Northern Territory Government

DEPARTMENT OF HEALTH AND FAMILIES

# Burden of Disease and Injury

## in the Northern Territory

## 1999-2003

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# Summary

The burden of disease and injury (BOD) methodology was developed to provide a global assessment of ill health in a population, by quantifying the collective contributions of both fatal and non-fatal outcomes. The method can also be used to compare the relative contribution of the various conditions, and to quantify the impact of major risk factors on health outcomes. The BOD method uses the composite measure of "disability adjusted life years" (DALY) to combine both fatal health outcomes (years of life lost, YLL) and non-fatal health outcomes (years lost due to disability, YLD). It is more comprehensive and accurate than the conventional epidemiological analysis of mortality for the assessment of population health needs. BOD studies have become a leading source of evidence to inform health policy and health service planning.

This report is the second BOD study for the Northern Territory (NT), and applies the methodology used in the most recent Australian BOD study. The report provides a comprehensive assessment for 177 conditions over the period from 1999 to 2003. The report includes information on:

- the health care needs of Territorians by major disease and injury category and by demographic characteristics (age, sex and Aboriginality);
- comparisons with the national average, using age standardised DALY rates; and,
- the contribution of 17 risk factors for the common conditions. The risk factors include low socio-economic status, obesity, physical inactivity, tobacco and alcohol.

Over the five-year study period, NT residents lost a total of 174 593 DALYs. The burden of ill health was greater in males, with a male to female ratio of 1.36, which exceeded the population ratio of 1.11. The non-fatal burden of disease constituted the majority (57%) of ill health. The Aboriginal population was over-represented for both the non-fatal (57%) and fatal (50%) outcomes, compared with their proportion of the total NT population (29%). The crude DALY rate for the NT population as a whole was 34% higher than the national figures, even though the NT median age was 6 years younger than Australian median age. After adjustment for the age structure of the populations, the study highlights that the disease burden in the NT Aboriginal population for this period was 3.57 times the national average. The burden of the NT non-Aboriginal population was also greater, 1.22 times the national average. When combined, the age-adjusted burden of disease in the NT was 1.74 times the national average.

A new measure, the health adjusted life expectancy (HALE) counts the average number of years that an individual lives before suffering either a disability or death. The NT Aboriginal male HALE at birth was estimated as 51 years, 20 years shorter than the Australian average (71). The NT Aboriginal female HALE was 56 years, 19 years shorter than the corresponding Australian average (75). The greater contribution to the HALE gap between Aboriginal and Australian averages was from premature death (82% and 76% for males and females, respectively).

Among disease categories, mental conditions constituted 16.3% of the total DALYs, and ranked as the leading category of BOD for both NT males and females. Cardiovascular diseases, diabetes and cancers followed closely behind, accounting for 12.4%, 10.5% and 9.4% of the total DALYs respectively. Within the NT Aboriginal population, the age groups from 25 to 54 contributed the greatest proportion of total

health need expressed as DALYs. Among the NT non-Aboriginal population the greatest total health need is among those aged from 55 to 64 years. The World Health Organisation uses three major groups of disease and injury. Combining the DALY rates into these groups demonstrates that the differential between the NT Aboriginal and national rates for Group I conditions (communicable, maternal and neonatal conditions) was a rate ratio of 5.9, compared with Group III conditions (injury) with a rate ratio of 3.8, and the Group II conditions (non-communicable disease) with a rate ratio of 3.4. The NT non-Aboriginal DALY rates were 10-40% higher than the national average.

Caution is required when comparing BOD studies from different years because of changes in methodology and the effect of improved data recording. Nonetheless when the current study is compared with the 1994-1998 study, general changes are evident. There were increases in BOD for type 2 diabetes, depression and chronic obstructive pulmonary disease in both NT Aboriginal and non-Aboriginal populations. In the Aboriginal population the BOD attributed to nephritis and nephrosis, suicide & self-inflicted, homicide & violence and vision loss also increased. For the non-Aboriginal population, there were decreases for substance abuse and lung cancer.

Several factors limited the precision of this study. The BOD methodology is complex and continues to evolve, in part due to improvements in data availability. In this study, where local data were not available the report relied on national and international studies. There was also varying quality of data for different conditions, with data for some conditions based on estimates rather than accurate assessments. These limitations mean that the results of the study should be interpreted as indicative rather than precise information.

# Introduction

## Background

The World Health Organisation (WHO) developed the burden of disease and injury (BOD) methodology in the 1990s, as a measure of the global health care need within a population.[1] The BOD methodology quantifies in years, the collective contributions of both fatal and non-fatal outcomes, using the unit of disability adjusted life years (DALY). The DALY represents a significant evolution in health care need assessment, by moving from counting only the number of deaths to also including number of life years affected by poor health and disability.

The Australian Institute of Health and Welfare (AIHW) released the first Australian BOD report in 1999.[2] Two further national reports, the second Australian BOD study and the first national Indigenous BOD study were commissioned by the Australian Department of Health and Ageing, and completed in 2007 by a collaboration between University of Queensland and AIHW.[3,4]

**Figure 1 Age standardised disability adjusted life years per 1000 population, by state and territory, Australia, 2003**


Source: Begg et al. 2007. The burden of disease and injury in Australia 2003. See Reference 3. Reproduced with permission.

The second Australian BOD study reported that in 2003, the Northern Territory (NT) had the highest BOD among all states and territories.[3] The age standardised DALY rate for the NT was estimated to be 50% higher than the Australian average. The NT

also has the shortest "health adjusted life expectancy" (HALE) at birth (67.7 years) among all states and territories, 5.2 years shorter than the national average (72.9). The national report provided only limited information at state level and further analyses of NT BOD data by key demographics and with detailed BOD categories are required to identify causes of the high BOD in the NT and to inform the development of local health strategies.

The NT population is distinctive in many ways. It has only 1% of the total Australian population, the smallest jurisdiction in Australia by population, and with a land area of 1.3 million square kilometres also has the lowest population density. The NT has the highest proportion of Aboriginal people (29% compared with 2.4% for Australia).[5] The NT has a relatively young population with a median age of 30 years compared with the Australian median age of 36 years.[6] The NT also has the highest resident population turnover (the total of interstate/international arrivals and departures expressed as a proportion of the resident population) of any state or territory at 19% per year compared with the lowest turnover rates of 5% in Victoria and South Australia.[7]

In 2004, researchers within the Department of Health and Families published the first NT BOD study.[8] The NT study covered the five years from 1994 to 1998, which provided an increased amount of available data, while also allowing direct comparison with the first national study which utilised 1996 data. The NT study showed that health inequalities affect not only the longevity of life but also the quality of life. Additionally, most of the excess burden experienced by Aboriginal people in comparison to the non-Aboriginal population occurred in diseases such as ischaemic heart disease, chronic obstructive pulmonary disease, renal disease and diabetes, all of which have modifiable risk factors including smoking, nutrition, overweight, physical inactivity and poor education.

The results of the first NT study have been widely used to inform policy and services in both the NT and national contexts. This includes assessing and monitoring the NT population's needs for health care, identifying health priorities, and informing more effective, efficient and equitable allocation of health resources. In 2007, the Health Gains Planning Branch was requested to update the NT BOD report and provide more recent information about the health status of the NT population.

# Purpose

This second report expands the scope of the previous NT BOD report and provides a comprehensive assessment of the premature mortality and disability experienced by NT Aboriginal and non-Aboriginal populations attributable to diseases, injuries and selected risk factors for the years from 1999 to 2003. In the national BOD studies, a single year of data was used, but this is insufficient for detailed analyses by disease/injury categories and demographic variables for the NT. To increase data reliability five years of data were aggregated in this study. The aims of this study were:

- to develop NT BOD estimates for all categories of disease and injury for the years between 1999 and 2003 by age group, sex and Aboriginality;
- to estimate incidence, prevalence, mortality and duration for major categories of disease and injury by major demographic characteristics;
- to assess the health gap in terms of HALE between Aboriginal and non-Aboriginal population; and
- to estimate the contribution of major risk factors to the BOD in the NT.

# Methods

The methods used in this second NT BOD study are consistent with those used in the most recent Australia BOD study (2003),[3] with the singular addition of scabies to the NT study. This consistency in methods includes the standard for life expectancies, disease groups, classifications, disease sequelae and disability weights. The consistency between the studies allows direct comparability between the NT and national results.

## Disability adjusted life years and health adjusted life expectancy

The central measure used in BOD studies is the DALY. The DALY has two components: firstly, years of life lost (YLL) – a measure of premature death; and secondly, years lost due to disability (YLD) – a measure of the contribution of non-fatal outcomes to the total burden of ill health in a population.

YLL was determined by applying the age at death and the standard life expectancy for that specific age. The total YLL were then calculated by multiplying number of deaths by the standard life expectancy at each age. The standards applied were based on the Australian BOD study, which includes a standard life expectancy at birth of 80.0 for males and 82.5 for females.[3] YLD was derived by multiplying the estimated number of new cases of a condition by the average duration of the condition (to remission or death) and a disability weight that quantifies the equivalent loss of healthy years of life. The YLDs were estimated on the basis of both incidence and prevalence. The estimates of prevalence were derived using DisMod II,[9] a standard software for epidemiological modelling, which maintains internal mathematical balances between incidence, prevalence, mortality and duration estimates derived from the data. The future streams of DALYs are discounted at 3%. Uniform age weightings have been used in this study.

The HALE is an additional composite measure used in BOD studies and is regarded by WHO as a summary measure of the level of health attained by populations.[10] The HALE is an estimate of the average number of “healthy” life years that a person of a certain age can expect to live by adjusting for both the life years lost due to premature death and disability. In line with the national BOD study, the prevalent YLDs were adopted for revaluing HALE. The disability component was calculated by applying prevalent YLD in an abridged life table and deducting the estimated duration by the proportion of time spent at each age, in less than perfect health.[11]

As previously mentioned, the NT BOD study follows exactly the methods of the national study including BOD classification, life expectancy standard, case definition, sequela definition and disability weight, with the exception of scabies. Scabies is a parasite infestation of the skin associated with overcrowding and poor personal hygiene. The infestation is typically characterised by rash and intense itching. Scabies is added to the NT study, because while it is an uncommon and generally uncomplicated skin condition in the wider Australian population, it is particularly prevalent in the NT remote Aboriginal communities. Scabies disability weight has been assumed 0.0193 and the

duration is 1.6-3.3 years (same as eczema). A total of 177 conditions were analysed by key demographical variables.

Following the classification scheme used by the national study,[3] disease and injury categories were grouped in three broad groups:

- Group I: Communicable, maternal, neonatal and nutritional conditions;
- Group II: Non-communicable diseases; and
- Group III: Injuries.

Group I consists of five major disease categories: infectious diseases, acute respiratory diseases, maternal, neonatal and nutritional conditions. Group II is made up of 14 major disease categories, which are mental disorders, cardiovascular diseases, diabetes, cancers, neurological diseases, chronic respiratory, genitourinary, digestive, musculoskeletal, skin, congenital, oral, endocrine diseases and other neoplasms. Group III covers intentional and unintentional injuries. Direct age standardisation was undertaken using Australian 2001 estimated resident population to allow comparison between NT and national rates.

# Risk factor assessment

Modifiable risk factors are environmental exposures, personal determinants and lifestyle characteristics that are associated with an increased likelihood of an individual developing a disease or injury. These conditions are considered to be amenable to change. With one exception, the methods for risk factor assessment in this study followed those used in the Australian BOD study. A total of 17 risk factors were investigated in this study including high body mass index, physical inactivity, tobacco, high blood cholesterol, alcohol, high blood pressure, low fruit and vegetable intake, occupational exposures, illicit drugs, intimate partner violence, child sexual abuse and unsafe sex. Prevalence of each risk factor for the non-Aboriginal population was assessed using updated NT epidemiological and health survey data.

The exception to the risk factor analysis was the addition of low socio-economic status to the national list of selected risk factors. Low socio-economic status or poverty is widely recognised as a key determinant of many categories of disease and injury in the NT and also underpins many other risk factors. Statistical Local Area (SLA) level Socio-Economic Indexes for Areas 2001 (SEIFA) index[12] and YLLs were used to estimate the interplay between poverty and BOD. YLD information could not be used because it is not SLA specific, but for this purpose it was assumed that the association between risk factor and YLD was consistent with the association of risk factors and YLL. Linear regression was used to measure the correlation between the risk factor and YLL by SLA. The determinant coefficient ($R^2$) provides a statistical estimate of the proportion of the total BOD with which each risk factor is associated. The prevalence of risk factors for the NT Aboriginal population was adopted from the national Indigenous BOD study, and assumes that the NT Aboriginal population has a similar prevalence of risk factors to the national Indigenous population.[12]

Each risk factor was assessed independently by univariate analysis and the estimates for the association between risk factors and the BOD are not mutually exclusive. This means that the estimated proportion for BOD associated with all risk factors may exceed 100%. A method for assessing the interaction between the risk factors would require knowledge of the complex causal pathways between risk factors and conditions. A BOD model that incorporates the interaction of risk factors has not been developed.

