



Australian Government

**Australian Institute of
Health and Welfare**

*Better information and statistics
for better health and wellbeing*

HEALTH AND WELFARE EXPENDITURE SERIES

Number 40

Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07

An analysis by remoteness and disease

October 2010

Australian Institute of Health and Welfare

Canberra

Cat. no. HWE 49

The Australian Institute of Health and Welfare is Australia's national health and welfare statistics and information agency. The Institute's mission is better information and statistics for better health and wellbeing.

© Australian Institute of Health and Welfare 2010

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without prior written permission from the Australian Institute of Health and Welfare. Requests and enquiries concerning reproduction and rights should be directed to the Head of the Communications, Media and Marketing Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601.

This publication is part of the Australian Institute of Health and Welfare's Health and welfare expenditure series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 1323-5850

ISBN 978-1-74249-067-0

Suggested citation

Australian Institute of Health and Welfare 2010. Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07: an analysis by remoteness and disease. Health and welfare expenditure series no. 40. Cat. no. HWE 49. Canberra: AIHW.

Australian Institute of Health and Welfare

Board Chair

Hon. Peter Collins, AM, QC

Director

Penny Allbon

Any enquiries about or comments on this publication should be directed to:

Paul Lukong

Expenditure and Economics Unit

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Phone: (02) 6249 5036

Email: paul.lukong@aihw.gov.au

Published by the Australian Institute of Health and Welfare

**Please note that there is the potential for minor revisions of data in this report.
Please check the online version at <www.aihw.gov.au> for any amendments.**

Contents

- Acknowledgments..... iv
- Summary vi
- 1 Introduction.....1**
 - 1.1 Data and methods used to provide estimates.....1
- 2 Expenditure per person by remoteness.....5**
 - 2.1 MBS and PBS expenditure per person by remoteness.....7
 - 2.2 Hospital separations by remoteness.....9
 - 2.3 Expenditure on hospital separations by remoteness10
- 3 Hospital separations and expenditure by disease group.....11**
 - 3.1 Hospital separations by disease group11
 - 3.2 Expenditure on hospital separations by disease group.....15
- References20

Acknowledgments

The collection and analysis of the data and the writing of this publication was primarily done by Paul Lukong, Damian O'Rourke and Marie McNamara. Stephanie, Bowles, Joseph Kaspar, John Goss, Richard Jukes, Jenny Hargreaves and Teresa Dickinson also provided input.

The AIHW also wishes to thank the members of the Aboriginal and Torres Strait Islander Technical Advisory Group who helped plan this report, and provided advice on the methods and its content. Members who contributed to this report are listed below.

In addition, the AIHW acknowledges the funding for the project from the Office for Aboriginal and Torres Strait Islander Health within the Australian Government Department of Health and Ageing.

Office for Aboriginal and Torres Strait Islander Health, Department of Health and Ageing	Elizabeth Clout John Maxwell
New South Wales Health	Peter Brandt
Victorian Department of Human Services	Mary Sullivan
Queensland Health	Stephen Begg
Department of Health Western Australia	Elizabeth Rohwedder
Department of Health South Australia	Lee Schmidt
Department of Health and Human Services Tasmania	Mark Johnson
ACT Health	Yvonne Mills
Northern Territory Department of Health and Families	Margaret Foley
Australian Bureau of Statistics	Brent Bufton
Office of Indigenous Policy Coordination, Department of Families, Housing, Community Services and Indigenous Affairs	Darren Benham
Department of Veterans' Affairs	Eric McDonald

Abbreviations

ACCHOs	Aboriginal Community Controlled Health Organisations
AIHW	Australian Institute of Health and Welfare
BEACH	Bettering the Evaluation and Care of Health
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
MBS	Medicare Benefits Schedule
OATSIH	Office for Aboriginal and Torres Strait Islander Health
PBS	Pharmaceutical Benefits Scheme

Summary

This report looks at health expenditure estimates per person for Indigenous and non-Indigenous Australians at the regional level. It also, for the first time, provides estimates of expenditure for Aboriginal and Torres Strait Islander people by disease and injury groups. This analysis shows differences in expenditure and service use that can be hard to detect in more aggregated statistics.

- Health expenditure per person on selected health services for Aboriginal and Torres Strait Islander people varied across remoteness areas, generally increasing with remoteness.
- Medicare Benefits Schedule (MBS) expenditure per person was lower for Aboriginal and Torres Strait Islander people across all remoteness areas, although the disparity between Indigenous and non-Indigenous Australians decreased with remoteness.
- Pharmaceutical Benefits Scheme (PBS) expenditure per person on Aboriginal and Torres Strait Islander people was highest in *Remote/very remote* areas, but for non-Indigenous Australians it was highest in *Inner regional* areas and *Major cities*.
- Overall, Indigenous hospital separation rates were higher than non-Indigenous rates, but the rate ratios varied across remoteness areas. The highest rate ratios were in *Remote/very remote* areas.
- Overall, the average cost per hospital separation across all remoteness areas was higher for Indigenous Australians than for non-Indigenous Australians.
- Genitourinary diseases were responsible for the highest proportion of hospital separations among Aboriginal and Torres Strait Islander people. These separations were largely for care involving dialysis.
- In 2006–07, genitourinary diseases, mental and behavioural disorders, and maternal conditions had the highest expenditure for Indigenous hospital separations, while cardiovascular diseases, unintentional injuries and malignant neoplasms had the highest expenditure for non-Indigenous hospital separations.

1 Introduction

In 2009, the AIHW released the report, *Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07* (AIHW 2009a). That report estimated per person expenditure on health services for Indigenous Australians was 1.31 times that for the non-Indigenous population. This per person ratio masks the considerable variation in health expenditure for Aboriginal and Torres Strait Islander people across regions. This report builds on those national and state level estimates reported in the 2006–07 report, by providing estimates at the regional level. Reporting estimates by Australian Standard Geographical Classification remoteness area provides a better insight into how health services for Aboriginal and Torres Strait Islander people are delivered and used.

This report also, for the first time, provides estimates of admitted patient expenditure for Aboriginal and Torres Strait Islander people by disease and injury groups. These disease expenditure estimates are an allocation of the 2006–07 admitted patient expenditure for Aboriginal and Torres Strait Islander people, and represent nearly 40% (estimated expenditure of \$1,156 million) of total admitted patient expenditure for the Aboriginal and Torres Strait Islander population.

This report has been produced at the request of the Australian Health Ministers Advisory Council, and has been funded by the Office for Aboriginal and Torres Strait Islander Health (OATSIH) in the Australian Government Department of Health and Ageing.

1.1 Data and methods used to provide estimates

The AIHW gathers health expenditure information from many sources, including the Australian Bureau of Statistics, the Department of Health and Ageing, the Department of Veterans' Affairs and state/territory health authorities. This information is used to produce estimates published in the AIHW report, *Health expenditure Australia*. These estimates, which are by all areas of health expenditure, are then allocated between Indigenous and non-Indigenous Australians to produce the report, *Expenditure on health for Aboriginal and Torres Strait Islander people*.

The AIHW uses specialised methods to calculate and improve the quality of estimates for all areas of health expenditure. Detailed descriptions of data sources and methods used in relation to areas of expenditure are covered in *Health expenditure Australia 2007–08* (AIHW 2009b) and *Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07* (AIHW 2009a).

