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An analysis by remoteness and disease

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Abbreviations

ACCHOs	Aboriginal Community Controlled Health Organisations
AIHW	Australian Institute of Health and Welfare
AR-DRG	Australian Refined Diagnosis Related Group
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification
MBS	Medicare Benefits Schedule
OATSIH	Office for Aboriginal and Torres Strait Islander Health
PBS	Pharmaceutical Benefits Scheme
PPH	Potentially Preventable Hospitalisations

Symbols

. .	not applicable

Summary

This report complements *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011) by providing a more detailed analysis of health expenditure estimates for Indigenous and non-Indigenous Australians. Estimates are disaggregated at the regional level as well as for specific disease and injury groups.

Health expenditure in 2008–09:

- Overall, for every dollar spent per non-Indigenous Australian, $1.39 was spent on Indigenous Australian (AIHW 2011).
- Expenditure on health services varied depending on the service. However, on the total selected health services in this report—admitted patients, Aboriginal Community Controlled Health Organisations (ACCHOs), Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS)—expenditure was higher for Indigenous than non-Indigenous Australians. For every dollar spent per non-Indigenous Australian, $1.55 was spent per Indigenous Australian.
- Expenditure on these selected health services varied depending on location, generally increasing with remoteness. The difference was greatest in *Remote and very remote* areas where, for every dollar spent per non-Indigenous Australian, $2.41 was spent per Indigenous Australian.
- For MBS and PBS expenditure, however, the amount spent on Indigenous Australians was generally lower than for non-Indigenous Australians. On average, for every $1.00 spent per non-Indigenous Australian on MBS services, $0.58 was spent per Indigenous Australian.
- PBS expenditure per person was lower for Indigenous Australians across all remoteness areas, except in *Remote and very remote* areas, where for every dollar spent per non-Indigenous Australian, $1.22 was spent per Indigenous Australian.
- The average cost per hospital separation was higher for Indigenous than non-Indigenous Australians in *Major cities* and *Inner regional* areas.

Hospital expenditure by disease group in 2008–09:

- Genitourinary diseases (including those for which dialysis is a treatment) were responsible for the highest proportion of hospital separations among both Indigenous (45% of all hospital separations) and non-Indigenous Australians (16%).
- In 2008–09, genitourinary diseases (11%) and mental and behavioural disorders (10%), accounted for the highest proportion of admitted patient expenditure for Indigenous Australians, while cardiovascular diseases (12%) and unintentional injuries (10%) were the highest expenditure areas for non-Indigenous admitted patients.

Potentially preventable hospitalisations (PPH) in 2008–09:

- The highest expenditure for Indigenous and non-Indigenous Australians was for diabetes complications ($95 and $24 per person respectively) and chronic obstructive pulmonary disease ($55 and $23 respectively); both chronic condition PPH.
- In the acute conditions group, the highest PPH expenditure per Indigenous Australian was for convulsions and epilepsy ($30 per person) followed by pyelonephritis ($24).

1 Introduction

Earlier in 2011, the Australian Institute of Health and Welfare (AIHW) released the report, *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011). The report noted that the estimated per person expenditure on health services for Indigenous Australians in 2008–09 was 1.39 times that for the non-Indigenous population. There is, however, considerable variation in health expenditure for Aboriginal and Torres Strait Islander people across regions, service types and disease groups that is not well reflected by the Australia-wide ratio.

This report builds on the national and state level estimates published in the 2008–09 report, by providing estimates at the regional level. Reporting estimates by Australian Standard Geographical Classification remoteness area provides a more detailed examination of how health services for Aboriginal and Torres Strait Islander people are delivered and used.

The report also provides estimates of admitted patient expenditure for Aboriginal and Torres Strait Islander people by disease and injury groups. These are a disaggregation of the 2008–09 admitted patient expenditure estimates for Aboriginal and Torres Strait Islander people (estimated $1,470 million, which includes private hospital admitted patient expenditure for public patients), and represent 40% of total health expenditure for the Aboriginal and Torres Strait Islander population ($3,700 million) (AIHW 2011).

This report 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 initially used to produce the estimates in the AIHW reports on health expenditure (e.g. AIHW 2010b). These estimates are then allocated between Indigenous and non-Indigenous Australians to produce the reports on Indigenous health expenditure (e.g. AIHW 2011).

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 2008–09* (AIHW 2010b) and *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011).

Medicare's Voluntary Indigenous Identifier

This report uses Medicare's Voluntary Indigenous Identifier data to estimate the MBS and PBS components of expenditure on health for Aboriginal and Torres Strait Islander people. Since 2002, Medicare Australia has included a Voluntary Indigenous Identifier question on its registration forms, and as at January 2009 around 244,100 people—or 45% of the estimated total Aboriginal and Torres Strait Islander population—had registered (AIHW 2011).

Data from the Voluntary Indigenous Identifier enrolled population must be 'scaled up' to estimate the MBS and PBS expenditure for the total Indigenous population.

Scaling 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 exercised when interpreting these estimates. For further information, see Appendix A1.6 of *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011).

Indigenous identification in hospital separations data

The AIHW report *Indigenous identification in hospital separations data: quality report* (AIHW 2010c) presented the latest findings on the quality of Indigenous identification in hospital separations data in Australia. These findings were based on studies of Indigenous identification in public hospitals in 2007 and 2008.

The results indicated that, overall, the quality of Indigenous identification in hospital separations data had improved since the previous assessment, but that the level of Indigenous under-identification in Australian public hospitals was estimated to be 11%. The level varied substantially between states/territories and by remoteness. 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

The AIHW recommendations, accepted by the National Health Information Standards and Statistics Committee, state that only the Indigenous status information from hospitals in New South Wales, Victoria, Queensland, Western Australia, South Australia and public hospitals in the Northern Territory are acceptable for detailed analysis by remoteness. In accordance with these recommendations, analyses of hospital separations and average expenditure per casemix by remoteness area of patient's residence (tables 3 and 4) have been presented for these jurisdictions only. Thus, separation rates in this report need to be interpreted with care as, in tables 3 and 4, data for Tasmania and the Australian Capital Territory (comprising about 4.5% of the Indigenous population) are not included. To retain comparability with previous reports in the Indigenous expenditure series, the remaining tables include data from all states/territories. This decision will be reviewed after the current hospital audit results are released.

Estimates of the level of Indigenous under-identification in hospital separations data reported in the 2010 report (AIHW 2010c) 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).

A separate expenditure adjustment factor of 54% was derived from an analysis of linked hospital morbidity data from New South Wales (AIHW 2001) and has been applied to hospital separations recorded for Indigenous patients in private hospitals. This methodology will be reviewed before the next issue in this series.

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 in this report should be interpreted with caution.

Expenditure on hospital separations by disease group

Disease groups in this report are based on those in *The burden of disease and injury in Australia 2003* (AIHW: Begg et al. 2007), which identifies and quantifies the impact of health problems in Australia. In 2008–09, diagnoses and external causes of injury were recorded using the sixth edition of *the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification* (ICD-10-AM) (NCCH 2008). Disease and injury categories in the 2007 report were assigned to 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-AM 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 the diseases reported for hospital admission (principal diagnosis only). The group 'signs, symptoms and ill-defined conditions, and other contact with health services' was included to cover some health service expenditure that could not be assigned to any other disease group.

