 3*)

2 a) If yes, were these caused by: (Tick all that apply).

- | | |
|---|---|
| <input type="checkbox"/> Road traffic accident | <input type="checkbox"/> Drink-related |
| <input type="checkbox"/> A sport/leisure activity | <input type="checkbox"/> Military training |
| <input type="checkbox"/> An accident at home | <input type="checkbox"/> Military operations |
| <input type="checkbox"/> An event outside your control (e.g. flood) | <input type="checkbox"/> Fights/assaults |
| <input type="checkbox"/> Work-related | <input type="checkbox"/> Other (Please specify) |

The following questions are about your health NOW.

3. In general, would you say your health is?

Excellent Very Good Good Fair Poor

4. Compared to one year ago, how would you rate your health in general NOW?

- Much better now
- Somewhat better now
- About the same
- Somewhat worse now
- Much worse now

5. In the past 4 (four) weeks, to what extent has your physical health or any emotional problems interfered with your normal social activities with family, friends, neighbours, or groups? (Please tick ONE box).

- Not at all
- Slightly
- Moderately
- Quite a bit
- Extremely

6. In the past 4 (four) weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? (Please tick ONE box on each line).

	Yes	No
a) Cut down on the amount of time you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>
b) Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>
c) Were limited in the kind of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>
d) Had difficulty performing the work or other activities (e.g. it took extra effort)	<input type="checkbox"/>	<input type="checkbox"/>

7. How TRUE or FALSE is each of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
a) I seem to get ill more easily than other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I expect my health to get worse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I am as healthy as anybody I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) My health is excellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. During the past 4 (four) weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

YOUR CHILDREN'S HEALTH AND YOUR PREGNANCY HISTORY (Including your partner's)

You will be aware that in the past some Service personnel have expressed concern about reproductive health. We would be grateful if you would answer the following questions.

If you have **NEVER** fathered/had a pregnancy and have **NEVER** had fertility problems please tick the box and go to **Question 12**.

9. For each of your biological LIVING children, please write their year of birth and circle their sex in the table below.

	Birth Month/Year	Male / Female
Child 1	/	Male / Female
Child 2	/	Male / Female
Child 3	/	Male / Female
Child 4	/	Male / Female
Child 5	/	Male / Female
Child 6	/	Male / Female
Child 7	/	Male / Female
Child 8	/	Male / Female
Child 9	/	Male / Female
Child 10	/	Male / Female

10. Have you fathered / had any pregnancies ending in the following outcomes? Please give the number of pregnancies if you answer YES to any question.

	No	Yes	Number
a) Child born alive but who died within one week of life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
b) Child born alive but who died after one week of life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
c) Miscarriage (less than 24 weeks gestation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
d) Stillbirth (24 weeks or more gestation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
e) Termination (abortion) because something was wrong with the baby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
f) Termination (abortion) for other reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
g) Ectopic pregnancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
h) Other outcome (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>			
i) Presence of a birth defect (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>			
j) Presence of chromosomal abnormality (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>			

11. Have you ever been investigated by a doctor (or are currently awaiting investigation) for infertility?

Yes No

SMOKING

12. Over your lifetime, would you have smoked as much as 100 cigarettes or a similar amount of tobacco?

Yes

No

If YES, go to question 13

If NO, go to question 16

13. Do you currently smoke as much as one cigarette per day (or 1 cigar per week or 1 gram of tobacco per month)?

Yes

No ***(If NO, go to question 14)***

If YES:

- a. How old were you when you started smoking as much as one cigarette per day (or 1 cigar per week or 1 gram of tobacco per month)?

Age in years

- b. What is the average number of cigarettes per day, grams of tobacco per day and/or number of cigars per week that you currently smoke?

Cigarettes per day

Grams of tobacco per day (do not include tobacco from cigarettes or cigars)

Cigars per week

Go to question 15.

14. Have you ever smoked as much as one cigarette per day (or 1 cigar per week or 1 gram of tobacco per month)?

Yes

No *(If No, go to question 15)*

If YES:

a. How old were you when you started smoking as much as one cigarette per day (or 1 cigar per week or 1 gram of tobacco per month)?

Age in years

b. How old were you when you stopped smoking as much as one cigarette per day (or 1 cigar per week or 1 gram of tobacco per month)?

Age in years

c. What was the average number of cigarettes per day, grams of tobacco per day and/or number of cigars per week that you smoked?

Cigarettes per day

Grams of tobacco per day (don't include tobacco from cigarettes or cigars)

Cigars per week

15. IF you have deployed was your smoking pattern different while on deployment compared with before you deployed?

I have **not** deployed

I did **not** smoke on deployment

I smoked **more** than usual while on deployment

I smoked the **same** amount on deployment as when not deployed

I smoked **less** than usual while on deployment

If your smoking pattern changed during your deployment, what was the main reason? (Please specify).

<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

ALCOHOL

16. How often do you have a drink containing alcohol?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Never | Monthly or less | 2 to 4 times a month | 2 to 3 times a week | 4 or more times a week |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

If NEVER, go to question 26.

In answering the following questions, please remember that a standard drink contains 10g of pure alcohol.



17. How many 'standard' drinks (see above) containing alcohol do you have on a typical day when you are drinking?

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 or 2 | 3 or 4 | 5 or 6 | 7 to 9 | 10 to 14 | 15 or more |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

18. How often do you have six or more 'standard' drinks on one occasion?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Never | Less than once a month | Monthly | Weekly | Daily or almost daily |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

19. How often during the last year have you found that you were not able to stop drinking once you had started?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Never | Less than once a month | Monthly | Weekly | Daily or almost daily |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

20. How often during the last year have you failed to do what was normally expected from you because of drinking?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Never | Less than once a month | Monthly | Weekly | Daily or almost daily |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

21. How often during the last year have you needed a drink in the morning to get yourself going after a heavy drinking session?

Never	Less than once a month	Monthly	Weekly	Daily or almost daily
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. How often during the last year have you had a feeling of guilt or remorse after drinking?

Never	Less than once a month	Monthly	Weekly	Daily or almost daily
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never	Less than once a month	Monthly	Weekly	Daily or almost daily
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. Have you or someone else been injured as a result of your drinking?

No	Yes, but not in the last year	Yes, during the last year
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. Has a relative, a friend, a doctor or other health professional been concerned about your drinking or suggested you cut down?

No	Yes, but not in the last year	Yes, during the last year
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remember, the Study team is available on 1800 886 567 if you are unsure about how to complete any section of this questionnaire. Please call any time Monday to Friday during business hours.

LIFE EXPERIENCES

	Never	One time	Two times	Three or four times	Five or more times
26. How often over the last <u>month</u> did you get angry at someone and yell or shout at them?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. How often over the last <u>month</u> did you get angry with someone and kick or smash something, slam the door, punch the wall, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. How often over the last <u>month</u> did you get into a fight with someone and hit the person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. How often over the last <u>month</u> did you threaten someone with physical violence?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	All of the time	Most of the time	Some of the time	A little of the time	None of the time
30. In the past four (4) weeks, about how often did you feel tired for no good reason?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. In the past four (4) weeks, about how often did you feel nervous?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. In the past four (4) weeks, about how often did you feel so nervous that nothing could calm you down?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. In the past four (4) weeks, about how often did you feel hopeless?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. In the past four (4) weeks, about how often did you feel restless or fidgety?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. In the past four (4) weeks, about how often did you feel so restless that you could not sit still?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. In the past four (4) weeks, about how often did you feel depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. In the past four (4) weeks, about how often did you feel that everything was an effort?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. In the past four (4) weeks, about how often did you feel so sad that nothing could cheer you up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. In the past four (4) weeks, about how often did you feel worthless?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences.

Please consider the event or group of events, military or non-military, in your life that you found most stressing. Read the list of problems and complaints below and indicate how much you have been bothered by that problem or complaint in the past month.

40. a. The event, or group of events you experienced was:

While deployed? Yes No

Event:

Year:

40 b. How much have you been bothered by the following in the past month?	Not at all	A little bit	Moderately	Quite a bit	Extremely
Repeated, disturbing <i>memories, thoughts or images</i> of a stressful experience from the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repeated, disturbing <i>dreams</i> of a stressful experience from the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suddenly <i>acting or feeling</i> as if a stressful experience were happening again (as if you were reliving it)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling <i>very upset</i> when <i>something reminded</i> you of a stressful experience from the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having <i>physical reactions</i> (eg heart pounding, trouble breathing, sweating) when <i>something reminded</i> you of a stressful experience from the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Avoiding <i>thinking about</i> or <i>talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Avoiding <i>activities</i> or <i>situations</i> because <i>they reminded</i> you of a stressful experience from the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trouble <i>remembering important parts</i> of a stressful experience from the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40 b. How much have you been bothered by the following in the past month?	Not at all	A little bit	Moderately	Quite a bit	Extremely
Loss of <i>interest</i> in activities that you used to enjoy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling <i>distant</i> or <i>cut off</i> from other people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling as if your <i>future</i> somehow will be <i>cut short</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trouble <i>falling</i> or <i>staying</i> asleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling <i>irritable</i> or having <i>angry</i> outbursts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having <i>difficulty concentrating</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being " <i>super alert</i> " or watchful or on guard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling <i>jumpy</i> or easily startled?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40 c. Is there any other event that has caused you to have similar reactions?

- No
- Yes - while deployed
- Yes - while NOT deployed

If you responded Yes to 40c, the event, or group of events, you experienced was:

Event:

<hr/> <hr/> <hr/>

Year:

BACKGROUND AND ACTIVITIES

YOUR BACKGROUND

People come to the military from a variety of different backgrounds. We are interested to see if and how experiences before you joined the Defence Forces affect your health and well-being.

	True	False
41. I come from a close family.	<input type="checkbox"/>	<input type="checkbox"/>
42. I used to get shouted at a lot at home.	<input type="checkbox"/>	<input type="checkbox"/>
43. I often used to play truant from school.	<input type="checkbox"/>	<input type="checkbox"/>
44. I felt valued by my family.	<input type="checkbox"/>	<input type="checkbox"/>
45. I regularly used to see or hear physical fighting or verbal abuse between my parents.	<input type="checkbox"/>	<input type="checkbox"/>
46. In my family there was at least one member I could talk to about things that were important to me.	<input type="checkbox"/>	<input type="checkbox"/>
47. I used to be hit / hurt by a parent or caregiver regularly.	<input type="checkbox"/>	<input type="checkbox"/>
48. One or more of my parents had problems with drugs or alcohol.	<input type="checkbox"/>	<input type="checkbox"/>
49. My family used to do things together.	<input type="checkbox"/>	<input type="checkbox"/>
50. I spent some time (any time) in Local Authority Care / Social Services.	<input type="checkbox"/>	<input type="checkbox"/>
51. I had one special teacher / youth worker / family friend who looked out for me.	<input type="checkbox"/>	<input type="checkbox"/>
52. I often used to get into physical fights at school.	<input type="checkbox"/>	<input type="checkbox"/>
53. There was at least one thing / activity that I did that made me feel special or proud.	<input type="checkbox"/>	<input type="checkbox"/>
54. I was suspended / expelled from school (ever).	<input type="checkbox"/>	<input type="checkbox"/>
55. I had problems with reading or writing at school and needed extra help.	<input type="checkbox"/>	<input type="checkbox"/>
56. I did things that should have got me (or did get me) into trouble with the police.	<input type="checkbox"/>	<input type="checkbox"/>

RECREATION AND SOCIAL ACTIVITIES

Please answer the following questions regarding your recreation and social activities.

57. Do you commemorate significant military-related occasions such as attending ANZAC day services, participate in marches or attend dawn services?

No Yes

58. Do you know of other service veterans living near you?

No Yes

59. Are any of your close relatives (parents, siblings) military veterans?

No Yes

Please answer the following questions about your participation in social and recreational activities.

60. How often do you ...	Every day	Several times per week	Weekly or fortnightly	Monthly	Rarely or on special occasions	Never
Have contact with an ex-service organisation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have social contact with other veterans?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have contact with friends or relatives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attend social activities such as watching sport, eat meals or watch movies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Play sport (golf, fishing, exercise)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set aside time to do a hobby (wood work, craft, music)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set aside time to relax (watch TV, read, listen to music)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do voluntary work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BACKGROUND DETAILS

Now we have some general questions.

1. Are you male or female?

Male

Female

2. What is your date of birth? / /19 (day/ month/ year)

3. Do you regard yourself as being of Aboriginal or Torres Strait Islander origin?
(If you are both Aboriginal and Torres Strait Islander origin, mark both “yes” boxes).

No

Yes - Aboriginal

Yes – Torres Strait Islander

4. What is your current marital status? Choose one.

Married

De facto relationship (ADF recognised)

De facto relationship

Separated

Divorced

Widowed

Single, never married

Other, please specify

5. What was your marital status ONE YEAR AGO? Choose one.

Married

De facto relationship (ADF recognised)

De facto relationship

Separated

Divorced

Widowed

Single, never married

Other, please specify

6. How satisfied are you with your marriage/relationship?

- Extremely satisfied
- Satisfied
- Neither satisfied or dissatisfied
- Dissatisfied
- Extremely dissatisfied
- Not applicable

7. Have you or your spouse/partner ever seriously suggested the idea of divorce or permanent separation within the LAST YEAR?

- Yes No Not applicable

8. Overall, what impact have your military commitments (now, or in the past if you have left the military) had on your:

a) Marriage/relationship?

- No impact
- Positive impact
- Negative impact
- Not applicable

b) Children?

- No impact
- Positive impact
- Negative impact
- Not applicable

9. Which category best describes the highest educational qualification you have completed? Choose one.

- Primary school
- Secondary school up to grade 10
- Secondary school grades 11-12
- Certificate (trade, apprenticeship, technicians etc)
- Diploma (associate, undergraduate)
- Bachelor degree
- Post-graduate qualification
- Other

10. What is your current occupational status?

- Paid employment full-time
- Paid employed part-time/casual
- Volunteer/community work
- Student
- Home duties
- Retired
- Not working due to ill-health / TPI
- Unemployed
- Other, please specify

11. How many hours per week do you normally work? hours

12. If you have separated from the ADF, have you had a period of unemployment greater than 3 months?

Yes

No

Not applicable

Was this period of unemployment primarily due to health problems?

Yes

No

If **YES**, please specify type

13. What is your main source of income now? Choose one.

Wage or salary

Own business or share in a partnership

Age Service pension

Invalidity Service Pension

Compensation benefit

Under the: VEA

SRCA

MRCA

Other government pension / allowance / benefit

Child allowance

Superannuation / annuity

Dividends / interest / income from investments

Other, please specify

14. Are you in receipt of any type of pension?

Yes

No

15. Please indicate your current service status.

- Australian Army
- Australian Army Reserve – Active / General
- Australian Army Reserve – Stand-by / Inactive
- Royal Australian Navy
- Royal Australian Navy Reserves – Active
- Royal Australian Navy Reserves – Stand-by
- Royal Australian Air Force
- RAAF Reserve - Active
- RAAF Reserve – Stand-by / General
- RAAF Reserve – Specialist
- Ready Reserve (Navy)
- Ready Reserve (Army)
- Ready Reserve (Air Force)
- Civilian employed by Dept of Defence
- Civilian contracted by Dept of Defence
- Foreign armed services
- Not in any service or Defence Force

16. To the nearest year, how long have you served:

a) As a regular years or Not applicable

b) As a volunteer reservist years or Not applicable

17. What is your CUURENT rank or what WAS your rank when you left the military?

- Senior Commissioned Officer (CMDR /LTCOL /WGCDR and above)
- Commissioned Officer (LCDR /MAJ /SQNLDR and below)
- Senior Non-Commissioned Officer (PO /SGT and above)
- Junior Non-Commissioned Officer (LS /CPL and below)
- Other ranks (AB/ SMN /PTE /LAC /AC or equivalent)

18. In the past THREE YEARS, roughly how many months in total have you been away on deployment?

months

19. Do you intend to stay in the military?

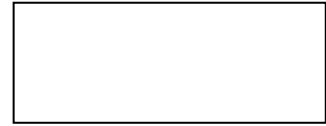
Yes

No

Already discharged

Thank for you completing this questionnaire.

Your participation is appreciated.



The Centre for Military and Veterans' Health

East Timor Deployment Questionnaire

This questionnaire is about your deployment to East Timor.

Date you started this questionnaire:

DEPLOYMENT TO EAST TIMOR

We would like to know some specific details about your deployment to East Timor.

1. What were your MAIN duties during your deployment to East Timor? (Please tick all boxes that apply).

- | | |
|---|--|
| <input type="checkbox"/> Medical | <input type="checkbox"/> Logistics / supply |
| <input type="checkbox"/> Welfare | <input type="checkbox"/> Training Local Police/Army |
| <input type="checkbox"/> Maritime operations – above deck | <input type="checkbox"/> Air crew |
| <input type="checkbox"/> Maritime operations – between deck | <input type="checkbox"/> Engineering |
| <input type="checkbox"/> Intelligence | <input type="checkbox"/> Catering |
| <input type="checkbox"/> Military police | <input type="checkbox"/> Administrative |
| <input type="checkbox"/> Musician | <input type="checkbox"/> Communications |
| <input type="checkbox"/> Driver | <input type="checkbox"/> Flight operations |
| <input type="checkbox"/> Force Protection | <input type="checkbox"/> Headquarters |
| <input type="checkbox"/> Combat | <input type="checkbox"/> CIMIC (Civil Military Co-operation) |
| <input type="checkbox"/> Other, please specify | <input type="checkbox"/> Peacekeeping |

2. What was your rank when you were FIRST deployed to East Timor?

- Senior Commissioned Officer (CMDR /LTCOL /WGCDR and above)
- Commissioned Officer (LCDR /MAJ /SQNLDR and below)
- Senior Non-Commissioned Officer (PO /SGT and above)
- Junior Non-Commissioned Officer (LS /CPL and below)
- Other ranks (AB/ SMN /PTE /LAC /AC or equivalent)

3. Please indicate your service status during this deployment.

- Reservist on Full Time Service
- Full time member
- Other, please specify

4. Were you given a medical waiver in order to deploy to East Timor?
 Yes No Don't know
5. Were you given an administrative waiver in order to deploy to East Timor?
 Yes No Don't know
6. How many times did you deploy to East Timor?
7. How long in total were you deployed to East Timor? / (months/weeks)
8. When did your FIRST deployment to East Timor begin? / (month/year)
Please include the month and year if you can recall them.
9. When did your LAST deployment to East Timor end? / (month/year)
Please include the month and year if you can recall them.
10. When you first deployed to East Timor did you know how long you would be deploying for?
 Yes No Don't know
11. What would have been your preferred length of deployment to East Timor?
 1 month
 3 months
 4 months
 6 months
 Other, please specify
12. Why did you leave East Timor? Please tick all that apply.
 End of the deployment
 Returned to Australia because of injury or illness
 Compassionate reasons or problems with family
 To attend a professional / military training course
 A routine posting to another unit
 To return to civilian employment (Reserve or Specialist forces only)
 Disciplinary reasons
 Administrative reasons (please specify)
 Other reason (please specify)

INSTRUCTIONS Use the map below to identify where you were on land or sea in or around East Timor. If you went to six or more locations please identify the **five** locations in which you spent the most time.



13. Which ground locations did you serve at or visit and how long were you there?

	Location	Length of Time		
		Days	Weeks	Months
1st location				
2nd location				
3rd location				
4th location				
5th location				

VACCINATIONS & MEDICATIONS

INSTRUCTIONS We would like to know about any vaccinations and medications you received as part of your deployment. If you do not have your 'yellow book', please still complete this section to the best of your ability.

14. Did you take tablets to protect you against malaria on your deployment to East Timor?

No

Yes

Don't know

If Yes,

a. Which antimalarial did you use mostly?

Doxycycline (Doxy)

Mefloquine (Lariam)

Malarone

Other

Don't Know

b. Did you change antimalarial drug?

Yes

No

If yes, what to?

Doxycycline (Doxy)

Mefloquine (Lariam)

Malarone

Other

Don't Know

c. Did you take your antimalarial drugs?

All the time

Most of the time

Some of the time

Rarely or never

15. Did you use primaquine on return to Australia (post exposure antimalarial drug)?

No

Yes

Don't know

If Yes,

a. How often were you directed to take primaquine?

Two times per day

Three times per day

b. Did you take your primaquine...?

As directed

Most of the time

Some of the time

Rarely or never

16. Did you take any other prescription medications (not prescribed within the military system or otherwise) during your time in East Timor (e.g. asthma medications)?

No

Yes

Don't know

If Yes, please specify

17. Did you have a significant reaction to any vaccinations or medications that you received for your deployment to East Timor?

No

Yes

Don't know

If Yes,

a. Which vaccination(s) or medication(s) did you react to?

Please specify

b. Did you seek medical advice for this reaction?

Yes

No

CHEMICAL & ENVIRONMENTAL EXPOSURES

We would like to know about chemical or environmental contaminants that you may have been exposed to during your deployment to East Timor.

INSTRUCTIONS: *Please indicate whether or not you have experienced any of the activities and items, given below, during your deployment to East Timor.*

18. During your deployment to East Timor...	No	Don't know	Yes			
			How often?			
			Daily	At least once a week	At least once a month	Less than monthly
Did you enter buildings or areas that might have contained asbestos?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you close to loud noises?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you use high pressure sprayers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you in contact with or did you use heavy metals such as lead paints and mercury?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you eat locally sourced food?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you drink water from local taps or wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you swim or bathe in local lakes, rivers or the sea?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you shower in water with fuel in it (evident by visible oil film, smell or stinging eyes)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you exposed to intense smoke e.g. from fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you do any refuelling?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you use solvents/degreasing agents, e.g. from cleaning, painting or hand washing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you exposed to engine exhaust so that it irritated your eyes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you bitten by flies, sand flies, fleas, mosquitoes or other insects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you stung or bitten by spiders, scorpions or other "bugs"?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was your clothing or uniforms treated with pesticides (e.g. permethrin)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was your tent or mosquito net treated with pesticides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was your sleeping bag (Bivi bag) treated with pesticides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you live or work in an area that had been recently sprayed or fogged with a pesticide?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you exposed to any chemical spills/chemically contaminated sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were you involved in the cleanup of any chemicals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. During your deployment to East Timor did you ever use a personal insect repellent?

- No Yes Don't know

If Yes, please fill in the following table.

Please name the type of repellent you used and how often you used it.

What was the personal insect repellent?	No	Don't know	Yes			
			How often was it used?			
			Daily	At least once a week	At least once a month	Less than monthly
ADF issue repellent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your own repellent (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<div style="border: 1px solid black; height: 40px; width: 100%;"></div>						

20. During your deployment to East Timor, did you ever apply pesticides including insecticides (but not including personal repellents) e.g. by spraying, fogging, laying bait etc?

- No Yes Don't know

If Yes, please answer the following:

a. Did you wear protective clothing while applying pesticides by spraying, fogging or laying bait?

- No Yes

b. What type of pesticide or insecticide did you apply by spraying, fogging or laying bait etc.? (Tick all those that apply).

- Permethrin based
- Baygon (Propoxur, Aprocarb)
- Bendicarb (Ficam)
- Diazinon
- Temephos (Abate)
- Malathion (Maldison)
- Other, unknown type
- Other, please specify

23. Did you have diarrhoea and/or vomiting during deployment to East Timor?
 Yes No (*if no, go to question 26*)
24. Did the symptoms of diarrhoea and/or vomiting prevent you from carrying out your duties?
 Yes No
25. Did you need intravenous fluids (a drip) as a result of diarrhoea and/or vomiting?
 Yes No

YOUR HEALTH AFTER YOUR DEPLOYMENT

The following question is about your health AFTER your deployment to East Timor.

26. Compared to your health BEFORE you deployed to East Timor, how would you rate your health in general NOW?
- | | |
|---------------------|--------------------------|
| Much better now | <input type="checkbox"/> |
| Somewhat better now | <input type="checkbox"/> |
| About the same | <input type="checkbox"/> |
| Somewhat worse now | <input type="checkbox"/> |
| Much worse now | <input type="checkbox"/> |

YOUR WORK ON DEPLOYMENT

The following questions are about your work ON deployment.

27. Did you feel that the work asked of you in theatre generally matched your trade experiences and ability?
- Yes
 No, work was generally **above** my trade experience and ability
 No, work was generally **beneath** my trade experience and ability
28. Thinking of one very difficult experience on this deployment, do you feel that:
- a) your colleagues did what was expected of them Yes No
- b) you did what was expected of you Yes No

29. During your deployment, did you:	Never	Occasionally	Frequently	Do you think this benefited the local community?	
				Yes	No
a) Work with the National Police/Army	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Assist in the building of infrastructure e.g. wells/roads, train local police/army	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Take part in Hearts and Minds campaigns e.g. interacted with the community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Work with DFAT*/AusAID/NGOs** to assist the locals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* DFAT =Department of Foreign Affairs and Trade

** NGO = Non-Government Organisation

30. Do you think the tasks you did whilst on deployment made a useful contribution to:

a) The local population? Yes No

b) The military mission as a whole? Yes No

31. In your opinion what was the level of morale in your immediate workplace/work team during the deployment?

Very Low

Low

Average

High

Very High

37. Overall, how would you describe your deployment experience?

- Very Negative
- Negative
- Neither Negative or Positive
- Positive
- Very Positive

The web site http://www.defence.gov.au/health/DMH/SelfHelp/i-dmh_Trauma.htm suggests that following a traumatic event, one way to “help restore emotional and psychological well-being” may be to keep a diary. We are interested in evaluating whether diary keeping is beneficial. We are interested in evaluating whether keeping a diary during deployments may be beneficial.

38. Do you normally keep a diary?

- Yes
- No

39. Did you keep a diary while on deployment to East Timor?

- Yes
- No

If you kept a diary while on deployment to East Timor please indicate your level of agreement with the following statement:

39a. I found keeping a diary or journal a useful activity.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

EVENTS

40. INSTRUCTIONS: *The following questionnaire asks you about events that may have occurred during your deployment. Please read each event statement carefully and then indicate, by marking the square, how often you experienced the event, how it affected you at the time and how it affects you now.*

NOTE: Some of this material may have the capacity to cause distress to some participants. You are free to omit answering any material which you find upsets you. If you do become distressed, contact telephone numbers where assistance or advice can be obtained are provided with this package.

It is important that you mark a response in each of the three columns.

How often did the following occur...?	How often did you experience the event?					How did it affect you at the time? (felt fear, horror, or helplessness)				How does it affect you now? (feelings of fear, horror or helplessness)			
	Never	Rarely	On occasion (x2-5)	Often (x6-10)	Very often (x11+)	Not at all	A little	A moderate amount	A great deal	Not at all	A little	A moderate amount	A great deal
You were in danger of being killed e.g. combat, motor vehicle accident (MVA), assault, sexual assault, natural disaster, hostage situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You were in danger of being injured e.g. combat, MVA, assault, sexual assault, natural disaster, hostage situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You had to handle dead bodies e.g. disaster situation, temporary morgue, mass graves including any form of human remains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You saw dead bodies e.g. disaster situation, temporary morgue, mass graves including any form of human remains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You heard of a close friend or co-worker who had been injured or killed e.g. combat, MVA, disaster situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You were present when a close friend or co-worker was injured or killed e.g. combat, MVA, disaster situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You feared that you had been exposed to a contagious disease, toxic agent or injury e.g. radioactivity, HIV, chemical warfare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

42. Below is a list of factors that some people may find stressful. Please read each factor carefully, and then indicate, by filling in the box, the response that best describes how much stress that factor caused you DURING your deployment.

	No stress	Slight stress	Moderate stress	A lot of stress	Extreme stress
Risk of unauthorised discharge (UD) of weapons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk of vehicle accidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Living conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Isolation from Australia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Isolation from other deployed members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal privacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sorting out problems at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boredom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Living and working with the same people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overload of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Periods of high activity then low or no activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Behaviour of others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Living in a different culture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Separation from family and friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threat of danger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not getting on with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of opposite sex company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Language barriers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sorting out disagreements with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frustration generally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinking about returning home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The overseas organisation (eg. UN, MFO)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your role in the country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completing deployment's objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ADF's lack of concern with deployed troops/sailors/ airmen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Australian military hierarchy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	No stress	Slight stress	Moderate stress	A lot of stress	Extreme stress
The deployment's rules and regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Double standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contact with family/friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taking leave back in Australia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taking leave other than in Australia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mail service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Working with military of other countries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Length of deployment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please list any other stressful experiences and fill in which best describes how much stress it caused</i>					
<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

RETURN TO AUSTRALIA PROCESSING

Now some questions about your Return to Australia Processing (RTA).

43. What did you do during this time? *Please tick all that apply.*

- Relocated from main location occupied during the deployment to a staging area to prepare for RTA
- Travel (by air / sea / other) –
Please specify how long
- Preparation for RTA in main peacekeeping location
- Other, please specify

44. What did you do in the two weeks immediately after you returned home?

- Went on leave for the entire time
- Returned to work for a few days before going on leave
- Went on short leave and returned to work. Deferred leave until much later
- Was sick or injured requiring hospitalisation or convalescence leave
- Returned straight back to work
- Other, please specify

45. Were you posted out of the Unit you served with in East Timor within six months of your return to Australia?

- No Yes

If Yes,

a. Was the posting or transfer from the Unit you served with at your request?

- No Yes

POST DEPLOYMENT EXPERIENCES

We would like to know about some of the experiences you may have had after returning from your deployment to East Timor.

INSTRUCTIONS: Please indicate whether you have experienced any of the items listed below as a result of your deployment to East Timor. If YES, please estimate, for each section, whether you experienced the item a little, somewhat or a lot.

46. As a result of your deployment to East Timor, have you experienced or felt any of the following?	No	Yes		
		How much?		
		A Little	Some	A lot
Greater self-pride?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rewarded for a job well done?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A greater appreciation for your country?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jealousy or resentment from other Defence Force members?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of recognition for your efforts during your deployment by the Australian Government?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of recognition for your efforts during your deployment by the ADF?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of recognition for your efforts during your deployment by the Australian people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inadequately debriefed following your deployment activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved as a leader?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tougher, more confident or more self assured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More knowledgeable of world issues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disillusioned by the scenes that you witnessed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Valued and respected for your deployment activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More appreciative of being alive?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More respectful of other Australian and allied veterans?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well looked after by the ADF or the Australian Government?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stronger bonds with the members of your ship/unit/squadron?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proud to be an Australian veteran?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

47. Since your return from your deployment to East Timor, has your marital status changed?

Tick all that apply. Since my deployment I have:

- Not changed my marital status
- Married, or started living with a partner
- Separated from a partner
- Divorced from a partner
- Been widowed
- Other, please specify

Appendix 4 - Media Summary

Media Summary for East Timor Health Study: Defence, ex-Serving and non-Defence Publications

Publication	Date Published
Advertisements	
Australian Peacekeepers and Peacemakers Veterans' Association (APPVA) Magazine	Sept 07 Feb 08 June 08
Service Newspapers (Army, Navy and Airforce News)	21 Feb 08 6 Mar 08 20 Mar 08 (Inserts) 17 April 08 10 July 08
Journal of Military and Veterans' Health	Apr 08 July 08 Oct 08
The Chronicle (Canberra)	22 Apr 08
City West News (Amberley)	21 Apr 08
Fremantle Gazette	22 Apr 08
Penrith Press (Richmond)	22 Apr 08
North West News	16 Apr 08
Townsville Sun	16 Apr 08
Liverpool Leader	23 Apr 08
Editorials	
Australian Peacekeepers and Peacemakers Veterans' Association (APPVA) magazine	Feb 08 Sep 08
Penrith Press	22 Feb 08
Stand To (RSL National)	1 Mar 08
Vetaffairs	1 Mar 08
UQ News	1 Apr 08
Townsville Sun	16 Apr 08
NT News	28 Apr 08
Cairns Sun	28 May 08
Canberra Times	3 Oct 08
Townsville Bulletin	8 Oct 08
Townsville Sun	8 Oct 08
Queensland Times	9 Oct 08



Project Completion Report - Annexes

East Timor Health Study

Deliverable Item 7 (Phase 2)

9 April 2009



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Literature Review

East Timor Health Study

Deliverable Item 2h (Phase 1b)

2 May 2006



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Approvals

This document requires the following approvals:

Name	Position	Signature	Date	Version
CMVH SRT				
SAC				

Signed approval forms are filed in the Management section of the project file.

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This document has been distributed to:

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Executive Summary

1. The purpose of the Defence Deployed East Timor Health Study is to conduct a cross-sectional health study on personnel who have returned from service in each of the East Timor Operations. A literature review of the conduct and findings of veteran health studies of relevance to the East Timor study will establish an account of available scientific literature in this field. The parameters of the literature review have been expanded to include a background of East Timor, the events leading to the deployment of Australian Service personnel to East Timor, the nature of the six Operations of the ADF in East Timor encompassed in this project and other scientific and technical literature regarding issues potentially or actually impacting upon the health of Australian veterans to East Timor. Limits, strengths and weaknesses of published literature relevant to the East Timor deployments will be conveyed in this review. An attempt has been made to structure the review according to the Nature of Service Review being conducted by the Australian Defence Force incorporating the East Timor deployments.

2. Six Operations in East Timor are described in this review, spanning a period from 19 June 1999 until 13 May 2005, including a combination of 'warlike' and 'non-warlike' operations. The Operations included in this review are:

- a. Operation SPITFIRE - 06 September 1999 – 19 September 1999
- b. Operation FABER - 19 June 1999 – 23 February 2000
- c. Operation WARDEN 16 September 1999 – 10 April 2000
- d. Operation TANAGER 20 February 2000- 19 May 2002
- e. Operation CITADEL 20 May 2002 – 19 May 2004
- f. Operation SPIRE 20 May 2004 – 13 May 2005.

3. In recent times ADF personnel have deployed on active service overseas in a variety of war-like and non war-like roles. These include peacekeeping, peace enforcement, border protection, humanitarian assistance and offensive military operations in support of coalition agreements. Such deployments have varied in intensity and complexity and have been associated with a wide range of operational, occupational and environmental health threats; physical, physiological and psychological. Identification and documentation of the various health threats encountered has been variable and at times limited.

4. There are continuing controversies and significant public debate about the health effects of deployments on current and former members of the ADF. Concerns have usually been raised by veterans and ex-service organisations as health effects become manifest, often many years after the deployment has been completed. As a consequence, the health effects of operational deployments have only been studied retrospectively to date, with associated difficulty in obtaining relevant data,

particularly that regarding hazardous exposures. The interpretation of such data is problematic and conclusions drawn potentially inconclusive.

5. To the end of 2005, 71 service pensions had been accepted as payable to Australian veterans of the East Timor Operations. A service pension is a means tested income support pension and can be paid to veterans on the grounds of age or invalidity, and to eligible partners, widows and widowers. The 71 pensions described here, as accepted for East Timor Operations, were those paid only to veterans. In the same period since the deployments began, 49 partner and war widow / widower pensions were accepted as payable as a result of East Timor Operations. Disability pensions were awarded to 1189 incapacitated veterans of the East Timor Operations.

6. Information sources for this literature review are from available unclassified sources. An earlier report of the health hazards relating to the InterFET deployments has been undertaken. The information sourced for that report has been expanded to include all East Timor deployments, and consolidated to conform to the Nature of Service Review framework.

7. It is necessary to define terms used in this review, in order to provide clear understanding of the interrelationship between threats, hazards, risk and harm. This also helps determine context for findings from the literature.

- a) **Harm** is defined as, “physical or mental damage or injury”
- b) **Hazard** is defined as, “the potential to cause injury or illness”
- c) **Threat** is defined as, “a person or thing likely to cause harm”
- d) **Risk** is defined as, “the probability and consequences of occurrence of injury, illness, disease, damage or loss. (The probability that a potential harm may become actual)”

8. Three significant documents that have been used in this review are the Australian National Audit Office report on East Timor deployments, the ADF Nature of Service Review Report and the InterFET Hazard Assessment report that was accepted by the Deployment Health Surveillance Program Scientific Advisory Committee and Program Management Board.

9. It must be noted that in conducting this review, the literature that was considered was deemed to be relevant to the hazards of deployment applicable to East Timor, rather than the broader concept of deployment. These hazards, when applied to the Nature of Service Review framework, were further considered as to their risk of, or actual harm from, the hazards identified in the literature.

1 Introduction

1. The purpose of the Defence Deployed East Timor Health Study is to conduct a cross-sectional health study on personnel who have returned from service in each of the East Timor Operations. A literature review of the conduct and findings of veteran health studies of relevance to the East Timor study will establish an account of available scientific literature in this field. The parameters of the literature review have been expanded to include a background of East Timor, the events leading to the deployment of Australian Service personnel to East Timor, the nature of the six Operations of the ADF in East Timor encompassed in this project and other scientific and technical literature regarding issues potentially or actually impacting upon the health of Australian veterans to East Timor. Limits, strengths and weaknesses of published literature relevant to the East Timor deployments will be conveyed in this review. An attempt has been made to structure the review according to the Nature of Service Review being conducted by the Australian Defence Force incorporating the East Timor deployments.

2. This literature review has been undertaken in accordance with the National Health and Medical Research Committee document titled, “How to review the evidence: Systematic identification and review of the scientific literature”¹.

2 Background to Australia's Involvement in East Timor Military Operations



3. East Timor had been administered by Portugal until 1974 when civil war broke out between those who favoured independence and those who advocated integration with Indonesia. Portugal withdrew and Indonesia intervened militarily and integrated East Timor as its 27th province in 1976. The United Nations never recognised this integration, and both the Security Council and the General Assembly called for Indonesia's withdrawal².

4. Successive talks with Indonesia and Portugal aimed at resolving the status of the territory resulted in Indonesia proposing a limited autonomy for East Timor within Indonesia in June 1998. A set of agreements between Indonesia and Portugal were signed in New York on 5 May 1999. Indonesian and Portuguese Governments entrusted the United Nations Secretary-General with organising and conducting a "popular consultation" in order to determine whether the East Timorese people accepted or rejected a special autonomy for East Timor within the unitary Republic of Indonesia. UN Resolution 1246 authorized the establishment of the United Nations Mission in East Timor (UNAMET) on 11 June 1999. This Resolution stipulated that after the vote, UNAMET would oversee a transition period pending implementation of the decision of the East Timorese people. Six Australian Military Liaison Officers,

along with 50 Australian Federal Police Officers and a further 40 Australian Officials provided support to UNAMET³.

5. On 30 August 1999, approximately 98 percent of registered East Timorese voters went to the polls and rejected the proposed autonomy by a margin of 78 percent in favour of undertaking a process of transition towards independence.

6. Following the announcement of the result, pro-integration militias, at times with the support of elements of the Indonesian security forces, launched a campaign of violence, looting and arson throughout the entire East Timor territory.

7. Following the outbreak of violence, the Indonesian Armed Forces and police began a drawdown from the territory, eventually leaving completely along with Indonesian administrative officials.

8. The displacement and death of East Timorese civilians as a result of the post-referendum violence created severe labour shortages, with educated local leaders being particularly targeted. The majority of key civil servants and commercial bank officials (mostly Indonesian nationals) returned to Indonesia. As the public administration stopped functioning, the UN and non-governmental organisations (NGOs) became almost the only source of employment.

9. The Secretary-General and the Security Council undertook strenuous diplomatic efforts to halt the violence, pressing Indonesia to meet its responsibility to maintain security and order in the territory. On 12 September 1999, the Government of Indonesia agreed to accept the offer of assistance from the international community. The Security Council then authorised a unified multinational force (InterFET) under command of Australia to restore peace and security in East Timor, to protect and support UNAMET in carrying out its tasks and, within force capabilities, to facilitate humanitarian assistance operations.

10. At a meeting with the United Nations on 28 September 1999, Indonesia and Portugal reiterated their agreement for the transfer of authority in East Timor to the United Nations.

3 United Nations Operations in East Timor

UNITED NATIONS MISSION IN EAST TIMOR (UNAMET)

11. UNAMET was established by Security Council resolution 1246 on 11 June 1999 for a period up to 31 August 1999. By Security Council resolution 1257 of 3 August, UNAMET was extended to 30 September 1999.

12. Its mandate was to organise and conduct a popular consultation on the basis of a direct, secret and universal ballot, in order to ascertain whether the East Timorese people accept the proposed constitutional framework providing for a special autonomy for East Timor within the unitary Republic of Indonesia or reject the proposed special autonomy for East Timor, leading to East Timor's separation from Indonesia, in accordance with the General Agreement and to enable the Secretary-General to discharge his responsibility under Paragraph 3 of the Security Agreement⁴.

INTERNATIONAL FORCES EAST TIMOR (INTERFET).

13. InterFET deployed into East Timor on 20 September 1999. Its mission was to protect and support United Nations activities in East Timor including humanitarian aid in accordance with the United Nations Mandate. InterFET was given authorisation under Article 42 of Chapter 7 of the UN charter, which enabled InterFET to use air, sea and land forces as required to restore and maintain peace, and achieve its mandated mission.⁵

UNTAET AND TRANSITION TO INDEPENDENCE

14. On 19 October 1999, the Indonesian People's Consultative Assembly formally recognised the result of the consultation. Shortly thereafter, on 25 October, the United Nations Security Council, by resolution 1272 (1999), established the United Nations Transitional Administration in East Timor (UNTAET) as an integrated, multidimensional peacekeeping operation fully responsible for the administration of East Timor during its transition to independence. Resolution 1272 mandated UNTAET to provide security and maintain law and order throughout the territory of East Timor; to establish an effective administration; to assist in the development of civil and social services; to ensure the coordination and delivery of humanitarian assistance, rehabilitation of humanitarian assistance, rehabilitation and development assistance; to support capacity-building for self-government; and, to assist in the establishment of conditions for sustainable development. In February 2000, marking the complete deployment of UNTAET, command of military operations was transferred from INTERFET to the United Nations Peacekeeping Force (UN-PKF). UNTAET also began a process of reorganising itself to resemble more closely the future government of East Timor and to increase the direct participation of the East Timorese.

15. On 30 August 2001, two years after the Popular Consultation, more than 91 percent of East Timor's eligible voters went to the polls again; this time to elect an 88-member Constituent Assembly tasked with writing and adopting a new Constitution and establishing the framework for future elections and a transition to full

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independence. Twenty-four members of the new all-East Timorese Council of Ministers of the Second Transitional Government were sworn into office. The new Council replaced the Transitional Cabinet created in 2000. The Constituent Assembly and a new East Timorese Government were to govern East Timor during the remaining transitional period before its independence as a democratic and sovereign State.

16. East Timor's Constituent Assembly signed into force the Territory's first Constitution on 22 March 2002 and following presidential elections on 14 April, Mr. Xanana Gusmão was appointed president-elect of East Timor (Mr. Gusmão received 82.69 percent of the vote and Mr. Fancisco Xavier do Amaral 17.31 percent). With both these preconditions for a hand-over of power met, the Constituent Assembly was to transform itself into the country's parliament on 20 May 2002.

17. Newly independent East Timor swore in its first government and held an inaugural session of Parliament on the morning of 20 May 2002; just hours after, more than 120,000 people celebrated the birth of the nation at a massive ceremony on the outskirts of Dili. The government, composed primarily of the same cabinet members that comprised the pre-independence Council of Ministers, was officially inaugurated by President Xanana Gusmão. The ceremony was attended by some 300 dignitaries including United Nations Secretary-General Kofi Annan, who handed over authority from the United Nations to the Speaker of East Timor's National Parliament.

18. East Timor's Parliament then held its first session at which President Gusmão presented Secretary-General Annan with a request from East Timor to join the United Nations.

UNMISSET AND THE POST-INDEPENDENCE PERIOD

19. The United Nations continued to maintain a presence in East Timor throughout the post-independence period to ensure the security and stability of the emerging State. The United Nations Mission of Support in East Timor (UNMISSET) was set up by resolution 1410 (2002) and unanimously adopted by the Security Council on 17 May 2002.

20. This Mission was established for an initial period of 12 months, starting on 20 May 2002, with the following mandate:

- a) To provide assistance to core administrative structures critical to the viability and political stability of East Timor;
- b) To provide interim law enforcement and public Security and to assist in developing the East Timor Police Service (ETPS); and,
- c) To contribute to the maintenance of the new country's external and internal security.

21. The Council decided that UNMISSET would be headed by a Special Representative of the Secretary-General, and initially consist of 1,250 civilian police

and military troop strength of 5,000, including 120 military observers. The civilian component would include:

- a) Focal groups for gender and HIV/AIDS issues;
- b) A Civilian Support Group of up to 100 personnel filling core functions, and,
- c) A Serious Crimes Unit and a Human Rights Unit.

22. The Council decided that downsizing of UNMISSET should proceed as quickly as possible, after careful assessment of the situation on the ground, and that the Mission would, over a period of two years, fully devolve all operational responsibilities to the East Timorese authorities as soon as feasible, without jeopardising stability⁶.

23. The United Nations Mission of Support in East Timor (UNMISSET) was established by Security Council resolution 1410 (2002) of 17 May for an initial period of 12 months, starting on 20 May 2002, with the following mandate:

- a) To provide assistance to core administrative structures critical to the viability and political stability of East Timor;
- b) To provide interim law enforcement and public security and to assist in the development of a new law enforcement agency in East Timor, the East Timor Police Service (ETPS); and,
- c) To contribute to the maintenance of the external and internal security of East Timor.

24. The Council also requested UNMISSET to give full effect to the following three Programmes of the Mandate Implementation Plan as set out in section III A 3 of the report of the Secretary-General (S/2002/432) of 17 April 2002:

- a) Stability, Democracy and Justice;
- b) Public Security and Law Enforcement; and,
- c) External Security and Border Control.

25. On 19 May 2003 that mandate was extended for another year until 20 May 2004 by Security Council resolution 1480 (2003).

26. On 14 May 2004 the Security Council, in its resolution 1543, again extended the mandate of UNMISSET for a period of six months, with a view to subsequently extending the mandate for a further and final period of six months, until 20 May 2005. It also decided to reduce the size of the mission and revise its tasks, in accordance with the recommendations of the Secretary-General as outlined in his report of 29 April 2004, to include the following elements:

- a) Support for the public administration and justice system of Timor-Leste and for justice in the area of serious crimes;
- b) Support to the development of law enforcement in Timor-Leste; and,
- c) Support for the security and stability of Timor-Leste.

27. On 16 November 2004, the Security Council, by its resolution 1573 (2004), extended the mandate of UNMISET for a final six months until 20 May 2005. The Council also decided to maintain UNMISET's tasks, configuration and size, in order to allow the Mission to complete its mandate and consolidate gains made in that country thus far.

28. On 20 May 2005, UNMISET successfully concluded its mandate in Timor-Leste. It was succeeded by a small follow-on political mission – the United Nations Office in Timor-Leste (UNOTIL), which was established by the Security Council to ensure that the underpinnings of a viable State are firmly in place in that country.

4 Australia's Involvement in East Timor Operations

29. The East Timor Operations began following secret planning in June 1999. It was anticipated that a two-phased operation may be required, with the first phase being an emergency evacuation of Australians and other nationals authorised by the Australian Government from East Timor. The second phase of initial operations was anticipated to involve reinforcing evacuation forces, in order to establish protected areas in East Timor until public safety was restored under a United Nations international force⁷.

30. Six Operations in East Timor are described in this review, spanning a period from 19 June 1999 until 13 May 2005, including a combination of 'warlike' and 'non-warlike' operations. A brief description of each of the Operations included in this review is listed below.

OPERATION SPITFIRE - 06 SEPTEMBER 1999 – 19 SEPTEMBER 1999

31. During September 1999, an air bridge was established to move non-essential staff of UNAMET, including Australians and other approved nationals from Dili to Darwin under Operation SPITFIRE. This Operation was deemed non-warlike service.

