

1 Introduction

1.1 Background

In view of the health disadvantage of Indigenous Australians relative to other Australians (ABS & AIHW 2005) and the need for accurate statistical information about the health status of Indigenous Australians, the quality of Indigenous status information in hospital admitted patient statistics has been a matter of longstanding concern for the users of those statistics and for the organisations responsible for collection of the statistics. This is because of the potential value of admitted patient statistics in describing the use of hospitals by Indigenous Australians, given the comprehensive coverage of the data collections and the generally well established infrastructure that exists for the data collections at the state and territory and national levels. The correct identification of the Indigenous status of Indigenous patients is also essential if hospital services specifically directed towards assisting Indigenous patients are to be effective.

Concern has centered on the apparent under-identification of Indigenous patients and the representativeness of separations that are identified as being for Indigenous people. The findings of various studies of hospital separations data have suggested that this under-identification stems from the lack of collecting or reporting of Indigenous status information using the agreed national standards (Box 1). It has also been found that the under-identification has not been uniform – with geographically based variation, for example. The possibility of misclassification involving the Indigenous subcategories ('Aboriginal but not Torres Strait Islander origin', 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin') has also raised questions about data analysis using these subcategories.

In recognition of the uncertainty about the precise magnitude of the health disadvantage of Indigenous people and about their use of health services because of incomplete identification of Indigenous people in administrative records and uncertainties in estimating the size and composition of the Indigenous population, *The Aboriginal and Torres Strait Islander Health Information Plan* (ATSIHWIU 1997) made 42 recommendations for collection and maintenance of quality statistics on the health status of Indigenous people. Several of the recommendations relate to improving the quality of hospital separations data.

At its December 2002 meeting the National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data (NAGATSIHID) discussed the need to monitor and improve the quality of Indigenous identification in hospital separations data. A project directed towards these goals was subsequently included as part of the work program of the Australian Institute of Health and Welfare, with funding provided by the Australian Health Ministers' Advisory Council.

Box 1: The standard *National Health Data Dictionary* question and classification for Indigenous status

The *National Health Data Dictionary* recommends that the following standard question be used to elicit information about Indigenous status. The question is based on the Australian Bureau of Statistics standard for Indigenous status:

[Are you] [Is the person] [Is (name)] of Aboriginal or Torres Strait Islander origin?

The response categories are as follows:

(For persons of both Aboriginal and Torres Strait Islander origin, mark both 'Yes' boxes.)

- No
- Yes, Aboriginal
- Yes, Torres Strait Islander

The dictionary recommends the following output classification for Indigenous status:

- Aboriginal but not Torres Strait Islander origin
- Torres Strait Islander but not Aboriginal origin
- Both Aboriginal and Torres Strait Islander origin
- Neither Aboriginal nor Torres Strait Islander origin
- Not stated/inadequately described

The classification includes a broader grouping of the detailed categories, as follows:

Indigenous:

- i.e. Aboriginal but not Torres Strait Islander origin, Torres Strait Islander but not Aboriginal origin and Both Aboriginal and Torres Strait Islander origin

Non-indigenous:

- i.e. Neither Aboriginal nor Torres Strait Islander origin
- Not stated/inadequately described

The aim of the project was to monitor and improve the completeness of Indigenous identification in hospital records over time. The project outcomes were to be:

- a description of the extent to which the Indigenous origin of Indigenous patients is under-identified in separations data from a summary of work done previously
- an outline of methods jurisdictions use to improve Indigenous identification data – including examples of best practice and of methods that have not worked
- development of guidelines to support consistent and appropriate analysis of Indigenous status information in hospital separations data. The guidelines were planned to deal with adjustment for under-identification of Indigenous patients, analysis of data with unreported Indigenous status, use of data for the Indigenous subcategories, and use of state and territory data.

Following some initial work done by the Aboriginal and Torres Strait Islander Health and Welfare Information Unit – a collaboration between the Australian Bureau of Statistics and the AIHW – the AIHW completed the project with advice from NAGATSIHID, the AIHW's Australian Hospital Statistics Advisory Committee, and the Statistical Information Management Committee of the Australian Health Ministers' Advisory Council's National Health Information Group.

The project outcomes were consolidated into this report, which was endorsed by the Statistical Information Management Committee.

1.2 This report

Chapter 2 reports on assessments of the quality of Indigenous identification in hospital separations data. It brings together the findings of formal studies of the extent to which Indigenous status is misclassified or not reported in the data and current assessments of the overall quality of states' and territories' Indigenous status information, as made by state and territory health authorities and by the AIHW. The reasons for poor Indigenous identification suggested in this literature are also summarised.

Chapter 3 provides an account of state and territory policies and processes relating to ascertainment of the Indigenous status of hospital admitted patients, including details of methods used to improve ascertainment and examples of good practice. This material was obtained from information reported in questionnaires the AIHW sent to state and territory health authorities in late 2004.

Chapter 4 provides an analysis of Indigenous identification in national hospital separations data. This analysis was undertaken to inform assessments of the quality of Indigenous status data and needs for improvement in the data.