In the current analysis, the number of hospital separations and the expenditure per separation were calculated using data from the AIHW Hospital Morbidity Costing Model. This model weights the total number of Indigenous and non-Indigenous Australians admitted to each hospital according to diagnosis group (using Australian Refined Diagnosis Related Group (AR-DRG) weights (DoHA 2009)) and length of stay. The estimates of hospital separations therefore take into account differences in casemix and hospital operating costs across the regions. As in previous Expenditure on health for Aboriginal and Torres Strait Islander people reports, 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 2001; AIHW 2005; AIHW 2008; AIHW 2009).

An adjustment factor was applied to the expenditure estimates by disease group to ensure that the total sum of the estimates for all disease groups matched the total amount of admitted patient expenditure in *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011).

Scope of disease expenditure analysis

The analysis in this report of expenditure by disease only includes private hospital services expenditure and public hospital admitted patient expenditure, which accounted for 40% ($1,470 million) of total Indigenous health expenditure in 2008–09 (AIHW 2011).

It is not possible to classify all expenditure on health goods and services by disease, because sometimes not all expenditure can be apportioned to one specific disease or injury. Expenditure categories that could not be classified by disease included: community health services (22% of total Indigenous health expenditure), non-admitted patient hospital services (11%), medical services (7%), medications (5%), patient transport, public health services (4% each), research (3%), dental services (2%), other professional services, aids and appliances, and health administration (around 1% each) (AIHW 2011).

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 an indication of health-seeking behaviour and of Indigenous Australians' access to health-care services, but are not a measure of the size of the disease burden on the Aboriginal and Torres Strait Islander population
- do not include costs associated with 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.

Expenditure on hospital separations by potentially preventable hospitalisations

The classification of potentially preventable hospitalisations (PPH) used in this report broadly aligns with that in *Australian hospital statistics 2008–09* (AIHW 2010a). There are a number of methodological differences in this report that mean the data are not comparable with other reports. For more information on methods used in this report, see Box 1.

This report uses three broad categories of PPH, which have been sourced from *The Victorian Ambulatory Care Sensitive Conditions Study* (DHS, Victoria 2002) and are classified as:

- **Vaccine-preventable**. These diseases can be prevented by proper vaccination and include influenza, bacterial pneumonia, tetanus, measles, mumps, rubella, pertussis and polio. These conditions are considered to be preventable, and therefore hospitalisations are considered preventable.
- **Acute**. These conditions may not be preventable, but theoretically would not have resulted in hospitalisation if adequate and timely care (usually non-hospital care) was received. These include complicated appendicitis, dehydration/gastroenteritis, pyelonephritis, perforated ulcer, cellulitis, pelvic inflammatory disease, ear nose and throat infections and dental conditions.
- **Chronic**. These conditions may be preventable through behaviour modification and lifestyle change, but they can also be managed effectively through timely care (usually non-hospital care) to prevent deterioration and hospitalisation. These conditions include diabetes complications, asthma, angina, hypertension, congestive heart failure and chronic obstructive pulmonary disease.

2 Expenditure per person by remoteness

This section examines health expenditure per person across the four areas of health services for which it was possible to estimate expenditure by remoteness: admitted patient services, OATSIH grants to Aboriginal Community Controlled Health Organisations (ACCHOs), the MBS and the PBS. In 2008–09, these areas of health expenditure together accounted for 57% ($2,119 million) of health expenditure on Indigenous Australians, compared with 51% ($53,149 million) for non-Indigenous Australians (AIHW 2011). The remaining areas of health expenditure excluded from the analyses accounted for 43% of health expenditure on Aboriginal and Torres Strait Islander people in 2008–09, and these include: community health services other than ACCHOs (14% of total Indigenous health expenditure), non-admitted patient hospital services (11%), patient transport, public health services (4% each), research (3%), dental services, MBS other services (2% each), PBS other than pharmaceutical benefits, other professional services, aids and appliances, and health administration (around 1% each). Therefore, 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 2008–09* (AIHW 2011) and earlier reports.

For the categories of health expenditure on Aboriginal and Torres Strait Islander people that were within scope for this analysis, for every dollar spent per non-Indigenous Australian, $1.55 was spent on Indigenous Australians, but expenditure varied by remoteness (Table 1). There was a general increase in health expenditure on Aboriginal and Torres Strait Islander people with remoteness, except in *Inner regional* areas. In *Remote and very remote,* and *Outer regional* areas, for every dollar spent on non-Indigenous Australians, $2.41 and $1.44 respectively were spent on Indigenous Australians (Table 1).

In 2008–09, expenditure per person on public hospital services for Indigenous Australians was higher than the expenditure for non-Indigenous Australians for all remoteness areas, particularly in *Remote and very remote* areas. In these areas, for every dollar spent per non-Indigenous Australian, $2.77 was spent per Indigenous Australian. There was less difference in *Inner regional* areas (ratio of 1.47).

Expenditure per person on private hospital services was much lower for Indigenous than non-Indigenous Australians in all remoteness areas. The Indigenous to non-Indigenous expenditure ratio was highest in *Outer regional* areas (0.30) and lowest in *Inner regional* areas (0.16).

Consistent with their Indigenous focus, OATSIH-funded ACCHOs are attended by Indigenous Australians at a far greater rate than non-Indigenous Australians, which is reflected in the extremely high ratio of per capita expenditure for Indigenous compared with non-Indigenous Australians. This is particularly so in *Major cities* (555 times the non-Indigenous spend per capita), *Inner regional* (238 times) and *Outer regional* (106 times) areas.

Table 1: Health expenditure per person on selected health services[(a)], Indigenous and non-Indigenous Australians, by remoteness areas of patient's residence, 2008–09 ($)

Area of expenditure		Major cities	Inner regional	Outer regional	Remote/ very remote	All regions
Admitted patient services						
Public hospital services	Indigenous	2,165.9	1,947.8	2,613.7	3,865.8	2,624.0
	Non-Indigenous	1,063.0	1,327.0	1,447.1	1,398.0	1,155.6
	Ratio	2.04	1.47	1.81	2.77	2.27
Private hospitals	Indigenous	79.9	66.3	96.1	48.8	73.1
	Non-Indigenous	402.7	404.1	316.1	247.3	392.4
	Ratio	0.20	0.16	0.30	0.20	0.19
OATSIH grants to ACCHOs	Indigenous	216.0	375.9	588.9	1,238.7	577.1
	Non-Indigenous	0.4	1.6	5.5	66.0	2.2
	Ratio	555.32	237.50	106.23	18.76	259.40
MBS[(b)]	Indigenous	476.0	393.6	303.0	236.7	362.8
	Non-Indigenous	648.7	588.5	523.4	404.6	621.3
	Ratio	0.73	0.67	0.58	0.58	0.58
PBS[(c)]	Indigenous	250.6	252.3	189.3	304.2	250.2
	Non-Indigenous	328.4	375.4	344.3	249.0	337.7
	Ratio	0.76	0.67	0.55	1.22	0.74
Total selected health services	**Indigenous**	**3,188.3**	**3,035.9**	**3,791.0**	**5,694.0**	**3,887.2**
	Non-Indigenous	**2,443.2**	**2,696.6**	**2,636.4**	**2,364.8**	**2,509.2**
	Ratio	**1.30**	**1.13**	**1.44**	**2.41**	**1.55**

(a) Excludes health expenditure on: non-admitted patient services, patient transport, dental services, community health other than ACCHO, other professional services, public health, aids and appliances, research and health administration.

(b) Excludes the following: allied health services, optometry and dental services.

