

**The burden of disease and  
injury  
in Aboriginal and Torres  
Strait Islander peoples**

**SUMMARY REPORT**

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An electronic version of the full report and this summary report are available at: <http://www.uq.edu.au/bodce/2003-indigenous-burden-of-disease-report>

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# Foreword

Policies and programs to improve health rely heavily on valid and timely information about the major causes of disease and injury in a population, and how these are changing. Typically, government policy is informed by a variety of data sources about the state of population health, many of them fragmentary and of uncertain quality, and none of them completely capturing the spectrum of diseases and injuries of interest, or indeed the consequences of disease and injury in terms of premature mortality and disability. More than a decade ago, a single summary measure of population health, the disability-adjusted life year, or DALY, was developed and has been widely applied since to measure disease burden by age, sex, cause and risk factor in numerous populations across the globe and its major regions. DALYs are now the accepted unit for health accounting worldwide, and the burden of disease framework has become the global standard for integrating, adjusting and using available health information to produce policy-relevant and comparable evidence about a population's health.

While there have been numerous burden of disease studies over the past decade in developed countries, including several in Australia, the framework and tools have never before been applied to measure disease burden in Indigenous populations (apart from a pilot study in the Northern Territory), although the need for such evidence to guide policies and programs is clear. Given the uncertain quality of many data sources on Indigenous health and the lack of comprehensive information about the comparative importance of various diseases and injuries, it has been difficult to appreciate the complete set of priorities for Indigenous health development. This report responds to that need by providing, for the first time, burden of disease and injury estimates (produced by leading experts in the field) for the Aboriginal and Torres Strait Islander population of Australia. Detailed estimates are provided of the comparative importance of more than 170 diseases and injuries for the health of Indigenous Australians, and, in doing so, this report fills an important gap in the evidence base for Indigenous Australian health policy.

By highlighting the main causes of disease burden – and there are many – the report provides clear guidance for intervention strategies, particularly to reduce the unacceptably high risks of death in young adulthood that are still prevalent today. For example, on current rates, one-third of young Indigenous men aged 15 will be dead before age 60, compared with 8% in the Australian population. This four-fold increase in risk of death, comparable to parts of Africa today, is largely due to excess mortality from such causes as ischaemic heart disease, suicide and Type 2 diabetes. Its reduction must be a priority for Indigenous health services.

With the publication of this report, a critical gap in the information base for health development for Indigenous Australians has been filled. I strongly urge all health jurisdictions throughout Australia to consider its findings carefully in developing policies for the better health of Indigenous Australians.

Alan D. Lopez  
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The study was ably advised and guided throughout by a steering committee and technical advisory panel, the members of which are detailed on the following pages. The contributions of each group are gratefully acknowledged. Professor Lopez's guiding role as chairman also deserves special mention.

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The views, methods and findings expressed in this report are not necessarily those of the members of the steering committee and the technical advisory panel or the organisations to which they belong.

# Introduction

Our study is the first comprehensive description of health problems among Indigenous peoples in Australia. The study, *The burden of disease and injury in Aboriginal and Torres Islander peoples*, quantifies the contribution of specific diseases and key health risk factors to Indigenous health problems. It highlights the significant differences in health between Indigenous Australians and the total population, and indicates where the biggest health gains can be made. Taking into account fatal and non-fatal health outcomes, it details the risk factors and conditions that contribute most to the enormous health gap observed between the two populations. The study represents the first step towards a more systematic approach in assessing and prioritising the health concerns of Indigenous peoples in Australia. This understanding is a prerequisite to improving the health of Indigenous peoples in Australia.

***The health gap in diseases and injuries between Australian Indigenous and general populations is unacceptably large. Prioritisation of health interventions by health gain is an important approach in significantly narrowing this health gap.***

Prioritising health issues is a challenge facing policy and decision makers, health practitioners and community leaders working in Indigenous health services.

There are no simple answers to the problems of Indigenous health, made difficult by the complex interplay of many health, economic and social factors. A multi-pronged approach is needed to develop sustainable health intervention strategies for Indigenous populations that also take account of economic and social imperatives. However these requirements should not lead to inaction by health policy makers arguing that the social and economic problems should be tackled first. It is within the reach of appropriately resourced health services to reduce a sizeable proportion of the Indigenous health gap.

Getting the basic health data sorted and prioritised into a useable form for policy makers and community leaders is an important step in working out the best ways to tackle Indigenous health issues.

