

CHAPTER 7

MORTALITY

INTRODUCTION

7.1 The causes and rates of mortality within a community provide valuable information that highlight health problems and provide implications for the management of future health resources and subsequent delivery of health care. Within the Australian Defence Force (ADF), the causes and rates of mortality are derived from Unit Medical Records or Notification of Casualties. Although it would be expected that the number of deaths in peacetime in the ADF would be relatively few, it is important to assess the cause and frequency of death in order to determine which deaths could have been preventable. Strategies for minimising preventable deaths may then be implemented.

ROYAL AUSTRALIAN NAVY

7.2 Death statistics for the Royal Australian Navy (RAN) were obtained from the Directorate of Personnel Computer Systems—Navy (DPCS-N). From 1994–98, there were a total of 42 deaths in the RAN—an average of 8.4 per year. The highest number of deaths during this period (14) occurred in 1995 and the lowest number (4) occurred in 1997. The average death rate over this period was 5.7 per 10 000 personnel per year. Figure 7–1 depicts the change in the rate of deaths per 10 000 personnel per year over the five-year period. The rate of deaths in the RAN decreased significantly between 1995 and 1996, and has remained relatively stable since that time.

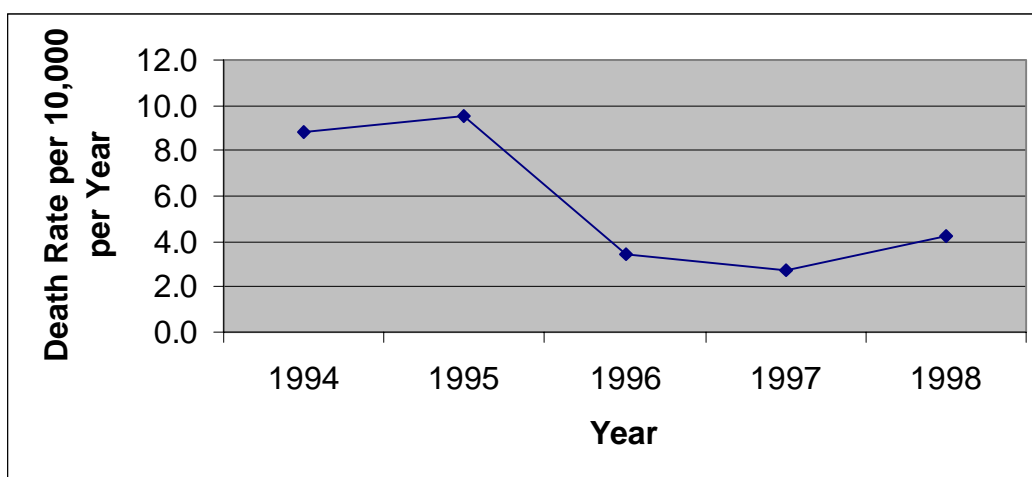


Figure 7–1: Rate of deaths in the Royal Australian Navy from 1994–98

7.3 Table 7-1 summarises the causes of death over the five-year period in terms of the categories provided by DPCS-N.

Cause of Death	1994	1995	1996	1997	1998	Total	Avg.
Asphyxiation	0	1	0	0	0	1	0.2
Air Accident	0	1	0	0	0	1	0.2
Injuries	1	1	0	0	0	2	0.4
Natural Causes	4	3	4	2	1	14	2.8
Electrocution	1	0	0	0	0	1	0.2
Misadventure	0	1	0	0	0	1	0.2
Motor Cycle Accident	2	2	0	0	0	4	0.8
Motor Vehicle Accident	2	3	0	1	0	6	1.2
Service Accident	0	0	0	0	4	4	0.8
Suicide	2	3	1	1	1	8	1.6
TOTAL	12	15	5	4	6	42	8.4

Table 7-1: Causes of deaths in Royal Australian Navy personnel from 1994-98

7.4 Figure 7-2 depicts the proportion of deaths associated with each category with the sum of motor vehicle accidents and motor cycle accidents shown under the heading 'Motor Vehicle Accidents'. The leading cause of death was 'died of natural causes', which accounted for approximately one-third of all deaths. No detailed breakdown of this category was provided. The second leading cause of death among RAN personnel was motor vehicle accidents, which accounted for nearly a quarter of all deaths over the period. Suicide was the cause in 19 per cent of all RAN deaths and the third leading overall cause of death. Service accidents (eg fire on HMAS WESTRALIA in 1998) accounted for a further 10 per cent of deaths. The remaining causes, which accounted for 13 per cent of deaths, were associated with various accidents and injuries.