# Data sources

A large number of data sources have been analysed in this study, ranging from disease surveillance and registration data, to small-scale epidemiological studies. The major datasets used and an assessment of their quality are presented in Table 1.[13,14]

**Table 1 List of data sources and quality assessment**

| Type | Data source | Quality assessment |
|---|---|---|
| Surveillance data | ABS death data, 1999-2003 | Excellent |
| | NT notifiable diseases, 1999-2003 | Excellent |
| | Cancer registry data, 1999-2003 | Excellent |
| | Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) | Good |
| Survey data | AusDiab 2000 | Reasonable |
| | National health survey data, 2001 | Reasonable |
| | National Aboriginal & Torres Strait Islander Health Survey, 2004-05 | Good |
| | NT CATI survey data, 2000 | Good |
| Administrative data | NT and national hospital morbidity data, 1999-2003 | Good |
| | NT interstate transfer data | Fair |
| Research data | Local epidemiological research | Reasonable |

All categories of YLL analysis and 51 out of 177 categories of YLD (about 66% of total DALY) used high quality death registration or disease surveillance data. The analysis of other categories of YLD applied hospital morbidity rate ratios, survey data and epidemiological research results.

During YLD analysis, a disease specific check list was followed to determine the order of priority among coexisting data sources. The check list included six questions in a descending priority:

- Is there an NT specific disease register or surveillance system?
- Is there an NT specific epidemiological survey or other study?
- Is there a national or interstate disease register or surveillance system?
- Is there a national or interstate epidemiological survey or other study?
- Are there NT service activity data?
- Is there an international epidemiological study?

Hospital morbidity rate ratios were calculated to derive YLD estimates for all categories of disease and injury to differentiate morbidity for different populations. A rate ratio greater than 1 for the NT Aboriginal population indicated that hospital admission for Aboriginal people was more common than for NT non-Aboriginal people or more common than the national average. Two types of hospital morbidity rate ratios were calculated: the ratio between NT Aboriginals and non-Aboriginal hospital admission rates and the ratio between the general NT population rates and Australian average. The NT and national hospital morbidity data were obtained from NT hospital morbidity database and HealthWiz software managed by AIHW. A standard mapping table based on the International Classification of Diseases (ICD) system was developed to derive

the age and sex specific hospital morbidity rate ratio between NT Aboriginal, non-Aboriginal population and national average.

A unique hospital registration number is available for each individual admitted to any NT public hospital, and this was used to eliminate repeated admissions of the same patient to NT hospitals at different times and locations arising from the same condition.

## Trend analysis

Epidemiological trends are important for health policy formulation. In the light of previous BOD studies, these trends could be revealed by comparing the BOD standardised rates over time, globally or by detailed categories. Unfortunately the results from this study were not easily comparable with previous BOD studies including the 1994-1998 NT BOD results, due to developments in the BOD methodology. This study therefore was limited to a descriptive assessment of the gross changes that have occurred between the two NT studies, including an assessment of the changes in ranking by BOD categories. A detailed validation of the changes between the two NT BOD studies will be undertaken as a separate project.

# Results

## Disease and injury in the Northern Territory - DALYs, YLLs and YLDs

Between 1 January 1999 and 31 December 2003, the NT resident population lost a total of 174 593 DALYs from the combination of disease and injury (Table 2). Male Territorians carried a greater burden of ill health, with a male to female ratio of total DALYs of 1.36, which exceeded the population sex ratio of 1.11. For the NT population, the non-fatal burden (YLD) constituted the majority (57%) of the total DALYs. The Aboriginal population was 29% of the total NT population for this period, and were over-represented in both fatal (YLL, 57%) and non-fatal (YLD 50%) conditions. Full details of fatal (YLL) and non-fatal (YLD) outcomes by Aboriginality, sex and disease are listed in the Appendix (Table 11 and Table 12).

**Table 2 Total burden of disease and injury measured as YLLs, YLDs and DALYs, Northern Territory, 1999-2003**

| | Aboriginal | Non-Aboriginal | Total |
|---|---|---|---|
| YLLs | | | |
| Males | 25 116 | 22 065 | 47 181 |
| Females | 17 710 | 9 849 | 27 559 |
| Total | 42 825 | 31 914 | 74 740 |
| YLDs | | | |
| Males | 24 094 | 29 475 | 53 569 |
| Females | 25 400 | 20 884 | 46 284 |
| Total | 49 494 | 50 359 | 99 853 |
| DALYs | | | |
| Males | 49 210 | 51 540 | 100 750 |
| Females | 43 110 | 30 733 | 73 843 |
| Total | 92 319 | 82 273 | 174 593 |

Note: YLL=years of life lost; YLD=years lived with disability; DALY=disability adjusted life year.

A comparison of DALYs between NT Aboriginal and non-Aboriginal populations, and between NT and Australia is presented in Figure 2. The rates are calculated for the NT as the average annual rate of DALYs per 1000 population and are compared with the national data for 2003. The results highlight that the NT Aboriginal population carried a much greater BOD than both the NT non-Aboriginal population, and the national population in terms of crude DALY rates. Males had higher DALY rates than females in all populations. The crude DALY rate for NT non-Aboriginal males was similar to the Australian male rate, but the DALY rate for NT non-Aboriginal females was 26% below the corresponding national female average. As a result, the total crude rate for NT non-Aboriginal people was 11% lower than the national average. When the NT Aboriginal and non-Aboriginal populations were combined, the crude DALY rates were 34%

higher than the national figures, even though the NT median age (30 years) was substantially younger than the Australian median age (36 years).[15]

**Figure 2 Comparison of annual disability adjusted life years lost per 1000 population, Northern Territory 1999-2003 and Australia 2003**

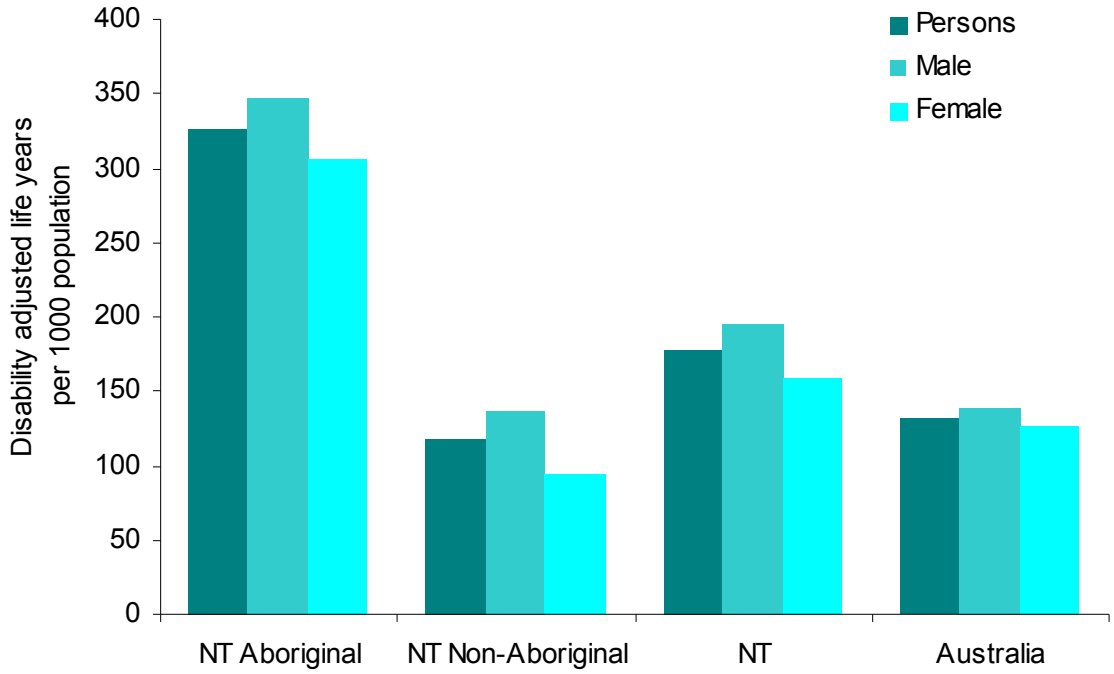



**Table 3 Annual age standardised YLL, YLD and DALY rates and rate ratios, Northern Territory 1999-2003 and Australia 2003**

| | Age standardised rates* | | | | Rate ratio (Australia=1.00) | | |
|---|---|---|---|---|---|---|---|
| | NT Aboriginal | NT non-Aboriginal | NT | Australia | NT Aboriginal | NT non-Aboriginal | NT |
| YLL | | | | | | | |
| Male | 291.2 | 88.0 | 127.0 | 75.0 | 3.88 | 1.17 | 1.69 |
| Female | 208.9 | 54.3 | 92.7 | 51.5 | 4.05 | 1.05 | 1.80 |
| Total | 248.4 | 72.8 | 110.8 | 62.8 | 3.95 | 1.16 | 1.76 |
| YLD | | | | | | | |
| Male | 220.2 | 93.8 | 120.4 | 67.3 | 3.27 | 1.39 | 1.79 |
| Female | 214.4 | 75.4 | 110.7 | 67.7 | 3.16 | 1.11 | 1.63 |
| Total | 216.6 | 86.2 | 116.3 | 67.5 | 3.21 | 1.28 | 1.72 |
| DALY | | | | | | | |
| Male | 511.3 | 181.8 | 247.3 | 142.3 | 3.59 | 1.28 | 1.74 |
| Female | 423.3 | 129.7 | 203.3 | 119.3 | 3.55 | 1.09 | 1.71 |
| Total | 465.0 | 159.1 | 227.2 | 130.3 | 3.57 | 1.22 | 1.74 |

Notes: * Annual average disability adjusted life years per 1000 population; Rates were age standardised to 2001 Australian estimated resident population. DALY=disability adjusted life year; NT=Northern Territory; YLD=years lived with disability; YLL=years of life lost.

To improve comparability between populations, the effect of the age differences between the populations on the crude DALY rates was eliminated by using direct age standardisation. Age standardised DALY rates and associated rate ratios, are presented in Table 3. The age adjusted DALY rate for NT Aboriginal population was 3.57 times the national average. The age adjusted DALY rate for the non-Aboriginal population was also greater (1.22) than the national average. The NT population as a whole carried 1.74 times greater BOD than the national average.

# Health adjusted life expectancy

The converse to the expression in DALYs of the burden of ill health in a population is the measurement of the expected years of health, expressed as HALE. A comparison of HALEs in NT populations is presented in Figure 3 and Figure 4.

NT Aboriginal male newborns were estimated to have a life expectancy, for the study period, of 59 years, 19 years less than the Australian male average (78 years). After adjustment for the non-fatal burden, the NT Aboriginal male HALE at birth was 51 years, 20 years shorter than the respective Australian average (71 years).[3] The NT non-Aboriginal male life expectancy at birth for the study period was estimated to be 75 years, 3 years less than the Australian average. However, there was no notable disparity in the estimated HALE at birth between NT non-Aboriginal and Australian males. The HALE gap at birth between NT Aboriginal and NT non-Aboriginal males (20 years) was slightly wider than the life expectancy gap (19 years), which is a result of the additional and greater burden of non-fatal conditions.

**Figure 3 Life expectancy (LE) and health adjusted life expectancy (HALE) by Aboriginality, males, Northern Territory, 1999-2003**

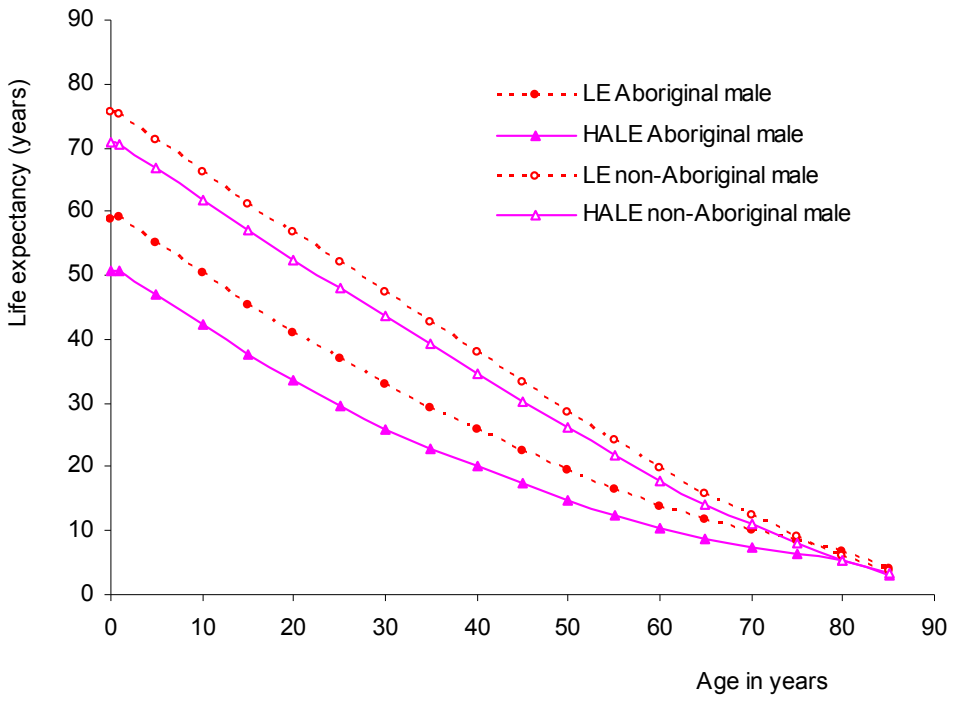
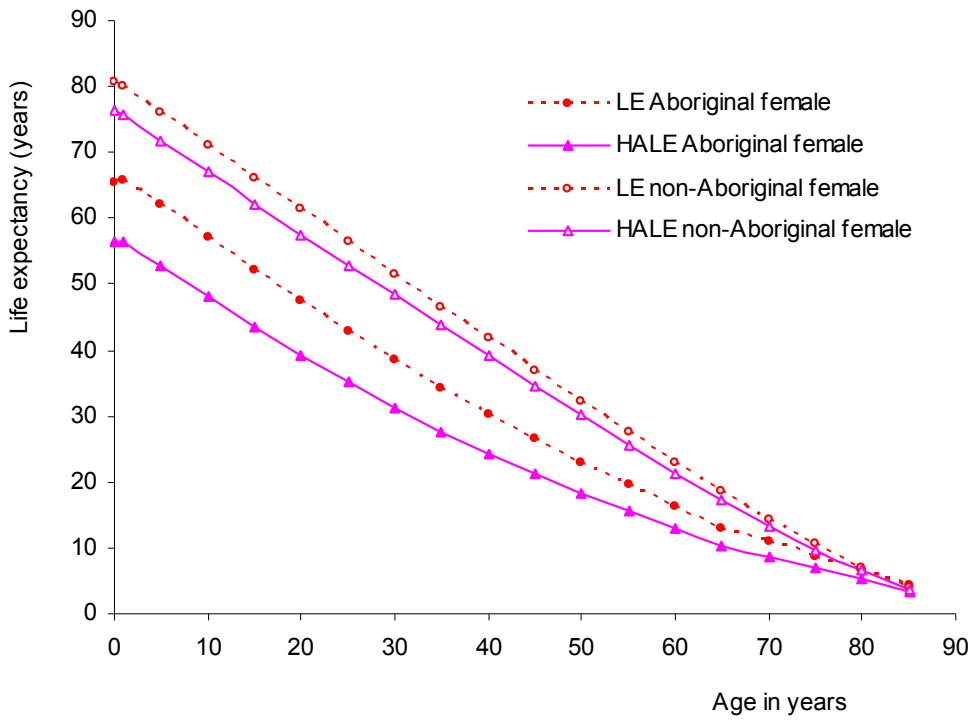