Our study adopts an evidence-based approach to rank Indigenous health problems against those of the general population. We believe that it is critical to identify those areas of Indigenous health most likely to make the biggest health gains for the Indigenous peoples of Australia.

This document summarises detailed research presented in the full report *The burden of disease and injury in Aboriginal and Torres Strait Islander peoples 2003* published by The University of Queensland, Brisbane, in 2007. An electronic version of the report is available at <http://www.uq.edu.au/bodce/2003-indigenous-burden-of-disease-report>.

## A comprehensive and methodological study

It has been known for a long time that Indigenous Australians experience much higher mortality rates and have worse life expectancy than the total Australian population.

The evidence, however, was generally limited to traditional population health indicators, such as life expectancy at birth, mortality rates, hospital separation data and reports on the prevalence of infectious diseases and lifestyle disorders. These conventional studies and indicators do not take into account the impact that disease and injury have on both disability and mortality thereby obscuring the impact of a number of significant diseases and conditions, such as mental disorders.

For policy decision making, these disparate measures inadequately indicate where the opportunities for health gain lie. Burden of disease estimates for Indigenous Australians, on the other hand, help to identify those diseases and risk factors that are most responsible for the gap in health status between Indigenous Australians and the Australian population overall.

In essence then, this study addresses the key health question: 'For which health problem, addressing which age group, in males or females, by location, and by risk factors, is a concerted effort most likely to lead to an improvement in the health status of the population?' The question has many facets, which we answer by ranking the health data on diseases and injuries by the influencing factors or criteria – demographics and risks – to inform prioritisation of health strategies.

***'For which health problem, addressing which age group, in males or females, by location, and by risk factors, is a concerted effort most likely to lead to an improvement in the health status of the population?' This is what our report attempts to answer.***

Our study uses the common currency of ill-health called the DALY, or disability-adjusted life year, which is the equivalent of one lost

year of 'healthy' life due to death and disability. It measures burden of disease, incorporating both fatal and non-fatal health data from hospital records, vital registration, surveys and other sources. The unit also forms the basis of the health gap measurement between the two populations.

An earlier study of health burden was done for the general Australian population, *The burden of disease and injury in Australia 2003* available at <http://www.aihw.gov.au/publications/index.cfm/title/10317>. This provides a benchmark against which to assess the health conditions and requirements of the Indigenous population. In both studies, diseases and injuries are classified into more than 170 mutually exclusive categories, and eleven common risk factors are assessed. Our study is based on 2003 data to ensure completeness and valid comparison with the national population study.

## The burden of ill-health

Measuring the disease burden nationwide, we find the contrasts of health and well-being between the Indigenous and general populations starkly significant. According to the DALY method, the Indigenous population has two-and-half times greater total burden of disease and injury than the general Australian population.

***Measuring the disease burden nationwide, we find the contrasts of health and well-being between the Indigenous and general populations starkly significant.***

The study reveals huge health gaps between Indigenous and non-Indigenous peoples in Australia. The total burden of disease would be 59% lower in Indigenous Australians if they had the same level of mortality and disability as the total Australian population. There are health problems at every age, for all diseases identified, and by all leading indicators of health risk.

### Problems at every age

At every age, young or old, Indigenous Australians are sicker, and die earlier, than their non-Indigenous counterparts. The opportunity for improvement is huge.

***There are health problems at every age, for all diseases identified, and by all leading indicators of health risk.***

Mortality in young and middle-aged Indigenous adults is particularly high (33% and 23% probability of dying between ages 15 and 60 years in males and females, respectively, compared with 10% and 6% in the total Australian population).

Mortality in the under-five age group in Indigenous Australians is also greater than in the total Australian population but differences are less extreme than for adult mortality. The probability of dying before age five is 1.6% and 1.4% for males and females respectively (compared with national figures of 0.7% and 0.6%).

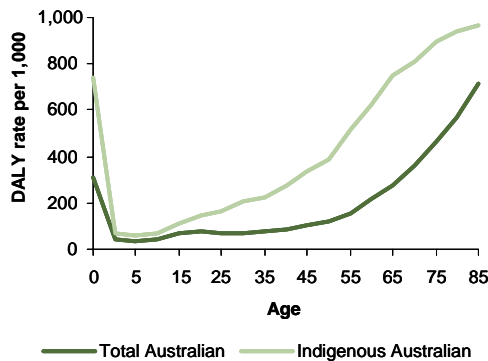
Health-adjusted life expectancy for Indigenous males is 56 years in 2003 (compared with 71 years for males in the total population), and

for Indigenous females is 60 years (compared with 75 years for females in the total population); a gap of about 15 years compared with the total population.