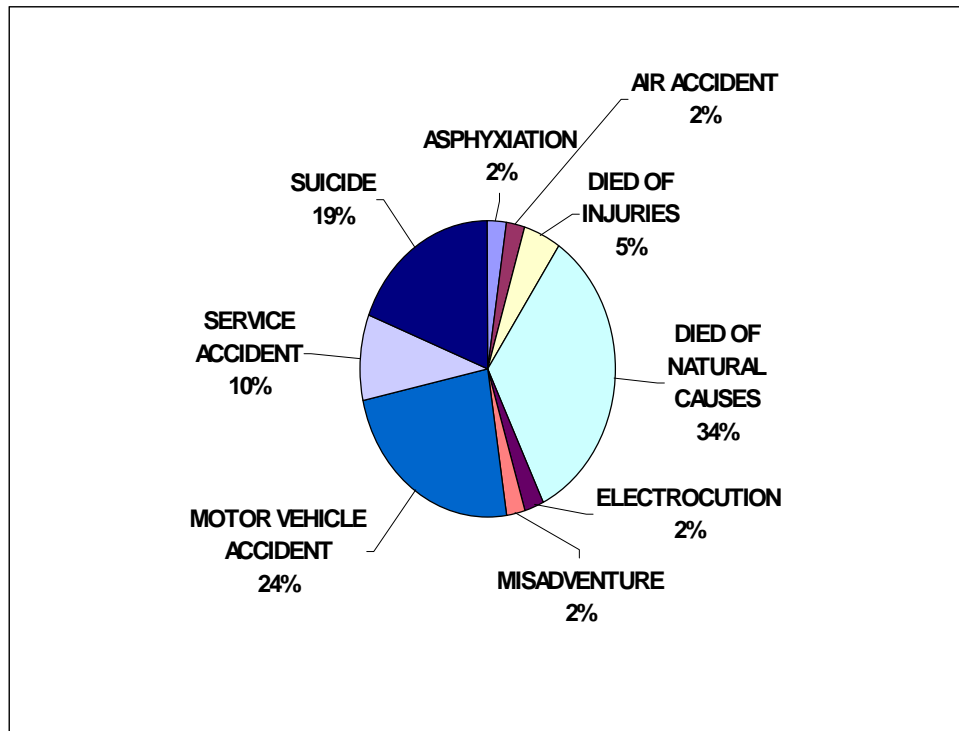


Figure 7-2: Causes of death in the Royal Australian Navy from 1994-98

7.5 A summary of the RAN death rates (per 10 000 personnel) by cause is provided in [table 7-2](#).

Cause of Death	1994	1995	1996	1997	1998	Avg.
Asphyxiation	0.0	0.7	0.0	0.0	0.0	0.1
Air Accident	0.7	0.0	0.0	0.0	0.0	0.1
Died of Injuries	0.7	0.7	0.0	0.0	0.0	0.3
Died of Natural Causes	2.7	2.0	2.8	1.4	0.7	1.9
Electrocution	0.7	0.0	0.0	0.0	0.0	0.1
Misadventure	0.0	0.7	0.0	0.0	0.0	0.1
Motor Vehicle Accident	2.7	3.4	0.0	0.7	0.0	1.4
Service Accident	0.0	0.0	0.0	0.0	2.8	0.6
Suicide	1.4	2.0	0.7	0.7	0.7	1.1
TOTAL	8.8	9.5	3.5	2.7	4.2	5.7

Table 7-2: Summary of death rates by cause in the Royal Australian Navy from 1994-98

7.6 In the RAN, the rate of deaths due to motor vehicle accidents has tended to decrease considerably over the past five years. The rates of suicides and deaths due to natural causes have also tended to decrease over the five year period. The death rate in 1998 would have been extremely low except for the fire aboard HMAS WESTRALIA, which resulted in four of the six RAN deaths that year.

AUSTRALIAN REGULAR ARMY

7.7 Statistics on deaths in the Army were provided from the death register database maintained by Soldier Career Management Army. Figure 7-3 depicts the number of deaths in the Army, which occurred over the period from 1994-98. The average number of deaths over the five year period was 27.4 with an average of 24.6 related to deaths of Australian Regular Army (ARA) personnel and an average of 2.8 related to deaths of general reserve personnel.

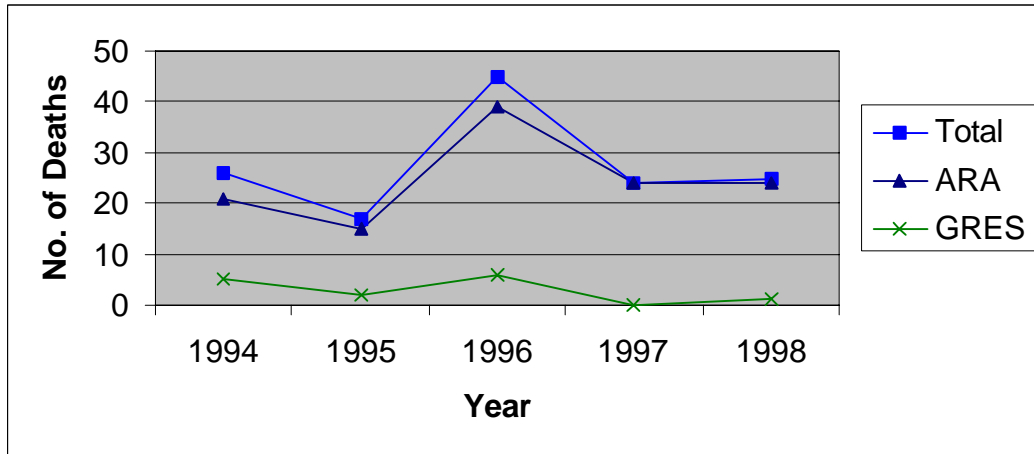


Figure 7-3: Number of deaths in the Australian Army from 1994-98

7.8 The average death rate over the period for ARA personnel was 9.5 per 10 000 personnel per year. As can be seen in figure 7-4, the death rate was abnormally high for 1996, attributable to the 18 deaths resulting from the crash of two Blackhawk helicopters.

