

Cancer incidence study 2003

Australian veterans of the Korean War

October 2003

Australian Institute of Health and Welfare
Canberra

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REPATRIATION COMMISSION

16 August 2003

The Hon Danna Vale MP
Minister Assisting Minister of Defence and
Minister for Veterans' Affairs
Parliament House
CANBERRA ACT 2600

Dear Minister

I have pleasure in submitting the final report of the *Cancer Incidence Study of Australian Veterans of the Korean War* conducted by a team from the Australian Institute of Health & Welfare, headed by Dr Paul Jelfs. This study has investigated the incidence rates of cancer among Australian male veterans of the Korean War between 1982 and 1999 and compared these with the incidence rates over the same period for male members of the general Australian population of the same age.

Your predecessor had previously approved the conduct of a *Mortality Study of Australian Veterans of the Korean War*. The results of that study will be published separately and should be available shortly.

I would like to take this opportunity to thank the members of the Korean War Veterans Cancer Incidence Study Consultative Committee for their assistance and cooperation during the conduct of the study:

- Commander Ken Barnett – representing the Australian Veterans and Defence Services Council;
- Rear Admiral Ian Crawford AO AM(Mil) – representing the Regular Defence Force Welfare Association;
- Wing Commander Dick Cresswell DFC – representing the RAAF Association;
- Mr Syd Gellatly – representing the Korea and South East Asia Forces Association of Australia;
- Mr David Gibson PSM – representing the Department of Defence;
- Mr Norm Goldspink MBE – representing the Returned & Services League of Australia Limited;
- Dr James Henderson – representing the Korea War Veterans Association, NSW Inc;

- Mr Bill Hindson MC MG – representing the Australian Federation of Totally and Permanently Incapacitated Ex-Servicemen and Women;
- Major General Jim Hughes AO DSO MC – representing the RAR Association;
- Mr George Lang – representing the Association of Queensland Korean Veterans Inc;
- Mr John Manley OAM – representing the Naval Association of Australia;
- Colonel Alan McDonald – representing the Korean Veterans Association of Australia Inc; and
- Mr Ian Street – representing the Korean Veterans Tasmania.

The report's preparation was supervised by the Study Scientific Advisory Committee, chaired by Professor Priscilla Kincaid-Smith AC CBE, ably assisted by Professor Scott Henderson AO, Professor John McNeil, Professor Michael Moore and Professor John Zalcborg.

I would also like to thank Dr Keith Horsley, the Director of Research Studies and the other departmental staff who worked on the study.

Yours sincerely

A handwritten signature in black ink that reads "Paul Stevens". The signature is written in a cursive style with a large, looped initial "P".

Paul Stevens
COMMISSIONER

Professor Priscilla Kincaid-Smith

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14 August 2003

Major General Paul Stevens AO
Repatriation Commission
Lovett Tower
13 Keltie Street
WODEN ACT 2606

Dear Major General Stevens

I have great pleasure in providing you with a copy of the Report of the *Cancer Incidence Study of Australian Veterans of the Korean War*, which has been completed by the Australian Institute of Health & Welfare. The Scientific Advisory Committee has endorsed this study, undertaken by a team led by Dr Paul Jelfs.

Kind regards.

Yours sincerely



Priscilla Kincaid-Smith, AC CBE
Chair
Scientific Advisory Committee
Korean War Veterans' Health Studies.

Contents

- List of tables..... **viii**
- List of figures..... **ix**
- Acknowledgments **x**
- Executive summary**xiii**
- 1 Introduction and background 1**
 - 1.1 Overview of the Korean War and Australia’s involvement..... 1
 - 1.2. Health and environmental threats 3
 - 1.3 Objectives of the study 9
 - 1.4 Study organisation and administration 9
 - 1.5 Structure of this report10
- 2 Data and methodology.....13**
 - 2.1 Data sources13
 - 2.2 Study methods13
- 3 Findings21**
 - 3.1 Observed cancers in Korean War veterans21
 - 3.2 Korean War veterans’ cancer experience compared to the Australian community22
 - 3.3 Contribution of smoking to smoking-related cancers25
 - 3.4 Cancer in veterans by type of Service27
 - 3.5 Korean War veterans cancer incidence by Service type and duration of service32
 - 3.6 Cancer mortality of Korean War veterans43
- 4 Conclusions46**
- 5 Future directions48**
- Appendixes49**
 - Appendix A: Calculation of estimated cancer rates for varying levels of smoking prevalence50
 - Appendix B: Membership of the Study Consultative Committee51
 - Appendix C: Membership of the Study Scientific Advisory Committee52
 - Appendix D: Study protocol.....53
 - Appendix E: Project staff.....58
- References59**