OPERATION FABER - 19 JUNE 1999 – 23 FEBRUARY 2000

32. From 19 June 1999, prior to the referendum for independence in East Timor in August 1999, to 23 February 2000, Australian Defence Personnel contributed to the United Nations Assistance Mission to East Timor (UNAMET) under Operation FABER which was first a non-warlike prior to the 16 September 1999, then becoming a warlike operation from the 16 September 1999. The area of operations for Operation FABER comprised East Timor and the sea area that on 16 September 1999 was the territorial sea of Indonesia adjacent to East Timor.

OPERATION WARDEN 16 SEPTEMBER 1999 – 10 APRIL 2000

33. The ADF contributed large numbers of Defence personnel to the International Force in East Timor (InterFET) from 16 September 1999 to 10 April 2000 in a warlike operation termed Operation WARDEN.

34. The area of operations for Operation WARDEN comprised East Timor and the sea area that on 16 September was the territorial sea of Indonesia adjacent to East Timor.

OPERATION TANAGER 20 FEBRUARY 2000- 19 MAY 2002

35. During the latter part of Operation WARDEN, personnel deployed under the United Nations Transitional Administration, East Timor (UNTAET) are taken to have rendered warlike service on Operation TANAGER between 20 February 2000 and 19 May 2002 in the area of operations comprising East Timor and the sea adjacent to East Timor out to a distance of 12 nautical miles from the low water mark.

OPERATION CITADEL 20 MAY 2002 – 19 MAY 2004

36. Operation TANAGER continued until 19 May 2002 when the United Nations mission completed transition into a mission of Support for East Timor (UNMSET), to which the ADF contributed further personnel under Operation CITADEL. This operation was considered warlike until 17 August 2003, and then considered non-warlike following that date.

OPERATION SPIRE 20 MAY 2004 – 13 MAY 2005

37. Operation SPIRE is Australia's contribution to an extension of the United Nations Mission in support of the East Timor mandate for the mission in East Timor. This operation began in May 2004 and continues the work of Operation CITADEL, Australia's contribution to the United Nations Mission in support of East Timor, which concluded on 19 May 2004. Australia's contribution to Operation SPIRE continues as a non-warlike operation and consists of 100 logistics support personnel, mainly employed in engineering, maintenance and transport roles and supported by an Australian National Command Element.

5 Health Issues of Veterans of Military Deployments

What are the health and wellbeing issues among Defence personnel who deploy on military Operations?

38. In recent times ADF personnel have deployed on active service overseas in a variety of warlike and non-warlike roles. These include peacekeeping, peace enforcement, border protection, humanitarian assistance and offensive military operations in support of coalition agreements. Such deployments have varied in intensity and complexity and have been associated with a wide range of operational, occupational and environmental health threats; physical, physiological and psychological. Identification and documentation of the various health threats encountered has been variable and at times limited.

39. There are continuing controversies and significant public debate about the health effects of deployments on current and former members of the ADF. Concerns have usually been raised by veterans and ex-service organisations as health effects become manifest, often many years after the deployment has been completed. As a consequence, the health effects of operational deployments have only been studied retrospectively to date, with associated difficulty in obtaining relevant data, particularly that regarding hazardous exposures. The interpretation of such data is problematic and conclusions drawn potentially inconclusive.

40. The body of research around post-conflict health outcomes lacks systematically collected data⁸. Reasons for this perhaps arise from the nature of research bias inherent in studies attempting to attribute causality of any single disease to the exposure of war-like conflict. Biases include the absence of control populations, poor exposure data and reporting biases⁹.

41. Investigation of post-deployment health consequences has begun to be addressed as structured iterations of research projects are conducted. The themes evolving from research around recent conflicts such as the Persian Gulf War (1991) are directed towards issues such as the definition of environmental exposures during the deployment and the related health problems (regardless of whether these fit known syndromes); how to provide health care for veterans after deployment; and prevention of adverse health outcomes in future deployments¹⁰.

42. Post-conflict syndromes have followed wars since at least the United States Civil War⁹ and the Boer war¹¹, so that post-conflict syndromes should be considered an expected outcome. Focus upon the psychological and physical ill health of veterans in the United States became acute following the Vietnam conflict when the first five years after separating from the military was associated with an increase risk of dying from motor vehicle accidents, suicide, homicide and accidental poisoning¹². Psychological problems including depression, anxiety and combat related post-traumatic stress disorder, were also more common among Vietnam veterans¹³. Among Australian Army veterans of the Vietnam conflict, combat exposure was related to increased reporting of health problems, with some chronic physical conditions and psychological problems lingering for several decades.

43. The Binns' Report¹⁴ reported findings and recommendations with respect to the status of scientific progress in understanding in the area, primarily concluding that more research is needed since not all mechanisms of ill-health and disease related to deployment are understood¹⁴. These conclusions conflict with findings made by the (US) Institute of Medicine¹⁰, which regarded there was a lack of causal evidence for low dose toxic agent exposure¹⁵ and the absence of a specific Gulf War Syndrome¹⁶. This may indicate a lack of impartiality and a failure of scientific process in addressing the problem of ill health arising after this conflict¹⁷.

44. The United States military response to the difficulties of studying post-conflict health and well-being has been the collaboration of the Departments of Defence and Veterans' Affairs in founding a large prospective study of Service personnel¹⁸. The "Millennium Cohort" is designed to evaluate the impact of military deployments on various measures of health over time, including medically unexplained symptoms and chronic diseases such as cancer, heart disease and diabetes. When fully operational, the cohort will develop considerable epidemiological power, ultimately enrolling 140,000 U.S. Service personnel and following their military careers and beyond using survey questionnaires including questions on demographic characteristics, self-reported medical conditions and symptoms, health-related behaviours and self-assessed physical and mental well-being. Most recently, the study was able to investigate the psychological health effects among military populations of the September 11, 2001 terrorist attacks¹⁹.

45. British veterans of the 1991 Gulf War have reported lesser health and more symptoms of ill health²⁰; however, no particular syndrome has been discerned^{21, 22}. An independent (British) inquiry chaired by Lord Lloyd of Berwick investigated and reported on circumstances that have led to the health and death of approximately 6000 British troops following deployment to the "first" Gulf War²³. The primary finding of this inquiry was that veterans in receipt of pensions were most concerned about their condition being recognised and the effort required in obtaining recognition. The recommendation arising was for formal recognition of illnesses as being related to this deployment. Controversially, the Inquiry supported the use of the term "Gulf War Syndrome" against evidence and opinion presented.

46. Approximately a fifth of British veterans of the 1991 deployment to the Middle East believe they have a Gulf War Syndrome²⁴. Sociological and demographic factors are most closely related to psychological and physical ill health²⁵. Factors included rank, perhaps as a surrogate for socioeconomic status as reflected in health correlations in civilian populations. Ill health was also observed to be more common among those veterans returning to civilian life rather than remaining in the military environment. Multiple vaccinations were found to have a relationship with ill health, probably involving the concurrent stress of deployment contributing²⁶, however, no evidence was found of a distinct Gulf War syndrome among British service personnel²². The investigation of the current deployment of British Service personnel to the Middle East involves a self-reported questionnaire delivered directly or by mail to veterans within two years of deployment conclusion.

47. The Australian Gulf War Study²⁷ investigated whether veterans had an increased risk of psychological disorders, and increased prevalence of other medical conditions, chronic fatigue syndrome, other evidence of adverse health effects, or adverse

reproductive outcomes, related to their deployment exposure. The study used a combined questionnaire and comprehensive health assessment and compared the findings to the health of Service personnel not having deployed to the Gulf War (of 1991). These veterans were found to report all general health symptoms and some medical conditions more commonly than their colleagues who were not deployed²⁸. They developed more psychological disorders, were more likely to have persistent psychological symptoms and the risk of these was increased with more adverse military experiences reported on the deployment; however, no “Gulf War” syndrome was found²⁹. The psychological health and aspects of physical health of the Gulf War veterans were concluded to differ significantly from those Service persons who did not deploy. Recommendations made following the study included addressing the psychological preparedness and management of adverse military experiences, recording accurately occupational, environmental and iatrogenic exposures and military experiences of the deployment and establishing a system to allow comparison of pre-deployment health status³⁰.

48. Few studies of Australian veterans of the United Nations Peacekeeping operations in East Timor have been published. The East Timor Operations were punctuated with the highest monthly incidence of malaria experienced by the ADF since 1968 during the Vietnam conflict³¹. This early outbreak was largely born by soldiers of the forward Units in the Operation³². The majority of cases of malaria associated with the East Timor operations were vivax malaria and actually occurred after veterans returned to Australia. A high proportion of these veterans suffered relapses of malaria for several months and in some cases years after returning to Australia³³. To some extent this was associated with poor tolerance of malaria chemoprophylaxis^{31, 34}; and inadequate terminal prophylaxis regimens against nascent malaria parasites³⁵. As a result, alternative chemoprophylaxis agents were investigated^{36, 37, 38}. Aetiology of post-deployment health concerns following the East Timor operations have begun to be attributed to malaria chemoprophylaxis, as manifest through legal action against the ADF. However, residual clinical conditions following malaria contracted in East Timor have attracted DVA pensions³⁹ despite no evidence for this health outcome being available in the scientific literature. Despite recurring illness and continuing threat of these diseases in East Timor, some Australian soldiers found the experience positive and chose to serve again⁴⁰.

49. Dengue was also a common illness during East Timor Operations⁴¹. Personnel with viremic dengue were returned to Australia under the re-deployment plans of the ADF from East Timor. This introduced the risk of re-establishing dengue in Townsville and caused some concern among local residents³⁶. Veterans’ pensions have been allocated based on chronic conditions attributed to these illnesses contracted during the East Timor operations³⁹.

50. A search and review of literature regarding post deployment health surveillance methods indicate that retrospective health studies have been conducted for most of the major conflicts since the Second World War. The major post-deployment health studies conducted on Australian veterans relate to the Korean, Vietnam and the 1990/91 Gulf War.

51. Over time, lessons learnt from past conflicts in matters of disease prevention, health risk communication, improved health countermeasures and military health care

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meant that overall illness and injury rates during conflict were expected to improve. Reports of ill health from veterans of the 1990/91 Persian Gulf War were unexpected and the unexplained adverse health outcomes caused widespread public and scientific concern.

52. During this time, it was recognised that there was inadequate identification and measurement of combat exposures, poor medical documentation relating to exposures and lack of health information. Health support measures satisfactory to the veterans' needs were absent as little was understood of the causes or treatment options for illness attributed to combat exposure.

53. To date, there is no reported system of linking personnel to measurable exposure data throughout the duration of a deployment. Recommendations to develop and implement a method of capturing hazard exposure information and applying it to group or individual personnel are proposed; however, no evidence of development was found for this report.

54. The Australian Defence Force Nature of Service Review has been developed to express the extent to which ADF personnel

“deployed on authorised military operations in defence of the nation and its security interests are likely to be exposed to the risk of harm as a consequence of executing their mission and tasks”⁴².

55. The Nature of Service Declaration goes some way to describing the notion of exposure to the risk of harm and identifies five types of harm as being; physical harm (battle casualties); physical harm (non-battle casualties); psychological harm; social harm and financial harm. Of these, physical harm from battle and non-battle casualty and psychological harm will be considered to assess the level of exposure to the risk of harm for each operation. However, the intended outcome of the Nature of Service Review is to develop a process where ADF personnel will, “receive equitable recognition, compensation and reward for operational service in defence of the nation and its security interests”⁴², rather than aim to quantify military service exposures. For this reason, the framework for this literature review is based on the Nature of Service Review framework.

56. International interoperability programs involving Australia, Canada, New Zealand, the United Kingdom and the United States include facilities for information exchange, research cooperation and development and system and equipment compatibility. Hazard assessment and deployment health surveillance systems are issues identified for health interoperability. Major post-deployment health surveillance strategies and activities of other nations are summarised as follows:

UNITED STATES DEPLOYMENT HEALTH INITIATIVES

US Army Centre for Health Promotion and Preventive Medicine (USACHPPM)

57. This centre was established at the beginning of World War II, eventually developing to provide services in clinical and field preventive medicine,

environmental and occupational health, health promotion and wellness, epidemiology and disease surveillance, toxicology and laboratory sciences.

58. Significant undertakings under USACHPPM are:

- a) The Deployment Environmental Surveillance Program, which is responsible for:
 - (1) On-site environmental surveillance to identify potential health risks;
 - (2) Spatial and temporal analyses of potential environmental health risks related to acute and chronic exposures using geographic information systems (GIS) and integrating this information to update medical threat assessments and countermeasures;
 - (3) Archive all environmental surveillance data to allow investigations of any future adverse health outcomes following a deployment; and,
 - (4) Develop environmental and occupational hazard identification, exposure monitoring and risk assessment for military operations.

Technical Guides

59. Technical Guide 230⁴³ and 230RD⁴⁴: U.S. Army Centre for Health Promotion and Preventive Medicine (USACHPPM) Technical Guide (TG) 230 Version 1.3 – Chemical Exposure Guidelines for Deployed Military Personnel provides chemical concentration levels for various environmental media (referred to as Military Exposure Guidelines (MEGs), associated health effects information and procedural guidance to assist with operational risk management of chemical hazards. This guide also includes a qualitative risk assessment ranking tool that parallels existing U.S. military doctrine.

60. The Technical Guide 230 RD (Reference Document) – Chemical Exposure Guidelines for Deployed Military Personnel (USACHPPM, 2003) presents specific notes, equations, and sources from which the MEGs were derived.

61. Technical Guide 248⁴⁵: Technical Guide 248 – Guide for Deployed Preventive Medicine Personnel on Health Risk Management (USACHPPM, 2001) introduces the process and tools that allow decision making based on medical threat. Its audience is preventive medicine personnel who are tasked to provide health risk assessments to command elements.

62. These documents were recommended for ADF consideration and the U.S. methodology for health hazard assessment in the field was described during a recent Sir Edward Dunlop Inaugural Veterans' Health Symposium⁴⁶.

The Force Health Protection Strategy

63. Developed by the U.S. Department of Defence and aiming to “protect the health of military members from medical and environmental hazards associated with military service”. It will achieve this, in part, by “continuous assessment of current and future health of military members through military surveillance, longitudinal health studies, adequate medical record documentation and clinical follow up”⁴⁷.

64. This program will achieve this by conducting a program of comprehensive evaluations in a specialty care clinic setting. A post-deployment health assessment, known as DD Form 2796, is administered to every service member returning from a deployment. In August 2005, a post-deployment health reassessment (DD Form 2900) was introduced and provides for a second health assessment at approximately 90 to 180 days after deployment. The DD Form 2900 was developed to build on the use of existing standardised scales currently in use in primary care settings and in the DD Form 2796. It provides for identification of physical health symptoms that have been associated with deployment-related health concerns and conditions, potential exposure “worry” (often associated with subsequent development of chronic, multi-symptom illness), mental health conditions, and family and relationship conflict and concerns. Mental health scales were selected to identify conditions for which evidenced-based assessment and treatment is available⁴⁸.

65. Components of the health surveillance include:

- a) The individual’s responses to the health assessment questions on the revised DD Form 2796;
- b) Mental health or psychosocial issues commonly associated with deployments;
- c) Special medications taken during the deployment; and,
- d) Concerns about possible environmental or occupational exposures.

The Millennium Cohort Study

66. The primary objective of this study is to determine if factors such as military service, deployment history, service exposures and service categories are associated with chronic disease development. Scores of standardised self-reported health measures of physical and psychological functioning and information comparing clinical assessment against military service factors are proposed to be assessed.

The Committee on Strategies to Protect the Health of Deployed U.S. Forces

67. In order to prevent and reduce the number of illnesses in future deployments, the Department of Defence (DoD) asked the National Academy of Sciences (NAS) to advise it on a long-term strategy for protecting the health of military personnel. Collaboration between the Institute of Medicine (IOM) and the National Research Council (NRC) identified four key tasks and submitted these in report form as listed below:

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- a) Strategies to Protect the Health of Deployed U.S. Forces: Analytical Framework for Assessing Risks (2000) – outlines methods to develop an analytical framework for assessing health risks to deployed forces. It provides guidance rather than instruction.
- b) Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterising and Documenting Exposure – a review and evaluation of technology and methods for detecting and tracking exposures to potentially harmful chemical and biological agents.
- c) Strategies to Protect the Health of Deployed U.S. Forces: Force Protection and Decontamination – a review and evaluation of technology and methods for physical protection and decontamination, particularly of chemical and biological agents.
- d) Strategies to Protect the Health of Deployed U.S. Forces: Medical Surveillance, Record Keeping, and Risk Reduction – a review and evaluation of medical protection, health consequences management and treatment, and medical record keeping.

UNITED KINGDOM

68. The Gulf War Illness Research Unit (Guy's, King's and St Thomas' Medical School, London) in collaboration with the Office of National Statistics and the Royal Centre for Defence Medicine undertook a cross-sectional postal survey on a random sample of Gulf War veterans, Bosnia conflicts veterans and a group of service persons not deploying despite being in the UK forces in 1990-1991⁴⁹. The questionnaire included enquiries regarding exposures to chemical, environmental, trauma, combat and other hazards during the 1990/91 Gulf War. Mechanisms to measure exposures from the time of the conflict were unavailable for comparison with reported exposures. A substantial proportion of Gulf War veterans are ill with multi-symptom conditions not explained by wartime stress or psychiatric illness¹⁴.

69. The UK Armed Forces had never carried out a long-term study of the outcome of military service until the OP Telic study, commenced by the King's College London in 2003.

70. The OP Telic study of deployed UK service personnel deployed to Iraq will attempt to: distinguish at all levels between subjective and objective measures of exposure; record and link individual based exposures; collaborate with the Defence Analytical Services Agency (DASA) and other research groups including reproduction, cancer, mortality and exposure modelling in order to prepare for future contacts/tracing and monitoring.

71. Assessment of environmental exposures will be drawn from sources such as Unit Diaries and environmental monitoring programs; however, opportunities for assessing exposures at the individual level remain difficult with multiple and incompatible systems for linking existing data concerning issues such as medical countermeasures and environmental exposures.

CANADA

72. Approximately 2000 Canadian Forces veterans of Afghanistan and the Arabian Gulf Region between October 2001 and October 2003 in Operation APOLLO were enrolled in a study involving a questionnaire and interviews four to six months after their return to Canada.

73. The study of Operation APOLLO veterans⁵⁰ identified the lack of data on the environmental and other exposures of the cohort and lack of pre-deployment data to serve as a baseline.

AUSTRALIA

74. Australian studies of military deployments indicate that health and well-being issues are reported by returning veterans of operations which impact not only on the service member, but on their families and the general community⁵¹. Australian studies of the Vietnam War, Korean War and the 1991 Gulf War confirm that health concerns exist for veterans of military operations and are attributed to their combat experience.

75. Surviving Australian Korean War veterans, approximately five decades after the Korean War, are experiencing significant excesses in several measures of psychological ill health, lower life satisfaction and poorer quality of life, and excess medical conditions and hospitalisations compared with a group of similarly aged Australian men who were residing in Australia at the time of the Korean War⁵².

76. The results of the Australian veterans of the 1990/91 Gulf War indicate that the psychological health and some aspects of physical health of Australian veterans of the Gulf War do differ significantly from similar Australian Defence Force personnel who were not deployed to the Gulf War. The differences in physical health primarily relate to self-reported symptoms and medical conditions rather than more objective measures of physical health⁵³.

77. The Morbidity of Vietnam Veterans' study, better known as the Vietnam Veterans' Health Study, was the first comprehensive effort by an Australian Government that aimed to establish a complete health picture of Vietnam veterans and their families through a series of studies⁵⁴. Some findings on male Vietnam veterans were that:

- 30 percent reported experiencing panic attacks;
- 41 percent said they suffered anxiety disorders and 45 percent depression;
- 31 percent reported suffering post traumatic stress disorder (PTSD);
- 25 percent of veterans said they had been told by their doctor they had cancer;
- 405 veterans said they had cancer of the colon, more than three times higher than expected; and,
- 51 veterans reported cases of male breast cancer, more than 17 times the expected number.

What are the health and well-being issues among Defence personnel deploying to East Timor?

78. Few scientific papers report on the longer term health and well-being of Australian veterans of East Timor. Technical reports such as the Department of Veterans' Affairs 2004-2005 Annual Report³⁹ provide a glimpse of the issue and some indication regarding the likely health concerns of these veterans.

79. To the end of 2005, 71 service pensions had been accepted as payable to Australian veterans of the East Timor Operations. A service pension is a means-tested income support pension and can be paid to veterans on the grounds of age or invalidity, and to eligible partners, widows and widowers³⁹. The 71 pensions described here, as accepted for East Timor Operations, were those paid only to veterans. In the same period since the deployments began, 49 partner and war widow / widower pensions were accepted as payable as a result of East Timor Operations. Disability pensions were awarded to 1189 incapacitated veterans of the East Timor Operations.

80. These data are only the tip of the health and well-being issues of Australian service personnel deployed to East Timor. Table 1 below indicates the top 15 disability pensions accepted under the current Repatriation Medical Authority Statement of Principles by DVA to veterans for East Timor Operations³⁹. The rate of acceptance indicates veterans consider a larger burden of ill-health to be related to their deployment to East Timor.

Table 1: Department of Veterans' Affairs 2004/05 Annual Report

2004/05 Top 15 accepted disabilities covered by SoPs -East Timor veterans only

Statement of Principle - title	Rate of accepted disability (n=~23000)	No. of disabilities accepted using RMA SoPs	Acceptance Rate (%)	No. of disabilities rejected using RMA SoPs	Disabilities rejected and accepted using RMA SoPs
Sensory-neural hearing loss	0.33%	76	90	8	84
Post traumatic stress disorder	0.30%	70	83	14	84
Tinnitus	0.27%	63	74	22	85
Lumbar spondylosis	0.19%	43	80	11	54
Acute sprains and acute strains	0.14%	33	44	42	75
Alcohol dependence or alcohol abuse	0.13%	31	69	14	45
Osteoarthritis	0.12%	28	54	24	52
Intervertebral disc prolapse	0.11%	25	54	21	46
Depressive disorder	0.11%	25	57	19	44
Fracture	0.10%	23	61	15	38
Solar keratosis	0.07%	17	65	9	26
Tinea of the skin	0.07%	16	67	8	24
Internal derangement of the knee	0.06%	13	39	20	33
Malaria	0.05%	11	100		11
Rotator cuff syndrome	0.04%	10	36	18	28

6 The Framework for the Literature Review

81. Information sources for this literature review are from available unclassified sources. An earlier report of the health hazards relating to the InterFET deployments has been undertaken. The information sourced for that report has been expanded to include all East Timor deployments, and consolidated to conform to the Nature of Service Review framework.

82. It must be noted that in conducting this review, the literature that was considered was deemed to be relevant to the hazards of deployment applicable to East Timor, rather than the broader concept of deployment. These hazards, when applied to the Nature of Service Review framework, were further considered as to their risk of, or actual harm from, the hazards identified in the literature.

83. It is necessary to define terms used in this review, in order to provide clear understanding of the interrelationship between threats, hazards, risk and harm. This also helps determine context for findings from the literature.

- a) **Harm** is defined as, “physical or mental damage or injury”⁵⁵
- b) **Hazard** is defined as, “the potential to cause injury or illness”⁵⁶
- c) **Threat** is defined as, “a person or thing likely to cause harm”⁵⁷
- d) **Risk** is defined as, “the probability and consequences of occurrence of injury, illness, disease, damage or loss. (The probability that a potential harm may become actual)”⁵⁶

84. The following is an indication of the information sources accessed to conduct this literature review. This list is inclusive, but not a complete list of sources accessed. The complete list is detailed under the heading ‘References’ on page 51.

- a) Australian Government websites (and all relevant links provided)
 - (i) Australian Parliament House Archive website
 - (ii) Australian National Audit Office website
 - (iii) Department of Defence
 - (iv) Department of Foreign Affairs and Trade, and AusAID;
- b) The Department of Veterans’ Affairs website (and all relevant links provided)
 - (i) Australian Vietnam Veterans’ health studies
 - (ii) Korean Veteran health studies;
- c) A Search of East Timor Coalition Defence Force Home pages (and all relevant links provided) including: Canadian Defence Force, Irish Defence Force, U.S. Defence Force, Philippines Defence Force, New Zealand Defence Force, Royal Thai Defence Force, UK Defence Force & Royal

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Ghurkha Regiment French Defence Force Portuguese Defence Force
East Timor Defence Force TNI;

- d) The Australian War Memorial website
- e) The Ministry of Foreign Affairs and Co-operation Timor-Leste;
- f) A targeted search for post-deployment health surveillance methods undertaken by the United States, the United Kingdom and Canada;
- g) Non-Governmental organisation websites including: United Nations, World Health Organisation, FAO, UNHCR, ICRC, Oxfam, MSF;
- h) A 'Google' search using search terms including: East Timor, Health, Military, Defence, InterFET, Australia, UNTAET, UNSIMET;
- i) Academic research sites including: Medline, CINAHL, The Australasian Medical Index;
- j) Review of contemporary journals of military and veterans health received at the Centre for Military and Veterans' Health and the University of Queensland libraries, specifically: Australian Military Medicine, ADF Health, Journal of the Australian Defence Health Service, Military Medicine (AMSUS), Aviation, Space and Environmental Medicine, Occupational and Environmental Medicine, Australian Communicable Disease Intelligence, Transactions of the Royal Society of Tropical Medicine and Hygiene, The American Journal of Tropical Medicine and Hygiene, British Journal of Psychiatry, and the International Journal of Epidemiology.

85. Three significant documents that have been used in this review are the Australian National Audit Office report on East Timor deployments, the ADF Nature of Service Review Report and the InterFET Hazard Assessment report that was accepted by the Deployment Health Surveillance Program Scientific Advisory Committee and Program Management Board⁵⁸.

86. The Australian National Audit Office released its report on "Management of Australian Defence Force Deployments to East Timor"⁵⁹ in 2002. This document was compiled following comprehensive review of Defence's planning and management of the ADF deployments to East Timor including focus on personnel, logistic and other support systems, practices and procedures used to deploy and sustain Australia's military presence in East Timor during operations up to the audit start in March 2001.

87. Field work conducted as part of the audit included access to Australian Defence Headquarters, Navy and Army Headquarters, Defence Personnel Executive (DPE), Defence Science and Technology Organisation (DSTO), Joint Logistics Command (JLC), Headquarters Australian Theatre (HCAST), Land Headquarters (LHQ), Headquarters Northern Command (NORCOM), Defence Materiel Organisation (DMO) Darwin, Deployable Joint Force Headquarters (DJFHQ) and Australian

National Command Element (ASNCE) in East Timor, and consultation with the Department of Foreign Affairs and Trade (DFAT) and Prime Minister and Cabinet⁵⁹.

88. The Nature of Service Review was instigated to address the perceived shortcomings and consequential anomalies arising from the current system for declaring the Nature of Service (NOS) for ADF operations. Declarations of service have historically been classified as warlike or non-warlike, relating to “the need to complete assigned tasks, incur risk, the use of force, and as a consequence, the expectation of casualties”⁴².

89. The framework of the Nature of Service Review expresses the concept of “risk from harm” from five categories of harm identified as:

- a) Physical harm from battle casualties;
- b) Physical harm, not from battle casualties;
- c) Psychological harm;
- d) Social harm; and,
- e) Financial harm.

90. Further to the audit undertaken of the East Timor Operations and the Nature of Service framework, a concerted effort has been made to identify all relevant primary research, and, using a standardised appraisal of study quality, those studies of acceptable quality are systematically (and sometimes quantitatively) synthesised with results presented under categories determined using the Nature of Service Review.

91. As the material for this review has intentionally excluded items from Restricted Defence sources, a deficit in the completeness of information is acknowledged.

7 Findings from the Review of Literature on the Health Effects of East Timor Deployments

(Arranged per Nature of Service Review)

7.1 Physical Harm – Battle Casualties

92. Amongst factors that can contribute to battle casualties and result in physical harm are enemy action, fragmenting munitions, chemical and biological weapons and fratricide. Factors that can mitigate battle casualties are support from well-trained and supported allies, clear guidance to military personnel on the conduct of operations within the mission, and coordinated support infrastructure to sustain the mission.

Australia's allied forces in East Timor deployments

93. Despite being a complex multinational deployment, the International Force East Timor (InterFET) operation was deployed relatively quickly to establish conditions of security in East Timor⁶⁰. This was a disparate force with inherent weaknesses. Operational responsibility was distributed according to the capabilities of the forces assigned to the mission. Command-and-control rested with a strong lead-nation (Australia) model. At the peak of InterFET, 23 troop-contributing countries provided over 11,000 personnel. Australia was the largest contributor with 5,700 members of the Australian Defence Force in country at one time. This was the largest deployment of Australian military personnel since the Vietnam War. It was the first time that Australia was a major participant in forming and leading an international coalition force⁵⁹.

94. Following the InterFET operations, Australia has continued to maintain a presence in East Timor under UNTAET and UNISMET. Countries contributing military personnel throughout the UNTAET Operations include: Australia, Bangladesh, Bolivia, Brazil, Chile, Denmark, Egypt, Fiji, Ireland, Japan, Jordan, Kenya, Malaysia, Nepal, New Zealand, Norway, Pakistan, Philippines, Portugal, Republic of Korea, Russian Federation, Singapore, Slovakia, Sweden, Thailand, Turkey, United Kingdom, United States, and Uruguay.

95. Countries contributing to UNISMET include: Argentina, Australia, Austria, Bangladesh, Benin, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Chile, China, Croatia, Denmark, Egypt, Fiji, Gambia, Ghana, Ireland, Japan, Jordan, Kenya, Malaysia, Mozambique, Namibia, Nepal, New Zealand, Niger, Nigeria, Norway, Pakistan, Peru, Philippines, Portugal, Republic of Korea, Russian Federation, Samoa, Senegal, Serbia and Montenegro, Singapore, Slovakia, Slovenia, Spain, Sri Lanka, Sweden, Thailand, Turkey, Ukraine, United Kingdom, United States of America, Uruguay, Vanuatu, Zambia and Zimbabwe⁶.

96. The peak strength of UNMISSET at 31 August 2002 was:

Military – 4776

UN police – 771

International civilians – 465

Local civilians – 856

97. There are currently 53 Australian military personnel remaining in East Timor.

Mission and Tasks

98. A clear and internationally supported mission with defined tasks for all of the East Timor Operations has resulted in a series of operations responsive to the needs and aspirations of East Timorese people.

99. At the commencement of operations in East Timor, the mission of the International Force was to:

- a) Restore peace and security in East Timor;
- b) Protect and support the United Nations mission in East Timor; and,
- c) Within capabilities, facilitate humanitarian assistance operations.

100. Subsequently, the mission tasks evolved and were described under resultant Security-Council resolutions as follows:

- a) S/RES/1236 (7 May 1999) by which the Council welcomed the conclusion of an Agreement between Indonesia and Portugal;
- b) S/RES/1246 (11 June 1999) by which the Council decided to establish until 31 August 1999 the United Nations Mission in East Timor (UNAMET) to organize and conduct a popular consultation;
- c) S/RES/1257 (3 August 1999) by which the Council extended the mandate of UNAMET;
- d) S/RES/1262 (27 August 1999) by which the Council extended the mandate of UNAMET and called upon all parties to cooperate with it in the implementation of its mandate;
- e) S/RES/1264 (15 September 1999) by which the Council authorized the establishment of a multinational force;
- f) S/RES/1272 (22 October 1999) by which the Council established the United Nations Transitional Administration in East Timor;
- g) S/RES/1319 (8 September 2000) in which the Council, among other things, insisted "that the Government of Indonesia take immediate additional steps, in fulfilment of its responsibilities, to disarm and disband the militia immediately, restore law and order in the affected areas in West Timor, ensure safety and security in the refugee camps and for humanitarian workers, and prevent cross-border incursions into East Timor";

- h) S/RES/1338 (31 January 2001) by which the Council, among other things extended the mandate of UNTAET until 31 January 2002, bearing in mind the possible need for adjustments related to the independence timetable;
- i) S/RES/1392 (31 January 2002) by which the Council extended the mandate of UNTAET until 20 May 2002;
- j) S/RES/1410 (May 17, 2002) by which the Council voted on a resolution to establish the UN Mission of Support in East Timor (UNMISSET), which will succeed the UN Transitional Administration in East Timor (UNTAET). The mission will provide assistance to the new administration and help secure the viability and political stability of East Timor; and,
- k) S/RES/1480 (May 19, 2003) The Security Council voted unanimously to extend the East Timor mission one year after the territory gained independence. UNMISSET provides assistance to the new government in areas of infrastructure, public administration and security.

101. In April 2005, the UN Security Council unanimously passed a resolution establishing a small follow-on special political mission in East Timor, the UN Office in East Timor (UNOTIL), to succeed UNMISSET when its mandate expired on May 20, 2005. UNOTIL will remain there until May 20, 2006.

Rules of Engagement

102. The terms of the United Nations Security Council Resolution 1264 (1999), to establish InterFET as a multi-national peacekeeping force, provided authority for nations participating in the force to take all measures necessary to fulfil its tasks.

103. The Security Council authorised InterFET to *take all necessary measures* to fulfil its mandate. This point is significant as it demonstrates recognition that forces despatched on peace-enforcement missions require a mandate to apply proportional, but often deadly, force if they are to achieve their mission⁶¹.

104. Although there are reports of occasions where the Australians would have been permitted to open fire under the Rules of Engagement⁶², records show that despite times (during InterFET) when they were provoked by having weapons pointed and mock fired at them, the Australians had stayed cool and vigilant. “The provocations were immature and foolhardy, not the actions of professional military forces. Those in the trucks did not seem to understand that every Australian infantryman and cavalryman could see them clearly at night”⁶².

105. In response to killings of UN personnel, the UN-PKF liberalised its rules of engagement to permit peacekeepers to shoot at militia members who were perceived to be a threat to the United Nations Peacekeeping Force (UN-PKF). As of November 2000, peacekeepers had shot and killed six suspected militia members operating within East Timor. By year's end, more than a dozen pro-Indonesia militia members, lacking support from the local population, had surrendered to the UN-PKF and UNTAET, and the UN-PKF believed that most of the remaining militia members had returned to West Timor⁶³.

Reliability of our Allies

106. No assessment

Potential for fratricide

107. The potential for battle casualties existed from contact with peacekeepers of allied nations, other Australian Defence personnel or from accidental discharge of weapons.

108. Records for the number of unauthorised discharges (UD) of weapons until 14 September 2001 indicated that there had been a total of 117 UD's recorded in East Timor. It was attributed that 66 percent of these discharges were the result of incorrect drills and 50 percent of the personnel responsible for the UD's were the rank of Private, despite only 37 percent of the deployed population being of the rank of Private⁵⁹.

109. Records also indicate that more UD's were reported amongst Australian troops during the early stages of the East Timor deployments, with 70 incidents in the first 22 weeks of operations. This pattern is consistent with studies of the Vietnam War deployments⁵⁹.

110. The highest UD incident rate occurred during October 1999, with an estimate of one UD a year per 28 members; however, this declined to one UD a year per 139 members by August 2001⁵⁹.

Language barriers and cultural awareness

111. Preparation for deployments other than conventional war require specialist training in the nature of peacekeeping, cultural awareness and local language to enable planning, intelligence gathering and population cooperation in the conduct of East Timor operation⁵⁹.

112. Prior to the InterFET deployment, there were no training packages within Defence for possible operations in East Timor at any stage during 1999⁵⁹. A handbook⁵ that was available for issue to personnel deploying to Timor was produced in 2000, and provided information on issues relevant to East Timor, including:

- a) The dynamics of East Timorese society;
- b) Government;
- c) Economy;
- d) Religion;
- e) Prominent cultures; and,
- f) Language.

113. 'Lessons learned' reports in Defence show a wide recognition of the need for ADF personnel to have cultural awareness and language training to facilitate planning, intelligence gathering and population cooperation in the more likely geographic areas of ADF deployment⁵⁹. Given that during the course of East Timor operations personnel were widespread throughout the country and in close living and working arrangements with other peacekeeping nations, communication in languages other than English was essential.

114. Some ADF units, before deployment to East Timor, made efforts to gain a rudimentary understanding of the language and culture of the area they were about to deploy to, using commercial language schools and open source material⁵⁹. More than one language is spoken throughout East Timor, and the issues of language are described below.

115. The national language of East Timor is Tetum, which is a Malayo-Polynesian language influenced by Portuguese, with which it has equal status as an official language. A vast majority of the generation educated before 1975 speak Portuguese. Fataluku, a Papuan language widely used in the eastern part of the country (often more so than Tetum) that has official recognition under the constitution, as do other indigenous languages including: Bekais, Bunak, Dawan, Fataluku, Galoli, Habun, Idalaka, Kawaimina, Kemak, Lovaia, Makalero, Makasai, Mambai, Tokodede and Wetarese. The number of languages listed for East Timor is 20⁶⁴. Of those, 19 are living languages and one is extinct.

116. The Indonesian language, or Bahasa Indonesia, has ceased to be an official language, although it, along with English, has the status of a 'working language' under the Constitution. It is still widely spoken, particularly among younger people who were educated entirely under the Indonesian system, under which the use of either Portuguese or Tetum were banned⁶⁴.

117. It was noted in a number of reviews in Defence of the East Timor deployments that the ADF would benefit from personnel with skills in the languages of likely coalition members, as well as the country in which operations may be carried out. These language skills are recognised as being crucial in avoiding misunderstandings and increasing operational efficiency⁵⁹.

Political and security influences in East Timor

Government

118. East Timor became a fully independent republic on May 20, 2002, following approximately 2 ½ years under the authority of UNTAET. The country has a parliamentary form of government with its first parliament formed from the 88-member Constituent Assembly chosen in free, and fair, UN-supervised elections in August 2001.

119. The 29-member Cabinet is dominated by the FRETILIN Party, which won the majority of Assembly seats. Mari Alkatiri, FRETILIN's Secretary General, is Prime Minister and Head of Government, and Xanana Gusmao, elected in free and fair elections on April 14, 2002, is President and Head of State.

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120. In July 2005, the Prime Minister announced a restructuring of the Cabinet and the first reshuffle since independence. East Timor witnessed its largest and longest political demonstration in April and May 2005 when several thousand protestors took part in a demonstration, led by the Catholic Church that lasted 20 days. The demonstration ended peacefully with the signing of an agreement between the Catholic Church and the Prime Minister that resolved several key issues of disagreement⁶⁵.

Armed Forces of Indonesia (ABRI) - Angkatan Bersenjata Republik Indonesia

121. Military presence in East Timor has worked as a security force for East Timor and it has been a means of political control and governance. After the Indonesian annexation in 1975, the members of the ABRI rose dramatically. The ABRI, the Indonesian security arm on the island that included military and police, and also the Timorese people called Wanras, was used as an auxiliary force. Later, it promoted pro-integration militias. In April 1999, the police and military section split.

TNI (Tentara Nasional Indonesi)

122. The local military organisation is currently called the Indonesian National Defence Force, otherwise known as TNI. The exact number of personnel of the TNI in the region is unknown. In addition, the TNI was able to move soldiers in and out of East Timor through the open border with West Timor. Considering the rotation and movement of personnel and the information above, one can estimate a total number of approximately 17,000 military / police personnel present in East Timor in early 1999.

Wanras

123. The Wanras are auxiliary troops that formed part of the ABRI and currently form part of the TNI. They work under temporary contracts with salaries lower than those of the permanent personnel from the ABRI and the TNI. The Wanras are cheap soldiers who work as a "self-defence" unit. They are included in the total number of TNI personnel.

Militias

124. The militias were tacitly backed by the regular armed forces although they acted independently. Some of the militias' equipment was composed of machetes and lances but others carried light weapons. The TNI sometimes furnished the militias with weapons, but the extent of collaboration is unclear.

125. Distinction between the local military personnel on East Timor – the *Wanras* and the militias – was difficult at times. During the consultation, some of the militias wore uniforms with the insignia of their organisation.

126. By April 1999, the combined force of the militias was estimated to count at least 7,900 men. This figure is likely to have increased prior to the consultation.

FRETILIN - The Revolutionary Front for an Independent East Timor

127. FRETILIN was a resistance movement which fought for the independence of East Timor, first from Portugal and then from Indonesia, between 1974 and 1998. It was originally the Timorese Social Democratic Association (ASDT). After East Timor gained its independence from Indonesia, FRETILIN became one of several parties competing for power in a multi-party system.

FALINTIL – Forças Armadas de Libertacao Nacional de Timor-Leste

128. Following the Indonesian invasion, the National Liberation Armed Forces of East Timor (FALINTIL), the armed side of FRETILIN, fought the Indonesians. By December 1978, the resistance was almost destroyed by the ABRI. Nonetheless, the leadership of Jose Alexandre Gusmao reinvigorated the FALINTIL, which continued to fight against the Indonesian forces until 1983, when a cease-fire was negotiated. The cease-fire, a product mainly of the efforts of Colonel Purwanto, was short-lived. Up until 1992, the Indonesians had followed a relentless military policy against the FALINTIL. In 1992, Xanana Gusmao was arrested and following his arrest, FALINTIL forces decreased considerably. In the beginning of 1999, the FALINTIL consisted of 200-1,000 armed people, with some support networks among the civilian population⁶⁶.

129. Engagement with FALINTIL during the early days of the East Timor deployments provided invaluable assistance to Australians as described in Breen (2001), “They were keen to pass on information gathered from their vast network of informants to McOwan’s personnel, on the locations and intentions of militia groups. They were pleased to see InterFET use this information to detain militiamen and to raid militia headquarters and accommodation areas”⁶².

Current Military of East Timor from the CIA World Factbook 2002⁶⁷

130. Military branches. The Forças de Defesa de Timor Leste (Tetum: Forças Defesa Timor Lorosae English: Timor Leste Defense Force) or FALINTIL-FDTL (often F-FDTL) comprises an Army and a small Naval component; note - plans are to develop a force of 1,500 active personnel and 1,500 reserve personnel over the next five years. The forces were reconstituted from the national liberation movement guerrilla army known as FALINTIL (Portuguese acronym for Armed Forces for the Liberation of East Timor). FALINTIL officially became F-FDTL on February 1, 2001. Few soldiers from the insurgency remain in the forces due to the narrow age requirement⁶⁸

131. While F-FDTL has no formal police functions, it has taken on a policing role, particularly during an incident in the Atsabe sub-district of the Ermera District in January 2003⁶⁹. Conversely, the National Police (Policia Nacional de Timor-Leste, PNTL) have been involved in border defence operations near the western border.

132. The current profile of the East Timor Defence Force status is as follows.

Military manpower:

Military age: 18-21 years of age

Availability: NA
Fit for military service: NA
Reaching military age annually: NA
Military expenditures:
Dollar figure: \$4.4 million (FY03)
Percent of GDP: 1%

East Timorese Army

133. The land force of the F-FDTL consists of two light infantry battalions, each with an authorised strength of between 600 and 650 personnel. This force was predominantly trained by the Australian and Portuguese militaries. Each battalion has three rifle companies, a support company and an HQ company. The 1st Battalion was initially manned by veterans of the pre-independence guerrilla force and is based at Baucau. The 2nd Battalion is manned largely by new recruits, and is at Nicolau Lobato Training Centre, near Metinaro. Logistics and service support is provided through Headquarters F-FDTL in Dili.

The East Timorese Navy

134. The Navy consists of a total of 65 personnel and two Albatross Class patrol vessels: Oecusse and Atauro.

Impact of militia on Peacekeeping personnel in East Timor

135. On 24 July 2000, approximately eight militia members shot and killed New Zealand U.N. peacekeeper Private Leonard William Manning and mutilated his corpse, near Suai, East Timor, where Manning's unit was patrolling the East/West Timor border area. On 10 August 2000, East Timorese militia members killed Nepalese U.N. peacekeeper Private Devi Ram Jaisi and wounded four other persons⁷⁰.

136. In one account of the early days of the East Timor deployment⁶², it was stated; "We had a lot of militia driving by pointing weapons at us. Most of the time most of my blokes would take up fire positions straight away and militia soon got the picture that if they pointed a weapon, we were ready to drop one of them. They liked to resort to [calling out], "we're going to kill you Aussie", and ...hands across the throat and stuff like that"⁷¹.

137. The impact of militia on peacekeeping personnel in East Timor clearly affected the conditions associated with being deployed to East Timor. For this reason, the operations until 2003 were deemed to be "warlike"⁷²

138. Disease and Non-Battle Injury (DNBI) casualty rates were estimated to be high - approximately 0.3 percent of the force per day - and casualties from hostile action were estimated at up to 0.03 percent of the force in contact per day for extended periods during the initial phases of the East Timor Operations⁷³. Battle casualty rates for the remainder of the East Timor operations are unknown, however are not expected to exceed the initial estimates.

139. Fatalities for East Timor Operations until May 2005 are listed as:

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11 troops
2 military observers
2 international staff
9 local civilian staff
1 other
2 total⁷⁴

140. Of the 11 fatalities for East Timor operations, only two were from Australian military personnel. One fatality was the result of disease, the other from accidental gunfire⁵⁹.

7.2 Physical Harm – Non-Battle Casualties

141. Living conditions including field conditions, base accommodation and facilities, as well as opportunities and compliance with injury prevention strategies can affect the level and severity of non-battle casualties. The civilian infrastructure and degree to which that infrastructure is able to be accessed and utilised can impact upon support needs of deploying forces.

142. Basic instruction in 'living in the field' was identified as a weakness in soldier training⁵⁹ during the earlier East Timor Operations. Reiteration of the importance of hygiene, regular changes of clothing, protection against vectors, maintaining physical and dental fitness and to seek medical assistance early were noted^{75, 59}.

143. Knowledge of preventative health measures was generally poor among ADF personnel, therefore magnifying the health risk. Serious health outcomes identified for 3 Brigade included the motor vehicle fatality and evacuation of two soldiers from Timor to Australia as Very Seriously Ill (VSI), with complications arising from malaria infection⁷⁶.

Civil infrastructure

144. During the uprising in late 1999, about 70 percent of the economic infrastructure of East Timor was destroyed by Indonesian troops and anti-independence militias, and 300,000 people fled west into West Timor or to remote locations. By 2003, all but about 30,000 of the refugees had returned. Growth was held back in 2003 by extensive drought and the gradual winding down of the international presence. The country faced challenges in continuing the rebuilding of infrastructure, strengthening the infant civil administration, and generating jobs for young people entering the workforce. One promising long-term project is the development of oil and gas resources in nearby waters, which have begun to supplement government revenues ahead of schedule.

145. Road Safety was a constant cause for concern, based on poor road infrastructure often exacerbated by long periods of no maintenance, the wet season, a local population with no concept of road safety and road rules and no enforceable set of rules for civilian use. There were three motor vehicle deaths recorded, one in an InterFET soldier (NZ) and two in East Timorese civilians after colliding with InterFET personnel⁷⁷. This resulted in policies released by Commander (COMD) InterFET when regarding the wearing of safety belts, safety, vehicle modifications, speed limits and the carriage of personnel in the rear of vehicles⁷⁸.

146. Waste management was identified early as an important issue with the potential to impact upon the health of ADF personnel. Key strategies included education of personnel, location of facilities/waste disposal receptacles, establishment and maintenance of a waste collection service and back loading of hazardous and medical waste to Australia. Environmental health assets maintained visibility of these facilities and their potential impact on human health⁷⁹.

147. Asbestos exposure and the lack of knowledge and equipment with which to deal with potential asbestos exposure were identified⁸⁰. Findings of the OST identified the presence of Chrysotile (white asbestos) in building materials sourced from damaged buildings where ADF personnel were working or accommodated. The clean up of these buildings and lack of personal protective equipment (PPE) meant that a number of ADF personnel were exposed to asbestos without adequate PPE. An asbestos policy placing restrictions on military and civilian personnel cleaning up and transporting asbestos waste was instituted once the hazard was identified and confirmed through laboratory analysis⁸¹.