Guidelines for consistent and appropriate analysis of Indigenous status information in separations data within the data quality constraints that exist at this time are provided in Chapter 5; these were developed on the basis of the material presented in Chapters 2, 3 and 4.

Recommendations about policies and processes needed to improve the quality of Indigenous identification in separations data are provided in Chapter 6. These are also based on the material presented in Chapters 2, 3 and 4.

Appendix A provides additional data tables that accompany the analysis presented in Chapter 4.

Appendix B shows the questionnaire completed by state and territory health authorities to inform this report.

Additional information on hospital separations data

The AIHW publication *Australian Hospital Statistics 2003–04* (AIHW 2005a) provides comprehensive information about important data structures, data elements and analytical techniques pertaining to hospital separations data.

2 Assessments of the quality of Indigenous identification in hospital separations data

This chapter brings together the findings of studies of the extent to which Indigenous status has been misclassified or not reported in hospital separations data and current assessments of the overall quality of states' and territories' Indigenous status information, as made by the state and territory health authorities and by the AIHW. These results are presented in Sections 2.1 and 2.2 respectively. Section 2.3 summarises the reasons for poor Indigenous identification, as suggested in the literature discussed.

2.1 Formal studies of the quality of Indigenous identification

This section summarises the findings of studies of the extent to which Indigenous status is misclassified or not reported in separations data and provides brief commentary on the strengths and weaknesses of the methods used in those studies.

The studies provide valuable insights, but their restricted geographical scope and methodological limitations have precluded any conclusive assessment to date of the quality of Indigenous identification in hospital separations data collections Australia-wide.

The studies fall into three broad groups:

- assessments that have used face-to-face patient interviews after admission to determine the accuracy of Indigenous status information in the hospital records
- assessments using external data – either population data or survey data
- assessments involving comparison of separations data for multiple admissions.

Assessments based on patient interviews

The accuracy of information about Indigenous status in hospital separations data has been assessed in a number of studies in which responses obtained from interviews with patients in the hospital ward after admission (assumed to be correct) were compared with the information in the hospital record. Table 1 summarises the main studies that have used this method.

Table 1: Studies using face-to-face interviews to assess the accuracy of information on Indigenous status in hospital records

Author and year of publication	Year of study	Hospitals included in the study	Number of patients interviewed	Number of patients identified as Indigenous at interview	Proportion of Indigenous people ^(a) correctly identified in hospital records
Shannon, Brough & Haswell-Elkins 1997	1997	2 Queensland hospitals	451	25	44% overall
Lynch & Lewis 1997	1997	2 Queensland hospitals	1,836	76	66% and 70%
Condon et al. 1998	1997	All 5 public hospitals in the Northern Territory	400	216	93% overall
ATSIHWIU 1999	1998	11 hospitals in 5 jurisdictions	8,276	648	85% overall (range 55–100%)
Young 2001	2000	26 hospitals in Western Australia	10,106	754	86% overall (range 78–94%)
Mahoney 2001	2000	2 Queensland hospitals	1,090	35	74% overall (range 62%, 82%)

(a) Based on identification at interview.

The 1997 Northern Territory study

In 1997 the Northern Territory Department of Health and Community Services used patient interviews in an audit of the recording of demographic items in hospital separation records at all five public hospitals in the Northern Territory (Condon et al. 1998). The items selected for audit were Indigenous status, sex, date of birth, country of birth, marital status and place of residence.

The audit involved a sample of 1% of annual admissions for each of the five hospitals. This produced an unweighted sample of the entire Northern Territory data set, plus samples of sufficient size to assess data quality at each of the two larger hospitals (Royal Darwin and Alice Springs).

The demographic items recorded at 400 interviews were compared with the corresponding records in the Northern Territory hospital separations data. Overall, the audit found a high level of agreement between the interviews and the separations data for patients' sex and Indigenous status, a reasonable level of agreement for country of birth, and an unsatisfactory level of agreement for place of residence, marital status and date of birth.

The audit found that, among 216 patients identified at interview as Indigenous, 200 (92.6%) had been recorded as such at admission and 16 (7.4%) had been recorded as non-Indigenous. Among 182 patients identified at interview as non-Indigenous, 176 (96.7%) had been recorded at admission as non-Indigenous, five (2.7%) had been recorded as Indigenous, and one (0.5%) had no recorded Indigenous status (Table 2).

Table 2: Number of patients interviewed, by Indigenous status obtained at admission and Indigenous status obtained via interview, 1997 Northern Territory study

Indigenous status identified at interview	Indigenous status recorded at admission			Total
	Indigenous	Non-Indigenous	Not stated	
Indigenous	200 (92.6%)	16 (7.4%)	0 (0.0%)	216
Non-Indigenous	5 (2.7%)	176 (96.7%)	1 (0.5%)	182
Not stated	0	2	0	2
Total	205	194	1	400

Source: Based on Condon et al. (1998).