List of tables

Table 1:	Comparison of incidence of head & neck cancer between male Korean War veterans and the total Australian male population, 1999.....	16
Table 2:	Veteran population by age at the end of the Korean War, 1956, at the beginning of the study, 1982, and at the end of the study, 1999.....	17
Table 3:	Most common cancers among Korean War veterans, 1982–1999	21
Table 4:	Observed and expected numbers of cancers for Korean War veterans and the standardised cancer incidence ratio (SIR), 1982–1999	24
Table 5:	Expected cancers among Korean War veterans assuming various levels of smoking prevalence	26
Table 6:	Observed and expected numbers of cancers for Korean War veterans who served in the Navy, and the standardised cancer incidence ratio (SIR), 1982–1999	29
Table 7:	Observed and expected numbers of cancers for Korean War veterans who served in the Army, and the standardised cancer incidence ratio (SIR), 1982–1999	30
Table 8:	Observed and expected numbers of cancers for Korean War veterans who served in the RAAF, and the standardised cancer incidence ratio (SIR), 1982–1999	31
Table 9:	Categories of duration of service for Navy and Army veterans.....	32
Table 10:	Observed and expected numbers of cancers and the standardised cancer incidence ratio (SIR) for Navy veterans who served in Korea in the short duration of service category, 1982–1999	37
Table 11:	Observed and expected numbers of cancers and the standardised cancer incidence ratio (SIR) for Navy veterans who served in Korea in the medium duration of service category, 1982–1999	38
Table 12:	Observed and expected numbers of cancers and the standardised cancer incidence ratio (SIR) for Navy veterans who served in Korea in the long duration of service category, 1982–1999	39
Table 13:	Observed and expected numbers of cancers and the standardised cancer incidence ratio (SIR) for Army veterans who served in Korea in the short duration of service category, 1982–1999	40
Table 14:	Observed and expected numbers of cancers and the standardised cancer incidence ratio (SIR) for Army veterans who served in Korea in the medium duration of service category, 1982–1999	41
Table 15:	Observed and expected numbers of cancers and the standardised cancer incidence ratio (SIR) for Army veterans who served in Korea in the long duration of service category, 1982–1999	42
Table 16:	Deaths of Korean War veterans diagnosed with cancer, by cancer incidence and cause of death, 1982–1999.....	44
Table D1.	Comparison of incidence of cancer x between male Korean veterans and the total Australian male population, 1982.....	56

List of figures

- Figure 1: Mean daily temperature in Pyongyang 4
- Figure 2: Mean monthly rainfall in Pyongyang 7
- Figure 3: Standardised cancer incidence ratios and 95% confidence intervals for Korean War veterans, 1982-1999, by Scenario23
- Figure 4: Standardised cancer incidence ratios and 95% confidence intervals for veterans, by service type, 1982-1999.....28
- Figure 5: Standardised cancer incidence ratios and 95% confidence intervals for Navy Korean War veterans, by service duration category, 1982-199935
- Figure 6: Standardised cancer incidence ratios and 95% confidence intervals for Army Korean War veterans, by service duration category, 1982-199936

Acknowledgments

The study was commissioned and funded by the Australian Government. It was conducted at the Australian Institute of Health and Welfare (AIHW) under the *Australian Institute of Health and Welfare Act 1987*. The study was planned under the supervision of the Study Consultative Committee, and the technical guidance of the Study Scientific Advisory Committee. Members of each of these committees and the project team are listed in Appendixes B, C and E.

The authors of this report are Dr Indrani Pieris-Caldwell, Mr Phil Trickett and Dr Paul Jelfs. This report was peer reviewed by the Study Scientific Advisory Committee using its epidemiological expertise to examine the methods and findings of this study, clinical expertise in advising on medical aspects and a veteran representative to advise on conditions in Korea affecting health risks.



Men of B Company, 2 RAR, moving down off the Kansas Line to the battalion area after a week spent constructing defensive positions, 10 January 1954. AWM 157821



A pilot climbs into the cockpit of his Mustang at snow-covered Hambung airfield, North Korea, November 1950. AWM PO675/127/068

Executive summary

- The aim of this study was to examine the incidence of cancer experienced by the 17,381 Australian male veterans of the Korean War compared with that experienced in the Australian community for the period 1982–1999. These cancer patterns were examined for all Korean War veterans and for each of the Services—Navy, Army and RAAF.
- Work was commissioned by the Department of Veterans' Affairs (DVA) and was undertaken by AIHW under the supervision of the Study Consultative Committee and a Scientific Advisory Committee. The DVA and AIHW Ethics Committees provided approval for the work.
- The outcome of the study showed that Korean veterans experienced a significantly greater overall cancer risk than the Australian community, with an excess of between 13% and 23%, and varying significantly in the pattern across Services.
- At the commencement of the study period (1982), there were 15,041 veterans identified as being alive and eligible for the study. An additional 884 veterans (5%) could not be found after extensive searches of data systems and are referred to as 'veterans whose status is unknown'.
- There were 3,543 cancers identified in the veteran population in the period 1982–1999 using the DVA Korean nominal roll and the AIHW National Cancer Statistics Clearing House. The most common cancers found among the veteran population were cancer of the prostate (21% of the total cancers), lung cancer (19%), colon (8%), melanoma (7%), rectum (6%) and head & neck cancers (5%).
- To ascertain whether veterans experienced cancer at a similar rate to the Australian community, a series of steps were required to calculate the population 'at risk' for each year of the study (i.e. remove deaths). Once this was established the Australian community rate was applied to the 'at risk' population to determine how many cancers would be expected amongst the veterans.
- Deaths of veterans were identified both here in Australia using the AIHW's National Death Index and the state and territory Registrars of Births, Deaths and Marriages databases, and overseas using the New Zealand Registrar of Births, Deaths and Marriages database.
- The 5% of veterans whose status is unknown posed a problem for the study in that they needed to be taken account of, as including them or excluding from the population 'at risk' significantly influenced how many cancers might be expected amongst veterans.
- Two 'at risk' population Scenarios were derived to manage this issue. Scenario 1 excludes veterans whose status was unknown from the at-risk population and Scenario 2 includes this group in the at-risk population. The report presents findings under both Scenarios.
- The study compared cancers in veterans with those expected based on Australian community rates under the two Scenarios, by producing standardised cancer incidence ratios. Where the ratio exceeds one, the actual cases of cancer among veterans are higher than the expected number, and vice versa. However, these results also need to be considered along with the confidence intervals around each ratio, which help indicate statistical significance. The findings reported below only highlight those results that have been found to be statistically significant.