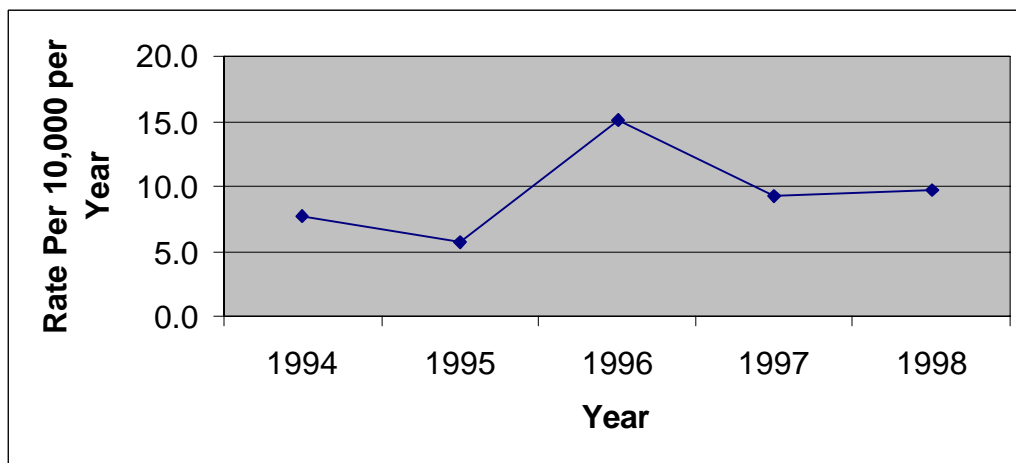


Figure 7-4: Rate of deaths in Australian Regular Army personnel from 1994-98

7.9 A summary of the causes of death among ARA personnel from 1994-98 is depicted in figure 7-5. The leading cause of death in the ARA was motor vehicle accidents, which accounted for 29 per cent of all deaths (an average of 7.4 deaths per year). Suicide and deaths by self-inflicted injuries and wounds accounted for 15 per cent of all deaths in the ARA (an average of 3.8 deaths per year). Air accidents and other accidents accounted for 15 per cent and 11 per cent of deaths over the five-year period. Among illnesses, cancers, cardiac events and other illnesses, injuries and congenital anomalies accounted for 11 per cent, six per cent, and seven per cent, respectively, of deaths. The cause of death was unknown in six per cent of deaths.

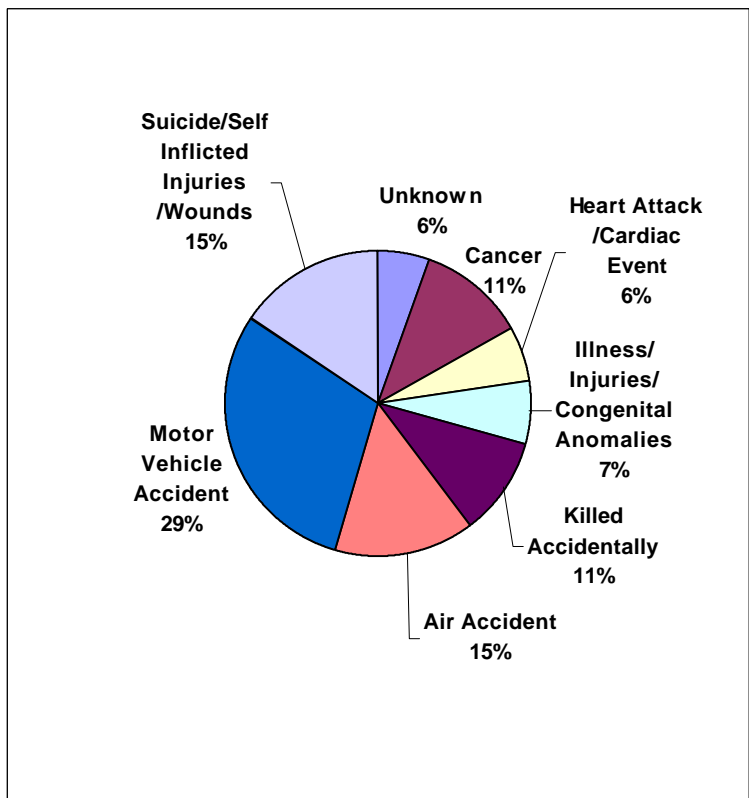


Figure 7-5: Causes of death in Australian Army personnel from 1994-98

7.10 A summary of death rates (per 10 000) by cause for ARA personnel from 1994-98 is provided in table 7-3. There are no clear trends that indicate a significant change in rates in one direction or another during the last five years.

