Appendix 4 Health services for older Aboriginal and Torres Strait Islander people—some issues

In 2001–02, Australian Government recurrent expenditure on high-level residential care subsidy was estimated at $3,385.3 million. Of this, $28.3 million related to Aboriginal and Torres Strait Islander residents (see Table A4.1). This included specifically targeted funding for Aboriginal and Torres Strait Islander Flexible Care Services, which operated mainly in regional and remote areas. A small percentage of the recipients of these Flexible Care Services may have been non-Indigenous people (for example, non-Indigenous spouses of Indigenous people). Flexible Care Services serviced almost 20% of all Indigenous aged care clients and provide a range of high-level, low-level residential care and aged care packages. Of the total funding of $9.0 million for Flexible Care Services in 2001–02, an estimated $5.5 million or 61.5% related to high-level care places. In Victoria, the Australian Capital Territory and Western Australia there were no Flexible Care Service expenditure allocated to high-level care places.

Table A4.1: Australians Government recurrent health funding for high care in residential aged care homes[(a)], 2001–02

	Indigenous		Non-Indigenous	
State/territory	**($ million)**	**Per cent total**	**($ million)**	**Per cent total**
New South Wales	5.5	0.4	1,239.9	99.6
Victoria	0.7	0.1	817.0	99.9
Queensland	6.0	1.0	585.1	99.0
Western Australia	5.7	2.2	250.5	97.8
South Australia	2.8	0.9	328.8	99.2
Tasmania	0.3	0.3	95.5	99.7
Aust. Capital Territory	0.1	0.3	34.8	99.7
Northern Territory	7.2	56.4	5.5	43.6
Australia[(b)]	**28.3**	**0.8**	**3,357.1**	**99.2**

(a) Relates to the 'health component' of residential aged care, residents in RCS levels 1–4.

(b) Includes an estimated $5.5 million funding for Flexible Care Services on high-level care places.

Source: AIHW analysis of DoHA unpublished residential care data.

There were 111,451 residents in aged care facilities needing and receiving high-level care during 2001–02 (Table A4.2). Australia wide, Aboriginal and Torres Strait Islander people made up an estimated 0.7% (780) of these residents. The proportion of residents in receipt of high-level care who were Indigenous varied greatly by jurisdiction—from 53.3% in the Northern Territory to 0.1% in Victoria.

Table A4.2: Residents receiving high-level care in residential aged care facilities[(a)], by State, 2001-02

State	Aboriginal and Torres Strait Islander people		Non-Indigenous people	
	Number of residents	Per cent total	Number of residents	Per cent total
New South Wales	174	0.4	41,432	99.6
Victoria	18	0.1	25,298	99.9
Queensland	166	0.8	20,528	99.2
Western Australia	183	2.3	7,899	97.7
South Australia	16	0.1	10,989	99.9
Tasmania	8	0.3	3,159	99.7
Australian Capital Territory	3	0.3	1,181	99.7
Northern Territory	211	53.3	185	46.7
Australia	**780**	**0.7**	**110,671**	**99.3**

(a) Relates to the 'health component' of residential aged care, residents in RCS levels 1–4.

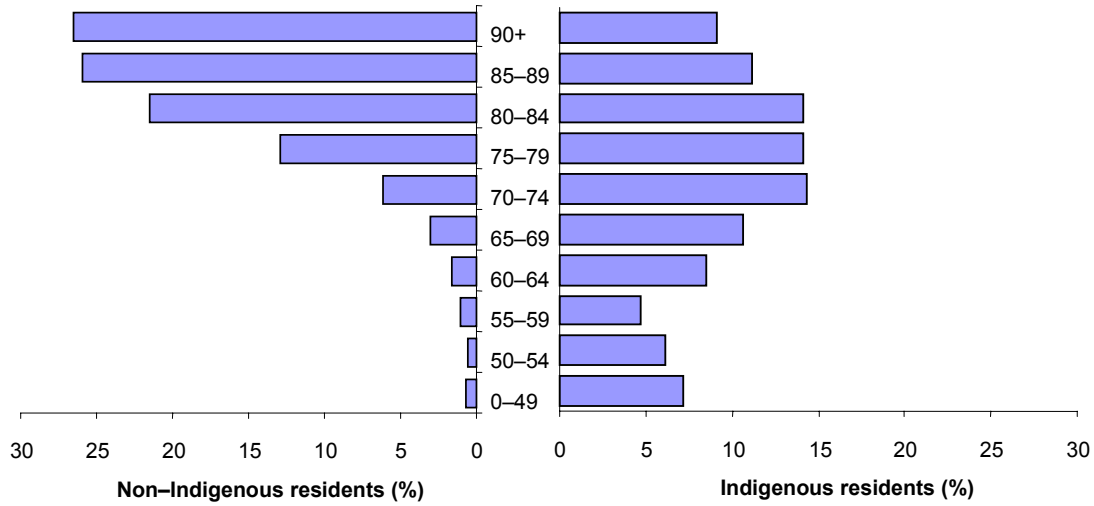
Note: Utilisation of Flexible Care Services has not been included.