Indigenous Australians not only have a much shorter life span, but the proportion of time lived with disability is greater than that in the total population (13% compared with 10%).

Subsequently, the disease burden occurs at a considerably higher rate at each age group for Indigenous Australians compared with the total Australian population (Figure 1).

**Figure 1: DALY rates by age, Indigenous and total Australian population, 2003**

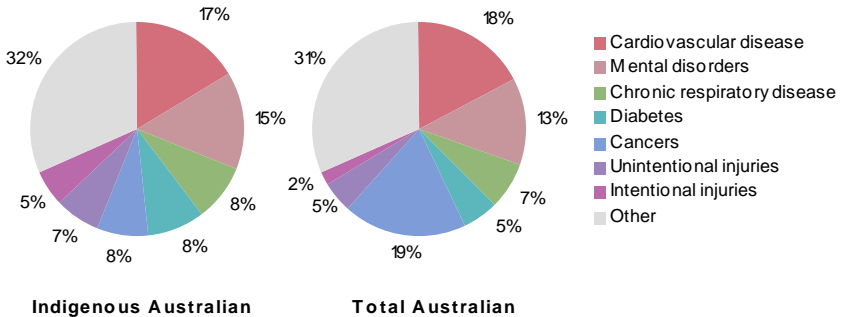


### By cause

Cardiovascular disease and mental disorders are the leading causes of disease burden in the Indigenous Australian population in 2003, together accounting for 32% of the disease burden (Figure 2). Chronic respiratory disease, diabetes and cancers are the next three leading causes, accounting for an equal proportion (8% each) of the total Indigenous Australian disease burden. Cancer is responsible for a much greater proportion of the burden in the total Australian population (19%) than the Indigenous population (8%). This is because cancers often occur later in life, and many Indigenous people die earlier from other causes. Diabetes and unintentional and intentional injuries are each responsible for a larger proportion of the

total burden in Indigenous Australians than in the total Australian population.

**Figure 2: DALYs by leading causes, Indigenous and total Australian population, 2003**



### By gender

Ischaemic heart disease is the largest single contributor to the disease burden experienced by Indigenous Australian males, accounting for 12% of the total burden. Type 2 diabetes, anxiety & depression, suicide and road traffic accidents are the next four leading causes of male burden, together accounting for 22% of the male burden.

For females, the leading cause is anxiety & depression, accounting for 10% of the total burden. Type 2 diabetes, ischaemic heart disease, asthma and chronic obstructive pulmonary disease are the following four leading causes, accounting for 26% of the total burden for females.

Among the seven leading broad cause categories the largest differentials in disease burden rates for the Indigenous and total Australian population were for cardiovascular disease, diabetes, and intentional injuries in both males and females (Figure 3).

**Figure 3: DALY rate per 1,000 for the leading broad cause groups by sex, Indigenous and total Australian population, 2003**



\*Total Australian rates age-standardised to the Indigenous population.

RR—Rate ratio of Indigenous Australian to total Australian DALYs.

Among the 20 individual diseases and injuries that cause the greatest burden, the largest differentials in burden rates between the Indigenous Australians and the total Australian male population are for homicide and violence, at a rate ratio (RR) of 6.8, inflammatory heart disease (RR 6.3) and lower respiratory tract infection (RR 6.1). For females, the largest differentials are for rheumatic heart disease (RR 26.4), homicide and violence (RR 11.0), and alcohol dependence and harmful use (RR 7.9).

## Tackling health risks: the key

The study finds a strong correlation between analysed risk factors and diseases that pose the greatest burden for the Indigenous population. The 11 risk factors included in this study are tobacco, alcohol, illicit drugs, high body mass, inadequate physical activity, low intake of fruit and vegetables, high blood pressure, high cholesterol, unsafe sex, child sexual abuse and intimate partner violence.

Indigenous Australians experience a higher rate of disease burden due to each of the 11 risk factors considered compared with the total Australian population. This results from a combination of higher prevalence of exposure to the risk factors and higher disease levels in the population.