Medicare Voluntary Indigenous Identifier

This report uses Medicare Voluntary Indigenous Identifier data for estimates of the Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS) components of expenditure on health for Aboriginal and Torres Strait Islander people. Until recently these estimates were based on data from Bettering the Evaluation and Care of Health (BEACH), an annual survey done by the Family Medicine Research Centre at the University of Sydney (an AIHW collaborative centre). However, BEACH does not provide a large enough sample size for disaggregated analysis of Indigenous statistics. Since 2002, Medicare Australia has had a

Voluntary Indigenous Identifier question on its registration forms, and, as at January 2009, 210,351 people – or 41% of the total Aboriginal and Torres Strait Islander population – had registered.

Voluntary Indigenous Identifier data considerably improves the accuracy of Indigenous expenditure estimates, and allows increased scope for disaggregated analysis. However, data from the Voluntary Indigenous Identifier enrolled population must be ‘scaled up’ to estimate that of the total Indigenous population, and this is a complex exercise that must take into account variations in the number of people registered with the Voluntary Indigenous Identifier by age, sex, states/territories and remoteness. It is possible that this method may slightly overestimate or underestimate the actual level of MBS and PBS expenditure for Indigenous Australians, so some caution should be used in interpreting these estimates. See Appendix B in *Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07* (AIHW 2009a).

Indigenous identification in hospital separations data

The AIHW has released the report *Indigenous identification in hospital separations data: quality report* (AIHW 2010). This report presented the latest findings on the quality of Indigenous identification in hospital separations data in Australia, based on studies of Indigenous identification in public hospitals done during 2007 and 2008.

The results of the studies indicated that, overall, the quality of Indigenous identification in hospital separations data had improved since last assessed, but that there was still 11% Indigenous under-identification in Australian public hospitals. The level of under-identification varied substantially between states/territories. In private hospitals, this information was frequently unavailable, and where Indigenous status information was collected, the data were not always accurate.

Adjustment for variation in Indigenous identification in hospital separations and expenditure data by remoteness

Based on the guidelines of the National Health Information Standards and Statistics Committee, the analyses of hospital separations for Aboriginal and Torres Strait Islander people by remoteness area in this report include Indigenous status information for hospitals only in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory (public hospitals only), for which the quality of Indigenous identification is considered acceptable for analysis purposes. Thus, separation rates in this report need to be interpreted with care, as data for Tasmania and the Australian Capital Territory, which together account for about 4.5% of the Indigenous population, are not included.

Estimates of the level of Indigenous under-identification from the 2010 report were used to adjust admitted patient expenditure by remoteness for New South Wales, Victoria, Queensland, South Australia, Western Australia and the Northern Territory (public hospitals only). In some states and territories, a single state-wide average under-identification adjustment factor was applied. In others, differential under-identification factors were used, depending on the region in which the particular service(s) were located.

Since the AIHW studies on Indigenous identification in hospital separations data in Australia did not include private hospitals, an adjustment factor of 54% for private hospitals

was derived from analysis of linked hospital morbidity data from New South Wales (AIHW 2001).

Some of the expenditure patterns in this report may be influenced by variations in the completeness of Indigenous identification, despite the adjustments made for under-identification. It is possible that health expenditure estimates for Indigenous Australians may slightly overestimate or underestimate the actual level of health expenditure for Indigenous Australians. As a result, estimates on health expenditure for Indigenous Australians presented in this report should be used with caution.

Expenditure on hospital separations by disease group

Disease groups in this report are based on those published in *The burden of disease and injury in Australia 2003*, which identifies and quantifies the impact of health problems in Australia based on the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) disease coding (AIHW: Begg et al. 2007). Disease and injury categories in this report were grouped into three broad cause groups:

- communicable, maternal, neonatal and nutritional conditions
- non-communicable diseases and
- injuries.

These three broad groups were then subdivided into 22 disease groups that correspond to chapter-level groups of ICD-10 codes. These were further divided into individual disease and injury categories – such as asthma, hypertensive renal disease and breast cancer – to provide a more comprehensive coverage of disease groups (principal diagnosis) reported for hospital admission. The group ‘signs, symptoms and ill-defined conditions, and other contact with health services’ was included to cover some health service expenditure that cannot be allocated by disease groups. For a full list of ICD-10 codes used, see Annex Table 1 of *The Burden of Disease and Injury in Australia 2003* (AIHW: Begg et al. 2007).

In this report, separations and expenditure per separation were calculated from data in the AIHW Hospital Morbidity Costing Model. This model applies Diagnosis Related Group weights and length of stay adjustment to both Indigenous and non-Indigenous cases for each hospital. This model, therefore, takes into account differences not only in casemix, but also differences in hospital operating costs across the regions. As in the 1998–99, 2001–02 and 2004–05 reports on *Expenditure on health for Aboriginal and Torres Strait Islander peoples*, a loading of 5% was added to the Aboriginal and Torres Strait Islander patient costs to take into account known differences in comorbidity for similar Diagnosis Related Groups in Aboriginal and Torres Strait Islander patients (AIHW 2008a).

An adjustment factor was applied to expenditure estimates by disease groups from the Hospital Morbidity Costing Model to ensure that the total sum of the estimates for all disease groups matched the total amount of admitted patient expenditure published in *Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07* (AIHW 2009a).

Scope of disease expenditure analysis

The analysis of disease expenditure in this report only includes admitted patient expenditure. Expenditure on these services, which represents \$1,156 million – or about 40% of total Indigenous health expenditure – has been allocated to each disease category.

It is not possible to allocate all expenditure on health goods and services by disease. Expenditure on most community and public health programs, such as support for the treatment and prevention of many conditions, cannot be allocated to one specific disease or injury. Expenditure categories that were not able to be allocated by disease included community health services (21% of total Indigenous health expenditure) and non-admitted patient hospital services (11% of total Indigenous health expenditure).

It is important that the interpretation and limitations of the disease expenditure estimates are clearly understood. The most important points to note are that the estimates:

- only reflect 40% of total Indigenous health expenditure
- are only one measure of the size of the disease burden on the Aboriginal and Torres Strait Islander population (that is, the ‘size of the problem’)
- are not an indication of the loss of health due to that disease
- do not, of themselves, provide guidance as to priorities for intervention
- do not, of themselves, indicate how much would be saved if a specific disease, or all diseases, were prevented
- are not an estimate of the total economic impact of diseases in the Aboriginal and Torres Strait Islander community. This is because the estimates do not include costs that are accrued outside the health system – for example, lost productivity, costs associated with the social and economic burden on carers and family, and costs due to lost quality and quantity of life.

2 Expenditure per person by remoteness

This section looks at health expenditure per person on four areas of health services for Indigenous and non-Indigenous Australians for which it was possible to estimate expenditure by remoteness area – that is, admitted patient services, OATSIH grants to Aboriginal Community Controlled Health Organisations (ACCHOs), the MBS and the PBS. In 2006–07, these areas of health expenditure together accounted for 57% (\$1,667 million) of health expenditure on Indigenous people, compared with 49% (\$45,350 million) for non-Indigenous Australians (AIHW 2009a). Since the remaining areas of health expenditure excluded from the analyses in this report account for 43% of health expenditure on Aboriginal and Torres Strait Islander people, care should be exercised when interpreting and/or comparing these estimates with those published in *Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07* and earlier reports.