Source: AIHW analysis of DoHA unpublished ACCMIS data.

The Australian Indigenous community has higher fertility and mortality rates than the rest of the Australian population. This has led to an age structure for Indigenous Australians in 2001–02 that was very different from that of the broader community. The Aboriginal and Torres Strait Islander population was, on average, much younger than the non-Indigenous population and this, in the absence of any other factors affecting demand, would tend to suggest a lower use of services for older people care when averaged across the whole Indigenous population. On the other hand, the generally poorer health status of Indigenous people at all ages increases the demand for these types of services at younger ages (Figure A4.1).

The implications of the different Indigenous needs are recognised in the Aged Care Act 1997, which uses 50 plus years in planning services for older Aboriginal and Torres Strait Islander people and 70 plus years for non-Indigenous people. These aged based planning criteria do not exclude people below these ages from accessing these types of services if an Aged Care Assessment Team determines that such services are the best means of meeting their care needs.

The combination of a much lower life expectancy and relatively poorer health status for Indigenous Australians results in an age structure of Indigenous residents in residential care facilities that is less skewed than that of non-indigenous residents—with a greater proportion of younger Indigenous people using such services. Well over half the non-Indigenous residents were aged 85 years and over, whereas less than a quarter of Indigenous residents were in those age groups. On the other hand, more than a quarter (26.5%) of the Indigenous residents were aged less than 65 years, compared with 3.9% of non-Indigenous residents.



(a) Relates to the 'health component' of residential aged care, residents in RCS levels 1–4.

Note: Utilisation of Flexible Care Services has not been included, as demographic information about these residents is not known.

Source: AIHW analysis of DHAC unpublished residential care data.

Figure A4.1: High-care residential aged care[(a)] utilisation, age profiles of Aboriginal and Torres Strait Islander and non-Indigenous persons, Australia, 2001-02 (%)

Indigenous users of high-level residential care were a greater share of the total population sub-group than were non-Indigenous users for every population sub-group (Table A4.3). For example, 21.6 per 1,000 Indigenous people aged 65–74 receive high-level residential aged care, compared with 7.8 per 1,000 for non Indigenous people.

Because of the older age-structure of the non-Indigenous population, their utilisation rate of 5.8 residents per 1,000 population was higher than that for the Indigenous population of 1.7 per 1,000.

Table A4.3: Rates of usage of high-care residential aged care[(a)] by Aboriginal and Torres Strait Islander people and non-Indigenous Australians, by age group, 2001-02

	Rate per 1,000 population		
Age group	**Indigenous**	**Non-Indigenous**	**Ratio**
1–49	0.16	0.08	1.99
50–64	1.64	0.88	1.87
65–74	21.62	7.79	2.77
75+	90.28	86.03	1.05
All ages	**1.72**	**5.83**	**0.29**

(a) Relates to the 'health component' of residential aged care, residents in RCS levels 1–4.

Note: Utilisation of Flexible Care Services has not been included.

Sources: Residential care population—ACCMIS data from DoHA; ABS 2003c.

The lower utilisation by Indigenous Australians (1.72 per 1,000 as opposed to 5.83) is reflected in the lower per person expenditure on high-level residential care facilities compared with non-Indigenous people.

The per person health component of Australian Government expenditure for Indigenous Australians has been analysed both with expenditure on Flexible Care Services ($5.5 million) included, and excluded. The difference that the inclusion of expenditure on Flexible Care Services made in some jurisdictions was marked. For example, in South Australia average per person expenditure increased from $17.24 to $110.41 by the inclusion of the Flexible Care Service expenditure. Naturally, the per person expenditure for Aboriginal and Torres Strait Islander people was increased by the inclusion of Flexible Care Services from $49.56 per person to an average of $61.65 per person.

The ratio of 3.12:1 for the Northern Territory was indicative of the different population structure in the Territory. The Territory had a higher concentration of Aboriginal and Torres Strait Islander people in its population and a younger age structure for the non-Indigenous population. All other States showed a low ratio of expenditure on high-level residential aged care for Aboriginal and Torres Strait Islander people relative to non-Indigenous people.

The Indigenous to non-Indigenous expenditure ratio of for residential care (0.34:1) is greater than the usage ratio of 0.29:1 (Table A4.3). This suggests that Indigenous residents had more complex care needs than did their non-Indigenous counterparts.