Cause of Death	1994	1995	1996	1997	1998	Avg.
Unknown	0.0	0.0	0.8	0.8	0.8	0.5
Cancer	1.8	0.4	1.9	0.0	1.2	1.1
Cardiac Event	0.4	0.8	0.0	0.4	1.2	0.5
Illness/Injuries/Congenital Anomalies	1.1	0.0	1.2	0.8	0.0	0.6
Killed Accidentally	0.4	0.8	1.5	1.5	0.8	1.0
Air Accident	0.0	0.0	6.9	0.0	0.0	1.4
Motor Vehicle Accident	3.0	1.9	1.9	3.9	3.6	2.9
Suicide/Self Inflicted Injuries/Wounds	1.1	1.5	0.8	1.9	2.0	1.5
TOTAL	7.8	5.8	15.0	9.3	9.6	9.5

Table 7-3: Death rates by cause for Australian Regular Army personnel from 1994-98

7.11 A previous study of causes of mortality in ARA personnel for the period 1977–91 was published in 1997. The average number of deaths among ARA personnel during the period 1977–91 was 41 per year. The mortality rate during this period varied from 9 to 17 per 10 000 per year with a general trend toward lower rates over time. The trend in lower rates was considered to be attributable to the reduction in motor vehicle accident mortality in the community as a whole.¹

ROYAL AUSTRALIAN AIR FORCE

7.12 Death statistics for the Royal Australian Air Force (RAAF) were obtained from ADF Health Records—RAAF. During the period from 1994–98 a total of 50 deaths occurred in the RAAF for an average of 10 per year or an average rate of 5.8 deaths per 10 000 personnel per year. As depicted in [figure 7-6](#), the RAAF death rate has dropped since 1994.

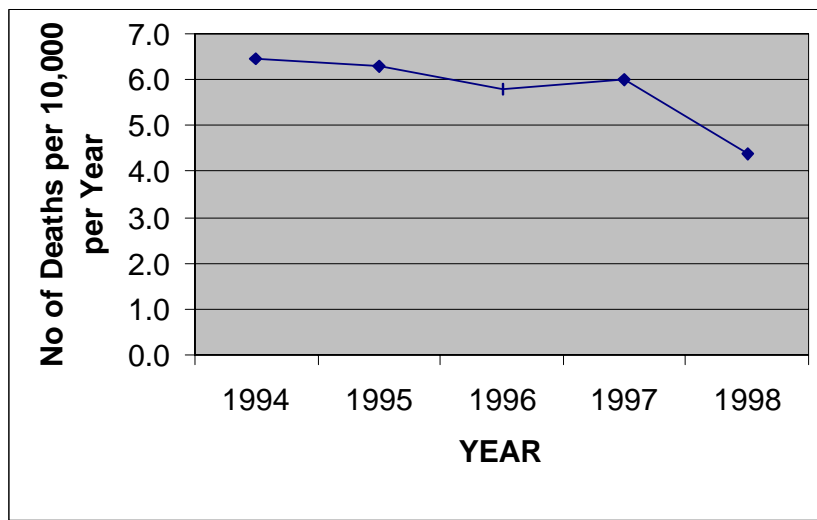


Figure 7-6: Death rates among Royal Australian Air Force personnel from 1994–98

7.13 The causes of death among RAAF personnel over the period from 1994–98 as reported by ADF Health Records—RAAF are depicted in [figure 7-7](#). Cancer was the leading cause of death among RAAF personnel, contributing to 32 per cent of deaths. The second leading cause of death among RAAF personnel was motor vehicle accidents, accounting for 24 per cent of deaths (average rate equal to 1.4 motor vehicle accidents per 10 000 personnel per year). Heart ailments and suicide each accounted for 18 per cent of deaths. Other accidents accounted for six per cent of deaths.

¹ Thompson, R.J., Warfe, P.G., and Lipnick, R.J., 'Causes of Mortality in Australian Regular Army Personnel, 1977–1991', Paulatim, 1997, pages 53–57.

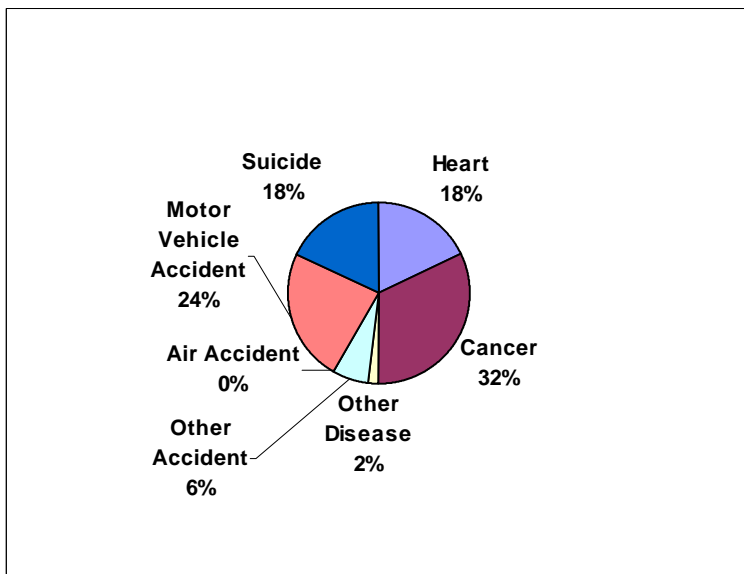


Figure 7-7: Causes of death in Royal Australian Air Force personnel from 1994-98

7.14 A summary of death rates (per 10 000 personnel) by cause for RAAF personnel is provided in [table 7-4](#). There are no clear trends to indicate that rates of death in any category have changed significantly over the past five years.