For the categories of health expenditure on Aboriginal and Torres Strait Islander people that were within the scope for this analysis, expenditure varied across remoteness areas. Table 1 shows a general increase in health expenditure on Aboriginal and Torres Strait Islander people with remoteness, except in *Inner regional* areas. The ratios of Indigenous to non-Indigenous expenditure were highest in *Remote/very remote* and *Outer regional* areas, with ratios of 2.33 and 1.48 respectively (Table 1).

In 2006–07, expenditure per person on public hospital services for Indigenous Australians was higher than the expenditure for non-Indigenous Australians when compared by remoteness areas. The Indigenous to non-Indigenous expenditure ratio was highest in *Remote/very remote* areas (2.84) and lowest in *Inner regional* areas (1.40).

Expenditure per person on private hospital services was much lower for Indigenous Australians than for non-Indigenous Australians by remoteness areas. The Indigenous to non-Indigenous expenditure ratio was highest in *Outer regional* areas (0.42) and lowest in *Major cities* and *Inner regional* areas (0.15).

Expenditure per person on health services through ACCHOs was much higher across remoteness areas for Indigenous Australians than that for non-Indigenous Australians, being 451 and 193 times that of the non-Indigenous expenditure in *Major cities* and *Inner regional* areas, respectively.

Table 1: Health expenditure per person on selected health services^(a), Indigenous and non-Indigenous Australians, by remoteness areas of patient's residence, 2006–07 (\$)

Area of expenditure		Major cities	Inner regional	Outer regional	Remote/ very remote	All regions
Admitted patient services						
Public hospital	Indigenous	1731.3	1569.0	2119.8	3234.4	2150.0
	Non-Indigenous	965.4	1122.8	1216.6	1139.5	1022.4
	Ratio	1.79	1.40	1.74	2.84	2.10
Private hospitals	Indigenous	55.6	51.4	109.6	35.7	61.7
	Non-Indigenous	369.0	338.5	258.7	190.8	349.8
	Ratio	0.15	0.15	0.42	0.19	0.18
OATSIH grants to						
ACCHO	Indigenous	268.8	321.9	569.7	804.7	477.6
	Non-Indigenous	0.6	1.7	6.6	54.0	2.3
	Ratio	451.4	192.9	86.9	14.9	209.1
MBS ^(b)	Indigenous	350.2	310.2	338.4	299.2	326.6
	Non-Indigenous	590.3	524.2	468.2	388.9	562.6
	Ratio	0.59	0.59	0.72	0.77	0.58
PBS ^(c)	Indigenous	158.6	141.8	178.3	223.2	175.2
	Non-Indigenous	285.1	319.3	284.2	200.1	290.2
	Ratio	0.56	0.44	0.63	1.12	0.60
Total selected health	Indigenous	2,564.4	2,394.3	3,315.8	4,597.2	3,191.0
	Non-Indigenous	2,210.4	2,306.4	2,234.2	1,973.3	2,227.4
	Ratio	1.16	1.04	1.48	2.33	1.43

(a) Excludes areas of health expenditure such as community health services, patient transport and public health services.

(b) Excludes other health services provided through Medicare such as optometry, dental and allied health services.

(c) Excludes RPBS, methadone, copayments and highly specialised drugs dispensed from public and private hospitals.

Source: AIHW Health Expenditure Database.

2.1 MBS and PBS expenditure per person by remoteness

Expenditure on health for Aboriginal and Torres Strait Islander people 2006-07 indicated that MBS expenditure per person in that year was \$327 for Indigenous Australians, compared with \$563 for non-Indigenous Australians, a ratio of 0.58. PBS expenditure per person in that year was estimated at \$175 for Indigenous Australians, compared with \$290 for non-Indigenous Australians, a ratio of 0.60. Table 2 shows variations in distribution of MBS and PBS expenditure per person across remoteness areas.

Overall, MBS expenditure per person decreased with remoteness, from an average in *Major cities* of \$350 per person for Indigenous Australians and \$590 per person for non-Indigenous Australians, to an average in *Remote/very remote* areas of \$299 per person for Indigenous Australians and \$389 per person for non-Indigenous Australians.

MBS expenditure per person was lower for Aboriginal and Torres Strait Islander people across all remoteness areas, although the disparity between Indigenous and non-Indigenous Australians decreased with remoteness. The greatest disparity was in *Major cities* (with a difference of \$240 per person or an Indigenous to non-Indigenous expenditure ratio of 0.59), while the smallest gap was in *Remote/very remote* areas (a difference of \$90 per person or an Indigenous to non-Indigenous expenditure ratio of 0.77).

The ratio of Indigenous to non-Indigenous MBS expenditure per person was generally higher for general practitioner services than for other MBS service types (pathology, imaging, specialist, and operations and other). General practitioner services in *Outer regional* areas and *Remote/very remote* areas was the only MBS service type with expenditure per person higher for Indigenous Australians than non-Indigenous Australians (a ratio of 1.01). The lowest overall expenditure ratio was for the MBS category of 'operations and other', with ratios ranging from 0.37 in *Outer regional* areas to 0.31 in *Inner regional* and *Remote/very remote* areas.

Overall, PBS expenditure per person for Aboriginal and Torres Strait Islander people increased with remoteness, from an average of \$159 per person in *Major cities* to an average of \$223 per person in *Remote/very remote* areas. In contrast, PBS expenditure per person for non-Indigenous Australians generally decreased with remoteness, from an average of \$285 per person in *Major cities* to an average of \$200 per person in *Remote/very remote* areas.

The greatest difference in Indigenous to non-Indigenous PBS expenditure per person was in *Inner regional* areas (a difference of \$178 per person or an Indigenous to non-Indigenous expenditure ratio of 0.44) and *Major cities* (a difference of \$127 per person or an Indigenous to non-Indigenous expenditure ratio of 0.56). In *Remote/very remote* areas, Indigenous Australians received PBS expenditure of \$23 more per person than non-Indigenous Australians (a ratio of 1.12).

The high PBS Indigenous to non-Indigenous per person expenditure ratio in *Remote/very remote* areas was driven by the high ratio of PBS expenditure per person under Section 100 of the *National Health Act 1953*. Section 100 arrangements allow patients attending an approved remote area Aboriginal and Torres Strait Islander health service to receive PBS medicines without the need for a prescription form and at no charge.

Note that most medical services provided through ACCHOs are billed to Medicare through an exemption issued under Section 19(2) of the *Health Insurance Act 1973*.