148. Following the early clean-ups by untrained operators, the confirmed sites were sanitised and cleared by trained operators. A methodological sampling program was conducted within the Dili military precinct with plans to extend the program to the rest of the East Timor AO.

149. All personnel deployed to East Timor are likely to have been exposed to higher levels of asbestos than would normally be encountered in Australia⁸². Personnel located in the Dili region would have been exposed to higher levels than those personnel who were located in the border region or Suai due to the nature and density of buildings in Dili⁸³.

150. The assessment made at the time was that the overall level of risk to a person's health was low, based on opinion that asbestos-related illnesses are generally only the result of long-term heavy exposure to asbestos⁸⁴.

151. Although no direct exposures to toxic chemicals were reported other than exposure to aviation fuel, a number of issues related to Hazardous Chemicals (HAZCHEM) were identified by the Occupational Safety team deployed to East Timor during the InterFET deployment. These included difficulties in identifying poorly labelled drums of chemicals, the location of full chemical and fuel drums within defensive works, accommodation of personnel near chemicals and storage and disposal of chemicals once they had been identified as being hazardous. A requirement for additional PPE for personnel involved in HAZCHEM examination or disposal was identified⁸⁵.

152. There is no evidence of sampling or testing for lead paint products conducted across the Dili precinct at the time of this review. Due to the age and structure of the buildings it was thought possible that lead paint may have been used⁸⁴.

153. Potential hazards from radiation sources were identified – one being a civilian dental x-ray machine stored at B Echelon 2RAR that was isolated and disposed of. A second source was a 1985 baggage x-ray machine in poor repair adjacent to the living and dining areas of the 381 SQN. The report by the OST stated that investigations revealed that the baggage x-ray machine was a source of active radiation, and the hazard distance from living areas was isolated.

154. Investigations were conducted with the manufacturer to determine the extent and level of the radiation contained within the machine. A report of the outcome from these investigations has not been determined.

155. An investigation of radiation levels within the University and Joint Support Unit (JSU) compound was conducted due to the number of receivers and transmitted within a limited area. A report of the outcomes from these investigations has not been determined. OST expected that the level of radiation would not exceed safe levels.

7.3 Natural Environment

156. The impact of the natural environment on personnel deployed to East Timor varies according to the operating area of the forces. Urban areas, with the exception of Baucau, Ainaro and Viqueque, were mostly flat terrain and relatively easy to access. In inland areas and off-road from the coast, extremely difficult conditions existed due to the rocky, mountainous terrain and pockets of thick forest. Rainfall, particularly monsoonal rain, affected the capacity to travel by vehicle or move heavy equipment⁵.

Topography

157. East Timor (14,874 km²) includes the eastern end of the island of Timor, the enclave of Oecussi (2500 km²) and the islands of Atauro (144 km²) and Jaco (8 km²). The country has a quite dramatic topography, dominated by the central mountain range of Ramelau. The highest peak is Tata-Mai-Lau in the western end of the territory, reaching 2964 m, and several peaks reach more than 2000 m⁸⁶.

158. Along most of the southern coast of the island there is a sizeable coastal plain (20-30 km wide), whereas on the northern side the steep mountains either fall directly into the sea or there are smaller plain areas, such as at Dili.

159. In Oecussi the coastal plain is relatively extensive. The northern coast is also characterised by littoral terraces of coral origin. In some areas there are plateaus at 300-700m above sea level. This is the case at the Fuiloro plateau, which is at 500-700m above sea level around Lospalos and the Lake Iralalaru in the east, the plains around Maliana in the west, and the area around Baucau airport. These highland plains do, however, differ substantially in soil quality and water availability. Around Lospalos the major production is cattle, although there are plans for irrigated sugarcane. At the Baucau plains the low groundwater level provides restricted potential for agricultural production.

160. Topography influences the weathering, depth, erodibility, infiltration and leaching of a soil. As much as 44% of East Timor's area may have a slope of more than 40%.

161. Areas where Australian troops were located and patrolled include the range of topographical scenarios described; therefore Australian personnel were exposed to duties in isolated locations, over harsh topography and in a tropical climate with endemic disease and health issues.

Climate

162. In East Timor the climate may in broad terms be characterised as hot and humid tropics, however humidity in East Timor varies from "permanently moist" on the South coast (9-12 months per year with more than 100 mm rain) to "permanently dry" on the northern side of the mountain range (0-4 months per year with more than 100 mm rain). Mean temperatures vary with altitude. The mean annual temperature in Dili (at sea level) is 27.5 degrees C. It is only 19.8 degrees C at Maubisse at 1432m above

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sea level (Keefer, 2000). Maximum, minimum and mean monthly temperatures may vary by only 1-3 degrees C. Diurnal temperature variations may be larger. The maximum diurnal variation is up to 13 degrees C in the south-east monsoon period (May-July) and the minimum is 7-9 degrees C in the north-west monsoon period (December-March).

Harmful flora and fauna

163. The fauna and flora of East Timor are not well known although in many local communities, people know, value, and utilise a variety of forest plants for medicinal and other purposes.

164. In the driest areas in the northern lowlands, the natural vegetation is thorn forest. The lowlands along both coasts are otherwise dominated by dry deciduous forest. With altitude, moist deciduous forest and semi-evergreen forests become dominant. In smaller areas with sufficient rainfall throughout the year, the natural forest cover would be evergreen rainforest.

165. Harmful flora and fauna have been identified as:

- a) Wild pigs, dogs (due to rabies) and mosquitoes in highland areas;
- b) Crocodiles, sharks, stone-fish, cone shells, sea-snakes, box jellyfish, land snakes and centipedes are known sources of mortality and morbidity in coastal regions; and,
- c) Ciguatera fish poisoning, of which the risk varies throughout the year and from different waters around the region.

7.4 Known Diseases and Available Countermeasures

166. The World Health Organisation has confirmed deaths from avian influenza and outbreaks of avian influenza amongst birds in the region since 2004. The Department of Health advises Australians who reside in East Timor for an extended period to consider, as a precautionary measure, having access to influenza antiviral medicine for treatment. Long-term residents are at a greater risk of exposure to avian influenza over time. Medical advice should be sought before antiviral medicines are commenced. Australians intending to travel to East Timor for shorter periods are at much lower risk of infection but should discuss the risk of avian influenza with their doctor as part of their routine pre-travel health checks⁸⁷.

Cutaneous leishmaniasis

167. The identification of cutaneous leishmaniasis⁸⁸ during the InterFET operations was reported after the InterFET deployment in 2000. These findings were not corroborated in other research⁸⁹.

Malaria

168. Total malaria infections in ADF personnel acquired from East Timor deployments are recorded as⁹⁰:

East Timor, September 1999 – June 2005	
Diagnosed in East Timor	82
Diagnosed on return to Australia	389
Total	471

169. In the period 1 January – 30 June 2005, one new case was acquired in East Timor and diagnosed on return to Australia.

170. Of all these cases reported, 64 cases³¹ were diagnosed during the InterFET deployment, with a total of 321 cases of malaria in total being attributed to service during InterFET³⁷. This would indicate that those measures used to prevent malaria improved during the course of operations in East Timor, whether by compliance or more effective prophylaxis.

171. On return to Australia, primaquine therapy of vivax infection was undertaken in addition to ongoing chemoprophylaxis with doxycycline or mefloquine. However, the dose of primaquine was increased from 22.5mg to 30mg daily (for 14 days) due to recognition of parasite tolerance to the established dose⁹¹.

172. In the initial outbreak of malaria in the forward areas of operations, the major risk factors identified were intolerance of doxycycline chemoprophylaxis, involvement in night operations, the lack of preventive medicine activity addressing the local vector problem, the lack of available chemicals to treat uniforms and bed nets and the location of platoon sites near vector breeding areas³².

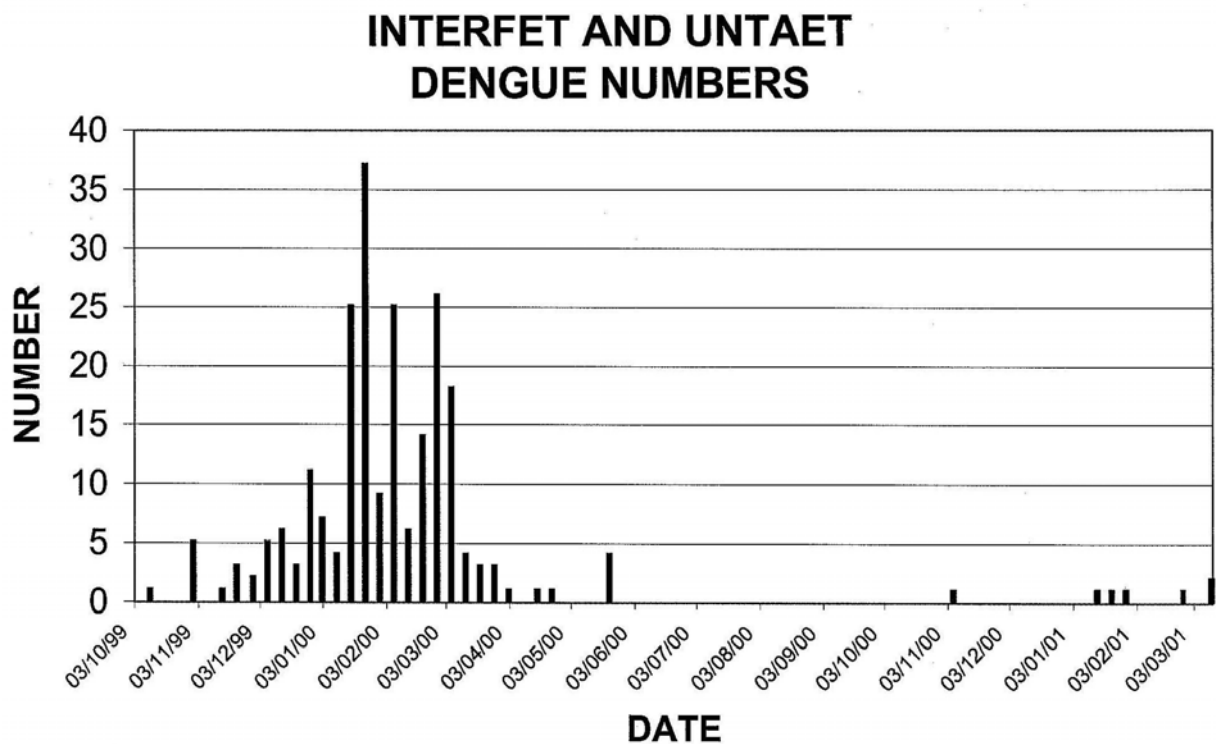
173. A higher rate of malaria was noted in soldiers who slept without the protection of a mosquito net. Also, poor acceptance and usage of ADF gel-formulated insect repellent (35% DEET or N,N-diethyl-3-methylbenzamide or diethyl toluamide) was reported, resulting in less than optimal compliance with its use⁹². Use of Perigen, a 500 g/L permethrin (25:75 cis:trans) in an emulsifiable concentrate with clothing and bed nets dipped in a water emulsion (12 mL of Perigen/L of water) for 2 minutes, was designed to deliver a minimum target dosage of permethrin in military shirts of 0.12 mg/cm³. Use of a wide range of DEET containing insect repellents containing from 7 to 80% DEET was reported.

Dengue

174. During the period of the InterFET operation, formal confirmation of dengue infection was not uniformly undertaken; however, 160 cases were confirmed among Australian service personnel⁹³. These included cases of all four serotypes of dengue. Seroprevalence studies of InterFET personnel on return to Australia indicated up to 20 percent of personnel had been exposed to the virus in some units.

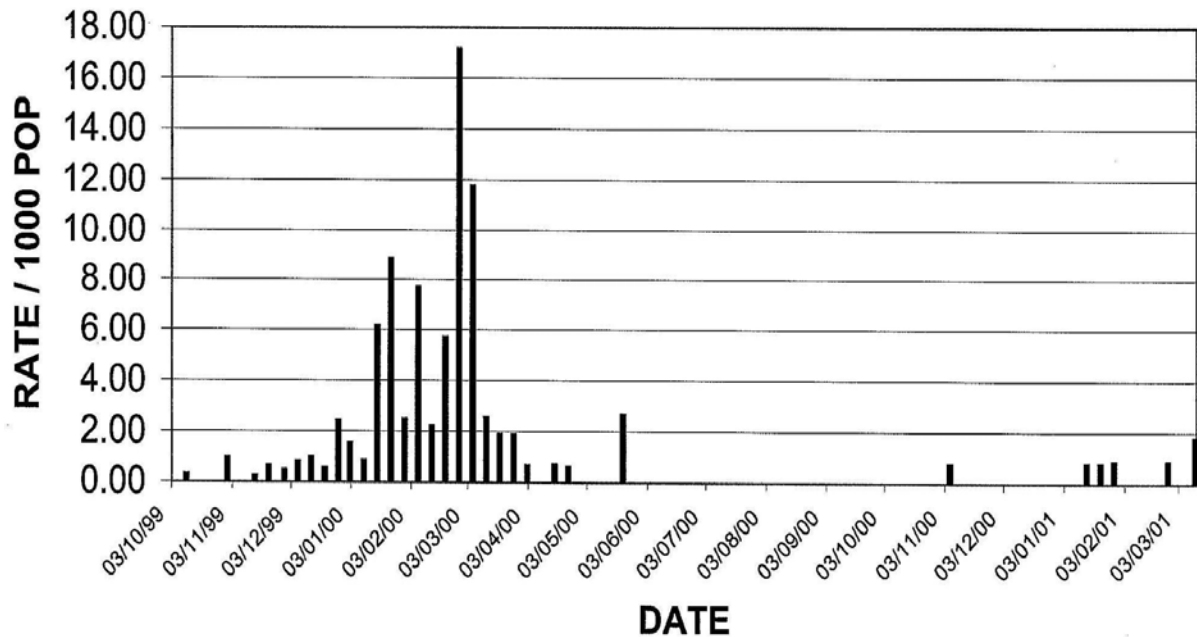
175. The potential for increased transmission of vector borne diseases (principally malaria and dengue fever) among Timorese people and hence to the ADF was related to population displacement, destroyed buildings, increased mosquito breeding during the rainy season (Dec to March) and loss of health care services thus reducing diagnostic and treatment capability⁹⁴.

176. Dengue continues to pose a threat to Australian personnel deployed to East Timor, as a particularly severe dengue fever outbreak was recorded as having occurred in the 2005 wet season (December 2004 – April 2005)⁹⁵.



Reference: ADF File

INTERFET AND UNTAET DENGUE ATTACK RATES



Reference: ADF File

Tuberculosis

177. Although Tuberculosis is a major public health problem within East Timor, no Australian personnel were reported to have contracted the disease as a consequence of operations during East Timor.

Japanese Encephalitis

178. A small proportion of the deployed Australian Force to InterFET was studied for outcomes of JE vaccination⁹⁶. There was no serious adverse events recorded arising from the vaccination. The main adverse event reported was arm pain which is of significance during the period of preparation for deployment.

7.5 Review of health intelligence gathered, collated and prepared by ADF in support of these and subsequent operations in East Timor

179. Operational health intelligence was gathered and collated prior to the commencement of the East Timor operation, with reports produced by Headquarters Australian Theatre (HQAST), ASTJIC and the SHI of DHS. An East Timor hazard assessment report was undertaken by CMVH in 2005. This document includes summaries of the health intelligence and health hazards known in East Timor. This report is at Annex A.

180. Prior to Australians deploying to East Timor, the main issues noted were:

- a) Health services in East Timor were below Australian and Indonesian standards requiring any ADF health contingent deployment to be independently equipped for utility supply;
- b) Power, water and telephone supply systems were unreliable;
- c) Blood supply in East Timor was NOT safe as little or no screening is conducted on local supply;
- d) The following issues were determined to pose a LOW operational health risk, prior to the deployment of Australian forces;
- e) Malaria, JE, dengue fever and possibly tuberculosis, - and with prophylactic measures taken; and,
- f) Effects of temperature and water.

181. It was noted that due to security restrictions, early information on disease epidemiology in Timor was scarce.

182. Following multiple deployments of UN personnel; recording and reporting significant health information from data generated throughout the deployments, as well as information from non-military health programs in East Timor, a more comprehensive record of health hazards became available. The health issues identified in East Timor following UN deployments include:

- a) Acute diarrhoeal diseases were highly endemic; occur year round and countrywide;
- b) Malaria which was endemic at moderate to high levels with high levels of single drug and multi drug resistance;
- c) Dengue fever which was reported as endemic at moderate to high levels. All four dengue viral serotypes have been isolated. In 1995 the dengue incidence was reported at 3.92% for Timor; the case fatality rate was 2.9% for Timor and dengue was endemic in 46.9% of Timor;

- d) Japanese Encephalitis was a year round risk that may be elevated during the rainy season of November through to April. Serological surveys of pigs in East Timor indicated the presence of JE, although no virus isolation had been obtained;
- e) Chikungunya fever was endemic countrywide with risk elevated in urban and village areas;
- f) Murray Valley encephalitis and Ross River fever risk was unclear;
- g) Meningococcal meningitis posed a year round risk that was endemic at low levels. Incidence rates and serogrouping data were not available at the time of report;
- h) Typhoid and paratyphoid fevers were reported throughout Indonesia; however specific incidence data for Timor was not available;
- i) Leptospirosis was reported as a year round risk, with an elevated risk associated in areas of stagnant water and muddy soils. Few human cases have officially been reported;
- j) Scrub typhus cases had been reported from agricultural communities;
- k) Widespread infection with enteric protozoal diseases and intestinal helminths was reported year round;
- l) No incidence data on Cholera available for Timor at information prior to Australian personnel deploying⁹⁷;
- m) Viral hepatitis (A, E and B, C and D) was reported as moderately to highly endemic with the last available survey being conducted in 1994;
- n) Tuberculosis was reported by World Health Organisation (WHO) in 1995 as indicating a prevalence of 8.03 per 100,000 population for East Timor;
- o) Sexually transmitted diseases including gonorrhoea and chlamydial urethritis/cervicitis occur year round and are endemic. 1995 data indicate a Syphilis prevalence of 8.2 per 10,000 population for Timor and a gonorrhoea prevalence of 25.6 per 10,000 population for Timor;
- p) Filariasis is reported with an increased risk during the rainy season, with B.timori reported as highly endemic and having infection rates reported as up to 84.9 percent;
- q) Data for flea-borne typhus, plague, louse-borne typhus were unclear for Timor, although reports of human cases reported in some areas of Indonesia in the 1970s, '80s and '90s;

- r) Other diseases recorded without specific risk within East Timor include; rabies, anthrax, Q fever, angiostrongyliasis, paragonimiasis, clonorchiasis, cysticercosis and brucellosis.

183. Acute respiratory infections and dermatological conditions were amongst the most common causes of morbidity for deployed personnel during some phases of the operations.

7.6 Psychological Harm

184. Post traumatic stress disorders have been recorded amongst military personnel in combat situations and peacetime military training⁹⁸ and peacekeeping tasks.

185. Ongoing research is being undertaken into the psychological harm of military deployments, both from combat and peacekeeping deployments. Findings from these studies indicated that the impact of psychological harm to veterans who served in East Timor operations may not become evident^{99, 100} until years after the deployment has ended^{101, 102}.

186. Reported rates for PTSD amongst some United Nations forces are summarised below in Table 2:

Table 2: Reported incidence and prevalence of post-traumatic stress disorder, by nation and UN deployment

<i>Nationality of troops</i>	<i>PTSD incidence</i>	<i>Deployment</i>
Canadian	8%	UNPROFOR (Yugoslavia)
Danish	7%	UNPROFOR (Yugoslavia) March 1992–February 1999
Dutch	5%	UNIFIL (United Nations International Force in Lebanon) March 1978–current
Norwegian	2%	UNPROFOR (Yugoslavia) March 1992–1999
American	15%	Vietnam War
American	11.4%	UNOSOM I (Somalia) April 1992–April 1993

Source: Pearn J. The victor as victim: Stress syndromes of operational service 2: Post traumatic stress syndromes. ADF Health 2000; 1:85-7.

187. During 1999 a range of psychological screening instruments were introduced as part of the psychological support provided to personnel deployed on Australian peacekeeping missions overseas. The results from both the initial and 3-month follow-up indicate “low but significant levels of psychological problems in personnel following (these) humanitarian deployments”¹⁰³. The full report of this study is at Annex B.

188. The data for this study consisted of deployments to East Timor (88%), Bougainville (11%) and other minor operations (1%) and was a comparison of the mental health of deployed personnel against both military and civilian benchmarks. Findings in this report indicated relatively low levels of acute stress disorder, psychological distress and PTSD symptoms.

189. It was reported that only 2% of ADF personnel deployed to East Timor reported Acute Stress Disorder Scale (ASDS) scores above the suggested cut-off of 56 (Bryant, Moulds, & Guthrie, 2000). Significantly, no other deployments reported scores above the cut-off on the ASDS.

190. It was further stated in Deans (2002)¹⁰⁴ that duties that are not within a person's expected job description, as well as "traumatic" events are reported as stressful, despite the relatively non-traumatic nature of the deployments surveyed. A relationship between morale, alcohol misuse and measures of psychological distress was established, although this notion is that poor morale leads to, or is an outcome of, problematic drinking and poor mental health.

191. The second of these two reports examined the relationship between a number of key causes of mental health problems and outcome variables (Deans, 2002b). It was found that reported exposure to traumatic stressors did not strongly predict either general mental health or PTSD symptomatology¹⁰⁵. The complete report of the analysis of the traumatic stress exposure scale (revised) is at Annex C

192. The following is a summary table the psychological conditions accepted by DVA for East Timor Operations:

Table 3: 2004/05 Top 3 accepted psychological disabilities covered by SoPs - East Timor veterans

Statement of Principle title	No. of disabilities accepted using RMA SoPs	Acceptance rate (%)
Post traumatic stress disorder	70	83
Alcohol dependence or alcohol abuse	31	69
Depressive disorder	25	57

193. As with the harm resulting from all hazards associated with the East Timor deployments, knowledge of the extent of psychological harm for veterans will evolve as efforts to identify, manage and document the exposures and confounding factors that contribute to psychological harm associated with these deployments continue.

7.7 Social Harm

194. Social harm refers to those aspects of deployment that prohibit personnel from participating in events considered usual practice during peacetime service. Events that can contribute to social harm include: isolation from family and friends; the inability to maintain supportive and intimate relations with partners / spouses; restricted capacity to practice religious beliefs; an inability to participate in children's educational and direct well-being; and, an inability to participate in cultural and sporting interests as normal.

195. Issues such as postal and communication support to deployed members and their families, anticipated or unanticipated welfare needs of personnel and their families as well as changed family dynamics can create social harm.

196. Social harm can in itself have an impact on psychological harm, as found in the study of U.S. soldiers undertaking peacekeeping duties in Bosnia¹⁰⁶. It was found that married soldiers were more likely than single soldiers to report negative consequences of deployment, including depression, due to dissatisfaction with the military chain of command, being away from home, and deterioration of marital/significant other relationships.

197. In another study using data on 2,101 U.S. Vietnam veterans, the following social outcomes were supported by the findings of the study. These are that:

- a) Factors that propel men into combat also make them poor marriage material;
- b) Combat causes problems such as post-traumatic stress symptoms or antisocial behaviour that increase marital adversity; and,
- c) Combat intensifies pre-military stress and antisocial behaviour that then negatively affects marriages.

198. It was further found that combat creates stress and antisocial behaviour, but only antisocial behaviour has direct effects on marriage.

199. Following East Timor deployments, it was anticipated that military personnel who were highly valued due to their deployment experience would seek discharge from the military. Initiatives to retain veterans from East Timor were investigated; however the expected higher rates of discharge did not eventuate. It is believed that this is due to Defence "undertaking action to alleviate the perceived adversity to social dimensions"¹⁰⁸.

200. Findings from the ADF Exit Survey (2001)¹⁰⁹ indicated that respondents separating from the ADF who had experienced an operational deployment or served with a United Nations mission were more likely to report that having reached their goals in the Service had a strong influence on their decision to leave the ADF. The analysis also showed that the top ten reasons for choosing discharge post-deployment to East Timor tended to fall into the four main themes of:

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- a) career;
- b) family and personal issues;
- c) job satisfaction; and,
- d) rewards¹⁰⁸.

201. Other studies support the hypothesis that it is the homecoming experience that may impact on the actual development of PTSD¹¹⁰. Issues during the time periods immediately after the return from the combat zone and the first six months after homecoming were studied. It was found that the factor of *psychological isolation during the first 6 months* (within the scale items) was the strongest predictor of PTSD ten years after the war, explaining 43% of the variance.

202. The overall impact on the potential social harm to the veteran and their social networks has been acknowledged with resources becoming available for deploying personnel and their families.

203. For Australian personnel, the Department of Defence has made available publications and established website resources¹¹¹ for deploying personnel and their families, covering topics such as:

- a) Pre and post-deployment briefings;
- b) Social support activities;
- c) Counselling and welfare services; and,
- d) Information on the normal processes of separation and tips on how to maintain and re-establish relationships following deployment.

7.8 Financial Harm

204. Financial harm has not been considered as part of this review.

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Annexes

- Annex A: EM Literature Review Annex A. Hazard report_ 2005_Nov_15.pdf
- Annex B: EM Literature Review Annex B. ADF - The Psychological Impact of Peacekeeping Deployments. Part 1. Mental Health of Deployed Personnel.pdf
- Annex C: EM Literature Review Annex C. ADF - The Psychological Impact of Peacekeeping Deployments. Part 2. Deployment Factors Affecting Mental Health.pdf



Sample Generation Report

East Timor Health Study

Deliverable Item 1 (Phase 2)

30 May 2007



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Name	Position	Signature	Date	Version
A/Prof Susan Treloar	First Chief Investigator			
Prof Annette Dobson	Chair Scientific Research Team			
Prof Tony McMichael	Scientific Advisory Committee			

Signed approval forms are filed in the Management section of the project file.

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DEFENCE DEPLOYED EAST TIMOR HEALTH STUDY

Deliverable Item 1 (Phase2)

Sample Generation

Due Date: 15 May 2007

Description of Deliverable from Statement of Works

Deliverable item 1 (Sample Frame Generation). The agreed methodology has been developed in conjunction with SAC. The Sample Frame Generation shall reference:

- a. The Nominal Rolls, as developed utilising source documents provided by the PMO;
- b. A profile of the project Nominal Rolls to determine the final sampling strategy (as per SAC recommendations May 2006);
- c. Definition and selection of an appropriate comparison group;
- d. Approximately 2000 personnel from the comparison group and 5000 East Timor (across all projects) veterans; as derived from the Nominal Roll (the final numbers to be confirmed on analysis of the Nominal Roll profiles) and
- e. A Summary of Activities undertaken to achieve this deliverable will be submitted and will include:
 1. the size of the project Nominal Roll and overlap between sources of data for the project Nominal Roll
 2. a description of the overlap between the East Timor project Nominal Roll and the Solomon Islands and Bougainville project Nominal Rolls; and
 3. a summary of any issues with the data used to generate the project Nominal Rolls.

Executive Summary

1. Based on the problems with the InterFET Pilot Project Nominal Roll, which was based only on data obtained from PMKeyS, a new procedure was developed for generation of the Nominal Rolls for the Solomon Islands, Bougainville and East Timor Health Studies. This process involved the use of data from three sources: PMKeyS, the system used by the Department of Defence for all aspects of personnel management; ADFPAY, which is the Australian Defence Force Pay System and is responsible for salary payment for Service personnel, and Allotment Certificates, provided to serving members of the Australian Defence Force deployed on a war-like operation, for the purposes of Veterans' Affairs, taxation and Defence home loans. A variety of other potential sources of data were identified and investigated, but were not considered relevant for generation of the East Timor Nominal Roll. Individuals were included in the data files if they had been allocated a relevant code or descriptor indicating that they had deployed as part of the East Timor Operations.
2. Defence personnel were eligible for inclusion on the East Timor Health Study Nominal Roll if they deployed to East Timor as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL or SPIRE (the "East Timor Operations"), conducted between 19 June 1999 and 13 May 2005. In order to be inclusive, individuals whose deployment start date was prior to 19 June 1999 were retained, as it is standard practice for some individuals to deploy early to prepare for the operation. Individuals were included on the Project Nominal Roll if they were identified in either PMKeyS, ADFPAY or Allotment Certificate data as having been deployed as part of the East Timor Operations.
3. Individuals were eligible for inclusion in the East Timor Health Study Comparison Group if they had not deployed as part of the East Timor Operations, were not included on the East Timor Health Study Nominal Roll, and were a member of a Defence Service in the period 19 June 1999 and 13 May 2005. Comparison individuals were randomly selected from the PMKeyS database, and frequency matched to the veteran group on service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986).
4. The East Timor Health Study Nominal Roll included 19710 individuals: with 12111 (61%) identified in all three data sources (PMKeyS, ADFPAY and Allotment Certificate data). In total 15678 individuals were identified through PMKeyS data, 18374 were identified through ADFPAY records and 14160 were obtained from the Allotment certificates.
5. Although capture-recapture methods indicated that ascertainment was reasonably high (above 85% of the full Nominal Roll), the actual validity and reliability of the Nominal Roll is still unknown. However this can be assessed to some degree by comparison of the deployment history obtained from the Solomon Islands, Bougainville and East Timor Nominal Rolls with self-reported deployment history obtained from participants.

6. A comparison group of 17501 who did not deploy to East Timor as part of the “East Timor Operations” were randomly selected by PMKeyS using stratified random sampling.
7. 4000 individuals from the East Timor Project Nominal Roll and 2501 comparison were selected for inclusion in the East Timor Health Study.
8. A further sample of approximately 1000 individuals will be selected from two subgroups for proposed malaria-related substudies: those involved in clinical trials of antimalarials (mefloquine and tafenoquine) and registered cases of malaria recorded on the Army Malaria Institute Cantral Malaria Register.
9. Up-to-date address data should be obtained prior to mail-out of the invitation package.
10. Any problems highlighted during contact with potential study participants, or based on information provided by participants, should be incorporated into SOPs for generation of future Nominal Rolls.

Introduction

11. The East Timor Health Study forms part of a series of studies that aim to research the health and well-being of Australian veterans who have deployed on active service overseas. It is being conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).

12. Traditionally post-deployment health studies have been retrospective studies examining health issues which have arisen from veterans' concerns on return from deployment or hypotheses generated in descriptive studies of veterans' health. The CMVH Deployment Health Surveillance Program aims to replace that approach with a prospective, analytic system for longitudinal surveillance of the health of Australian Defence Force (ADF) personnel who have been deployed on specific operations.

13. The purpose of the East Timor Health Study is to conduct a cross-sectional study of the health status of Australian service personnel who deployed to East Timor between 19 June 1999 and 13 May 2005 as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL or SPIRE (the "East Timor Operations"). The first stage of this study is the selection of the study samples, involving identification and selection of the appropriate veteran and comparison individuals for inclusion in the study. This requires the development of a Project Nominal Roll, followed by selection of an appropriate comparison group.

14. This report is the first Deliverable for the East Timor Health Study and documents the development of the Project Nominal Roll, generation of the comparison groups, and selection of the sample for inclusion in the study.

Methods

Project Nominal Roll

15. The East Timor Health Study Nominal Roll, or Project Nominal Roll, is a list of Service personnel identified as having deployed to East Timor as part of the East Timor Operations between 19 June 1999 and 13 May 2005.

Lessons learned from InterFET Pilot Project

16. The InterFET Pilot Project has provided valuable information on generation of the Project Nominal Roll which has been incorporated into the East Timor Project Nominal Roll methodology.

17. The Nominal Roll for InterFET was generated by Defence from PMKeyS, which is the system used by the Department of Defence for all aspects of personnel management. The Nominal Roll for the InterFET Pilot Project was found to have errors in both ascertainment and in content, as outlined below.

18. Errors of ascertainment refer to errors where Service personnel who should have been included on the roll were not, or personnel who were included on the roll but did not actually deploy to the specified operations and were thus ineligible for this study.

- a) It has been estimated, based on expert knowledge of the number and size of deployments and on post-activity reports, that at least 7000 individuals had been deployed as part of InterFET. Only 4124 individuals were on the Nominal Roll provided by Defence.
- b) In addition the Royal Australian Navy and Royal Australian Air Force were under-represented as the number of individuals from these services who were included on the Nominal Roll was substantially less than the minimum number known to have been deployed.
- c) Individuals known to have been deployed were not included on the roll.
- d) It is possible that individuals were included on the Nominal Roll but were not actually deployed; although there is currently no evidence of this and it is likely to be a minor problem.
- e) Thus it is possible that between 25% and 50% of the true InterFET deployment population may not have been included on the InterFET Nominal Roll.

19. Errors in content of data included on the Nominal Roll are errors of omission or inaccuracy of data provided as part of the Nominal Roll.

- a) Details of service were incorrect for some records (e.g. stated as Navy when were actually Army).
- b) Date of entry into service was after date of deployment.
- c) It was found that 29% of details of current addresses were not correct, probably because the Nominal Roll was obtained prior to the last posting cycle, and given that a posting cycle is 2-3 years, it is estimated that about one third of Defence Personnel are transferred at each posting cycle.
- d) Errors in content of data of the comparison group also occurred whereby persons initially deemed as eligible for inclusion in the comparison group were later found to have deployed to InterFET.

20. The information on problems with the InterFET Nominal Roll has been incorporated into a new Standard Operating Procedure (SOP) for generation of the East Timor Health Study Nominal Roll and provision of the Project Nominal Roll to the Research Coordination Unit (RCU) of CMVH. Primarily this has involved exploration of other sources of data for generation of the Project Nominal Roll. The problem of errors in content of the Project Nominal Roll is unlikely to be resolved in the short term, thus these are likely to persist for the East Timor Health Study.

Data Sources

21. There are multiple sources of information identifying Service personnel who have been deployed on military operations. Based on the experience of the InterFET Pilot Project, and following discussions with the Defence Health Program Management Office (PMO), record keepers and military personnel, it is evident that

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no one source of information can be verified to be a complete and accurate record of personnel deployed on any operation. Thus three sources of data are used in generation of the East Timor Project Nominal Roll: PMKeyS, ADFPAY and Allotment Certificates.

22. **PMKeyS** is the system used by the Department of Defence for all aspects of personnel management. It includes information on postings and deployments, including a code of the operation on which individuals were deployed, as well as demographic information. PMKeyS was implemented for the Navy in August 2001, the RAAF in February 2002 and the Army in July 2002.

23. **ADFPAY** is the Australian Defence Force Pay System, which is responsible for salary payment for Service personnel. Service personnel who are on deployment may be eligible to receive additional financial remuneration, which depends on the operation. Since each operation is identified in the ADFPAY database, this allows identification of personnel deployed to the East Timor Operations. ADFPAY is linked to PMKeyS.

24. **Allotment Certificates** are provided to serving members of the Australian Defence Force deployed on a war-like operation, for the purposes of Veterans' Affairs, taxation and Defence home loans. Since a number of the East Timor Operations were classified as warlike, the allotment lists were considered to be a relevant source of data in the construction of the Project Nominal Roll for these deployments.

25. Thus searching on operation code and/or description in either PMKeyS, ADFPAY and Allotment Certificates should identify all Service personnel who have been on a particular deployment. However this is not necessarily the case. Since membership on the deployment lists and operation orders may change over time, different versions of these may be generated and different information provided to the recipients of these data. Changes in membership could be due to last minute changes in circumstances of individuals or operational needs. It is also possible that details of all personnel deployed are not entered into PMKeyS, ADFPAY or Allotment Certificate records. This may be a particular problem for PMKeyS, which was not implemented until at least two years after commencement of the East Timor Operations. If an individual is eligible for deployment pay supplements and does not receive these, he/she has the opportunity to correct this. There is no similar "check" of deployment identification for PMKeyS. Thus there may be some variation in the individuals identified through the PMKeyS and ADFPAY. Data from PMKeyS, ADFPAY and Allotment certificates will be included in the generation of the Project Nominal Roll.

26. Names of individuals who have been deployed could potentially be obtained from secondary data sources. While all of these sources have been deemed to be infeasible, a brief outline of the sources and the reasons why it is not possible or appropriate to obtain these data is included below.

27. **Honours and awards.** This is a list of all personnel receiving honours or awards while serving with Australian Defence Forces during a variety of warlike and non-warlike operations. Personnel will be included on this list if their name appeared on

the Allotment Certificate list or if they applied for an honour or award and were deemed eligible, and then had this information appropriately recorded. The managers of this database were approached by Defence Health Program Management Office (PMO) for access to the Honours and Awards data. However the data were considered to be very unreliable by the managers. Many eligible individuals have not yet applied for awards, and the database was not up-to-date, with time lags between eligibility and application of up to 2 years. While in the past the Governor General's Office has had a copy of the honours and awards list for each deployment, this source is not currently an option.

28. **The National Welfare Coordination Centre (NWCC)** is a unit which is responsible for provision of information, support and referral to other family support agencies for families of deployed Service personnel. This unit was founded in 1999 to provide support for families of Service personnel deployed to East Timor. Since that time, the Centre has been expanded to provide assistance for all deployments. Individuals are included in this database if they completed a specific handwritten form prior to deployment. Approximately 27,000 names are on this list. Details of the operation on which individuals have been deployed may be retained for up to 12 months following completion of the operation. After this time no information is available to link personnel to individual operations, thus it is not a feasible or valid method of identifying individuals for the East Timor Health Study Nominal Roll.

29. **Next-of-Kin Lists.** Prior to any deployment all Service personnel are required to provide details of their next-of-kin so that relevant information can be provided to families. Separate lists are generated for each deployment, and these are archived after completion of the operation. Information from next-of-kin lists is 'in-confidence' and cannot be accessed. In addition the lists do not necessarily include correct details of service personnel but may include contact information of a relative or even a post office. Once personnel have returned from deployment they may have a new posting and thus the previous address may not be correct. Next-of-Kin lists are generated as part of the NWCC activities.

30. **The Australian Taxation Office (ATO).** Members of the Australian Defence Forces and employees of the Department of Defence who had been deployed to the East Timor Operations may have been exempt from income tax for a period of the deployment under section 23AG of the ITAA 1936 (Class Ruling CR 2001/178). Therefore the ATO may be a source of information on the East Timor Operations. The ATO was contacted by the PMO, and it became evident that it was not feasible to access this information. Tax concessions could be obtained concurrently, during the time of deployment, or retrospectively at some period following completion of the deployment. Some individuals, particularly if their marriage was unstable, did not apply for their tax rebate for up to 4 years following deployment. In addition the ATO was unable to appropriately identify deployed individuals, thus it is not a feasible source of data for the Project Nominal Roll.

31. **Deployed Forces Support Unit (DFSU).** This was a unit established to do the 'sign off' of preparation of Service personnel for deployment. They checked medical and dental fitness, gave some vaccinations and ensured that persons deploying were administratively and medically prepared. Thus a list is available of individuals who have passed through the DFSU; however not all individuals went through this unit

prior to deployment. In addition, on completion of the operation the DFSU database is closed down and all data is rolled into the NWCC.

32. *Single Service Lists* are lists held by each service on members who have been deployed. These lists are based on the Unit Roll Books and Ships' Logs. However this system is no longer in use and Single Services rely on PMKeyS information.

Generation of the Project Nominal Roll

33. Service personnel were included on the East Timor Health Study Nominal Roll if they appeared in either PMKeyS, ADFPAY or the Allotment Certificate records as having been deployed as part of the East Timor Operations between 19 June 1999 and 13 May 2005. Following meetings with PMKeyS and ADFPAY personnel, a list of items to be provided from each data source was generated. Allotment Certificate data were obtained directly by the PMO, with only limited information available on the individuals on this list.

34. The PMO provided CMVH Research Coordination Unit (RCU) with separate EXCEL (Microsoft Corporation, Redmond WA, USA) files which included all Service personnel identified through PMKeyS, ADFPAY or Allotment Certificates. These files were merged into a single file with one record for each individual, removing the duplicate records. This process was managed by CMVH RCU staff, who were cleared to at least 'Restricted', with statistical and programming input from the previous and current Project Statisticians and the First Chief Investigator of the Solomon Islands Health Study.

35. As not all required information was available on ADFPAY and Allotment Certificate data, a list of individuals identified from ADFPAY or Allotment Certificates but not PMKeyS was sent to PMKeyS staff, who then provided all the necessary data on these individuals to the RCU for addition to the Project Nominal Roll.

Data Management and Analysis

36. All data files from each source were appended to form three separate datasets (one each for PMKeyS, ADFPAY and Allotment Certificates). Records with duplicate combinations of service number (or PMKeyS number if no service number), service (Army, Navy, RAAF), deployment location, deployment start date and deployment end date were deleted. Records were deleted for deployments which commenced after 13 May 2005, which is the end date for inclusion in the East Timor Health Study. Data were then sorted by service number (or PMKeyS number), service, deployment location and deployment start date, and only the first deployment (within each deployment location) for each individual retained. This then produced a file for each of PMKeyS, ADFPAY and Allotment Certificate data with only one record per individual for each deployment location. These files were merged by service number (or PMKeyS number if no service number) service and deployment location, to produce a Nominal Roll for each of the Solomon Islands, Bougainville and East

Timor Health Studies. As service number is not unique across services this was used in conjunction with service as the unique identifier for individuals.

37. A table providing details of the total number of individuals identified for the Project Nominal Roll, as well as the number of individuals identified from each source was produced. This information was then used to estimate the number of individuals likely to be missed from the Project Nominal Roll using capture-recapture methods. Annex 1 provides a description of this method, including appropriate assumptions.

38. A Deployment Profile Analysis was undertaken to determine the deployment history, based on the Nominal Rolls for the three Near North Area of Influence Studies, for all individuals on these Rolls. This involved merging of data for each of the three Project Nominal Rolls by service number (or PMKeyS number if no service number was available) and service, and determining on which combination of Project Nominal Rolls individuals were included. A table was produced which showed the number of individuals with deployments to all three locations, to each individual location only, and to all other possible combinations of deployments.

39. Individuals on the East Timor Health Study Nominal Roll were stratified according to service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986). Birth year was considered to be a more logical variable than current age, or age at commencement of the deployment, as this would vary between deployments and studies. A table was generated with the strata definition, the number of deployed personnel and the number of comparison individuals to be selected in each stratum and provided to PMKeyS staff for selection of the comparison group.

40. The birth cohorts generated for the East Timor Health Study were slightly different from those used in the generation of the Solomon Islands and Bougainville comparison groups. The birth cohorts were modified for the East Timor study because, whilst generating the comparison group, difficulties were encountered in filling the stratum requested for the youngest cohort from the PMKeyS database. Therefore the year of birth categories were changed from 1937-1966, 1967-1976 and 1977-1988 to 1938-1967, 1968-1974 and 1975-1986.

Comparison Group

41. The comparison group for the East Timor Health Study includes Service personnel who were not deployed to the East Timor as part of the East Timor Operations, but were potentially eligible for deployment. For scientific rigour and to reduce the effect of confounding as much as possible, it was important that the East Timor Health Study comparison group was as similar to the deployed group as possible on all potential confounding factors except for deployment. To ensure this similarity, the comparison group has been selected to reflect the characteristics of the deployed group, using frequency matching.

42. For security reasons, the comparison group was selected from PMKeyS by Defence personnel with security clearances commensurate with access to such data,

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using the protocol prescribed by the East Timor Health Study Research Team. The comparison group was frequency matched to the deployment group on service (AirForce, Army, Navy), status (permanent or reserve), gender and birth year (1938-1967, 1968-1974 and 1975-1986).

43. To aid the creation of the comparison group by PMKeyS, the strata specified were split into two groups by the date of first deployment to the East Timor Operations. Those who first deployed to East Timor between June 1999 and December 2002 were frequency matched with personnel who were members of Defence at some point in this interval. Similarly those who deployed to East Timor between January 2003 and May 2005 were to be frequency matched with people who served in Defence during this period.

44. All individuals who are included on the PMKeyS database who did not have an East Timor Operation code, or who were not included on the East Timor Health Study Nominal Roll, and were a member of a Defence Service between June 1999 and May 2005 were eligible for inclusion in the study comparison group. Reservists and permanent personnel were both included.

45. PMKeyS staff sent a file that included names, addresses and other variables required for recruitment of participants to be sent to the CMVH RCU. This file was merged with the East Timor Health Study Nominal Roll to produce a study sample file.

Sampling

46. All personnel who deployed to East Timor between 19 June 1999 and 13 May 2005 as part of the East Timor Operations were selected to be part of the Veteran group (Project Nominal Roll). A comparison group of the same size as the Nominal Roll was generated using frequency matching. This number was required for the Mortality and Cancer Incidence components of the East Timor Health Study, where a ratio of comparison to veteran individuals of 1:1 was determined to be optimum for statistical power.

47. Because the number of Defence personnel who deployed to East Timor was expected to be larger than required for a scientifically valid, economically viable and logistically feasible study, a sample of veteran and comparison individuals was selected for inclusion in the self-report and Defence-owned data collection aspects of the Study.

48. 4000 personnel were selected from the East Timor Nominal Roll and 2501 were selected from the full list of comparisons using stratified random sampling. A random number was generated for each comparison individual, and the observations sorted by service, service type, gender, year of birth category and random number. Within each stratum the required number of observations was selected in order of increasing random number. These individuals then constituted the veteran and comparison sample for inclusion in the self-report and Defence-owned data collection components of the East Timor Health Study.

49. It is proposed to undertake future substudies to investigate the effects of other exposures which occurred as part of the East Timor deployments. While these substudies are not part of the main East Timor Health Study, they will be briefly mentioned here as they require additional sampling (which is relevant to this document). The first set of three proposed substudies will focus on the effects of malaria and / or antimalarial medication. It is estimated that approximately 1350 individuals were involved in clinical trials of antimalarial medications conducted by the Army Malaria Institute (AMI) or who have been diagnosed with malaria during or after their deployment, and have been recorded on AMI Central Malaria Register.

50. The sampling for these substudies will occur after the initial sampling has been performed for the main investigational cohort from the population deploying to East Timor. The main cohort contains 4000 participants. Each substudy will be briefly outlined below.

51. *Tafenoquine Substudy:* The subject roll for the AMI clinical study of tafenoquine (including the mefloquine blinded comparison group) with 1RAR will be used as the basis for the cohort of this substudy. The sample size is approximately 600 of which all will be included in the sample. The roll will be sourced from AMI in a collaborative research effort with the Institute and the Principal Investigator (LTCOL Peter Nasveld). Further notification will be required to the original study sponsor (GlaxoSmithKline).

52. *Mefloquine Substudy:* The subject roll for the AMI pharmacovigilance study of mefloquine with 4RAR will be used as the basis for the cohort of this substudy. The sample size is approximately 400 of which all will be included in the sample. The roll will be sourced from the AMI in a collaborative research effort with the Institute and Principal investigator (LTCOL Scott Kitcher).

53. *Malaria Substudy:* The subject roll for this substudy will be drawn from the Central Malaria Register of the AMI in a collaborative research effort, using a MS Access query specifying the exposure of "East Timor". This query has been run by LTCOL Kitchener for the epidemiology of malaria associated with the ADF East Timor deployments and included both cases of malaria in East Timor and those occurring in Australia following exposure to malaria in East Timor. There are approximately 350 cases included. All cases will be sampled for the substudy.

54. Each proposal of these substudies will be submitted to the Australian Defence Health Research Ethics Committee (ADHREC), the Department of Veterans Affairs Human Research Ethic Committee (DVAHREC) and the University of Queensland: Behavioural & Social Sciences Ethical Review Committee (BSSERC) for ethical approval.