Cause of Death	1994	1995	1996	1997	1998	Avg. ^(a)
Heart	1.1	0.6	1.2	0.6	1.9	1.1
Cancer	3.2	1.1	1.7	2.4	0.6	1.8
Other Disease	0.0	0.0	0.0	0.0	0.6	0.1
Other Accident	0.0	0.6	0.0	1.2	0.0	0.4
Air Accident	0.0	0.0	0.0	0.0	0.0	0.0
Motor Vehicle Accident	1.6	2.9	0.0	1.8	0.6	1.4
Suicide	0.5	1.1	2.9	0.0	0.6	1.0
TOTAL	6.5	6.3	5.8	6.0	4.4	5.8

Note

(a) Based on data from ADF Health Records—RAAF.

Table 7-4: Death rates in Royal Australian Air Force by cause from 1994-98

COMPARISON TO RELEVANT BENCHMARKS

Comparisons between the Services

7.15 Table 7-5 compares average death rates per 10 000 personnel between the Services for the period from 1994-98. The Army had the highest and the RAN had the lowest death rate among the Services over the five-year period. The RAAF and RAN had the same rates for motor vehicle accidents, but the Army rate was more than twice as high as the other two Services. The reason that the Army had a much higher rate of air accidents is attributable to the Blackhawk Incident in 1996, which resulted in 18 deaths. The rates of suicide/self-inflicted injury were comparable among the Services although the Army rate was somewhat higher than the other Services. The death rate from other accidents was highest in the RAN and lowest in the RAAF. The RAAF had higher rates of death due to cancer and heart attack/cardiac events than the Army. No data was available for comparison with the RAN, since such deaths are recorded in the RAN database as 'natural causes.'

Cause of Death	RAN	ARA	RAAF
All Causes	5.7	9.5	5.8
Air Accidents	0.1	1.4	0
Motor Vehicle Accidents	1.4	2.9	1.4
Suicide/Self-inflicted injury	1.1	1.5	1.0
Other Accidents	1.2	1.0	0.4
Cancer	1.9 (Natural causes)	1.1	1.8
Heart Attack		0.5	1.1
Other Diseases		0.6	0.1
Unknown		0.5	

Table 7-5: Comparison of average death rates between Services from 1994-98

7.16 The line chart in figure 7-8 depicts the rates of death by Service (per 10 000 personnel) compared with the rates of deaths in the ADF for the same period 1994-98.

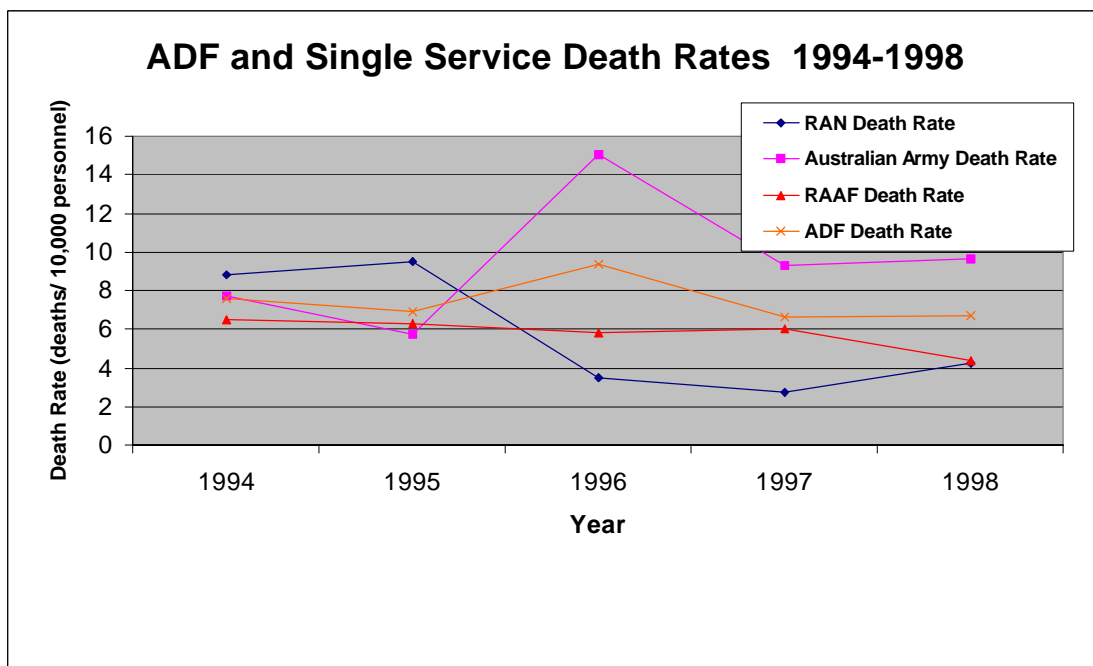


Figure 7-8: Individual Service death rates compared with Australian Defence Force death rates per 10 000 personnel

7.17 The overall average rates of death in the ADF from 1994–98 are illustrated in figure 7-9. The highest rate of death in the ADF, at 32 per cent, was attributed to natural causes which include cancers, disease and cardiac events. Motor vehicle accidents were the second highest cause of deaths, at a rate of 27 per cent. The third highest death rate was suicide and self inflicted injury, with a rate of 17 per cent.