The 11 risk factors considered together explain 37% of the total burden of disease experienced by Indigenous Australians (Table 1). The remaining 63% consists of a range of known and unknown risk factors, yet to be identified or quantified.

For the total Indigenous population, the ten risk factors associated with cardiovascular disease together explain 69% of the cardiovascular disease burden. Tobacco contributes most to this cause, followed closely by high body mass, high blood cholesterol, physical inactivity and high blood pressure.

Eight of the risk factors are associated with cancer and together explain 49% of the total burden from this cause. In contrast, for the burden of disease and injury study in the total Australian population, the risk factors explain 33% of the cancer burden. The major difference between the distribution of cancer burden among these risk factors is that a greater proportion of cancer is explained by tobacco in the Indigenous Australian population compared with the total Australian population (35% compared with 21%).

***...a greater proportion of cancer is explained by tobacco in the Indigenous Australian population compared with the total Australian population (35% compared with 21%).***

More than one-third of mental disorders is attributable to four of the risk factors. Alcohol contributes the most to this burden, followed by illicit drugs, child sexual abuse and intimate partner violence.

Five of the risk factors are associated with injuries and together explain 33% of the burden from this cause. This is similar to the proportion of injury burden explained by these risk factors in the total Australian population (32%), but as the burden of injuries in Indigenous Australians is much larger, it means that the average risk of an injury due to these risk factors is also much higher. Alcohol is by far the leading risk factor for injury burden in Indigenous Australians, followed by intimate partner violence, illicit drugs and child sexual abuse.

***Alcohol is by far the leading risk factor for injury burden in Indigenous Australians.***

Two-thirds of the diabetes burden is due to high body mass index and physical inactivity.

**Table 1: Burden of disease attributable to 11 selected risk factors by cause, Indigenous Australian population, 2003**

	Broad cause group					All causes
	Cancer	CVD	Mental	Injury	Diabetes	
Total burden (DALYs)	7,817	16,786	14,860	12,384	8,498	95,976
Attributable burden (%) <sup>(a)</sup>						
Tobacco	34.6	33		0.7		12.1
High body mass	3.2	31.3			63.2	11.4
Physical inactivity	4.7	29.9			31.2	8.4
High blood cholesterol		31.3				5.5
Alcohol						
Harmful effects	6.3	1.6	16.3	22.2		6.2
Beneficial effects		-4.8				-0.8
Net effects	6.3	-3.2	16.3	22.2		5.4
High blood pressure		26.3				4.6
Low fruit & vegetable intake	4.2	18				3.5
Illicit drugs		<0.1	12.9	3.6		3.4
Intimate partner violence	2.4	2.4	4.5	7.5		2.6
Child sexual abuse	0.2	<0.1	6.7	2.7		1.4
Unsafe sex	4.5					1.2
<b>Combined risk factors<sup>(b)</sup></b>	<b>48.5</b>	<b>68.9</b>	<b>37.4</b>	<b>32.6</b>	<b>68.8</b>	<b>37.4</b>

CVD—Cardiovascular disease.

(a) Attributable burden within each column is expressed as a percentage of total burden for that column.

(b) Figures for combined risk factors are not column totals.

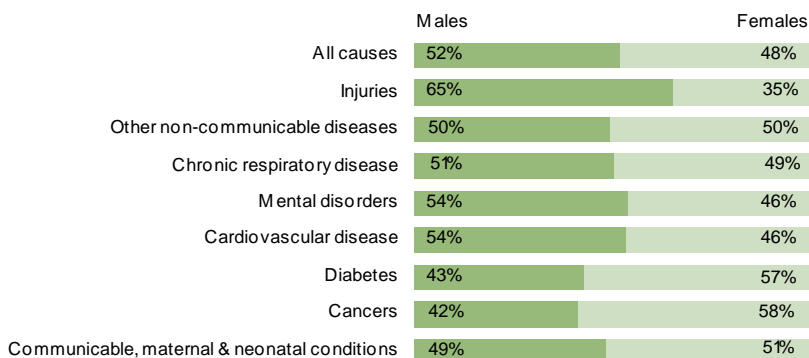
## The health gap

Our analysis of disease burden and the health gap, by sex, age, and location status, is designed to provide the health profession, from policy maker to health practitioner and community health worker, with the evidence base needed to prioritise investments in Indigenous health.