**Figure 4 Life expectancy (LE) and health adjusted life expectancy (HALE) by Aboriginality, females, Northern Territory, 1999-2003**




The NT Aboriginal female life expectancy at birth was estimated to be 65 years, 18 years shorter than the Australian average (83 years). After inclusion of the non-fatal burden, the NT Aboriginal female HALE was 56 years, 19 years less than the Australian average (75 years). The NT non-Aboriginal female life expectancy at birth was estimated to be around 81 years, 2 years less than the Australian average. However, the NT non-Aboriginal female HALE at birth was 76 years, one year longer than the Australian average. The HALE gap at birth between NT Aboriginal and non-Aboriginal females (20 years) was 4 years wider than the life expectancy gap (16 years), indicating a relatively greater non-fatal burden experienced by NT Aboriginal females.

Aboriginal males and females shared similar HALE gaps (about 20 years) at birth compared with their NT non-Aboriginal counterparts. Further details of the HALE gap between the NT Aboriginal and NT non-Aboriginal populations are presented in Table 4, including the separate contributions of fatal and non-fatal health outcomes. The table demonstrates that in NT males, 82% of the HALE gap at birth was caused by premature deaths and 18% caused by disability, whereas in NT females, 76% of the gap resulted from premature deaths and 24% from disability. The HALE gap diminishes with age, and by the age of 50 years, the gap was about 10 years. By the age of 75 years there was little difference between Aboriginal and non-Aboriginal populations for either health adjusted or conventional life expectancies. The gap between the NT Aboriginal and non-Aboriginal HALE, measured as a proportion of the Aboriginal HALE, was highest (55-77%) between ages 30 and 69 years, which emphasises that the Aboriginal HALE had the greatest potentials for improvement at ages 30-69 years.

**Table 4 Health adjusted life expectancy gap (years) between Aboriginal and non-Aboriginal populations, split by fatal and non-fatal contributions, Northern Territory, 1999-2003**

| | Due to premature death | | Due to excess morbidity | | Total HALE gap | |
|---|---|---|---|---|---|---|
| Age | Male | Female | Male | Female | Male | Female |
| 0 | 16.7 | 15.3 | 3.6 | 4.8 | 20.3 | 20.1 |
| 1 | 16.1 | 14.3 | 3.7 | 5.0 | 19.8 | 19.3 |
| 5 | 16.0 | 14.1 | 3.5 | 4.9 | 19.5 | 18.9 |
| 10 | 16.0 | 14.0 | 3.4 | 4.7 | 19.4 | 18.8 |
| 15 | 15.9 | 13.9 | 3.3 | 4.7 | 19.2 | 18.6 |
| 20 | 15.6 | 13.7 | 3.3 | 4.5 | 18.9 | 18.2 |
| 25 | 15.1 | 13.5 | 3.3 | 4.3 | 18.4 | 17.8 |
| 30 | 14.5 | 13.2 | 3.1 | 4.0 | 17.7 | 17.2 |
| 35 | 13.4 | 12.5 | 2.9 | 3.7 | 16.3 | 16.1 |
| 40 | 12.0 | 11.5 | 2.7 | 3.3 | 14.7 | 14.9 |
| 45 | 10.5 | 10.3 | 2.4 | 3.0 | 13.0 | 13.3 |
| 50 | 9.2 | 9.1 | 2.1 | 2.6 | 11.3 | 11.8 |
| 55 | 7.7 | 7.9 | 1.8 | 2.2 | 9.5 | 10.2 |
| 60 | 6.0 | 6.6 | 1.5 | 1.9 | 7.6 | 8.5 |
| 65 | 4.2 | 5.5 | 1.3 | 1.5 | 5.5 | 7.0 |
| 70 | 2.3 | 3.4 | 1.2 | 1.3 | 3.4 | 4.7 |
| 75 | 0.9 | 1.8 | 0.9 | 1.0 | 1.8 | 2.8 |
| 80 | -0.5 | 0.4 | 0.7 | 0.8 | 0.2 | 1.3 |
| 85 | -0.2 | -0.3 | 0.3 | 0.5 | 0.2 | 0.2 |

Note: HALE = health adjusted life years

# Contributions of the major disease and injury categories

The three broad BOD groups discussed in the Methods section are made up of 22 major categories of disease and injury on the basis of diagnoses in ICD codes. The contribution of each category to the total disease burden is presented in Table 5. Mental conditions constituted 16.3% of the total BOD among the NT population and were the leading category of BOD for both NT males and females. Cardiovascular diseases, diabetes and cancers were the next highest ranked categories, and accounted for 12.4%, 10.5% and 9.4% of the total DALYs respectively. There were some variations between genders. For example, females had relatively greater proportion of mental conditions (18.3%), while for males there was a greater proportion of cardiovascular diseases (13.9%). There were less marked gender differences in the proportion of total burden of disease attributed to diabetes and cancers.

The proportions of burden of disease by major disease category, sex and either fatal or non-fatal outcome are illustrated graphically in Figure 5 and Figure 6. Figure 5 highlights that NT males accounted for a greater burden of total disease and injury (58%), and were particularly prominent in intentional (77%) and unintentional injury (71%), and cardiovascular diseases (65%). NT females experienced a proportionally greater burden from nutritional (63%) and genitourinary diseases (62%), in addition to the maternal conditions. Figure 6 highlights that while fatal outcomes contributed the minority (43%) of the total burden, they were the dominant outcome for conditions such as intentional injury (84%), cancer (83%), digestive and cardiovascular diseases (both 77%). Non fatal outcomes constituted almost 100% of DALYs for oral and skin diseases.

**Table 5 Contributions of major disease categories to the total burden of disease and injury, by sex, Northern Territory, 1999-2003**

| | Disability adjusted life years | | | Percentage of total | | |
|---|---|---|---|---|---|---|
| **Major disease category** | **Male** | **Female** | **Persons** | **Male** | **Female** | **Persons** |
| Mental | 14 994 | 13 493 | 28 486 | 14.9 | 18.3 | 16.3 |
| Cardiovascular | 13 992 | 7 601 | 21 593 | 13.9 | 10.3 | 12.4 |
| Diabetes | 10 949 | 7 355 | 18 304 | 10.9 | 10.0 | 10.5 |
| Cancer | 9 395 | 7 063 | 16 459 | 9.3 | 9.6 | 9.4 |
| Neurological | 7 425 | 5 873 | 13 299 | 7.4 | 8.0 | 7.6 |
| Chronic respiratory | 6 923 | 5 349 | 12 272 | 6.9 | 7.2 | 7.0 |
| Unintentional injuries | 7 925 | 3 172 | 11 097 | 7.9 | 4.3 | 6.4 |
| Intentional injuries | 6 266 | 1 887 | 8 153 | 6.2 | 2.6 | 4.7 |
| Genitourinary | 2 996 | 4 954 | 7 950 | 3.0 | 6.7 | 4.6 |
| Neonatal | 3 963 | 2 556 | 6 518 | 3.9 | 3.5 | 3.7 |
| Digestive | 2 765 | 1 840 | 4 605 | 2.7 | 2.5 | 2.6 |
| Musculoskeletal | 1 743 | 2 533 | 4 276 | 1.7 | 3.4 | 2.4 |
| Skin | 2 317 | 1 662 | 3 979 | 2.3 | 2.3 | 2.3 |
| Infectious | 2 071 | 1 903 | 3 974 | 2.1 | 2.6 | 2.3 |
| Acute respiratory | 2 056 | 1 404 | 3 460 | 2.0 | 1.9 | 2.0 |
| Congenital | 1 810 | 1 164 | 2 974 | 1.8 | 1.6 | 1.7 |
| Nutritional | 733 | 1 223 | 1 955 | 0.7 | 1.7 | 1.1 |
| Oral | 971 | 699 | 1 670 | 1.0 | 0.9 | 1.0 |
| Endocrine | 659 | 609 | 1 268 | 0.7 | 0.8 | 0.7 |
| Other neoplasms | 213 | 320 | 533 | 0.2 | 0.4 | 0.3 |
| Maternal | 0 | 561 | 561 | 0 | 0.8 | 0.3 |
| Ill defined | 582 | 624 | 1 206 | 0.6 | 0.8 | 0.7 |
| **Total** | **100 750** | **73 843** | **174 593** | **100.0** | **100.0** | **100.0** |

**Figure 5 Sex differentials of the burden of disease and injury by major disease category, Northern Territory, 1999-2003**

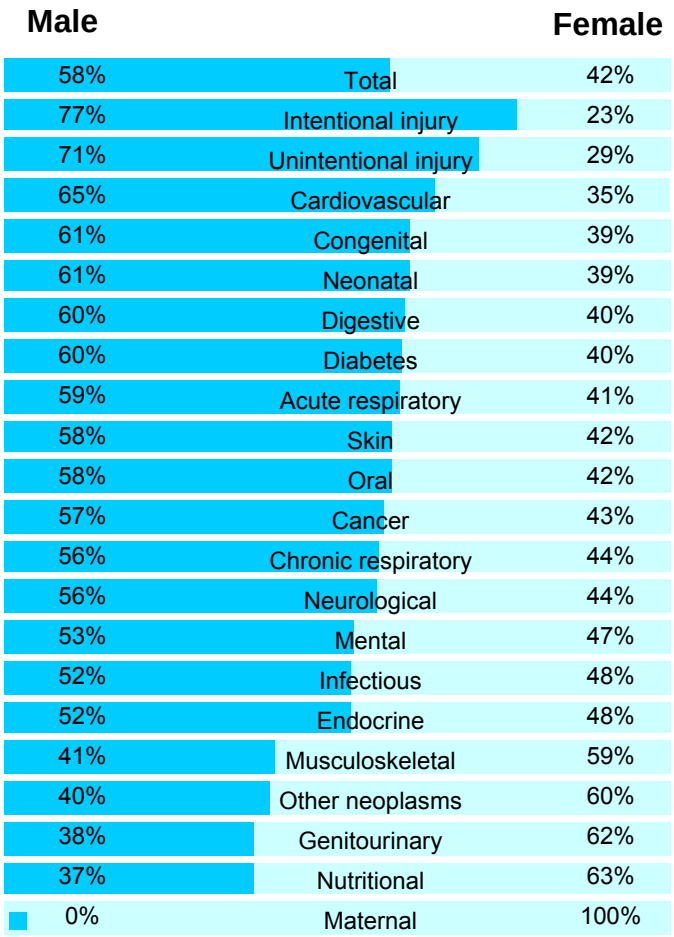
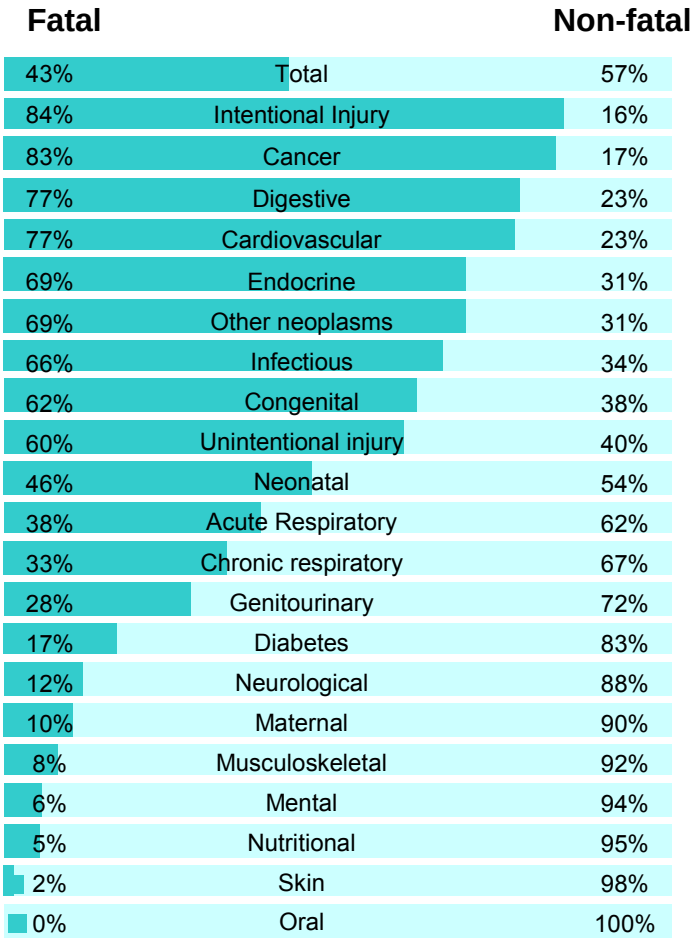


**Figure 6 Contribution of fatal and non-fatal health outcomes to the total burden of disease and injury by major disease category, Northern Territory, 1999-2003**




# Demographic patterns

The distribution of the burden of disease by age and major disease category for NT Aboriginal and non-Aboriginal populations is demonstrated graphically in Figure 7 and Figure 8 respectively. From the graphs it is evident that the NT Aboriginal population experienced the highest proportions of DALYs in the age groups from 25 to 54, and that there was a sequential impact of the leading conditions. Mental health conditions peaked in the age group 15-24 followed by the increasing impact of cardiovascular disease which peaked at 35-44 years, followed by diabetes which peaked in 45-54 years age group. Together these three conditions accounted for 40% of the total BOD in the NT Aboriginal population.