Table 2: MBS and PBS expenditure per person, Indigenous and non-Indigenous Australians, by remoteness areas of patient's residence, 2006–07 (\$)

	Major cities	Inner regional	Outer regional	Remote/ very remote	All regions
MBS^(a)					
General practitioner					
Indigenous	173.4	148.6	174.0	156.5	164.1
Non-Indigenous	217.4	187.0	173.1	154.5	206.2
Ratio	0.80	0.79	1.01	1.01	0.80
Pathology					
Indigenous	47.0	42.9	49.0	63.5	50.6
Non-Indigenous	85.8	80.8	74.5	65.9	83.4
Ratio	0.55	0.53	0.66	0.96	0.61
Imaging					
Indigenous	43.9	41.5	40.5	25.5	38.1
Non-Indigenous	85.8	80.8	74.5	65.9	83.4
Ratio	0.51	0.51	0.54	0.39	0.46
Specialist					
Indigenous	50.1	42.0	31.4	19.5	36.8
Non-Indigenous	71.8	52.5	40.1	27.4	64.3
Ratio	0.70	0.80	0.78	0.71	0.57
Operations and other					
Indigenous	41.1	38.5	39.9	27.7	37.0
Non-Indigenous	129.0	122.5	109.2	88.1	125.2
Ratio	0.32	0.31	0.37	0.31	0.30
<i>Total MBS</i>					
Indigenous	350.2	310.2	338.4	299.2	326.6
Non-Indigenous	590.3	524.2	468.2	388.9	562.6
Ratio	0.59	0.59	0.72	0.77	0.58
PBS^(b)					
Mainstream PBS benefits					
Indigenous	145.7	130.3	163.8	40.1	120.6
Non-Indigenous	261.3	292.7	260.5	174.4	265.9
Ratio	0.56	0.45	0.63	0.23	0.45
Section 100					
Indigenous	0.0	0.0	0.0	179.6	43.9
Non-Indigenous	0.0	0.0	0.0	9.8	0.2
Ratio	0.0	0.0	0.0	18.4	258.1
Other PBS special supply					
Indigenous	12.9	11.5	14.5	3.5	10.7
Non-Indigenous	23.8	26.6	23.7	15.9	24.2
Ratio	0.54	0.43	0.61	0.22	0.44
<i>Total PBS</i>					
Indigenous	158.6	141.8	178.3	223.2	175.2
Non-Indigenous	285.1	319.3	284.2	200.1	290.2
Ratio	0.56	0.44	0.63	1.12	0.60
Total MBS and PBS					
Indigenous	508.7	452.0	516.6	522.4	501.7
Non-Indigenous	875.4	843.5	752.4	588.9	852.8
Ratio	0.58	0.54	0.69	0.89	0.59

(a) Excludes other health services provided through Medicare such as optometry, dental and allied health services.

(b) Excludes RPBS, methadone, copayments and highly specialised drugs dispensed from public and private hospitals.

Source: AIHW Health Expenditure Database.

2.2 Hospital separations by remoteness

The section presents hospital separation rates by remoteness area for Indigenous and non-Indigenous Australians. Overall, most Aboriginal and Torres Strait Islander patients are identified in public hospital separation records. However, for private hospitals, Indigenous status information is less often recorded on separation data. As a result, Indigenous identification is considered poor in private hospitals (AIHW 2005b).

Separation rates by remoteness and Indigenous status are published in this report to provide context to the admitted patient expenditure estimates for Aboriginal and Torres Strait Islander people. Readers are advised to use the report *Australian hospital statistics* for separation rate data. Separation rates in this report are not comparable with those published in *Australian hospital statistics 2006–07*, because the rates in this report are not age standardised. This is to ensure consistency and comparability with the report *Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07* and all previous reports in that series. Also, in contrast to *Australian hospital statistics 2006–07*, separation rates published in this report have been adjusted for Indigenous under-identification.

Table 3 shows hospital separations per 1,000 population by remoteness area and Indigenous status. Hospital separations rates differ across remoteness areas. However, for more remote areas, they were substantially higher for Indigenous Australians than non-Indigenous Australians. The highest hospital separation rate for Aboriginal and Torres Strait Islander people was 957 per 1,000 population in *Remote* areas, and the lowest was 337 per 1,000 population in *Major cities*. For non-Indigenous Australians, the highest was 353 per 1,000 population in *Major cities*, and the lowest was 266 per 1,000 population in *Remote* areas.

In terms of Indigenous to non-Indigenous hospital separation rate ratios, these also varied across remoteness areas. The rate ratio was highest in *Remote* areas, at 3.6 times that for non-Indigenous Australians, followed by *Very remote* areas, with 2.4 times the rate for non-Indigenous Australians.

Table 3: Hospital separation^{(a)(b)} rates^(c), by remoteness area of patient's residence and Indigenous status^(d), 2006–07

Indigenous status	Major cities	Inner regional	Outer regional	Remote	Very remote	All regions
Indigenous	337.3	345.6	633.6	956.9	652.8	509.4
Non-Indigenous	352.7	341.6	323.6	265.6	274.2	346.4
Total	352.5	341.7	341.6	370.3	456.2	350.5
Rate ratio ^(e)	0.96	1.01	1.96	3.60	2.38	1.47

(a) Includes data for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory (public hospitals only), for which the quality of Indigenous identification is considered acceptable for analysis. Caution should be exercised in interpreting these data due to jurisdictional differences in data quality.

(b) Hospital separations for which care type was reported as Newborn with no qualified days, and records for Hospital boarders and Posthumous organ procurement have been excluded.

(c) Number per 1,000 population.

(d) Admitted patient rates have been adjusted for Indigenous under-identification.

(e) Indigenous to non-Indigenous rate ratio.

Source: AIHW National Hospital Morbidity Database.

2.3 Expenditure on hospital separations by remoteness

The section presents expenditure on hospital separations by remoteness area for Indigenous and non-Indigenous Australians. The average cost per casemix-adjusted hospital separation information presented in this section excludes the cost of private medical services funded through Medicare. These private medical services are already captured in Medicare statistics, which are part of ‘medical services’ rather than ‘hospitals’. This exclusion has a large impact on the data for hospitals, particularly that for private hospitals. In 2006–07, about 11.0% (or \$3,789 million) of the cost of care for hospital separations was for private medical services expenditure delivered through Medicare (AIHW 2008b).

Table 4 shows average expenditure per casemix-adjusted hospital separation, by remoteness area of patient residence and Indigenous status. The average expenditure per casemix-adjusted hospital separation for Aboriginal and Torres Strait Islander people varies across remoteness areas. Overall, it was higher for Indigenous Australians than for non-Indigenous Australians. The highest (\$5,298) average expenditure per casemix-adjusted separation for Indigenous Australians was in *Major cities*, and lowest (\$3,519) in *Outer regional* areas. For non-Indigenous Australians, the highest (\$4,976) was in *Very remote* areas and the lowest (\$3,783) in *Major cities*. As a result, the Indigenous to non-Indigenous difference in average expenditure per casemix-adjusted separation was greatest in *Major cities* (with Indigenous separations costing \$1,515 more per casemix-adjusted separation), followed by *Outer regional* areas (with Indigenous separations costing \$1,040 more per casemix-adjusted separation).

This contrasts with *Remote* areas where the average expenditure per casemix-adjusted separation was \$1,118 more for non-Indigenous Australians than for Indigenous Australians

The ratio of Indigenous to non-Indigenous average expenditure per casemix-adjusted separation for hospitals was lowest in *Outer regional* areas (0.77), and highest in *Major cities* (1.40).