Overlap between deployments

55. For a given health study, it is expected that members of both the veteran and the comparison groups will include Service personnel who have been deployed to locations other than those relevant to that study, and thus eligible for inclusion in more than one study. The East Timor Health Study is one of three studies looking at the health effects of deployment in the Near North Area of Influence, with the other two studies looking at the Solomon Islands and Bougainville. Therefore, there will be some overlap between individuals deployed to these three operations. This is described in more detail in Annex 2.

56. Once the veteran and comparison groups for the three studies were selected, a “Deployment Profile Analysis” was undertaken, which documents the overlap of the veteran and comparison individuals sampled for the studies. This will inform the contact strategy for the three Near North Area of Influence Deployment Health Studies, so that individuals are not contacted for more than one study. Individuals who are eligible for inclusion in the East Timor Health Study who have also been selected for either the Solomon Islands or Bougainville Studies may be approached as part of the sampling for these studies. While study data will be obtained once for each individual, individuals may be included in more than one set of statistical analysis. For example an individual deployed to East Timor may be included as a veteran for the East Timor Health Study, but may also be in the comparison group for the Bougainville Health Study. This “sharing” of study participants is an epidemiologically and statistically valid approach.

57. While the process of independently sampling for each of the three Deployment Health Studies (and then examining the overlap) may seem like a convoluted approach, it is necessary to ensure scientific rigour of the studies. If, for example, the comparison group for the East Timor Health Study is selected excluding Service personnel who have been deployed to Bougainville, then the comparison group will be biased relative to the veteran group (some of whom will have deployed to Bougainville). This is particularly an issue as multiple deployments may have a greater impact on health outcomes than a single deployment. The analysis strategy for the Deployment Health Studies will allow for examination of this potential “dose-response” effect.

58. A Deployment Profile Analysis, similar to that described above for the Project Nominal Roll was also obtained for the comparison group, to determine deployment history to the Solomon Islands and Bougainville for this group, and to check whether any of the comparisons had also potentially been deployed as part of the East Timor Operations. Details of individuals selected for inclusion in the comparison group were merged with the file obtained for the Deployment Analysis Profile for the Veteran group, described above.

Ethical Approval

59. Formal ethics approval was obtained for generation of the Project Nominal Roll, generation of the Comparison Group and selection of the study sample from the Australian Defence Health Research Ethics Committee (ADHREC), and from the University of Queensland: Behavioural & Social Sciences Ethical Review Committee (BSSERC). Copies of these approval letters are shown in Annexes 3 and 4.

60. Analyses were undertaken using the SAS (SAS institute Inc. NC, USA) and STATA (StataCorp, Texas, USA) statistical analysis programs.

Results

East Timor Health Study Project Nominal Roll

Source Data Files

61. Files provided by PMKeyS and ADFPAY included data for all deployments relevant to the three Near North Area of Influence Deployment Health Studies. Allotment Certificate data only included details of individuals deployed to some (i.e. war-like) East Timor Operations. Due to the size of some of the data files from PMKeyS and ADFPAY, they were separated into multiple parts of appropriate size to allow files to be emailed to CMVH RCU over the Defence Restricted Network. A description of the names and size of files is provided in Annex 5, with details of file formats provided in Annex 6.

62. Data were provided to CMVH RCU in EXCEL format, and each file was converted to tab delimited format to enable reading by SAS.

63. For PMKeyS data there were two sets of files. The first included all deployment information, while the second included details of all discharge and rehire information for individuals in the deployment files. The status of individuals (i.e. permanent or reserve) on the deployment files was as at the time of deployment. As individuals can be discharged and rehired for a specific time period, then discharged and rehired again, there can be multiple occurrences of discharge and rehire for individuals. The most recent information on discharge and rehire was required to specify the most recent status of individuals. While status at the time of deployment was used to select the appropriate comparison group, the most recent status will be used to determine whether the study documentation will be mailed to the individual's home or work address.

64. ADFPAY data on individuals who are no longer in Defence are periodically archived (approximately every 12-24 months). ADFPAY data files therefore included deployment data for individuals on active status, as well as archived deployment data.

65. There were seven files for Allotment Certificate data: one file for all Operation Tanager deployments; one file for each of Army, Navy and RAAF Operation Stabilise deployments and one file each of Army, Navy and RAAF Operation Warden deployments.

Preliminary Data Checks

66. There were seven files for each of PMKeyS deployment and discharge/rehire data files types: five files for Army deployments (because of the number of Army deployments and thus the size of the files), one for Navy and one for Air Force deployments.

67. The format of PMKeyS data was consistent for each file type (i.e. within deployment data and within discharge/rehire data), with one exception. For the NAVY file, cell R66 (sex variable) was located after the medical category code description; for all other files it was included after the “former name” variable.

68. There was one error in the PMKeyS deployment data: one date of birth was in a format which could not be read in. This resulted in missing date of birth and thus missing age for this individual. There were 11 errors in the date of discharge or rehire: eight of these could be appropriately corrected, while the remaining three were uninterpretable and were thus classified as missing data.

69. There were 10 files for ADFPAY deployment data, four of which included previously archived data. The format of the data files was not consistent, with variation in the row at which the data commenced. The first row of data commenced on row 5 (4 data files), 6 (5 data files) or 7 (1 data file). One file had an extra non-empty row at the end of the file. This row did not contain any data, but included the words “security classification restricted”. Apart from these issues, the format of data within the files appeared to be consistent, and no obvious errors were encountered by SAS on reading of data.

70. Allowance codes and allowance descriptions do not have a unique 1-to-1 relationship to identify individual deployment Operations. For example Deployment Codes DEP20 and PEA013 both include more than one East Timor Operation. Codes and Descriptors appear to separate deployment versus Peace Enforcement Allowance (PEA prefixes).

Generation of Project Nominal Roll

71. The PMKeyS and ADFPAY data files all included service number and service as identifiers. PMKeyS data also included PMKeyS number (called EMPLID) in addition to service number. Both numbers were not available for all individuals. Service personnel who enlisted after the introduction of PMKeyS will not have been allocated a Service number, and are thus only identifiable by PMKeyS number. Service number was used as the primary identification key in combination with service (as service number is not unique across services; i.e. the same service number could be used for all three services), with PMKeyS number used when there was no

service number. PMKeyS number is a unique identifier and is not duplicated across services.

72. Allotment Certificate data included service number (or PMKeyS number if there was no service number) but not service. For individuals deployed on Operation Warden, separate files had been provided for each service, allowing individuals to be allocated to their appropriate service (7113 records). However for those deployed on Operation Tanager, only one file including all individuals was provided, and it was therefore necessary to allocate service using a variety of strategies (n = 17281 records). Some ranks in Defence are unique to a particular service, enabling 12988 records to be allocated to service based on ranks. A further 364 records could be allocated to service based on the service number prefix (which was unique for some but not all service numbers).

73. In total there were 20211 deployments for the East Timor deployments identified via PMKeyS; 5307 for Operation Citadel (Opcode H25); 286 for Operation Spire (Opcode H26), 9230 for Operation Tanager (Opcode H10) and 5388 for Operation Warden (Opcode H11). Of these, 15 had a deployment start date after 13 May 2005 and were excluded as they were ineligible for inclusion in the study. Two individuals whose deployment start date was prior to 19 June 1999 were retained. Most of these individuals had a start date within the month prior to the commencement of the deployment, and it is common practice for some individuals to deploy early to prepare for the operation. There were 20196 remaining deployments for 15678 individuals.

74. A total of 57164 East Timor deployments were identified from ADFPAY data, of which 21 had commenced after the study end date (13 May 2005) and were excluded. There were 57143 eligible deployments records (which may not necessarily equate to actual deployments) undertaken by 18502 individuals.

75. From Allotment Certificate data there were 28747 records in total, with 4235 of these relating to Operation Stabilise. As deployments for this Operation were not eligible for the East Timor Health Study they were deleted. This resulted in 24512 records for East Timor deployments. One deployment was post 13 May 2005 and was excluded from this set of files. There were 24511 Allotment Certificate records for 14160 individuals

76. Merging of PMKeyS, ADFPAY and Allotment certificate data resulted in an Nominal Roll of 20013. The merging of Allotment Certificates with PMKeyS and ADFPAY data was a complex task because service was unknown for 3929 individuals identified through Allotment Certificates. Since service number is not unique across the services further merges on surname and initials of given names were necessary to compile the Nominal Roll.

77. Thorough checks for duplicates resulted in the removal of 303 records and an East Timor Health Study Project Nominal Roll of 19710 individuals. Almost two-thirds of individuals (61%) were identified in all three data sources, with 22% identified through only two data sources, and 17% identified through one source of data only (see Table 2). Using the capture-recapture method outlined in Annex 1, and a priori estimates of the East Timor Nominal Roll the “true” size of the Project

Nominal Roll can be estimated to be 20871; i.e. 1000 larger than that actually obtained.

Table 2: Number of individuals on the East Timor Nominal Roll by source of data - generated by CMVH 23/05/2007

Data Source	East Timor	
	N	%
PMKeyS, ADFPAY and Allotment certificates	12111	61
PMKeyS and ADFPAY only	2911	15
PMKeyS and Allotment certificates only	131	1
ADFPAY and Allotment certificates only	1238	6
PMKeyS only	525	3
ADFPAY only	2114	11
Allotment certificates only	680	3
Total	19710	100

Characteristics of East Timor Operation Veterans

78. Table 3 below shows the characteristics of East Timor Operation Veterans used for selection of the comparison group by service, status, gender and birth year. Only 9% of eligible East Timor Health Study veterans were female, and 37% were born between 1975 and 1986 (inclusive). Note that date of birth was missing for 15 individuals, all of whom also had missing gender. More than three-quarters of the Nominal Roll individuals were in the Army (80%), and the majority (93%) were in the permanent Defence Force (rather in the Reserves).

Table 3: Characteristics of veterans eligible for East Timor Health Study

Characteristic		Frequency	Percent %
Sex	Female	1,832	9
	Male	17,863	91
	Missing	15	0.1
Birth group	1938-1967	5,731	29
	1968-1974	6,678	34
	1975-1986	7,286	37
	Missing	15	0.1
Service	Army	15,825	80
	Navy	2,249	11
	RAAF	1,636	8
Service Type	Permanent	18,411	93
	Reserve	1,284	7
	Missing	15	0.1

Comparison Group Selection

79. The number of East Timor Operation veterans in each of the strata used for selection of comparison is shown in Table 4.

80. PMKeyS generated the required sample using a random number to sort records within sampling strata and then select the required number of observations. The sample set was produced using a normal distribution random number generator (mean = 3, standard deviation = 3 and random seed = 20). Where a stratum category could not be filled within the 1999-2002 cohort, the category was filled with the any excess from the same category in the 2003-2005 cohort and vice versa. The data were provided to CMVH RCU over the Defence Restricted Network in ZIP archives which contained the EXCEL files, with data for each strata provided in a separate spreadsheet.

81. The number of comparisons generated by PMKeyS was 17880. Of these 379 were on found to be on the East Timor Nominal Roll records were deleted from the East Timor Comparison group. The characteristics of the full comparison group are presented in Table 5.

82. The total number of comparisons is less than the number on the East Timor Nominal Roll. It is estimated that more than half of the male Army Permanent staff deployed to East Timor, so the selection of a comparison group of equal size was not possible in every strata. A substantial deficit can be seen in the strata of Permanent Army males in the birth cohort 1968-1974 (4632 on the Nominal Roll compared to 2684 in the comparison group).

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Table 4: Number in Strata in the Nominal Roll used for selection of comparison group

		Sex						
		F			M			
		Birth group			Birth group			
		1938-1967	1968-1974	1975-1986	1938-1967	1968-1974	1975-1986	Total
Service	Type							
Army	Permanent	208	425	504	3567	4632	5468	14804
	Reserve	54	28	34	443	188	274	1021
Navy	Permanent	34	115	178	588	695	580	2190
	Reserve	1	1		45	12		59
RAAF	Permanent	61	120	45	612	428	166	1432
	Reserve	11	7	7	111	34	34	204
Total		369	696	768	5366	5989	6522	19710

NB. The 15 participants with a missing gender code, date of birth and service type have been allocated strata based the most frequent age and gender categories of participants with the same strata characteristics.

Table 5: Number of individuals in the full comparison group: by strata.

		Sex						
		F			M			
		Birth group			Birth group			
		1938-1967	1968-1974	1975-1986	1938-1967	1968-1974	1975-1986	Total
Service	Type							
Army	Permanent	203	414	496	3492	2684	5350	12639
	Reserve	54	28	34	442	186	259	1003
Navy	Permanent	33	114	177	586	690	577	2177
	Reserve	1	1		42	12		56
RAAF	Permanent	61	120	45	609	423	166	1424
	Reserve	11	7	7	109	34	34	202
Total		363	684	759	5280	4029	6386	17501

Sampling

83. The number of veteran and comparison individuals in each stratum selected for inclusion in the East Timor Health Study is shown in Tables 6 and 7 respectively. Due to rounding error in the calculation of numbers in each stratum the number in the comparison sample is 2501 (as opposed to 2500).

Table 6: Number of individuals in the veteran group study sample: by strata.

		Sex						Total
		F			M			
		Birth group			Birth group			
Service	Type	1937-1966	1967-1976	1977-1988	1937-1966	1967-1976	1977-1988	
Army	Permanent	42	86	102	724	941	1111	3006
	Reserve	11	6	7	90	38	56	208
Navy	Permanent	7	23	36	119	141	118	444
	Reserve				9	2		11
RAAF	Permanent	12	24	9	124	87	34	290
	Reserve	2	1	1	23	7	7	41
Total		74	140	155	1089	1216	1326	4000

Table 7: Number of individuals in the comparison group study sample: by strata.

		Sex						Total
		F			M			
		Birth group			Birth group			
Service	Type	1937-1966	1967-1976	1977-1988	1937-1966	1967-1976	1977-1988	
Army	Permanent	29	59	71	499	383	764	1805
	Reserve	8	4	5	63	27	37	144
Navy	Permanent	5	16	25	84	99	82	311
	Reserve				6	2		8
RAAF	Permanent	9	17	6	87	60	24	203
	Reserve	2	1	1	16	5	5	30
Total		53	97	108	755	576	912	2501

NB. There are 2501 in the comparison sample as opposed to 2500. This difference is due to rounding.

Overlap between deployments

84. Table 8 shows the number of individuals with various combinations of deployment locations. The table also includes multiple deployment location data obtained by the PMO using manual searching.

Table 8: Preliminary data on multiple operations of deployment for Near North Area of Operations¹.

Operation/s	Provided by DHSP 21 July 2006	Generated by CMVH May 2007
Solomon Islands Only	1310	2446
Bougainville Only	1327	2464
East Timor Only	13700	16465
Solomon Islands and Bougainville	129	238
Solomon Islands and East Timor	1465	1171
Bougainville and East Timor	1564	1840
Solomon Islands and Bougainville and East Timor	274	234
Total	19769	24858
Total for Solomon Islands	3178	4089
Total for Bougainville	3294	4776
Total for East Timor	17003	19710

¹Note that these numbers represent the approximate number of individuals, not the number of deployments.

85. Table 9 shows the Deployment Profile Analysis for the overall comparison group (n=17501) as well as for each of the 4000 Veteran and 2501 comparison individuals selected for inclusion in the study sample. Note that there are no individuals in the Veteran sample who have not been deployed to East Timor (as this is one of the eligibility criteria for the East Timor Nominal Roll). The self-reported deployment history of the individuals in the study will be used to cross check these data (if individuals respond to the study invitation package).

Table 9: Preliminary data on multiple operations of deployment for Near North Area of Operations¹ for comparison group and study sample

Operation/s	All Comparison individuals (n=17501)	Study sample Veteran group (n=4000)	Study sample Comparison group (n=2501)
Solomon Islands Only	897	0	128
Bougainville Only	1014	0	153
East Timor Only	0	3374	0
Solomon Islands and Bougainville	105	0	18
Solomon Islands and East Timor	0	228	0
Bougainville and East Timor	0	351	0
Solomon Islands and Bougainville and East Timor	0	47	0
No deployments	15485	0	2202
Total	17501	4000	2501

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Discussion

Data Management

86. Generation of the Project Nominal Roll and the comparison group required a substantial amount of data management and manipulation. This was in part due to the large size of the source data files provided from Defence for generation of the Project Nominal Roll. In order for these files to be able to be emailed over the Defence Restricted Network, the data were provided in multiple files. Each file needed to be checked for structure and format, and then saved in a tab delimited format for input to SAS (the program used to manipulate and check the data).

87. The “Restricted” security classification of the source data required a complex process for generation of the Project Nominal Roll. All data had been sent to the RCU over the Defence Restricted Network. It was not possible to load the statistical software required for analysis on to the computer which allowed access to the DRN. Thus a laptop capable of processing “Restricted” information was obtained and the SAS statistical software program then installed. This laptop was used under supervision of security cleared defence personnel. However datafiles could not be received or sent from the laptop computer, impacting on the time taken for these tasks.

88. For the PMKeyS, ADFPAY and Allotment Certificate data there were multiple records per individual (each representing a different deployment, or in some cases duplicates of the same deployment). Each file was initially examined separately and duplicates removed. Files were then merged to provide a more comprehensive list of deployed personnel and determine the overlap between files. Allotment Certificate data required a substantial amount of manipulation prior to linkage with PMKeyS and ADFPAY data.

Validity and Reliability

89. It is still unclear how comprehensive the Project Nominal Roll is, and what the true number of Service personnel deployed as part of the East Timor Operations is. The estimated size of the Nominal Roll, using the confidence intervals generated by capture-recapture methods indicates that between 1031 and 1304 individuals may have been missed from the Nominal Roll.

90. Because of the classified nature of their work, deployment details of Special Forces (SF) personnel may not be included in the Defence databases. They might still receive deployment allowances, however they will not necessarily be identified as SF.

91. Following implementation of the PMKeyS Personnel Management system in 2001-2002, new enlistments into the Defence Force have been allocated a PMKeyS number for purposes of identification, and since then individuals have been deployed using this identification system. Individuals who had enlisted since 1996 (or who were still in Defence since 1996) but prior to PMKeyS have also been allocated a PMKeyS

number in addition to their service number, which was previously used for identification and deployment. Databases should include, where relevant, both identification numbers as these will differ for the same individual. For the East Timor Operations all Service personnel will have been deployed on either service number or PMKeyS number. The different identification numbers used adds another level of complexity to management and analysis of the data. Service Number was used as the primary identification key, however if this was missing then PMKeyS number was used. Records in ADFPAY data were identified by one variable, called "Service Number", which was actually Service Number, if the individual had been allocated one, or PMKeyS number otherwise. As identification number was used to merge the data from PMKeyS and ADFPAY, it is possible that some personnel were identified by different numbers in the files, and thus may appear as two individuals. A substantial amount of checking was undertaken after merging of data files to try and minimise this, but it is unlikely to have completely solved the problem.

92. Further estimates of validity and reliability of the Project Nominal Roll and comparison group selection will be obtained when data from the invitation package are received. As part of the first stage of the study, participants are requested to provide details of all of their recent deployments. These data will then be compared to the deployment history of individuals obtained as part of the Deployment Profile Analysis.

93. Changes in postings can have an impact on the validity of both home and work address data for Service personnel. It was found in the InterFET Pilot Project that 29% of individuals had a change in address details between receipt of the original Project Nominal Roll and mail-out of the survey. Similarly, based on preliminary data from the Solomon Islands Health Study, there appear to be incorrect addresses for individuals on the Solomon Islands Nominal Roll and comparison group. The extent of these error will not be know until completion of the mail-out and followup processes for the Solomon Islands Health Study. This information may then be used to revise contact and recruitment strategies for the East Timor Health Study.

94. The process of generation of the East Timor Health Study Nominal Roll was substantially more complex than for the Bougainville Health Study Nominal Roll, which in turn was more complex than that for the Solomon Islands Health Study Nominal Roll. Because the Solomon Island Operation (Operation ANODE) was quite recent (Study eligibility period was July 2003 to December 2005), most deployment information was available on both PMKeyS and ADFPAY data. For the Bougainville Health Study Nominal Roll, there were large number of deployments identified by ADFPAY but not PMKeyS, as these Operations commenced in 1997, several years prior to the implementation of PMKeyS. The process of matching the ADFPAY data with individuals on PMKeyS, providing this information to CMVH and then selecting the comparison group was quite complex. Because generation of the East Timor Health Study Nominal Roll involved the use of Allotment Certificate data, which required complex manipulation in order to link with PMKeyS and ADFPAY data, in addition to starting prior to the implementation of PMKeyS, this process required a substantial amount of time, not only by CMVH staff, but also by PMKeyS staff.

Recommendations

95. The following recommendations based on the experience of generating the East Timor Health Study Nominal Roll should be considered for the conduct of the health study, and for generation of future Project Nominal Rolls:

- Where possible, the validity and reliability of the Project Nominal Roll should be checked with data provided by individuals on their deployment history.
- Up-to-date address data should be obtained prior to mail-out of the invitation package.
- For future studies, it is important that data be provided by PMKeyS and ADFPAY and Allotment Certificates in a consistent format, and that the format of all data files should be checked by the RCU prior to any analysis being conducted.
- Any problems highlighted during contact with potential study participants, or based on information provided by participants, should be incorporated into SOPs for generation of future Nominal Rolls.

Annex 1 – Description of Capture-recapture Method

Capture-recapture methods are used to estimate the number of individuals in a closed population. They were initially developed by zoologists to count wildlife populations. In human studies these methods are useful to count numbers with specific characteristics, usually a disease or condition of interest, when there are multiple sources or lists, none of which is comprehensive. Capture-recapture methods have been used to estimate numbers of people with birth defects, infectious diseases, drug use and injuries, so that estimates of prevalence and/or incidence may be obtained. Firstly the sources or lists must be identified. These can include hospital databases, disease registers, support group membership, general practice records, etc. Individuals need to be identified from the lists and a unique identifier must be available so that the overlap between lists can be determined, i.e. the number of people appearing on each list only and the numbers appearing on all combinations of lists need to be obtained. In animal studies animals are usually ‘captured’, tagged and then released and can therefore be identified during a different capture (recapture). The number missing from the lists can then be estimated.

For capture-recapture with two lists or data sources, the number of people in either or both of the lists can be counted and this then used to estimate the number in neither of the lists (the missing number). Data can be arranged in a 2 x 2 contingency table

Table 1.2 Format for 2X2 table for capture-recapture method

In List A	In List B		Total
	Yes	No	
Yes	m		M
No		*	
Total	n		

* missing data – to be estimated

The total population, N, can then be estimated using the formula:

$$N = \frac{(M + 1)(n + 1)}{(m + 1)} - 1$$

When three or more lists are to be used, the method is slightly more complicated and log-linear models can be used to estimate the missing number.

The assumptions for capture-recapture methods are:

- The study population is a closed population
- Lists are independent of one another
- All members of the population have the same probability of being captured
- All identified elements are members of the population

The estimates of the size of the full Nominal Roll based on Capture Recapture methods are presented in Table 1.3.

This table is based on methods outlined by Hook and Regal¹. The authors urge caution about using the method associated with the saturated model (1-2,1-3,2-3) and the estimate from this saturated model appears implausibly high. Therefore the estimates 1-2, 1-3 model (with the lowest AIC and BIC of all the remaining models) have been used in the report to when discussing the estimated “true” size of the East Timor Nominal Roll.

Table of capture-recapture estimates of the full East Timor nominal roll

Model	d.f.	AIC	BIC	x	N	95% CI
Independent	3	4087.1	4069.	84.1	19794	(19777, 19813)
1-2	2	3127	3114.9	280	19990	(19952, 20031)
1-3	2	2570.7	2558.6	173.7	19884	(19857, 19913)
2-3	2	3923.2	3911.1	139.7	19850	(19825, 19877)
1-2, 1-3	1	1058.9	1052.9	1161.2	20871	(20741, 21014)
1-2, 2-3	1	2371.1	2365	2725.2	22435	(21926, 23077)
1-3, 2-3	1	2267.8	2261.8	381.3	20091	(20039, 20148)
1-2, 1-3, 2-3	0	0	0	19360.6	39071	(35263, 43934)

Source 1 = PMKeyS data; Source 2 = ADFPAY data; Source 3 = Allotment Certificate data.

d.f. degrees of freedom; AIC Akaike Information Criterion; BIC Bayesian Information Criterion; CI, Confidence interval.

X = Estimate of East Timor deployed personnel not identified through the 3 sources.

N = Estimate of personnel on the full East Timor Nominal Roll.

1. Regal RR, Hook EB. Capture –Recapture Methods in Epidemiology: Methods and Limitations. *Epidemiol Rev* Vol.17, No. 2, 1995

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Annex 2 – Description of Overlap in Deployments

Figure 1. Venn diagram of the overlap between individuals deployed to the Solomon Island (SI), Bougainville (BV) and East Timor (EM), and how selection of the veteran and comparison groups for the three Health Studies will be managed.

Figure 1a.
Sampling for the Defence Deployment Solomon Islands Health Study.

- Randomly selected comparison individuals
- All individuals who deployed to the Solomon Islands

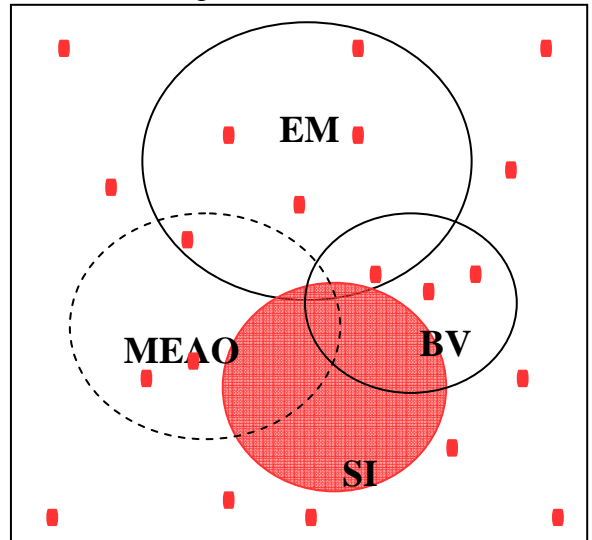


Figure 1b.
Sampling for the Defence Deployment Bougainville Health Study.

- ◆ Randomly selected comparison individuals
- All individuals who deployed to Bougainville

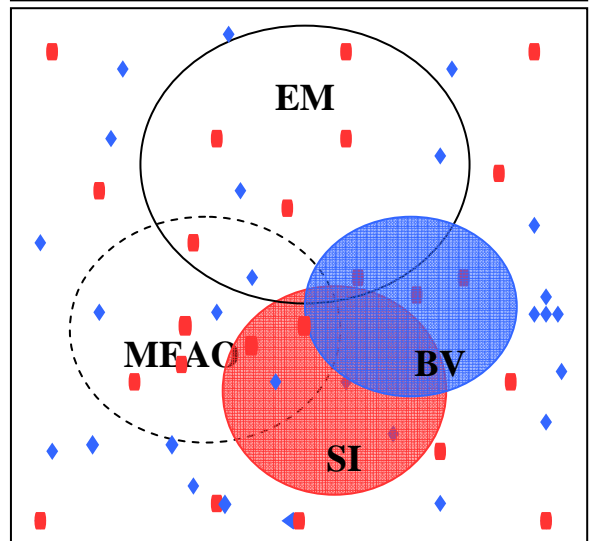
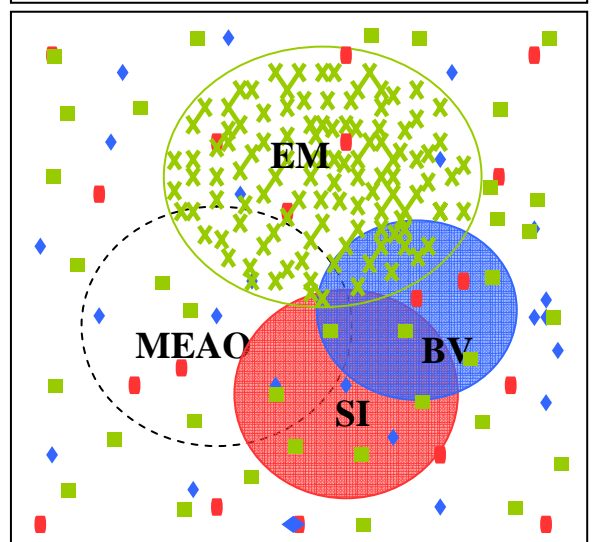


Figure 1c.
Sampling for the Defence Deployment East Timor Health Study.

- Randomly selected comparison individuals
- XXX Sample of individuals who deployed to East Timor



Annex 3 - Australian Defence Health Research Ethics Committee (ADHREC) letter of approval



Australian Government
Department of Defence
Defence Support Group

DEFENCE HEALTH
SERVICES
CP2-7-068
Campbell Park
CANBERRA ACT 2600

2006/1091530
ADHREC 449/06
DCP/OUT/2006/134

Doctor Catherine D'Este
Associate Professor
Centre for Military and Veterans Health
Deployment Health Surveillance Unit University of Queensland
Level 2 Mayne Medical School Herston Road
HERSTON QLD 4006

Dear **Doctor D'Este**

**AUSTRALIAN DEFENCE HUMAN RESEARCH ETHICS COMMITTEE
(ADHREC) PROTOCOL 449/06: DEPLOYMENT HEALTH SURVEILLANCE
PROGRAM: SAMPLE GENERATION AND MORTALITY AND CANCER
INCIDENCE STUDIES**

1. ADHREC has considered your protocol and has cleared your project to proceed. Please note that ethical clearance from ADHREC does not automatically confer access to ADF personnel; this will have to be sought from the relevant military commanders.
2. Your protocol has been allocated **ADHREC Protocol Number 449/06, and this number should be quoted in all correspondence.** Your protocol has been approved for a period of three years. If your research is to continue over the three year approval time, ADHREC approval for an extension is to be sought in writing.
3. ADHREC requires you to provide six-monthly progress reports. The first report is due on **23 January 2007.** As part of your report would you please include a narrative describing the progress to date, and any events of significance occurring in the conduct of the protocol, in particular any adverse outcomes are to be described. Could you please also comment on the following, where applicable:
 - a. Outcome in the case of completed research,
 - b. Maintenance and security of your records,
 - c. Compliance with the approved protocol,
 - d. Any amendments or modifications to the protocol, and
 - e. Compliance with any other special conditions that ADHREC may have required
4. **If your protocol requires any modification, ADHREC approval must be sought in writing, detailing all modifications required.**

Defending Australia and its National Interests

5. For Clinical trials, ADHREC is to be notified in writing of all **Serious Adverse Events within 72 hours of the event occurring.**
6. For completeness, would you please sign and initial the enclosed Researcher's Agreement and return it to me at your convenience. I have also enclosed ADHREC's Guidelines for Volunteers, a copy of which is to be given to each study participant.
7. The Committee wishes you well with your research. Please contact me if I can be of any assistance.

Yours sincerely,



Doctor Rosemary A. Landy
Executive Secretary
Australian Defence Human Research Ethics Committee
CP2-7-068
Campbell Park Offices
CANBERRA ACT 2600

Tel (02) 62663837
Fax (02) 62664982
E-mail: ADHREC@defence.gov.au


10 July 2006

Attachment:

- A. ADHREC *Researchers Agreement*
- B. ADHREC *Guidelines for Volunteers*

Defending Australia and its National Interests

Annex 4 - University of Queensland: Behavioural & Social Sciences Ethical Review Committee (BSSERC) letter of approval.



THE UNIVERSITY OF QUEENSLAND
Institutional Approval Form For Experiments On Humans
Including Behavioural Research

Chief Investigator: Associate Professor Cate D'Este

Project Title: Deployment Health Surveillance Program: Sample Generation

Supervisor: None

Co-Investigator(s): Associate Professor Scott Kitchener, Professor Sandy McFarlane, Dr Sonya Bennett, Professor Annette Dobson, Dr Ben Stute

Department(s): Centre for Military and Veterans' Health

Project Number: 2006000478

Granting Agency/Degree: Department of Defence

Duration: 31st October 2007

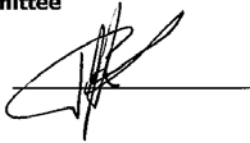
Comments:

Approval is for Stage I of current project (compiling list of eligible participants – nominal roll).

(The Committee advises that the investigator should consult with appropriate organisations concerned with the welfare of specific vulnerable groups (e.g. Armed Force Federation of Australia in cases of service personnel; Aboriginal and Torres Strait Islander Studies Unit for indigenous service personnel) for subsequent stages to progress.)

Name of responsible Committee:-
Behavioural & Social Sciences Ethical Review Committee
 This project complies with the provisions contained in the *National Statement on Ethical Conduct in Research Involving Humans* and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:-
Dr Jack Broerse
Chairperson
Behavioural & Social Sciences Ethical Review Committee

Date 18/08/06 Signature 

Annex 5 – Data files provided by PMKeyS and ADFPAY

Filename	Row at which data commences	Column at which data commences	Number of data records	Description
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 1 - ARMY	2	1	4999	PMKeyS deployment data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 2- ARMY	2	1	5000	PMKeyS deployment data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 3- ARMY	2	1	5000	PMKeyS deployment data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 4- ARMY	2	1	5000	PMKeyS deployment data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 5- ARMY	2	1	3783	PMKeyS deployment data for ARMY part 1 of 5
PMKEYS nominal rolls data IN62825 NAVY CMVH 290806 NAVY.xls	2	1	1256	PMKeyS deployment data for NAVY
PMKEYS nominal rolls data IN62825 RAAF CMVH 290806 RAAF.xls	2	1	1038	PMKeyS deployment data for RAAF
Total number of records			26076	
20060717 ADFPAY nominal roll raw data DHSD1 Part 1.xls	6	1	10000	ADFPAY deployment data file 1 part 1 of 5
20061717 ADFPAY nominal roll raw data DHSD1 Part 2.xls	6	1	10000	ADFPAY deployment data file 1 part 2 of 5
20061717 ADFPAY nominal roll raw data DHSD1 Part 3.xls	6	1	10000	ADFPAY deployment data file 1 part 3 of 5
20061717 ADFPAY nominal roll raw data DHSD1 Part 4.xls	6	1	10000	ADFPAY deployment data file 1 part 4 of 5
20060717 ADFPAY nominal roll raw data DHSD1 Part 5.xls	6	1	14626	ADFPAY deployment data file 1 part 5 of 5
File 2 - 20060618 ADFPAY nominal roll raw data DHSD2.xls	7	1	217	ADFPAY deployment data file 2
File 3 - 20063107 ADFPAY nominal roll raw data Batch-Wipe-2000.xls	5	1	170	ADFPAY deployment data archived in 2000
File 4 - 20063107 ADFPAY nominal roll raw data Batch-Wipe-2002.xls	5	1	3542	ADFPAY deployment data archived in 2002
File 5 - 20063107 ADFPAY nominal roll raw data Batch-Wipe-2005.xls	5	1	7826	ADFPAY deployment data archived in 2005
File 6 - 20063107 ADFPAY nominal roll raw data Onlie-Wipe-2000-2007.xls	5	1	4163	ADFPAY deployment data archived from 2000-2007
Total number of records			70545	

Filename	Row at which data commences	Column at which data commences	Number of data records	Description
File 7 - original - allotment certificate - Op Tanager.xls	2	2	17281	Allotment certificate data for Op Tanager
File 8 - original - allotment certs - Op Stabilise ARMY.xls	4	1	323	Allotment certificate data for Op Stabilise - ARMY
File 8 - original - allotment certs - Op Stabilise NAVY.xls	4	1	3907	Allotment certificate data for Op Stabilise - NAVY
File 8 - original - allotment certs - Op Stabilise RAAF.xls	4	1	5	Allotment certificate data for Op Stabilise - RAAF
File 8 - original - allotment certs - Op Warden ARMY.xls	4	1	6285	Allotment certificate data for Op Warden - ARMY
File 8 - original - allotment certs - Op Warden NAVY.xls	4	1	88	Allotment certificate data for Op Warden - NAVY
File 8 - original - allotment certs - Op Warden RAAF.xls	4	1	740	Allotment certificate data for Op Warden - RAAF
File 9 - original – Supp allotment certificate Op Tanager for HMA Ships.xls	3	1	118	Allotment certificate data for Op Tanager - data from ships
Total number of records			28747	
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 1 REH_TER	2	1	7999	PMKeyS discharge and rehire data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 2 REH_TER	2	1	8000	PMKeyS discharge and rehire data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 3 REH_TER	2	1	8000	PMKeyS discharge and rehire data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 4 REH_TER	2	1	8000	PMKeyS discharge and rehire data for ARMY part 1 of 5
PMKEYS nominal rolls data - IN62825 ARMY CMVH 290806 - Part 5 REH_TER	2	1	10312	PMKeyS discharge and rehire data for ARMY part 1 of 5
PMKEYS nominal rolls data IN62825 NAVY CMVH 290806 REH_TERM	2	1	2034	PMKeyS discharge and rehire data for NAVY
PMKEYS nominal rolls data IN62825 RAAF CMVH 290806 REH_TER	2	1	1741	PMKeyS discharge and rehire data for RAAF
Total number of records			46086	

Annex 6 – Description of variables provided by PMKeyS and ADFPAY

Data Source	content of file	variable name	variable description	Variable codes
PMKeyS	<i>deployment data</i>	service	service	ARMY, NAVY, RAAF
		stype	service type - regular or reserve	CFT, REG, RES
		EmplID	employee number - PMKeyS	
		sno	number	
		rank	Service number	
		rankd	rank code	
		empls	rank description	
		sname	employment status	A=active, D=discharged, T=
		gname1	surname	
		gname2	given name 1	
		fname	given name 2	
		sex	firstname	
		oprcode	sex	
		oprd	operation code	
		sdate	operation description	
		edate	date of start of deployment	
		mcode	date of end of deployment	
		mdscr	medical employment category code	
		bdate	medical employment category description	
		ddate	date of birth	
mstatus	date of death			
haddr1	marital status			
	home address field 1			

Data Source	content of file	variable name	variable description	Variable codes			
PMKeyS	deployment data	service	service	ARMY, NAVY, RAAF			
		haddr2	home address field 2				
		haddr3	home address field 3				
		city	home address city				
		state	home address state				
		pcode	home address postcode				
		cntry	home address country				
		unitid	most recent unit - identification number				
		unitd	most recent unit - description				
		location	most recent unit - location				
		uaddr1	most recent unit - address (line 1)				
		uaddr2	most recent unit - address (line 2)				
		uaddr3	most recent unit - address (line 3)				
		uaddr4	most recent unit - address (line 4)				
		ucity	most recent unit - city				
		ustate	most recent unit - state				
		upcode	most recent unit - postcode				
		ucntry	most recent unit - country				
		discharge & rehire data			service	service	ARMY, NAVY, RAAF CFTS, REG, RES-A, RES-ES, RES-HRR, RES-1
					stype	type of service	
					EMPLID	PMKeyS id number	
					effdate	date of discharge or rehire	
					action	whether discharged or rehired	HIR, MTR, REH, TER
reason	reason for discharge of rehire						

Data Source	content of file	variable name	variable description	Variable codes
PMKeyS	deployment data	service	service	ARMY, NAVY, RAAF
		descr		
		status		
		comments		
ADFPAY		si	service indicator	1=ARMY, 2=RAAF, 3=NAVY
		sno	service number	
		sname1	first surname	allows for up to 6 different surnames
		sname2	second surname	
		sname3	third surname	
		sname4	fourth surname	
		sname5	fifth surname	
		sname6	sixth surname	
		gnames	given names	all given names in the same field
		dob	date of birth	
		endate	date of enlistment	
		acode	deployment allowance code	
		adescr	deployment allowance description	
		sdate	date of start of deployment	
		edate	date of end of deployment	
		rcode	rank code	
		pstation	pay station	5 digit code
	ppoint	pay point	2 digit code - sub-unit of pay station	
	paddress	pay address		
	disdate	date of discharge		
	disreas	reason for discharge		

Data Source	content of file	variable name	variable description	Variable codes
PMKeyS	deployment data	service	service	ARMY, NAVY, RAAF
		stype	service type	P = permanent, R=reserve
		mstatus	marital status	
Allotment Certificates		sno	service number	
		rank	rank at time of deployment	
		initials	initials	
		sname	surname	
		sdate	date of start of deployment	
	edate	date of end of deployment		



Mortality Study Report

East Timor Health Study

Deliverable Item 2 (Phase 2)

31 July 2007



Centre for Military and Veterans' Health

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Status	Final
Date Saved	26/11/2007



Australian Government
Department of Defence
Department of Veterans' Affairs



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



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Document Administration

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Revision History

Date	Version	Description	Track Changes
31/07/07	1.0	Initial Draft	
26/11/07	2.0	Updated based on comments from the SAC	

Approvals

This document requires the following approvals:

Name	Position	Signature	Date	Version
A/Prof Susan Treloar	First Chief Investigator			
Prof Annette Dobson	Chair Scientific Research Team			
Prof Tony McMichael	Scientific Advisory Committee			

Signed approval forms are filed in the Management section of the project file.

Distribution

This document has been distributed to:

Organisation and Title	Date	Copies
DHSP SRT	26/07/07	electronic
PMO	31/07/07	Electronic

DEFENCE DEPLOYED EAST TIMOR HEALTH STUDY

Deliverable Item 2 (Phase2)

Mortality Study Report

Due Date: 31 July 2007

Executive Summary

1. The Defence Deployed East Timor Health Study is part of a series of studies being conducted by the Centre for Military and Veterans' Health to investigate the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service to East Timor.
2. This is an updated report of the East Timor mortality study. Information on date of enlistment is now utilised in the person-years calculations, and the suggestions received from the Scientific Advisory Committee (SAC) have been built into the document.
3. This report presents the mortality component of the East Timor Health Study. One of the main questions of interest in veterans' health is whether veterans are at an increased risk of dying compared to their Australian contemporaries. Deployment may increase the risk of death in a number of ways. A psychological trauma may lead to later suicide; a physical trauma may lead to a chronic disease that reduces life expectancy; exposure to known or unknown environmental toxins may lead to cancer and death.
4. The aims of the study were:
 - To compare the mortality rate for veterans of the East Timor Operations to a comparison group of Defence personnel who did not deploy as part of the East Timor Operations.
 - To compare the mortality rate for veterans of the East Timor Operations to the general Australian population.
5. A Project Nominal Roll was generated from three sources of data: PMKeyS, the system used by the Department of Defence for all aspects of personnel management; ADFPAY, which is the Australian Defence Force Pay System and is responsible for salary payment for Service personnel; and Allotment Certificates, provided to serving members of the Australian Defence Force deployed on a war-like operation, for the purposes of Veterans' Affairs, taxation and Defence home loans. Defence personnel deployed to East Timor as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE between June 19th

1999 and May 13th 2005 were eligible for inclusion on the Nominal Roll. The comparison group was selected from Defence personnel who were serving in the same period and were frequency matched to the deployed group on service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986).

6. The mortality comparison was based on the entire Nominal Roll (n = 19710) and comparison group (n= 17501). The risk of death in each group was calculated as the total number of deaths divided by the total person-years of follow-up to time of death or end of the study period. Hazard Ratios and 95% confidence intervals were obtained for the veteran group relative to the comparison group.
7. The Standardised Mortality Ratios (SMRs) compared death rates in the veteran and comparison groups to Australian norms. The number of observed deaths were divided by the number of expected deaths for the various age strata and multiplied by 100 to provide the SMRs.
8. The NDI linkage identified 65 deaths in the East Timor veterans and 45 deaths in the non-deployed comparison group between the start of follow-up and 31 December 2005.
9. The all-cause death rate in the East Timor veteran group was slightly higher than that observed in the comparison group (HR 1.18 95% CI (0.80, 1.73)). ADF personnel who deployed to East Timor also had a mortality rate from external causes above that of the frequency matched comparison group (HR 1.41 95% CI (0.83, 2.39)).
10. East Timor veterans and the frequency matched comparisons both had lower all-cause mortality rates than those observed in the general population of the same age (SMRs 43.7 and 35.1 respectively). The rates of deaths from external causes were also lower in the East Timor veterans and comparisons relative to the mortality rates observed in the general population (SMRs 48.6 and 35.4 respectively).

1 Introduction

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a series of studies that aim to research the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service overseas. It is being conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).
2. This report presents the mortality component of the East Timor Health Study, hereafter to be entitled the East Timor Mortality Study.
3. One of the main questions of interest in veterans' health is whether veterans are at an increased risk of dying compared to their Australian contemporaries. Deployment may increase the risk of death in a number of ways. A psychological trauma may lead to later suicide; a physical trauma may lead to a chronic disease that reduces life expectancy; exposure to known or unknown environmental toxins may lead to cancer and death.

1.1 Deployment Health Surveillance Program

4. The Centre for Military and Veterans' Health (CMVH) is a consortium of The University of Queensland, University of Adelaide and Charles Darwin University, which is dedicated to innovatively seeking solutions to military and veterans' health issues through research, education, e-health and public debate. CMVH is conducting a series of studies examining the long-term health issues of deployed Australian Defence personnel, as part of its Deployment Health Surveillance Program (DHSP). The program will look at the health of troops deployed to the Solomon Islands, Bougainville, East Timor and the Middle East Area of Operations (MEAO).
5. The studies to be conducted by CMVH as part of the Deployment Health Surveillance Program aim to eventually develop a prospective, analytic system for longitudinal surveillance of health of ADF personnel who are deployed on specific operations. The core of the Deployment Health Surveillance Program is the formation of an integrated data system which will be established at the CMVH consortium of Universities. The Deployment Health Surveillance Program builds on previous and current national and international studies, and is a critical step in establishing best practice surveillance methodologies and providing a baseline for monitoring the future health of veterans of ADF operations to these regions.
6. In recent times ADF personnel have deployed on active service overseas in a variety of war-like and non war-like roles. Post deployment health concerns have followed wars since at least the United States Civil War (Hyams et al, 1996) and the Boer war (Jones et al, 2002). Focus on the psychological and physical ill health of veterans in the United States became acute following the Vietnam conflict, when the first five years after separating from the military was associated with an increased risk

of dying from motor vehicle accidents, suicide, homicide and accidental poisoning (The Centers for Disease Control Vietnam Experience Study, 1987).

7. In Australia there has been evidence of higher mortality in both Korean and Vietnam Veterans. Korean War veterans have a 21% increase in overall mortality compared with the Australian male population, and an increase in cancer mortality of 31% (Harrex et al, 2003). For Vietnam veterans, the mortality rate is 6% lower than expected compared to the Australian male population, but 23% higher than the mortality of serving non-veterans who did not serve in Vietnam (Wilson et al, 2005).

1.2 The East Timor Deployment

8. East Timor is located in the eastern part of Timor, an island in the Indonesian archipelago that lies between the South China Sea and the Indian Ocean.

9. East Timor had been administered by Portugal until 1974 when civil war broke out between those who favoured independence and those who advocated integration with Indonesia (United Nations webpage).

10. In May 1999 Indonesian and Portuguese Governments entrusted the United Nations Secretary-General with organising and conducting a "popular consultation", in order to determine whether the East Timorese people accepted or rejected a special autonomy for East Timor within the unitary Republic of Indonesia. UN Resolution 1246 authorised the establishment of the United Nations Mission in East Timor (UNAMET) on 11 June 1999. This Resolution stipulated that after the vote, UNAMET would oversee a transition period pending implementation of the decision of the East Timorese people. In a poll in August 1999, approximately 98 percent of registered East Timorese voters went to the polls and rejected the proposed autonomy by a margin of 78 percent in favour of undertaking a process of transition towards independence.