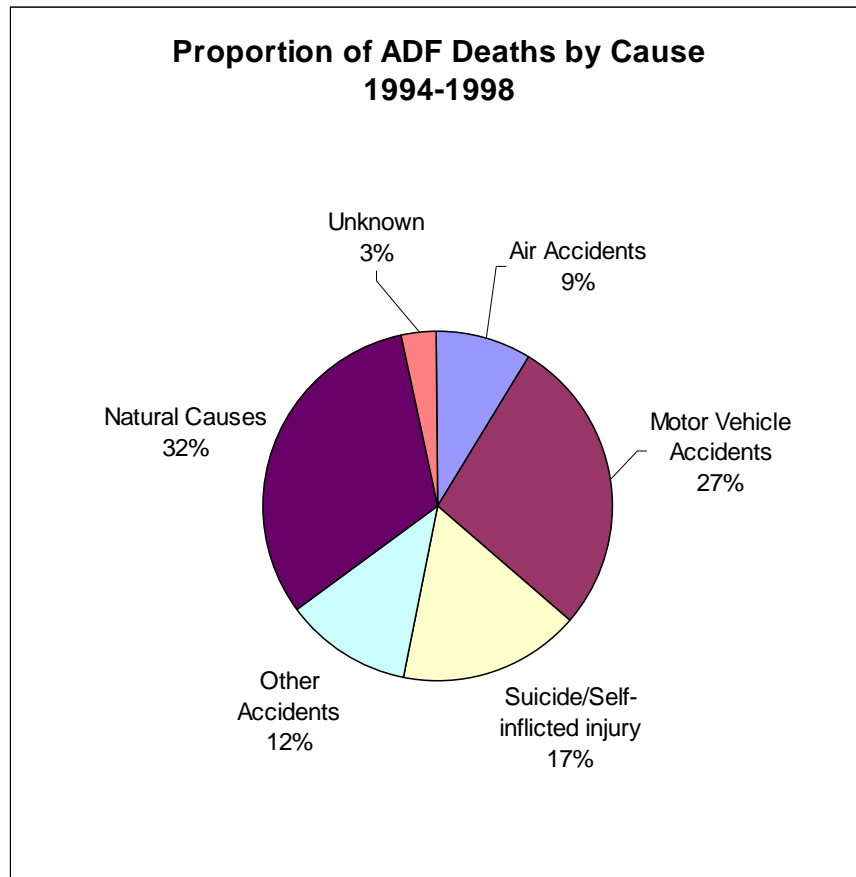


Figure 7-9: Proportion of Australian Defence Force deaths by cause—1994–98

Comparison with the Australian population at large

7.18 The Australian Bureau of Statistics (ABS) publishes an annual report on causes of death among the Australian population.² Since many causes of death are age related, the most accurate comparisons of death statistics require that the death rates be age standardised. Age standardised rates were not calculated for the ADF as part of this report. Such calculations should be considered for future reports. Despite the inherent problem in comparing non-standardised rates, a brief discussion of death rates within the Australian population at large may provide some reference point for evaluating the ADF statistics. The overall standardised death rate in Australia for all causes in 1997 was 624.3 per 100 000 population per year (62.4 per 10 000 population per year). The Australian rate has fallen every year since 1988 when it was 752.2 per 100 000 per year, a decrease of 17 per cent. Leading causes of death differ by age. The ABS provides a summary of death statistics for the 15–24 and 25–44 year age groups, which are probably most comparable to the ADF population.

7.19 The 1998 Australian death rate for suicide in males aged 15–54 years was 31.5 per 100 000 persons. The suicide death rate for males (aged 17–55 years) in the ADF for 1998 was 16.8 per 100 000 (eight suicides in the male ADF population of 47756 personnel). The rates were even lower in 1999 with six males suicides in an ADF population of 45 134, resulting in a rate of 13.3 per 100 000 personnel. ABS rates for the Australian population for 1999 are not yet available. Whilst the ADF suicide death rates are lower than those of the Australian population, the smaller numbers of ADF suicides and the different socio-economic structure of the ADF makes it difficult to make any valid comparisons between the rates of the two populations.

7.20 The age-specific death rates from motor vehicle traffic accidents for the 15–24 and 25–44 age groups in Australia in 1997 were 19.6 per 100 000 per year and 10.1 per 100 000 per year, respectively. Once again, males have much higher death rates from motor vehicle accidents than women. The age-specific death rates for males in the 15–24 and 25–44 age group in 1997 were 28.5 and 14.7, respectively. The rates among all RAN and RAAF personnel (14 per 100 000 per year) are similar to the rate among males in the 25–44 age group in Australia. The rate among ARA personnel (29 per 100 000 per year) is similar to the rate among males in the 15–24 age group. Thus, it appears that the rate of deaths in ARA personnel from road traffic accidents is higher than rates in the general population. The proportion of all deaths due to motor vehicle accidents for the 15–24 and 25–44 age groups in Australia in 1997 were 27.0 per cent and 9.1 per cent, respectively. The proportion of deaths in the ADF attributable to motor vehicle accidents (RAN = 24 per cent, Army = 30 per cent, and RAAF = 24 per cent) is much higher than in the 25–44 age group in Australia.

7.21 The age-specific death rate from malignant neoplasms in the 25–44 age group in Australia in 1997 was 20.7 per 100 000 population per year, compared with the five year (1994–1998) average cancer rate for RAAF of 18 per 100 000 population, and the ARA rate of 11. (A combined ADF rate was unavailable as RAN death records did not break down the cause of ‘deaths by natural causes’.)