### Gender differences

The overall Indigenous health gap is shared equally between males and females. The gap for injuries is much greater in males, while for diabetes and cancers the gap is greater in females (Figure 4).

**Figure 4: Indigenous health gap (DALYs) by selected causes expressed as proportions by sex, and proportions due to fatal and non-fatal outcomes, 2003**



### The age factor

The health gap between Indigenous Australians and the general population is the widest for the age group of 35–54 years (at 35%), followed by the 15–34-year age group (at 25%), the 55-year and older age group (at 23%), and then children under 15 years (at 17%).

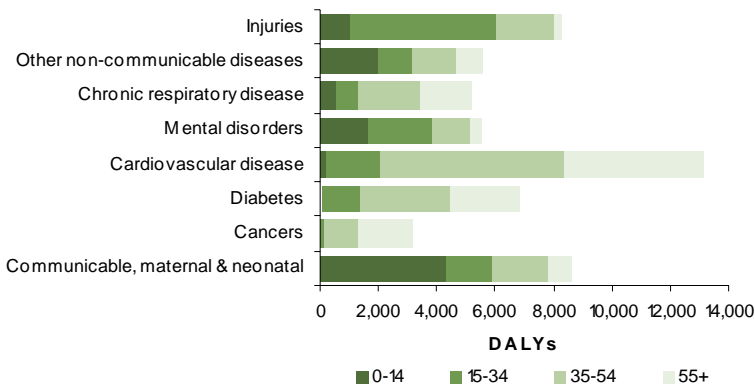
Cardiovascular disease and diabetes are the main contributors to the health gap at ages 35 years and over (Figure 5).

Injuries and mental disorders are the main contributors to the health gap in young adults aged 15–34 years; notably at these young ages, cardiovascular disease and diabetes are already responsible for one-fifth of the health gap.

Suicide explains almost half of the health gap from injuries in young males. In young females, injuries contribute a lesser proportion to the gap, but there is still considerable excess health loss from road traffic accidents, suicide and violence.

Substance-use disorders explain most of the gap from mental disorders in young adults.

**Figure 5: Indigenous health gap (DALYs) due to selected causes by age, 2003**



### Location differences

The health problems of Indigenous Australians in both non-remote and remote areas are important in different ways.

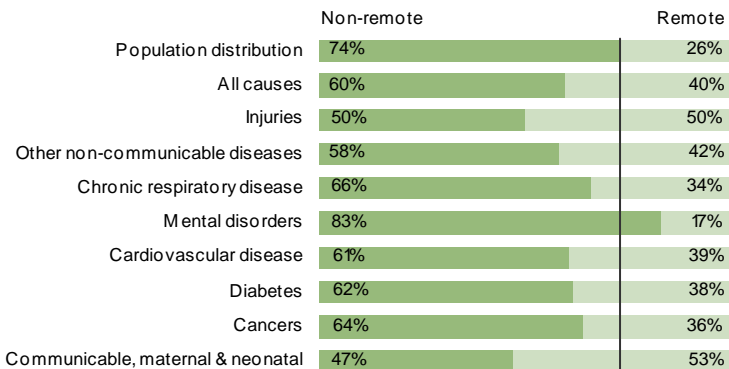
Indigenous Australians residing in remote areas represent 26% of the total Indigenous Australian population. They contribute 35% of the overall Indigenous disease and injury burden and experience 40% of the Indigenous health gap (Figure 6).

Conversely, Indigenous Australians living in cities and towns represent 74% of the total Indigenous population, contribute 65% of

the overall Indigenous disease and injury burden, and experience 60% of the Indigenous health gap.

Despite the higher disease rates experienced by Indigenous Australians in remote areas, the majority of burden still occurs in non-remote areas. Relative to population size Indigenous Australians residing in remote areas experience a disproportionate amount of the health gap for all major disease areas apart from mental disorders.

**Figure 6: Indigenous health gap (DALYs) by selected causes expressed as proportions by remoteness, 2003**



### Risk factor gap

If Indigenous Australians experience the same burden rates as the total Australian population due to these 11 selected risk factors, 29% of the total Indigenous Australian burden of disease could be avoided. This is half of the overall Indigenous health gap of 59%. This indicates that there is potential to considerably reduce the disease and injury experience of all Indigenous Australians with interventions targeted at these risk factors.