By contrast, the NT non-Aboriginal population has a different age distribution of ill health. The peak age group of ill health for the non-Aboriginal was 55-64 years, 10-20 years later than the Aboriginal population. The top three categories were mental conditions which peaked between 15 and 34 years, and cancers and cardiovascular diseases, both of which peaked in the 55 to 64 years age group. Together these three conditions contributed 43% of the total BOD in the NT non-Aboriginal population.

**Figure 7 Burden of disease and injury expressed as DALYs in the Aboriginal population, by major disease category and age group, Northern Territory, 1999-2003**

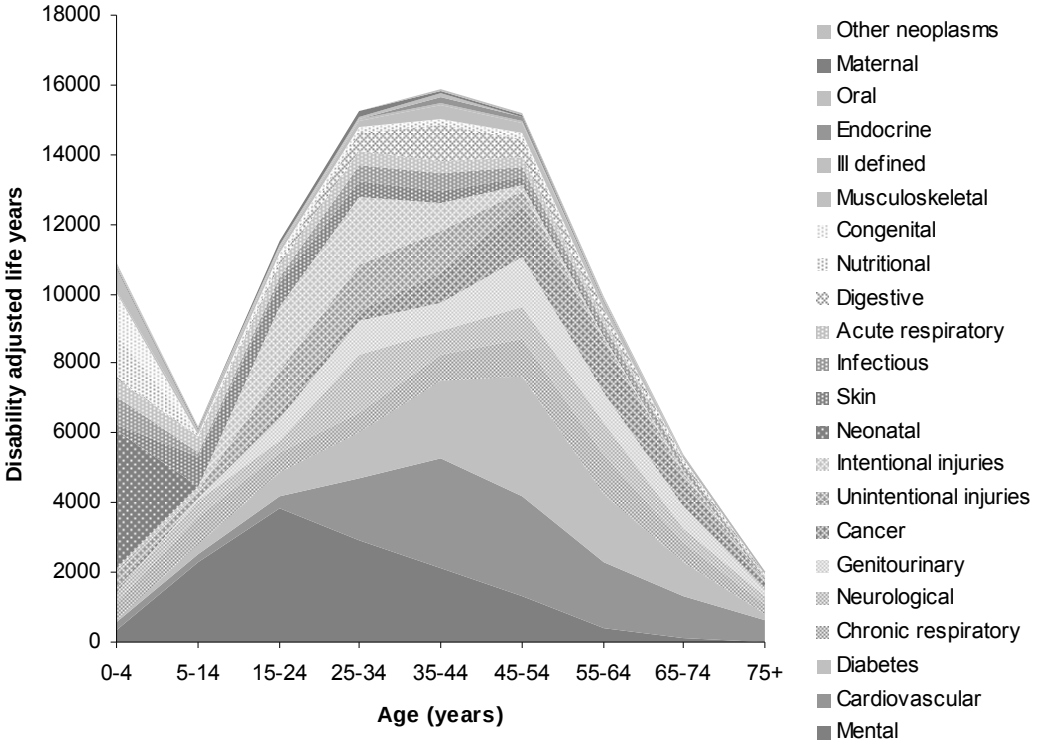
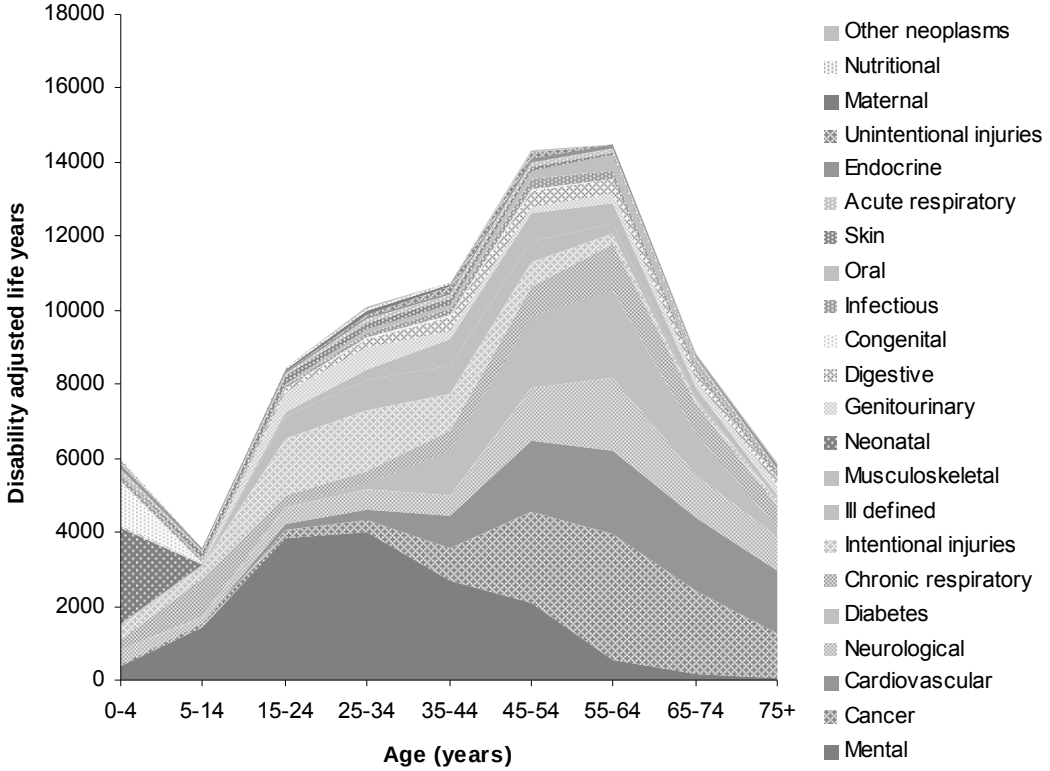


**Figure 8. Burden of disease and injury expressed as DALYs in the non-Aboriginal population, by major disease category and age group, Northern Territory, 1999-2003**




# Age standardised rates

To directly compare the burden of disease in the NT and Australian populations, it is necessary to adjust the results for the differences in the age structures of the populations. Age standardised rates of the NT burden of disease by disease group, Aboriginality and sex were calculated for the NT Aboriginal and NT non-Aboriginal populations and are compared with Australian rates in Table 6. In all three populations, males had a greater burden of disease than their female counterparts. The NT Aboriginal population had a much greater BOD than either the NT non-Aboriginal and the Australian populations. The rate ratio of NT Aboriginal to Australian DALY rates for each of the three groups ranged from 3.4 to 5.9, with the greatest differentials in communicable, maternal and neonatal conditions (5.9), compared with injury (3.8) and non-communicable disease (3.4). The NT non-Aboriginal DALY rates were 10-40% higher than the national result.

After combining Aboriginal and non-Aboriginal results the NT total DALY rates were 70% higher than the national average with the greater differentials for communicable, maternal and neonatal conditions (rate ratio 2.6) and injuries (2.0).

**Table 6 Age standardised DALYs per 1000 population (with rate ratio, Australia=1.0), by Aboriginality, sex and disease group, Northern Territory and Australia, 1999-2003**

| | Communicable/ maternal/neonatal | Non-communicable | Injuries | All causes |
|---|---|---|---|---|
| NT Aboriginal | | | | |
| Male | 37.3 (5.5) | 426.1 (3.5) | 48 (3.6) | 511.3 (3.6) |
| Female | 35.7 (6.3) | 364.2 (3.4) | 23.4 (4.3) | 423.3 (3.5) |
| Persons | 36.4 (5.9) | 392.9 (3.4) | 35.7 (3.8) | 465 (3.6) |
| NT non-Aboriginal | | | | |
| Male | 8.7 (1.3) | 154.5 (1.3) | 18.6 (1.4) | 181.8 (1.3) |
| Female | 6.7 (1.2) | 116.8 (1.1) | 6.2 (1.1) | 129.7 (1.1) |
| Persons | 7.8 (1.3) | 138.4 (1.2) | 12.9 (1.4) | 159.1 (1.2) |
| Northern Territory | | | | |
| Male | 16.3 (2.4) | 205.1 (1.7) | 26 (2.0) | 247.3 (1.7) |
| Female | 15.3 (2.7) | 177.1 (1.6) | 10.9 (2.0) | 203.3 (1.7) |
| Persons | 15.9 (2.6) | 192.5 (1.7) | 18.8 (2.0) | 227.2 (1.7) |
| Australia 2003 | | | | |
| Male | 6.8 | 122.4 | 13.2 | 142.3 |
| Female | 5.7 | 108.2 | 5.4 | 119.3 |
| Persons | 6.2 | 114.8 | 9.3 | 130.3 |

Note: age standardised to 2001 Australian estimated resident population. DALY=Disability adjusted life year.

**Table 7 Age standardised DALYs per 1000 population (with rate ratio, Australia=1.0), by Aboriginality, sex and major disease category, Northern Territory 1999-2003 and Australia 2003**

| | NT Aboriginal | | NT non-Aboriginal | | Australia | |
|---|---|---|---|---|---|---|
| **Category** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| Infectious | 12.4 (4.4) | 12.3 (7.4) | 2.6 (0.9) | 2.2 (1.3) | 2.8 | 1.7 |
| Acute respiratory | 12.3 (6.6) | 8.6 (5.2) | 2.1 (1.2) | 1.0 (0.6) | 1.9 | 1.7 |
| Maternal | 0.0(-) | 2.1 (9.4) | 0.0(-) | 0.5 (2.5) | 0.0 | 0.2 |
| Neonatal | 8.9 (4.6) | 6.3 (3.8) | 3.8 (2.0) | 2.5 (1.5) | 1.9 | 1.7 |
| Nutritional | 3.7 (24.4) | 6.4 (13.6) | 0.2 (1.0) | 0.5 (1.0) | 0.2 | 0.5 |
| Cancer | 49.7 (1.8) | 36.5 (1.7) | 30.2 (1.1) | 22.7 (1.0) | 27.6 | 22.0 |
| Other neoplasms | 1.9 (3.8) | 2.5 (4.3) | 0.6 (1.3) | 0.4 (0.7) | 0.5 | 0.6 |
| Diabetes | 73.7 (9.2) | 67.8 (10.8) | 18.1 (2.3) | 7.3 (1.2) | 8.0 | 6.3 |
| Endocrine | 2.7 (1.8) | 3.6 (2.7) | 1.5 (1.0) | 1.1 (0.9) | 1.5 | 1.3 |
| Mental | 50.2 (3.0) | 42.7 (2.3) | 19.5 (1.2) | 20.2 (1.1) | 16.6 | 18.8 |
| Neurological | 31.8 (2.0) | 33.0 (2.2) | 19.6 (1.3) | 14.2 (0.9) | 15.5 | 15.0 |
| Cardiovascular | 102.5 (3.8) | 65.3 (3.4) | 30.0 (1.1) | 19.7 (1.0) | 27.1 | 19.3 |
| Chronic respiratory | 40.1 (3.9) | 36.6 (4.4) | 15.8 (1.5) | 10.1 (1.2) | 10.4 | 8.4 |
| Digestive | 16.5 (5.5) | 11.8 (4.4) | 4.9 (1.6) | 3.5 (1.3) | 3.0 | 2.7 |
| Genitourinary | 34.5 (11.5) | 37.9 (10.7) | 3.8 (1.3) | 5.9 (1.7) | 3.0 | 3.5 |
| Skin | 10.3 (10.2) | 9.7 (9.7) | 2.0 (2.0) | 1.4 (1.4) | 1.0 | 1.0 |
| Musculoskeletal | 4.3 (0.9) | 9.3 (1.6) | 3.8 (0.8) | 6.4 (1.1) | 4.5 | 5.9 |
| Congenital | 4.4 (2.3) | 3.4 (2.3) | 2.2 (1.1) | 1.3 (0.8) | 1.9 | 1.5 |
| Oral | 1.8 (1.6) | 2.1 (1.6) | 2.1 (1.8) | 1.9 (1.4) | 1.2 | 1.3 |
| Ill defined | 1.7 (3.8) | 1.9 (2.8) | 0.5 (1.0) | 0.7 (1.0) | 0.5 | 0.7 |
| Unintentional injuries | 24.7 (2.9) | 14.8 (3.7) | 11.9 (1.4) | 4.7 (1.2) | 8.6 | 4.0 |
| Intentional injuries | 23.3 (5.1) | 8.6 (6.1) | 6.7 (1.5) | 1.5 (1.1) | 4.6 | 1.4 |
| All causes | 511.3 (3.6) | 423.3 (3.5) | 181.8 (1.3) | 129.7 (1.1) | 142.3 | 119.3 |

Note: age standardised to 2001 Australian estimated resident population

Analyses by major disease category are presented in Table 7, and demonstrate the marked differences in age standardised DALY rates. The leading causes of BOD were cardiovascular disease and diabetes in the NT Aboriginal males and females, cancers and cardiovascular disease in the NT non-Aboriginal males, and cancers and mental conditions in the NT non-Aboriginal females. The most substantial differences, between the NT Aboriginal population and the Australian average were in nutritional conditions (rate ratio 13.6-24.4), genitourinary disease (10.7-11.5), diabetes (9.2-10.8), and skin conditions (9.7-10.2). The major difference between the NT non-Aboriginal population and the Australian average was in maternal conditions (2.5) in females due to higher hypertensive disorder of pregnancy, and diabetes (2.3) in males, possibly due to the higher hospitalisation and prevalence.[16]

# Changes in the burden of disease between 1994-1998 and 1999-2003

There were substantial methodological developments and data source changes that occurred between the two NT BOD studies, and consequently comparisons must be considered as indicative only. Table 8 details the top ten BOD categories for both NT Aboriginal and non-Aboriginal population. The numbers of DALYs have been used to rank the disease and injury categories.