Table A4.4: Commonwealth recurrent health funding for high-level care in residential aged care facilities[(a)], per person 2001–02

	Indigenous ($)				
State	Residential aged care subsidy	Flexible Care Services	Total	Non-Indigenous ($)	Ratio
New South Wales	39.01	1.44	40.44	192.52	0.21
Victoria	25.05	—	25.05	171.02	0.15
Queensland	40.65	6.78	47.43	167.02	0.28
Western Australia	86.83	—	86.83	136.49	0.64
South Australia	17.24	93.18	110.41	221.24	0.50
Tasmania	16.89	2.21	19.10	210.16	0.09
Australian Capital Territory	23.22	—	23.22	110.40	0.21
Northern Territory	89.66	36.47	126.12	39.33	3.21
Australia	**49.56**	**12.08**	**61.65**	**177.11**	**0.35**

(a) Relates to the 'health component' of residential aged care, residents in RCS levels 1–4.

Source: AIHW analysis of Department of Health and Aged Care unpublished residential care data.

Appendix 5 Hospital costing method

Introduction

Estimated expenditure on hospital services was the largest health expenditure area for both Indigenous (47.5%, $849.5 million) and non-Indigenous people (34.2%, 21,456.9 million). This Appendix provides some background on hospital separations for Indigenous and non-Indigenous people in 2001–02 and outlines aspects of the methodology used to calculate the expenditure estimates. Four areas are described:

- Hospitalisations of Indigenous and non-Indigenous people;
- Under-identification of Indigenous people in hospital data and recent studies;
- Admitted patient costing methodology; and
- Non-admitted emergency department investigation.

Hospitalisation

Hospitalisation was more common for Aboriginal and Torres Strait Islander people than for the rest of the population. Hospital admissions generally represented a stage of illness that had progressed to a point where acute medical intervention was required to treat the disease process or injury. For Aboriginal and Torres Strait Islander people this was the case.

In 2001–02, Indigenous hospital separations accounted for 191,071 or 3.0% of total separations (Table A5.1). The majority of these (97.2%) were from public hospitals. Reported separations from private hospitals for Indigenous Australians represented only 0.2% of total private hospital separations. However, the low quality in the reporting of Indigenous status in some jurisdictions caution needs to be exercised (AIHW 2003a). In Tasmania, for example, for two-thirds of the separations from private hospitals Indigenous status was not reported.

Overall, on an age-standardised basis, there were 579 separations per 1,000 Indigenous persons, compared to a rate for the non-Indigenous population of 323 per 1,000 (Table A5.1). This indicates that in 2001–02, Aboriginal and Torres Strait Islander people experienced a rate of hospitalisation almost twice that of the non-Indigenous population (AIHW 2003a).

The Northern Territory reported the highest number of separations per 1,000 Indigenous population (999 per 1,000), followed by Western Australia (764 per 1,000). This indicates that the separation rate for Indigenous people in the Northern Territory was over four times that of non-Indigenous people.

Table A5.1: Reported Indigenous and non-Indigenous separations by hospital sector, states and territories, 2001–02

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number of separations, public hospitals				
Indigenous	34,713	8,013	53,161	34,629	12,656	1,525	1,361	39,644	185,702
Non-Indigenous	1,224,276	1,081,851	630,006	318,130	340,374	73,030	58,428	23,572	3,749,667
Not reported	4,728	—	11,554	—	9,304	4,932	2,156	266	32,940
Total	**1,263,717**	**1,089,864**	**694,721**	**352,759**	**362,334**	**79,487**	**61,945**	**63,482**	**3,968,309**
					Per cent of separations				
Indigenous	2.7	0.7	7.7	9.8	3.5	1.9	2.2	62.4	4.7
Non-Indigenous	96.9	99.3	90.7	90.2	93.9	91.9	94.3	37.1	94.5
Not reported	0.4	—	1.7	—	2.6	6.2	3.5	0.4	0.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
					Number of separations, private hospitals				
Indigenous	468	383	1,374	2,739	212	145	48	. .	5,369
Non-Indigenous	691,236	579,453	462,031	262,393	192,357	23,151	25,558	. .	2,236,179
Not reported	838	—	129,669	—	5,201	47,353	1,580	. .	184,641
Total	**692,542**	**579,836**	**593,074**	**265,132**	**197,770**	**70,649**	**27,186**	**. .**	**2,426,189**
					Per cent of separations, private hospitals				
Indigenous	0.1	0.1	0.2	1.0	0.1	0.2	0.2	. .	0.2
Non-Indigenous	99.8	99.9	77.9	99.0	97.3	32.8	94.0	. .	92.2
Not reported	0.1	—	21.9	—	2.6	67.0	5.8	. .	7.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**. .**	**100.0**
					Number of separations, all hospitals				
Indigenous	35,181	8,396	54,535	37,368	12,868	1,670	1,409	39,644	191,071
Non-Indigenous	1,915,512	1,661,304	1,092,037	580,523	532,731	96,181	83,986	23,572	5,985,846
Not reported	5,566	—	141,223	—	14,505	52,285	3,736	266	217,581
Total	**1,956,259**	**1,669,700**	**1,287,795**	**617,891**	**560,104**	**150,136**	**89,131**	**63,482**	**6,394,498**
					Per cent of separations, all hospitals				
Indigenous	1.8	0.5	4.2	6.0	2.3	1.1	1.6	62.4	3.0
Non-Indigenous	97.9	99.5	84.8	94.0	95.1	64.1	94.2	37.1	93.6
Not reported	0.3	—	11.0	—	2.6	34.8	4.2	0.4	3.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
					Separation rate[(a)] per 1,000				
Indigenous people	354.7	410.4	620.8	763.7	699.3	124.6	747.1	999.0	579.0
Non-Indigenous people	290.5	340.3	351.8	326.0	348.5	315.7	308.1	224.8	322.5
All people	291.5	340.6	358.0	337.1	352.7	310.3	310.3	394.3	326.7
Rate ratio(b)	1.2	1.2	1.8	2.3	2.0	0.4	2.4	4.4	1.8