Table 4: Average expenditure per casemix^(a)-adjusted hospital^(b) separation^{(c)(d)}, by remoteness area of patient’s residence and Indigenous status, 2006–07 (\$)

Indigenous status	Major cities	Inner regional	Outer regional	Remote	Very remote	All regions
Indigenous	5,298.3	4,688.4	3,518.5	3,849.1	4,630.9	4,341.9
Non-Indigenous	3,783.3	4,278.2	4,559.4	4,966.5	4,976.2	3,961.8
Total	3,803.8	4,291.3	4,440.1	4,476.7	4,616.6	3,975.6
Rate ratio ^(e)	1.40	1.10	0.77	0.78	0.93	1.10

(a) The range and types of patients (the mix of cases) treated by a hospital or other health service. Casemix provides a way of describing and comparing hospitals and other services for planning and managing health care. Casemix classifications put patients into manageable numbers of groups with similar conditions that use similar health-care resources, so that the activity and cost-efficiency of different hospitals can be compared.

(b) The cost of private medical services funded through Medicare, which is estimated at \$3,789 million—or the equivalent of 11% of hospital expenditure on hospital separations—is not included.

(c) Includes data for New South Wales, Victoria, Queensland, Western Australia, South Australia, and the Northern Territory (public hospitals only), for which the quality of Indigenous identification is considered acceptable for analysis. Caution should be exercised in interpreting these data due to jurisdictional differences in data quality.

(d) Hospital separations for which care type was reported as Newborn with no qualified days, and records for Hospital boarders and Posthumous organ procurement have been excluded.

(e) Indigenous to non-Indigenous rate ratio.

Source: AIHW National Hospital Morbidity Database.

3 Hospital separations and expenditure by disease group

This section provides, for the first time, estimates of hospital separations and expenditure by disease and injury groups for Indigenous and non-Indigenous Australians. Along with the patterns of hospital separations by disease group, the section also describes different patterns of expenditure on different types of disease.

3.1 Hospital separations by disease group

This section presents hospital separation rates by disease group, for Indigenous and non-Indigenous Australians. In 2006–07, more than two-thirds (71%) of hospital separations for Aboriginal and Torres Strait Islander people were accounted for by just seven disease groups: genitourinary diseases (43% of all Indigenous hospital separations); maternal conditions (8%); unintentional injuries (5%); diseases of the digestive system (4%); mental and behavioural disorders (4%); acute respiratory infections (4%); and cardiovascular disease (3%) (Figure 1). In contrast, these seven disease groups accounted for half (50%) of all non-Indigenous hospital separations.

Genitourinary disease group (which include diseases for which care involves dialysis) accounted for the highest proportion of hospital separations in both the Indigenous and non-Indigenous populations. However, in the Indigenous population it accounted for 43% of all hospital separations, whereas in the non-Indigenous population it accounted for 16% of separations.

The high proportion of genitourinary disease separations for Aboriginal and Torres Strait Islander people was driven by the large number of hospital separations for which care involved dialysis, which represented 94% of separations from the genitourinary disease group. Separations for care involving dialysis accounted for 72% of non-Indigenous genitourinary disease separations.

Dialysis has been included in the genitourinary disease group, as this group includes chronic renal failure for which dialysis is a common treatment. Chronic renal failure can be caused by a number of different diseases and conditions, not all of which are included in the genitourinary disease group.

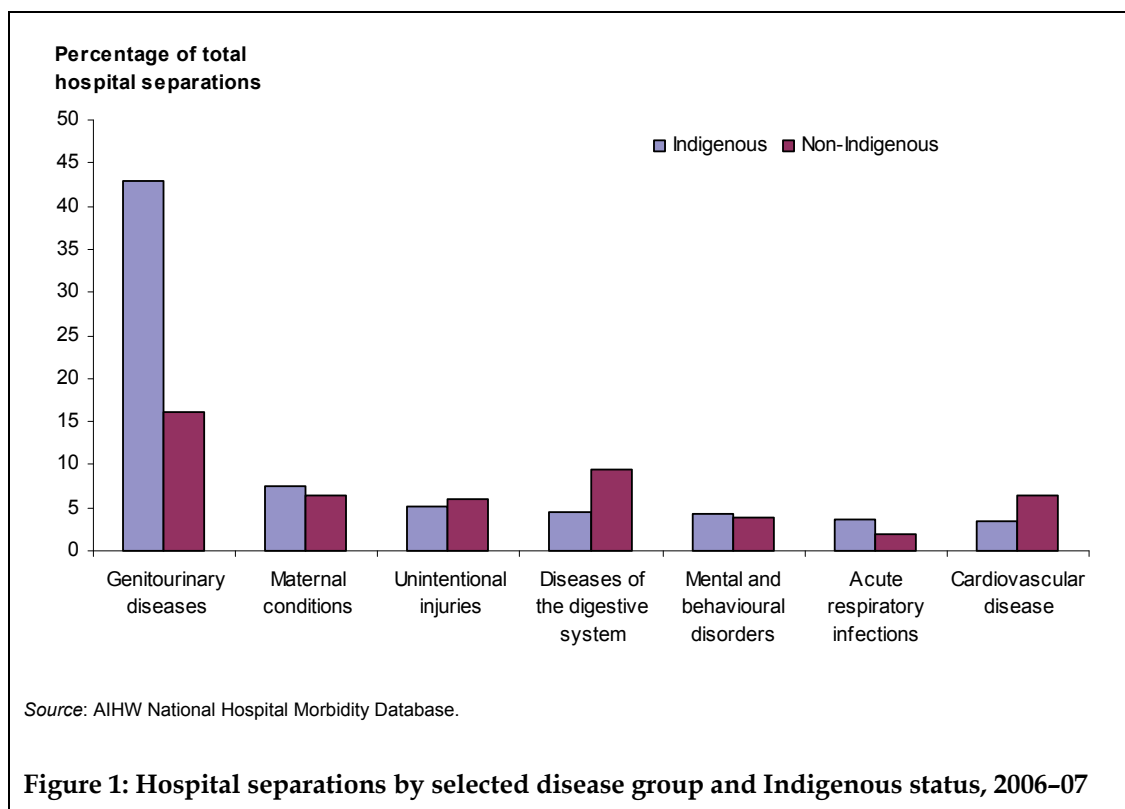


Table 5 shows hospital separations per 1,000 population by disease group in public and private hospitals. Broadly, separation rate ratios for most disease groups were higher for Indigenous Australians than for non-Indigenous Australians. The separation rate ratio for Indigenous Australians who were admitted for genitourinary diseases (mainly due to care involving dialysis) was 4.2 times the rate ratio for non-Indigenous Australians. Following was alcohol dependence and other harmful drug use at 3.5 times, and acute respiratory infections at 3.0 times the rate of non-Indigenous Australians.