**Table 8 Comparison of top ten causes of burden of disease in 1994-1998 and 1999-2003, by Aboriginality, Northern Territory**

| | DALY | | Rank | | Change | |
|---|---|---|---|---|---|---|
| | 1994-1998# | 1999-2003 | 1994-1998 | 1999-2003 | DALY | Rank |
| **Aboriginal** | | | | | | |
| Type 2 diabetes | 3684.5 | 10689.3 | 2 | 1 | ↑ | ↑ |
| Anxiety & depression | 1614.9 | 7665.9 | 10 | 2 | ↑ | ↑ |
| Ischaemic heart disease | 4658.1 | 7344.5 | 1 | 3 | ↑ | ↓ |
| Nephritis and nephrosis | 1196.3 | 4102.2 | 14 | 4 | ↑ | ↑ |
| COPD | 2423.0 | 3199.1 | 7 | 5 | ↑ | ↑ |
| Road traffic accidents | 3172.3 | 2918.7 | 3 | 6 | ↓ | ↓ |
| Suicide & self-inflicted | 964.5 | 2813.5 | 19 | 7 | ↑ | ↑ |
| Homicide & violence | 1660.5 | 2145.2 | 9 | 8 | ↑ | ↑ |
| Vision loss | 890.3 | 2033.3 | 21 | 9 | ↑ | ↑ |
| Scabies related skin infection | . | 1983.2 | . | 10 | ~ | ~ |
| **Non-Aboriginal** | | | | | | |
| Anxiety & depression | 4286.0 | 9862.6 | 1 | 1 | ↑ | ↔ |
| Type 2 diabetes | 1587.6 | 6687.8 | 11 | 2 | ↑ | ↑ |
| Ischaemic heart disease | 4098.4 | 5795.0 | 2 | 3 | ↑ | ↓ |
| Vision loss | 1372.6 | 4300.5 | 13 | 4 | ↑ | ↑ |
| COPD | 2394.3 | 3562.0 | 10 | 5 | ↑ | ↑ |
| Road traffic accidents | 3763.1 | 2987.4 | 4 | 6 | ↓ | ↓ |
| Substance abuse | 3999.1 | 2739.3 | 3 | 7 | ↓ | ↓ |
| Suicide & self-inflicted | 2830.0 | 2602.2 | 6 | 8 | ↓ | ↓ |
| Lung cancer | 2539.7 | 2145.6 | 8 | 9 | ↓ | ↓ |
| Asthma | 2447.2 | 2017.6 | 9 | 10 | ↓ | ↓ |

Notes: COPD = chronic obstructive pulmonary disease; DALY = disability adjusted life years; # see Reference 8;

It is evident from Table 8 that in the NT Aboriginal population the burden of ill health associated with type 2 diabetes, anxiety and depression, nephritis and nephrosis, chronic obstructive pulmonary disease (COPD), suicide and self-inflicted injury, homicide and violence, and vision loss have increased. For the NT non-Aboriginal population anxiety and depression, type 2 diabetes, and COPD appear to have increased while at the same time there were substantial declines in the impact of substance abuse and lung cancer.

# Attributable risk factors

A total of 17 selected risk factors were investigated in this study including low socio-economic status, high body mass index, physical inactivity, tobacco, alcohol consumption, high blood cholesterol and hypertension. There are clear but complex interactions between many of these risk factors, however for this study the risk factors were considered independently. A consequence is that the separate attributable proportions of each risk factor cannot be added to provide a total for all risk factors.

As described in Methods section, SEIFA was applied at an SLA level to estimates the impact of socio-economic status. The statistical associations between the four SEIFA indices and BOD are shown in Table 9. An additional composite index was created by adding the four standard indices for each SLA. The results indicated that there were statistically significant inverse correlations between all SEIFA indexes and BOD, the lower the SEIFA indices (indicating low socio-economic status), the greater the BOD.

Of all risk factors investigated, low socio-economic status was assessed to be the most important health risk for BOD, with 26.8% (47 140 DALYs or 20 180 YLLs and 26 960 YLDs respectively) of the BOD correlated to low socio-economic status (Table 10).

Other risk factors were also important. High body mass index accounted for 11.1% of the total BOD (19 362 DALYs) and was the second leading risk factor, followed closely by physical inactivity, which could explain 11.0% of DALYs (19 280). Tobacco, alcohol and high blood cholesterol were responsible for 8.1, 4.5 and 4.2% of the total BOD, which were equivalent to 14 191, 7 794 and 7 364 DALYs respectively.

**Table 9 Proportion of burden of disease and injury associated with various SEIFA indexes, Northern Territory, 1999-2003**

| Index | Measures | Correlation coefficient | Significance test | $R^2$ |
|---|---|---|---|---|
| Advantage | High index represents high incomes, education and employment | -0.4588 | P<0.01 | 21.1% |
| Disadvantage | Low index represents low incomes, education and employment | -0.5957 | P<0.01 | 35.5% |
| Economic Resource | High index represents high economic status | -0.4530 | P<0.01 | 20.5% |
| Education Occupation | High index represents high education and employment status | -0.4028 | P<0.01 | 16.2% |
| Combined SEIFA | High index represents high socio-economic status | -0.5177 | P<0.01 | 26.8% |

Note: SEIFA = Socio-Economic Indexes for Areas 2001 (see Reference 12).

**Table 10 Major health risk factors, as assessed by the attributable burden of disease and injury, Northern Territory 1999-2003**

| Risk factor | Attributable DALYs | Attributable proportion |
|---|---|---|
| Low socio-economic status | 46 790 | 26.8% |
| High body mass index | 19 362 | 11.1% |
| Physical inactivity | 19 280 | 11.0% |
| Tobacco | 14 191 | 8.1% |
| Alcohol | 7 794 | 4.5% |
| High blood cholesterol | 7 364 | 4.2% |
| High blood pressure | 6 803 | 3.9% |
| Low fruit and vegetable intake | 5 736 | 3.3% |
| Intimate partner violence | 3 316 | 1.9% |
| Illicit drugs | 2 694 | 1.5% |
| Child sexual abuse | 2 191 | 1.3% |
| Occupational exposures | 2 134 | 1.2% |
| Unsafe sex | 901 | 0.5% |
| Air pollution - long term | 666 | 0.4% |
| Osteoporosis | 138 | 0.1% |
| Ozone - short term | 71 | 0.0% |
| Particulates - short term | 69 | 0.0% |

Note: DALY = disability adjusted life years.

# Discussion

The BOD method represents a significant improvement in health care needs assessment. Conventional needs assessment in epidemiology based on mortality analysis does not include non-fatal health outcomes. The development of the DALY allows the combination of both fatal and non-fatal health outcomes, and uses time (years of life) as a common currency to quantify the magnitude of health problems and associated risk factors.

This report highlights the disease and injury burden among the Aboriginal and non-Aboriginal populations in the NT. The analysis has included coverage of 177 conditions, which allows a comparison of the health care needs resulting from each of these conditions. The information is generally provided using the standard measure of DALY, but HALE is also added as a more sensitive measure of the impact of non-fatal health outcomes. The changes in the burden of disease between the 1994-1998 study and this second 1999-2003 study, is useful for health care providers and policy makers to be better prepared for the emerging challenges in health care.

This study also represents significant improvement from our previous BOD study (1994-98). The information is more up-to-date and there are improved sources for the estimation of non-fatal outcomes (YLD), and for new estimates of HALE. We have also assessed 17 risk factors, including the assessment of poverty.

## Potential applications

This study provides more reliable and complete estimates of the NT BOD than the national BOD study, for several reasons:

- it incorporates information over a longer period (five years),
- this study uses local data that was not used in the national study,
- it incorporates more NT specific health issues, and
- the study includes Aboriginal and non-Aboriginal comparison of BOD.

The study highlights that after adjustment for age structure, the NT population as a whole had 74% greater BOD than the national average. This excess burden is greater than the 50% excess reported in the national study.[3]

Potential applications of the findings of the study include:

- Evidence based priority setting in health, by providing decision-makers with an assessment of the magnitude of both specific and collective health care needs.
- The study highlights health inequalities, particularly for the Aboriginal population. The methods available through BOD studies allow the opportunity for monitoring the progress of both fatal and non-fatal health outcomes toward the goal of closing the gap. The inclusion of an assessment of the life expectancy gap by using HALE will also be informative.
- Health economic evaluation can also be applied. Cost-effectiveness, cost-benefit and cost-utility analyses and health expenditure analysis by disease category provide essential information for decision-making process, especially for informing the introduction of new interventions, the assessment of financial burden and for economic evaluation.

## Data limitations

Fatal health outcomes can be estimated from a single source which is the widely used ABS mortality dataset. By contrast, the non-fatal estimates YLDs were based on multiple sources of data including survey results and service activity data. The reliability and validity of BOD estimates are dependent on the underlying quality of these many data sources and therefore over precise analysis of the BOD data should be avoided.

More generally, the BOD methods are more complicated than conventional mortality analysis and the risk of errors is undeniably greater. The complexity includes various assumptions incorporated into BOD analyses, and of particular note is the use of discount rates for adjusting future values. BOD methodology is also still evolving creating discrepancies between different studies. The data sources and data collection mechanisms used for studies at different times are also likely to change as the general availability of information increases. Strictly speaking, the BOD results in this study are therefore not completely comparable with either the recent national results or the previous NT results, and appropriate caution is required when making comparisons between the different studies.

## Where to from here?

The BOD measures are increasingly a part of health outcome monitoring. A collaborative and ongoing process, at both national and state level is needed to maintain expertise for timely and routine reporting. New developments include the potential for small area BOD assessments to be utilised for regional planning and development.