11. Following the announcement of the result, pro-integration militias, at times with the support of elements of the Indonesian security forces, launched a campaign of violence, looting and arson throughout the entire East Timor territory.

12. On 12 September 1999, the Government of Indonesia agreed to accept the offer of assistance from the international community. The Security Council then authorised a unified multinational force (InterFET) under command of Australia to restore peace and security in East Timor, to protect and support UNAMET in carrying out its tasks and, within force capabilities, to facilitate humanitarian assistance operations.

13. This report will study six Operations, spanning a period from 19 June 1999 to 13 May 2005. They include a combination of 'warlike' and 'non-warlike' operations. These were Operation SPITFIRE (6 September 1999 to 19 September 1999), Operation FABER (19 June 1999 to 23 February 2000), Operation WARDEN (16 September 1999 to 10 April 2000), Operation TANAGER (20 February 2000 to 19 May 2002), Operation CITADEL (20 May 2002 to 19 May 2004) and Operation SPIRE (20 May 2004 to 13 May 2005), referred to as the 'East Timor Operations'.

14. Potential harmful exposures on these operations include the potential physical threat from militia and the psychological impact of deployment to a “war-like” environment (such as isolation, loneliness and stress). Other exposures in the East Timor deployments include the risk of infectious disease such as malaria or dengue fever and risk of traffic accidents in hazardous road conditions (Conner, 2006).

2 Aims and Objectives

15. The purpose of the East Timor Mortality Study is to determine whether deployment to East Timor as part of the East Timor Operations was associated with increased mortality. The specific aims of the Study are:

- To compare the mortality rate for veterans of the East Timor Operations to a comparison group of Defence personnel who did not deploy as part of the East Timor Operations.
- To compare the mortality rate for veterans of the East Timor Operations to the general Australian population.

16. In order to address the above aims, the objectives of the East Timor Mortality Study are:

- To formulate the methodology for making comparisons, specifically:
 - The process for matching files with the NDI
 - The required statistical analysis
- To run the analysis for the veterans listed on the East Timor Health Study Nominal Roll, and identify areas of possible improvement for future deployment health studies.
- To collect information on cause of death and compare deaths from different causes between the comparison groups.

3 Methods

3.1 Study design

17. The East Timor Mortality Study is a Retrospective Cohort Study. The mortality of veterans who deployed to East Timor was compared to that of a comparison group of Defence personnel who did not deploy as part of the East Timor Operations, as well as to the general Australian population. Information on mortality was obtained from linkage with the National Death Index (NDI) held by the Australian Institute of Health and Welfare (AIHW). The AIHW is provided with data on vital status from all State and Territory Registries of Births, Deaths and Marriages, as it is a legal requirement to register all deaths in Australia.

18. Comparison of mortality rates of veterans of the East Timor Operations with the Australian population provides an estimate of the mortality of the deployed group relative to the population; however it may result in systematic bias. The Healthy

Worker Effect, which was first described in 1885 (Ogle, 1885), is an effect whereby individuals who are in the workforce are healthier than the average population: the “sicker” or “unhealthier” components of the population are unable to work. Thus comparison of mortality for an occupational group relative to the general Australian population may demonstrate the appearance of reduced mortality in the group of workers. This phenomenon has been extended to the “Healthy Soldier Effect”, where, because of recruitment processes and enlistment requirements, members of the Australian Defence Force are “healthier” than other workers (Wen et al, 1983). More recently in relation to studies conducted in veterans of the first Gulf War, the “Healthy Warrior Effect” has been identified (Haley, 1998). This refers to the fact that Defence personnel who undertake operational deployments are required to be at the highest level of fitness, and have undergone another level of health screening beyond those not deployed.

19. Therefore for the East Timor Mortality Study, comparisons were made between deployed personnel and a comparison group of Defence personnel who were not deployed to East Timor as part of the East Timor Operations, as well as comparisons with the Australian population.

3.2 Study population

20. The list of Defence personnel deployed to East Timor as part of the East Timor Operations who are eligible for inclusion in the East Timor Health Study is termed the East Timor Health Study Nominal Roll. Based on the pilot work undertaken as part of the DHSP, a procedure was developed for generation of the East Timor Health Study Nominal Roll from Department of Defence data. This process involved the use of data from three sources: PMKeyS, the system used by the Department of Defence for all aspects of personnel management; ADFPAY, which is the Australian Defence Force Pay System and is responsible for salary payment for Service personnel; and Allotment Certificates provided to serving members of the Australian Defence Force deployed on a war-like operation, for the purposes of Veterans’ Affairs, taxation and Defence home loans. A variety of other potential sources of data were identified and investigated, but were not considered relevant for generation of the East Timor Nominal Roll. Individuals were included in the data files if they had been allocated a relevant code or descriptor indicating that they had deployed as part of the East Timor Operations.

21. Since a number of the East Timor Operations were classified as warlike, the allotment lists were considered to be a relevant source of data in the construction of the Project Nominal Roll for these deployments.

22. Defence personnel were eligible for inclusion on the East Timor Health Study Nominal Roll if they deployed to East Timor as part of the East Timor Operations between 19 June 1999 and 13 May 2005 (defined as the end of the study period). Individuals deployed as part of this Operation after 13 May 2005 were ineligible for inclusion. In order to be inclusive, individuals whose deployment start date was prior to 19 June 1999 were retained, as it is standard practice for some individuals to deploy early to prepare for the operation. Individuals were included on the Project Nominal

Roll if they were identified in either PMKeyS, ADFPAY or Allotment Certificate data as having been deployed as part of the East Timor Operations.

23. The comparison group for the East Timor Health Study includes Service personnel who were not deployed to East Timor as part of the East Timor Operations, but were potentially eligible for deployment. For scientific rigour and to reduce the effect of confounding as much as possible, it was important that the East Timor Health Study comparison group was as similar to the deployed group as possible on all potential confounding factors except for deployment. To ensure this similarity, the comparison group was selected to reflect the characteristics of the deployed group, using frequency matching.

24. Individuals were eligible for inclusion in the East Timor Health Study Comparison Group if they had not deployed as part of the East Timor Operations, were not included on the East Timor Health Study Nominal Roll, and were a member of a Defence Service between 19 June 1999 and 13 May 2005. Comparison individuals were randomly selected from the PMKeyS database (after excluding individuals on the East Timor Health Study Nominal Roll), and frequency matched to the veteran group on service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986).

25. The East Timor Health Study Nominal Roll included 19710 individuals and the comparison group included 17501 current or past Defence personnel.

26. More detailed information on the East Timor Health Study Nominal Roll can be obtained in the Defence Deployed East Timor Health Study Sample Generation Document (Deliverable 1 of Phase 2 of the East Timor Health Study).

3.3 Data Collection

27. Details (full name, gender and date of birth) were extracted for individuals on the East Timor Health Study Nominal Roll and the comparison group and were forwarded to AIHW for linkage with the National Death Index.

28. Information on the underlying cause of death was available from AIHW for deaths registered up to 31 December 2005. Cause of death (where available) was provided by AIHW using ICD 10 codes.

29. While coded cause of death was available up to the end of 2005, AIHW was still able to provide notifications of date of death (without the cause of death code) through the NDI beyond this date.

30. The receipt of NDI output was managed through the recorded delivery of a zipped password protected file. The password for the file was sent separately by email. This was considered appropriate given the confidential nature of the information. AIHW provided an output of the National Death Index comparison in multiple files, with different files obtained from different matching strategies, and thus generally reflecting varying probabilities of “true” matches.

3.3.1 Validating the death data from AIHW

31. The matching process was undertaken by AIHW in June 2007 using a probabilistic matching program. This is necessary because details on the death records and in the project nominal roll may not be completely accurate. For example a birth day may be entered as '1' in one source and '7' in another due to handwriting, misreading or even random error.

32. The AIHW program compares several variables in the health study data file, including names and date of birth, with these variables in the NDI data. The matching process will provide some "exact" matches, where names, date of birth and sex are exactly the same in both files. There will usually be many more "possible" matches – some of which may be very likely and others highly unlikely. Therefore as part of the process of determining whether the individual has died, some examination of all of the possible matches is required. All possible matches are provided, in various files, so that the user can undertake an appropriate check to identify acceptable matches. Because the number of potential matches can be very high, it is not feasible to examine all possible individual matches. Thus a set of rules has been developed to facilitate this process and identify only likely matches for manual checking (Annex 1).

33. Additional information from a variety of sources was used to check the validity of information obtained from the NDI. A Google search (<http://www.google.com.au>), as well as searches on the Australian Defence website (<http://www.defence.gov.au/index.htm>) and the Australian Broadcasting Corporation news website (<http://www.abc.net.au/news/>) were undertaken on names in the "possibly dead" groups in an effort to confirm vital status.

34. Information in the date of death field from the PMKeyS records was also used as a cross-check of the NDI data.

35. The above checks allowed some individuals in the group of "possibly dead" to be allocated to the "definitely dead" or "definitely alive" groups, with the vital status of some individuals remaining uncertain.

3.4 Statistical Methods

36. This section outlines the statistical methods undertaken for the East Timor Mortality Study.

37. Because AIHW do not have good coverage of deaths in the most recent three months, the follow-up date is typically actually three months less than the date of request. Thus the end of the follow-up period for assessing mortality in this analysis was 31 December 2005, as cause of death was available for notification up to the end of 2005. However, a sensitivity analysis was also performed looking at deaths notified up to 20 March 2007.

38. For the purposes of statistical analyses, only individuals with date of death on or before 31 December 2005 who were identified as “exact” matches from the NDI linkage, or “possible” matches with verification of death through clerical check or an alternate source of information were classified as having died and were defined as “verified deaths”. All other individuals were classified as alive.

39. There are two main comparisons to the analysis of the mortality data: comparison of the validated deaths for veterans with the number of deaths amongst the comparison group of service personnel; and comparison with the expected deaths based on Australian population data. Comparing observed death rates to the general Australian population may be biased because ADF personnel are generally fitter and healthier than the general population. This is called the “healthy soldier effect” and will bias true adverse associations towards the null hypothesis of no effect (Haley, 1998). To somewhat overcome this problem the observed number of deaths can also be compared to a non-deployed comparison group.

3.4.1 Mortality Relative to Comparison Group

40. Examining mortality in the East Timor Health Study veteran group relative to the comparison group involved firstly determining the risk of death in each group. This is defined as the number of deaths divided by the total person-years of follow-up for each group.

41. Person-years is defined as the period of observation and hence covers the time when the subject could have possibly died. Subjects commenced contributing person years from the most recent date of the OP FABER start date (19th June 1999) or the date a participant enlisted into the ADF. Follow-up continued until 31st December 2005 or to the date of death, whichever came sooner.

42. Relative risk was then calculated as the risk of mortality in the veteran group divided by the risk of mortality in the comparison group. The 95% confidence intervals give the range of values we would expect to find the measure of effect, with a probability of 95%. If the confidence interval does not include 1, the risks are statistically significantly different for the two groups.

43. Relative risks and 95% confidence intervals were obtained for subgroups based on specific causes of death where numbers permitted.

44. Adjusted hazard ratios were calculated using Cox regression (Cleves et al). These results adjusted for differences in service, service type (permanent or reserve), sex and age between the East Timor veteran and comparison groups. These are the estimates presented in Table 2 of the results section.

3.4.2 Mortality Relative to the Australian Population

45. Comparison of mortality in the study groups with the Australian population involves comparing the actual or observed number of deaths, with the number of

deaths we would expect if the death rates were similar between the study sample and the population.

46. The expected number of deaths was based on population and mortality data from the Australian Bureau of Statistics (AIHW) for the years 1999 to 2005. The expected number of deaths in the population was calculated by multiplying the number of person years in each 5-year age and sex group for each calendar year by the mortality rate for that age / sex group and year.

47. The Standardised Mortality Ratio (SMR) was used to compare deaths rates in the veteran population to Australian norms. It is defined as:

$$\text{SMR} = 100 \times (\text{Observed number of deaths} / \text{Expected number of deaths}).$$

48. An SMR equal to 100 indicates no difference between the observed and expected number of cancers. An SMR above 100 means that the observed number of cases was higher than expected, and an SMR below 100 indicates that the number of cases was lower than the expected number. An overall SMR (across sex and all age groups) was calculated using the direct method (dos Santos Silva, 1999). Statistical p-values for the difference between the observed number of deaths and the expected number based on Australian population data was calculated using Fisher's exact method (Rothman, 1979).

49. The 95% confidence intervals give the range of values we would expect to find the measure of effect, with a probability of 95%. For the SMR results, if the confidence interval does not include 100, mortality is statistically significantly difference between the two populations.

50. SMRs and 95% confidence intervals were obtained for subgroups based on specific causes of death where numbers permitted.

3.5 Sample size

51. The East Timor Mortality Study was performed on the full Nominal Roll and comparison group selected as opposed to a sample of deployed personnel to maximise power of statistical comparisons.

3.6 Ethics

52. Ethical clearance was received from the Australian Institute of Health and Welfare (AIHW) Ethics Committee (protocol no 06/542), the University of Queensland Behavioural & Social Sciences Ethical Review Committee (UQBSSERC) (protocol no 2006000886) and the Australian Defence Human Research Ethics Committee (ADHREC) (protocol no 449/06), to conduct the Mortality Studies.

4 Results

4.1 Characteristics of Sample

53. As expected, because of the method of selecting the comparison group, the demographic characteristics of the exposed and unexposed groups were similar.

54. The mean age of the East Timor veteran and comparison groups on the commencement of follow-up was very similar {28.4 (SD 7.5) vs 28.5 (SD 8.6) years respectively}. A breakdown of the age-sex distribution of the nominal roll and comparison group is presented in Table 1. Even though broad age cohorts (1938-1967, 1968-1974 and 1975-1986) were used in the frequency matching of the comparison group to the Nominal Roll, the age distribution is very similar between the two study groups. The distributions of service and service type (Permanent or Reserve) and sex were also well balanced between the nominal roll and comparison group (Table 1).

Table 1: Demographic characteristics of Defence personnel in the East Timor Mortality Study

	East Timor Veterans n = 19,710		Comparison group n = 17,501	
	n	%	n	%
Age				
<25	7,827	39.7	7,518	43.0
25-34	8,234	41.8	6,031	34.5
35-44	3,030	15.4	3,110	17.8
45-54	576	2.9	830	4.7
55-64	28	0.1	12	0.1
Unknown date of birth	15			
Sex				
Male	17,863	90.7	15,695	89.7
Female	1,832	9.3	1,806	10.3
Unknown gender	15			
Service				
Navy	2,249	11.4	2,233	12.8
Army	15,825	80.3	13,642	77.9
Air force	1,636	8.3	1,626	9.3
Service type				
Regular/Permanent	18,411	93.5	16,240	92.8
Reserve	1,284	6.5	1,261	7.2
Unknown service type	15			

4.2 Mortality

55. There were 110 deaths identified through the linkage with NDI data before the end of follow-up 31 December 2005. There were 7 death records identified before this cut-off date on the PMKeyS database that were not picked up on the NDI linkage. Primary analyses were undertaken using the 110 deaths identified through the NDI linkage, as there may be differential bias in reporting and coding of death data on PMKeyS between the veteran and comparison groups.

56. There were 65 deaths in 122453 person-years in the East Timor veterans and 45 deaths in 100306 person-years among the comparisons. Therefore the death rates in the veterans and comparisons were 0.53 per 1000 person-years and 0.45 per 1000 person-years respectively.

Table 2: Mortality from different causes in the East Timor veteran group and the comparison group up to 31 December 2005

	Number of deaths		Hazard Ratio*	95% CI	p-value#
	East Timor Veterans	East Timor Comparisons			
	Pyrs = 122453	Pyrs = 100306			
All Causes	65	45	1.18	(0.80, 1.73)	0.40
Cancer C00-C97	7	10			
Diseases of the circulatory system I00-I99	3	7			
All external causes V01-Y89	39	22	1.41	(0.83, 2.39)	0.20
Intentional self harm X60-X84	16	10	1.26	(0.57, 2.78)	0.57
Motor vehicle accidents V01-V79	16	8	1.70	(0.72, 3.99)	0.22

* Hazard ratio adjusted for differences in age, sex, service and service type

p-value from Cox proportional hazards model

57. The all-cause death rate in the East Timor veteran group was above (HR 1.18 (95% CI (0.80, 1.73))) that observed in the comparison group (Table 2). An increased rate in the East Timor veterans relative to the comparisons was also observed in the deaths from external causes (HR 1.41 (95% CI (0.83, 2.39))). The rates of mortality from Intentional self harm and Motor vehicle accidents were higher in the East Timor veterans relative the comparison group (HR 1.26 and 1.70 respectively). None of the Hazard ratios calculated indicated a statistically significant difference.

58. The Hazard Ratios associated with comparisons of deaths from more specific causes have not been presented because they are based on a small number of events.

59. AIHW provided notifications of death beyond 2005 without the corresponding cause of death. Because AIHW do not have good coverage of deaths in the most recent three months, the follow-up date for this calculation was three months less than the date of request. The relative risk of all-cause mortality was therefore calculated for an extended follow-up period using data up to 20 March 2007. In this extended follow-up period there were 82 deaths identified in the veteran group and 62 deaths in the comparisons. The person-years of follow-up were 146327 and 121499 in the veterans and the comparison group respectively. Using this data the unadjusted Relative Risk of all-cause mortality in East Timor veterans relative to the comparison group was 1.10 (95% CI (0.78, 1.55)).

60. The all-cause death rates observed in the general population were compared to the East Timor veterans and the East Timor comparison group. These results are presented in Table 3. The mortality of the East Timor veterans was lower than that expected in the general population (SMR 41.8 95% CI (32.2, 53.2)). The mortality of East Timor comparisons was also significantly lower than the rate seen in the general population (SMR 32.8 95% CI (23.9, 43.9)).

Table 3: All-cause standardised mortality ratio in the East Timor veteran and comparison groups up to 31 December 2005

	Person-years	Observed deaths	Expected deaths	SMR	95% CI	p-value [#]
East Timor veterans	122453	65	148.9	43.7	(33.7, 55.6)	<0.001
East Timor comparisons	100306	45	128.2	35.1	(25.6, 47.0)	<0.001

SMR=Standardised Mortality Ratio

p-value based on the chi-squared statistic

61. Sixty one out of the 110 deaths identified through the NDI before 31 December 2005 were from external causes. The rates of death from external causes in the East Timor cohorts were compared to the death rates in the general population using Standardised Mortality Ratios (Table 4).

Table 4: All external cause standardised mortality ratio in the East Timor veteran and comparison groups up to 31 December 2005

	Person-years	Observed deaths	Expected deaths	SMR	95% CI	p-value [#]
East Timor veterans	122453	39	80.2	48.6	(34.6, 66.5)	<0.001
East Timor comparisons	100306	22	62.1	35.4	(22.2, 53.7)	<0.001

SMR=Standardised Mortality Ratio

p-value based on the chi-squared statistic

62. The rates of mortality from external causes in East Timor veterans (SMR 48.6 95% CI (34.6, 66.5)) and comparisons (SMR 35.4 95% CI (22.2, 53.7)) were lower than the rates expected in the general population of the same age. The magnitude of these effects was consistent with the all-cause SMRs observed in Table 3.

5 Discussion

63. The main finding is that the death rate in the East Timor veterans was slightly above that in the comparison group who did not deploy to East Timor. This result was not statistically significant.

64. There was also an increased rate of deaths from external causes in the East Timor veterans relative to the comparison group. Within these deaths from external causes, there were higher rates of deaths from intentional self harm and motor vehicle accidents in the East Timor veterans compared to the comparisons. None of the increases in mortality in the veteran group were statistically significant.

65. Even though there was an increase in the mortality from external causes in the veteran group relative to the comparisons, the rate of mortality from external causes in the veterans was still significantly lower than that expected in the general population of the same age.

66. It was noted that 8 out of the 16 deaths from motor vehicle accidents in the East Timor veterans were motorcycle accidents (compared to 1 out of 8 of the motor vehicle deaths in the comparison group). These results are based on small numbers and as such must be interpreted with caution. It will be interesting to compare more specific causes of death such as these as the follow-up period increases, allowing for more powerful comparisons.

67. There were 11 deaths in the study with cause of death classified as ICD 10 code R99 'Other ill-defined and unspecified causes of mortality'. Inspection of these deaths indicated that 10 of these 11 death records were ADF members who died overseas. No attempt was made to reassign these death codes to a more specific cause. For this reason a comparison of all disease-related causes (A00-R99) was not performed in this report.

68. It is important to consider the potential sources of bias in this and future mortality studies.

69. A 'Healthy Warrior effect' may occur as Defence personnel who undertake operational deployments are required to be at the highest level of fitness. Those on the Nominal Roll must have been fit to deploy to East Timor at the time of their deployment. The comparison group were not required to be fit to deploy over the same time period. Medical classification was not used as a stratification variable in the generation of the comparison group because of difficulties in migrating the data from the PMKeyS records back to 1999. This may be a potential confounder as the comparison group may be 'less healthy' and more susceptible to negative health outcomes than the group who deployed to East Timor. In this study the personnel in the East Timor comparison group had a statistically significantly lower death rate than that observed in the general population (SMR 32.8).

70. Since the procedure of matching deaths with the NDI is based on a probabilistic routine it is possible that some real deaths will not be detected. Seven deaths identified on PMKeyS were not picked up by the NDI matching results. At least one of these cases was known to have died overseas. However, it is not expected that

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there was differential bias in the ascertainment of death between the veteran and comparison cohorts.

71. The average follow-up period in this study is 6.0 years. This length of follow-up is unlikely to be sufficient to show trends in cancer mortality and from other diseases which develop over a longer time period. Comparison of mortality at an increased follow-up time will allow more informative and specific comparisons, with greater statistical power to detect true effects.

72. To detect a large hypothesised difference of 50% (RR 1.5) in mortality with 80% power, 80 deaths in the East Timor comparison group and 135 deaths in the East Timor veterans are required (total of 215). Based on death rates for Australian males (AIHW 2007) it is estimated that this number of deaths would be achieved by 2002. However, this is clearly an underestimate, due in part to the healthy soldier effect, since the results in this report show that only 45 deaths have been observed in the East Timor comparison group up to the end of 2005.

73. To detect a 30% increase in all cause mortality (RR 1.3) with 80% power, 493 deaths would need to have been observed over the study period (293 deaths in the East Timor veterans versus 200 deaths in the East Timor comparisons). Based on death rates for Australian males and assuming death rates remain at the 2005 level it is estimated that this number of deaths be accrued by 2007.

74. Similarly to detect a 20% increase in mortality among the East Timor veterans (RR 1.2) at 80% power, a total of 798 events are required (541 in the East Timor veterans versus 400 in the East Timor comparisons). Based on the same assumptions 80% power may be achieved by including all deaths up to the end of 2013.

75. For the study to be powerful enough to detect 10% increase in mortality in the East Timor veterans at 80% power, an increased length of follow-up would be required. Using the same death rates to predict mortality, it is estimated that 80% power may be gained by the year 2031.

76. These calculations of the time taken to achieve 80% power are likely to be underestimates. The estimates are based on male death rates for all participants in the study. 10% of the study population are women, and the mortality in this group is likely to be lower than that assumed. Population death rates have been falling over time as life expectancy increases and no adjustment was made for this in the calculations presented. In addition, the death rate of the personnel in the East Timor mortality study are most probably going to be lower than the death rate in the Australian population due to the Healthy Soldier effect. For these reasons the anticipated time required to achieve 80% power should be interpreted cautiously.

77. It is also important to factor in the time lag between the events occurrence and when the data is available from AIHW. Presently for mortality studies this is a 2 year interval and for cancer incidence 4 years.

6 Summary, Conclusions and Recommendations

78. The all-cause mortality rate was slightly higher in the East Timor veterans than in the frequency matched comparisons. Non-significant increases in external causes of death were also observed in the East Timor veterans relative to the comparison group. It is recommended that this mortality analysis be repeated at a future time point to determine whether the excess of deaths from external causes are still evident. Such an analysis based on an increased number of events will allow comparisons of mortality from more specific causes to be performed.

79. The mortality rates observed in the veteran and comparison cohorts were both significantly lower than the rates observed in the general population. These results based on large cohorts provide good evidence of a Healthy Soldier effect in the ADF relative to the civilian population.

80. The East Timor Mortality Study includes 19710 individuals and the comparison group included 17501 current or past Defence personnel. Through future mortality linkages it is anticipated that these large cohorts will be valuable in assessing any increased mortality risks associated with the East Timor deployment, as well as patterns of mortality in members of the ADF in the period 1999-2005 relative to the Australian population.

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Annex 1

Rules for actioning matches from the National Death Index by pass number, weight and sex

Pass	Quality
g1ex	All matches are of the highest quality possible.
g4dmy	Very high quality matches at top of file. Anything with a weight above 20 is a likely true match. Dubious matches may start appearing at a weight of around 16. Very few true matches below 10, though some may be found even below 5.
g2ay, g3sy, g5dy, g7my, g9dm	Any match with a weight above 30 is a good candidate for a true match. Below 30 and down to 20 there will be many plausible-looking matches but how many of them are true is up for debate. It really depends on your own judgement and the strictness you wish to apply to your study. Accepting matches with a weight below 20 is entering dangerous territory. Note that g7my and g9dm will have more true matches than the others, presumably because these kinds of errors in the birth date are more common.
g6a, g8s, g10y, g11d, g12m	All matches are dubious. You might accept a match if the weight is particularly high, say above 35, and the two birth dates are “close”, e.g. 12/03/1934 and 11/03/1935.
g13n	All matches are highly dubious. You should only accept a match if its weight is extremely high, say above 40, and there are other compelling reasons.
b1y	Remember: even if the NDI record has a full date of birth you should ignore it because it is, or is likely to be, a dummy. Only consider the year. With this in mind, these matches are difficult to resolve. How many people might share the same name and the same birth year? As a rough guide, if you accept all matches with a weight of above 25 and reject those below, you might be about right in terms of overall numbers of true matches. You will probably have accepted some false matches but these may be approximately cancelled out by the true matches below 25 that you rejected.
b2n	You can apply similar rules to whatever you used for pass b1y but be more wary. If you used a straight cutoff rule like that suggested above then you should probably raise the cutoff for this pass by, say, 3.



Cancer Incidence Study Report

East Timor Health Study

Deliverable Item 2 (Phase 2)

28 September 2007



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Approvals

This document requires the following approvals:

Name	Position	Signature	Date	Version
A/Prof Susan Treloar	First Chief Investigator			
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Signed approval forms are filed in the Management section of the project file.

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DEFENCE DEPLOYED EAST TIMOR HEALTH STUDY

Deliverable Item 2 (Phase2)

Cancer Incidence Study Report

Due Date: 28 September 2007

Executive Summary

1. The Defence Deployed East Timor Health Study is part of a series of studies being conducted by the Centre for Military and Veterans' Health to investigate the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service to East Timor.
2. In addition the suggestions received from the Scientific Advisory Committee (SAC) have been incorporated into the report.
3. This report presents the cancer incidence component of the East Timor Health Study. One of the main questions of interest in veterans' health is whether veterans are at an increased risk of cancer compared to their Australian contemporaries. Deployment may increase the risk of cancer in a number of ways. Exposure to known or unknown environmental toxins may lead to cancer and death. Differences in diet and in the prevalence of smoking and alcohol consumption whilst on deployment may also lead to an increased risk of cancer.
4. The aims of the study were:
 - To compare cancer incidence for veterans of East Timor Operations to a comparison group of Defence personnel who did not deploy as part of these operations.
 - To compare cancer incidence for veterans of East Timor Operations to the general Australian population.
5. A Project Nominal Roll was generated from three sources of data: PMKeyS, the system used by the Department of Defence for all aspects of personnel management; ADFPAY, which is the Australian Defence Force Pay System and is responsible for salary payment for Service personnel; and Allotment Certificates, provided to serving members of the Australian Defence Force deployed on a war-like operation, for the purposes of Veterans' Affairs, taxation and Defence home loans. Defence personnel deployed to East Timor as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE between June 19, 1999 and May 13, 2005 were eligible for inclusion on the Nominal Roll. The

comparison group was selected from Defence personnel who were serving in the same period and were frequency matched to the deployed group on service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986).

6. The cancer incidence comparison was based on the entire Nominal Roll (n = 19,710) and comparison group (n= 17,501). The risk of cancer in each group was calculated as the total number of cancers divided by the total person-years of follow-up to time of death or end of the study period. Rate Ratios and 95% confidence intervals were obtained for the veteran group relative to the comparison group.
7. The Standardised Incidence Ratios (SIRs) compared cancer incidence rates in the veteran and comparison groups to Australian norms. The number of observed cancers was divided by the number of expected cancers for the various age strata and multiplied by 100 to provide the SIRs.
8. The linkage with the National Cancer Statistics Clearing House identified 79 cancers in the East Timor veterans and 71 cancers in the non-deployed comparison group between the start of follow-up and 31 December 2003.
9. The overall cancer incidence rate in the East Timor veteran group was similar to that observed in the comparison group (RR 0.88 95% CI (0.63, 1.23)).
10. East Timor veterans and the frequency matched comparisons both had similar overall cancer incidence rates to those observed in the general population of the same age (SIRs 106.8, 95% CI (84.6, 133.1) and 103.7, 95% CI (81.0, 130.8) respectively).
11. Further follow-up of the East Timor study population will increase the statistical power of the study and allow comparisons of specific cancer sites to be compared. Although the veteran and comparison groups were well matched in terms of age, gender, service and service type (permanent or reserve), biases may have occurred because of differences in mobility, fitness, length of enlistment in the ADF and deployment history between the veteran and comparison groups.

1 Introduction

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a series of studies that aim to research the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service overseas. It is being conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).
2. This report presents the cancer incidence component of the East Timor Health Study, hereafter to be entitled the East Timor Cancer Incidence Study.
3. Deployment may increase certain behaviours and lifestyle factors such as smoking and alcohol consumption which can lead to an increased risk of cancer. A UK study of smoking rates of British armed forces in the second Gulf War indicated that the prevalence of smoking increased whilst on deployment (Boos et al, 2004).
4. In recent times ADF personnel have deployed on active service overseas in a variety of war-like and non war-like roles. Post deployment health concerns have followed wars since at least the United States Civil War (Hyams et al, 1996) and the Boer War (Jones et al, 2002).
5. In Australia there has been evidence of higher cancer incidence in both Korean and Vietnam veterans, compared to the general population. Australian veterans of the Korean War have been found to have a significantly greater overall cancer risk than the Australian community, with an excess of between 13% and 23% (AIHW, 2003). Australian Vietnam veterans have also been found to have a significant elevated overall cancer incidence rate, 15% higher than expected compared to the Australian male population (Wilson et al, 2005).

1.1 Deployment Health Surveillance Program

6. The Centre for Military and Veterans' Health (CMVH) is a consortium of The University of Queensland, University of Adelaide and Charles Darwin University, which is dedicated to innovatively seeking solutions to military and veterans' health issues through research, education, e-health and public debate. CMVH is conducting a series of studies examining the long-term health issues of deployed Australian Defence personnel, as part of its Deployment Health Surveillance Program (DHSP). The program will look at the health of troops deployed to the Solomon Islands, Bougainville and East Timor.
7. The studies to be conducted by CMVH as part of the Deployment Health Surveillance Program aim to eventually develop a prospective, analytic system for longitudinal surveillance of health of ADF personnel who are deployed on specific operations. The core of the Deployment Health Surveillance Program is the formation of an integrated data system which will be established at the CMVH consortium of Universities. The Deployment Health Surveillance Program builds on previous and

current national and international studies, and is a critical step in establishing best practice surveillance methodologies and providing a baseline for monitoring the future health of veterans of ADF operations to these regions.

1.2 The East Timor Deployment

8. East Timor is located in the eastern part of Timor, an island in the Indonesian archipelago that lies between the South China Sea and the Indian Ocean.
9. East Timor had been administered by Portugal until 1974 when civil war broke out between those who favoured independence and those who advocated integration with Indonesia (United Nations webpage).
10. In May 1999 Indonesian and Portuguese Governments entrusted the United Nations Secretary-General with organising and conducting a "popular consultation", in order to determine whether the East Timorese people accepted or rejected a special autonomy for East Timor within the unitary Republic of Indonesia. UN Resolution 1246 authorised the establishment of the United Nations Mission in East Timor (UNAMET) on 11 June 1999. This Resolution stipulated that after the vote, UNAMET would oversee a transition period pending implementation of the decision of the East Timorese people. In a poll in August 1999, approximately 98 percent of registered East Timorese voters went to the polls and rejected the proposed autonomy by a margin of 78 percent in favour of undertaking a process of transition towards independence.
11. Following the announcement of the result, pro-integration militias, at times with the support of elements of the Indonesian security forces, launched a campaign of violence, looting and arson throughout the entire East Timor territory.
12. On 12 September 1999, the Government of Indonesia agreed to accept the offer of assistance from the international community. The Security Council then authorised a unified multinational force (InterFET) under command of Australia to restore peace and security in East Timor, to protect and support UNAMET in carrying out its tasks and, within force capabilities, to facilitate humanitarian assistance operations.
13. The East Timor deployment consisted of six Operations, spanning a period from 19 June 1999 to 13 May 2005. They included a combination of 'warlike' and 'non-warlike' operations. These were Operation SPITFIRE (6 September 1999 to 19 September 1999), Operation FABER (19 June 1999 to 23 February 2000), Operation WARDEN (16 September 1999 to 10 April 2000), Operation TANAGER (20 February 2000 to 19 May 2002), Operation CITADEL (20 May 2002 to 19 May 2004) and Operation SPIRE (20 May 2004 to 13 May 2005), referred to as the 'East Timor Operations'. Operation SPIRE extended beyond May 2005, but the Nominal Roll for this study only includes those deployed up until 13 May 2005.
14. Potential harmful exposures on these operations include the potential physical threat from militia and the psychological impact of deployment to a "war-like" environment (such as isolation, loneliness and stress). Other exposures in the East

Timor deployments include the risk of infectious disease such as malaria or dengue fever and risk of traffic accidents in hazardous road conditions (Conner, 2006).

15. The InterFET Pilot Project Report (Kitchener et. al., 2007) highlighted that asbestos exposure from damaged buildings was a possible risk factor in East Timor operations. Anecdotal evidence and Defence Safety Management Agency (DSMA) reports suggest that ADF personnel were involved in the clearing of asbestos-containing debris without the use of appropriate personal protective equipment (PPE) or safety measures. It was reported in Parliament on 21 February 2001 that:

“the health risk to personnel conducting clean-up activities was assessed as medium to high. The risk to personnel subsequently occupying buildings was assessed as low to varying degrees, all personnel deployed to East Timor are likely to have been exposed to higher levels of asbestos fibres than would normally be encountered in Australia” (ANAO, 2002)

16. A Senate Legislative Committee Brief (Senate, 2002) also noted that local reconstruction practice involved crushing building rubble (including asbestos) to make mortar for buildings, and how deployed personnel were to be cautious about drilling concrete structures without suitable protection from dusts and fibres.

17. Although the acute health effects of exposure to asbestos are not well identified, the long-term effects of exposure are well documented. Long-term exposure to asbestos can result in both non-cancerous (Pneumoconiosis) and cancerous conditions. Asbestos is well recognised as a long-term cause of lung cancer and mesothelioma (a form of pleural cancer). These conditions are recognised as having a long latency period of about 10-40 years (ATSDR, 1989).

2 Aims and Objectives

18. The purpose of the East Timor Cancer Incidence Study is to determine whether deployment to East Timor as part of the East Timor Operations is associated with increased cancer incidence. The specific aims of the Study are:

- To compare cancer incidence for veterans of the East Timor Operations to a comparison group of Defence personnel who did not deploy as part of the East Timor Operations.
- To compare cancer incidence for veterans of the East Timor Operations to the general Australian population.

19. In order to address the above aims, the objectives of the East Timor Cancer Incidence Study are:

- To formulate the methodology for making comparisons, specifically:
 - The process for matching files with the National Cancer Statistics Clearing House and the Victorian Cancer Registry.
 - The required statistical analysis

- To run the analysis for the veterans listed on the East Timor Health Study Nominal Roll, and identify areas of possible improvement for future deployment health studies.
- To collect information on type of cancer and compare cancers from different causes between the comparison groups.

3 Methods

3.1 Study design

20. The East Timor Cancer Incidence Study is a Cohort Study. The cancer incidence of veterans who deployed to East Timor was compared to that of a comparison group of Defence personnel who did not deploy as part of the East Timor Operations, as well as to the general Australian population. Information on cancer incidence was obtained from linkage with the National Cancer Statistics Clearing House (NCSCCH) held by the Australian Institute of Health and Welfare (AIHW) and the Victorian Cancer Registry. AIHW is provided with data on cancer from all State and Territory Cancer Registries, with the exception of Victoria, as the Victorian Cancer Registry undertake their own record linkage. It is a legal requirement to register all cancers, except for non-melanocytic skin cancer, in Australia.

21. Comparison of cancer rates of veterans of the East Timor Operations with the Australian population provides an estimate of the cancer incidence of the deployed group relative to the population; however it may result in systematic bias. The Healthy Worker Effect, which was first described in 1885 (Ogle, 1885), is an effect whereby individuals who are in the workforce are healthier than the average population: the “sicker” or “unhealthier” components of the population are unable to work. Thus comparison of mortality for an occupational group relative to the general Australian population may demonstrate the appearance of reduced mortality in the group of workers. This phenomenon has been extended to the “Healthy Soldier Effect”, where, because of recruitment processes and enlistment requirements, members of the Australian Defence Force are “healthier” than other workers (Wen et al, 1983). More recently in relation to studies conducted in veterans of the first Gulf War, the “Healthy Warrior Effect” has been identified (Haley, 1998). This refers to the fact that Defence personnel who undertake operational deployments are required to be at the highest level of fitness, and have undergone another level of health screening beyond those not deployed.

22. Therefore for the East Timor Cancer Incidence Study, comparisons were made between deployed personnel and a comparison group of Defence personnel who were not deployed to East Timor as part of the East Timor Operations, as well as comparisons with the Australian population.

3.2 Study population

23. The list of Defence personnel deployed to East Timor as part of the East Timor Operations who are eligible for inclusion in the East Timor Health Study is termed the East Timor Health Study Nominal Roll. Based on the pilot work undertaken as part of the DHSP, a procedure was developed for generation of the East Timor Health Study Nominal Roll from Department of Defence data. This process involved the use of data from three sources: PMKeyS, the system used by the Department of Defence for all aspects of personnel management; ADFPAY, which is the Australian Defence Force Pay System and is responsible for salary payment for Service personnel; and Allotment Certificates, provided to serving members of the Australian Defence Force deployed on a war-like operation, for the purposes of Veterans' Affairs, taxation and Defence home loans. A variety of other potential sources of data were identified and investigated, but were not considered relevant for generation of the East Timor Nominal Roll. Individuals were included in the data files if they had been allocated a relevant code or descriptor indicating that they had deployed as part of the East Timor Operations.

24. Defence personnel were eligible for inclusion on the East Timor Health Study Nominal Roll if they deployed to East Timor as part of the East Timor Operations between 19 June 1999 and 13 May 2005 (defined as the end of the study period). Individuals deployed as part of these Operations after 13 May 2005 were ineligible for inclusion. In order to be inclusive, individuals whose deployment start date was prior to 19 June 1999 were retained, as it is standard practice for some individuals to deploy early to prepare for the operation. Individuals were included on the Project Nominal Roll if they were identified in PMKeyS, ADFPAY or Allotment certificate data as having been deployed as part of the East Timor Operations.

25. The comparison group for the East Timor Health Study includes Service personnel who were not deployed to East Timor as part of the East Timor Operations, but were potentially eligible for deployment. For scientific rigour and to reduce the effect of confounding as much as possible, it was important that the East Timor Health Study comparison group be as similar to the deployed group as possible on all potential confounding factors except for deployment. To ensure this similarity, the comparison group was selected to reflect the characteristics of the deployed group, using frequency matching.

26. Individuals were eligible for inclusion in the East Timor Health Study comparison group if they had not deployed as part of the East Timor Operations, were not included on the East Timor Health Study Nominal Roll, and were a member of a Defence Service at some point in the period 19 June 1999 to 13 May 2005. Comparison individuals were randomly selected from the PMKeyS database (after excluding individuals on the East Timor Health Study Nominal Roll), and frequency matched to the veteran group on service (Navy, Army or Air Force), service type (Permanent or Reserve), sex and birth year (1938-1967, 1968-1974 or 1975-1986)

27. The East Timor Health Study Nominal Roll included 19,710 individuals and the comparison group included 17,501 current or past Defence personnel.

28. More detailed information on the East Timor Health Study Nominal Roll can be obtained in the Defence Deployed East Timor Health Study Sample Generation Document (Deliverable 1 of Phase 2 of the East Timor Health Study).

3.3 Data Collection

29. Details (full name, gender and date of birth) were extracted for individuals on the East Timor Health Study Nominal Roll and the comparison group and were forwarded to AIHW for linkage with the National Cancer Statistics Clearing House (NCSCH).

30. The format of the data required by AIHW was the same as that required for linkage with the National Death Index (NDI). The format has been detailed in Annex 1. The results of the cancer incidence linkage with the NCSCH were to be given in de-identified form. For this reason it was necessary to supply AIHW with the study group of each participant as an additional field.

31. In addition AIHW was also provided a 'date of entry into the cohort' for each study participant. This enabled the staff at AIHW to correctly classify incidence cancers as baseline or follow-up events.

32. After discussion with the Victorian Cancer Registry, AIHW was permitted to link the data supplied by DHSP with the cancer records from Victoria as well as the other Australian States and Territories. This ensured that the same cancers were not notified twice in two separate linkages.

33. The receipt of NCSCH output from AIHW was managed through the recorded delivery of a zipped password protected file. The password for the file was sent separately by email. This was considered appropriate given the confidential nature of the information. Due to small numbers and because individual consent from each participant was not obtained, the results provided by AIHW were in de-identified, tabular form. AIHW provided an output of the cancer linkage in an Excel file with the headings: group (study arm), sex, birth date range (5-year intervals), year of diagnosis and International Classification of Disease summary code (ICD-10). The results were split by those diagnosed before the 'date of entry into the cohort' and those diagnosed after this date.

34. If a subject had more than one cancer then AIHW returned this output in a separate table. This would allow the primary analysis to focus on the person's first cancer diagnosis.

3.4 Statistical Methods

35. This section outlines the statistical methods undertaken for the East Timor Cancer Incidence Study.

36. Because the AIHW records were current up to the end of 2003, all participants were followed up from 19 June 1999 or from the date of enlistment to Defence if the subject joined after this date. Follow-up continued up to 31 December 2003. Participants who died before 31 December 2003 were censored at date of death.

37. There are two main comparisons to the analysis of the cancer data: comparison of the number of cancers for veterans with the number of cancers amongst the comparison group of service personnel; and comparison with the expected cancer incidence based on Australian population data. Comparing observed cancer rates to the general Australian population may be biased because ADF personnel are generally fitter and healthier than the general population. This is called the “healthy soldier effect” and will bias true associations towards the null hypothesis of no effect (Haley, 1998). To somewhat overcome this problem the observed number of cancers can also be compared to a non-deployed comparison group.

38. Non-melanocytic skin cancers were not included in any of the comparisons presented since not all registries collect information on this type of cancer. These cancers are indexed as ‘C44 Other malignant neoplasms of skin’ in ICD-10.

3.4.1 Cancer incidence Relative to Comparison Group

39. Examining cancer incidence in the East Timor Health Study veteran group relative to the comparison group involved firstly determining the risk of cancer in each group. This is defined as the number of cancers divided by the total person-years of follow-up for each group.

40. The cancer incidence analysis performed included subjects’ first primary cancers diagnosed after date of entry to the study cohort as opposed to all cancers diagnosed. Patients were not censored at diagnosis of cancer because the exact date of diagnosis was not known. All participants who had a cancer before the date of entry into the cohort were eligible for inclusion in the study and were included in the statistical analysis, but cancers diagnosed prior to the deployment start date were not included in the follow-up analyses.

41. Person-years are defined by the period of observation, and hence cover the time when the subject could have possibly been diagnosed with cancer. In this study an individual’s person-years of exposure spans from the 19 June 1999 or the date of enlistment into the ADF, whichever was later, to the date of death or follow-up date (31 December 2003). Because the cancer incidence data was returned to CMVH in de-identified form the person-years of risk was based on time to death or end of study follow-up as opposed to time to first cancer.

42. The Relative Risk was calculated as the risk of cancer in the veteran group divided by the risk of cancer in the comparison group. Rate Ratios with associated 95% confidence intervals were obtained. The confidence intervals and corresponding p-values were calculated using the ‘exact’ method using STATA (StataCorp, Texas).

43. To avoid unstable results based on small numbers, relative risks were only calculated for comparisons where the total number of events was greater than 20.

3.4.2 Cancer Incidence Relative to the Australian Population

44. Comparison of cancer incidence in the study groups with the Australian population involves comparing the actual or observed number of cancers with the number of cancers we would expect if the cancer rates were similar between the study sample and the population.

45. The expected number of cancers was based on population and cancer incidence data from the AIHW Cancer Cubes and General Records of Incidence and Mortality for the years 1999 to 2003 (AIHW, 2007). The expected number of deaths in the population was calculated by multiplying the number of person-years in each 5-year age and sex group for each calendar year by the mortality rate for that age / sex group and year.

46. The Standardised Incidence Ratio (SIR) was used to compare deaths rates in the veteran population to Australian norms. It is defined as:

$$\text{SIR} = 100 \times (\text{Observed number of cancers} / \text{Expected number of cancers}).$$

47. An SIR equal to 100 indicates no difference between the observed and expected number of cancers. An SIR above 100 means that the observed number of cases was higher than expected, and an SIR below 100 indicates that the number of cases was lower than the expected number. An overall SIR (across sex and all age groups) was calculated using the direct method (dos Santos Silva, 1999). Statistical p-values for the difference between the observed number of deaths and the expected number based on Australian population data was calculated using Fisher's exact method (Rothman, 1979).

48. The 95% confidence intervals give the range of values we would expect to find the measure of effect, with a probability of 95%. For the SIR results, if the confidence interval does not include 100, cancer incidence is statistically significantly different between the two populations.

3.5 Sample size

49. The East Timor cancer incidence analysis was performed on the full Nominal Roll and a comparison group of double the size, as opposed to a sample of deployed personnel, to maximise power of statistical comparisons.

3.6 Ethics

50. Ethical clearance was received from the Australian Institute of Health and Welfare (AIHW) Ethics Committee (protocol no 06/542), the University of Queensland Behavioural & Social Sciences Ethical Review Committee (UQBSSERC) (protocol no 2006000886) and the Australian Defence Human Research Ethics Committee (ADHREC) (protocol no 449/06), to conduct the Cancer Incidence

Studies. Separate ethics approvals were gained from each of the Australian State and Territory Cancer Registries.

4 Results

4.1 Characteristics of Sample

51. As expected, because of the method of selecting the comparison group, the demographic characteristics of the exposed and unexposed groups were similar.

52. The mean age of East Timor veteran and comparison groups on the commencement of follow-up was very similar (28.4 (SD 7.5) versus 28.5 (SD 8.6) years respectively). A breakdown of the age-sex distribution of the veteran and comparison groups is presented in Table 1. Even though broad age cohorts (1938-1967, 1968-1974 and 1975-1986) were used in the frequency matching of the comparison group to the Nominal Roll, the age distribution is similar between the two study groups.