(a) Rates are directly age-standardised to the Australian population at 30 June 2001 and separation rate for non-Indigenous includes Not reported.

(b) The rate ratio is equal to the separation rate for Indigenous persons divided by the separation rate for non-Indigenous persons (which includes Not reported).

Source: AIHW 2003a.

These estimates were influenced by the quality of the data on Indigenous status, and in many jurisdictions the proportion of Indigenous separations is likely to be understated. Under-identification rates can be influenced by variation among the jurisdictions in the health status of Indigenous persons and in their access to hospital services.

In order to better understand the quantum of expenditure on admitted patient services for Aboriginal and Torres Strait Islander people, jurisdictions provided estimates of the level of possible under-identification in hospital records. The results of the application of these under-identification estimates to hospital separations are displayed below (Table A5.2).

Table A5.2: Estimated Indigenous and non-Indigenous separations by hospital sector, adjusted for under-identification of Aboriginal and Torres Strait Islander people, states and territories, 2001–02

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Estimated under-identification (%)	30	25	20	6	0[(a)]	0[(a)]	30	0[(a)]	n.a.
Adjusted number of separations, public hospitals									
Indigenous	46,062	10,495	65,442	39,610	13,207	2,550	1,832	39,817	219,015
Non-Indigenous	1,907,285	1,659,202	1,222,352	584,901	546,857	147,586	87,299	23,674	6,179,156
Total	**1,953,347**	**1,669,697**	**1,287,794**	**624,511**	**560,064**	**150,136**	**89,131**	**63,491**	**6,398,171**
Per cent of separations									
Indigenous	2.4	0.6	5.1	6.3	2.4	1.7	2.1	62.7	3.4
Non-Indigenous	97.6	99.4	94.9	93.7	97.6	98.3	97.9	37.3	96.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Population proportion									
Indigenous	2.1	0.6	3.5	3.5	1.7	3.7	1.2	28.8	2.4
Non-Indigenous	97.9	99.4	96.5	96.5	98.3	96.3	98.8	71.2	97.6

(a) For South Australia, Tasmania and the Northern Territory, Non-responses have been redistributed in proportion to the identified separations.

Source: AIHW analysis of National Hospital Morbidity Database.

Under-identification of Aboriginal and Torres Strait Islander people in admitted patient data

Collection of information on the Indigenous status of hospital patients is, a typical part of the admission process in public hospitals. However, in both previous reports, adjustments were necessary to correct for under-enumeration of Aboriginal and Torres Strait Islander people, and advice from states and territories was to the affect that such adjustments were necessary part of the 2001–02 estimates.

Reported hospital separation data

A combination of factors was considered when determining the adjustments that should be made for Indigenous under-identification. These included the available studies of identification, adjustments applied in the two previous reports and current data covering hospital separations.

In 2001–02, there were 185,702 Indigenous separations from public hospitals reported. This represented 4.7% of all public hospital separations (see Table A5.1). Indigenous separations reported for private hospitals were minimal.

In an attempt to understand the under-enumeration of Aboriginal and Torres Strait Islander people, the reported information on public hospital separations was closely analysed. Reported hospital separations for Aboriginal and Torres Strait Islander people over the last seven years were examined for each jurisdiction (Table A5.3 and Figure A5.1). This showed that:

- In every state and territory, the ratio of reported Indigenous to non-Indigenous separation rates increased between 1995–96 and 2001–02.
- Large changes in Tasmania and the Australian Capital Territory reflect the relatively poor and variable rate of Aboriginal and Torres Strait Islander identification in hospital separations.
- Tasmanian identification of Aboriginal and Torres Strait Islander patients remains poor.