(c) Excludes RPBS, 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

The ratio of Indigenous to non-Indigenous MBS expenditure per person varied according to the type of services delivered. Ratios over 1.0 mean that more is spent on an Indigenous Australian than on a non-Indigenous Australian and vice versa. In 2008–09, average MBS expenditure per person was $363 for Indigenous Australians and $621 for non-Indigenous Australians, a ratio of 0.58 (Table 2). Overall, per person MBS expenditure, as well as the Indigenous to non-Indigenous expenditure ratio, decreased with remoteness, from an average in *Major citie*s of $476 per Indigenous Australian and $649 per non-Indigenous Australian (a ratio of 0.73), to an average in *Remote and very remote* areas of $237 and $405 respectively (a ratio of 0.58).

Total MBS expenditure per person by remoteness was consistently lower for Aboriginal and Torres Strait Islander people. While the ratio of Indigenous to non-Indigenous expenditure generally decreased with remoteness, the disparity in absolute terms varied across remoteness areas. The greatest disparity between Indigenous and non-Indigenous Australians was in *Outer regional* areas where there was a difference of $220 per person, or $303 spent per Indigenous Australian versus $523 per non-Indigenous Australian. The smallest difference was in *Remote and very remote* areas ($168 per person).

In 2008–09, the expenditure ratio was generally higher for unreferred MBS services (i.e. general practitioner (GP) and other unreferred services) than for referred MBS services (i.e. specialist and other tertiary services). The Indigenous to non-Indigenous expenditure ratios for GP services ranged from 1.15 in *Major cities* to 0.81 in *Remote and very remote* areas, while the other unreferred services ratio ranged from 0.91 in *Major cities* to 1.62 in *Remote and very remote* areas. For referred MBS services, the expenditure ratios were lowest overall for imaging (ranging from 0.46 in *Major cities* to 0.26 in *Remote and very remote* areas) and highest overall for specialist services (ranging from 0.88 in *Inner regional* areas to 0.55 in *Remote and very remote* areas).

In 2008–09, average PBS expenditure per person was $250 for Indigenous Australians, and $338 for non-Indigenous Australians, a ratio of 0.74 (Table 2). PBS expenditure for Aboriginal and Torres Strait Islander people varied with remoteness, from $189 per person in *Outer regional* areas to $304 in *Remote and very remote* areas. In contrast, PBS expenditure for non-Indigenous Australians was lowest in *Remote and very remote* areas ($249 per person) and highest in *Inner regional* areas ($375).

The ratio of Indigenous to non-Indigenous expenditure per person was lowest in *Outer regional* areas (0.55), meaning PBS expenditure per person was lower for Indigenous ($189) than non-Indigenous Australians ($344), and highest in *Remote and very remote* areas (1.22 or $304 and $249).

The high expenditure ratio in *Remote and very remote* areas was primarily due to the PBS expenditure under Section 100 of the *National Health Act 1953*. This arrangement allows patients attending an approved remote area Aboriginal and Torres Strait Islander health service to receive PBS medicines directly from the service and at no cost to the patient.

Table 2: MBS and PBS expenditure per person, Indigenous and non-Indigenous Australians, by remoteness areas of patient's residence, 2008–09 ($)

	Major cities	Inner regional	Outer regional	Remote/ very remote	All regions
MBS[(a)]					
General practitioner[(b)]					
Indigenous	217.9	163.7	140.0	103.8	161.8
Non-Indigenous	188.9	161.6	151.8	127.9	179.1
Ratio	1.15	1.01	0.92	0.81	0.90
Other unreferred					
Indigenous	32.1	34.3	27.7	29.9	31.1
Non-Indigenous	35.4	35.5	28.4	18.5	34.5
Ratio	0.91	0.97	0.98	1.62	0.90
Pathology					
Indigenous	46.9	40.6	34.1	40.4	41.2
Non-Indigenous	94.0	86.8	81.5	67.2	91.0
Ratio	0.50	0.47	0.42	0.60	0.45
Imaging					
Indigenous	43.4	38.8	25.3	14.5	31.5
Non-Indigenous	94.0	89.7	77.7	56.6	91.0
Ratio	0.46	0.43	0.33	0.26	0.35
Specialist					
Indigenous	65.9	52.4	29.7	16.8	43.3
Non-Indigenous	78.7	59.5	46.0	30.4	71.1
Ratio	0.84	0.88	0.65	0.55	0.61
Operations and other					
Indigenous	69.7	63.7	46.1	31.2	54.0
Non-Indigenous	157.7	155.4	138.1	104.1	154.5
Ratio	0.44	0.41	0.33	0.30	0.35
Total MBS					
Indigenous	*476.0*	*393.6*	*303.0*	*236.7*	*362.8*
Non-Indigenous	*648.7*	*588.5*	*523.4*	*404.6*	*621.3*
Ratio	*0.73*	*0.67*	*0.58*	*0.58*	*0.58*
PBS[(c)]					
Mainstream PBS benefits					
Indigenous	228.6	230.2	172.7	70.4	178.8
Non-Indigenous	297.7	340.3	312.1	214.7	306.0
Ratio	0.77	0.68	0.55	0.33	0.58
Section 100					
Indigenous	. .	. .	. .	227.0	54.2
Non-Indigenous	. .	. .	. .	12.1	0.2
Ratio	. .	. .	. .	18.76	259.40
Other PBS special supply					
Indigenous	22.0	22.2	16.6	6.8	17.2
Non-Indigenous	30.7	35.1	32.2	22.1	31.6
Ratio	0.72	0.63	0.52	0.31	0.55
Total PBS					
Indigenous	*250.6*	*252.3*	*189.3*	*304.2*	*250.2*
Non-Indigenous	*328.4*	*375.4*	*344.3*	*249.0*	*337.7*
Ratio	*0.76*	*0.67*	*0.55*	*1.22*	*0.74*
Total MBS and PBS					
Indigenous	**726.6**	**645.9**	**492.3**	**540.8**	**613.0**
Non-Indigenous	**977.1**	**963.9**	**867.7**	**653.5**	**959.0**
Ratio	**0.74**	**0.67**	**0.57**	**0.83**	**0.64**

(a) Excludes the following: allied health services, optometry and dental services.

(b) Includes general practitioners and vocationally registered general practitioners.

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

Source: AIHW health expenditure database.

2.2 Hospital separations by remoteness

This section compares the rates of hospital separations for Indigenous and non-Indigenous Australians according to the remoteness of their usual residence. While the quality of Indigenous hospital separation data is improving, the non-reporting and under-identification of Indigenous status remains a major issue (for more information see section 1.1 *Indigenous identification in hospital separations data* and *Adjustment for variation in Indigenous identification in hospital separations and expenditure data by remoteness*).

The rate of hospital separations by remoteness and Indigenous status are 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 2008–09* (AIHW 2010a) for age-standardised rates of hospital separations. Rates in this report are not age-standardised to ensure consistency and comparability with the report *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011) and all previous reports in that series. Also, in contrast to *Australian hospital statistics 2008–09* (AIHW 2010a), rates of hospital separations in this report have been adjusted for Indigenous under-identification.

In 2008–09, hospital separation rates differed across remoteness areas, but were always higher for Indigenous than non-Indigenous Australians, particularly in more remote areas. In *Remote* areas, hospital separation rates for Aboriginal and Torres Strait Islander people were 1,058 per 1,000 and for non-Indigenous Australians were 325 per 1,000. In *Very remote* areas separation rates were 729 and 304 per 1,000 Indigenous and non-Indigenous Australians respectively (Table 3).

The difference between the Indigenous and non-Indigenous hospital separation rates (that is, the rate ratios) also varied across remoteness areas. The difference was greatest in *Remote* areas with Indigenous hospital separation rates 3.25 times those of non-Indigenous Australians.