Overall, using the assumption that Indigenous status was correctly identified at interview, the study found a 5.1% net undercount of Indigenous patients across the survey data set. This suggested the need to apply a correction factor of 1.05 (i.e. 216/205) to the recorded count of separations for Indigenous people in the Northern Territory. None of the undercount was the result of non-reporting of Indigenous status: it stemmed solely from the misclassification of Indigenous people as non-Indigenous.

The 1998 ATSIHWIU pilot study

A 1998 pilot study conducted by the Aboriginal and Torres Strait Islander Health and Welfare Information Unit – a collaboration between the Australian Bureau of Statistics and the AIHW – developed the patient interview methodology for use nationally (ATSIHWIU 1999).

In order to assess procedures across a range of settings, the hospitals included in the study covered a number of jurisdictions, both large and small hospitals, and hospitals with either a large or a small Indigenous representation in the population living in the hospital’s catchment area. Twelve hospitals were included – five in South Australia, three in the Northern Territory, two in the Australian Capital Territory, one in Victoria and one in Queensland. The study was successfully completed at 11 of these hospitals.

Although the project design was directed mainly at development of the methodology, an intended by-product was the production of estimates of data quality for each of the hospitals in the study (but not for jurisdictions or for Australia as a whole). The necessary sample size at each hospital was estimated from the formula $sample\ size = 1/(y * y(1-s) * p)$, which depended on three factors:

- the proportion of the hospital’s patients who were of Indigenous origin – p
- the proportion of the hospital’s Indigenous patients who were correctly identified as Indigenous in current hospital records – s
- the required standard error to apply to the sample estimate of the proportion of Indigenous patients correctly identified as such in hospital records – y.

The proportion of the hospital’s patients who were correctly identified as Indigenous and the proportion who were actually Indigenous were estimated, for example, from information from previous studies and from information on the population in the hospital catchment area. The standard error was set to achieve a two out of three

chance that results would be accurate to within 25%. To achieve substantially better precision would have required impracticably large sample sizes.

Sample sizes for the participating hospitals ranged from 100 to 1,500 patients. The main determinant of the variation in sample sizes between hospitals was the proportion of the hospital's patients who were of Indigenous origin: the smaller this proportion, the larger the sample size needed to achieve the required standard error.

With the exception of people in intensive care units and other people who were not well enough or competent enough to be included, the scope of the study covered all patients who were in hospital on the day the interviewers visited, including children for whom parental consent was obtained. The aim was to maximise the completeness and representativeness of the sample, including coverage of most wards and the correct representation of day-only and longer stay patients.

Patients were asked the standard question for determining Indigenous status that is set out in the *National Health Data Dictionary*. At four of the hospitals some of the interviews were conducted by Indigenous interviewers, and comparison of the results of these interviews with the results of interviews conducted by non-Indigenous interviewers indicated that the Indigenous status of the interviewer did not greatly influence the way Indigenous patients identified at interview.

The project also explored the quality of other demographic data collected at admission – sex, date of birth, country of birth and place of usual residence. This provided a base for assessment of the relative accuracy of the Indigenous status data; it had the additional benefit of avoiding an exclusive focus on the question of Indigenous status.

The project found that the extent to which Indigenous patients had been correctly recorded at admission varied greatly between the 11 hospitals that completed the study (55% to 100% correct) but was consistently lower than the extent to which non-Indigenous patients had been correctly recorded at admission (94% to 100% correct).

Data were obtained for 8,269 patients. Among the 648 patients identified at interview as Indigenous, 549 (84.7%) had been recorded as such at admission, 86 (13.3%) had been recorded as non-Indigenous, and 13 (2.0%) had unreported Indigenous status. Among the 7,617 patients identified at interview as non-Indigenous, 7,507 (98.6%) had been recorded at admission as non-Indigenous, 15 (0.2%) had been recorded as Indigenous, and 95 (1.2%) had unreported Indigenous status (Table 3).

Table 3: Number of patients interviewed, by Indigenous status obtained at admission and Indigenous status obtained via interview, 1998 ATSIHWIU study

Indigenous status identified at interview	Indigenous status recorded at admission			Total
	Indigenous	Non-Indigenous	Not stated	
Indigenous	549 (84.7%)	86 (13.3%)	13 (2.0%)	648
Non-Indigenous	15 (0.2%)	7,507 (98.6%)	95 (1.2%)	7,617
Not stated	0	2	2	4
Total	564	7,595	110	8,269

Source: Based on ATSIHWIU (1999).

Overall, using the assumption that Indigenous status was correctly identified at interview, the study found a 13.0% net undercount of Indigenous patients across the survey data set (i.e. 564 patients recorded as Indigenous compared with 648 patients identified at interview as Indigenous). The misclassification of Indigenous people as non-Indigenous made a substantially greater contribution to this undercount than did the non-reporting of Indigenous status.

Other demographic data elements were also inaccurately and incompletely recorded, but recording of Indigenous status showed the greatest variation from hospital to hospital and had the lowest level of accuracy overall.