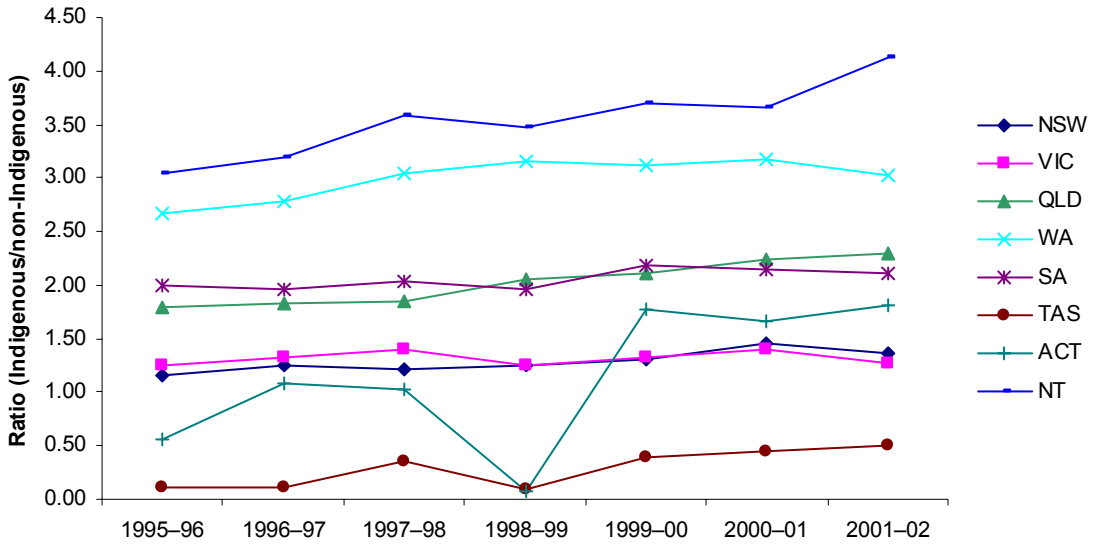
Table A5.3: Ratio of Indigenous to non-Indigenous reported separations per 1,000 population, public (non-psychiatric) hospitals, by state and territory, 1995–96 to 2001–02

Year	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Aust
1995–96	1.15	1.25	1.80	2.66	2.00	0.11	0.56	3.05	1.72
1996–97	1.25	1.33	1.82	2.79	1.96	0.12	1.07	3.19	1.80
1997–98	1.21	1.40	1.85	3.04	2.04	0.35	1.03	3.58	1.87
1998–99	1.25	1.25	2.05	3.15	1.97	0.09	0.07	3.48	1.92
1999–00	1.31	1.33	2.11	3.12	2.19	0.39	1.77	3.69	2.01
2000–01	1.46	1.41	2.25	3.17	2.15	0.44	1.65	3.66	2.09
2001–02	1.36	1.27	2.30	3.03	2.10	0.51	1.81	4.12	2.03
% change: 1995–96/ 2001–02	18.3	1.6	27.8	13.9	5.0	363.6	223.2	35.1	18.0

(a) Non-ACT residents represent 22% of separations in the ACT. These patients are included in the numerator and will overstate the population rate.

Note: No age adjustments or under-identification adjustments have been made to these data. Not stated responses for Indigenous status are included with non-Indigenous responses.

Source: AIHW National Hospital Morbidity Database.



Note: Non-ACT residents represent 22% of separations in the ACT. These patients are included in the numerator and will overstate the population rate.

Source: AIHW National Hospital Morbidity Database.

Figure A5.1: Ratio of Indigenous to non-Indigenous reported separations per 1,000 population, public (non-psychiatric) hospitals, by state and territory, 1995–96 to 2001–02

In some jurisdictions these data clearly indicate an increase in the proportion of separations defined as Indigenous. However, it is not possible to determine whether this increase can be attributed to improved identification, or a change in hospital use by Aboriginal and Torres Strait Islander people and changing population demographics.

Investigations of reporting accuracy in hospital separation data

The 1998–99 report into health expenditure for Aboriginal and Torres Strait Islander people included detailed reviews of a number of studies on Indigenous identification that provided evidence to inform the levels of under-identification used in that report (see Chapter 4 & Appendix 6, AIHW 2001). These included:

- ABS & AIHW study on the quality of Indigenous identification in hospital data (ATSIHWIU 1999),
- Victorian Department of Human Services surveys of Aboriginal and Torres Strait Islander identification in high hospital users, and
- New South Wales Health Department patient linkage studies.

Further investigations into under-identification of Indigenous patients have occurred in some jurisdictions prior to this particular study. These have been reviewed in determining the appropriate level of under-identification in some jurisdictions.

These included:

- A study in Western Australia during 2000–01 involving face-to-face interviews with patients in 26 Western Australian public hospitals (Young 2001); and

- An analysis of the Victorian Admitted Episodes Dataset (VAED) involving estimation of the level of Indigenous under-identification within six hospital groups. In those hospitals with a Koori Hospital Liaison Officer (KHLO), an independent assessment of the number of Indigenous separations was made by the KHLO. In other hospitals, under-identification was estimated based on the type of catchment area for the hospitals and the target Indigenous population.