Table 3: Hospital separation[(a)(b)] rates[(c)], by remoteness areas of patient's residence and Indigenous status[(d)], 2008–09

Indigenous status	Major cities	Inner regional	Outer regional	Remote	Very remote	All regions
Indigenous	483.5	453.9	719.8	1,058.2	729.0	620.2
Non-Indigenous	363.2	399.7	372.4	325.4	304.0	370.1
All Australians	*364.6*	*401.1*	*393.2*	*438.3*	*508.1*	*376.4*
Rate ratio[(e)]	1.33	1.14	1.93	3.25	2.40	1.68

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

(c) Number per 1,000 population for selected states.

(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 average expenditure per casemix-adjusted hospital separation (hereafter referred to as 'separation') for Aboriginal and Torres Strait Islander people varied across remoteness areas. Overall, it was higher for Indigenous than non-Indigenous Australians. The highest average expenditure per separation for Indigenous Australians was in *Very remote* areas ($4,808) and lowest in *Outer regional* areas ($3,824) (Table 4). For non-Indigenous Australians, the highest expenditure was also in *Very remote* areas ($5,259); however, the lowest was in *Major cities* ($4,054).

The average expenditure per hospital separation was higher for Indigenous Australians in *Major cities* ($590 more spent on Indigenous separations than non-Indigenous separations) and in *Inner regional* areas ($297 more). This contrasts with *Outer regional* area where the average expenditure per separation was $841 more for non-Indigenous than Indigenous Australians.

The ratio of Indigenous to non-Indigenous average expenditure per separation for hospitals was lowest in *Outer regional* areas (0.82), and highest in *Major cities* (1.15).

Table 4: Average expenditure per casemix[(a)]-adjusted hospital[(b)] separation[(c)(d)], by remoteness areas of patient's residence and Indigenous status, 2008–09 ($)

Indigenous status	Major cities	Inner regional	Outer regional	Remote	Very remote	All regions
Indigenous	4,644.5	4,614.3	3,824.2	4,335.1	4,807.9	4,414.7
Non-Indigenous	4,054.1	4,317.5	4,665.1	5,075.7	5,258.8	4,177.2
All Australians	*4,063.3*	*4,326.6*	*4,572.8*	*4,800.2*	*4,948.1*	*4,187.0*
Ratio[(e)]	1.15	1.07	0.82	0.85	0.91	1.06

(a) Casemix refers to the range and types of patients (the mix of cases) treated by a hospital or other health service. It 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 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) Excludes hospital separations for which care type was reported as Newborn with no qualified days, and records for Hospital boarders and Posthumous organ procurement.

(e) Indigenous to non-Indigenous ratio.

Source: AIHW National Hospital Morbidity Database.

3 Hospital separations and expenditure by disease group

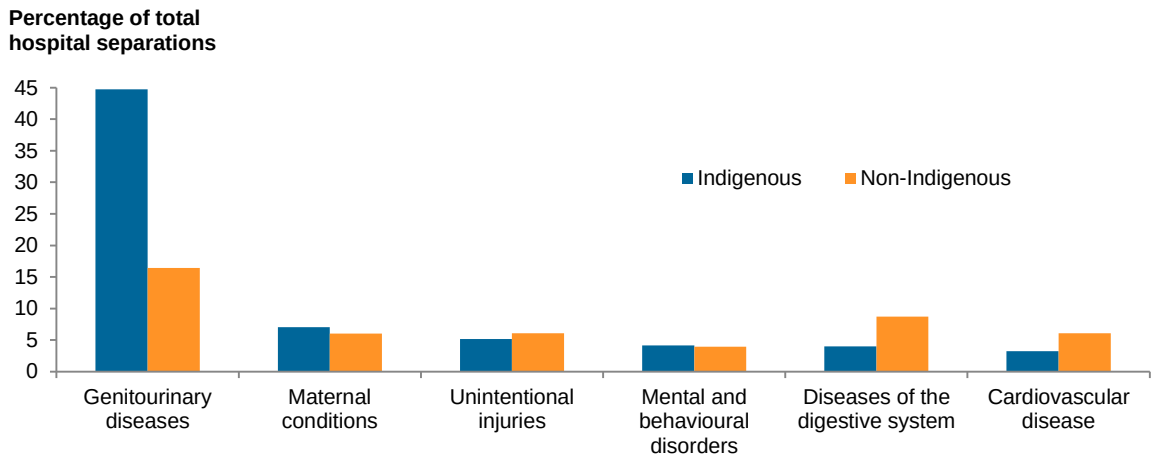
This section provides estimates of hospital separations and the expenditure per hospital separation by disease and injury groups (principal diagnosis only) for Indigenous and non-Indigenous Australians. These estimates are based on data from all states/territories. Therefore, they are not comparable with estimates presented in *Australian hospital statistics 2008–09,* which only presents data from New South Wales, Victoria, Queensland, Western Australia, South Australia and public hospitals in the Northern Territory (AIHW 2010a). For more information see section 1.1 *Adjustment for variation in Indigenous identification in hospital separations and expenditure data by remoteness*.

3.1 Hospital separations by disease group

There were some notable differences between Indigenous and non-Indigenous Australians in the patterns of hospitalisations by disease and injury groups (Figure 1).

In 2008–09, genitourinary diseases (which include diseases for which dialysis is a treatment) accounted for the highest number of hospital separations for both Aboriginal and Torres Strait Islander Australians and other Australians. Genitourinary diseases, however, comprised a much larger share of total hospital separations for Indigenous (45%) than non-Indigenous Australians (16%). Maternal conditions accounted for the second-highest number of hospital separations for Indigenous Australians (7%), followed by unintentional injuries (5%) and mental and behavioural disorders (4%) (Figure 1).

For non-Indigenous Australians, diseases of the digestive system (9%) followed by cardiovascular disease, unintentional injuries and maternal conditions (all at 6%) were the next most prominent reasons for hospital admission. Indigenous Australians were hospitalised for genitourinary diseases at a rate 4.54 times that of non-Indigenous Australians (Table 5).



Source: AIHW National Hospital Morbidity Database.

Figure 1: Hospital separations by selected disease group and Indigenous status, 2008–09

Table 5: Hospital separation[(a)(b)] rates, by disease group and Indigenous status[(c)] in public and private hospitals, 2008–09