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# Appendix

## Details of years of life lost (YLL) by disease

**Table 11 Years of life lost (YLL) by disease, Aboriginality and sex, Northern Territory 1999-2003**

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 0 | All causes | 42 825 | 25 116 | 17 710 | 31 914 | 22 065 | 9 849 |
| 1 | Communicable/maternal/neonatal | 4 970 | 2 828 | 2 141 | 2 136 | 1 556 | 581 |
| 1A | Infectious | 1 882 | 899 | 983 | 727 | 463 | 264 |
| 1A01_ | Tuberculosis | 244 | 139 | 105 | 13 | 13 | 0 |
| 1A02 | STDs | 90 | 0 | 90 | 0 | 0 | 0 |
| 1A02a | Syphilis | 27 | 0 | 27 | 0 | 0 | 0 |
| 1A02b | Chlamydia | 38 | 0 | 38 | 0 | 0 | 0 |
| 1A02c | Gonorrhoea | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A02d | Other STD | 25 | 0 | 25 | 0 | 0 | 0 |
| 1A03_ | HIV/AIDS | 27 | 0 | 27 | 17 | 17 | 0 |
| 1A04_ | Diarrhoeal diseases | 89 | 33 | 56 | 0 | 0 | 0 |
| 1A05 | Childhood immunisable diseases | 110 | 79 | 32 | 0 | 0 | 0 |
| 1A05a | Diphtheria | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05b | Whooping cough | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05c | Tetanus | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05d | Poliomyelitis | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05e | Measles | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05f | Rubella | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05g | Hib influenzae | 110 | 79 | 32 | 0 | 0 | 0 |
| 1A06_ | Meningitis | 358 | 136 | 222 | 35 | 35 | 0 |
| 1A07_ | Septicaemia | 382 | 214 | 167 | 234 | 114 | 119 |
| 1A08 | Arbovirus infection | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A08a | Ross River virus | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A08b | Barmah Forest virus | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A08c | Dengue | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A08d | Other arbovirus infection | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A09 | Hepatitis | 76 | 27 | 49 | 116 | 116 | 0 |
| 1A09a | Hepatitis A | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A09b | Hepatitis B | 52 | 27 | 24 | 47 | 47 | 0 |
| 1A09c | Hepatitis C | 24 | 0 | 24 | 69 | 69 | 0 |
| 1A09d | Other hepatitis | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A10_ | Malaria | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A11_ | Trachoma | 0 | 0 | 0 | 0 | 0 | 0 |
| 1Aoth | Other infectious | 507 | 271 | 236 | 313 | 168 | 145 |
| 1B | Acute respiratory | 907 | 599 | 308 | 418 | 359 | 59 |
| 1B01_ | Lower respiratory tract infections | 876 | 568 | 308 | 418 | 359 | 59 |
| 1B02_ | Upper respiratory tract infections | 0 | 0 | 0 | 0 | 0 | 0 |
| 1B03_ | Otitis media | 32 | 32 | 0 | 0 | 0 | 0 |
| 1C | Maternal | 58 | 0 | 58 | 0 | 0 | 0 |
| 1C01_ | Maternal haemorrhage | 0 | 0 | 0 | 0 | 0 | 0 |
| 1C02_ | Maternal sepsis | 0 | 0 | 0 | 0 | 0 | 0 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 1C03_ | Hypertensive disorders of… | 31 | 0 | 31 | 0 | 0 | 0 |
| 1C04_ | Obstructed labour | 0 | 0 | 0 | 0 | 0 | 0 |
| 1C05_ | Abortion | 0 | 0 | 0 | 0 | 0 | 0 |
| 1Coth | Other maternal conditions | 27 | 0 | 27 | 0 | 0 | 0 |
| 1D | Neonatal | 2 019 | 1 259 | 760 | 988 | 730 | 258 |
| 1D01_ | Birth trauma and asphyxia | 398 | 236 | 162 | 226 | 151 | 75 |
| 1D02_ | Low birth weight | 833 | 488 | 346 | 359 | 291 | 68 |
| 1D03_ | Neonatal infections | 220 | 142 | 79 | 92 | 88 | 5 |
| 1Doth | Other perinatal conditions | 567 | 394 | 173 | 310 | 200 | 110 |
| 1E | Nutritional | 103 | 70 | 32 | 4 | 4 | 0 |
| 1E01_ | Protein-energy malnutrition | 51 | 44 | 7 | 0 | 0 | 0 |
| 1E02_ | Deficiency anaemia | 7 | 0 | 7 | 0 | 0 | 0 |
| 1Eoth | Other nutritional deficiencies | 45 | 26 | 18 | 4 | 4 | 0 |
| 2 | Non-communicable | 28 649 | 15 863 | 12 786 | 22 013 | 14 330 | 7 683 |
| 2F | Cancer | 4 955 | 2 560 | 2 395 | 8 675 | 5 243 | 3 432 |
| 2F01_ | Mouth and oropharynx cancers | 526 | 375 | 152 | 519 | 399 | 120 |
| 2F02_ | Oesophagus cancer | 310 | 226 | 84 | 199 | 135 | 63 |
| 2F03_ | Stomach cancer | 75 | 31 | 44 | 267 | 152 | 115 |
| 2F04_ | Colorectal cancer | 169 | 92 | 77 | 957 | 604 | 353 |
| 2F05_ | Liver cancer | 459 | 348 | 111 | 270 | 231 | 39 |
| 2F06_ | Gallbladder cancer | 45 | 14 | 31 | 54 | 47 | 7 |
| 2F07_ | Pancreas cancer | 332 | 262 | 70 | 363 | 215 | 149 |
| 2F08_ | Lung cancer | 1 172 | 732 | 440 | 1 991 | 1 452 | 538 |
| 2F09_ | Bone and connective tissue | 44 | 0 | 44 | 94 | 60 | 34 |
| 2F10_ | Melanoma | 17 | 17 | 0 | 360 | 229 | 131 |
| 2F11_ | Non-melanoma skin cancers | 14 | 14 | 0 | 143 | 133 | 10 |
| 2F12_ | Breast cancer | 527 | 0 | 527 | 943 | 0 | 943 |
| 2F13_ | Cervix cancer | 161 | 0 | 161 | 215 | 0 | 215 |
| 2F14_ | Corpus uteri cancer | 45 | 0 | 45 | 74 | 0 | 74 |
| 2F15_ | Ovary cancer | 83 | 0 | 83 | 113 | 0 | 113 |
| 2F16_ | Prostate cancer | 9 | 9 | 0 | 340 | 340 | 0 |
| 2F17_ | Testicular cancer | 23 | 23 | 0 | 0 | 0 | 0 |
| 2F18_ | Bladder cancer | 54 | 31 | 23 | 92 | 82 | 10 |
| 2F19_ | Kidney cancer | 23 | 0 | 23 | 290 | 161 | 129 |
| 2F20_ | Brain cancer | 44 | 0 | 44 | 424 | 302 | 122 |
| 2F21_ | Thyroid cancer | 60 | 48 | 12 | 0 | 0 | 0 |
| 2F22_ | Lymphoma | 178 | 47 | 131 | 288 | 169 | 119 |
| 2F23_ | Multiple myeloma | 10 | 10 | 0 | 36 | 10 | 26 |
| 2F24_ | Leukaemia | 309 | 150 | 160 | 208 | 175 | 33 |
| 2F25_ | Larynx cancer | 111 | 53 | 59 | 168 | 168 | 0 |
| 2F26_ | Eye cancer | 0 | 0 | 0 | 35 | 35 | 0 |
| 2Foth | Other malignant neoplasms | 154 | 79 | 75 | 234 | 145 | 89 |
| 2G | Other neoplasms | 289 | 149 | 140 | 79 | 48 | 31 |
| 2G01_ | Uterine myomas | 0 | 0 | 0 | 0 | 0 | 0 |
| 2G02_ | Benign neoplasms of meninges | 33 | 0 | 33 | 10 | 6 | 4 |
| 2Goth | Other benign neoplasms | 256 | 149 | 107 | 70 | 42 | 28 |
| 2H | Diabetes | 2 425 | 1 127 | 1 297 | 680 | 407 | 273 |
| 2H01_ | Type 1 diabetes | 282 | 146 | 136 | 210 | 143 | 66 |
| 2H02_ | Type 2 diabetes | 2 142 | 981 | 1 161 | 470 | 263 | 207 |
| 2I | Endocrine | 415 | 180 | 235 | 463 | 270 | 193 |
| 2I01 | Non-deficiency anaemia | 32 | 0 | 32 | 33 | 0 | 33 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 2I01a | Haemolytic anaemia | 0 | 0 | 0 | 33 | 0 | 33 |
| 2I01b | Other non-deficiency anaemia | 32 | 0 | 32 | 0 | 0 | 0 |
| 2I02_ | Cystic fibrosis | 0 | 0 | 0 | 0 | 0 | 0 |
| 2I03_ | Haemophilia | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Ioth | Other endocrine and metabolic | 383 | 180 | 203 | 430 | 270 | 160 |
| 2J | Mental | 1 072 | 888 | 184 | 599 | 420 | 179 |
| 2J01 | Substance abuse | 1 072 | 888 | 184 | 548 | 395 | 153 |
| 2J01a | Alcohol dependence | 781 | 629 | 152 | 166 | 139 | 28 |
| 2J01b | Heroin dependence | 26 | 26 | 0 | 233 | 233 | 0 |
| 2J01c | Benzodiazepine dependence | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J01d | Cannabis dependence | 32 | 0 | 32 | 0 | 0 | 0 |
| 2J01e | Other drug abuse | 232 | 232 | 0 | 149 | 23 | 126 |
| 2J02_ | Schizophrenia | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J03_ | Anxiety & depression | 0 | 0 | 0 | 42 | 25 | 16 |
| 2J04_ | Bipolar disorder | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J05_ | Personality disorders | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J06 | Eating disorders | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J06a | Anorexia nervosa | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J06b | Bulimia nervosa | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J06c | Other eating disorders | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J07 | Childhood conditions | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J07a | ADHD | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J07b | Autism | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Joth | Other mental disorders | 0 | 0 | 0 | 9 | 0 | 9 |
| 2K | Neurological | 935 | 509 | 427 | 671 | 417 | 254 |
| 2K01_ | Dementia | 242 | 66 | 176 | 213 | 115 | 98 |
| 2K02_ | Epilepsy | 283 | 179 | 104 | 118 | 79 | 39 |
| 2K03_ | Parkinson’s disease | 52 | 31 | 21 | 74 | 49 | 26 |
| 2K04_ | Multiple sclerosis | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K05_ | Motor-neuron disease | 12 | 12 | 0 | 53 | 32 | 20 |
| 2K06_ | Huntington's | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K07_ | Muscular dystrophy | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08 | Vision loss | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08a | Glaucoma | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08b | Cataract | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08c | Macular degeneration | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08d | Adult-onset hearing loss | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08e | Refractive errors | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K08f | Other vision | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K10_ | Migraine | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Koth | Other nervous system disorders | 346 | 221 | 125 | 213 | 142 | 71 |
| 2L | Cardiovascular | 9 579 | 5 846 | 3 733 | 6 971 | 5 031 | 1 941 |
| 2L01_ | Rheumatic | 1 105 | 479 | 626 | 52 | 17 | 34 |
| 2L02_ | Ischaemic heart disease | 5 581 | 3 854 | 1 727 | 4 522 | 3 592 | 930 |
| 2L03_ | Stroke | 1 078 | 505 | 574 | 1 180 | 631 | 549 |
| 2L04_ | Inflammatory | 837 | 591 | 246 | 326 | 282 | 44 |
| 2L05_ | Hypertensive | 282 | 52 | 229 | 133 | 108 | 26 |
| 2L06_ | Non-rheumatic | 48 | 18 | 30 | 57 | 26 | 32 |
| 2L07_ | Aortic aneurysm | 147 | 73 | 74 | 247 | 148 | 99 |
| 2L08_ | Peripheral vascular | 48 | 22 | 26 | 95 | 35 | 60 |
| 2Loth | Other cardiovascular disease | 453 | 252 | 201 | 359 | 193 | 167 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 2M | Chronic respiratory | 2 710 | 1 474 | 1 236 | 1 382 | 951 | 431 |
| 2M01_ | COPD | 1 437 | 676 | 761 | 1 107 | 752 | 355 |
| 2M02_ | Asthma | 104 | 43 | 60 | 84 | 65 | 19 |
| 2Moth | Other chronic respiratory disease | 1 170 | 755 | 415 | 191 | 134 | 57 |
| 2N | Digestive | 2 377 | 1 396 | 981 | 1 190 | 789 | 401 |
| 2N01_ | Peptic ulcer disease | 29 | 29 | 0 | 67 | 47 | 20 |
| 2N02_ | Liver cirrhosis | 1 653 | 1 037 | 615 | 644 | 504 | 140 |
| 2N03_ | Appendicitis | 0 | 0 | 0 | 8 | 8 | 0 |
| 2N04_ | Intestinal obstruction | 54 | 37 | 16 | 88 | 56 | 32 |
| 2N05_ | Diverticulitis | 26 | 8 | 19 | 32 | 25 | 7 |
| 2N06_ | Gallbladder and bile duct disease | 37 | 17 | 19 | 17 | 10 | 7 |
| 2N07_ | Pancreatitis | 156 | 115 | 42 | 47 | 17 | 29 |
| 2N08_ | Inflammatory bowel disease | 0 | 0 | 0 | 39 | 0 | 39 |
| 2N09_ | Vascular insufficiency bowel | 72 | 15 | 57 | 71 | 14 | 58 |
| 2Noth | Other digestive system diseases | 351 | 139 | 212 | 177 | 108 | 69 |
| 2O | Genitourinary | 1 993 | 798 | 1 194 | 231 | 96 | 135 |
| 2O01_ | Nephritis and nephrosis | 1 668 | 711 | 956 | 165 | 63 | 102 |
| 2O02_ | Benign prostatic hypertrophy | 12 | 12 | 0 | 13 | 13 | 0 |
| 2O03_ | Urinary incontinence | 0 | 0 | 0 | 0 | 0 | 0 |
| 2O04_ | Infertility | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Ooth | Other genitourinary diseases | 313 | 74 | 238 | 53 | 20 | 34 |
| 2P | Skin | 39 | 0 | 39 | 21 | 10 | 11 |
| 2P01_ | Eczema | 0 | 0 | 0 | 0 | 0 | 0 |
| 2P02_ | Acne | 0 | 0 | 0 | 0 | 0 | 0 |
| 2P03_ | Psoriasis | 0 | 0 | 0 | 0 | 0 | 0 |
| 2P04_ | Ulcers | 21 | 0 | 21 | 21 | 10 | 11 |
| 2P05_ | Scabies related skin infection | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Poth | Other skin diseases | 19 | 0 | 19 | 0 | 0 | 0 |
| 2Q | Musculoskeletal | 210 | 26 | 184 | 134 | 39 | 95 |
| 2Q01_ | Rheumatoid arthritis | 0 | 0 | 0 | 46 | 32 | 13 |
| 2Q02_ | Osteoarthritis | 0 | 0 | 0 | 20 | 4 | 16 |
| 2Q03_ | Back pain | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Q04_ | Slipped disc | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Q05_ | Occupational overuse syndrome | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Q06_ | Systemic lupus erythematosus | 139 | 0 | 139 | 0 | 0 | 0 |
| 2Q07_ | Gout | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Qoth | Other musculoskeletal diseases | 71 | 26 | 45 | 69 | 4 | 65 |
| 2R | Congenital | 1 023 | 571 | 453 | 821 | 545 | 276 |
| 2R01_ | Anencephaly | 32 | 0 | 32 | 0 | 0 | 0 |
| 2R02_ | Spina bifida | 31 | 31 | 0 | 0 | 0 | 0 |
| 2R03_ | Congenital heart disease | 331 | 267 | 63 | 421 | 308 | 114 |
| 2R04_ | Cleft lip and/or palate | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R05 | Digestive system malformations | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R05a | Anorectal atresia | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R05b | Oesophageal atresia | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R05c | Other digestive system… | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R06 | Urogenital tract malformations | 14 | 0 | 14 | 47 | 47 | 0 |
| 2R06a | Renal agenesis | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R06b | Other urogenita tract…. | 14 | 0 | 14 | 47 | 47 | 0 |
| 2R07_ | Abdominal wall defect | 0 | 0 | 0 | 32 | 32 | 0 |
| 2R08_ | Down syndrome | 67 | 0 | 67 | 0 | 0 | 0 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 2R09_ | Other chromosomal disorders | 63 | 0 | 63 | 96 | 63 | 32 |
| 2Roth | Other congenital anomalies | 486 | 273 | 213 | 225 | 95 | 130 |
| 2S | Oral | 0 | 0 | 0 | 0 | 0 | 0 |
| 2S01_ | Dental caries | 0 | 0 | 0 | 0 | 0 | 0 |
| 2S02_ | Periodontal disease | 0 | 0 | 0 | 0 | 0 | 0 |
| 2S03_ | Edentulism | 0 | 0 | 0 | 0 | 0 | 0 |
| 2S04_ | Pulpitis | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Soth | Other oral conditions | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Z | Ill defined | 627 | 338 | 289 | 96 | 63 | 32 |
| 2Z01_ | Sudden infant death syndrome | 623 | 338 | 285 | 96 | 63 | 32 |
| 2Z02_ | Chronic fatigue syndrome | 4 | 0 | 4 | 0 | 0 | 0 |
| 3 | Injuries | 9 206 | 6 425 | 2 782 | 7 765 | 6 180 | 1 585 |
| 3T | Unintentional injuries | 4 606 | 2 998 | 1 608 | 4 693 | 3 650 | 1 043 |
| 3T01_ | Road traffic accidents | 2 812 | 1 869 | 943 | 2 665 | 1 999 | 666 |
| 3T02_ | Other transport | 269 | 162 | 107 | 518 | 449 | 68 |
| 3T03_ | Poisoning | 55 | 55 | 0 | 340 | 230 | 109 |
| 3T04_ | Falls | 137 | 73 | 63 | 571 | 442 | 129 |
| 3T05_ | Fires burns scalds | 152 | 78 | 75 | 110 | 110 | 0 |
| 3T06_ | Drowning | 473 | 269 | 203 | 198 | 143 | 55 |
| 3T07_ | Sports injuries | 0 | 0 | 0 | 0 | 0 | 0 |
| 3T08_ | Natural & environmental factors | 132 | 89 | 42 | 158 | 158 | 0 |
| 3T09_ | Machinery accidents | 0 | 0 | 0 | 8 | 8 | 0 |
| 3T10_ | Suffocation foreign bodies | 176 | 146 | 31 | 57 | 54 | 3 |
| 3T11 | Health service side effects | 119 | 29 | 90 | 19 | 6 | 13 |
| 3T11a | Surgical & medical misadventure | 77 | 29 | 48 | 15 | 6 | 9 |
| 3T11b | Adverse effects of drugs in… | 42 | 0 | 42 | 4 | 0 | 4 |
| 3T12 | Cutting/piercing/striking/crushing | 83 | 30 | 53 | 0 | 0 | 0 |
| 3T12a | Cutting & piercing accidents | 83 | 30 | 53 | 0 | 0 | 0 |
| 3T12b | Striking & crushing accidents | 0 | 0 | 0 | 0 | 0 | 0 |
| 3Toth | Other unintentional injuries | 198 | 198 | 0 | 51 | 51 | 0 |
| 3U | Intentional injuries | 4 601 | 3 427 | 1 174 | 3 072 | 2 530 | 542 |
| 3U01_ | Suicide & self-inflicted | 2 808 | 2 481 | 327 | 2 600 | 2 208 | 391 |
| 3U02_ | Homicide & violence | 1 793 | 945 | 847 | 446 | 295 | 151 |
| 3U03_ | Legal intervention & war | 0 | 0 | 0 | 27 | 27 | 0 |
| 3Uoth | Other unintentional injuries | 0 | 0 | 0 | 0 | 0 | 0 |