Although the results of these studies may not have been directly applied to this analysis, initial analyses for this report centred around their findings.

In other jurisdictions where adjustment factors were used, consideration was given to:

- reported usage rates relative to other jurisdictions,
- under-identification studies undertaken for the earlier reports, and
- adjustment factors used in the two previous Indigenous health expenditure reports.

In most jurisdictions it was concluded that identification had not improved since 1998–99. Or, in some cases, the adjustments applied in the 1998–99 report may have understated the rate of Indigenous under-identification at the time. Accordingly, for most jurisdictions, the same under-identification adjustments applied in the 1998–99 report were again applied in this report (Table A5.4).

For those states and territories where no under-identification adjustment was made, the not stated responses were distributed between Indigenous and non-Indigenous patients according to the proportion of identified responses.

Table A5.4: Estimated under-identification adjustments for admitted patient data

State/territory	1998–99 under-identification adjustment	2001–02 under-identification adjustment
New South Wales	1.30	1.30
Victoria	1.25	1.25
Queensland	1.20	1.20
Western Australia	1.06	1.06
South Australia	1.10	Nil
Tasmania	See note[(a)]	See note[(b)]
Australian Capital Territory	1.44	1.30
Northern Territory	Nil	Nil

(a) A 1997 survey of outpatient services was used in place of admitted patient data.

(b) The Tasmanian Department of Health and Human Services Aboriginal Health and Wellbeing Steering Committee advised that no under-identification adjustment be used.

Source: AIHW 2001.

Treatment of under-identification in Tasmania

For the second Indigenous health expenditure report, Tasmanian admitted patient data was regarded as very poor. In place of identified admitted patient data, information from a 1997 survey of outpatient services was used. According to that study, 7.1% of outpatient services were for Aboriginal and Torres Strait Islander people. There have been some concerns that this method was somewhat arbitrary, with the relationship between Indigenous use of outpatient and inpatient services not clearly established.

For the 2001–02 report, the quality of Indigenous identification in admitted hospital records was again considered very poor. ABS census data suggest that Indigenous Australians represent 3.7% of the state's population, yet identified Indigenous separations accounted for 1.9% of all separations from public hospitals in 2001–02.

Advice from Tasmania indicated that Indigenous identification was problematic due to such factors as poor procedures and systems, poor levels of self-identification due to stigma, and issues regarding Aboriginal identity in Tasmania. The Tasmanian Department of Health and Human Services Aboriginal Health and Wellbeing Steering Committee requested that hospital separations be used in an un-manipulated form, stating that this would provide a statistically valid baseline for continual improvement with which to address the disparity in health outcomes between Indigenous Australians and non-Indigenous people.

Redistribution of the 'non-stated' responses in line with the identified Indigenous and non-Indigenous hospital separations increased the Indigenous proportion of separations to 2.05%.

Admitted patient costing methodology

The first two reports on expenditures Aboriginal and Torres Strait Islander health services used a core methodology outlined in the first disease costing study for estimating admitted patient costs. The publication *Disease costing methodology used in the Disease Costs and Impact Study 1993–94* covers this in more detail (Mathers et al. 1998). The model is a variation on the casemix costing at the time that allowed for differences in length of stay.

AIHW's hospital costing method estimates the cost of every hospital separation. Acute hospital admitted patient costs are estimated by apportioning the total admitted patient expenditure per establishment (calculated by applying an estimated in-patient fraction or Ifrac to the total expenditure reported for that establishment) to individual episodes of hospitalisation. An adjustment was made for the resource intensity of treatment for the specific episode using the Diagnostic Related Groups (DRG) and the length of stay. Adjustment factors were applied to data from most jurisdictions to correct for under-identification of Aboriginal and Torres Strait Islander people.

DRG cost weights reflected the average cost of all episodes included in the DRG. The length of stay adjustment reflected that some costs were proportional to length of stay, whereas others were independent of length of stay (e.g. ward nursing care and meals versus theatre costs) (Table A5.5).

Table A5.5: Assumed variation of DRG cost components by length of stay within DRG

Assumption	Component
Independent of length of stay	Prostheses Emergency Departments Critical Care Operating Rooms Specialised Procedure Suits
Proportional to length of stay	Ward Medical Ward surgical Pathology Imaging Allied Health Pharmacy Medical and Surgical supplies On Costs Hotel Depreciation

Source: AIHW 2001.

For sub and non-acute patients, where there are no DRG weights, the most recent cost relativities was the July to December 1996 sub- and non-acute patient (SNAP) study (Eager et al. 1997). Estimates of overall sub- and non-acute costs from states and territories, derived in Table A3.9 of *Australian Hospital Statistics 2001–02* (AIHW 2003a), were combined with the SNAP study relativities to estimate per diem costs for sub and non-acute patients.