Disease group	Separations per 1000 population		Rate ratio
	Indigenous	Non-Indigenous	
1. Communicable diseases, maternal and neonatal conditions	**87.4**	**42.0**	**2.08**
Infectious and parasitic diseases	*11.9*	*5.8*	*2.05*
Sexually transmitted diseases	1.3	0.5	2.75
Chlamydia	0.8	0.3	2.70
Gonorrhoea	0.2	0.0	37.74
Other sexually transmitted diseases[(d)]	0.3	0.1	1.84
Diarrhoeal diseases	4.8	2.7	1.77
Childhood immunisable diseases	0.3	0.1	6.08
Whooping cough	0.3	0.0	7.16
Other infectious and parasitic diseases	5.5	2.6	2.13
Acute respiratory infections	*23.0*	*7.7*	*2.99*
Otitis media	2.8	1.3	2.09
Maternal conditions	*43.2*	*22.3*	*1.94*
Neonatal causes	*6.5*	*2.5*	*2.58*
Nutritional deficiencies	*2.8*	*3.7*	*0.75*
2. Non-communicable diseases	**430.0**	**234.2**	**1.84**
Malignant neoplasms	*7.3*	*22.1*	*0.33*
Breast cancer	0.5	1.2	0.43
Leukaemia	0.5	1.0	0.51
Mouth and oropharynx cancer	0.4	0.3	1.46
Colorectal cancer	0.5	1.4	0.36
Lung cancer	0.5	0.9	0.62
Cervical cancer	0.2	0.1	2.33
Other malignant neoplasms	4.6	17.2	0.27
Other neoplasms	*3.5*	*8.2*	*0.43*
Diabetes mellitus	*8.5*	*3.8*	*2.22*
Type 2 diabetes	6.9	3.0	2.26
Endocrine and metabolic disorders	*4.3*	*4.5*	*0.95*
Mental and behavioural disorders	*25.4*	*14.5*	*1.76*
Alcohol dependence and other harmful use	7.3	2.0	3.57
Anxiety and depression	5.8	6.0	0.96
Nervous system and sense organ disorders	*13.6*	*21.2*	*0.64*
Nervous system disorders	8.1	9.0	0.91
Sense organ disorders	5.5	12.2	0.45
Glaucoma-related blindness	0.1	0.2	0.33
Cataract-related blindness	2.0	7.8	0.25
Macular degeneration	0.0	0.8	0.06
Adult-onset hearing loss	0.1	0.1	0.90
Refractive disorder and other vision loss	3.3	3.3	1.01
Cardiovascular disease	*19.8*	*22.5*	*0.88*
Rheumatic heart disease	0.7	0.1	6.19
Ischemic heart disease	11.4	9.4	1.21
Stroke	1.8	2.3	0.79
Inflammatory heart disease	0.6	0.4	1.39
Peripheral vascular disease	0.3	0.9	0.33
Other cardiovascular disease[(e)]	5.0	9.2	0.54

(continued)

Table 5 (continued): Hospital separation[(a)(b)] rates, by disease group and Indigenous status[(c)] in public and private hospitals, 2008–09

	Separations per 1000 population		
Disease group	**Indigenous**	**Non-Indigenous**	**Rate ratio**
Chronic respiratory disease	*14.8*	*10.1*	*1.46*
Chronic obstructive pulmonary disease	5.1	2.8	1.85
Asthma	4.1	1.6	2.53
Other chronic respiratory diseases	5.5	5.7	0.96
Diseases of the digestive system	*24.4*	*32.1*	*0.76*
Genitourinary diseases	*274.8*	*60.5*	*4.54*
Hypertensive renal disease	3.2	2.0	1.62
Other nephritis and nephrosis[(f)]	259.9	43.3	6.00
Other genitourinary diseases	11.7	15.3	0.77
Diseases of the skin and subcutaneous tissue	*12.6*	*5.9*	*2.13*
Musculoskeletal and connective tissue diseases	*11.7*	*20.2*	*0.58*
Congenital anomalies	*2.3*	*1.6*	*1.47*
Oral conditions	*6.8*	*6.9*	*0.98*
3. Injuries[(g)]	**45.3**	**24.5**	**1.85**
Unintentional injuries	*31.6*	*22.4*	*1.41*
Road traffic and other transport accidents	4.7	2.8	1.66
Poisoning	0.9	0.4	2.18
Falls	8.3	7.8	1.07
Other unintentional injuries	17.7	11.3	1.56
Intentional injuries	*13.7*	*2.2*	*6.33*
Self-inflicted injuries	3.0	1.2	2.54
Inflicted by another person	10.6	1.0	11.05
4. Signs, symptoms and ill-defined conditions, and other contact with health services [(h)]	**51.3**	**68.1**	**0.75**
Total	**613.9**	**368.9**	**1.66**

(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, Hepatitis B, syphilis, and other STDs.

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

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

(g) Hospital separations 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.

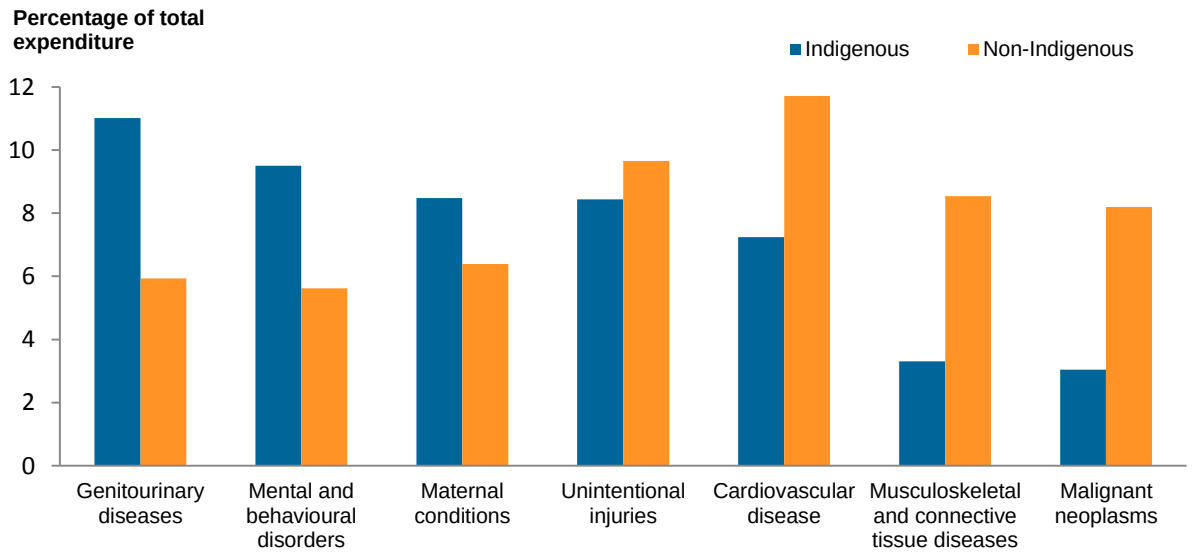
Source: AIHW National Hospital Morbidity Database.

3.2 Hospital expenditure by disease group

This section presents hospital expenditure for Indigenous and non-Indigenous Australians by disease and injury group according to the number of hospital separations and the cost of these encounters.

The categories that accounted for the highest proportion of admitted patient expenditure per Indigenous Australian were genitourinary diseases (11% of total admitted patient expenditure); mental and behavioural disorders (10%); maternal conditions (8%) and unintentional injuries (8%) (Figure 2).

For non-Indigenous Australians, the largest areas of admitted patient expenditure were cardiovascular disease (12%), unintentional injuries (10%), musculoskeletal and connective tissue diseases (9%), and malignant neoplasms (8%).



Source: AIHW National Hospital Morbidity Database.

Figure 2: Expenditure on hospital separations by selected disease groups and Indigenous status, 2008–09

Hospital expenditure per person was higher for Indigenous than non-Indigenous Australians for all but three disease groups (malignant neoplasms, musculoskeletal and connective tissue diseases, and other neoplasms) (Table 6). The highest per person expenditure ratio for Indigenous Australians compared with non-Indigenous Australians was for intentional injuries (6.78 times as high). This was followed by diabetes mellitus (4.01), neonatal causes (3.97), acute respiratory infections (3.68) and diseases of the skin and subcutaneous tissue (3.29).