Table 1: Demographic characteristics of Defence personnel in the East Timor Cancer Incidence Study

	East Timor Veterans n = 19,710		Comparison group n = 17,501	
	n	%	n	%
Age				
<25	7,617	40	7,152	41
25-34	8,342	42	6,279	36
35-44	3,093	15	3,192	18
45-54	583	2.9	865	4.9
55-64	60	0.1	13	0.1
Unknown date of birth	15			
Sex				
Male	17,863	91	15,695	90
Female	1,832	9.3	1,806	10
Unknown gender	15			
Service				
Navy	2,249	11	2,233	13
Army	15,825	80	13,642	78
Air force	1,636	8.3	1,626	9.3
Service type				
Regular/Permanent	18,411	93	16,240	93
Reserve	1,284	6.5	1,261	7.2
Unknown service type	15			

53. The distributions of service and service type (Permanent or Reserve) and sex were also well balanced between the Nominal Roll and comparison group (Table 1). The mean length of follow-up in this cancer incidence study was 4 years.

54. A total of 693 of the study participants enlisted into Defence after 31 December 2003 (75 veterans and 618 comparisons). These personnel did not contribute any person-years or follow-up events in the analysis.

4.2 Cancer Incidence

55. One hundred and thirty-five of the cancers identified through the linkage were diagnosed before the commencement of follow-up. This data on cancer diagnosis before the East Timor deployment gives some indication of the baseline characteristics of the veteran and comparison groups. A breakdown of the cancers diagnosed before the date of entry into the cohort is presented in Table 2.

Table 2: Baseline table of cancers diagnosed before commencement of follow-up

Cancers	Veterans n = 19,710	Comparisons n = 17,501
Malignant neoplasm of digestive organs (C15-C26)	1	4
Malignant melanoma of skin (C43)	35	36
Malignant neoplasm of the male genital organs (C60-C63)	10	9
Malignant neoplasm of lymphoid haematopoietic and related tissue (C81-C96)	6	9
Other malignant neoplasms	14	11
Total malignant neoplasms	66	69

56. In both the veteran and comparison groups, malignant melanoma of the skin was the most common cancer. There was a slightly higher incidence of malignant neoplasms in the comparison group relative to the veteran group in the period before deployment to East Timor (Table 2).

57. Cancer incidence rates from the date of commencement of follow-up in the East Timor veteran group and the comparison group are presented in Table 3

Table 3: Cancer incidence by type in the East Timor veteran and comparison groups from commencement of follow-up up to 31 December 2003

Cancers	Number of cancers		Rate Ratio*	95% CI	p-value #
	East Timor Veterans Pyr = 83144 n = 19,710	East Timor Comparisons Pyr = 65573 n = 17,501			
Malignant neoplasm of digestive organs (C15-C26)	3	11			
Malignant melanoma of skin (C43)	33	21	1.24	(0.70, 2.25)	0.45
Malignant neoplasm of the male genital organs (C60-C63)	14	13	0.85	(0.37, 1.96)	0.67
Malignant neoplasm of lymphoid haematopoietic and related tissue (C81-C96)	7	13			
Other malignant neoplasms	22	13			
Total malignant neoplasms	79	71	0.88	(0.63, 1.23)	0.43

Exact p-value

* Relative risks are presented when more than 20 events have occurred.

58. Overall the rates of cancers of all types were very similar between the East Timor veterans and comparisons (RR 0.88, 95% CI (0.63, 1.23)). Malignant melanoma of the skin was the most common cancer to occur in the follow-up period. There was a slightly higher rate of malignant melanoma in the East Timor veterans than the comparison group, but this was not statistically significant. Overall the rates of cancers of all types were very similar between the East Timor veterans and comparisons (RR 0.88, 95% CI (0.63, 1.23)).

59. In the category ‘cancers of the male genital organs’, 25 of the 27 diagnoses were Malignant neoplasms of testis (C62). This result is broadly consistent with the young age distribution of the study participants. These findings are consistent with results from the Bougainville Cancer Incidence Study.

60. The third most common group of cancer diagnoses was ‘malignant neoplasm of lymphoid haematopoietic and related tissue’ followed by ‘cancer of the digestive organs’. The cancers from less common causes were grouped into the category ‘other malignant neoplasms’.

61. The cancer incidence rates observed in the general population were compared to the East Timor veterans and the comparison group. These results are presented in Table 4. The incidence of cancer in the East Timor veterans was approximately equal

to that expected in the general population (SIR 106.8 95% CI (84.6, 133.1)). Similarly the incidence of cancer in the East Timor comparisons was similar to the corresponding rate seen in the general population (SIR 103.7 95% CI (81.0, 130.8)).

Table 4: Standardised incidence ratio of all cancers in the East Timor veteran and comparison groups up to 31 December 2003

	Person- years	Observed cancers	Expected cancers	SIR	95% CI	p - value [#]
East Timor veterans	83144	79	74.0	106.8	(84.6, 133.1)	0.71
East Timor comparisons	65573	71	68.4	103.7	(81.0, 130.8)	0.57

SIR=Standardised Incidence Ratio

p-value based on the chi-squared statistic

62. The most common cancers observed of specific types in the East Timor Health Study were also compared to the expected number in the general population. The rates of malignant melanoma of the skin were above the rates expected in the general population. The Standardised Incidence Ratio (SIR) for East Timor veterans was 173.3 (95% CI (119.3, 243.4)) and the SIR for the comparison group was 125.7 (95% CI (77.8, 192.1)). Although the rates of malignant melanoma of the skin in this study cohort was higher than the rate expected in the general population, this calculation is based on a small number of events (54 in total) and as such should be interpreted with caution.

5 Discussion

63. There was no clear difference in the overall rate of cancer incidence between the East Timor veterans and comparisons (RR 0.88 95% CI (0.63, 1.23)).

64. The incidence of malignant melanoma of the skin was marginally higher in the East Timor veterans relative to the comparison group. This comparison is based on a total of 54 cancers of this type and the increase observed is not statistically significant.

65. A higher rate of skin melanomas than the rate expected in the general population was also noted. With increased follow-up and statistical power it will be interesting to observe whether this pattern holds.

66. The rates of overall cancer incidence observed in the East Timor veterans and comparisons were very similar to the rates of cancer expected in the general population, of the same age and sex demographic over the same time period.

67. The cancers identified as potential risks associated with exposure to asbestos in East Timor (lung cancer and neoplasms of respiratory organs) were not observed as common events in this cancer incidence analysis. However, the latency period for cancers of this type is likely to be longer than the average of 4 years of follow-up this cancer incidence study has accrued so far.

68. The cancer incidence results indicate a different pattern from the mortality results for the same study cohorts up to 31 December 2005 with respect to

comparisons with the Australian population (East Timor Mortality Report, 2007). The mortality of the East Timor cohort was lower than rates of mortality expected in the general population (SMR 41.8 and 32.8 in the veteran and comparison groups respectively). In contrast, the rates of cancer incidence were similar to the rates one would expect in the Australian population of the same age (SIR 106.8 and 103.7 in the veterans and comparisons respectively). This contrast between the SMRs and the SIRs was also evident in the Bougainville Health Study.

69. The lower all-cause mortality observed in the study cohort compared to the general population may be attributable in part to the healthy soldier effect. The absence of a similar reduction in the cancer incidence relative to the Australian population may be owing to a combination of factors (flagged in points 70 to 72):
70. Regular health checks and screening in the military population may temporarily increase the incidence of specific cancers by advancing the time of diagnosis so that cancers are detected and treated earlier.
71. The incidence-specific cancers (such as melanomas) may be more influenced by early life exposures. If these early life exposures were similar between the study cohort and the general population, then for this group of cancers one would expect the rates observed in the study and the Australian population to be similar.
72. The lower death rate in the East Timor veterans and comparisons relative to the general population may in part be a consequence of fewer deaths from external causes in the ADF than differences in physical health between the ADF and the general Australian population. The deaths from external causes in the East Timor veterans and comparisons were both clearly lower than the numbers expected in the Australian population (SMRs 46.7 and 32.3 respectively).
73. The average age at entry for the East Timor Health Study was 28.5 years. Typically cancer incidence for many sites of cancer increases with age, with many more cancers presenting in the older age groups.
74. To detect a large hypothesised difference of 50% (RR 1.5) in cancer incidence with 80% power, 80 cancers in the East Timor comparison group and 135 cancers in the East Timor veterans are required (total of 215). Based on cancer incidence and death rates for Australian males (AIHW 2007), and assuming death rates and cancer incidence rates stay at the 2005 and 2003 levels respectively it is estimated that this number of deaths would be achieved by 2003. In this report 71 cancers were observed in the East Timor comparison group, up to the end of 2003 however, only 79 cancers have occurred in the East Timor veterans over the same time period.
75. To detect a 30% increase in cancer incidence (RR 1.3) with 80% power, 493 cancers would need to have been observed over the study period (293 events in the East Timor veterans versus 200 events in the East Timor comparisons). Using the same technique, it is estimated that this number of cancers will be accrued by 2008.
76. Similarly to detect a 20% increase in cancer incidence among the East Timor veterans (RR 1.2) at 80% power, a total of 941 events are required (541 in the East Timor veterans versus 400 in the East Timor comparisons). Based on the same

assumptions 80% power may be achieved by including all cancers up to the end of 2013.

77. Using the same technique it is estimated that the East Timor study will achieve 80% power to detect a difference of 10% (RR 1.1) between the East Timor veterans and comparisons by 2029.

78. If cancer incidence rates fall for the age cohorts included in this study or the level of cancer incidence in the military is lower than that observed in the general population then each of these calculations are likely to underestimate the time taken to achieve 80% power. For these reasons the anticipated time required to achieve 80% power should be interpreted cautiously.

79. The cancer incidence data available at any point in time are not as current as the mortality data. At the time of this report's preparation, cause of mortality information was available from AIHW for deaths registered up to 2005, whilst cancer incidence data were current for cancers registered up to 2003. This lag in the availability of cancer incidence data should be taken into account in future cancer incidence studies.

80. It is important to consider the potential sources of bias in this and future cancer incidence studies.

81. Follow-up of study personnel began on 19 June 1999 (the start date of OP FABER) or the date of enlistment into Defence if the subject joined after this date. Individual dates of deployment to East Timor were not used as start dates of follow-up because there were no corresponding values in the comparison group. It is possible that a small number of cancers in the veteran group were diagnosed before a person's deployment to East Timor. Because the data were returned to CMVH in de-identified form we cannot check for occurrences of this type.

82. The rates of cancer incidence based on the mortality person-years would be lower than the rates calculated if person years ended at the time of the first diagnosis of cancer. Because cancer incidence data was not available at the level of the individual (de-identified form) the person-years calculations were based on time to death as opposed to time to first cancer. This described bias would be non-differential between the veteran and comparison cohorts, however the SIRs will be slightly underestimated in this analysis.

83. The grouped cancer incidence data did not facilitate the fitting of Cox proportional hazards models with time to first cancer as the outcome of interest. This report presents crude rate ratios between the two groups. The difference between the crude rate ratios and those adjusted for differences in demographics between the groups is likely to be small because the veteran and comparison groups were frequency matched on age, sex, service and service type.

84. The East Timor Health Study Nominal Roll was generated from three sources, ADFPAY, PMKeyS database and Allotment Certificates. Although capture-recapture methods indicated that ascertainment was reasonably high (above 85% of the full Nominal Roll) (East Timor Sample Frame Generation Report, 2007) some bias resulting from the completeness of the East Timor Nominal Roll is possible.

85. Although the East Timor veteran and comparison groups entered the study cohort at approximately the same age (28.5 and 28.4 respectively), the comparison group on average had a later date of enlistment than the East Timor veterans. Because of this the average length of follow-up in the veteran group was 4.2 years compared to 3.9 years in the comparison group. Because person-years of follow-up are used as denominators in all analyses, any bias resulting from this difference in the length of follow-up is likely to be small and to decrease further with increased follow-up.

86. A potential confounder is the health status (Medical classification) of those on the East Timor Nominal Roll compared to the comparison group. Those on the Nominal Roll would have all been fit to deploy to East Timor at the time of their deployment. The comparison group were not required to be fit to deploy over the same interval. This is a possible confounder as the comparison group may be 'less healthy' and more susceptible to negative health outcomes than the group who deployed to East Timor.

6 Summary, Conclusions and Recommendations

87. The East Timor veterans do not have a higher risk of cancer incidence than a frequency matched comparison group of ADF personnel at this stage.

88. The rates of cancer incidence in both the East Timor veterans and the frequency matched comparison group of personnel who did not deploy to East Timor were similar to the rates observed in the Australian population of the same age and gender demographics.

89. The East Timor veterans have a slightly higher incidence of malignant melanoma of the skin relative to the ADF comparison group. These results are based on a short follow-up period of 4 years so there is a possibility of chance findings. Further follow-up will add increased statistical power to all comparisons made.

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8 Annexes

8.1 Annex 1

Fields required by AIHW for cancer linkage with the NCSCCH

The AIHW required the data to be in a particular format. This format required the following information in separate fields:

1. ID number
2. Surname
3. First given name
4. Second given name
5. Third given name
6. Sex
7. Date of birth
8. Date of last contact
9. State of residence at last contact
10. Date of death if known
11. Study arm (Veteran or Comparison)

AIHW required all names in UPPER CASE and all dates in the format YYYYMMDD. The date of last contact for all participants was set as 20 November 1997.



Completion of Self-reported Data Collection – Final Report

East Timor Health Study

Deliverable Item 5 (Phase 2)

17 November 2008



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Department of Defence
Department of Veterans' Affairs



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Document Administration

Document Location

The Master copy of this document is held at the following location:

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17/11/08	V1.0	Original report submitted	Nil

Approvals

This document requires the following approvals:

Name	Position	Signature	Date	Version
A/Prof Susan Treloar	Head, Deployment Health Surveillance Program and 1 st chief investigator			
Prof Annette Dobson	Chair Scientific Research Team			
Prof Michael Moore	Scientific Advisory Committee			
BRIG Tony Gill	Program Management Board			

Signed approval forms are filed in the Management section of the project file.

Distribution

This document has been distributed to:

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DEFENCE DEPLOYED EAST TIMOR HEALTH STUDY

Deliverable Item 5 (Phase2)

Completion of Self Reported Data Collection Stage

Due Date: 17 November 2008

Extract from Statement of Works - East Timor Health Study

“The proposed methodology has been developed using two stages of contact:

- a. Questionnaire Stage 1 contact will provide selected individuals with:
 1. invitation to participate;
 2. study background and information;
 3. study consent form;
 4. letter of support from a Senior Defence Representative and/or Repatriation Commissioner;
 5. preferred mode of completion of Study Questionnaire; (Internet, mail); and
 6. section requesting specification of the individual’s deployment history.
- b. Questionnaire Stage 2 contact will provide participants with:
 1. Study Questionnaires relevant to the deployments specified in Stage 1; and
 2. Study Questionnaire in their preferred mode of delivery.
- c. A Summary of Activities undertaken to achieve this deliverable will be submitted and will contain descriptive statistics on data collection including:
 1. response rates for self report questionnaire; and
 2. preferred modes of delivery for the self report questionnaire.”

Executive Summary

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a series of studies that aim to research the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service overseas. It is being conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).
2. The aim of the East Timor Health Study is to conduct an investigation of the health status of a random sample of Australian Defence Force serving and ex-serving members who deployed to East Timor between June 1999 and May 2005 on Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE, relative to an appropriate comparison group who were ADF members at the time, but did not deploy on these Operations.
3. This document reports on the process of collection of self-report data for the East Timor Health Study. Study response rates and participant characteristics are presented; however, the report does not provide results of any analysis of the self-reported data. This will be the subject of a further report.
4. A random sample of 3998 ADF personnel who deployed to East Timor between June 1999 and May 2005 on Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE were included in the East Timor Health Study. A frequency-matched comparison group who were eligible to deploy to East Timor, but did not, were also invited. The total sample was 6499 individuals, of whom 41 were excluded from the study. The final number of potential participants was 6458.
5. Study methods were modified from those described in the initial Statement of Works to learn from experience in conducting the Defence Deployed Solomon Islands Health Study in 2007.
6. The study methods included contacting all potential invitees by email or mail and inviting them to complete a self-report health questionnaire. In addition, the East Timor veterans were invited to complete a deployment questionnaire. Questionnaires could be completed online or in hard copy and returned by post. Emailing invitations was an innovation in this study. This study also allowed consent to be given online for the first time. The study allowed for collection of information by telephone interview, under specific conditions.
7. A total of 6449 individuals were invited to complete questionnaires. Two thirds of the invitations were emailed and one third were mailed. After telephone follow-up of invitees the participation rate was 40%. Eighty-seven percent of participants completed the questionnaire online. The refusal rate was 16.5%. Individuals who did not respond and were not contactable are retained in the denominator for calculating these rates.
8. The Department of Veterans' Affairs (DVA) conducted enhanced contact tracing. DVA found new addresses for 43% of individuals unable to be contacted by

CMVH. DVA mailed the invitations, and where necessary, reminders, to these individuals.

9. Emailing of invitations proved to be an efficient strategy for serving ADF personnel. Contacting ex-serving individuals remains a major challenge. Strategies to maintain regular contact with program participants in the future are proposed.

1 Introduction

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a series of studies that aim to research the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service overseas. It is being conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).
2. The aim of the East Timor Health Study is to conduct an investigation of the health status of a random sample of Australian Defence Force serving and ex-serving members who deployed to East Timor between June 1999 and May 2005 on Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE, relative to an appropriate comparison group who were ADF members at the time, but did not deploy on these Operations.
3. The East Timor Health Study includes the analysis of data gathered from mortality and cancer incidence registries, a comprehensive self-reported questionnaire, and ADF health and psychological screening records.
4. This document reports on the process of collection of self-report data for the East Timor Health Study. Study response rates and participant characteristics are presented; however, the report does not provide results of any analysis of the self-reported data. This will be the subject of a further report.
5. For the purposes of this report, **“response/respondent”** refers to individuals who replied to the study invitation and includes individuals who refused to participate, while **“participation/participant”**, refers only to those individuals who provided self-reported questionnaire data.

2 Methods of Data Collection

6. A random sample of 3998 ADF personnel who deployed to East Timor between June 1999 and May 2005 as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE were invited to participate in the East Timor Health Study. A comparison group of 2501 individuals who were eligible to deploy to East Timor, but did not, were also invited. Forty-one persons were excluded from the sample (29 persons are known to be deceased, eight to have left the ADF and permanently emigrated, and four to be incapable of completing questionnaires due to health or other reasons). Hence, there were 6458 potential invitees.

7. Individuals were sent an invitation to participate in the study either by email or mail. Emails were sent to all individuals with an email address, as provided by PMKeyS. This was an innovation introduced following experience in the Solomon Islands Health Study. Defence email addresses were used in the first instance, and if a Defence email address was not available the personal email address was used. (Persons residing overseas were only excluded from the sample if they had left the ADF and email contact was not possible. Where postal addresses were available for overseas residents, invitations were not posted unless requested by the respondent, as reply paid envelopes could not be provided).

8. Process piloting took place in early November 2007 by emailing approximately 300 individuals. Online responses were hindered during November and December 2007 by technical problems, including password and screen problems, especially where the web site was accessed over the Defence Restricted Network. These were resolved by liaison with the Data Management and Analysis Centre (DMAC) at the University of Adelaide, who have developed the Study web interface and database.

9. Emails were then sent in batches between 17 and 19 December 2007 and between 7 and 10 January 2008.

10. The email invitation consisted of a personally addressed letter from the Chief Investigator inviting the individual to participate, along with a link to the website containing the online questionnaire and consent forms, and their login details for the questionnaire. The website also contained links to:

- Letter of Support from the Chief of the Defence Force and Repatriation Commissioner
- ADHREC Guidelines for Volunteers
- Information sheet explaining the procedures and requirements related to participation in the study

11. Individuals could participate in the study by clicking on the web link and completing the questionnaire online, or by emailing the DHSP account and requesting a mail package (consisting of invitation pack and questionnaires) be sent to a nominated address.

12. Individuals could refuse participation in the study by email, putting 'Refusal' in the subject line, by logging onto the questionnaire website and clicking 'Refuse' on the relevant page, or by calling the free call number 1800 886 567.

13. Individuals who had not responded to the email invitation within one month were sent a reminder email. If there was still no response within another month of this email, a telephone call was made to confirm contact details. Telephone calls were made at a variety of times during the day and evening in order to maximise contact opportunities. Up to ten attempts were made to contact individuals. Calls were made by appropriately trained interviewers, hired as casual staff by CMVH.

14. If a delivery failure occurred on an email contact, the follow-up telephone protocol described above was followed immediately as this suggested that both the email and mail contact details obtained from PMKeyS were outdated.

15. The mailing of invitation packages was delayed due to problems getting the materials proofed and printed. Invitations were mailed in late April 2008 in cases where email addresses were lacking. Mailing addresses were provided by PMKeyS. Envelopes were marked "Addressee Only: Please Forward". For ex-serving personnel or reservists, the residential address was used while invitations for currently serving personnel were sent to Defence addresses. Any subsequent printing of invitation materials for mail outs conducted by DVA was handled by a different printing contractor.

16. The mailed invitation package included:

- Letter of invitation:
 - Personally addressed letter from the Chief Investigator
 - Letter of Support from the Chief of the Defence Force and the Repatriation Commissioner
 - Contact details of the study investigators
 - ADHREC Guidelines for Volunteers
- Information sheet: a brochure containing information about the study, what is involved in participating, and contact information for support networks
- Reply forms booklet:
 - Login details for online questionnaire
 - Consent forms (one copy for participant to keep)
 - Defer participation/register refusal sheet
 - Contact details form
 - Preference of mode of completion of the questionnaire (i.e. web or mail)
 - Alternative contact details form (optional)
 - Deployment history form
- Reply paid envelope

17. A 1800 (free-call) number was also provided to participants in the information sheet. Potential participants could telephone this number to register a refusal or to seek clarification about any aspect of the study. This telephone number was manned by a member of the study team, and had voicemail facility so that messages could be left.

18. Participants returned the relevant sections of the reply forms booklet, and a questionnaire was mailed to the nominated address if the participant indicated mail as their preferred mode of completion.
19. Those who preferred to complete the questionnaire online were provided with their login details in the invitation package.
20. Reminder cards were sent to non-respondents via post. If no reply was received within two to four weeks of the reminder card, a telephone call was placed to confirm contact details. These calls followed the same protocol as those made to email non-respondents, described earlier.
21. Where persons were unable to be contacted by telephone, address details were obtained by regular updates from PMKeyS. The Department of Veterans' Affairs (DVA) also provided an enhanced contact tracing service, electronically matching DHSP requests to their own in-house databases in the first instance and then to the Australian Electoral Roll.
22. All participants were asked to complete a General Health Questionnaire, and those who had deployed to East Timor were also asked to complete an East Timor Deployment Questionnaire. Both of these questionnaires were available online.
23. Participants who had also deployed to Bougainville and were selected as a veteran in the Bougainville Health Study were asked to complete an additional questionnaire on this deployment. This negated the need to recruit them again for the Bougainville Health Study. This questionnaire was also available online.
24. Forty-seven persons who participated in the Solomon Islands study, which was conducted by CMVH in 2007, had either deployed to East Timor or were selected in the comparison group for the East Timor study. They were asked to complete the relevant questionnaires at that time, so that it would not be necessary to approach them again in 2008. Another 47 members of the East Timor sample either did not respond or declined to take part in the Solomon Islands study. They were approached again, the invitations being sent in May 2008 to maximise the time between approaches.
25. The Department of Veterans' Affairs (DVA) conducted enhanced contact tracing. CMVH forwarded lists of persons unable to be contacted. DVA searched for new addresses in their own internal databases in the first instance, and then on the Australian Electoral Roll. Due to privacy laws, DVA mailed the invitations, and where necessary, reminders, to these individuals. Consequently, CMVH was unable to conduct any further telephone follow-up unless invitees contacted CMVH directly. Five hundred and fifty invitations were mailed by DVA and a further 344 will be mailed in early November.
26. Questionnaire reminders were emailed or mailed in the following circumstances:
 - a mailed questionnaire was not returned;
 - a consent form indicating a preference for web mode of delivery was received or the consent form was completed online but the questionnaire was outstanding.

DVA also mailed reminders, where required.

27. Mail-out and receipt of documents was conducted in-house, with printing of study documents sourced externally. Completed hard copies of questionnaires were entered directly into the online database by DMAC.

28. A communication and media strategy was designed and implemented prior to contact with potential study participants and at various times during the recruitment and data collection process. The aims of this were to alert individuals to the study and potentially increase response rates. The communication and media strategy involved advertisements and editorials in Defence and ex-Serving publications (such as Service newspapers and Australian Peacekeepers and Peacemakers Veterans' Association magazine) as well as advertisements in non-Defence media (such as the Chronicle, City West News, Fremantle Gazette and Penrith Press) and media releases.

29. Ethics approval was granted by the Australian Defence Human Research Ethics Committee (ADHREC) (Protocol no. 475/07), the Department of Veterans' Affairs Human Research Ethics Committee (DVA HREC) (Protocol no. E07/007) and the University of Queensland Behavioural and Social Sciences Ethical Review Committee (UQ BSSERC) (Protocol no. 2007000231).

30. The UQ BSSERC requested a strict protocol in that CMVH interviewers could not directly suggest a telephone interview to initial non-respondents as a means of participation. This had implications for the success of telephone contact in this study.

3 Results

3.1 Response rates for self-report questionnaire

31. Table 1 provides details of response, refusal and contact rates for the East Timor Health Study. Figures for the Bougainville study are also shown for comparison, as the studies were conducted concurrently and there was some overlap between the samples.

32. A total of 6449 individuals were invited to complete a choice of online or paper questionnaires (an additional nine individuals for whom contact details could not be found were unable to be approached). Two-thirds of the invitations were emailed and one third were mailed. After telephone follow-up of invitees the participation rate was 40%. Eighty-seven percent of participants completed the questionnaire online. The refusal rate was 16.5%. Individuals who did not respond and were not contactable are retained in the denominator for calculating these rates. East Timor study participants include 47 persons who had already submitted data during the Solomon Islands study in 2007, obviating the need to contact them again.

33. Persons who declined to take part were not asked for a reason; however, reasons which were volunteered for non-participation included:

- lack of time or other more pressing priorities
- lack of access to a computer to complete the online questionnaire
- lack of relevance of the study as they either did not deploy to East Timor or did not experience any problems during their deployment
- lack of relevance of the study questions to their situation
- inability to access the online questionnaire
- disinclination to revisit aspects of their deployment
- disaffection with the ADF or DVA.

Wherever possible, CMVH enquiry staff explained that it was important for all members of the study sample to participate, and, where appropriate, offered assistance with alternative methods of submitting data.

34. After the initial pilot phase in late 2007, there were still a number of persons who reported difficulty in accessing or using the online questionnaire. These difficulties included log on problems and data disappearing or not saving. Such cases were reported to DMAC and in some cases solutions were available; however, for many no explanation could be found, suggesting a user-end problem. In all such cases which came to DHSP attention, telephone or hard copy methods were offered. However, several persons refused as a result, and it is likely that there were other people who had such difficulties but did not report them.

35. Survey fatigue was another problem mentioned by respondents. CMVH were aware of several other concurrent studies among the same population. This caused confusion with a number of persons stating, when contacted by telephone, that they had already completed the questionnaire.

Table 1: Summary of response and participation for self-report data collection

	a		b		c		(a+b)-c	
	Bougainville sample (BV)		East Timor sample (EM)		Overlap (Individuals in both samples)		Total individuals (net)	
	n	%	n	%	n	%	n	%
1 Total sample	7138		6499		799		12838	
2 Excluded (deceased / emigrated / incapacity)	66		41		6		101	
3 Potential invitees (1-2)	7072		6458		793		12737	
4 Invitations unable to be sent (contact details unavailable)	41		9		0		50	
<u>Invitations sent:</u>								
5 Email (as % of invitees, i.e. 5/3 x 100)	4706	66.5	4577	70.9	626	78.9	8657	68.0
6 Paper (as % of invitees i.e. 6/3 x 100)	2325	32.9	1872	29.0	167	21.1	4030	31.6
7 Total (as % of invitees, i.e. 6/3 x 100)	7031	100.0	6449	100.0	793	100.0	12687	100.0
<u>Undeliverable invitations*:</u>								
8 Email (as % of sent i.e. 8/5 x 100)	244	5.2	153	3.3	21	3.4	376	4.3
9 Paper (as % of invitees i.e. 9/6 x 100)	505	21.7	361	19.3	39	23.4	827	20.5
<u>Questionnaire response:</u>								
10 Refusals (i.e. 10/7 x 100)	1008	14.3	1067	16.5	109	13.7	1966	15.5
11 Online (i.e. 11/7 x 100)	2595	36.9	2264	35.1	389	49.1	4470	35.2
12 Paper (i.e. 12/7 x 100)	396	5.6	315	4.9	68	8.6	643	5.1
13 Telephone interview (i.e. 13/7 x 100)	17	0.2	23	0.4	2	0.3	38	0.3
14 Participation (i.e. (11+12+13)/7 x 100)	3008	42.8	2602	40.3	459	57.9	5151	40.6
15 Response (i.e. (10+14)/7)	4016	57.1	3669	56.9	568	71.6	7117	56.1

* Some of these individuals have since responded as a result of telephone follow up or contact tracing

Note: percentage totals may not add up due to rounding

36. Table 2 shows the contactability of non-respondents. Twenty-five percent of potential invitees were unable to be contacted by telephone during the study to confirm whether they had received their invitations. Among those able to be contacted who did not either take part or explicitly refuse, in 126 cases it was established by contact with a family member or work colleague that the individual was unavailable during the study period, due to deployment or other reasons. The remaining 1049 individuals who were able to be contacted by phone did not submit data or explicitly refuse.

Table 2: Contact with non-respondents

Contactability	n	n	% of Non-respondents (N=2790)	% of Potential invitees (N=6458)
<u>Contacted by phone:</u>				
- unavailable: on deployment	63			
- unavailable: other / unknown reason	63	126	4.5	2.0
- other		1049	37.6	16.2
		1175	42.1	18.2
<u>Unable to be contacted by phone</u>		1615	57.9	25.0
Total		2790	100.0	43.2

3.2 Participant characteristics

37. Table 3 below shows participation for people according to their demographic characteristics. It was found that:

- Participation in the East Timor veterans was higher than that in the comparison group (41% vs 34%)
- Participation was higher in females than males (47% vs 37%)
- Participation increased with age group
- Participation was similar in the Navy (44%) and RAAF (42%), but lower in Army (37%)
- Participation among those who had left the ADF was lower than among those currently serving. Only 18% of ex-serving members in the sample participated in the study, compared to 44% of serving members
- Permanent members of the Defence Force had a similar participation as reservists (39% and 36% respectively)
- Participation differed between States, with the highest rate in ACT, NT, and VIC and the lowest in WA.

Table 3: Participation by demographic characteristics

Characteristic	Total N=6458	Questionnaire submitted N=2602		Test Statistic		
	N	n	%	X ²	df	P
Exposure						
Veteran	3969	1709	43.1			
Comparison	2489	893	35.9	52	1	<0.001
Sex						
Male	5831	2292	39.3			
Female	627	310	49.4	24	1	<0.001
Age group						
≤30	1888	546	28.9			
31-35	1534	586	38.2			
36-40	1258	557	44.3			
41-45	878	440	50.1			
≥46	900	473	52.6	204	4	<0.001
Service						
ARMY	5092	1986	39.0			
NAVY	773	353	45.7			
RAAF	593	263	44.4	17	2	<0.001
Employee status						
Currently serving	4987	2330	46.7			
Ex-serving	1471	272	18.5	376	1	<0.001
Service Type						
Regular/Permanent	4426	1815	41.0			
Reserve	2030	787	38.8	2.9	1	0.09
missing	2	0	0.0			
State						
ACT	866	438	50.6			
NSW	1626	628	38.6			
NT	426	179	42.0			
QLD	1972	757	38.4			
SA	265	99	37.4			
TAS	105	39	37.1			
VIC	682	293	43.0			
WA	491	167	34.0			
Overseas	25	2	8.0	66	9	<0.001

Note: Participation refers to submission of self-reported questionnaire data

38. Table 4 shows the breakdown of demographics in the East Timor veteran and comparison groups. Distribution of demographics is similar between the two exposure groups, except for age group and service type (regular or reserve).

Table 4: Participant characteristics by exposure status

Characteristic	Veteran N=1709		Comparison N=893		Test statistic		
	n	%	n	%	X ²	df	P
Sex							
Male	1509	88.3	783	87.7	0.21	1	0.65
Female	200	11.7	110	12.3			
Age group							
<=30	312	18.3	234	26.2	47.4	4	<0.001
31-35	426	24.9	160	17.9			
36-40	392	22.9	165	18.5			
41-45	301	17.6	139	15.6			
46+	278	16.3	195	21.8			
Service							
ARMY	1321	77.3	665	74.5	2.6	2	0.27
NAVY	223	13.0	130	14.6			
RAAF	165	9.7	98	11.0			
Employee status							
Currently serving	1526	89.3	804	90.0	0.34	1	0.56
Ex-serving	183	10.7	89	10.0			
Service Type							
Regular/Permanent	1154	67.5	661	74.0	11.7	1	0.001
Reserve	555	32.5	232	26.0			
Questionnaire method							
Mail	219	12.8	96	10.8	2.5	2	0.28
Web	1474	86.2	790	88.5			
Interview	16	0.9	7	0.8			
State							
ACT	273	16.0	165	18.5	26.8	7	<0.001
NSW	401	23.5	227	25.4			
NT	112	6.6	67	7.5			
QLD	544	31.8	213	23.9			
SA	56	3.3	43	4.8			
TAS	26	1.5	13	1.5			
VIC	176	10.3	117	13.1			
WA	119	7.0	48	5.4			

Note: Participation refers to submission of self-reported questionnaire data

3.3 Summary of data collection process

39. The process for management of the data collection is summarised in Table 5.

Table 5: Self-reported data: Summary of management activities by month

Study management activities	
Month	<u>Ongoing tasks:</u>
	<ul style="list-style-type: none"> ▪ Tracking and reporting (DHSP database) ▪ Communications strategy
November 07	<ul style="list-style-type: none"> ▪ Piloted emailing of invitations, batching by service and region ▪ Some website problems experienced, related both to the online questionnaire and access through the DRN. Emails were sent out to those affected, with alternative options for completing the questionnaire provided. ▪ Commenced consultation with printing house re mail out packs
December 07	<ul style="list-style-type: none"> ▪ Continued send out of email invitations ▪ Web problems resolved, emails sent out to those affected
January 08	<ul style="list-style-type: none"> ▪ Remaining email invitations sent, except for people approached during the Solomon Islands Health Study
February 08	<ul style="list-style-type: none"> ▪ Continued consultation with printing house ▪ Commenced email reminders ▪ Telephone follow-up commenced ▪ Commenced sending mail out packs to those who requested hard copies of the invitation pack and the questionnaires ▪ Advertisements published in APPVA and service newspapers
March 08	<ul style="list-style-type: none"> ▪ Continued consultation with printing house ▪ Further batches of email reminders sent to email invitees yet to respond ▪ Further telephone follow-up of email invitees yet to respond ▪ Continued to send mail out packs to those who requested them ▪ Advertisements and an insert on the DHSP included in service newspapers
April 08	<ul style="list-style-type: none"> ▪ Invitation packs and questionnaire printed ▪ Mailed out invitation packs to those in the sample without email addresses ▪ Final batch of reminder emails sent to email invitees who had yet to respond ▪ Continued to send mail out packs to those who requested them ▪ Advertisements published in service newspapers, as well as regional publications such as the Chronicle, City West News, Fremantle Gazette and Penrith Press, to coincide with paper mail outs
May 08	<ul style="list-style-type: none"> ▪ Email invitations sent to people approached during the Solomon Islands study ▪ Invitation reminder cards mailed ▪ Questionnaires sent out to participants who had requested hard copies ▪ Commenced mail out of questionnaire reminder cards for outstanding paper questionnaires ▪ Continued to send mail out packs to those who requested them
June 08	<ul style="list-style-type: none"> ▪ Continued to make follow up telephone calls to non-respondents and persons with outstanding questionnaires ▪ Continued to mail or email questionnaires, reminders and other study documents where requested ▪ The list for enhanced contact tracing was forwarded to DVA
July-October 08	<ul style="list-style-type: none"> ▪ Continued to make follow up telephone calls to non-respondents and persons with outstanding questionnaires ▪ Continued mailing questionnaires, reminders and other study documents ▪ Enhanced contact tracing and mail out by DVA continued

40. Despite the communications strategy implemented by CMVH, enquiry staff received a number of queries about the study auspices, suggesting that most ADF personnel had not heard about the study prior to being contacted.

41. Table 6 shows the number of emailed/mailed items and follow-up attempts per individual, giving an indication of the level of effort required to obtain a single questionnaire. (Note that some of these contacts were initiated by the respondents).

Table 6: Contacts or contact attempts made per person by participation status

Participant	No. of contacts or contact attempts per person (mean)			
	Email	Mail	Phone/fax	All
Yes (N=2602)	2.8	0.4	1.9	5.1
No (N=3856)	2.1	1.1	3.3	6.5
All (N=6458)	2.4	0.8	2.8	6.0

Note: contact attempts did not necessarily yield actual contact with a person.

42. The mean number of contacts or contact attempts made per potential participant was six. This is just over half the contact attempts per person as for the Solomon Islands study where the average was 10. This demonstrates that our processes were more streamlined, especially for mail contacts, than for the Solomon Islands study. A detailed monthly breakdown of contact activity is given in Appendix I.

3.4 Evaluation of recruitment strategies

43. Table 7 summarises the effectiveness of each recruitment strategy. This table reports on recruitment activity during the East Timor study, hence data for the 47 persons who participated during the Solomon Islands study are not shown. Emailing the original invitation was more than twice as effective as mailing; however, it should be borne in mind that postal invitations were only sent where an email address was lacking; three-quarters of the persons approached in this way were ex-ADF members whose postal address details were also more likely to be out of date. Nineteen percent of these initial invitations were returned undeliverable. Similarly, invitations mailed by DVA went to persons for whom other contact strategies had proved ineffective, hence comprised the most difficult to reach group

44. Emailing of invitations for self-report data collection has proved to be a cost-effective means of contacting potential respondents, particularly serving members with Defence email addresses. The proportion of invalid or out-of-date email address was relatively small (i.e. 3%) and this was able to be ascertained, and the telephone follow-up protocol implemented, immediately.

45. Emailing of invitations and the online questionnaire also enabled rapid data collection. Five percent of participants submitted data within one day of their invitation being sent, and 10% within one week. Among participants, the mean time from sending the invitation to submission of data was approximately three and a

quarter months. (Participant characteristics for the combined Bougainville and East Timor studies, by elapsed time from invitation to data collection are shown in Appendix II.)

46. The most effective recruitment strategy was a telephone call plus an email of login details for the online questionnaire. Forty percent of those approached in this way participated without the need for a questionnaire reminder to be sent. This was a higher rate of participation than for telephone call plus the mailing of study documents (successful in 22% of cases). The participation rate for the questionnaire reminders was similar whether sent by email or mail; however, emails elicited a higher proportion of explicit refusals. The advantage of email contact was greater timeliness and convenience for recipients as well as for the study team.

Table 7: Response by recruitment strategy

Contact mechanism	Response:					
	Persons approached		Participated N=2556		Refused N=1065	
	n	%	n	%	n	%
Invitation						
Email	4577	100.0	518	11.3	70	1.5
Mail	1809	100.0	98	5.4	32	1.8
DVA (mail)	550	100.0	12	2.2	12	2.2
Invitation reminder						
Email	3785	100.0	431	11.4	138	3.6
Mail	1335	100.0	12	0.9	9	0.7
DVA (mail)	443	100.0	6	1.4	7	1.6
Follow up						
Telephone follow up alone	1704	100.0	183	10.7	464	27.2
Resend login details (email)	2190	100.0	872	39.8	156	7.1
Send / resend QA +/- invitation (mail)	659	100.0	142	21.5	17	2.6
Questionnaire reminder						
Email	954	100.0	191	20.0	149	15.6
Mail	383	100.0	72	18.8	8	2.1
Volunteered	2	100.0	0	0.0	0	0.0

* Volunteers contacted CMVH in response to publicity about the study before receiving an invitation.

Note: throughout this report, "response/respondent" refers to individuals who replied to the study invitation, while "participation/participant", refers only to those individuals who provided self-reported questionnaire data. "Contact mechanism" is the last mechanism used before the response was received; "Response type" is the eventual outcome of all contact.

47. Locating ex-serving individuals proved difficult. DVA enhanced contact tracing was useful for persons who were DVA clients or were on the electoral roll, but limitations imposed by the terms and interpretation of the Commonwealth Electoral

Act meant that telephone follow-up was not possible. It should also be noted that some persons responded to invitations and invitations reminders by completing the consent process only. In such cases their actual participation or refusal was only elicited after further contact on the part of CMVH. In Table 7 these are shown according to the last contact strategy used before the submission of data or receipt of a refusal. A more detailed evaluation of DVA contact tracing follows.

3.5 Contact tracing

48. The Department of Veterans' Affairs (DVA) provided an enhanced contact tracing service, electronically matching DHSP requests to their own in-house databases in the first instance (23% matched) and then to the Australian Electoral Roll (an additional 20% were matched). When required, reminders were also sent by DVA. The overall response rate from mailings by DVA, including responses elicited after additional contact by CMVH, was 8%, with a further 5% having completed the consent process but their questionnaire data is outstanding. Eighteen percent of invitations were returned undeliverable to DVA.

Table 8: Contact tracing by DVA

Tracing activity	N	% of requested
Total requested	1835	79.9
<u>New address found:</u>		
- DVA DB	518	22.6
- Electoral roll	464	20.2
Total traced	982	42.8
Not mailed*	68	3.7
To be mailed	364	19.8
Mailed	550	30.0
		% of mailed
Returned undeliverable	99	18.0
<u>Responded:</u>		
Refused	15	2.7
Participated	30	5.5
Consented; questionnaire outstanding	29	5.3
Total response	74	13.5

** This was because CMVH had found them in the meantime, or the address discovered by DVA was insufficient, or the person was deceased.*

Note: throughout this report, "response/respondent" refers to individuals who replied to the study invitation, while "participation/participant", refers only to those individuals who provided self-reported questionnaire data.

49. The potential to conduct contact tracing through ComSuper was also explored. ComSuper have indicated a willingness to help in this regard and ADHREC have recently given approval for this to be pursued. A pilot of this process will be

conducted in the near future in order to capitalise on the liaison with ComSuper to date and to inform future studies.

3.6 Preferred modes of delivery for the self report questionnaire

50. Eighty-seven percent of participants submitted their data via the online questionnaire (Table 1) with only 12% submitting hard copies. Only 0.9% of questionnaires were completed by telephone interview as this was not stated as an option in the invitation, but only offered where people stated they had had difficulty with other methods, for example, problems accessing the online questionnaire. Participants availing themselves of this mode of delivery did so for convenience, or where they had encountered problems accessing the online questionnaire.

51. A feature of the online questionnaire was a progress tracking meter, intended as a guide for participants. Not all questions were applicable to all individuals; therefore a completion figure of at least 90% usually indicated that all relevant questions had been answered. As the hard copy questionnaires received by CMVH were also entered into the online database, this progress meter also provides a means of evaluating the level of completion of all questionnaires received. It should be noted that individuals who submitted less than 10% of the questionnaire were not counted in participation rates.

52. The overall mean percentage of questions answered was 81%, with the figure for hard copies being 89% and online responses being 81%. Ninety-five percent of hard copies, and 77% of online questionnaires, were at least 80% complete. Only one percent of persons submitting hard copies completed less than 50% of the questionnaire, while for online responses the figure was 14%. The online method captures all data entered, even if the participant fails to complete the whole questionnaire and submit it, making more data items available for subsequent analysis.

3.7 Consent to linkage

53. Table 9 below shows participants' consent patterns for record linkage to ADF health and psychology records. Seventy-seven percent of participants consented to health record linkage and 71% to psychology record linkage, while 69% gave permission for both.

Table 9: Consent to record linkage

ADF Psychology record linkage	ADF Health record linkage					
	Consented		Refused		Total	
	n	%	n	%	n	%
Consented	1754	68.7	50	2.0	1804	70.6
Refused	217	8.5	533	20.9	750	29.4
Total	1971	77.2	583	22.8	2554	100.0

4 Discussion

54. Emailing of invitations and refinements to the online questionnaire proved to be both effective and efficient. While the level of participation (40%) may be less than optimal for a cross-sectional study, low response is considered less of an issue for longitudinal studies, as long as follow-up is good (Kelsey 1996). The level of participation achieved for this study compares favourably with the Solomon Islands study, especially as there were twice as many people in the East Timor sample who were no longer in Defence at the commencement of the study (23%, compared with 12% than in the Solomon Islands sample). In fact, participation was higher in the East Timor study than in the Solomon Islands study among both serving personnel (47%, compared with 46%) and ex-serving personnel (19%, compared with 9%).

55. Several factors are likely to affect to participation levels in studies of military health. Secular trends in epidemiological research show declining participation rates over recent years. In the Australian Longitudinal Study of Women's Health, for example, an estimated 41–42% of the younger women ($n = 14\ 247$), 53–56% of the mid-age women ($n = 13\ 716$), and 37–40% of the older women ($n = 12\ 432$) agreed to participate (Lee et al. 2005). However, women may be more likely than men to volunteer as study participants (Todd et al. 1983). ADF personnel also differ from the general Australian population with regard to their high geographical mobility.

56. Both the salience of the issue, and the time elapsed since the event in question, are important motivators of participation. The East Timor study covered the period 1999 to 2005, and unlike recent Gulf War and Vietnam studies, no particular health concerns have been widely expressed in recent times. The time factor impacts on both motivation to participate and the proportion of persons who are no longer serving and thus more difficult to locate. “Hot” topics generate widespread publicity which assists greatly in bringing research to the attention of potential participants. Participation in the East Timor study compares favourably with similar international studies, for example, the US Millennium Cohort study—which concerns a much more recent and controversial theatre of action—achieved an overall response rate of 33% (Ryan et al. 2007) for the first wave of data collection.

57. Other factors likely to impact on participation include the nature of the deployment and the roles and characteristics of the personnel involved. Participation differed between the East Timor and Bougainville studies, even though they were conducted concurrently. The overall participation rate for Bougainville was 43%, despite there being more ex-serving personnel in the sample (26%). It is not surprising to find higher volunteerism to participate in research among Bougainville veterans, as persons who deployed to this region generally did so voluntarily.

58. As with the Solomon Islands study, deployment to the location in question, age, and gender were positively associated with participation. However, for the East Timor study, regular / reserve status did not have a significant impact. Further, there was a significantly lower participation rate among Army personnel when compared with Navy and RAAF personnel. This may be related to different roles played by the services on different deployments.

59. While the proportion of ex-serving personnel participating in the Deployment Health Surveillance Program is improving, locating the remaining large numbers of individuals is still a significant challenge. In October 2008 ADHREC approved the transmission of personal information to ComSuper, in order that further enhanced tracing may be conducted via this organisation, similar to the agreement with DVA. This process will be piloted in the near future. However, the benefits of such tracing are limited without CMVH having access to the contact information found, and the possibility of telephone follow-up.

60. Characteristics were similar for the veteran and comparison groups, with the exception of service status (current or ex-serving). This is encouraging and demonstrates a lack of differential response bias between groups, and improves the internal validity of the study.

61. While the study included a communication strategy targeted at Defence publications, and involved a high degree of liaison with stakeholders within the ADF, general awareness about the study and the role of CMVH among Defence personnel remains low. As the Deployment Health Surveillance Program builds, this is likely to improve; however, strategic use of internal Defence communications mechanisms would assist in this regard. However, it would be important that this was done in a sensitive way, so as not to prejudice the perceived independence of CMVH.