The quality of Indigenous identification varied between hospitals, largely in accord with the degree of Indigenous representation in the population living in the hospital's catchment area. It was greatest for the group of hospitals that had catchments with a relatively high proportion of people of Indigenous origin: 94.4% of Indigenous patients were recorded as such at admission for this group of hospitals. It was least for the group of hospitals that had catchments with a relatively low proportion of people of Indigenous origin (66.4% correctly recorded), although accuracy was excellent for some individual hospitals in the group. Consistent with that, the quality of Indigenous identification tended to be greater at hospitals outside capital cities (90.8% of Indigenous patients were recorded as such at admission) than at capital city hospitals (78.5% correctly recorded).

The accuracy with which Indigenous status had been recorded varied little with other characteristics of the patient (sex and age) or the hospitalisation (length of stay, medical or surgical care, and relative cost weight) (ATSIHWIU 1999, Hargreaves 2001).

Overall, this pilot study demonstrated that it was possible to assess Indigenous data quality using a simple set of procedures. Valuable results were obtained without excessive use of resources.

The 2000 Western Australian study

The accuracy of hospital separations data was assessed in a study involving 10,106 patient interviews conducted at 26 public hospitals in Western Australia during 2000 (Young 2001). The study involved a two-tier sample that was selected as a random sample of patients taken at each of a random sample of hospitals.

With the exception of patients incapable of responding or not well enough to do so, patients in intensive care units, and other cases deemed inappropriate by hospital staff, all admitted patients in those hospitals were included in the scope of the study. Children were included if parental consent was obtained.

Interviewers were encouraged to include patients who did not speak English, but the sample probably under-represented such patients. Interviewers were unable to make use of interpreter services at hospitals because they did not have access to relevant patient information such as age, sex and ethnicity, and they were unable to use telephone interpreter services because of bans on mobile phone use.

As the ATSIHWIU study found, the Western Australian study found that recording of Indigenous status tended to be most complete and accurate at hospitals with a

relatively higher proportion of Indigenous people living in the hospital's catchment area. Using the assumption that Indigenous status was correctly identified at the interview, the study found that the extent to which Indigenous patients had been correctly recorded at admission ranged from 78.3% in the Metropolitan health region to 93.5% in the Pilbara/Kimberly region. The extent to which non-Indigenous patients had been correctly recorded at admission was consistently higher than for Indigenous patients, ranging from 98.9% to 99.7% across health regions.

Overall, the study found that, among the 754 patients identified at interview as Indigenous, 647 (85.8%) had been recorded as such at admission and 107 (14.2%) had been recorded as non-Indigenous. Among the 9,314 patients identified at interview as non-Indigenous, 9,271 (99.5%) had been recorded at admission as non-Indigenous and 43 (0.5%) had been recorded as Indigenous (Table 4).

There were no instances of unreported Indigenous status in the hospital records, a result of the fact that this category is not accommodated in systems for recording the Indigenous status of patients at public hospitals in Western Australia (as discussed in Section 3.1).

Table 4: Number of patients interviewed, by Indigenous status obtained at admission and Indigenous status obtained via interview, 2000 Western Australian study

Indigenous status identified at interview	Indigenous status recorded at admission			Total
	Indigenous	Non-Indigenous	Not stated	
Indigenous	647 (85.8%)	107 (14.2%)	0	754
Non-Indigenous	43 (0.5%)	9,271 (99.5%)	0	9,314
Not stated	1	37	0	38
Total	691	9,415	0	10,106

Source: Based on Young (2001).

Using the assumption that Indigenous status was correctly identified at interview, the study found an 8.5% net undercount of Indigenous patients across the survey data set. The undercount ranged between 12.6% in the Metropolitan health region and 4.7% in the Pilbara/Kimberly region. These results suggested the need for correction factors to be applied to the recorded counts of separations for Indigenous people, ranging between 1.14 for the Metropolitan region and 1.05 for the Pilbara/Kimberly region (or 1.09 state-wide).

The study found that the quality of Indigenous identification did not vary according to a patient's sex or age or a hospital's urban or rural location.

The 2000 Queensland study

Various smaller data quality audits based on patient interviews have been carried out in Queensland. The latest of these was conducted at two metropolitan hospitals in early 2000 (Mahoney 2001). Information collected at interview on Indigenous status, Department of Veterans' Affairs eligibility, transfer status and hospital insurance cover was compared with Queensland hospital separations data.

Overall, the audit found that, among 35 patients identified at interview as Indigenous, 26 (74.3%) had been recorded as such at admission, eight (22.9%) had

been recorded as non-Indigenous, and one (2.9%) had unreported Indigenous status (Table 5). At the individual hospitals 61.5% and 81.8% of those identified at interview as Indigenous had been recorded as such at admission.

Among 1,046 patients identified at interview as non-Indigenous, 1,021 (97.6%) had been recorded at admission as non-Indigenous, four (0.4%) had been recorded as Indigenous, and 21 (2.0%) had unreported Indigenous status.