Table 6: Expenditure on hospital separations[a][b], by disease group and Indigenous status[c] in public and private hospitals, 2008–09

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	**336.1**	**4,544.0**	**4,880.1**	**6.9**	**616.5**	**214.5**	**2.87**
Infectious and parasitic diseases	*54.3*	*681.1*	*735.4*	*7.4*	*99.6*	*32.2*	*3.10*
Sexually transmitted diseases	5.2	51.4	56.6	9.1	9.5	2.4	3.90
Chlamydia	2.1	21.3	23.5	9.1	3.9	1.0	3.87
Gonorrhoea	0.8	0.6	1.4	56.5	1.4	0.0	50.39
Other sexually transmitted diseases[d]	2.3	29.5	31.7	7.2	4.2	1.4	3.00
Diarrhoeal diseases	11.2	165.8	177.0	6.3	20.5	7.8	2.62
Childhood immunisable diseases	1.6	6.2	7.8	20.0	2.9	0.3	9.71
Whooping cough	1.4	5.6	7.0	20.3	2.6	0.3	9.92
Other infectious and parasitic diseases	36.4	457.7	494.1	7.4	66.8	21.6	3.09
Acute respiratory infections	*82.8*	*873.3*	*956.1*	*8.7*	*151.9*	*41.2*	*3.68*
Otitis media	5.6	50.0	55.6	10.0	10.2	2.4	4.31
Maternal conditions	*124.6*	*2,094.8*	*2,219.4*	*5.6*	*228.6*	*98.9*	*2.31*
Neonatal causes	*63.9*	*625.2*	*689.1*	*9.3*	*117.2*	*29.5*	*3.97*
Nutritional deficiencies	*10.5*	*269.7*	*280.2*	*3.8*	*19.3*	*12.7*	*1.51*
2. Non-communicable diseases	**836.5**	**20,555.2**	**21,391.8**	**3.9**	**1,534.3**	**970.4**	**1.58**
Malignant neoplasms	*44.8*	*2,686.0*	*2,730.7*	*1.6*	*82.1*	*126.8*	*0.65*
Breast cancer	2.0	128.0	130.1	1.6	3.7	6.0	0.62
Leukaemia	5.3	195.7	201.0	2.7	9.8	9.2	1.06
Mouth and oropharynx cancer	4.0	89.9	93.9	4.2	7.2	4.2	1.71
Colorectal cancer	4.5	339.2	343.7	1.3	8.2	16.0	0.51
Lung cancer	3.4	165.5	168.9	2.0	6.2	7.8	0.80
Cervical cancer	0.8	10.3	11.2	7.4	1.5	0.5	3.12
Other malignant neoplasms	24.7	1,757.2	1,781.9	1.4	45.3	83.0	0.55
Other neoplasms	*10.6*	*534.1*	*544.7*	*1.9*	*19.4*	*25.2*	*0.77*
Diabetes mellitus	*52.2*	*505.2*	*557.3*	*9.4*	*95.7*	*23.8*	*4.01*
Type 2 diabetes	45.6	406.8	452.4	10.1	83.6	19.2	4.35

(continued)

Table 6 (continued): Expenditure on hospital separations[a][b], by disease group and Indigenous status[c] in public and private hospitals, 2008–09

Disease group	Expenditure ($ million)			Indigenous share (per cent)	Expenditure ($) per person		Ratio
	Indigenous	Non-Indigenous	Total		Indigenous	Non-Indigenous	
2. Non-communicable diseases (continued)							
Endocrine and metabolic disorders	*15.9*	*448.4*	*464.3*	*3.4*	*29.2*	*21.2*	*1.38*
Mental and behavioural disorders	*139.7*	*1,843.3*	*1,983.1*	*7.0*	*256.3*	*87.0*	*2.94*
Alcohol dependence and other harmful use	17.6	135.9	153.5	11.5	32.3	6.4	5.03
Anxiety and depression	22.4	517.3	539.8	4.2	41.2	24.4	1.69
Nervous system and sense organ disorders	*37.0*	*1,286.1*	*1,323.2*	*2.8*	*68.0*	*60.7*	*1.12*
Nervous system disorders	24.3	721.3	745.7	3.3	44.6	34.1	1.31
Sense organ disorders	12.7	564.8	577.5	2.2	23.3	26.7	0.87
Glaucoma-related blindness	0.1	10.2	10.4	1.3	0.3	0.5	0.52
Cataract-related blindness	3.5	310.7	314.2	1.1	6.4	14.7	0.44
Macular degeneration	0.1	37.7	37.8	0.2	0.2	1.8	0.09
Adult-onset hearing loss	0.5	28.2	28.7	1.6	0.8	1.3	0.63
Refractive disorder and other vision loss	8.5	177.9	186.4	4.6	15.6	8.4	1.86
Cardiovascular disease	*106.5*	*3,839.0*	*3,945.5*	*2.7*	*195.3*	*181.2*	*1.08*
Rheumatic heart disease	5.9	53.8	59.7	9.9	10.9	2.5	4.29
Ischemic heart disease	61.2	1,734.3	1,795.5	3.4	112.3	81.9	1.37
Stroke	13.3	535.7	549.0	2.4	24.4	25.3	0.96
Inflammatory heart disease	5.4	129.2	134.6	4.0	9.9	6.1	1.63
Peripheral vascular disease	2.2	214.3	216.5	1.0	4.0	10.1	0.39
Other cardiovascular disease[e]	18.4	1,171.7	1,190.1	1.5	33.8	55.3	0.61
Chronic respiratory disease	*60.5*	*1,201.6*	*1,262.1*	*4.8*	*111.0*	*56.7*	*1.96*
Chronic obstructive pulmonary disease	26.4	474.4	500.8	5.3	48.4	22.4	2.16
Asthma	9.0	118.1	127.1	7.1	16.5	5.6	2.95
Other chronic respiratory diseases	25.1	609.1	634.2	4.0	46.1	28.8	1.60
Diseases of the digestive system	*84.2*	*2,402.8*	*2,487.0*	*3.4*	*154.4*	*113.4*	*1.36*
Genitourinary diseases	*161.9*	*1,944.6*	*2,106.5*	*7.7*	*297.0*	*91.8*	*3.23*
Hypertensive renal disease	13.5	258.6	272.2	5.0	24.8	12.2	2.03

(continued)

Table 6 (continued): Expenditure on hospital separation[a][b], by disease group and Indigenous status[c] in public and private hospitals, 2008–09

Disease group	Expenditure ($ million)			Indigenous share (per cent)	Expenditure ($) per person		Ratio
	Indigenous	Non-Indigenous	Total		Indigenous	Non-Indigenous	
2. Non-communicable diseases (continued)							
Genitourinary diseases (continued)							
Other nephritis and nephrosis[f]	118.6	636.0	754.7	15.7	217.6	30.0	7.25
Other genitourinary diseases	29.7	1,050.0	1,079.7	2.8	54.5	49.6	1.10
Diseases of the skin and subcutaneous tissue	*42.1*	*497.9*	*540.0*	*7.8*	*77.3*	*23.5*	*3.29*
Musculoskeletal and connective tissue diseases	*48.7*	*2,798.8*	*2,847.4*	*1.7*	*89.3*	*132.1*	*0.68*
Congenital anomalies	*20.2*	*320.7*	*341.0*	*5.9*	*37.1*	*15.1*	*2.45*
Oral conditions	*12.2*	*246.7*	*258.9*	*4.7*	*22.4*	*11.6*	*1.92*
3. Injuries[g]	**161.0**	**3,378.8**	**3,539.8**	**4.5**	**295.3**	**159.5**	**1.85**
Unintentional injuries	*124.0*	*3,166.4*	*3,290.3*	*3.8*	*227.4*	*149.5*	*1.52*
Road traffic and other transport accidents	27.0	493.8	520.7	5.2	49.5	23.3	2.12
Poisoning	1.7	32.2	33.9	5.1	3.1	1.5	2.07
Falls	27.3	1,219.6	1,246.9	2.2	50.1	57.6	0.87
Other unintentional injuries	68.0	1,420.8	1,488.8	4.6	124.7	67.1	1.86
Intentional injuries	*37.0*	*212.4*	*249.5*	*14.9*	*68.0*	*10.0*	*6.78*
Self-inflicted injuries	6.8	105.0	111.8	6.1	12.5	5.0	2.51
Inflicted by another person	30.2	106.9	137.1	22.0	55.4	5.0	10.97
4. Signs, symptoms and ill-defined conditions, and other contact with health services[h]	**136.8**	**4,311.2**	**4,448.0**	**3.1**	**251.0**	**203.5**	**1.23**
Total	**1,470.5**	**32,789.2**	**34,259.7**	**4.3**	**2,697.2**	**1,548.0**	**1.74**

(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, Hepatitis B, syphilis and other STDs.
(e) Includes hypertensive heart disease, aortic aneurysm and dissection, non-rheumatic heart disease and other cardiovascular disease.
(f) Includes expenditure for care involving dialysis (ICD-10 Z49).
(g) Hospital separations 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.