Changes to costing method for this study

Some modifications were made to the costing model used in the second report to incorporate the differences in costs between hospitals. From data held at the AIHW, the total cost per hospital was known, hence the model was able to incorporate differences between treatment costs in hospitals within a jurisdiction. This enabled more detailed cost relativities to be revealed. However, for this report, jurisdictions advised that establishments data do not accurately represent expenditure on admitted patient services. Accordingly, the total expenditure on admitted patient services, as reported by states and territories in data provided to AIHW, has been retained in this report. The final proportions (Indigenous/non-Indigenous) derived from the hospital costing model for public hospitals and public patients in private hospitals, were applied to this total reported expenditure on admitted patient services.

The differences between the reported expenditure on hospital services and the information contained in the hospital establishments data can largely be explained by differences in the scope of the two sets of data:

- The establishments data report on expenditures incurred by public hospital establishments within each state and territory. The establishments data for New South Wales hospitals, for example, include expenditure incurred in providing hospital services in New South Wales hospitals for residents of other states, particularly Queensland, the Australian Capital Territory and Victoria. Similarly, the establishments data for those other jurisdictions include expenditure incurred in providing hospital services for, among others, New South Wales residents.
- On the other hand, the data provided by state and territory departments to AIHW covers expenditures incurred in providing hospital treatment to people who reside in the state or territory concerned. For example, the acute-care expenditure data provided

by NSW Health, deducts the revenue flows received from other jurisdictions in respect of their residents treated in New South Wales establishments and adds the flows to other jurisdictions relating to New South Wales residents treated in those other jurisdictions.

Another substantial cause of difference between the two data sets is the way contracted services provided by private hospitals were treated. Some states advised that they had entered into contractual arrangements with some private hospitals for the provision of services to public patients. Expenditure under those arrangements was often incurred at a state-wide level and not apparent to any individual public hospital establishment. Therefore, the establishments data would not have included such expenditure, while the data provided by the state or territory health authority would have included it as expenditure on admitted patient services.

Cost loading for Indigenous separations

Studies have demonstrated that length of stay among Aboriginal and Torres Strait Islander peoples were often longer than that of non-Indigenous people (Fisher et al. 1998). Within each DRG category there were variations that were reflected in higher costs than the mean that was built into the standard costing (Beaver et al. 1998).

The second report substantiated these findings, it found that the average length of stay for Aboriginal and Torres Strait Islander people was longer than that of non-Indigenous people within the same DRG, yielding a higher cost per casemix-adjusted separation using the hospital morbidity costing methodology. The factors that contributed to this difference may have included hospital/regional variations and differences in levels of complexity (AIHW 2001).

The first report theorised that the difference in length of stay explained most of the cost differentiation between Indigenous and non-Indigenous patients in the same casemix categories (Deeble et al. 1998). However, there was some evidence available for the second report that higher costs were involved in treating Aboriginal and Torres Strait Islander people in the same DRG because of greater co-morbidities.

The National Aboriginal and Torres Strait Islander Casemix Study (Brewerton & Associates 1997) measured costs of Aboriginal and Torres Strait Islander and non-Indigenous patients in 10 hospitals in Northern Territory, Western Australia, northern Queensland and South Australia. It showed, after adjustment for casemix, a 5% higher cost for Aboriginal and Torres Strait Islander patients but this difference was not statistically significant.

Modelling work, just prior to the finalisation of the second report, using data from the New South Wales Trendstar hospitals, showed that, after adjustment for casemix, Aboriginal and Torres Strait Islander patients cost 9.4 to 9.5% more per separation. Of that higher cost, 2.4 to 2.6% was shown to be due to longer length of stay. The hospitals in that study were mostly larger hospitals and mostly metropolitan.

It was concluded that there was sufficient evidence to make an adjustment for higher cost intensity for Aboriginal and Torres Strait Islander patients. The New South Wales study showed that there was a higher cost, not related to length of stay, of 1.094/1.025 = 1.07, i.e. a 7% higher cost intensity per bed day (AIHW 2001). In the method followed in the second report, a more conservative cost loading adjustment of 5% was applied to Aboriginal and Torres Strait Islander separations.

Practices in the states and territories

Investigations for this report of practices in the jurisdictions exposed inconsistencies in the treatment of cost loading for Aboriginal and Torres Strait Islander patients; loadings ranged from 0–50%. Cost modelling for national expenditure estimates required a base with less variation.