Table 5: Number of patients interviewed, by Indigenous status obtained at admission and Indigenous status obtained via interview, 2000 Queensland study

Indigenous status identified at interview	Indigenous status recorded at admission			Total
	Indigenous	Non-Indigenous	Not stated	
Indigenous	26 (74.3%)	8 (22.9%)	1 (2.9%)	35
Non-Indigenous	4 (0.4%)	1,021 (97.6%)	21 (2.0%)	1,046
Not stated	0	9	0	9
Total	30	1,038	22	1,090

Source: Based on Mahoney (2001).

Of five patients identified at interview as of Torres Strait Islander but not Aboriginal origin, three had had been recorded as such at admission, one had been recorded as of Aboriginal but not Torres Strait Islander origin, and one had been recorded as non-Indigenous.

Using the assumption that Indigenous status was correctly identified at interview, the study found a 14.3% net undercount of Indigenous patients across the survey data set. The misclassification of Indigenous people as non-Indigenous made a greater contribution to this undercount than did the non-reporting of Indigenous status.

Comments on the methodology

The methodology is widely considered to be the ‘gold standard’ for assessment of the quality of Indigenous identification in hospital records. This reputation is based largely on the belief that more accurate information is collected at interview as a result of well-trained interviewers asking each patient’s Indigenous status strictly in accord with the standard question developed for this purpose by the Australian Bureau of Statistics, as opposed to other practices that might be used as part of patient admission procedures.

The relatively high resource costs of the method militate against it being used frequently for audits. Foremost among these costs is the payment of interviewers, a consequence of the number of interviews needed to give a rigorous sample and the time needed to obtain and conduct the interviews.

In smaller hospitals the time elapsed in obtaining sufficient interviews can also be considerable.

Assessment based on external data

Assessment based on population data

In developing an estimate of the under-enumeration of separations for Indigenous patients to inform the AIHW's analysis of expenditure on health services for Indigenous people for 2001–02, the Victorian Department of Human Services used a method involving adjustment to the counts of separations for Indigenous people for specific hospitals, so that the ratio of the hospital's separations for Indigenous people to total separations was no less than the ratio of Indigenous people to total people in the state or, where appropriate, the local area (Victorian Department of Human Services, pers. comm., 19 April 2004).

Counts of separations for Indigenous people were extracted from the Victorian admitted episodes data set for 2001–02 for each public hospital in Victoria. Dialysis patients were not included. Population-based adjustment was then applied to the counts for six groups of hospitals. In general, for hospitals with a state-wide role or undefined catchment, the counts of separations for Indigenous people were scaled up, where necessary, so that Indigenous representation in the total separations was no less than the proportion of the state-wide population that was of Indigenous origin – that is, 1.12% for children aged less than 15 years and 0.44% for people aged 15 years or more. Similarly, for hospitals with a defined local catchment, the Indigenous representation in the local population was used. The six groups of hospitals were as follows:

- *Group 1* – hospitals with Koori Hospital Liaison Officers (KHLOs), where this officer provided an independent (though not necessarily more precise) count of separations for Indigenous people. For these hospitals the count was taken to be the higher of the reported number and the number identified by the KHLO unless both counts were below the number expected on a population basis, in which case population-based adjustment was done, using the state-wide population or the local population (as appropriate). Conclusions drawn from in-depth consultations with the KHLO network were incorporated in these adjustments. For some hospitals, an assessment was also made of the degree of overlap between the hospital and KHLO counts, and this was used to estimate the number of patients omitted by both systems.
- *Group 2* – other rural hospitals with a well-defined catchment, where counts of separations for Indigenous people could be matched against the local Indigenous population. The counts of separations for Indigenous people were scaled up, where necessary, by means of population-based adjustment.
- *Group 3* – other rural hospitals without a well-defined catchment, where the number of separations and the size of the local Indigenous population made it unlikely that large numbers of Indigenous patients were not identified. No population-based adjustment was done.
- *Group 4* – other metropolitan hospitals with a state-wide function, for which Indigenous representation in total separations could be assumed to match Indigenous representation in the state-wide population. The counts of

separations for Indigenous people were scaled up, where necessary, by means of population-based adjustment.

- *Group 5* – other metropolitan hospitals lacking a state-wide function but serving large local Indigenous populations. The counts of separations for Indigenous people were scaled up, where necessary, by means of population-based adjustment.
- *Group 6* – other metropolitan hospitals with a poorly defined local catchment, where population cannot be used to scale up the reported separations. No population-based adjustment was done.

By this method, separations for Indigenous people in Victoria were estimated to have been 10,560 in 2001–02, some 28% higher than the 8,271 separations recorded in the Victorian hospital separations data set. From this, the Victorian separations data were assessed to have undercounted by 22% separations for Indigenous people in 2001–02.

Assessment based on survey data

During 2002 the Australian Bureau of Statistics conducted a project designed to estimate the extent of under-identification of Indigenous people in separations data for New South Wales and to assess the feasibility of developing a statistical model for small-area estimates of Indigenous hospitalisation (ABS, unpublished).

The work was based on episodes of hospitalisation reported by respondents to the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS). NATSIS was chosen for the study because it provided the largest sample of Indigenous people. Same-day hospitalisations were excluded from the analysis.