4 Potentially preventable hospitalisations

Potentially preventable hospitalisations (PPH) are conditions where hospitalisation is thought to have been avoidable if timely and adequate non-hospital care had been provided. It is useful to examine expenditure on PPH for Indigenous and non-Indigenous Australians to gain some insight into health cost burdens that could have been reduced through effective out-of-hospital care. A high level of PPH expenditure, however, may reflect one or more of the following scenarios: an increased prevalence of the conditions in the community; poorer functioning of the non-hospital care system; or an appropriate use of the hospital system to respond to greater need.

Box 1: Methods used to calculate PPH expenditure

PPH expenditure estimates for Indigenous and non-Indigenous Australians are published for the first time in this report. Although the general concepts and classification of PPH used here are similar to those used in *Australian hospital statistics 2008–09* (AIHW 2010a), the methodology used to derive PPH separations differs substantially between these two publications.

In order to allocate expenditure, PPH separations in this report are based solely on principal, not all, diagnoses. PPH separation rates have been derived from data for all states/territories. The estimates have been adjusted for Indigenous under-identification and are crude rather than age-standardised rates.

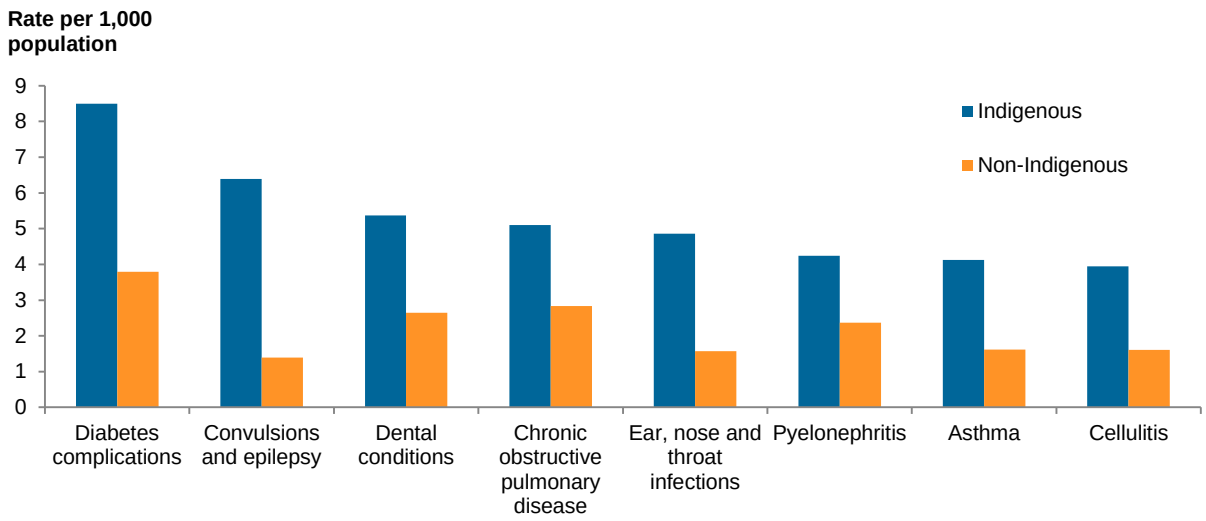
This method was used to ensure consistency and comparability with data in the report *Expenditure on health for Aboriginal and Torres Strait Islander people 2008–09* (AIHW 2011).

Therefore, PPH separation rates in this report need to be interpreted with care as they will be lower than those reported in other AIHW publications and the expenditure estimates apply only to the principal diagnosis.

The methodology in this report will be reviewed before the next issue in this series to improve comparability with other AIHW reports.

4.1 Separations for potentially preventable hospitalisations

The most frequent potentially preventable hospitalisations (PPH) for both Indigenous and non-Indigenous Australians were for diabetes complications. The rate of hospitalisation for diabetes complications among Indigenous Australians (8.5 per 1,000), however, was over twice the rate for non-Indigenous Australians (3.8) (Table 7). Convulsions and epilepsy (6.4 per 1,000), dental conditions (5.4) and chronic obstructive pulmonary disease (5.1) were the next most common PPH for Indigenous Australians (Figure 3).



Source: AIHW National Hospital Morbidity Database.

Figure 3: Selected potentially preventable hospitalisations per 1,000 population for Indigenous and non-Indigenous Australians, 2008–09

The health conditions for which the rate of PPH was highest for Indigenous Australians (for example, diabetes complications) varied from health conditions with the highest difference between the Indigenous and non-Indigenous Australians; such as nutritional deficiencies (7.96 rate ratio), rheumatic heart disease (6.19), and convulsions and epilepsy (4.60). Indigenous Australians had a higher rate of separation than non-Indigenous Australians for all PPH categories, except for iron deficiency anaemia (0.80 rate ratio) and perforated/bleeding ulcer (0.95) (Table 7).

Table 7: Hospital separation rates[(a)] by potentially preventable hospitalisations category and Indigenous status in public and private hospitals, 2008–09

	Separations per 1,000 population		
PPH category	**Indigenous**	**Non-Indigenous**	**Rate ratio**
Vaccine-preventable conditions			
Influenza and pneumonia	1.0	0.3	2.93
Other vaccine-preventable conditions	0.4	0.1	4.45
Total vaccine-preventable conditions	*1.4*	*0.4*	*3.23*
Acute conditions			
Appendicitis with generalised peritonitis	0.3	0.2	1.57
Cellulitis	3.9	1.6	2.45
Convulsions and epilepsy	6.4	1.4	4.60
Dehydration and gastroentiritis	3.4	2.9	1.20
Dental conditions	5.4	2.6	2.03
Ear, nose and throat infections	4.9	1.6	3.10
Gangrene	0.0	0.0	2.44
Pelvic inflammatory disease	0.6	0.2	3.06
Perforated/ bleeding ulcer	0.2	0.2	0.95
Pyelonephritis	4.2	2.4	1.79
Total acute conditions	*29.4*	*13.1*	*2.25*
Chronic conditions			
Angina	2.5	1.6	1.63
Asthma	4.1	1.6	2.53
Chronic obstructive pulmonary disease	5.1	2.8	1.85
Congestive heart failure	2.8	2.1	1.33
Diabetes complications	8.5	3.8	2.22
Hypertension	0.4	0.3	1.45
Iron deficiency anaemia	1.0	1.3	0.80
Nutritional deficiencies[(b)]	0.1	0.0	7.96
Rheumatic heart disease	0.7	0.1	6.19
Total chronic conditions	*25.3*	*13.6*	*1.86*
Total potentially preventable hospitalisations	**56.1**	**27.1**	**2.07**