Table 5: Hospital separation^{(a)(b)} rates, by disease group and Indigenous status^(c) in public and private hospitals, 2006–07

Disease group	Separations per 1000 population		
	Indigenous	Non-Indigenous	Rate ratio
1. Communicable diseases, maternal and neonatal conditions	84.1	40.0	2.10
<i>Infectious and parasitic diseases</i>	12.1	5.0	2.41
Sexually transmitted diseases ^(d)	4.5	2.0	2.30
Chlamydia	0.5	0.2	2.44
Gonorrhoea	0.3	0.0	61.38
Other sexually transmitted diseases	3.7	1.7	2.13
Diarrhoeal diseases	5.1	2.0	2.60
Childhood immunisable diseases	0.1	0.0	4.06
Whooping cough	0.1	0.0	4.54
Trachoma	0.0	0.0	0.00
Other infectious and parasitic diseases	2.4	1.0	2.26
Acute respiratory infections	20.9	6.9	3.02
Otitis media	2.2	1.2	1.81
<i>Maternal conditions</i>	42.8	22.8	1.88
<i>Neonatal causes</i>	6.1	2.6	2.37
<i>Nutritional deficiencies</i>	2.2	2.7	0.79
2. Non-communicable diseases	388.4	230.4	1.69
<i>Malignant neoplasms</i>	6.8	21.5	0.31
Breast cancer	0.4	1.1	0.37
Leukaemia	0.4	1.0	0.35
Mouth and oropharynx cancer	0.4	0.3	1.49
Colorectal cancer	0.5	1.5	0.30
Lung cancer	0.6	0.9	0.66
Cervical cancer	0.3	0.1	2.97
Other malignant neoplasms	4.2	16.6	0.26
<i>Other neoplasms</i>	3.3	8.2	0.40
<i>Diabetes mellitus</i>	7.9	3.6	2.18
Type 2 diabetes	6.5	2.8	2.32
<i>Endocrine and metabolic disorders</i>	4.0	4.9	0.82
<i>Mental and behavioural disorders</i>	24.5	14.2	1.73
Alcohol dependence and other harmful use	9.2	2.6	3.50
Anxiety and depression	3.0	4.4	0.70
<i>Nervous system and sense organ disorders</i>	12.4	19.5	0.64
Nervous system disorders	10.5	11.3	0.93
Sense organ disorders	1.9	8.2	0.23
Glaucoma-related blindness	0.1	0.2	0.39
Cataract-related blindness	1.6	7.4	0.22
Macular degeneration	0.1	0.4	0.14
Adult-onset hearing loss	0.1	0.1	1.04
Refractive disorder and other vision loss	0.0	0.2	0.17
<i>Cardiovascular disease</i>	19.2	23.1	0.83
Rheumatic heart disease	0.8	0.1	7.33
Ischemic heart disease	10.4	9.2	1.12
Stroke	1.7	2.3	0.71
Inflammatory heart disease	1.0	0.6	1.52
Peripheral vascular disease	0.3	0.9	0.27
Other cardiovascular disease ^(e)	5.1	9.9	0.52

(continued)

Table 5 (continued): Hospital separation^{(a)(b)} rates, by disease group and Indigenous status^(c) in public and private hospitals, 2006–07

Disease group	Separations per 1000 population		
	Indigenous	Non-Indigenous	Rate ratio
<i>Chronic respiratory disease</i>	13.0	9.6	1.35
Chronic obstructive pulmonary disease	4.5	2.6	1.75
Asthma	4.0	1.7	2.37
Other chronic respiratory diseases	4.4	5.3	0.84
<i>Diseases of the digestive system</i>	25.0	34.1	0.73
<i>Genitourinary diseases</i>	241.8	57.9	4.18
Hypertensive renal disease	3.2	1.7	1.90
Other nephritis and nephrosis ^(f)	228.0	40.6	5.62
Other genitourinary diseases	10.6	15.6	0.68
<i>Diseases of the skin and subcutaneous tissue</i>	12.3	5.8	2.13
<i>Musculoskeletal and connective tissue diseases</i>	10.7	19.7	0.54
<i>Congenital anomalies</i>	2.2	1.6	1.36
<i>Oral conditions</i>	5.5	6.7	0.81
3. Injuries^(g)	43.0	23.7	1.81
<i>Unintentional injuries</i>	29.2	21.6	1.35
Road traffic accidents	4.3	2.8	1.50
Poisoning	0.8	0.4	1.84
Falls	9.0	8.6	1.05
Other unintentional injuries	15.2	9.7	1.55
<i>Intentional injuries</i>	13.8	2.1	6.53
Suicide and self-inflicted injuries	2.8	1.2	2.41
Homicide	11.0	1.0	11.54
Other unintentional injuries	0.0	0.0	4.20
4. Signs, symptoms and ill-defined conditions, and other contact with health services^(h)	49.3	64.8	0.76
Total	564.8	358.9	1.57

(a) Includes hospital separation data for all states/territories.

(b) Hospital separations for which care type was reported as Newborn with no qualified days, and records for Hospital boarders and Posthumous organ procurement have been excluded.

(c) Admitted patient rates have been adjusted for Indigenous under-identification.

(d) Includes HIV/AIDS.

(e) Includes hypertensive heart disease, aortic aneurysm and dissection, and non-rheumatic heart disease.

(f) Includes separations for care involving dialysis (ICD-10 Z49).

(g) Hospital separation resulting from external cause events treated during hospitalisations.

(h) 'Signs, symptoms and ill-defined conditions' include diagnostic and other services for signs, symptoms and ill-defined conditions where the cause of the problem is unknown. 'Other contact with the health system' includes: fertility control, reproduction and development; elective cosmetic surgery; general prevention, screening and health examination; and treatment and after care for unspecified disease.

Source: AIHW National Hospital Morbidity Database.

3.2 Expenditure on hospital separations by disease group

This section presents expenditure on hospital separations, for Indigenous and non-Indigenous Australians by disease and injury categories, broken down into 22 disease groups.

In 2006–07, the disease categories that accounted for the highest proportion of hospital separations for Aboriginal and Torres Strait Islander people (Figure 1) were the same as those that accounted for the highest proportion of admitted patient expenditure on Indigenous Australians: genitourinary diseases (10% of total admitted patient expenditure); mental and behavioural disorders (10%); maternal conditions (9%); unintentional injuries (8%); cardiovascular disease (8%); diseases of the digestive system (6%); and acute respiratory infections (5%) (Figure 2).

Together these seven disease categories accounted for 55% of total admitted patient expenditure on Indigenous Australians. In contrast, they accounted for 50% of admitted patient expenditure on non-Indigenous Australians.

When expenditure on hospital separations for care involving dialysis is excluded, genitourinary diseases only accounted for 4% of both Indigenous and non-Indigenous admitted patient expenditure.