# The case for investment in Indigenous health

The case for a greater investment in Indigenous health, and prioritisation of health interventions, stems from the unassailable empirical evidence of the massive health burden and health gap experienced by Indigenous populations in Australia.

## Population health differences

In 2003 the Indigenous Australian population made up 2.4% of the total Australian population; however, despite its much younger age structure, the Indigenous Australian population carried 3.6% of the disease burden (which includes injuries).

## Huge health gap

The health gap between Indigenous and non-Indigenous peoples in Australia is very large. The risk of death and disability among Australia's Indigenous population is at a level comparable with only a few countries in the world that are not severely affected by HIV/AIDS mortality.

Out of 193 countries, adult males in Australia had the 7<sup>th</sup> lowest probability of dying between ages 15 and 60 in 2003. In contrast, Indigenous males in Australia had a probability of dying greater than males in East Timor, ranked 135<sup>1</sup>. Similarly, adult females in Australia had the 12<sup>th</sup> lowest probability of dying, while Indigenous Australian women had a probability of dying greater than females in East Timor, ranked 137. At current rates about 33% of young Indigenous men and 23% of Indigenous women aged 15 will be dead

***The risk of death and disability among Australia's Indigenous population is at a level that would be expected in some of the world's poorest countries...  
On the positive side, the potential for health gain is great.***

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<sup>1</sup> World Health Organisation 2005. World Health Statistics 2005, Health Status Statistics: Mortality [xls]. Viewed: 13 September 2007, <[http://www.who.int/healthinfo/statistics/whostat2005\\_mortality.xls](http://www.who.int/healthinfo/statistics/whostat2005_mortality.xls)>.

before age 60, compared with 10% and 6% in the Australian population. This four-fold increase in risk of death is largely due to excess mortality from causes such as ischaemic heart disease, suicide and Type 2 diabetes.

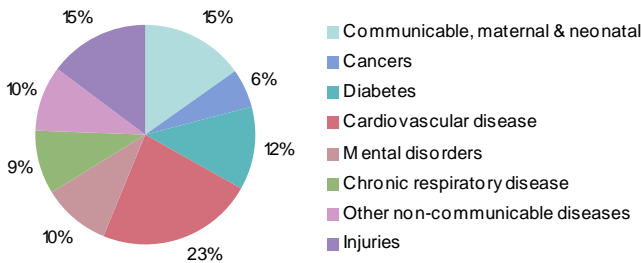
### Potential health gain

On the positive side, the potential for health gain among Indigenous peoples is great.

If Indigenous Australians have the same level of mortality and disability as the total Australian population, the total burden of disease would be 59% lower. Substantial health gain could be achieved if the 11 key risk factors facing Indigenous populations were ameliorated by proper, sustainable, health interventions.

The 11 risk factors cause high rates of non-communicable diseases, which explain 70% of the health gap between Indigenous Australians and the general Australian population. Cardiovascular disease at 23% is the leading contributor to the health gap in Indigenous Australians. Diabetes and mental disorders – at about 12% each – are the next two leading causes, with chronic respiratory diseases at 9% (Figure 7).

**Figure 7: Indigenous health gap by selected causes**



### The link between sickness and death

The mortality gap between Indigenous Australians and the total population is considerably greater than the disability gap between the two populations. This reflects in part a higher case fatality among

the Indigenous populations. The years of life lost due to fatal burden account for 54% of the total burden of disease estimates for Indigenous Australian in 2003. In contrast, about 66%, or two-thirds, of the Indigenous health gap is due to mortality. When sick, Indigenous Australians are more likely to die than non-Indigenous Australians.

***When sick, Indigenous Australians are more likely to die than non-Indigenous Australians.***

## Message for policy makers and community leaders

The findings of this study have profound implications for priority setting in government and community health policy. Policy makers and community leaders in health services now have an empirical roadmap by which to chart priorities to turnaround ongoing problems of Indigenous health.

This study provides them with a wealth of information to identify the greatest potential for health gain by:

- addressing particular diseases and risk factors;
- targeting the most-affected age groups in males and/or females; and
- providing effective interventions to Indigenous people residing in cities, regional towns and remote areas.

For the policy maker, priority setting is critical to the development of effective health strategies, and building the necessary service and program infrastructure. For community leaders, especially among Indigenous health services, it provides a yardstick against which to assess their own priorities and resource requirements.