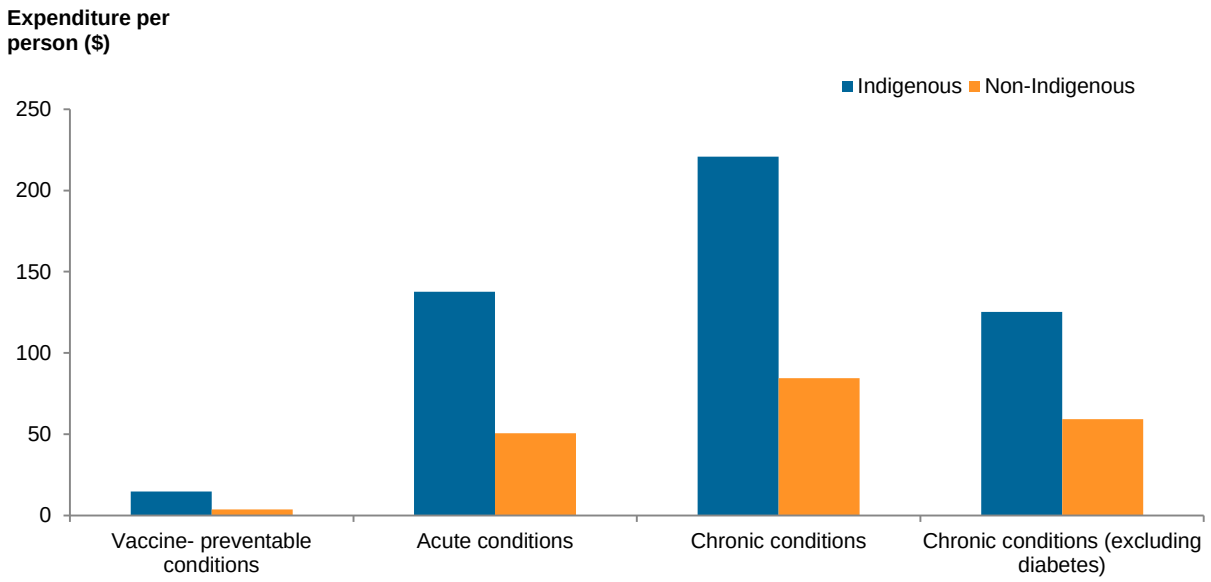
(a) Includes hospital separation data for all states/territories. Hospital separation rates differ from those published in *Australian hospital statistics: 2008–09* (AIHW 2010a) because the estimates in this report relate to principal diagnoses only, have been adjusted for Indigenous under-identification and are crude rates (rather than age-standardised rates).

(b) This condition is a subset of the burden of disease and injury group *Nutritional deficiencies* and cannot be compared with data in Table 5.

Source: AIHW National Hospital Morbidity Database.

4.2 Expenditure on potentially preventable hospitalisations

This section presents expenditure estimates for the various PPH for Indigenous and non-Indigenous Australians. In 2008–09, expenditure per person for Indigenous Australians was much higher than non-Indigenous Australians for all categories of PPH (Figure 4).



Source: AIHW National Hospital Morbidity Database.

Figure 4: Expenditure on hospital separations for potentially preventable hospitalisations by Indigenous status, 2008–09

The chronic conditions category was the area of highest PPH expenditure for Indigenous ($120 million) and non-Indigenous Australians ($1,684 million) (Table 8).

The highest chronic conditions PPH expenditure per person was for diabetes complications ($95 per Indigenous Australian and $24 per non-Indigenous Australian) followed by chronic obstructive pulmonary disease ($55 and $23 respectively). These also reflected the greatest cost differences in per person expenditure of $72 and $32 more respectively for Indigenous than non-Indigenous Australians.

In the acute conditions category the highest PPH expenditure per Indigenous Australian was for convulsions and epilepsy ($30 per person) and pyelonephritis ($24).

The per person Indigenous to non-Indigenous expenditure ratio was particularly high for nutritional deficiencies (expenditure ratio of 13.43, or more than 13 times as high for Indigenous than non-Indigenous Australians) and other vaccine preventable conditions (7.67). The greatest similarities in per person expenditure were for iron deficiency anaemia (1.13) and perforated/bleeding ulcer (1.25).

Table 8: Expenditure on potentially preventable hospital separations[(a)] by Indigenous status in public and private hospitals, 2008–09

PPH category	Total expenditure ($ million)		Indigenous share (per cent)	Expenditure per person ($)		Ratio
	Indigenous	Non-Indigenous		Indigenous	Non-Indigenous	
Vaccine-preventable conditions						
Influenza and pneumonia	6.1	64.3	8.6	11.1	3.0	3.67
Other vaccine-preventable conditions	1.9	9.5	16.5	3.4	0.4	7.67
Total vaccine-preventable conditions	*7.9*	*73.8*	*9.7*	*14.6*	*3.5*	*4.18*
Acute conditions						
Appendicitis with generalised peritonitis	1.6	29.8	5.1	2.9	1.4	2.07
Cellulitis	12.4	169.3	6.8	22.7	8.0	2.84
Convulsions and epilepsy	16.1	125.1	11.4	29.6	5.9	5.00
Dehydration and gastroenteritis	7.7	167.0	4.4	14.1	7.9	1.79
Dental conditions	10.3	109.1	8.6	18.9	5.2	3.68
Ear, nose and throat infections	9.8	83.2	10.6	18.0	3.9	4.59
Gangrene	0.3	3.6	7.8	0.6	0.2	3.31
Pelvic inflammatory disease	1.6	14.9	9.8	3.0	0.7	4.24
Perforated/ bleeding ulcer	1.9	59.5	3.1	3.5	2.8	1.25
Pyelonephritis	13.0	246.7	5.0	23.9	11.6	2.05
Total acute conditions	*74.8*	*1,008.1*	*6.9*	*137.2*	*47.6*	*2.88*
Chronic conditions						
Angina	5.0	93.1	5.1	9.1	4.4	2.07
Asthma	8.9	116.0	7.1	16.4	5.5	2.99
Chronic obstructive pulmonary disease	30.1	488.5	5.8	55.2	23.1	2.39
Congestive heart failure	14.5	358.3	3.9	26.7	16.9	1.58
Diabetes complications	51.9	500.6	9.4	95.2	23.6	4.03
Hypertension	0.9	19.6	4.4	1.7	0.9	1.80
Iron deficiency anaemia	1.5	52.1	2.8	2.8	2.5	1.13
Nutritional deficiencies[(b)]	1.2	3.4	25.7	2.1	0.2	13.43
Rheumatic heart disease	5.9	52.5	10.0	10.8	2.5	4.34
Total chronic conditions	*119.9*	*1684.2*	*6.6*	*219.9*	*79.5*	*2.77*
Total	**202.6**	**2,766.0**	**6.8**	**371.6**	**130.6**	**2.85**

(a) Includes hospital separations data for all states/territories. Hospital separation rates differ from those published in *Australian hospital statistics: 2008–09* (AIHW 2010a) because the estimates in this report relate to principal diagnoses only, have been adjusted for Indigenous under-identification and are crude rates (rather than age-standardised rates).

(b) This condition is a subset of the burden of disease and injury group *Nutritional deficiencies* and cannot be compared with data in Table 6.

Source: AIHW National Hospital Morbidity Database.

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