Comparison with other militaries

7.22 A paper on military suicides in The Technical Cooperation Program (TTCP) Nations (United States (US), United Kingdom (UK), Canada, Australia and New Zealand (NZ))³ provides an extensive review and analysis of data on suicides in the military. Topics covered in the paper include comparative suicide rates across the relevant military organisations, and the demographics, predisposing variables, potential triggers and behavioural signals associated with the victims. The TTCP study indicated that the reasons for the generally lower suicide rates in the military populations relative to matched comparisons in the civilian population reflect a number of factors, including tight screening processes and lack of attractiveness of the military to some groups. Of high risk groups in the general population, many are under-represented in or absent from the military including: people suffering from mental disorders, alcoholics, young people, the elderly, the bereaved, people in custody, native peoples, the unemployed or retired, those living alone, and those with poor physical health. The TTCP study also notes that lower rates may also reflect the group focus and substantial support mechanisms of most Defence organisations including counselling support, health programs, alcohol and drug programs, stress management programs, and free medical treatment. In addition, there is a tendency in military organisations to discharge those who do not ‘fit in’ or who are management ‘problems.’⁴ The British Army publishes an annual report of Army Health Indicators, which includes a summary of death statistics.⁵ In 1998 the overall death rate in the British Army was 9.0 deaths per 10 000 personnel per year, which is comparable to the ARA rate. During the ten-year period from 1988 to 1998, the death rate among men in the British Army varied from a minimum of eight deaths per 10 000 personnel per year to a maximum of 14 deaths per 10 000 personnel per year. In 1998, road traffic accidents accounted for 42 per cent of deaths in the British Army, compared to the five-year average Australian Army percentage of 30 per cent. The percentage of deaths attributable to self-inflicted wounds/suicide were the same for the British Army (1998) and the ARA (five-year average), at 15 per cent. The percentage of deaths due to neoplasms in the British Army in 1998 (16 per cent) was somewhat higher than the ARA five-year average of 11 per cent. Deaths related to heart disease were consistent with both the British Army (1998) and the ARA five-year average at six per cent.

7.23 The TTCP report notes that ‘although suicide rates tend to be less in the military than for matched groups in the general population, they still constitute the third leading cause of death and warrant special attention. This is not only because of the loss of the victims, but also because of the detrimental impact of suicides on the organisation, and on the victims’ associates.’⁶ The author notes that because of the low number of suicides in the smaller military forces, annual frequencies can and have fluctuated greatly from year to year. Thus, comparison across TTCP military populations requires caution.

3 Towney, A., ‘Military Suicides in TTCP Nations’, June 1994, The Technical Cooperation Program, Technical Panel UTP-3.

4 Towney, page 5.

5 Defence Analytical Support Agency, ‘Army Health Indicators 1998, volume 1: Deaths and Medical Discharges’, March 1999, British Army.

6 Towney, page 1.

7.24 Table 7-6 provides a summary of annual suicide rates per 10 000 for TTCP military organisations over varying periods between 1975 and 1991.⁷ The RAN suicide rate (1994-98) was lower than the Canadian, comparable to the NZ, and somewhat higher than the UK and US naval forces. The low figures for the US Navy may be influenced by the rules for data selection (ie only those with both death and suicide recorded against their names included). The US Navy figure is also well below the rate of 11.0 for 1982-84 described in one study. The Australian Army suicide rates were lower than the Canadian, higher than the NZ and comparable to the UK and US armies. The NZ figures may be distorted because of the very small numbers and lack of formal recording procedures. The RAAF rate was the lowest among TTCP air forces.

	Australia 1994-1998	Canada	New Zealand	United Kingdom	USA
Navy	1.1	1.31	1.02	0.73	0.66
Army	1.5	2.04	0.49	1.31	1.25
Air Force	1.0	1.4	2.14	1.17	1.15

Table 7-6: Suicide rates (per 10 000) in The Technical Cooperation Program Military Organisations

PREVENTION

Natural causes

7.25 Natural causes (disease, cardiac events and cancer) are the highest causes of death for ADF personnel, causing 32 per cent of ADF deaths over the five years from 1994-98. Whilst genetics is a factor in some disease, cancers and cardiac events such as chronic heart disease, hypertension and ischaemia, lifestyle factors are a contributing cause. Preventive strategies that involve education and changes to lifestyles, especially in the areas of physical exercise, dietary intake, stress management, cigarette smoking and sun exposure, offer significant reduction in morbidity and mortality rates for these health conditions. Chapter 4—'Risk factors for disease and health promotion' covers these issues within ADF health promotion management.

Motor vehicle accidents

7.26 Motor vehicle and motor cycle accidents are the second highest cause of death in the ADF, contributing to 27 per cent of deaths. Potential risk factors for motor vehicle related deaths include the following: not wearing seatbelts, driving under the influence of alcohol or drugs, fatigue, and driving at excessive speeds. Currently, data is not captured which would provide an indication of the extent to which such factors played a role in the deaths of ADF members in motor vehicle accidents. Continued education and command emphasis are important. While death rates due to motor vehicle accidents in the RAAF and RAN appear comparable to the general population for comparable age groups, the Army rates are higher and warrant further investigation.