The main outcome of the project was the strong indication that separations for Indigenous people were substantially undercounted in the New South Wales hospital separations data for 1994–95. A total of 41,600 hospitalisations of Indigenous people was estimated from NATSIS, whereas the New South Wales hospital separations data set recorded 17,414 separations of Indigenous people.

In order to make such a comparison, it was necessary to establish the overall compatibility of NATSIS with the New South Wales separations data. This was done by indirect means because NATSIS did not extend to the non-Indigenous population. The project first established that the estimate derived from the 1995 National Health Survey (NHS) of annual hospitalisations in New South Wales for the total population was of a magnitude comparable with the total number of separations recorded in the New South Wales hospital data set. The project then established that the estimate derived from NATSIS of annual hospitalisations in New South Wales for Indigenous people was of a magnitude comparable with that obtained from the NHS (Table 6).

The confidence interval reported in Table 6 indicates that a fairly large range of uncertainty applies to the estimated number of hospitalisations of Indigenous patients as obtained from NATSIS (and therefore to the estimated under-identification of separations for Indigenous patients in the New South Wales hospital separations data). This reflects the small number of relevant observations obtained in NATSIS – 366 hospital separations reported in 14,824 survey records.

Table 6: Assessment of Indigenous status data quality in New South Wales conducted in 2002 by the Australian Bureau of Statistics and based on survey data

Data	Number and confidence interval
New South Wales hospital separations in 1994–95 ^(a)	950,724
Estimated number of hospitalisations, 1995 NHS ^{(b)(c)}	1,060,800
	<i>(95% confidence interval: 823,200 to 1,298,400)</i>
Estimated number of Indigenous hospitalisations, 1995 NHS ^{(c)(d)}	52,900 ^(e)
Estimated number of Indigenous hospitalisations, 1994 NATSIS ^{(c)(f)}	41,600
	<i>(95% confidence interval: 31,500 to 51,700)</i>
New South Wales hospital separations for Indigenous people, 1994–95 ^(a)	17,414

(a) Same-day separations excluded. *Source:* Unpublished data from AIHW National Hospital Morbidity Database.

(b) *Source:* *National Health Survey: summary of results, states and territories* (ABS cat. no. 4368.0).

(c) Annual hospitalisations was estimated by multiplying the estimated number of hospitalisations for the two-week survey period by 26.

(d) *Source:* *National Health Survey: summary of results, states and territories* (ABS cat. No. 4368.0) and unpublished data from the 1995 National Health Survey.

(e) The relative standard error of the estimate is more than 50%.

(f) *Source:* *National Aboriginal and Torres Strait Islander Survey 1994: health of Indigenous Australians* (ABS cat. no. 4395.0) and *National Aboriginal and Torres Strait Islander Survey 1994: detailed findings* (ABS cat. no. 4190.0).

An unquantified degree of uncertainty also exists as a result of differing reference periods and the definitional/classification differences for the three data sets that were compared. Both NHS and NATSIS used just a two-week reference period and were conducted over only a number of months, which raises a concern, for example, about the representation by these surveys of seasonal variation in hospital separations.

The project also attempted to develop a predictive model for regional estimates of Indigenous hospitalisation based on the NATSIS data, but satisfactory estimates were not obtained. A major reason for this was the small number of hospitalisations for Indigenous people reported in NATSIS. The Australian Bureau of Statistics recommended further development of the model using data from the 2001 NHS to make it at least capable of identifying priority areas where education or promotion effort could be directed.

Comments on the methodology

Assessment based on population data

In the Victorian study, population-based adjustments to separation numbers for hospitals for which the Indigenous representation in total separations could be assumed to match the Indigenous representation in the population were amalgamated with two other sets of information – independent counts of separations provided by KHLOs and in-depth knowledge of individual hospitals obtained from the KHLO network.

In circumstances of incomplete coverage of hospitals by KHLOs, this method relies to an extent on an assumed standard relationship between the proportion of separations that involve Indigenous patients and the proportion of Indigenous people in a hospital's catchment area; accordingly, it cannot be expected to precisely quantify the under-identification of Indigenous patients in hospital separations data. The relationship between separations and population is, for example, likely to differ

substantially between regions, in keeping with the differing circumstances of Indigenous people in different areas.

Nevertheless, as a yardstick for broadly gauging the under-identification of Indigenous patients – particularly if under-identification is so substantial that the ratio of the separation rate for Indigenous people to that for non-Indigenous people is less than 1 – the method is potentially useful for monitoring change in the extent of under-identification. It may, for example, be useful in identifying an improvement in under-identification associated with the introduction of improved data collection processes.

The method would be expected to provide greater precision in circumstances of complete coverage of hospitals by the KHLO network.

Assessment based on survey data

The Australian Bureau of Statistics methodology employed an estimate of hospitalisations of Indigenous people in New South Wales in 1994–95 derived from the 1994 National Aboriginal and Torres Strait Islander Survey. A fairly large range of uncertainty applied to this estimate as a result of the small number of relevant observations obtained in the survey. The survey is also now rather dated. The future use of the Australian Bureau of Statistics methodology would require the availability of more contemporary survey results with sufficient observations to give a reasonably precise estimate of hospital separations of Indigenous people.