5 Recommendations for changes to future study protocols

62. A secure online means for program participants, including ex-serving ADF members, to voluntarily update their contact details and email addresses for the purpose of DHSP research could assist recruitment for future studies. This could improve contactability of those who are no longer the responsibility of the ADF but are not (yet) the responsibility of DVA. They could be anywhere in Australia or living overseas. It may also allow telephone contact with some DVA clients who are uncontactable via the last information held by Defence. CMVH interface with the Defence-DVA pilot for keeping track of those separating from ADF would also assist in this regard.

63. Future participation can also be improved by maintaining regular contact with program participants. As well as the promised participant feedback report of study findings, sending a twice yearly postcard is also proposed.

64. Study materials will be reviewed for future studies. The length of the questionnaire is still an issue and instructions in the information pack can be clarified, for example, advising that online respondents need not return any of the paper forms.

6 Conclusions

65. The East Timor Health Study has provided a solid positive response from serving members, which will form the basis of a future Near North cohort for subsequent studies.

7 References

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8 Appendices

- Appendix I Self-reported data (combined Bougainville and East Timor studies)—Recruitment activity by month
- Appendix II Self-reported data (Bougainville and East Timor studies) Participant characteristics by elapsed time from invitation to data collection

Appendix I Self-reported data (combined Bougainville and East Timor studies)—Recruitment activity by month

	Month	Nov /Dec 2007	January 2008	February 2008	March 2008	April 2008	May 2008	June 2008	July 2008	August 2008	September 2008	October 2008	TOTAL (N)
 Emails (N)	Invitation	2729	5848				102				1		8680
	Invitation reminder		1689	3027	2498	1810		101					9125
	Resend login details			391	539	648	961	769	733	218	113	488	4860
	Questionnaire reminder			2	456	4		1097	530	3	97	16	2205
	Other emails	434	584	644	606	535	136	439	427	141	95	115	4156
	TOTAL	3163	8121	4064	4099	2997	1199	2406	1690	362	306	619	29026
 Mailed items (N)	Invitation					3857	18			654	642		5171
	Invitation reminder						2786					1031	3817
	Questionnaire	9	42	67	55	75	297	277	234	83	141	106	1386
	Questionnaire reminder							265	186	133	60	78	722
	TOTAL	9	42	67	55	3932	3101	542	420	870	843	1215	11096
 Phone calls (N)	Non-respondent / undeliverable (e-)mail	2	678	1743	2905	3773	4958	5089	4028	1613	650	1968	27407
	Outstanding questionnaire							36	971	390	1062	3141	5600
	TOTAL	2	678	1743	2905	3773	4958	5125	4999	2003	1712	5109	33007
 QAs received (N)	Online	34	12	23	23	25	116	120	121	80	42	72	668
	Mail	230	809	560	571	412	396	388	389	187	303	263	4508
	Interview	14		1	1		2	1	8	2	5	3	37
	TOTAL	278	821	584	595	437	514	509	518	269	350	338	5213
	CUMULATIVE TOTAL (% of 12 737*)	2.2	8.6	13.2	17.9	21.3	25.4	29.3	33.4	35.5	38.3	40.9	

* Potential respondents (net sample for both studies)

Key:

DHSP activity

DVA activity

Appendix II Self-reported data (Bougainville and East Timor studies)
Participant characteristics by elapsed time from invitation to data collection

Characteristic	0-30 days N=997		31-90 days N=1632		91+ days N=2584		X ²	df	P
	n	%	n	%	n	%			
Exposure									
Neither deployment	228	22.9	494	30.3	790	30.6	45.6	6	<0.001
Bougainville only	462	46.3	615	37.7	915	35.4			
East Timor only	277	27.8	465	28.5	758	29.3			
Both deployments	30	3.0	58	3.6	121	4.7			
Sex									
Male	872	87.5	1428	87.5	2252	87.2	0.1	2	0.94
Female	125	12.5	204	12.5	332	12.8			
Age group									
21-25	106	10.6	214	13.1	519	20.1	96.0	8	<0.001
26-30	188	18.9	340	20.8	600	23.2			
31-35	229	23.0	378	23.2	555	21.5			
36-40	217	21.8	303	18.6	425	16.4			
41+	257	25.8	397	24.3	485	18.8			
Service									
ARMY	707	70.9	1280	78.4	1799	69.6	120.1	2	<0.001
NAVY	210	21.1	192	11.8	639	24.7			
RAAF	80	8.0	160	9.8	146	5.7			
Employee status									
Active	87	8.7	279	17.1	251	9.7	63.7	2	<0.001
Ex-serving	910	91.3	1352	82.8	2332	90.2			
missing	0	0.0	1	0.1	1	0.0			
Service Type									
Regular/Permanent	746	74.8	1027	62.9	1629	63.0	49.7	2	<0.001
Reserve	251	25.2	605	37.1	955	37.0			
State									
ACT	238	23.9	304	18.6	464	18.0	199.0	7	<0.001
NSW	261	26.2	402	24.6	630	24.4			
NT	41	4.1	115	7.0	129	5.0			
QLD	259	26.0	399	24.4	806	31.2			
SA	31	3.1	81	5.0	89	3.4			
TAS	6	0.6	36	2.2	27	1.0			
VIC	107	10.7	163	10.0	276	10.7			
WA	49	4.9	131	8.0	162	6.3			
Overseas	4	0.4	1	0.1	1	0.0			
missing	1	0.1	0	0.0	0	0.0			

Note: throughout this report, "response/respondent" refers to individuals who replied to the study invitation, while "participation/participant", refers only to those individuals who provided self-reported questionnaire data

9 Annexes

Annex 1 - Ethics Approval

Annex 2 - Invitation Package

Annex 3 - Invitation Reminder Card

Annex 4 - Questionnaire Reminder Card

Annex 5 - Health and Demographics Questionnaire

Annex 6 - East Timor Deployment Questionnaire



Defence Owned Data Completion Report

East Timor Health Study

Deliverable Item 6 (Phase 2)

10 December 2008



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Document Administration

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Approvals

This document requires the following approvals:

Name	Position	Signature	Date	Version
A/Prof Susan Treloar	First Chief Investigator			
Prof Annette Dobson	Chair Scientific Research Team			
Prof Michael Moore	Scientific Advisory Committee			
BRIG Tony Gill	Program Management Board			

Signed approval forms are filed in the Management section of the project file.

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Executive Summary

1. This report describes the Defence owned data collection stage of the East Timor Health Study. Two types of Defence owned data were collected: the Defence health data, which were extracted from medical records, and Defence psychology data, which were sourced from the electronic files managed by the Psychology Research and Technology Group (PRTG).
2. The collection of the psychology data relies on the completion of the self-report component of the East Timor Health Study, when details of consent are completed, collated and supplied to PRTG.
3. For Defence Health Data, selected health assessment documents were obtained from Unit Medical Records (UMRs) or from Central Medical Records (CMRs) when the UMR was not available. These documents were requested for this study in accordance with the approved protocols. UMRs include vaccination records and are, theoretically, a more up to date record than the CMR.
4. Ex-serving personnel's UMRs and all CMRs are stored in Defence records facilities. The UMRs of serving personnel are in use and should be located within the unit health facilities at the bases where the individuals are posted.
5. Three thousand nine hundred and ninety-eight (3,998) ADF personnel were deployed to East Timor between June 1999 and May 2005 as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE. The original intention was to include Unit Medical Records (UMRs) for all East Timor veterans in the East Timor Health Study and a matched comparison group who did not deploy to East Timor but were eligible to do so.
6. Early difficulties in obtaining the UMRs for serving personnel necessitated a revision of the sample size. The figures were reduced to 25% (845) of serving Army members' records and 50% (786) of serving Navy members' records. The numbers for ex-serving personnel were not reduced as they are under-represented in the self-report data. The numbers of RAAF personnel were also not reduced as they already comprised only a small proportion of the sample.
7. In total, 2989 Defence medical records were available for the East Timor Health Study. Most were UMRs; 17% were CMRs. This number represents 91% of the reduced sample and 53% of the original number of records.
8. The reduced availability of UMRs was largely confined to serving personnel, where only 45% of all requested records were available. In contrast, there was a 90% availability of records for ex-serving personnel.
9. There were differences between Services in availability of records; a total of 139% of Navy, 93% of Army and 46% of RAAF records requested were available (more records than required for Navy and Army were requested). These percentages were lower for currently serving members' UMRs; 23% of requested Navy, 59% of Army and 29% of RAAF UMRs were available.
10. Most medical records contained the relevant health assessment forms for data extraction; 79% of records included a relevant Annual Health Assessment or equivalent, 84% included a Comprehensive Preventive Health Examination or equivalent, and 72% of UMRs contained vaccination records.

11. The Defence owned data collection represents a key component of this study; however, obtaining these records was logistically complex and labour-intensive for both CMVH and the Defence health facilities involved. It remains to be seen whether accessing the UMR is either practical or cost effective. A Defence-wide system of electronic health records would facilitate data collection for future Defence health surveillance.

1 Introduction

1. The Defence Deployed East Timor Health Study (hereafter referred to as the East Timor Health Study) is part of a series of studies that aim to investigate the health and well-being of Australian Defence Force (ADF) veterans who have deployed on active service overseas. It is being conducted by the Centre for Military and Veterans' Health (CMVH) as part of the Deployment Health Surveillance Program (DHSP).
2. The aim of the East Timor Health Study is to determine the health status of Australian Service personnel who deployed to East Timor between June 1999 and May 2005 as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE, relative to an appropriate comparison group who did not deploy on these Operations.
3. This report presents the collection of the Defence owned data for the East Timor Health Study and reports on the availability of the various types of data collected. It does not report on data completeness or quality and contains no analysis of the Defence owned data; this will be the subject of a further report.
4. Two types of Defence owned data were collected: the Defence health data, which were extracted from medical records, and Defence psychology data, which were sourced from the electronic files managed by the Psychology Research and Technology Group (PRTG). The methods of collection for each type of data are described separately.

2 Methods of Data Collection

2.1 Defence Health Records

5. Three thousand nine hundred and ninety-eight (3,998) ADF personnel were deployed to East Timor between June 1999 and May 2005 as part of Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE. The original intention was to include Unit Medical Records (UMRs) for all East Timor veterans in the East Timor Health Study and a matched comparison group who did not deploy to East Timor but were eligible to do so. Due to logistical and human resource limitations associated with obtaining UMRs this was not possible within the timeframe and the sample for Defence health data was reduced.

6. Previous Defence Deployed Health Studies used Central Medical Records (CMRs) to access Defence health data. For the East Timor Health Study UMRs were sought rather than CMRs as they are considered to be more complete, up-to-date and contain the vaccination record, which is not duplicated in the CMR.

2.1.1 *Accessing Ex-Serving Members' UMRs*

7. Ex-serving Navy and Army UMRs were requested from the relevant Defence Medical Records storage facilities. After staff conducted a database search it was established that 75% of ex-serving Army UMRs were not located at the Army Medical Record facilities at Victoria Barracks as expected, but instead had been archived to Dandenong. This delayed data collection while negotiations took place with the Dandenong facility on how the consequential management and human resource impacts would be addressed.

8. Files for ex-serving RAAF personnel were obtained from the Micro Imagery of RAAF Medical Records (MIRMER) project. Over 90% of files were available for capture.

2.1.2 *Accessing Serving Members' UMRs*

9. UMRs of serving members are located at the members' supporting unit health facilities. PMKeyS data was used to locate members and the relevant unit health facilities were identified and requested to supply the UMRs to CMVH. The original intention was for all files to be sent via courier to CMVH for data extraction.

10. Several significant difficulties were experienced in trying to obtain access to serving members' UMRs. More than half of the files requested were not at the location indicated by the PMKeyS unit address data. Many units expressed a reticence to supply files to an organisation outside of Defence. Several units were already functioning at capacity and did not have the available resources to supply the UMRs within the timelines. Other units were concerned that the UMRs would be needed for deployment or a medical appointment.

11. An Army Reserve Nursing Officer was appointed by CMVH as a Defence Liaison to assist in negotiations with health facilities and the refinement of protocols. In response to feedback from units contacted three additional methods of data collection were developed.

2.1.3 *Additional Options Offered*

12. Option 1. Photocopied extracts of the relevant documents could be supplied to CMVH in place of the UMR itself. This method required additional human resources from the unit health facilities but files no longer needed to be released.

13. Option 2. Onsite data extraction by CMVH staff was offered to several Defence centralised locations with multiple units and a large concentration of files. Research assistants were sent to health facilities in Darwin, Canberra and Townsville for up to two weeks as well as to facilities within a reasonable travel time from the CMVH UQ node. This option had the least resource impact on the health facilities involved. However, it generated a significantly higher access cost per file due to the related expenses of travel, accommodation and subsistence allowances for the CMVH staff.

14. Option 3. In a small number of unit health facilities CMVH was able to coordinate onsite data collection by employing or funding staff at that location. Temporary staff, Army Reservists and existing staff members willing to work outside of their normally designated work hours were sought to reduce the human resource impact on the health facilities. This system presented a convenient solution to many of the supporting health facilities, however finding appropriate and available onsite staff was difficult at most locations.

2.1.4 *Sample Size Reduction*

15. It became apparent that due to the many and varied logistical complications associated with obtaining serving members' UMRs, combined with the unexpected delays in obtaining the UMRs of the ex-serving members that meeting the intended targets would be impossible within the study's timeframe. Therefore the sample size was reduced. A decision was made to limit the records for currently serving personnel for Army and Navy in both the East Timor veteran and comparison groups.

16. All ex-serving individuals were retained in the sample. This was based on experience from the Solomon Islands Health Study which had shown that contacting ex-serving members to participate in the self-report questionnaire component of the study was extremely difficult and hence this demographic was under-represented in this component of data collection.

17. The number of currently serving Army personnel files sought was reduced to a 25% sample (845). Records for Navy personnel were reduced by 50% (786). The number of files sought for RAAF was not reduced as there were comparatively few RAAF personnel included in the study. An exception report detailing the reduced scope through sampling was submitted and accepted on 3 April 2008.

18. This service specific reduction left 53% of the original sample. The changes should still enable sufficient power to detect moderate to large differences in the health and well-being of East Timor veterans compared with those who did not deploy to East Timor.

2.2 Defence Health Data Extraction

19. Defence routinely conducts and documents various health assessment activities for individuals and these form the basis of the Defence health data collection. Selected health assessment documents were obtained from the UMR, CMR or MIRMER for individuals in the East Timor Health Study. These documents were:

The most recent:

- a. Annual Health Assessment (AHA) (AD146) (Annex A) – conducted annually
- b. Five Yearly Comprehensive Preventive Health Examination (CPHE) (AD147) (Annex B) – a more detailed assessment which replaces the AHA every 5 years
- c. Specialist Employment Stream Annual Health Assessment (SESAHA) (AD146-1) – an AHA for those in specialist categories such as divers etc (Annex C)

All Operation FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE:

- d. Pre-Deployment Medical Checklists (AD359) (Annex D)
- e. Post-Deployment Health Screens (AD369) (Annex E)
- f. Health/Medical Insert Slips (AD367) (Annex F) and

All:

- g. Yellow Vaccination Booklets (Annex G)
- h. Inoculation records and
- i. Immunisation records

In the absence of an AHA the most recent:

- j. Medical Board (MB) (PM005, PM085, PM128) – similar to and predating the AHA (Annex H) or
- k. Supplementary Health Assessment – similar to and predating the AHA (Annex I)
- l. Health Assessment – similar to and predating the AHA (Annex J)

In the absence of a CPHE the most recent:

- m. Medical Examination Record – similar to and predating the CPHE (Annex K).

20. A UMR, CMR or extract was received for 2989 members of the sample (including 28 individuals later found to have died). The process below describes the methods of data extraction from the medical files.

21. UMRs, CMRs and extracts delivered to CMVH were released into the custody of the senior medical officer at CMVH, LTCOL (Dr) Peter Nasveld (Research Manager). While the documents were in the custody of CMVH they were either stored in locked cabinets in secure rooms or were under the supervision of a CMVH staff member who held appropriate clearances.
22. Documents collected onsite were either processed in the same manner as they would be at the CMVH office, or copies were made of the relevant forms which were then securely transported to CMVH and processed in the same manner as extracts.
23. At CMVH the forms outlined above were located, de-identified and recorded on a summary sheet. This sheet was then labelled with a specific study number generated for Defence health data. This number is different from the identification numbers used for self-report questionnaire data and for the psychology data, but with consent, is linkable to these sources using a key held at CMVH. The de-identified form was photographed with the study number and saved as a PDF file.
24. The details recorded on the summary sheet and the forms digitally collected were entered into a database. The summary sheet also recorded when a file held no relevant forms, thus documenting that the file had been reviewed.
25. All staff received extensive briefings on the particular nature of this medical-in-confidence data, the importance of confidentiality, signed a confidentiality agreement, and were under supervision of CMVH staff holding security clearances while working with the documents.
26. After all relevant forms had been collected, original documents were returned to their unit health facility and any copied extracts were securely destroyed.
27. Collected PDF files were transferred to the Data Management and Analysis Centre (DMAC) at the University of Adelaide using secure transfer processes: either personal delivery or via registered post person-to-person.
28. DMAC entered the de-identified data from the PDF files into a database that was specifically constructed for the Defence health data in the DHSP studies. Data entry commenced on 17 April 2008 and is continuing.
29. All processes were approved by the Australian Defence Human Research Ethics Committee (Protocol no. 475/07), University of Queensland Behavioural and Social Sciences Ethical Review Committee (Protocol no. 2007000231) and DVA Human Research Ethics Committee (Protocol no. E07/007) (See Annex L).

2.3 Defence Psychology Data

30. DHSP's research protocol included the collection of psychological screening tests routinely conducted by Defence for those who deploy on operations. Specifically, this includes the Return to Australia Psychological Screen (RtAPS), completed on leaving theatre along with individual interviews, and the Post Operational Psychological Screen (POPS), completed six months after return from theatre.
31. The Psychology Research and Technology Group (PRTG), as part of the Directorate of Mental Health, are the custodians of the electronic database containing

the RtAPS and POPS data. A process has been established for the management and transfer of the relevant RtAPS and POPS data and is described in Annex J.

32. Data collected from PRTG were de-identified and assigned a unique study number that was different from both the Defence health data and the self-report data study numbers, but with consent linkable to these records. In the study consent form, participants were asked to provide separate consent for linkage between each of the three components of the study: self-report data, Defence health data and Defence psychology data.

33. PRTG provided to DHSP the RtAPS and POPS data for those participants who specifically consented to the linkage of their RtAPS and POPS with their self-report data. For participants who did not provide explicit consent, including those who were not able to be contacted for this study, PRTG agreed to conduct specified analyses for DHSP.

34. As this process relies upon consent from participants, it will be completed after the collection of the self-report component of the East Timor Health Study is completed.

3 Results

3.1 Defence Health Records

3.1.1 Health Records Collected

35. In total 2989 Defence health records were collected for the East Timor Health Study. Table 1 provides a summary of the files collected and the revised sample size.

Table 1: Files Available

<i>Service</i>	<i>Population</i>		<i>Revised Sample</i>		<i>Files Available</i>	
	<i>N</i>		<i>N</i>	<i>% of Population</i>	<i>N</i>	<i>% of Revised Sample Available</i>
<i>Navy</i>	779		474	(61)	660	(139)*
<i>Army</i>	5122		2205	(43)	2055	(93)*
<i>RAAF</i>	597		597	(100)	274	(46)
<i>Total</i>	6498		3276	(50)	2989	(91)

* More records than required for Navy and Army were requested

36. The majority of UMRs for ex-serving personnel were able to be obtained. UMRs for currently serving members were far more difficult to acquire. Table 2 shows the number of files requested by CMVH and the number that were available for data collection.

Table 2: UMRs Requested and Available

<i>Service</i>	<i>Currently Serving</i>			<i>Ex-Serving</i>		
	<i>Requested</i>	<i>Available</i>		<i>Requested</i>	<i>Available</i>	
	<i>N</i>	<i>N</i>	<i>%*</i>	<i>N</i>	<i>N</i>	<i>%*</i>
<i>Navy</i>	583	133	(23)	168	160	(95)
<i>Army</i>	1447	851	(59)	1232	1094	(89)
<i>RAAF</i>	490	141	(29)	102	94	(92)
<i>Total</i>	2520	1125	(45)	1502	1348	(90)

*Denominator = number of files requested

37. The lower availability of UMRs can be primarily attributed to files not being located where the PMKeyS data indicated in the unit address fields. Some files were in use or deployed with the member. Some unit health facilities had additional UMRs, but did not have the resources to supply the files within the timelines of the study and CMVH was unable to arrange additional staff to assist at the facility. Table 3 presents the reasons reported by units for UMRs being unavailable. No reason was supplied for 1297 of the inaccessible files, though feedback from the unit health facilities suggests that most of these were not at the location they were requested from.

Table 3: Reported Reasons for UMR Unavailability

<i>Reason Reported</i>	<i>N</i>	<i>%</i>
<i>Files Not With This Unit</i>	111	(57.2)
<i>Member Not With This Unit</i>	30	(15.5)
<i>File In Use</i>	15	(7.7)
<i>On Course/Exercise</i>	12	(6.2)
<i>On Deployment</i>	9	(4.6)
<i>With Member</i>	7	(3.6)
<i>Member Discharging</i>	7	(3.6)
<i>Other</i>	3	(1.5)
<i>Total</i>	194	

*'Member Not with This Unit' was belatedly introduced as an option on the tick sheet. Prior to this they would likely have been recorded under 'Files Not With This Unit'

38. Where the UMR was not available the CMR was requested. Table 4 shows the number of CMRs collected in place of UMRs and what proportion of the total files collected they represented.

Table 4: Serving Members' CMRs Collected

<i>Service</i>	<i>East Timor Veterans</i>			<i>Comparisons</i>			<i>Total</i>		
	<i>Total Files Available</i>		<i>CMRs Collected</i>	<i>Total Files Available</i>		<i>CMRs Collected</i>	<i>Total Files Available</i>		<i>CMRs Collected</i>
	<i>N</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	388	210	(54)	272	157	(58)	388	210	(54)
<i>Army</i>	1304	83	(6.4)	751	27	(3.6)	1304	83	(6.4)
<i>RAAF</i>	172	27	(16)	102	12	(12)	172	27	(16)
<i>Total</i>	1864	320	(17)	1125	196	(17)	1864	320	(17)

3.1.2 Health Assessment Forms

39. The most recent Annual Health Assessment (AHA) and the most recent Comprehensive Preventative Health Examination (CPHE) were collected. If no AHA or CPHE were available the most recent equivalent form was captured as described by the protocol. Table 5 shows the number of forms that contained an AHA or older equivalent.

Table 5: Number of Files Containing an AHA or Equivalent Form

<i>Service</i>	<i>UMR/CMR/ MIRMER Available N</i>	<i>AHA or SESAHA in File N %</i>		<i>AHA Equivalent in File N %</i>		<i>Total Files Containing an AHA or Equivalent N %</i>	
		<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	660	437	(66)	76	(12)	513	(78)
<i>Army</i>	2055	1214	(59)	468	(23)	1682	(82)
<i>RAAF</i>	274	169	(62)	4	(1.5)	173	(63)
<i>Total</i>	2989	1820	(61)	548	(18)	2368	(79)

40. Table 6 shows the number of files that contained a CPHE or older equivalent.

Table 6: Number of Files Containing a CPHE or Equivalent Form

<i>Service</i>	<i>UMR/CMR/ MIRMER Available N</i>	<i>CPHE in File N %</i>		<i>CPHE Equivalent in File N %</i>		<i>Total Files Containing a CPHE or Equivalent N %</i>	
		<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	660	547	(83)	60	(9.1)	607	(92)
<i>Army</i>	2055	1572	(76)	119	(5.8)	1691	(82)
<i>RAAF</i>	274	195	(71)	10	(3.6)	205	(75)
<i>Total</i>	2989	2314	(77)	189	(6.3)	2503	(84)

41. The East Timor deployment ended in May 2005 and therefore any AHAs or CPHEs collected after that date were conducted after any exposures in East Timor. Table 7 shows the number of members' files whose most recent AHA, CPHE or older equivalent was conducted after May 2005.

Table 7: AHAs and CPHEs or Equivalents Conducted Post East Timor

<i>Service</i>	<i>UMR/CMR/ MIRMER Available N</i>	<i>AHA or Equivalent Post 2003 N %</i>		<i>CPHE or Equivalent Post 2003 N %</i>	
		<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	660	354	(54)	317	(48)
<i>Army</i>	2055	757	(37)	709	(35)
<i>RAAF</i>	274	120	(44)	107	(39)
<i>Total</i>	2989	1231	(41)	1133	(38)

3.1.3 Deployment Forms

42. Any Pre-Deployment forms, Post-Deployment forms or health insert slips for Operations FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE were collected. It is important to note that completion of pre- and post-deployment health check forms did not become a regular practice until after 2001. This will have contributed to the low rates of deployment forms collected.

43. Table 8 shows the number of FABER, SPITFIRE, WARDEN, TANAGER, CITADEL and SPIRE deployment forms and health insert slips collected from the files of East Timor veterans.

Table 8: Deployment Forms Collected for the Veteran Group

<i>Service</i>	<i>UMR/CMR/ MIRMER Available</i>	<i>Pre-Deployment Form</i>		<i>Health/Medical Insert Slip</i>		<i>Post- Deployment Form</i>	
	<i>N</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	388	17	(4.4)	27	(7.0)	1	(0.26)
<i>Army</i>	1304	558	(43)	549	(42)	102	(7.8)
<i>RAAF</i>	172	31	(18)	44	(26)	4	(2.3)
<i>Total</i>	1864	606	(33)	620	(33)	107	(5.7)

3.1.4 Vaccination records

44. Table 9 shows the availability of vaccination records within the files. 'Other Vaccination Records' includes the inoculations summary on the cover of the UMR or a similar document specific to vaccinations only. It does not include consent forms to receive a vaccine unless it specifically states that the vaccine was administered. Some records contained both a yellow book and another form of vaccination record. This has been accounted for in the total number of records containing some type of vaccine data.

Table 9: Vaccination Details Available

<i>Service</i>	<i>UMR/CMR/ MIRMER Available</i>	<i>Yellow Book</i>		<i>Other Vaccination Record</i>		<i>Number with Any Vaccination Records</i>	
	<i>N</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	660	222	(34)	180	(27)	306	(46)
<i>Army</i>	2055	800	(39)	1351	(66)	1478	(72)
<i>RAAF</i>	274	76	(28)	84	(31)	111	(41)
<i>Total</i>	2989	1098	(37)	1615	(54)	1895	(63)

45. Vaccine data were available for the majority of Navy members, but unavailable for the majority of RAAF members. This may be attributable to the majority of RAAF files being collected from MIRMER, which does not include vaccination data.

46. A key reason that UMRs were sought in favour of CMRs was the presence of vaccination records. Table 10 compares the availability of these data in the UMRs collected with that of the files collected as CMRs or MIRMER. The UMRs were far more likely to include vaccination data than the CMRs and MIRMER.

Table 10: Vaccination Data Availability in UMRs and CMRs or MIRMER

<i>File Type</i>	<i>Total</i>	<i>Contained</i>	
	<i>Available</i>	<i>Vaccination</i>	<i>Records</i>
	<i>N</i>	<i>N</i>	<i>%</i>
<i>UMR</i>	2473	1773	(72)
<i>CMR/MIRMER</i>	516	91	(18)
<i>Total</i>	2989	1864	(62)

3.1.5 No Forms Available

Table 11: A small number of the files collected contained none of the forms defined in the protocol. Table 11 provides the details of these files.**Table 12:** No Forms Available

<i>Service</i>	<i>UMR/CMR/ MIRMER Available</i>	<i>No Forms Being Collected Available</i>	
	<i>N</i>	<i>N</i>	<i>%</i>
<i>Navy</i>	660	2	(0.3)
<i>Army</i>	2055	33	(1.6)
<i>RAAF</i>	274	10	(3.6)
<i>Total</i>	2989	45	(1.5)

3.2 Defence Psychology Data

47. The collection of the Defence psychology data for the East Timor Health Study is more complex than it was for the earlier Solomon Islands Health Study. The types of data and the nature of the RtAPS and POPS screening processes varied over time and were not standardised until approximately 2003. Consequently, the data has been stored in multiple data bases by PRTG. DHSP has been working with PRTG on practical methods of combining the databases for the purposes of the Bougainville and East Timor Health Studies. This process is ongoing

48. The collection of the psychology data relies on the completion of the self-report component of the East Timor Health Study, when details of consent are completed, collated and supplied to PRTG. Further, the collection of RtAPS and POPS data requires the completion of the screening process and entry of the screen into the database for the appropriate deployment. Finally, an individual can only consent if they were: a) successfully contacted by DHSP; and, b) agreed to participate in the study. Table 13 details those who consented to the linkage of their RtAPS and POPS data for the East Timor study.

Table 13: Proportion of consenting participants

	<i>Participated in East Timor study</i>	<i>Consented to linkage</i>	<i>N*</i>
<i>East Timor veterans</i>	1709	1325 (78%)	3969

** Does not include those who have died or emigrated – see Table 1 Completion of Self-Report Data Collection East Timor Health Study.*

49. It has been agreed that analysed aggregate data on East Timor veterans who did not consent to access to the psychological screens will be provided by PRTG at the request of CMVH. This request will be made following the analysis of the data for those who have consented.

4 Discussion

4.1 Defence Health Data

50. Obtaining access to the serving members' UMRs was the greatest difficulty faced in the collection of the Defence Health Data. The system used for this study was both costly and labour-intensive. In future studies it is recommended that a different system of locating and accessing the data be implemented.

4.1.1 Accessing UMRs

51. Substantial negotiation was required to arrange access to the UMRs and to verify that the study was genuine. While the Defence liaison greatly expedited the negotiation process, in practice it had to be repeated with each service, base and health facility, and frequently with individual units across Australia. This significantly delayed the rate of access to the UMRs.

52. The most efficient method of obtaining the data from the UMRs was to employ staff from the local area to photocopy the relevant forms and send the extracts to CMVH for processing. This method minimised impact on the unit health facilities and reduced couriering costs. It also meant that files did not have to leave the facility.

53. Existing staff able to work outside their normal hours or reservists were an ideal solution. However, locating appropriate and available staff was not possible at some locations. Due to privacy concerns, most unit health facilities preferred that only staff with a health background be appointed. Further, some medical facilities at locations such as Robertson Barracks in Darwin specifically stated that they did not want casuals employed from the local area to work on the medical files. The concern was that likely employees would be spouses of military members serving in location and knowing other personnel employed on the base. Consequently, a breach of the privacy of individuals was more plausible.

54. At two locations temporary staff were hired from a recruitment agency. This was more costly to CMVH and the staff had to be trained and supervised by the unit health facility at their cost. This method presented a lower access cost per file than sending CMVH staff while decreasing human resource impact on the facility.

4.1.2 Locating UMRs

55. PMKeyS data were used to locate serving members and the relevant unit health facilities were contacted with a request for the UMRs. Frequently the unit health facilities held fewer than 60% of the files indicated by the PMKeyS unit address data. In two instances entire units were located at a different base from that which was listed.

56. The PMKeyS data were updated three times during 2008. Additionally adjustments were made to the data being collected along with a revision to how it was being interpreted. These updates had very little effect on success rates. The lowest success rates were found in Reserve and administrative units, as would be expected.

57. The discrepancy between the PMKeyS identified unit address and actual location of a particular UMR at a given point in time appears to be an inherent difficulty in sourcing these files. They are dynamic documents which are constantly

in use and as mobile as their members. Changed locations as a result of this high mobility do not always appear to be accurately reflected in the PMKeyS system at a given point in time. Included in Appendix 1 is a case study describing the issues faced while trying to locate and access files in Canberra.

4.1.3 Availability of Vaccination Data in UMRs

58. A key reason for accessing UMRs as opposed to CMRs was that UMRs contain vaccination data that is not routinely copied into the CMR. The UMRs collected did contain substantially more vaccination data than the CMRs and MIRMERs collected.

4.1.4 Staff

59. Due to the highly variable flow of available files, and hence work, casual staff were employed to extract the data. CMVH chose to employ predominantly medical students as they have completed tertiary study in medical ethics and are familiar with medical records. This process worked very well over the university holiday periods, but caused significant staffing difficulties during university exam periods as the majority of the casual staff became unavailable for work.

60. For future studies it is recommended that measures be taken to ensure a more steady supply of work. This would allow a small number of full-time or part-time staff with reliable availability to be employed, with casual staff appointed to assist during periods of high turnover.

5 Conclusion

61. Defence health data potentially provides a significant contribution to the Deployment Health Surveillance Program Studies, as they can increase coverage of the study population and have potential to reduce recall and self-report biases. However, accessing the data is both costly and labour-intensive. Analysis of the data will further inform decisions about its usefulness for Defence health surveillance. Questions of cost-benefit, feasibility and logistics will be addressed once the value of each data item and form is assessed.

62. For future studies it is recommended that the process for obtaining Defence health data be reviewed and a more efficient system for obtaining the data be found. A Defence-wide system of electronic health records would greatly facilitate up-to-date and efficient data collection for future Defence health surveillance.

Appendix 1: Canberra Case Study

The following case study highlights the systemic and logistic problems encountered when CMVH undertook to source serving members' UMRs for data collection. It also provides an example of excellent cooperation and assistance between Navy and CMVH in the ACT region.

Based on the information provided by PMKeyS, the ACT region was identified as holding 1664 TriService UMRs required. Some consideration was given to the fact that there were a number of very senior TriService Defence personnel in the ACT cohort. There were concerns expressed by the CMVH Senior Medical Officer regarding the appropriate manner in which to handle these UMRs. In order to address these concerns and the general logistical issues related to the access to such a large number of UMRs, the Defence Liaison for CMVH met with the Senior Health Officer (SHO) and Company Sergeant Major (CSM) for the Area Health Service, ACT and Northern NSW to negotiate options.

Following this meeting the CSM undertook a 100% audit on the 1664 members that PMKeyS indicated were located within the region. Of this figure, 382 were identified as being located within ACT and 70 were identified as location unknown. No alternate location for the unavailable files was able to be provided. The majority of the unavailable files were listed as being posted to the Directorate General of Navy Personnel and Training. This was identified to be an Administrative nominal posting location and in fact the member and their UMR were physically at an alternate location.

Although the numbers were substantially reduced, the decision was made that with the possibility of collecting data from 382 UMRs the most efficient course of action was to collect data onsite. In June a team of three research assistants was sent to the ACT for one week to extract data onsite across the various health centres including Russell Offices, HMAS Harman, Duntroon and Weston Creek. Of the 382 files sought, only 198 files were available for data capture.

In July 2008 a review of Navy files available in the Canberra region was conducted under direct orders of the Senior Navy Health Officer. An audit was undertaken by the Navy point of contact via the Navy MIMME data system at the Duntroon Health Centre with the assistance of an APS staff member. Of a list of over 700 names that revised PMKeyS data indicated should be present, only 35 files were confirmed to be within the region. Of that 35, four files were in use or with the member and were unavailable. As with the previous audit, the majority of the unavailable files were from the Directorate General of Navy Personnel and Training.

Whilst Navy and the ACT AHS provided CMVH with a high level of support and assistance, only a relatively low percentage of requested files were able to be obtained. In a large number of instances no alternative source of current UMR sites was identified.

Annexes

Annex A: Annual Health Assessment

Annex B: Comprehensive Preventative Health Examination

Annex C: Specialist Employment Stream Annual Health Assessment

Annex D: Pre-Deployment Medical Checklist

Annex E: Post-Deployment Health Screen

Annex F: Health/Medical Insert Slip

Annex G: Yellow Vaccination Booklet

Annex H: Medical Board

Annex I: Supplementary Health Assessment

Annex J: Health Assessment

Annex K: Medical Examination Record

Annex L: Ethics Approval

Annex M: Process for management and transfer of relevant RtAPS and POPS data

File Reference: DHSP - 070501



Commodore Robyn Walker
DHSD
CP20-2-021
CAMPBELL PARK ACT 2600

Dear Robyn

Re: Defence Health Surveillance Program – Solomon Islands Health Study

I am writing to seek your advice on the appropriate process to follow and personnel to contact with regard to obtaining the Defence owned psychological data relating to the Solomon Islands Health Study.

The intention to utilise Defence owned psychological data was described in the research plan approved by the Program Management Board (PMB) and in various ethics protocols. Specifically, the plan is to access and analyse the RtAPS and POPS psychological screens held by Defence on those service personnel deployed to the Solomon Islands who form our veteran sample for the Solomon Islands Health Study. The nature of the data is detailed in Enclosure 1.

While we understand the Psychology Research and Technology Group manage these data, it is currently unclear who owns the data. Therefore, would it be possible for you to, firstly, clarify who will direct the release of the data and, secondly, outline any specific processes we would be required to follow to obtain the data? Direct Liaison Authority with relevant stakeholders would be appreciated in order to facilitate clear and direct communication. This will assist in establishing comprehensive processes and documenting standard operating procedures that can, in turn, be employed for the Bougainville, East Timor and MEAO studies.

Thank you for your consideration of this request. I anticipate that your clarification of the issues raised will assist to progress this aspect of the study in a meaningful and transparent way.

Yours Sincerely

Cate D'Este

Associate Professor Cate D'Este
First Chief Investigator
Solomon Islands Deployment Health Study
Deployment Health Surveillance Program

1st May 2007

Enclosure 1:**DATA Requirements**

1. RtAPS and POPS for the Solomon Islands Health Study sample
2. Individual item results and scores for each participant.
3. Cut off scores used by Defence
4. Categorical data used by Defence
5. Validation of measures conducted by Defence
6. Documentation relating to known systematic biases.

Use of the data

1. Data will be deidentified prior to analysis.
2. Where the participant has expressly consented to linkage with their self reported data and their Defence data, specific protocols relating to linkage of deidentified data will be followed.
3. Where consent has not been granted, we will use deidentified data for overall analysis of the sample.



Australian Government
Department of Defence
Defence Support Group

COPY

Defence Health
Services Division
CP2-7-194
Campbell Park

2003/28092/1
PRTG/OUT/2007/33

Associate Professor Cate D'Este
Centre for Military and Veterans' Health
Level 2, Mayne Medical School
Herston Road
Herston QLD 4006

Dear Cate,

RE: DEFENCE HEALTH SURVEILLANCE PROGRAM – RTAPS/POPS DATA REQUEST

Reference:

A. DHSP 070501 of 1 May 2007

1. In response to your query of 1 May 07, the RtAPS and POPS records are classified as Psychology-in-Confidence and are controlled by the Defence Force Psychology Organisation (DFPO) and managed by the Psychology Research and Technology Group (PRTG). Requests for data may be made to COL Peter Murphy, Director DFPO.
2. It is noted that you are seeking to obtain records that fall into two categories:
 - a. Records that are identifiable and which will be linked to other data sets following receipt of consent from the individuals concerned;
 - b. De-identified records for which consent for access has not been obtained.
3. With regard to 2(a), a data request form and proposed agreement for use of the data are attached (Enclosure A and B). The data request form seeks to clarify what data is required. The data use agreement protocol is designed to provide Defence with an assurance that the data will be used in accordance with agreed conditions of use.
4. These should be completed and forwarded to COL Murphy with a minute requesting release of the relevant records. Copies of completed consent forms for participating individuals should also be enclosed.
5. With respect to 2(b), the process for accessing de-identified data for deployment-related mental health screens (5(a) above) is to request data summary reports or technical briefs from PRTG, specifying details of the analyses you request. A data summary report request form is attached (Enclosure C). These reports will be released through Head Defence Health Services.
6. For assistance in requesting RtAPS and POPS data and data summary reports (Reference A, Enclosure 1, Data Requirements 1 and 2), including queries regarding the data use agreement protocol, my point of contact is Ms Helen Wood, on (02) 6266 3193.

7. With regard to the additional request for information relating to the use of psychological screens within Defence (Reference A, Enclosure 1, Data Requirements 3 to 6), you may liaise directly with Ms Wood.

8. If you require further assistance please contact either Ms Wood or Mr John Maguire, Programme Manager on (02) 6266 3879.

Yours sincerely,



R.M. WALKER

Commodore

Director General Strategic Health Personnel and Plans

Defence Health Services Division

28 May 07

Enclosures:

Enclosure A. Data Request Form

Enclosure B. Data Use Agreement

Enclosure C. Data Summary Report – Request Form



Australian Government
Department of Defence
Defence Support Group

**DEFENCE FORCE PSYCHOLOGY ORGANISATION
PSYCHOLOGY RESEARCH AND TECHNOLOGY GROUP**

DATA USE AGREEMENT

The following agreement provides conditions of use for psychology records, controlled by the Defence Force Psychology Organisation, and supplied to the Centre for Military and Veterans health (CMVH) by the Psychology Research and Technology group for the purpose of research.

I, _____ (Name), First Chief Investigator for the
_____ (Name of study) agree to the following conditions
of use:

- a. The data will be managed in accordance with the Commonwealth Privacy Act 1988 National Health and Medical Research and Defence guidelines;
- b. The data will be used only in accordance with obligations outlined in contractual arrangements between CMVH and the Department of Defence regarding the above-named research;
- c. The data will be used only for such purposes as approved in the ADHREC Protocol (Protocol No _____), and for no other purpose;
- d. The data will be destroyed following completion of the study in accordance with ADHREC guidelines;
- e. The data will held in a secure location; and,
- f. The data will not be released to any third party for any reason, unless legally obliged to do so.

(Signature)

(Date)



Australian Government

Department of Defence
Defence Support Group

**DEFENCE FORCE PSYCHOLOGY ORGANISATION
PSYCHOLOGY RESEARCH AND TECHNOLOGY GROUP**

DATA SUMMARY REPORT – REQUEST FORM

Note that this form is to be completed in consultation with a Psychologist at PRTG. Please contact the relevant PRTG section for advice on (02) 6266 3193.

Requested From:

Section/Organisation:

Date Requested:

Date Required:

Information/Analysis Requested:

Reason for Request:

(PRTG Office Use Only)

Report Number:

Author:

Date Completed:

Information Provided:
(Copy of summary report attached here)

Summary Results:

MEDICAL-IN-CONFIDENCE (After first entry)

AD 146
Revised Dec 2004

Department of Defence

Annual Health Assessment

• Use only black pen and/or stamps

Health facility		Number			Encl or Folio
Service		Rank			
Unit, ship or section		Family name			
Corps, category or mustering		Given name(s)			
Reason for assessment		Date of birth	Age	Gender	
Current medical classification	Date of last five yearly examination				

Patient to complete

General health

Do you have any current illnesses?

Yes No



Details of current illnesses

Do you have any current injuries?

Yes No



Details of current injuries

Have you undergone any operative procedure in the last 12 months?

Yes No



Details of operative procedures within the last 12 months

Are you presently taking prescription medication or non prescription medication?

Yes No



Details of medication (Prescription, non prescripton, vitamins, etc)

Patient to complete

Do you smoke?

Yes No



Quantity

Do you drink alcohol?

Yes No



Amount per day	How often do you drink?

How often do you feel that your present lifestyle is putting you under too much stress?

Often Sometimes Seldom Never

During the past two weeks, how much stress have you experienced?

A lot of stress A moderate amount of stress Relatively little stress Almost no stress at all

Have you been deployed overseas within the last 12 months?

Yes No



Details of deployment

Date	Location

Do you wear glasses or contact lenses?

Yes No

Have you had a dental check within the last 12 months?

Yes No

Have you passed your annual fitness test?

Yes No

NO, AMA, SMA or authorised delegate to complete

Height	Weight	BMI	Blood pressure
Pulse rate	Faecal occult blood test (Result)		FOBT date

Females

Pap smear date <input type="checkbox"/> Not applicable	Mammogram date <input type="checkbox"/> Not applicable
Pap smear result	Mammogram result

*** Perform lifestyle counselling at every opportunity ***

MEDICAL-IN-CONFIDENCE (After first entry)

Number	Rank	Given name(s)	Family name	Encl or Folio
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<p>NO, AMA, SMA or authorised delegate to complete</p> <p>Serology</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> HIV <input type="checkbox"/> Positive <input type="checkbox"/> Negative </td> <td style="width: 50%;"> Hep C <input type="checkbox"/> Positive <input type="checkbox"/> Negative </td> </tr> <tr> <td> Hep B <input type="checkbox"/> Positive <input type="checkbox"/> Negative </td> <td> Date serology performed </td> </tr> <tr> <td> G6PD (Once only) <input type="checkbox"/> Positive <input type="checkbox"/> Negative </td> <td> G6PD date </td> </tr> </table> <p>Are routine vaccinations required? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p style="margin-left: 20px;">↓</p> <div style="border: 1px solid black; padding: 5px; min-height: 80px;"> List vaccinations required </div> <p>Hearing</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td>250</td> <td>500</td> <td>1000</td> <td>1500</td> <td>2000</td> <td>3000</td> <td>4000</td> <td>6000</td> <td>8000</td> <td>Hearing standard</td> </tr> <tr> <td>R</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>L</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; min-height: 150px;"> Comments </div>	HIV <input type="checkbox"/> Positive <input type="checkbox"/> Negative	Hep C <input type="checkbox"/> Positive <input type="checkbox"/> Negative	Hep B <input type="checkbox"/> Positive <input type="checkbox"/> Negative	Date serology performed	G6PD (Once only) <input type="checkbox"/> Positive <input type="checkbox"/> Negative	G6PD date		250	500	1000	1500	2000	3000	4000	6000	8000	Hearing standard	R											L											<p>NO, AMA, SMA or authorised delegate to complete</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>P</td> <td>U</td> <td>L</td> <td>H</td> <td>E</td> <td>E</td> <td>M</td> <td>S</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; min-height: 20px;"> MEC </div> <div style="border: 1px solid black; padding: 5px; min-height: 20px;"> Specialist employment classification </div> <p>Action required</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Problem</th> <th>Action</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> <p>Are vaccinations complete? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is a continuation sheet attached? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Has UMR been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Does assessment require a review by a Medical Officer? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Medical Individual Readiness Recommendation <input type="checkbox"/> Fit <input type="checkbox"/> Unfit</p>	P	U	L	H	E	E	M	S									Problem	Action																																																
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NO, AMA, SMA or authorised delegate conducting health assessment

Signature	Printed name	Rank or title	Phone number	Date
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Confirming authority (If required)

Signature	Printed name	Rank or title	Phone number	Date
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*** Perform lifestyle counselling at every opportunity ***
MEDICAL-IN-CONFIDENCE (After first entry)

MEDICAL-IN-CONFIDENCE (After first entry)
AHA Personal Health Summary Report

Rank	Given name(s)	Family name	Encl or Folio
Number	Age	Unit, ship or section	Date

This report gives an overall summary of your health status and provides advice to promote improved health. Consult your Health Personnel if you have any questions or concerns.

Medical classification

Current MEC

Body weight

	Desirable	Actual
Height		
Weight		
BMI	Between 20.0 and 26.9	

Screening

Blood pressure	Normal range < 130/80 mmHg	
----------------	----------------------------	--

Other screening

Test	Result	Action

Blood profile

	Normal range	Actual
Cholesterol (mmol / l)	Less than 5 mmol / l	
HDL (mmol / l)	Greater than 1 mmol / l	
LDL (mmol / l)	Less than 3 mmol / l	
Ratio (HDL / LDL)	Less than 1:3	

Personal health issues

	Action
Smoking	
Alcohol or drugs	
Sun protection	
Diet	
Physical activity	
Oral hygiene	
Stress or mental health	

Recommendations or follow up action

Is a review appointment required?