Suicide

7.27 The third highest cause of death in ADF personnel over the past five years is suicide, which causes 17 per cent of ADF deaths. While most authors (referred to in the TTCP report on suicides in the military) acknowledged the difficulties in preventing suicides, most thought that the generally lower levels in the military could be either maintained or improved by adopting specific measures. 'In general, the authors emphasise strategies that involve systemic, integrated approaches, rather than piecemeal or specialist oriented programs.'⁸ The TTCP report discusses six preventive measures for suicide in the military: health promotion, leadership training, specialist training, formal policies and procedural directives, accurate data gathering mechanisms, and improved screening.⁹

7 Toney, page 4.

8 Toney, appendix C.

9 Toney, appendix C.

7.28 Health promotion. Some authors have emphasised the promotion of a healthy lifestyle ethos as playing an important role. They suggest increasing the emphasis on the positive aspects of health promotion with suicide prevention incorporated as part of it, rather than being singled out specifically. Specific measures include:

- a. development of an ethos emphasising health, nutrition and fitness;
- b. encouragement of a personal commitment to healthy living by members through education, training, leadership and peer pressure;
- c. an emphasis on 'spiritual fitness' and an emphasis on adherence to and identification with the professional values and ethics of the military organisation;
- d. mandatory programs in oral health, hypertension identification, physical exercise, nutrition, weight control, smoking cessation and drug and alcohol control;
- e. development of crisis intervention, preventative and educational programs by health and care giving agencies in the areas of stress management and suicide prevention;
- f. ensuring a high level of awareness and ready availability of health care and personnel support systems including the use of such mechanisms as personal newsletters;
- g. possible introduction of mental health maintenance screening;
- h. access to a high-level of awareness of a 'hotline' and self-help groups; and
- i. emphasis to change the provision of support for members in critical jobs, and away from automatic exclusion if problems are identified.

7.29 Leadership training. In recognition that up to two thirds of victims had no contact with support agencies prior to their suicide, some authors have stressed the importance of good leadership and management training for first-line supervisors and other managers to ensure they can recognise warning signs and refer appropriately. Specific recommendations on what the training should emphasise are included in the TTCP report.

7.30 Specialist training. In addition to primary mental health care workers such as psychiatrists, psychologists, social workers and psychiatric nurses, other specialist groups, particularly those who serve as 'caregivers' and 'gatekeepers' may benefit from training in suicide awareness. These include medical doctors, military police, clergy, trainers, and members of critical incident stress management teams.

7.31 Formal policies and procedural directives. Several authors have highlighted the requirement for specific, clear, formal policies and directives governing areas of responsibility and procedural requirements when fatal or non-fatal self-inflicted injuries occur. The TTCP report provides specific examples of suggested actions following non-fatal self-inflicted injuries and suicides.

7.32 Accurate data gathering mechanisms. An important step in minimising suicides stressed by many authors involved improvements in data collection, processing, and reporting procedures. Such data provides important information that can inform prevention strategies. The establishment of a single, common database for information on suicides was stressed. While the incorporation of suicide and self-inflicted injury reporting with other injury and fatality reporting systems is consistent with a 'systemic approach', there is a need for specific suicide related information to be gathered.

7.33 Improved screening. While existing selection processes may screen out potential suicide victims, there may be a need for more research in this area, including trialing of specific instruments. Specifically the General Health Questionnaire and Beck's Depression Scale were suggested as potential trial instruments for those applicants, indicated by other measures, as requiring further investigation.

7.34 RAN experience. Many recommendations in the TTCP report have been incorporated into official RAN policy regarding suicides and stress management.¹⁰ The report was published in June 1994. Although the RAN suicide numbers are typically low, which makes it more difficult to determine a causative effect, it is interesting to note that RAN suicide rates dropped significantly in 1996 and have remained at the same low level since that time.

CONCLUSIONS

7.35 Each Service captures mortality data in separate databases, which differ in terms of the type and specificity of data captured. This appears to be inefficient and makes comparing data between the Services more difficult.

7.36 The ways in which mortality data is maintained by the Services do not correspond to the manner in which the Australian Bureau of Statistics records death statistics (eg by International Classification of Diseases-10 coded cause of death). Although there are unique military reasons for capturing data in somewhat different categories, the ABS standards should be adopted to the maximum extent possible.

7.37 Natural causes of death are the leading cause of death in the ADF. The ARA and RAAF break down the causes of natural deaths into cancer, cardiac events or disease, which assists in targeting health prevention strategies. RAN records from DPCS-N did not provide a break-down of natural causes of death to enable comparisons to be made.

7.38 Motor vehicle accidents are the second leading cause of death among personnel in the ADF. Death rates for motor vehicle accidents among ARA personnel appear to be higher than the Australian population at large.

7.39 Suicide rates of death in the ADF averaged out over a five-year period from 1994-98 were 26 per 100 000, compared with the 1998 national rate of 37 per 100 000 for males aged between 24-44.

7.40 Calculation of age-standardised rates would aid comparison to civilian benchmarks in future reports. Comparison of rates by gender and officer versus other ranks personnel may also provide additional useful information.

7.41 Implementation of preventive measures may be responsible for reduced suicide rates in RAN personnel over the past three years.

7.42 Over 70 per cent of ADF deaths are caused by accidents, natural causes and suicides, which could potentially be preventable by using health promotion and accident and injury prevention strategies.