***Policy makers and community leaders now have an empirical roadmap by which to chart priorities to turnaround ongoing problems of Indigenous health.***

Ultimately, the study provides a clearer benchmark against which to assess the effectiveness of future programs to control health problems in Indigenous communities. Repeating the study in five years time would show if the large health gap is narrowing or expanding, and the success or otherwise of health interventions in Indigenous populations. It also is the first step toward identifying cost-effective health investments, and to assess whether greater investment is required in the provision of specific Indigenous health services.

## Towards the development of health priorities

Certain diseases and risk factors contribute more than others to the overall burden of disease in Indigenous Australians, that is, to their disability-adjusted life years (DALYs), and to the Indigenous health gap that exists between Indigenous and general populations. Their identification should form the backbone of prioritisation efforts in the delivery of health services to Indigenous communities and individuals.

### Prevention is better than the cure

Cardiovascular disease, diabetes and tobacco-related conditions such as lung cancer and chronic respiratory disease collectively account for half the Indigenous health gap. Apart from tobacco, these diseases share additional lifestyle risk factors, including high body mass, physical inactivity, raised blood pressure and cholesterol.

These health problems largely affect middle-aged and older Indigenous Australians; however, they start at young ages, and there is a sizeable burden in the 15–34-year age group. Therefore, prevention efforts should be targeted at a much younger Indigenous population than in the rest of the population.

***Prevention efforts should be targeted at a much younger Indigenous population than in the rest of the population.***

Further health gain can be expected if the burden from infectious disease and neonatal conditions is addressed. These conditions explain 15% of the Indigenous health gap. Half of this burden is experienced by children.

Suicide, road traffic accidents, and homicide and violence are the main injuries that explained another 15% of the health gap. Most of these injuries occur at young adult ages, and there is a particularly high rate of suicide in young Indigenous males. Mental disorders, including substance-use disorders – particularly alcohol – also contribute significantly (10%) to the health gap.

### **Cure is better than illness**

The health gap is not only caused by preventable disease: the study also demonstrates that once Indigenous Australians become ill, they are more likely to die than other Australians. When addressing the health gap, the focus should not just be on prevention – it should also be on better care, cures, and treatments. Each disease may have specific problems to be addressed; however, it is likely that the higher case fatality for most diseases is influenced by a combination of late presentations, shortcomings in acute surgical and medical management, and inadequate follow-up during the course of disease.

## Further research

This report is the first part of at least a two-part project. In this first report, we give a good understanding of the Indigenous burden of disease, and the effect of diseases and risk factors on Indigenous health outcomes by demographics.

The second part of the study, commenced in 2005, is a detailed look at the economics, or cost-effectiveness, of health interventions, based on the data and analysis of the first report (see box below).

### About the 'Assessing Cost-Effectiveness – Prevention' project

National research is required to establish a clear schedule of cost-effective health interventions, priorities and actions. This is to help policy makers and communities decide which health interventions provide the best value for money or resources, by demographics, diseases and risk factors.

The 'Assessing Cost-Effectiveness (ACE) – Prevention' project aims to comprehensively model the cost-effectiveness of preventive intervention options for non-communicable disease in Australia, and to examine their health implications for Indigenous Australians.

The 'ACE – Prevention' project is funded by the National Health and Medical Research Council at The University of Queensland and Deakin University. The detailed project should be finished by the end of 2009.

## Where to from here?

The consequences of continued ill-health in Indigenous populations fuels existing economic and social disadvantage. Health interventions may help to break the cycle of disadvantage afflicting Indigenous populations.

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Addressing the multitude of health problems facing Indigenous Australians is complex and will require a wide range of initiatives to increase preventive and curative efforts from mainstream and particularly Indigenous health services. According to Australia's peak Indigenous community health organisation, National Aboriginal Community Controlled Health Organisation (NACCHO):

It is widely recognised that health solutions lie in assisting Aboriginal people being able to enjoy their right to self-determination. All relevant inquiries and studies have shown conclusively that culturally appropriate, comprehensive primary health care (such as Aboriginal community controlled health services), based on maximum community participation, is the best way of addressing Aboriginal health.<sup>2</sup>

Cost-effective health interventions, whether prevention or treatment, only succeed if they are taken up by Indigenous populations, in their communities and individually. Intervention programs need to be implemented in a socially acceptable manner. Local Indigenous communities and individuals must feel comfortable with proposed health interventions, and be given opportunities, and encouragement, to participate in the planning and implementation of community health initiatives.