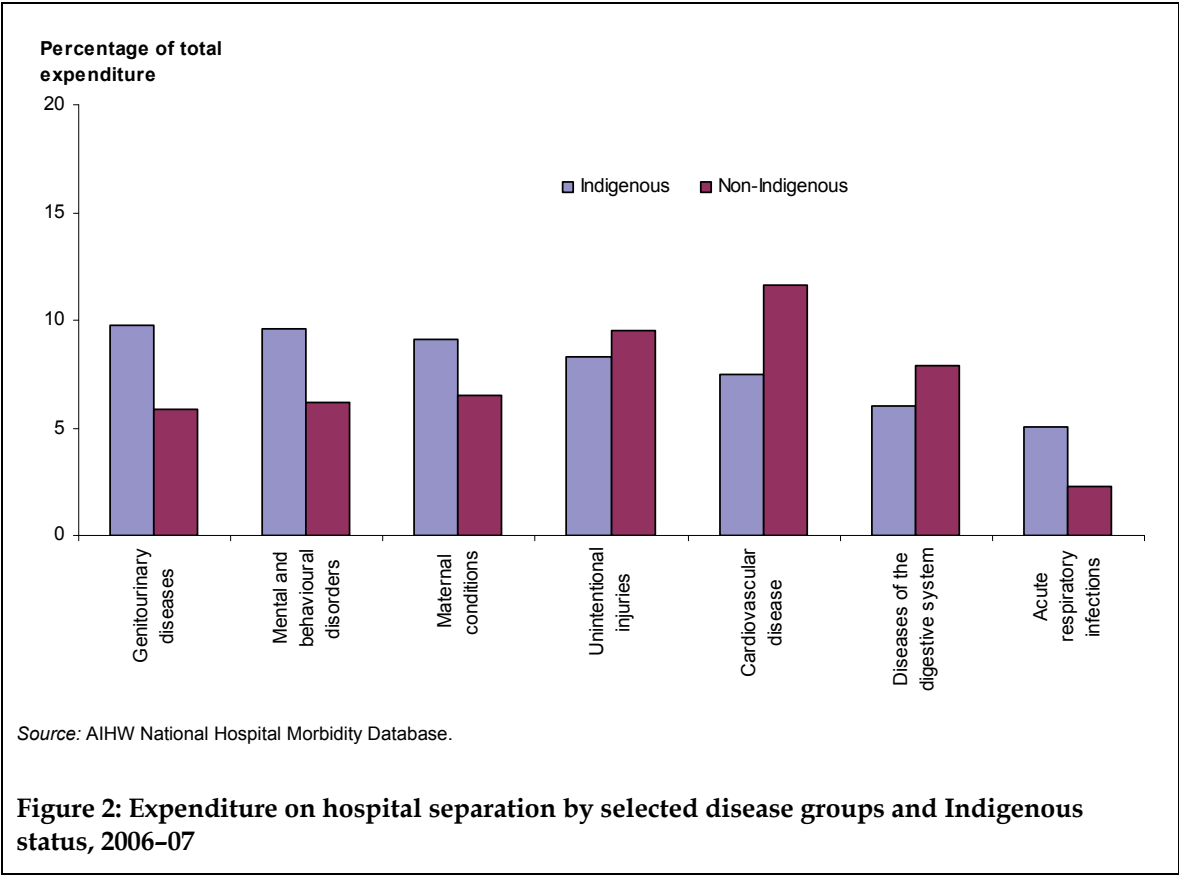


Table 6 shows expenditure on hospital separation (total and per person) by disease group in public and private hospitals. Broadly, expenditure per person for most disease groups was higher for Indigenous Australians than for non-Indigenous Australians. Per person expenditure for Indigenous Australians who were admitted for intentional injuries was 7.0 times as high as for non-Indigenous Australians. This was followed by neonatal causes (3.9 times as high), acute respiratory infections (3.6 times as high), infectious and parasitic diseases (3.5 times as high) and diabetes mellitus (3.4 times as high). Per person expenditure for genitourinary diseases (which include diseases for which care involved dialysis) was 2.7 times as high for Indigenous than non-Indigenous Australians.

Table 6: Expenditure on hospital separation^{(a)(b)}, by disease group and Indigenous status^(c) in public and private hospitals, 2006–07

Disease group	Expenditure (\$ million)			Indigenous share (per cent)	Expenditure (\$) per person		Ratio
	Indigenous	Non-Indigenous	Total		Indigenous	Non-Indigenous	
1. Communicable diseases, maternal and neonatal conditions	271.4	3,652.6	3,924.0	6.9	519.4	179.4	2.90
<i>Infectious and parasitic diseases</i>	48.9	545.5	594.3	8.2	93.5	26.8	3.49
Sexually transmitted diseases ^(d)	15.3	172.3	187.5	8.1	29.2	8.5	3.45
Chlamydia	1.4	15.2	16.7	8.4	2.7	0.7	3.59
Gonorrhoea	0.7	0.4	1.1	60.8	1.3	0.0	60.47
Other sexually transmitted diseases	13.2	156.6	169.7	7.8	25.2	7.7	3.28
Diarrhoeal diseases	13.1	101.6	114.7	11.5	25.2	5.0	5.04
Childhood immunisable diseases	0.2	2.3	2.5	8.8	0.4	0.1	3.76
Whooping cough	0.2	1.8	2.0	11.0	0.4	0.1	4.82
Other infectious and parasitic diseases	20.2	269.4	289.6	7.0	38.7	13.2	2.93
<i>Acute respiratory infections</i>	58.6	642.3	700.8	8.4	112.1	31.5	3.55
Otitis media	3.2	41.8	45.0	7.1	6.1	2.1	2.97
<i>Maternal conditions</i>	105.5	1,819.5	1,925.0	5.5	201.9	89.4	2.26
<i>Neonatal causes</i>	53.3	532.8	586.2	9.1	102.0	26.2	3.90
<i>Nutritional deficiencies</i>	5.2	112.5	117.7	4.4	10.0	5.5	1.81
2. Non-communicable diseases	648.8	17,889.5	18,538.3	3.5	1,241.6	878.7	1.41
<i>Malignant neoplasms</i>	35.8	2,413.7	2,449.5	1.5	68.5	118.6	0.58
Breast cancer	1.7	111.9	113.6	1.5	3.3	5.5	0.60
Leukaemia	4.1	178.2	182.4	2.3	7.9	8.8	0.91
Mouth and oropharynx cancer	3.4	77.7	81.1	4.2	6.5	3.8	1.71
Colorectal cancer	3.0	310.7	313.7	1.0	5.7	15.3	0.37
Lung cancer	3.2	147.4	150.7	2.2	6.2	7.2	0.86
Cervical cancer	1.1	10.5	11.6	9.6	2.1	0.5	4.16
Other malignant neoplasms	19.1	1,577.3	1,596.4	1.2	36.6	77.5	0.47
<i>Other neoplasms</i>	8.3	467.4	475.7	1.7	15.8	23.0	0.69
<i>Diabetes mellitus</i>	38.2	441.9	480.1	8.0	73.1	21.7	3.37
Type 2 diabetes	34.0	368.6	402.7	8.5	65.1	18.1	3.60

(continued)

Table 6 (continued): Expenditure on hospital separation^{(a)(b)}, by disease group and Indigenous status^(c) in public and private hospitals, 2006–07