It is also important that the survey duration and survey recall period are of sufficient duration to provide adequate survey representation of seasonal variation in separations and that there is a reasonably high degree of comparability between the survey and hospital separations data sets in relation to reference periods, definitions, classifications and interpretation.

If these requirements can be met, the methodology could prove useful.

Assessment involving comparison of data for multiple admissions

Assessment done in Victoria

In Victoria a study of hospital separations data was conducted to determine the accuracy of Indigenous identification among patients admitted at least twice in the state between 1994 and 1998 where an Indigenous status of Aboriginal and/or Torres Strait Islander was recorded on at least one occasion (AIHW 2001). This work relied on the statistical linkage of records for multiple patient episodes.

Patients were grouped into the following categories after an assessment (stated to be somewhat subjective) of probable Indigenous status based on information available in the hospital files and the consistency of identification over multiple episodes:

- definitely Indigenous – where sufficient evidence allowed that conclusion
- probably Indigenous – where the balance of probabilities supported that conclusion
- uncertain – because of insufficient or conflicting evidence

- probably non-Indigenous – on the balance of evidence
- non-Indigenous.

The extent to which patients had been recorded as Indigenous or non-Indigenous at each admission was examined for each group. For patients classified as definitely or probably Indigenous, 34% of admissions (199 of 580) had been recorded as non-Indigenous. For patients classified as definitely or probably non-Indigenous, 16% of admissions (334 of 2,083) had been recorded as Indigenous. The net result was the probable overstatement of admissions of Indigenous people by 135 – about 19% of all admissions recorded as Indigenous. A large proportion of the probable incorrect recording of patients as Indigenous was, however, the result of coding errors involving some dialysis patients at a single hospital.

Assessment done in New South Wales

The New South Wales Department of Health has conducted assessments based on the linking of individual patients within annual sets of data from its hospital separations data collection. Linked separations were identified for all Indigenous patients, and an estimate of under-identification of separations for Indigenous patients was then derived from the number of these linked separations that had Indigenous status recorded as other than Indigenous. An assumption implicit in this methodology is that every instance of ascertainment as Indigenous is correct. Results for 1997–98 suggested that Indigenous status was incorrectly specified for 12% of admissions of Indigenous people (AIHW 2001). As with the 1998 ATSIHWIU pilot study, this work found that under-identification was much higher at hospitals in metropolitan areas (where the proportion of the population that is Indigenous is relatively low) than in the remote areas (where it is relatively high).

Assessment done in the Northern Territory

In the Northern Territory comparison of multiple patient episodes is facilitated by the use of a common patient identifier throughout the public hospital system. The department conducted a study in 2003 that used this identifier to examine the history of reported Indigenous status for admitted patients and patients presenting at emergency departments. This showed no instances of Indigenous status being reported variably for any patient recorded in the hospital information system (admission or other attendance). Additional work would be needed to determine the extent to which this consistency was the result of people being re-questioned at each presentation and consistently identifying their Indigenous status.

Comments on the methodology

In the absence of a unique and universal patient identifier, comparison of data for multiple patient episodes is reliant on the precision of the record linkage. This can be problematic when linkage is attempted over a prolonged period or for large numbers of records, where opportunities for false matches become magnified. The problem is not so great for the New South Wales methodology, which deals with single years of data. Every data linkage technique will also miss a proportion of true matches. The linkage technique used in the New South Wales study was found, for example, to

have given a 35% overstatement in the total number of individuals using the public hospital system as a result of failures to correctly match admissions to individuals.

A somewhat smaller concern relates to the fact that the methodology generally incorporates the assumption that all differences in individual Indigenous status over time stem from data recording errors, rather than from a deliberate change in a person's self-identification as Indigenous.

A specific concern about the New South Wales methodology is the assumption of no incorrect ascertainment as Indigenous. That methodology assumes that every ascertainment of a patient as Indigenous is correct and that all conflicting records are incorrect. As described earlier, however, the Victorian data linkage exercise found that some patients reported as Indigenous were probably incorrectly ascertained as such. The common assumption that all ascertainment errors must lead to understatement of the number of separations for Indigenous patients is questionable in the case of states with low proportions of Indigenous people: even very low rates of random recording error for non-Indigenous people in these states could outweigh any systematic under-identification of Indigenous patients.

2.2 Current health authority and AIHW assessments of the quality of Indigenous identification

This section reports current assessments of the quality of Indigenous identification in separations data, specifically:

- assessments provided by state and territory health authorities to the AIHW, both for this report and as part of the annual national reporting of separations data
- assessments – in the form of Indigenous under-identification factors – formulated by the AIHW in consultation with the health authorities for use in the AIHW's reports on hospital expenditure for Indigenous admitted patients for 1995–96 (Deeble et al. 1998), 1998–99 (AIHW 2001) and 2001–02 (AIHW 2005b).