Where available, information was obtained from jurisdictions on the evidence base for the application of the cost loading for Indigenous hospital separations:

- Victoria has applied a loading of 10% to the Weighted Inlier Equivalent Separation (WIES) payment for all inpatients identified by Victorian public hospitals as Aboriginal and/or Torres Strait Islander since January 1999. The initiative was introduced in response to the National Aboriginal and Torres Strait Islander Casemix Study (Fisher et al. 1998). A study of Victorian cost weight data from 2001–02 showed that the difference in average cost between Indigenous and non-Indigenous patients was less than 1%. The cost weight study was based on 42 hospitals (out of 113) but included 40% of all Indigenous separations. In general, the greater the number of Indigenous separations in the DRG, the less difference there was between average costs. Some DRGs with very few Indigenous inpatients showed great variations between average Indigenous and non-Indigenous costs.
- New South Wales apply a 10% cost loading. Their analysis revealed that Indigenous separations were 9.4% more expensive to treat overall. The significant contributions to this excess were greater pathology, wards and clinical department costs. Notably, the average length of stay for Aboriginal and Torres Strait Islander people was not significantly different to non-Indigenous people.
- In South Australia, a 30% loading for Indigenous hospital separations applies. This is made on the basis of evidence from one of the national casemix studies, possibly Fisher et al. 1998.

Patient Clinical complexity Levels (PCCLs)

The AIHW also undertook an examination of relevant information collected in the hospital morbidity data. This included examining Patient Clinical Complexity Levels (PCCLs)—a variable included in the Australian Refined–Diagnosis Related Groups Version 4.2 (AR-DRG) data covering 2001–02.

The new PCCL variable is assigned to each separation record. PCCLs can be used to gauge the 'severity' of a patient's condition at a more detailed level than through the use of DRGs alone. The PCCL is calculated from severity weights, called complication and comorbidity levels (CCLs), assigned for all additional diagnoses for each episode. CCLs range from zero to four for surgical and neonate episodes, and from zero to three for medical episodes. The CCL values were developed from a combination of medical judgement and statistical analysis (DHAC 1998).

A PCCL is an estimate (derived for each episode) of the cumulative effect of each of the CCLs for that episode of care (DHAC 1998). The PCCL values range from zero (no complication or comorbidity) to four (catastrophic complication or comorbidity), see Table A5.6 below.

Table A5.6: Patient clinical complexity level (PCCL) values and descriptions

PCCL level	Description
0	No complication or comorbidity
1	Minor complication or comorbidity
2	Moderate complication or comorbidity
3	Severe complication or comorbidity
4	Catastrophic complication or comorbidity

Source: DHAC 1998.

At a national level, an analysis of PCCLs was undertaken using the costing model and controlling for DRG and length of stay. This indicated that the average PCCL level was 19% higher for Aboriginal and Torres Strait Islander people over non-Indigenous people. It should be noted, however, that the PCCL distribution is different across DRGs and currently there are no price values for PCCLs. Accordingly, the ability to quantify this difference in price terms is not yet available.

Cost loading adjustment

Based on evidence from the state and territories, the AIHW's PCCL investigation and that from the previous studies, a cost loading factor was again applied to Aboriginal and Torres Strait Islander separations to adjust for greater comorbidity. A 5% adjustment was made, which is the same as the value applied in the second report. This enabled some comparability with the second report.

Non-admitted patient services

In the two previous studies into expenditures on health for Aboriginal and Torres Strait Islander people, accident and emergency services were not reported separately from other non-admitted patient services. In the lead up to this report, data development work was undertaken to improve estimates in the area of non-admitted patient services. It was agreed that a survey of emergency departments should be undertaken.

The data required for the survey covered Indigenous status and triage category of Emergency Department clients over a two week period. An estimate of the annual number of episodes for each hospital's emergency department had also been provided prior to the survey. These estimates, combined with hospital peer group information, enabled the development of a weight, which when applied to the data enabled an estimate of the annual distribution Indigenous and non-Indigenous clients in Emergency Departments (Table A5.7). These proportions have been applied to expenditure information on emergency department services where available.

Table A5.7: Emergency department services, Indigenous and non-Indigenous proportion of clients

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Indigenous	3.53	2.69	7.79	14.27	3.41	3.50	1.90	42.55
Non-Indigenous	96.47	97.31	92.21	85.73	96.59	96.50	98.10	57.45

Source: AIHW unpublished data.

National Minimum Data Set—Non-admitted patient emergency department care

The National Minimum Data Set (NMDS)—Non-admitted patient emergency department care commenced in July 2003 and comprises 15 variables including Indigenous status, triage category and area of usual residence. It is collected in selected public hospitals in peer groups A and B (Principal referral, specialist women's and children's, Metropolitan and Rural and Remote hospitals) as defined in *Australian Hospital Statistics* collection.

In the future the NMDS will be able to provide information about the continuing use of emergency departments by Indigenous people in the larger hospitals. However, given the scope of the collection, there will still be some data gaps concerning the use of emergency departments in smaller hospitals.