# Details of years lost due to disability (YLD) by disease

**Table 12 Years lost due to disability (YLD) by disease, Aboriginality and sex, Northern Territory 1999-2003**

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 0 | All causes | 49 494 | 24 094 | 25 400 | 50 359 | 29 475 | 20 884 |
| 1 | Comm./maternal/neonatal | 6 464 | 3 006 | 3 457 | 2 899 | 1 432 | 1 467 |
| 1A | Infectious | 834 | 389 | 445 | 531 | 320 | 211 |
| 1A01_ | Tuberculosis | 20 | 10 | 10 | 13 | 9 | 4 |
| 1A02 | STDs | 72 | 11 | 61 | 24 | 5 | 19 |
| 1A02a | Syphilis | 8 | 4 | 4 | 0 | 0 | 0 |
| 1A02b | Chlamydia | 30 | 7 | 23 | 7 | 3 | 3 |
| 1A02c | Gonorrhoea | 22 | 1 | 21 | 12 | 1 | 11 |
| 1A02d | Other STD | 13 | 0 | 13 | 5 | 0 | 5 |
| 1A03_ | HIV/AIDS | 25 | 10 | 15 | 103 | 84 | 19 |
| 1A04_ | Diarrhoeal diseases | 86 | 44 | 42 | 50 | 25 | 25 |
| 1A05 | Childhood immunisable | 35 | 21 | 14 | 6 | 3 | 3 |
| 1A05a | Diphtheria | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05b | Whooping cough | 3 | 1 | 2 | 4 | 2 | 2 |
| 1A05c | Tetanus | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05d | Poliomyelitis | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05e | Measles | 0 | 0 | 0 | 0 | 0 | 0 |
| 1A05f | Rubella | 26 | 17 | 9 | 0 | 0 | 0 |
| 1A05g | Hib influenzae | 6 | 3 | 3 | 2 | 1 | 1 |
| 1A06_ | Meningitis | 188 | 99 | 90 | 53 | 34 | 19 |
| 1A07_ | Septicaemia | 84 | 42 | 42 | 34 | 19 | 15 |
| 1A08 | Arbovirus infection | 5 | 2 | 3 | 149 | 87 | 62 |
| 1A08a | Ross River virus | 4 | 1 | 2 | 116 | 64 | 52 |
| 1A08b | Barmah Forest virus | 1 | 0 | 1 | 18 | 13 | 5 |
| 1A08c | Dengue | 0 | 0 | 0 | 1 | 0 | 0 |
| 1A08d | Other arbovirus infection | 0 | 0 | 0 | 15 | 10 | 5 |
| 1A09 | Hepatitis | 71 | 47 | 24 | 38 | 24 | 15 |
| 1A09a | Hepatitis A | 6 | 4 | 2 | 11 | 6 | 5 |
| 1A09b | Hepatitis B | 21 | 10 | 11 | 12 | 6 | 7 |
| 1A09c | Hepatitis C | 30 | 19 | 11 | 9 | 7 | 3 |
| 1A09d | Other hepatitis | 14 | 14 | 0 | 6 | 6 | 0 |
| 1A10_ | Malaria | 0 | 0 | 0 | 1 | 0 | 0 |
| 1A11_ | Trachoma | 199 | 85 | 114 | 3 | 2 | 1 |
| 1Aoth | Other infectious | 49 | 20 | 30 | 57 | 29 | 28 |
| 1B | Acute respiratory | 1 773 | 892 | 881 | 362 | 205 | 156 |
| 1B01_ | Lower respiratory tract infection | 434 | 224 | 210 | 138 | 80 | 58 |
| 1B02_ | Upper respiratory tract infection | 142 | 51 | 92 | 80 | 41 | 39 |
| 1B03_ | Otitis media | 1 197 | 618 | 579 | 144 | 85 | 59 |
| 1C | Maternal | 283 | 0 | 283 | 220 | 0 | 220 |
| 1C01_ | Maternal haemorrhage | 7 | 0 | 7 | 8 | 0 | 8 |
| 1C02_ | Maternal sepsis | 28 | 0 | 28 | 26 | 0 | 26 |
| 1C03_ | Hypertensive disorders of… | 63 | 0 | 63 | 70 | 0 | 70 |
| 1C04_ | Obstructed labour | 10 | 0 | 10 | 12 | 0 | 12 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 1C05_ | Abortion | 3 | 0 | 3 | 7 | 0 | 7 |
| 1Coth | Other maternal conditions | 173 | 0 | 173 | 97 | 0 | 97 |
| 1D | Neonatal | 1 921 | 1 099 | 822 | 1 591 | 874 | 717 |
| 1D01_ | Birth trauma and asphyxia | 531 | 366 | 166 | 261 | 158 | 104 |
| 1D02_ | Low birth weight | 559 | 278 | 281 | 344 | 180 | 164 |
| 1D03_ | Neonatal infections | 441 | 290 | 151 | 522 | 342 | 181 |
| 1Doth | Other perinatal conditions | 389 | 165 | 224 | 463 | 194 | 269 |
| 1E | Nutritional | 1 653 | 626 | 1 027 | 196 | 33 | 163 |
| 1E01_ | Protein-energy malnutrition | 989 | 483 | 506 | 0 | 0 | 0 |
| 1E02_ | Deficiency anaemia | 664 | 143 | 521 | 196 | 33 | 163 |
| 1Eoth | Other nutritional deficiencies | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | Non-communicable | 42 097 | 20 515 | 21 582 | 46 114 | 27 029 | 19 086 |
| 2F | Cancer | 526 | 260 | 266 | 2 303 | 1 332 | 971 |
| 2F01_ | Mouth and oropharynx cancers | 94 | 77 | 17 | 233 | 207 | 27 |
| 2F02_ | Oesophagus cancer | 17 | 10 | 8 | 32 | 21 | 11 |
| 2F03_ | Stomach cancer | 13 | 5 | 7 | 21 | 13 | 8 |
| 2F04_ | Colorectal cancer | 44 | 27 | 17 | 253 | 169 | 84 |
| 2F05_ | Liver cancer | 9 | 6 | 2 | 5 | 5 | 0 |
| 2F06_ | Gallbladder cancer | 2 | 2 | 1 | 6 | 4 | 2 |
| 2F07_ | Pancreas cancer | 9 | 8 | 2 | 13 | 8 | 5 |
| 2F08_ | Lung cancer | 79 | 47 | 31 | 155 | 114 | 41 |
| 2F09_ | Bone and connective tissue | 13 | 6 | 7 | 25 | 20 | 5 |
| 2F10_ | Melanoma | 3 | 3 | 0 | 144 | 123 | 21 |
| 2F11_ | Non-melanoma skin cancers | 0 | 0 | 0 | 18 | 16 | 2 |
| 2F12_ | Breast cancer | 82 | 0 | 82 | 565 | 0 | 565 |
| 2F13_ | Cervix cancer | 27 | 0 | 27 | 42 | 0 | 42 |
| 2F14_ | Corpus uteri cancer | 17 | 0 | 17 | 26 | 0 | 26 |
| 2F15_ | Ovary cancer | 10 | 0 | 10 | 26 | 0 | 26 |
| 2F16_ | Prostate cancer | 17 | 17 | 0 | 390 | 390 | 0 |
| 2F17_ | Testicular cancer | 2 | 2 | 0 | 18 | 18 | 0 |
| 2F18_ | Bladder cancer | 4 | 3 | 1 | 23 | 22 | 2 |
| 2F19_ | Kidney cancer | 2 | 1 | 1 | 43 | 29 | 15 |
| 2F20_ | Brain cancer | 10 | 6 | 4 | 36 | 32 | 4 |
| 2F21_ | Thyroid cancer | 9 | 4 | 5 | 20 | 6 | 14 |
| 2F22_ | Lymphoma | 18 | 9 | 9 | 88 | 59 | 29 |
| 2F23_ | Multiple myeloma | 12 | 9 | 3 | 15 | 7 | 7 |
| 2F24_ | Leukaemia | 16 | 8 | 8 | 52 | 33 | 19 |
| 2F25_ | Larynx cancer | 0 | 0 | 0 | 0 | 0 | 0 |
| 2F26_ | Eye cancer | 0 | 0 | 0 | 8 | 8 | 0 |
| 2Foth | Other malignant neoplasms | 16 | 10 | 7 | 45 | 29 | 16 |
| 2G | Other neoplasms | 52 | 3 | 49 | 113 | 14 | 99 |
| 2G01_ | Uterine myomas | 38 | 0 | 38 | 76 | 0 | 76 |
| 2G02_ | Benign neoplasms of meninges | 8 | 1 | 7 | 19 | 5 | 14 |
| 2Goth | Other benign neoplasms | 5 | 1 | 4 | 17 | 9 | 9 |
| 2H | Diabetes | 8 807 | 4 343 | 4 464 | 6 392 | 5 072 | 1 320 |
| 2H01_ | Type 1 diabetes | 260 | 130 | 130 | 175 | 130 | 45 |
| 2H02_ | Type 2 diabetes | 8 547 | 4 212 | 4 334 | 6 217 | 4 943 | 1 275 |
| 2I | Endocrine | 179 | 85 | 93 | 211 | 124 | 87 |
| 2I01 | Non-deficiency anaemia | 42 | 20 | 22 | 30 | 17 | 14 |
| 2I01a | Haemolytic anaemia | 17 | 12 | 5 | 2 | 2 | 0 |
| 2I01b | Other non-deficiency anaemia | 25 | 9 | 17 | 28 | 15 | 13 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 2I02_ | Cystic fibrosis | 27 | 11 | 16 | 28 | 13 | 15 |
| 2I03_ | Haemophilia | 1 | 1 | 0 | 1 | 1 | 0 |
| 2Ioth | Other endocrine and metabolic | 108 | 53 | 55 | 151 | 93 | 58 |
| 2J | Mental | 12 279 | 6 301 | 5 978 | 14 537 | 7 385 | 7 152 |
| 2J01 | Substance abuse | 882 | 669 | 213 | 2 191 | 1 691 | 500 |
| 2J01a | Alcohol dependence | 527 | 419 | 107 | 1 439 | 1 157 | 282 |
| 2J01b | Heroin dependence | 194 | 141 | 52 | 412 | 308 | 104 |
| 2J01c | Benzodiazepine dependence | 41 | 18 | 23 | 110 | 50 | 60 |
| 2J01d | Cannabis dependence | 104 | 81 | 23 | 197 | 157 | 40 |
| 2J01e | Other drug abuse | 16 | 9 | 8 | 33 | 19 | 14 |
| 2J02_ | Schizophrenia | 479 | 278 | 201 | 1 100 | 607 | 493 |
| 2J03_ | Anxiety & depression | 7 666 | 3 179 | 4 486 | 9 821 | 4 147 | 5 674 |
| 2J04_ | Bipolar disorder | 331 | 248 | 83 | 146 | 89 | 57 |
| 2J05_ | Personality disorders | 1 783 | 1 122 | 661 | 575 | 375 | 200 |
| 2J06 | Eating disorders | 140 | 21 | 119 | 105 | 8 | 97 |
| 2J06a | Anorexia nervosa | 74 | 21 | 53 | 51 | 8 | 44 |
| 2J06b | Bulimia nervosa | 65 | 0 | 65 | 54 | 0 | 54 |
| 2J06c | Other eating disorders | 0 | 0 | 0 | 0 | 0 | 0 |
| 2J07 | Childhood conditions | 999 | 784 | 215 | 599 | 468 | 131 |
| 2J07a | ADHD | 458 | 330 | 129 | 209 | 131 | 78 |
| 2J07b | Autism | 541 | 455 | 86 | 390 | 337 | 53 |
| 2Joth | Other mental disorders | 0 | 0 | 0 | 0 | 0 | 0 |
| 2K | Neurological | 4 862 | 2 051 | 2 812 | 6 831 | 4 449 | 2 381 |