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<sup>2</sup> NACCHO (National Aboriginal Community Controlled Health Organisation) 2001. Submission to the Commonwealth Parliamentary inquiry into the needs of urban dwelling Aboriginal and Torres Strait Islander peoples. Viewed: 25 June 2007, <<http://www.naccho.org.au/Files/Documents/Urbaninquirysubmission.pdf>>.

It would be more effective to combine this with approaches outside the health sector to address the social and economic disadvantages that contribute to the poor health status of Indigenous Australians. This is in keeping with the Indigenous concept of health, which acknowledges that:

Improving Aboriginal health is not just about improving the physical well-being of an individual. It is about working towards the social, emotional, and cultural well-being of the whole community in which each individual is able to achieve their full potential as a human being.<sup>3</sup>

At the same time, these requirements should not lead to inaction by health policy makers, health practitioners, and others arguing that the social and economic problems and differences should be tackled first. It is within the scope and reach of appropriately resourced health services and local communities to help narrow this health gap by working together cooperatively for the short- and long-term benefit of Indigenous peoples.

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<sup>3</sup> *ibid.*

## Glossary of terms

**Achievable DALYs:** The years of healthy life lost (in DALYs) that Indigenous Australians would have experienced if the same DALY rates as the total Australian population had applied.

**Disability-adjusted life year (DALY):** The sum of the years of life lost (YLL), due to premature death, and the years lived with disability (YLD), with time as a common metric:  $DALY = YLL + YLD$ . One DALY is the equivalent of one lost year of 'healthy' life. It measures burden of disease. The DALY rate is the number of DALYs estimated in 2003 generally per 1,000 population.

**Disease burden:** Defined as the number of years lost of 'healthy' life lost, or DALYs, due to disease and injury from fatal and non-fatal causes. Its unit of measure is the DALY (disability-adjusted life year). Burden rate is the number of DALYs estimated in 2003 generally per 1,000 population.

**Health gap:** The difference between 'observed' and 'achievable' DALYs. Observed DALYs are estimated in the Indigenous Australian population in 2003 from health records and other sources. The 'achievable' burden is calculated by applying the total Australian rates of burden by age, sex and condition to the Indigenous Australian population. This gap between observed and 'achievable' is a useful measure for identifying health problems at different ages and thus where the greatest potential for Indigenous health gain exists.

**Health-adjusted life expectancy:** The average years of equivalent healthy life (without disability) that a person can expect to live at various ages; this is an adaptation of the well known concept of life expectancy that takes not only mortality but also illness/disability in a population into account; it is a single number that describes the overall health status of a population and hence is used in comparisons between countries.

**Rate ratio (RR):** The ratio of two rates, generally the ratio of the rate in Indigenous Australians to the rate in the total Australian

population. The rate in rate ratio can refer to DALYs, YLL, YLD, or mortality.

**Total burden of disease:** The fatal and non-fatal burden of disease due to all causes, which includes injury. This phrase may refer to the Indigenous Australian or total Australian population. This report mostly uses this term in reference to the Indigenous Australian population. It is measured by adding 'Years lived with disability' (YLD) to 'Years of life lost' (YLL).

**Years lived with disability (YLD):** The formula for calculating YLD is number of incident cases x disability weight (range 0–1) x duration of disability (in years). Non-fatal burden is equivalent to YLD.

**Years of life lost (YLL):** Years of life lost due to premature mortality. The formula for calculating YLL is number of deaths x standard life expectancy (in years). Fatal burden is equivalent to YLL.

## Further reading

Begg S, Vos T, Barker B, Stevenson C, Stanley L & Lopez AD 2007. The burden of disease and injury in Australia, 2003. Cat. no. PHE 82. Canberra: AIHW. Available at: <http://www.aihw.gov.au/publications/index.cfm/title/10317>.

Vos T, Barker B, Stanley L & Lopez AD 2007. The burden of disease and injury in Aboriginal and Torres Strait Islander peoples, 2003. Brisbane: School of Population Health, The University of Queensland. Available at: <http://www.uq.edu.au/bodce/2003-indigenous-burden-of-disease-report>.

Hill K, Barker B & Vos T 2007. Excess Indigenous mortality: are Indigenous Australians more severely disadvantaged than other Indigenous populations? *Int J Epidemiol.* 36(3):580-589.

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