Results

- The incidence of all cancers among Korean War veterans was 23% higher (Scenario 1) and 13% higher (Scenario 2) than expected compared with the Australian community rate.
- Compared to the expected number of cases, veterans experienced higher cancer incidence ratios under Scenario 1 and 2 for head & neck cancers (90% and 76% respectively), larynx cancer (72% and 60%), oesophagus cancer (54% and 42%) and lung cancer (42% and 31%). Smoking is a major risk-factor associated with each of these cancers.
- A further analysis of smoking-related cancers was undertaken to determine if smoking alone could explain all of the elevation in the incidence among veterans. The results indicate that even if 100% of veterans were smokers, the excess number of head & neck cancers would not have been explained by smoking alone, suggesting that there may be other factors influencing the elevation.
- Similarly, smoking prevalence rates would have had to reach 90% and 82% (under Scenario 1 and 2) to explain the cancer of the larynx ratios, 86% and 77% for cancer of the oesophagus, and 64% and 59% for cancer of the lung.
- Other cancers with significantly higher incidence among veterans, but only for Scenario 1, were melanoma and cancers of the prostate, colon and rectum.

Service type

- Cancer incidence among the Korean War veterans was analysed further by type of Service (Navy, Army and RAAF).
- The results showed that the total incidence of cancer among those who served in the Navy was 25% higher (Scenario 1) and 17% higher in Scenario 2. Prostate cancer (30% and 20% higher), head & neck cancer (93% and 81%), and lung cancer (25% and 17%) all showed significantly higher incidence among Navy veterans.
- Army veterans experienced 25% and 13% higher overall cancer incidence (Scenario 1 and 2). Lung cancer (59% and 44% higher), head & neck cancers (91% and 74%), cancer of the larynx (105% and 87%), and liver cancer (78% and 61%) all showed significantly higher incidence among Army veterans.
- Under both Scenarios, veterans who served in the RAAF showed no difference in the incidence of total cancer, but showed statistically significantly higher rates of melanoma (68% and 64%) under both Scenarios.

Duration of service by Service type

An analysis examining the relationship between cancer incidence and duration of service (short, medium and long duration) in Korea was conducted for the Army. There were insufficient numbers of cancer in the Navy and RAAF to provide a statistically reliable comparison.

- The key results from the analysis were that the number of all cancers experienced by Army veterans who served in the Korean War for a short, medium and long duration were 21%, 28% and 26% higher than expected in Scenario 1. Scenario 2 showed 10%, 16% and 13% higher numbers than expected respectively.
- The excess incidence of head & neck cancers, lung and larynx cancers among Army veterans compared with the Australian community increased consistently with duration of service under both population Scenarios, as the duration of their service in Korea increased from short to long duration category.

Mortality

- Of Korean War veterans who had developed cancer between 1982 and 1999, over 58% of veterans had died by 1999. Of these veteran deaths, the underlying cause of death in 71% of cases was the same cancer suffered by the veterans. Particularly notable were lung (89% of those dying with the same cancer), pancreas (89%), oesophagus (80%), liver (85%), brain (93%) and leukaemia (72%) cancers, which contributed greatly to the death toll of the Korean War veterans.
- A more comprehensive analysis of mortality patterns has been undertaken in another volume of the Korean War veterans' studies, examining the comparisons of mortality with the rest of the Australian community.



Two Bofors gunners enjoy a quiet moment on HMAS *Murchison* at Fork Anchorage, Han River estuary, 1951. AWM 044747



The Kapyong valley – looking across at the location of the B Company, 3 RAR positions of 25 April 1951. AWM 147836



Fairey Firefly (left) and Hawker Sea Fury (right) aircraft parked on the deck of HMAS *Sydney* in January 1952. The snow and ice made this a non-flying day. AWM PO1838.014