Yes No

↓

Date

Completed by

Signature	Printed name	Rank or title	Phone number	Date
-----------	--------------	---------------	--------------	------

MEDICAL-IN-CONFIDENCE (After first entry)

AD 147
Revised Feb 2007

Department of Defence

Comprehensive Preventive Health Examination

• Use only black pen and/or stamps

Health facility		Number		Encl or Folio	
Service		Rank			
Unit, ship or section		Family name			
Corps, category or mustering		Given name(s)			
Reason for assessment		Date of birth	Age		Gender
Current medical classification	Date of last five yearly examination				

Patient to complete

Family History

Have any of your family suffered from Heart disease, high blood pressure, diabetes, depression, stroke etc?

Yes No

Relationship	Problem

General Health

Have you had any persistent cough?

Yes No

Have you had any unusual shortness of breath or exertion?

Yes No

Have you had any chest pains?

Yes No

Have you had any persistent abdominal pains or cramps?

Yes No

Have you suffered any persistent indigestion or heartburn?

Yes No

Have you experienced any change of bowel habits?

Yes No

Have you passed blood with your bowel motions?

Yes No

Has your weight changed significantly?

Yes No

Are you on any special diet?

Yes No

Have you had any changes in passing urine?

Yes No

Patient to complete

General health (continued)

Do you experience any menstrual problems?

Yes No Not applicable

Have you had any pain or swelling in the scrotum?

Yes No Not applicable

Do you have any persistent muscular pain or weakness?

Yes No

Do you suffer migraines or severe headaches?

Yes No

Do you suffer dizzy spells, fits, fainting ?

Yes No

Do you experience any problems with your hearing ?

Yes No

Do you experience any problems with you vision ?

Yes No

Do you have any problems sleeping ?

Yes No

Do you have current illnesses or injuries ?

Yes No

Have you had any operative procedures since your last medical ?

Yes No

Have you received medical care outside of the ADF since your last medical ?

Yes No

If you answered 'Yes', to any questions, please describe

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Given name(s)	Family name	Encl or Folio
--------	------	---------------	-------------	---------------

Patient to complete
Current medications
 Are you taking any prescription or non-prescription medication?
 Yes No
 Are you taking any vitamins or alternative therapies?
 Yes No
 Details of medication, vitamins or alternative therapies

Allergies
 Have you any allergies?
 Yes No
 Details of allergies

Preventive health
Stress
 How often do you feel that your present lifestyle is putting you under too much stress?
 Often Sometimes Seldom Never
 During the past two weeks, how much stress have you experienced?
 A lot of stress A moderate amount of stress Relatively little stress Almost no stress at all
 Is there any other health problem troubling you?
 Yes No
 Details of problems troubling you

Patient to complete
Smoking history
 Do you smoke? Quit date
 Yes No Never smoked OR
 If "Yes, what do you smoke? Please describe
 Cigarettes Other
 How much do you smoke per day ?
 How long have you smoked for ?
Exercise
 How many days per week do you exercise
 What type of exercise do you do?
 Sport
 Gym
 Unsupervised or individual
 Other
 Please describe
 How many sessions per week do you exercise *(One session equals 30 minutes of exercise)*
Sun protection
 Do you use sun protection *(Hat, blockout, clothing, etc)?*
 Yes No
 Do you regularly check for new moles or skin lesions ?
 Yes No
Contraception
 Do you use contraception?
 Yes No
Females
 Have you had pap smear in the last two years?
 Yes No
 If over 50, have you had a mammogram in the last two years?
 Yes No
Operational factors
 Have you seen the dentist in the last 12 months?
 Yes No
 Date
 Have you passed your fitness test in the last 12 months ?
 Yes No
 Date
 Do you wear glasses or contact lenses?
 Yes No
 Date of last optometry or ophthalmology examination *(Month and year)*

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Given name(s)	Family name	Encl or Folio
--------	------	---------------	-------------	---------------

Patient to complete

Operational factors *(Continued)*

Have you been deployed overseas since your last medical?

Yes No



Details of deployment

Date	Location

Do you have any specific occupational or workplace exposure hazards or concerns *(eg radiation, noise, solvents, etc)*

Patient to complete

Aircrew only

Type of aircraft currently being flown

Type of aircraft that you have the most flying hours with

Total flying hours

Total military flying hours for the last six months

Total civilian flying hours for the last six months

Total aided night flying hours for last six months

Total unaided night flying hours for last six months

Date of last CASA medical examination

Parachutists only

Approximate date of your first jump

Current level of jump qualifications

Approximate number of military jumps

Approximate number of civilian jumps

Date of last chamber run *(Free fall parachutists only)*

Divers only

Date you obtained your qualification

Number of military hours logged

Number of civilian hours logged

Maximum diving depth

Date of maximum dive

Member's certification

I certify that this is an accurate record of my medical history since my last examination and I will immediately report any changes in my medical status to ADF medical personnel

Signature	Phone number	Date
-----------	--------------	------

MEDICAL-IN-CONFIDENCE (After first entry)

Number	Rank	Given name(s)	Family name	Encl or Folio
--------	------	---------------	-------------	---------------

NO, AMA, SMA or authorised delegate to complete
Alcohol history

Question 1

How often do you have a drink containing alcohol?

<input type="checkbox"/> Never <i>(Go to Question 9)</i>	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Monthly or less	1	
<input type="checkbox"/> 2 to 4 times a month	2	
<input type="checkbox"/> 2 to 3 times a week	3	
<input type="checkbox"/> 4 or more times a week	4	

Question 2

How many drinks containing alcohol do you have on a typical day when you are drinking ?

<input type="checkbox"/> 1 or 2	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> 3 or 4	1	
<input type="checkbox"/> 5 or 6	2	
<input type="checkbox"/> 7, 8 or 9	3	
<input type="checkbox"/> 10 or more	4	

Question 3

How often do you have six or more drinks on one occasion ?

<input type="checkbox"/> Never	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Less than monthly	1	
<input type="checkbox"/> Monthly	2	
<input type="checkbox"/> Weekly	3	
<input type="checkbox"/> Daily or almost daily	4	

Question 4

How often after during the last year have you found that you were not able to stop drinking once you started ?

<input type="checkbox"/> Never	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Less than monthly	1	
<input type="checkbox"/> Monthly	2	
<input type="checkbox"/> Weekly	3	
<input type="checkbox"/> Daily or almost daily	4	

Question 5

How often during the last year have you failed to do what was normally expected from you because of your alcohol ?

<input type="checkbox"/> Never	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Less than monthly	1	
<input type="checkbox"/> Monthly	2	
<input type="checkbox"/> Weekly	3	
<input type="checkbox"/> Daily or almost daily	4	

Question 6

How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

<input type="checkbox"/> Never	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Less than monthly	1	
<input type="checkbox"/> Monthly	2	
<input type="checkbox"/> Weekly	3	
<input type="checkbox"/> Daily or almost daily	4	

NO, AMA, SMA or authorised delegate to complete
Alcohol history (Continued)

Question 7

How often during the last year have you had a feeling of guilt or remorse after drinking?

<input type="checkbox"/> Never	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Less than monthly	1	
<input type="checkbox"/> Monthly	2	
<input type="checkbox"/> Weekly	3	
<input type="checkbox"/> Daily or almost daily	4	

Question 8

How often during the last year have you been unable to remember what happened during a night of drinking ?

<input type="checkbox"/> Never	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Less than monthly	1	
<input type="checkbox"/> Monthly	2	
<input type="checkbox"/> Weekly	3	
<input type="checkbox"/> Daily or almost daily	4	

Question 9

Have you or someone else been injured as a result of your drinking?

<input type="checkbox"/> No	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Yes, but not in the last year	2	
<input type="checkbox"/> Yes, during the last year	4	

Question 10

Has a relative, friend, or doctor or another health worker been concerned about your drinking or suggested you cut down?

<input type="checkbox"/> No	Points 0	➔ <input style="width: 80px; height: 40px;" type="text"/>
<input type="checkbox"/> Yes, but not in the last year	2	
<input type="checkbox"/> Yes, during the last year	4	

Record total of Questions 1 to 10 here ➔

Do not score Questions 11 and 12. These questions provide an indication of the client's 'readiness to change' or 'motivation to change' their alcohol use. This will assist you in deciding the level of intervention

Question 11

Do you think you presently have a problem with drinking ?

No
 Probably not
 Unsure
 Possibly
 Definitely

Question 12

In the next 3 months, how difficult would you find it to cut down or stop drinking?

Very easy
 Fairly easy
 Neither difficult nor easy
 Fairly difficult
 Very difficult

*** Perform lifestyle counselling at every opportunity ***

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Given name(s)	Family name	Encl or Folio
--------	------	---------------	-------------	---------------

NO to complete
Lifestyle counselling
 Have you conducted lifestyle counseling on the following:

Smoking
 Yes No

Comments

Drugs and alcohol
 Alcohol audit score

Comments

Sun protection
 Yes No

Comments

Diet *(Including cholesterol, calcium, iron, and energy)*
 Yes No

Comments

Physical activity
 Yes No

Comments

Oral hygiene
 Yes No

Comments

Stress and mental health
 Yes No

Comments

NO to complete
Lifestyle counselling *(Continued)*

Sexual behaviour and STIs
 Yes No

Comments

Clinical examination	Normal	Abnormal
1. Head, face, neck, scalp		
2. Nose		
3. Mouth		
4. Teeth, gums		
5. Ears _ Including drums and vasa		
6. Eyes - General		
7. Eyes - Ocular motility		
8. Eyes - Ophthalmoscopic		
9. Eyes - Visual fields (Confrontation)		
10. Respiratory system		
11. Cardiovascular system		
12. Peripheral vascular system		
13. Abdomen - Including hernial orifices		
14. Genito-urinary system		
15. Anus - per rectum (if applicable)		
16. Skin		
17. Nervous system		
18. Endocrine system		
19. Upper extremities		
20. Lower extremities		
21. Spinal system		
22. Posture		
23. Gait		
24. Lymphatic system		
25. Mental state		
26. Identifying marks and scars		
27. ECG results		

*** Perform lifestyle counselling at every opportunity ***

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Given name(s)	Family name	Encl or Folio
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<p>MO to complete Clinical examination <i>(Continued)</i></p> <div style="border: 1px solid black; height: 450px; margin-bottom: 10px;"> <p>Comments</p> </div> <p>Are routine vaccinations complete? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is a continuation sheet attached? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is UMR available? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Outstanding problems</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Problem</th> <th style="width: 30%;">Action</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Problem	Action																	<p>MO to complete Diagnosis of disabilities <i>(Continued)</i></p> <div style="border: 1px solid black; height: 250px; margin-bottom: 10px;"> <p>Comments</p> </div> <p>Restrictions</p> <div style="border: 1px solid black; height: 250px; margin-bottom: 10px;"> <p>Comments</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>P</td><td>U</td><td>L</td><td>H</td><td>E</td><td>E</td><td>M</td><td>S</td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table> <p>Recommended MEC</p> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"> </div> <p>Recommended SPEC</p> <div style="border: 1px solid black; height: 20px; margin-bottom: 5px;"> </div> <p>Does the member require reclassification? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>↓</p> <p>Is MECR <i>(Form PM518)</i> attached? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Has member been referred for MECRB? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	P	U	L	H	E	E	M	S																
Problem	Action																																										
P	U	L	H	E	E	M	S																																				

*** Perform lifestyle counselling at every opportunity ***

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Given name(s)	Family name	Encl or Folio
--------	------	---------------	-------------	---------------

<p>MO to complete Medical fitness recommendation Is the member cleared for full specialist duties without restrictions? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Has the unit been notified by either PM 101 - Medical or Dental Fitness Advice, PM 64 - Notification of Medical Assessment or by Drivers Log Book? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Comments</p> <div style="border: 1px solid black; height: 300px; width: 100%;"></div>	<p>MO to complete Medical fitness recommendations <i>(Continued)</i> Have all outstanding vaccinations been completed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Has post deployment screening been conducted <i>(If applicable)</i>? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is a continuation sheet attached? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Has UMR been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Individual readiness status <input type="checkbox"/> Ready <input type="checkbox"/> Not ready</p> <p>Is the member in receipt of a Department of Veterans Affairs pension? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p style="text-align: center;">▼</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Disability percentage</div> <p>Comments</p> <div style="border: 1px solid black; height: 300px; width: 100%;"></div>
--	---

Medical officer conducting examination

Signature	Printed name	Rank or title	Phone number	Date
-----------	--------------	---------------	--------------	------

Confirming authority *(If required)*

Is MEC valid?
 Yes No

▼

Recommendations

Signature	Printed name	Rank or title	Phone number	Date
-----------	--------------	---------------	--------------	------

*** Perform lifestyle counselling at every opportunity ***

MEDICAL-IN-CONFIDENCE *(After first entry)*

MEDICAL-IN-CONFIDENCE (After first entry)
CPHE Personal Health Summary Report

Rank	Given name(s)	Family name	Encl or Folio
Number	Age	Unit, ship or section	Date

This report gives an overall summary of your health status and provides advice to promote improved health. Consult your Health Personnel if you have any questions or concerns.

Medical classification

Current MEC

Body weight

	Desirable	Actual
Height		
Weight		
BMI	Between 20.0 and 26.9	

Screening

Blood pressure	Normal range < 130/80 mmHg	
----------------	----------------------------	--

Other screening

Test	Result	Action

Blood profile

	Normal range	Actual
Cholesterol (mmol / l)	Less than 5 mmol / l	
HDL (mmol / l)	Greater than 1 mmol / l	
LDL (mmol / l)	Less than 3 mmol / l	
Ratio (HDL / LDL)	Less than 1:3	

Personal health issues

	Action
Smoking	
Alcohol or drugs	
Sun protection	
Diet	
Physical activity	
Oral hygiene	
Stress or mental health	

Recommendations or follow up action

Is a review appointment required?

Yes No

↓
 Date

Completed by

Signature	Printed name	Rank or title	Phone number	Date
-----------	--------------	---------------	--------------	------

Specialist Employment Stream Annual Health Assessment
*(Divers, Submariners, Aircrew, Parachutists,
Air Defence Officers and Air Traffic Controllers)*

• Use only black pen and/or stamps

Health facility			Number			Encl or folio
Service			Rank			
Unit, ship or section			Family name			
Corps, category or mustering			Given name(s)			
Reason for assessment			Date of birth			
Current MEC	Current SPEC	Date allocated	Age	Gender		
Date of last CPHE		Date of last SESAHA				

Patient to complete

General health

Have you had any illnesses since your last medical examination?

Yes No

↓

Details of current or interim illnesses

Have you had any injuries since your last medical examination?

Yes No

↓

Details of current or interim injuries

Have you undergone any operative procedures in the last 12 months?

Yes No

↓

Details of operative procedures in the last 12 months

Are you presently taking prescription or non-prescription medication?

Yes No

↓

Details of medication *(Prescription, non-prescription, vitamins, etc)*

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Family name	Given name(s)	Encl or folio
--------	------	-------------	---------------	---------------

Patient to complete

General health *(Continued)*

Have you experienced any of the following in the previous 12 months or since your last medical examination?

	Yes	No	Unsure		Medical Officer's comments <i>(If insufficient space use 'Additional comments' on page 4)</i>
1. Eye or vision problems					
2. Eye surgery or vision correction (Refractive) surgery					
3. Continual sneezing, runny nose, itchy eyes or hay fever					
4. Sinus pressure or infection					
5. Deafness, hearing problems or ringing in ear(s)					
6. Ear infections or discharge from the ear					
7. Problems with ears or sinuses when flying, diving or parachuting					
8. Ear surgery					
9. Severe motion sickness, seasickness or loss of balance					
10. Severe or frequent headaches or migraines					
11. Fainting, blackouts or unconsciousness					
12. Convulsions, fits or epilepsy					
13. Head injury or concussion					
14. Heart disease or history of rheumatic fever					
15. Palpitations or awareness of your own heartbeat					
16. High blood pressure					
17. Pain or discomfort in the chest on exertion					
18. Shortness of breath on exertion					
19. Bronchitis, pneumonia or lung abscess					
20. Coughing up blood or phlegm					
21. Chronic or persistent cough					
22. Positive TB skin test					
23. Pleurisy or severe chest pain					
24. Pneumothorax or collapsed lung					
25. Asthma or wheezing					
26. Need to use puffer or inhaler					
27. Chest, lung or heart surgery					
28. Indigestion, peptic ulcer or acid reflux					
29. Vomiting blood or passing red or black bowel motions					
30. Recurrent vomiting or diarrhoea					
31. Any change in bowel habits					
32. Jaundice, hepatitis or liver disease					
33. Hernia					
34. Back injury					
35. Joint problem or sports injury					
36. Limitation of movement					
37. Heat stress or heat illnesses					
38. Cold stress and cold injuries					
39. Fractures (Broken bones)					
40. Paralysis, muscle weakness, numbness or tingling					
41. Kidney or bladder disease (Including stones)					
42. Passing urine more or less frequently than usual					
43. Discharge from penis or vagina					
44. High blood sugar (Diabetes)					
45. Blood diseases or bleeding problem					

MEDICAL-IN-CONFIDENCE (After first entry)

Number	Rank	Family name	Given name(s)	Encl or folio
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Patient to complete

General health (Continued)	Yes	No	Unsure	Medical Officer's comments <small>(If insufficient space use 'Additional comments' on page 4)</small>	
46. Skin disease, rashes or skin lesions					
47. Any chronic or contagious disease					
48. Depression or mental illness					
49. Claustrophobia or panic attacks					
50. Experienced weight gain or loss in excess of 5kg					
51. Wires, pins, plates, rods or any surgical implants					
52. Allergies or reactions to medications or foods					
53. Diving, flying or parachuting injuries (Ear or sinus squeeze, barotrauma)					
54. Symptoms of decompression illness (DCI)					
55. Any other problem related to diving, flying or parachuting					
56. Have you received medical care outside the ADF since your last health assessment?					
57. Any possibility of being pregnant? <small>(Females only)</small>					
58. Any incapacity during menstrual periods? <small>(Females only)</small>					
59. Do you smoke?			Quantity		
60. Do you drink alcohol?			Amount per day	How often do you drink	

61. How often do you feel that your current lifestyle is putting you under too much stress?
 Often Sometimes Seldom Never

62. During the past two weeks, how much stress have you experienced?
 A lot of stress A moderate amount of stress Relatively little stress Almost no stress at all

63a. Do you have any concerns about occupational or workplace exposure hazards (eg radiation, noise, asbestos, solvents, etc)?
 Yes No

63b. Are you enrolled in an occupational health surveillance program?
 Yes No

64. Have you been deployed overseas within the last 12 months?
 Yes No

↓

Details of deployment

Date	Location	Date	Location

65. Do you wear glasses or contact lenses?
 Yes No

↓

Date of last optometry or ophthalmology examination (Month and year)

66. What was the date of your last dental examination? (Month and year)

67. Have you passed your annual fitness test?
 Yes No

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Family name	Given name(s)	Encl or folio
--------	------	-------------	---------------	---------------

Patient to complete

<p>Aircrew only</p> <p>68. Type of aircraft currently being flown</p> <p>69. Type of aircraft that you have the most flying hours with</p> <p>70. Total flying hours</p> <p>71a. Total military flying hours for the last six months</p> <p>71b. Total civilian flying hours for the last six months</p> <p>72a. Total aided night flying hours for the last six months</p> <p>72b. Total unaided night flying hours for the last six months</p> <p>73. Date of last CASA medical examination <i>(If applicable)</i></p> <p>Parachutists only</p> <p>74. Approximate date of your first jump</p> <p>75. Current level of jump qualification</p> <p>76a. Approximate number of military jumps</p> <p>76b. Approximate number of civilian jumps</p> <p>77. Date of last chamber run <i>(Free fall parachutists only)</i></p> <p>Divers only</p> <p>78. Date you obtained your dive qualification</p> <p>79a. Number of military hours logged</p> <p>79b. Number of civilian hours logged</p> <p>80. Maximum diving depth</p> <p>81. Date of maximum dive</p>	<p>Additional comments</p>
---	----------------------------

Member's certification

I certify that this is an accurate record of my medical history since my last examination and I will immediately report any changes in my medical status to ADF medical personnel.

Signature	Phone number	Date
-----------	--------------	------



Medical - in - Confidence

PREDEPLOYMENT CHECK - 3 HOSP

DATE OF CHECK 08 JUN 99

Unit	<u>176AD</u>
Category / Mustering	<u>RAADC</u>

D.O.B. 30 OCT 58 Sex: M

PFT PASS	YES / NO	DATE: <u>15 FEB 99</u>
-----------------	-----------------	-------------------------------

If no or not current member not deployable in accordance with PERS 53-13

EMPLOYMENT STANDARD:

A . G Z Class 2
"OPERATION BELISI"

Last Tetanus	<u>09 DEC 92</u>
HIV / HCV:	<u>17 JUN 99</u>
Spectacles:	<u>YES / NO</u>
Blood Group:	<u>A NEG</u>
Overseas deployment	<u>(Yes) No</u>

Destination:	<u>BOUGONVILLE</u>
Antimalarial	<u>YES / NO</u>
G6PD:	<u>Normal / Deficient</u>
Additional Vaccinations:	_____

DRUG ALLERGIES	_____
IN RED	<u>NIL</u>

MEDICAL CONDITIONS:	MEDICATIONS:
<u>VARICOSE VEINS STRIPPED IN '95" -> REOCCURRED. CAUSING DISCOMFORT.</u>	<u>NIL</u>
_____	_____
_____	_____

✓ FIT FOR DEPLOYMENT **YES / NO**

Signature: [Signature] Rank: [Signature] Position: [Signature]

MEDICAL-IN-CONFIDENCE (After first entry)

AD 392 - Revised

28 October 2005

Department of Defence

Post Deployment Health Screen

GUIDANCE NOTES ON OBTAINING EXPOSURE HISTORY

The exposure history attempts to broadly determine exposure risk. The exposure to any hazard should be greater than normally encountered in a work setting.

Exposure Risk Assessment Guidance Notes Describe the circumstances of exposure. Where, how often and how much exposure occurred? Were there any symptoms following exposure? Was any personal protective equipment worn?

Hazardous Situation	Situation	Advice
Entry to Industrial or Chemical Manufacturing / Storage Sites	Look for genuine exposure to chemicals eg entry to areas where large amounts of chemicals were stored. Note presence of strong odours	No Specific Action For documentation
Oil Fire Smoke /Smoke from waste incineration	How close was the subject to the source? How long was spent within the smoke blanket? Any symptoms noted at the time or shortly after? What type of smoke? Oil, waste or unknown chemical.	No Specific Action For documentation Seek DPH advice if required
Exposure to Diesel Exhaust Fume	This is a common environmental hazard, persons at higher risk are those regularly exposed in poorly ventilated areas, or those subjected to conditions of increased fume density.	No Specific Action For documentation
Fuels (aviation, marine or automotive)	Odour from fuels and small splashes are common and of no significance. Persons at increased risk are those working with fuels in confined spaces for prolonged periods, those who developed symptoms after fuel handling, and those doused in fuel and unable to shower.	No Specific Action For documentation Seek DPH advice if required
Solvents (eg thinners, glues, sealants) and Paints	The type, quantity and frequency of exposure should be noted. Any symptoms experienced during or shortly after use. Aerosolised paints are of particular concern, especially with indoor use. Note the use of a respirator or otherwise.	No Specific Action For documentation Seek DPH advice if required
Pesticides /Herbicides	Thermal Pesticide Foggers — being exposed to the pesticide fog/mist	No Specific Action For documentation
Dusts or Fibres	Exclude sandstorms. The nature/source is important to determine if possible e.g. insulation/building materials/chemicals	No Specific Action For documentation
Non-Ionising Radiation (eg Radar or Microwave Transmitters)	Known incidents of close proximity to powerful transmitting sources whilst transmitting. Generally being in front of or to one side is a particular risk.	No Specific Action For documentation Seek DPH advice if required
Excessive Noise and Vibration	Noise hazards are very common especially in combat areas. All personnel claiming exposure to loud noise should undergo an audiogram.	Audiogram
Lasers	Known or suspected incidents of laser exposure. Note any ocular symptoms.	Measure V/A and visual field. Refer Ophthalmologist
Ionising radiation or radioactive materials	Known contact or proximity to an unshielded IR source. Look for acute health effects which may occur up to several weeks later.	Seek specialist advice re long term health monitoring
Potentially Contaminated Water – either through drinking or swimming	Note any exposure to potentially contaminated water. Note the possible source and type of contamination.	No Specific Action For documentation
Other Incidents or Concerns	An opportunity to raise any other issues of concern to the member.	
Directorate Preventive Health (DPH) contacts	Consultant in Occupational Medicine: (02) 6266 3830 SO2 Occupational Health: (02) 6266 4194	

AD 392 - Revised

28 October 2005

MEDICAL-IN-CONFIDENCE (After first entry)

Department of Defence

Post Deployment Health Screen

Operation Name

Reporting is required in accordance with DGDHS Health Directive 224 - Notifiable Condition Reporting in the Australian Defence Force.

This form is to be attached to the front inside cover of member's Unit Dental Record.

PMKeys number	
Service number	
Rank	
Family name	
Given name(s)	
Date of birth	Gender

Encl or Folio

Deployed Unit

Unit Location

The above-named member has served in the Operation during the following period:

Commencement date	Completion date

During Deployment was the member admitted to a medical facility?

Yes No



Date of admission	Length of time in medical facility	Diagnosis or Clinical Features

At any stage, during or since returning from the Operation has the member had any of the following? (tick those which are applicable)

<table border="1"> <tr><td>Yes</td><td>No</td></tr> <tr><td> </td><td> </td></tr> </table>	Yes	No			Unexplained fevers, flushes or sweating	<table border="1"> <tr><td>Yes</td><td>No</td></tr> <tr><td> </td><td> </td></tr> </table>	Yes	No			Haemoptysis	<table border="1"> <tr><td>Yes</td><td>No</td></tr> <tr><td> </td><td> </td></tr> </table>	Yes	No			Malaise/Lethargy
Yes	No																
Yes	No																
Yes	No																
<table border="1"> <tr><td> </td><td> </td></tr> </table>			Unexplained joint or muscle pain	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Unexplained loss of weight	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Commenced Smoking						
<table border="1"> <tr><td> </td><td> </td></tr> </table>			A persistant cough	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Skin rashes, lesions or ulcers	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Alcohol overuse						
<table border="1"> <tr><td> </td><td> </td></tr> </table>			Sandfly or mosquito bites	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Animal bite or scratch	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Other unusual or unexplained symptoms or signs						
<table border="1"> <tr><td> </td><td> </td></tr> </table>			Diarrhoea	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Since returning from the Operation has the member been sick?	<table border="1"> <tr><td> </td><td> </td></tr> </table>			Needle stick injury						

Date	Diagnosis, Clinical Features or Comments

(if insufficient space attach comments on form PM 223 Continuation Sheet)

MEDICAL-IN-CONFIDENCE (After first entry)

Service number and Employee ID	Family name	Department of Defence	Initials	Date of Birth
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Civilian Populations in the Operation area may have been exposed to the health threats listed below, therefore the following diseases should be considered:

Amoebiasis	Diarrhoeal Diseases	Malaria	Shingellosis
Anthrax (endemic)	Filarial diseases	Onchocerciasis	Sindbis Fevers
Arbovirus Infections	Hepatitis (All types)	Plague	STDs (including HIV)
Brucellosis	Hydatid disease	Q Fever	Toxoplasmosis
Cholera	Intestinal worms/protozoa of various types	Rabies	Tuberculosis
Crimean-Congo Haemorrhagic Fever	Leishmaniasis	Rickettsial diseases	Typhoid
Dengue Fever	Leptospirosis	Schistosomiasis	

Targeted physical examination is specifically looking for evidence of Leishmaniasis. This examination should be performed after the examining Medical Officer has read Health Bulletin 06/2003 – Leishmaniasis.

Targeted physical examination				
Temperature:		Pulse:		Blood pressure:
Abnormalities detected	Yes	No	Comments	
Skin (scalp to toe examination)				
Ulcerated lesions				
Subcutaneous nodules				
Lymphadenopathy				
Liver enlargement				
Spleen enlargement				

Did the member experience any adverse effect associated with any of the pre-deployment vaccinations? If so what were the symptoms and how long after the vaccination did they experience them.

MEDICAL-IN-CONFIDENCE (After first entry)

Service number and Employee ID	Family name	Department of Defence	Initials	Date of Birth
--------------------------------	-------------	-----------------------	----------	---------------

Hazardous Situation <small>[For further assistance use the attached guidance notes]</small>	Frequency of Exposure				Exposure above normal duty levels		The exposure history attempts to broadly determine exposure risk. The exposure to any hazard should be greater than normally encountered in a work setting
	Never	Once	Weekly	Daily	Yes	No	
	✓ appropriate box				✓ appropriate box		Medical Officer Comments
Entering or being in close proximity to recently destroyed military vehicles or structures							
Entry to industrial/chemical manufacturing/storage sites							
Oil Fire Smoke/Smoke from Waste Incineration							
Exposure to Diesel Exhaust Fumes							
Fuels (aviation, marine or automotive)							
Solvents (eg thinners, glues, sealants) or Paints							
Pesticides / Herbicides							
Dusts or Fibres							
Non-Ionising Radiation (eg Radar or Microwave Transmitters)							
Excessive Noise and Vibration							
Lasers							
Ionising radiation or radioactive materials							
Potentially Contaminated Water – either through drinking or swimming							
Other Incidents/Concerns							

N.B in all cases where there is a clear history of high risk exposure to hazardous agents seek specialist advice from the Directorate of Preventive Health (DPH) and note any advice given

Contacts in DPH:
 Consultant in Occupational Medicine: (02) 6266 3830 SO2 Occupational Health (02) 6266 4194

Signature	Medical Officer	Location	Date	Contact Number
-----------	-----------------	----------	------	----------------

Distribution

Original:	Copy 2	Copy 3:	
	NAVY & RAAF to be forwarded to:	ARMY to be forwarded to :	To be forwarded to:
To be filed as an enclosure in the member's UMR	Navy and Air Force ADF Health Records Department of Defence Queanbeyan Annex 4 Canberra ACT 2600	ADF Health Records - Army GPO Box 1932R Melbourne VIC 3001 For inclusion on the member's CMR	Defence Health Service Branch Operational Health Surveillance CP2-7-158 Canberra ACT 2600

MEDICAL-IN-CONFIDENCE (After first entry)
Department of Defence

AD 367
Amended 17 May 04

Health Insert Slip – Op ANODE

- **Reporting is required in accordance with DGDHS Health Directive 224 Notifiable Condition Reporting in the Australian Defence Force**

Service number and Employer ID	
Rank	
Family name	
Given name(s)	
Date of birth	Gender

Encl or Folio

Deployed Unit

The above-named member has served on Op Anode during the following period:

Commencement date	Completion date
-------------------	-----------------

Post deployment, the following actions are to be completed and signed off by the member's treating medical facility. Navy personnel are to satisfy single service re-deployment requirements.

Action	Initials	Date	Results	
G-6-PD screening has been confirmed prior to commencement of malaria eradication course or history of previous Primaquine course taken				
Doxycycline 100mg per day for 14 days on RTA. OR (if contra indicated) Mefloquine 250mg once weekly for two weeks				
Completed malaria eradication course of Primaquine <i>two tablets twice per day</i> (To be taken concurrently with doxycycline) for 14 days on RTA				
Return to Australia Psychological Screening on leaving area of operation				
Post Operational Psychological Screening within 3 months of RTA (Ongoing support provided where indicated)				
Mebendazole 100mg twice a day for 3 days (Starting on the day of return to Australia depending on location of deployment or if clinically indicated)				
Post Deployment Health Screen completed				
TST (Depending on location of deployment and if clinically indicated)				
AHA (at 3 months post RTA)				
HIV screening (at 3 months)				
HCV screening (at 3 months)				
Signature	Medical Officer	Location	Date	Contact Number

Distribution

Original:

To be filed as an enclosure in the member's UMR

Copy: Navy

Navy Health Records
Department of Defence
Queanbeyan Annex 4
Canberra ACT 2600

Copy: Army

Army Health Records
GPO Box 1932R
Melbourne VIC 3001

Copy: Air Force

Air Force Health Records
Department of Defence
Queanbeyan Annex 4
Canberra ACT 2600



World Health
Organization

**International Certificate of
Vaccination or Prophylaxis**

International Health Regulations (2005)



Organisation
mondiale de la Santé

**Certificat international de
vaccination ou de prophylaxie**

Règlement sanitaire international (2005)

Issued to / Délivré à

Passport number or
travel document number

Numéro du passeport ou
du document de voyage

MEDICAL-IN-CONFIDENCE

Department of Defence

PM 1
Introduced
Sept 84

MEDICAL BOARD EXAMINATION RECORD

Type of Board		2. ECN		3. Corps		Number		Encl/Folio
1. Trade or Qualification						Rank		
4. Unit		5. Length of Service		6. Age		Surname		
7. Height (cm)		8. Weight (kg)		9. CHEST (cm) Exp Ins		10. Waist (cm)		
						Christian or Given Names		
						Date of Birth		

11. URINALYSIS		12. BP (Sitting)		13. DISTANT VISION		14. RESP FUNC		15. AUDIOGRAM					
Protein				Unaided	Corrected To				500	1000	2000	3000	4000
Sugar				R 6/	6/	FEV ₁		R					
SG				L 6/	6/	FVC		L					

<i>If not examined enter 'NE' in abnormal column</i>		Normal	Ab-normal	<i>If not examined enter 'NE' in abnormal column</i>		Normal	Ab-normal
16. Head, face, neck, scalp				30. Anus (<i>per rectum if indicated</i>)			
17. Nose				31. Skin			
18. Mouth, throat, speech				32. Nervous system			
19. Teeth, gums				33. Endocrine system			
20. Ears – including drums				34. Upper extremities			
21. Eyes – general				35. Lower extremities			
22. Eyes – ocular motility				36. Back			
23. Eyes – ophthalmoscopic				37. Posture			
24. Eyes – visual fields (<i>confrontation</i>)				38. Gait			
25. Respiratory system				39. Lymphatic system			
26. Cardiovascular system				40. Emotional stability			
27. Peripheral vascular system				41. Mental capacity			
28. Abdomen, including hernial orifices				42. ECG (<i>if performed</i>)			
29. Genito – urinary system				43. Additional marks and scars			

44. Notes (*enter relevant item number before each comment*)

If additional comments on continuation sheet PM 223, mark ✓ in box

45. Particulars of any Disabilities (<i>Entered by the Examining Medical Officer</i>)			46. Previous PES	
Diagnosis of Disabilities Discovered		Percentage Degree of Each Incapacity	Composite Assessment of Incapacity (<i>per cent</i>) for General Labour Market	
		 (Date)	

47. Next Board Date	If Permanently Unfit List Disabilities by Item No	48. PULHEEMS					CP	New PES	49. Employment Restrictions		
		P	U	L	H	E	E	M	S		

50.		51. Decision of Confirming Authority	
a. (Signature of Examining MO)	b. (Signature of Examining MO) (Signature) (Date)	
..... (Printed Name) (Printed Name)	 (Signature) (Date)	
Examined at..... Date.....		Official Stamp	

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Family name	Given name(s)	Encl or folio
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Patient to complete

General health *(Continued)*

Have you experienced any of the following in the previous 12 months or since your last medical examination?

	Yes	No	Unsure		Medical Officer's comments <i>(If insufficient space use 'Additional comments' on page 4)</i>
1. Eye or vision problems					
2. Eye surgery or vision correction (Refractive) surgery					
3. Continual sneezing, runny nose, itchy eyes or hay fever					
4. Sinus pressure or infection					
5. Deafness, hearing problems or ringing in ear(s)					
6. Ear infections or discharge from the ear					
7. Problems with ears or sinuses when flying, diving or parachuting					
8. Ear surgery					
9. Severe motion sickness, seasickness or loss of balance					
10. Severe or frequent headaches or migraines					
11. Fainting, blackouts or unconsciousness					
12. Convulsions, fits or epilepsy					
13. Head injury or concussion					
14. Heart disease or history of rheumatic fever					
15. Palpitations or awareness of your own heartbeat					
16. High blood pressure					
17. Pain or discomfort in the chest on exertion					
18. Shortness of breath on exertion					
19. Bronchitis, pneumonia or lung abscess					
20. Coughing up blood or phlegm					
21. Chronic or persistent cough					
22. Positive TB skin test					
23. Pleurisy or severe chest pain					
24. Pneumothorax or collapsed lung					
25. Asthma or wheezing					
26. Need to use puffer or inhaler					
27. Chest, lung or heart surgery					
28. Indigestion, peptic ulcer or acid reflux					
29. Vomiting blood or passing red or black bowel motions					
30. Recurrent vomiting or diarrhoea					
31. Any change in bowel habits					
32. Jaundice, hepatitis or liver disease					
33. Hernia					
34. Back injury					
35. Joint problem or sports injury					
36. Limitation of movement					
37. Heat stress or heat illnesses					
38. Cold stress and cold injuries					
39. Fractures (Broken bones)					
40. Paralysis, muscle weakness, numbness or tingling					
41. Kidney or bladder disease (Including stones)					
42. Passing urine more or less frequently than usual					
43. Discharge from penis or vagina					
44. High blood sugar (Diabetes)					
45. Blood diseases or bleeding problem					

MEDICAL-IN-CONFIDENCE (After first entry)

Number	Rank	Family name	Given name(s)	Encl or folio
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Patient to complete

General health (Continued)	Yes	No	Unsure	Medical Officer's comments <i>(If insufficient space use 'Additional comments' on page 4)</i>	
46. Skin disease, rashes or skin lesions					
47. Any chronic or contagious disease					
48. Depression or mental illness					
49. Claustrophobia or panic attacks					
50. Experienced weight gain or loss in excess of 5kg					
51. Wires, pins, plates, rods or any surgical implants					
52. Allergies or reactions to medications or foods					
53. Diving, flying or parachuting injuries (Ear or sinus squeeze, barotrauma)					
54. Symptoms of decompression illness (DCI)					
55. Any other problem related to diving, flying or parachuting					
56. Have you received medical care outside the ADF since your last health assessment?					
57. Any possibility of being pregnant? (Females only)					
58. Any incapacity during menstrual periods? (Females only)					
59. Do you smoke?			Quantity		
60. Do you drink alcohol?			Amount per day	How often do you drink	

61. How often do you feel that your current lifestyle is putting you under too much stress?
 Often Sometimes Seldom Never

62. During the past two weeks, how much stress have you experienced?
 A lot of stress A moderate amount of stress Relatively little stress Almost no stress at all

63a. Do you have any concerns about occupational or workplace exposure hazards (eg radiation, noise, asbestos, solvents, etc)?
 Yes No

63b. Are you enrolled in an occupational health surveillance program?
 Yes No

64. Have you been deployed overseas within the last 12 months?
 Yes No

↓

Details of deployment

Date	Location	Date	Location

65. Do you wear glasses or contact lenses?
 Yes No

↓

Date of last optometry or ophthalmology examination (Month and year)

66. What was the date of your last dental examination? (Month and year)

67. Have you passed your annual fitness test?
 Yes No

MEDICAL-IN-CONFIDENCE *(After first entry)*

Number	Rank	Family name	Given name(s)	Encl or folio
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Patient to complete

<p>Aircrew only</p> <p>68. Type of aircraft currently being flown</p> <p>69. Type of aircraft that you have the most flying hours with</p> <p>70. Total flying hours</p> <p>71a. Total military flying hours for the last six months</p> <p>71b. Total civilian flying hours for the last six months</p> <p>72a. Total aided night flying hours for the last six months</p> <p>72b. Total unaided night flying hours for the last six months</p> <p>73. Date of last CASA medical examination <i>(If applicable)</i></p> <p>Parachutists only</p> <p>74. Approximate date of your first jump</p> <p>75. Current level of jump qualification</p> <p>76a. Approximate number of military jumps</p> <p>76b. Approximate number of civilian jumps</p> <p>77. Date of last chamber run <i>(Free fall parachutists only)</i></p> <p>Divers only</p> <p>78. Date you obtained your dive qualification</p> <p>79a. Number of military hours logged</p> <p>79b. Number of civilian hours logged</p> <p>80. Maximum diving depth</p> <p>81. Date of maximum dive</p>	<p>Additional comments</p>
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Member's certification

I certify that this is an accurate record of my medical history since my last examination and I will immediately report any changes in my medical status to ADF medical personnel.

Signature	Phone number	Date
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MEDICAL-IN-CONFIDENCE (After first entry)

Number	Rank	Family name	Given name(s)	Encl or folio
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MO to complete

Targeted physical examination findings	Normal	Abnormal	Comments
Respiratory			
Cardiovascular			
Gastrointestinal			
Neurologic			
Dermatologic			
Orthopaedic			
ENT			
Other			

Army only (Refer DI(A) PERS 159-1)

P	U	L	H	E	E	M	S		Specialist employment classification
								MEC	

Does the member require medical reclassification?

Yes No

Medical fitness recommendation

Is the member cleared for full specialist duties without restrictions?

Yes No

Has the unit been notified by either PM 101 - Medical or Dental Fitness Advice, PM 064 - Notification of Medical Assessment or by a Diver's Log Book?

Yes No

The member requires the following restrictions

Have all outstanding vaccinations been completed?

Yes No

Has post deployment screening been conducted (If applicable)?

Yes No

Is a continuation sheet attached?

Yes No

Has UMR been reviewed?

Yes No

Individual readiness status

Ready Not ready

Medical Officer conducting health assessment

Signature	Printed name	Rank	Phone number	Date
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Confirming authority (If required)

Is MEC valid?

Yes No

Recommendations

Signature	Printed name	Rank	Phone number	Date
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Number	
Rank	
Surname	
Christianity	
Date of Birth	1

Folio/En

25

1. HMAS STIRLING		2. Gaining Ship SWAN					
3. Category/Branch/List ELECTRICAL		4. Current Medical Category I	5. Reason for Examination SEAPOSTING MEDICAL	6. Last PM 85 Date 15/1/92 Encl No 23			
7. Blood Pressure Sitting 124/72	8. Pulse 58	9. Urinalysis Albumin NEG Sugar NEG		10. Chest X-Ray PM 170 <input checked="" type="checkbox"/> Normal Encl No 18 Date 22.1.87 Abnormal <input type="checkbox"/>	11. HS I	12. Dental Examination Last PM 344 Date	
13. Distant Vision R 6 L 6		14. Near Vision R = N L = N		15. VS I			16. Serological Examination PM 170 <input checked="" type="checkbox"/> Encl No <input checked="" type="checkbox"/> Date 15 APR 93 Test RPR Result NEG (CARD-REA)
17. Height (Cms) 173cms	18. Weight (Kgs) 65Kgs	19. Neck (Cms) 35cms	20. Abdomen (Cms) 71cms	21. % Body Fat (Males) 9.4%	22. If Overweight State Action Taken NA		

23. Ongoing treatment necessitating follow-up by gaining ship, eg Specialist Consultation, Serology, IMS



24. Me

.....
 (Signature) (Printed Name) (Rank) (Date) **30/8/93.**

25. Confirming Authority (Navy Office)

.....
 (Signature of Confirming Authority) (Date)

AC 782
 Introduced Nov 88
 Replaces Navy PM 085
 Army PM 001
 RAAF PM 128

Health Assessment

• Use only black pen and/or stamps

Health Facility or ADFRU AHS-SA	
Service NAVY	Trade or Profession
Member's Unit or Ship HMAS RANKIN	Contact Number
Reason for Examination DISCH	Discharge Due

Encl or Folio
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1. Current Classification										2. Height		3. Aircrew Only - Anthropometric Measurements					
P	U	L	H	E	E	M	S	CP	MEC	SPEC	171		Sitting Height	Buttock - Heel	Buttock to Knee	Functional Reach	
4. Weight		5. BMI		6. PFT			7. Pulse		8. Blood Pressure		9. Urinalysis						
87				Date last Attempted			68		Sitting 123/80		Lying		Protein	Sugar	Blood	Pregnancy (if applicable)	
				<input type="checkbox"/> Pass <input type="checkbox"/> Fail									NPO	NPO	NPO	<input type="checkbox"/> Neg <input type="checkbox"/> Pos	
10. Visual Acuity										11. Colour Perception			12. Hearing Standard				
Distant Vision					Near Vision					Visual Standard			Ish	Farns	CPS		
R6/2.5		Corr 6			R=N		Corr N						15	/	I	I	
L6/12		Corr 6			L=N		Corr N										
13. Spirometry				14. Immunisation						Divers and Submariners Only							
FEV1	FVC	Ratio%		Immunisation required <input type="checkbox"/> Yes <input type="checkbox"/> No						15. Sharpened (Tandem) Rombergs							
										30 Secs	1 Min	2 Min	3 Min	4 Min	Total		

/240

16. Investigations (if applicable)

17. Supporting Documentation				18. Referred to Medical Officer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Continuation Sheet Used		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Medical Examination Conducted		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
UMR Reviewed		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<i>[Signature]</i> DR M MCKENZIE CMO			
Questionnaire		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No				

19. Member Conducting Health Assessment					
Signature	Printed Name	Rank	Trade or Profession	Contact Number	Date

Stock No

Medical Examination Record

• Use only black pen and/or stamps

Health Facility or ADFRU AHS-SA	
Service NAVY	Trade or Profession
Member's Unit or Ship HMAS RANKIN	Contact Number
Reason for Examination DISCH	Discharge Due

Encl or Folio
85

Physical Examination

If not examined enter 'NE' in Abnormal Column	Normal	Abnormal	If not examined enter 'NE' in Abnormal Column	Normal	Abnormal
1. Head, Face, Neck, Scalp	✓		15. Genito-Urinary System	✓	
2. Nose	✓		16. Anus	NE	
3. Mouth, Throat, Speech	✓	✓	17. Per Rectum (If indicated)	NE	
4. Teeth, Gums	✓		18. Per Vagina (If indicated)	NE	
5. Ears - Including Drums	✓		19. Skin	✓	Ref 3
6. Ear - Valsalva - Right Ear	✓		20. Nervous System	✓	
Ear - Valsalva - Left Ear	✓		21. Endocrine System	✓	
7. Eyes - General	✓		22. Upper Extremities	✓	
8. Eyes - Ocular Mobility	✓		23. Lower Extremities		✓
9. Eyes - Ophthalmoscopic	NE		24. Spinal System	✓	
10. Eyes - Visual Fields	✓		25. Posture	✓	
11. Respiratory System	✓		26. Gait	✓	
12. Cardio Vascular System	✓		27. Lymphatic System	✓	
13. Peripheral Vascular System	✓		28. Psychiatric Assessment	✓	
14. Abdomen - Include Hemial Orifices	✓		29. Identifying Marks, Scars, etc		✓

30. Notes (Comment on all abnormal findings)

3. Lower lip chancres
 23. ⊕ white pain - currently being reviewed by ortho. of
 29. As previously described

EARLY NAVY VERSION OF CRTE

31. Supporting Documentation

Continuation Sheet PM223 Used	Questionnaire	UMR Reviewed
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

32. Particulars of any Disabilities (Entered by the Examining Medical Officer)

Diagnosis of Disabilities Discovered	Percentage Degree of each Incapacity	Composite Assessment of Incapacity (per cent) for General Labour Market

33. Medical Employment Classification

P	U	L	H	E	E	M	S	CP	MEC	SPEC	34. Fit for Reserve Duty	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
									ONE	(S)	35. MEC Valid	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	36. For MECR	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

37. Examining Medical Officer

Signature	Printed Name	Rank	Contact Number	Date
	DR M RANKIN	MA		29/11/07

38. Address (To be completed when Medical Examination is completed at a Non-Australian Defence Force Facility)

39. Confirming Medical Authority

Recommended MEC Endorsed Yes (if 'Yes', go to 41) No

P	U	L	H	E	E	M	S	CP	MEC	SPEC	41. Comments

41. Signature	Printed Name	Rank	Contact Number	Date