Disease group	Expenditure (\$ million)			Expenditure (\$) per person			Ratio
	Indigenous	Non-Indigenous	Total	Indigenous		Non-Indigenous	
				share (per cent)	Indigenous		
2. Non-communicable diseases continued							
<i>Endocrine and metabolic disorders</i>	13.4	445.6	459.0	2.9	25.6	21.9	1.17
<i>Mental and behavioural disorders</i>	110.6	1,729.0	1,839.7	6.0	211.7	84.9	2.49
Alcohol dependence and other harmful use	21.3	198.3	219.5	9.7	40.7	9.7	4.18
Anxiety and depression	9.9	391.6	401.5	2.5	18.9	19.2	0.98
<i>Nervous system and sense organ disorders</i>	33.4	1,126.6	1,160.0	2.9	63.9	55.3	1.15
Nervous system disorders	30.4	808.7	839.1	3.6	58.3	39.7	1.47
Sense organ disorders	2.9	317.9	320.8	0.9	5.6	15.6	0.36
Glaucoma-related blindness	0.1	7.9	8.0	1.7	0.3	0.4	0.67
Cataract-related blindness	2.4	269.9	272.3	0.9	4.6	13.3	0.35
Macular degeneration	0.1	11.9	12.0	0.5	0.1	0.6	0.18
Adult-onset hearing loss	0.3	22.6	22.9	1.2	0.5	1.1	0.49
Refractive disorder and other vision loss	0.0	5.6	5.6	0.5	0.0	0.3	0.18
<i>Cardiovascular disease</i>	86.8	3,256.4	3,343.2	2.6	166.1	159.9	1.04
Rheumatic heart disease	7.0	47.9	54.9	12.8	13.4	2.4	5.72
Ischemic heart disease	42.3	1,382.1	1,424.5	3.0	81.0	67.9	1.19
Stroke	11.9	483.3	495.2	2.4	22.7	23.7	0.96
Inflammatory heart disease	5.8	136.4	142.3	4.1	11.1	6.7	1.66
Peripheral vascular disease	2.0	174.6	176.6	1.2	3.9	8.6	0.46
Other cardiovascular disease ^(e)	17.7	1,032.1	1,049.8	1.7	33.8	50.7	0.67
<i>Chronic respiratory disease</i>	40.4	966.9	1,007.3	4.0	77.3	47.5	1.63
Chronic obstructive pulmonary disease	16.6	355.5	372.0	4.5	31.7	17.5	1.82
Asthma	6.3	97.1	103.4	6.1	12.1	4.8	2.53
Other chronic respiratory diseases	17.5	514.4	531.9	3.3	33.5	25.3	1.33
<i>Diseases of the digestive system</i>	69.6	2,197.7	2,267.3	3.1	133.3	107.9	1.23
<i>Genitourinary diseases</i>	112.4	1,640.5	1,752.9	6.4	215.2	80.6	2.67
Hypertensive renal disease	11.6	211.2	222.8	5.2	22.2	10.4	2.14

(continued)

Table 6 (continued): Expenditure on hospital separation^{(a)(b)}, by disease group and Indigenous status^(c) in public and private hospitals, 2006–07

Disease group	Expenditure (\$ million)			Indigenous share (per cent)		Expenditure (\$) per person			Ratio
	Indigenous	Non-Indigenous	Total	Indigenous share (per cent)	Non-Indigenous	Indigenous	Non-Indigenous	Ratio	
2. Non-communicable diseases continued									
<i>Genitourinary diseases continued</i>									
Other nephritis and nephrosis ^(f)	77.5	475.0	552.5	14.0		148.4	23.3	6.36	
Other genitourinary diseases	23.3	954.3	977.6	2.4		44.6	46.9	0.95	
<i>Diseases of the skin and subcutaneous tissue</i>	33.6	430.1	463.8	7.3		64.4	21.1	3.05	
<i>Musculoskeletal and connective tissue diseases</i>	38.4	2,267.7	2,306.1	1.7		73.5	111.4	0.66	
<i>Congenital anomalies</i>	19.6	266.8	286.4	6.8		37.5	13.1	2.86	
<i>Oral conditions</i>	8.2	239.0	247.3	3.3		15.8	11.7	1.34	
3. Injuries^(g)	127.8	2,843.1	2,970.9	4.3		244.6	139.6	1.75	
<i>Unintentional injuries</i>	95.8	2,665.1	2,760.8	3.5		183.3	130.9	1.40	
Road traffic accidents	20.6	429.4	450.0	4.6		39.4	21.1	1.87	
Poisoning	1.2	24.8	26.0	4.7		2.3	1.2	1.91	
Falls	24.5	1,146.9	1,171.4	2.1		46.9	56.3	0.83	
Other unintentional injuries	49.5	1,064.0	1,113.4	4.4		94.7	52.3	1.81	
<i>Intentional injuries</i>	32.0	178.0	210.0	15.2		61.3	8.7	7.01	
Self-inflicted injuries	5.7	95.5	101.2	5.7		11.0	4.7	2.34	
Inflicted by another person	26.3	82.0	108.3	24.3		50.3	4.0	12.48	
Other intentional injuries	0.0	0.5	0.5	4.6		0.0	0.0	1.88	
4. Signs, symptoms and ill-defined conditions, and other contact with health services^(h)	107.7	3,554.1	3,661.8	2.9		206.2	174.6	1.18	
Total	1,155.7	27,939.3	29,095.0	4.0		2,211.8	1,372.2	1.61	

(a) Includes hospital separation data for all states/territories.

(b) Hospital separations for which care type was reported as Newborn with no qualified days, and records for Hospital boarders and Posthumous organ procurement have been excluded.

(c) Admitted patient rates have been adjusted for Indigenous under-identification.

(d) Includes HIV/AIDS.

(e) Includes hypertensive heart disease, aortic aneurysm and dissection, and non-rheumatic heart disease.

(f) Includes expenditure for care involving dialysis (ICD-10 Z49).

(g) Hospital separation resulting from external cause events treated during hospitalisations.

(h) 'Signs, symptoms and ill-defined conditions' include diagnostic and other services for signs, symptoms and ill-defined conditions where the cause of the problem is unknown. 'Other contact with the health system' includes fertility control, reproduction and development; elective cosmetic surgery; general prevention, screening and health examination; and treatment and after care for unspecified disease.

Source: AIHW National Hospital Morbidity Database.

References

Australian Institute of Health and Welfare (AIHW 2001). Expenditures on health services for Aboriginal and Torres Strait Islander peoples 1998–99. Cat. no. IHW 7. Canberra: AIHW and Australian Government Department of Health and Aged Care.

AIHW 2005a. Expenditures on health for Aboriginal and Torres Strait Islander peoples 2001–02. Cat. no. HWE 30. Canberra: AIHW.

AIHW 2005b. Improving the quality of Indigenous identification in hospital separation records. Cat. no. HSE 101. Canberra: AIHW.

AIHW 2008a. Expenditures on health for Aboriginal and Torres Strait Islander peoples 2004–05. Cat. no. HWE 40. Canberra: AIHW.

AIHW 2008b. Health expenditure Australia 2006–07. Cat. no. HWE 42. Canberra: AIHW.

AIHW 2009a. Expenditure on health for Aboriginal and Torres Strait Islander people 2006–07. Health and welfare expenditure series no. 39. Cat. no. HWE 48. Canberra: AIHW.

AIHW 2009b. Health expenditure Australia 2007–08. Cat. no. HWE 46. Canberra: AIHW.

AIHW 2010. Indigenous identification in hospital separations data: quality report. Cat. no. HSE 85 Canberra: AIHW.

AIHW: 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.

Deeble J, Mathers C, Smith L, Goss J, Webb R & Smith V 1998. Expenditures on health services for Aboriginal and Torres Strait Islander peoples. Cat. no. HWE 6. Canberra: AIHW, Department of Health and Family Services & National Centre for Epidemiology and Population Health.