| 2K01_ | Dementia | 101 | 50 | 51 | 446 | 265 | 181 |
| 2K02_ | Epilepsy | 347 | 206 | 140 | 217 | 137 | 80 |
| 2K03_ | Parkinson’s disease | 38 | 38 | 0 | 138 | 101 | 37 |
| 2K04_ | Multiple sclerosis | 68 | 32 | 36 | 125 | 75 | 50 |
| 2K05_ | Motor-neuron disease | 1 | 1 | 0 | 6 | 4 | 2 |
| 2K06_ | Huntington's | 14 | 9 | 5 | 33 | 25 | 8 |
| 2K07_ | Muscular dystrophy | 8 | 6 | 2 | 8 | 6 | 2 |
| 2K08 | Vision loss | 2 033 | 1 141 | 892 | 4 300 | 2 980 | 1 321 |
| 2K08a | Glaucoma | 50 | 22 | 27 | 64 | 33 | 31 |
| 2K08b | Cataract | 20 | 9 | 11 | 22 | 10 | 12 |
| 2K08c | Macular degeneration | 35 | 12 | 22 | 172 | 75 | 96 |
| 2K08d | Adult-onset hearing loss | 1 297 | 802 | 495 | 2 980 | 2 242 | 738 |
| 2K08e | Refractive errors | 292 | 134 | 159 | 563 | 317 | 247 |
| 2K08f | Other vision | 339 | 162 | 177 | 499 | 304 | 196 |
| 2K10_ | Migraine | 1 692 | 264 | 1 428 | 801 | 382 | 419 |
| 2Koth | Other nervous system disorders | 560 | 303 | 257 | 754 | 474 | 279 |
| 2L | Cardiovascular | 2 767 | 1 569 | 1 198 | 2 275 | 1 546 | 729 |
| 2L01_ | Rheumatic | 153 | 39 | 114 | 18 | 4 | 14 |
| 2L02_ | Ischaemic heart disease | 1 763 | 1 029 | 734 | 1 273 | 877 | 396 |
| 2L03_ | Stroke | 447 | 230 | 217 | 538 | 361 | 177 |
| 2L04_ | Inflammatory | 101 | 66 | 34 | 102 | 82 | 20 |
| 2L05_ | Hypertensive | 190 | 167 | 24 | 9 | 7 | 2 |
| 2L06_ | Non-rheumatic | 40 | 12 | 29 | 31 | 18 | 13 |
| 2L07_ | Aortic aneurysm | 0 | 0 | 0 | 1 | 1 | 0 |
| 2L08_ | Peripheral vascular | 42 | 11 | 30 | 188 | 133 | 56 |
| 2Loth | Other cardiovascular disease | 30 | 14 | 16 | 115 | 64 | 51 |
| 2M | Chronic respiratory | 3 513 | 1 630 | 1 883 | 4 667 | 2 868 | 1 799 |
| 2M01_ | COPD | 1 762 | 696 | 1 066 | 2 455 | 1 566 | 889 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 2M02_ | Asthma | 1 594 | 827 | 767 | 1 934 | 1 084 | 850 |
| 2Moth | Other chronic respiratory… | 157 | 107 | 49 | 279 | 218 | 61 |
| 2N | Digestive | 198 | 93 | 105 | 840 | 487 | 353 |
| 2N01_ | Peptic ulcer disease | 33 | 22 | 12 | 96 | 73 | 22 |
| 2N02_ | Liver cirrhosis | 3 | 2 | 1 | 1 | 1 | 0 |
| 2N03_ | Appendicitis | 7 | 3 | 4 | 18 | 11 | 8 |
| 2N04_ | Intestinal obstruction | 13 | 6 | 7 | 51 | 35 | 15 |
| 2N05_ | Diverticulitis | 8 | 3 | 5 | 115 | 69 | 45 |
| 2N06_ | Gallbladder and bile duct... | 24 | 3 | 21 | 34 | 6 | 28 |
| 2N07_ | Pancreatitis | 22 | 18 | 4 | 13 | 12 | 2 |
| 2N08_ | Inflammatory bowel disease | 29 | 2 | 26 | 325 | 156 | 170 |
| 2N09_ | Vascular insufficiency bowel | 1 | 0 | 1 | 8 | 3 | 5 |
| 2Noth | Other digestive system…. | 58 | 34 | 24 | 179 | 121 | 58 |
| 2O | Genitourinary | 3 664 | 1 539 | 2 125 | 2 062 | 563 | 1 499 |
| 2O01_ | Nephritis and nephrosis | 2 434 | 1 366 | 1 068 | 241 | 164 | 77 |
| 2O02_ | Benign prostatic hypertrophy | 131 | 131 | 0 | 288 | 288 | 0 |
| 2O03_ | Urinary incontinence | 175 | 8 | 167 | 308 | 32 | 276 |
| 2O04_ | Infertility | 457 | 34 | 424 | 656 | 79 | 577 |
| 2Ooth | Other genitourinary diseases | 466 | 0 | 466 | 568 | 0 | 568 |
| 2P | Skin | 2 913 | 1 607 | 1 306 | 1 007 | 700 | 307 |
| 2P01_ | Eczema | 41 | 5 | 37 | 105 | 41 | 64 |
| 2P02_ | Acne | 343 | 198 | 146 | 227 | 152 | 75 |
| 2P03_ | Psoriasis | 290 | 226 | 64 | 276 | 243 | 33 |
| 2P04_ | Ulcers | 255 | 140 | 115 | 285 | 175 | 110 |
| 2P05_ | Scabies related skin infection | 1983 | 1039 | 945 | 114 | 89 | 25 |
| 2Poth | Other skin diseases | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Q | Musculoskeletal | 1 181 | 398 | 783 | 2 750 | 1 279 | 1 471 |
| 2Q01_ | Rheumatoid arthritis | 520 | 138 | 382 | 692 | 206 | 486 |
| 2Q02_ | Osteoarthritis | 167 | 76 | 91 | 816 | 430 | 385 |
| 2Q03_ | Back pain | 215 | 71 | 144 | 657 | 334 | 323 |
| 2Q04_ | Slipped disc | 12 | 4 | 7 | 95 | 58 | 37 |
| 2Q05_ | Occupational overuse | 113 | 15 | 98 | 177 | 37 | 140 |
| 2Q06_ | Systemic lupus erythematosus | 15 | 0 | 14 | 24 | 2 | 22 |
| 2Q07_ | Gout | 35 | 33 | 3 | 85 | 79 | 7 |
| 2Qoth | Other musculoskeletal diseases | 104 | 60 | 44 | 203 | 133 | 70 |
| 2R | Congenital | 568 | 346 | 222 | 562 | 349 | 214 |
| 2R01_ | Anencephaly | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R02_ | Spina bifida | 16 | 11 | 5 | 21 | 13 | 8 |
| 2R03_ | Congenital heart disease | 45 | 22 | 22 | 43 | 27 | 17 |
| 2R04_ | Cleft lip and/or palate | 4 | 2 | 2 | 3 | 2 | 2 |
| 2R05 | Digestive system malformations | 1 | 1 | 1 | 1 | 1 | 1 |
| 2R05a | Anorectal atresia | 1 | 0 | 0 | 1 | 0 | 0 |
| 2R05b | Oesophageal atresia | 1 | 0 | 0 | 0 | 0 | 0 |
| 2R05c | Other digestive system … | 0 | 0 | 0 | 0 | 0 | 0 |
| 2R06 | Urogenital tract malformations | 63 | 37 | 27 | 9 | 6 | 3 |
| 2R06a | Renal agenesis | 2 | 1 | 1 | 0 | 0 | 0 |
| 2R06b | Other urogenital tract… | 61 | 35 | 26 | 9 | 6 | 3 |
| 2R07_ | Abdominal wall defect | 3 | 2 | 1 | 3 | 2 | 1 |
| 2R08_ | Down syndrome | 77 | 49 | 28 | 84 | 53 | 32 |
| 2R09_ | Other chromosomal disorders | 257 | 161 | 96 | 281 | 172 | 109 |
| 2Roth | Other congenital anomalies | 101 | 62 | 40 | 116 | 74 | 42 |

| Code | Cause | Aboriginal | | | Non-Aboriginal | | |
|---|---|---|---|---|---|---|---|
| | | Persons | Male | Female | Persons | Male | Female |
| 2S | Oral | 462 | 239 | 223 | 1 208 | 732 | 476 |
| 2S01_ | Dental caries | 218 | 115 | 103 | 323 | 176 | 147 |
| 2S02_ | Periodontal disease | 14 | 8 | 5 | 42 | 29 | 13 |
| 2S03_ | Edentulism | 60 | 20 | 40 | 402 | 241 | 161 |
| 2S04_ | Pulpitis | 171 | 96 | 75 | 442 | 287 | 155 |
| 2Soth | Other oral conditions | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Z | Ill defined | 127 | 52 | 75 | 356 | 129 | 228 |
| 2Z01_ | Sudden infant death syndrome | 0 | 0 | 0 | 0 | 0 | 0 |
| 2Z02_ | Chronic fatigue syndrome | 127 | 52 | 75 | 356 | 129 | 228 |
| 3 | Injuries | 933 | 573 | 360 | 1 345 | 1 014 | 331 |
| 3T | Unintentional injuries | 575 | 374 | 201 | 1 223 | 903 | 320 |
| 3T01_ | Road traffic accidents | 107 | 77 | 30 | 323 | 232 | 91 |
| 3T02_ | Other transport | 36 | 30 | 6 | 212 | 147 | 65 |
| 3T03_ | Poisoning | 1 | 0 | 0 | 2 | 2 | 1 |
| 3T04_ | Falls | 245 | 144 | 101 | 352 | 253 | 99 |
| 3T05_ | Fires burns scalds | 41 | 21 | 20 | 31 | 22 | 9 |
| 3T06_ | Drowning | 0 | 0 | 0 | 0 | 0 | 0 |
| 3T07_ | Sports injuries | 4 | 2 | 3 | 11 | 9 | 2 |
| 3T08_ | Natural & environmental factors | 10 | 8 | 2 | 17 | 13 | 4 |
| 3T09_ | Machinery accidents | 12 | 7 | 5 | 70 | 62 | 8 |
| 3T10_ | Suffocation foreign bodies | 4 | 3 | 1 | 3 | 3 | 0 |
| 3T11 | Health service side effects | 0 | 0 | 0 | 1 | 0 | 1 |
| 3T11a | Surgical/medical misadventure | 0 | 0 | 0 | 1 | 0 | 1 |
| 3T11b | Adverse effects of drugs in… | 0 | 0 | 0 | 0 | 0 | 0 |
| 3T12 | Cutting/piercing/striking/crushin | 116 | 82 | 34 | 201 | 160 | 40 |
| 3T12a | Cutting & piercing accidents | 116 | 82 | 34 | 201 | 160 | 40 |
| 3T12b | Striking & crushing accidents | 0 | 0 | 0 | 0 | 0 | 0 |
| 3Toth | Other unintentional injuries | 0 | 0 | 0 | 0 | 0 | 0 |
| 3U | Intentional injuries | 358 | 199 | 159 | 122 | 111 | 11 |
| 3U01_ | Suicide & self-inflicted | 5 | 4 | 1 | 3 | 2 | 1 |
| 3U02_ | Homicide & violence | 352 | 195 | 158 | 119 | 108 | 11 |
| 3U03_ | Legal intervention & war | 0 | 0 | 0 | 1 | 1 | 0 |
| 3Uoth | Other unintentional injuries | 0 | 0 | 0 | 0 | 0 | 0 |

# List of tables

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# Burden of Disease and Injury
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