These assessments were based on a range of inputs, among them review of the separation numbers, detailed internal data consistency checking, and formal data quality studies. While not providing precise estimates of the accuracy of Indigenous status data, and rarely extending to specific subgroups such as metropolitan and non-metropolitan hospitals, they provide an overall evaluation of each jurisdiction's data quality as assessed by the jurisdiction in question and the AIHW.

Assessments provided in survey responses and as part of national reporting of hospital separations

In late 2004 the AIHW sent a questionnaire to each state and territory health authority, seeking information on policies and processes for ascertainment of the Indigenous status of hospital admitted patients in their jurisdiction, together with an assessment of the quality of the Indigenous status information in current data for their jurisdiction. A copy of the questionnaire is provided here as Appendix B.

Assessments of the quality of information on Indigenous status in hospital separations data collections are also provided annually to the AIHW by the health authorities as part of the national reporting of these data. The latest accounts were published in *Australian Hospital Statistics 2003–04* (AIHW 2005a), with data quality being noted there as in need of improvement at the national level and as acceptable only for Western Australia, South Australia and the Northern Territory.

The information published in *Australian Hospital Statistics 2003–04* and that provided in the questionnaires is summarised below.

New South Wales

In its account provided for *Australian Hospital Statistics 2003–04* New South Wales Health reported that its Indigenous status data were in need of improvement; in its survey response it rated the data quality as poor overall but with somewhat better reporting at hospitals in areas of high Indigenous population.

Victoria

In its account provided for *Australian Hospital Statistics 2003–04* the Victorian Department of Human Services reported:

... despite data quality improvement in recent years, Indigenous status data for 2003–04 should be treated with some caution. Studies in Victoria have shown that data are more accurate if the hospital employs a Koori Hospital Liaison Officer (KHLO), particularly in regional hospitals, where the KHLOs are located in the main Koori communities. Indigenous status data are considered less reliable in tertiary hospitals drawing Indigenous patients from outside their local communities, and in private hospitals.

The department reported in its survey response that, based largely on the derivation of population-based adjustments to hospitals' counts of separations for Indigenous people (reported in Section 2.1), it estimated separations for Indigenous people for 2001–02 to be 28% higher than the number recorded in the Victorian admitted episodes data set (equivalent to 22% under-enumeration). The extent of under-enumeration was reported to vary between hospitals, and a degree of over-identification was suspected for a small number of hospitals.

Queensland

In its account provided for *Australian Hospital Statistics 2003–04* Queensland Health stated that the available evidence suggested that separations for Indigenous people were significantly understated in the Queensland hospital separations data as a result of the non-reporting and misreporting of Indigenous status. The department reported in its survey response that, based largely on the results of patient interviews conducted at public hospitals in south-east Queensland between 1997 and 2000 (described in Section 2.1), together with the assumption that identification is better in rural and remote areas – where representation of Indigenous patients is higher – and the results of cross-checks between various data collections, it estimated a 20% under-identification of Indigenous patients across the state's public hospitals.

Western Australia

In its account provided for *Australian Hospital Statistics 2003–04* the Western Australian Department of Health rated its Indigenous status data as being of acceptable quality, although data from metropolitan hospitals were considered less accurate than data from remote areas. The department reported in its survey response that, based largely on patient interviews (Young 2001, described in Section 2.1), it assessed the quality of Indigenous status information in separations data as acceptable for both public and private hospitals.

South Australia

In its account provided for *Australian Hospital Statistics 2003–04* the South Australian Department of Health rated its 2003–04 Indigenous status data as suitable for inclusion in national statistical reports. The department reported in its survey response that, based on the results of patient interviews (ATSIHWIU 1999, described in Section 2.1), and subsequent informal evaluations, it assessed the quality of Indigenous identification in its hospital separations data as generally good for public hospitals but unacceptable for private hospitals, with identification being generally better at hospitals with higher representation of Indigenous patients.

Tasmania

In its account provided for *Australian Hospital Statistics 2003–04* the Tasmanian Department of Health and Human Services said the quality of its Indigenous status data had continued to improve in 2003–04 (in that it was being reported for most patients) but that some private hospitals did not collect Indigenous status data at all. The department reported in its survey response that it assessed overall separations counts for Indigenous people in Tasmania as below the number expected from population counts, with private sector counts poor.

The Australian Capital Territory

In its account provided for *Australian Hospital Statistics 2003–04* the Australian Capital Territory Department of Health stated that its monitoring of public hospital data had revealed a significant reduction in the number of separations for which Indigenous status was not reported. The department reported in its survey response that, based on the results of patient interviews (ATSIHWIU 1999) and subsequent data analyses that have indicated some improvement in the quality of Indigenous identification, it estimated a 40% under-identification of separations for Indigenous people in the Australian Capital Territory.

The Northern Territory

In its account provided for *Australian Hospital Statistics 2003–04* the Northern Territory Department of Health and Community Services reported that it considered the overall quality of Indigenous identification in its 2003–04 separation data to be acceptable. The department's survey response rated Indigenous identification as of high quality for public hospitals but considerably poorer for Darwin Private Hospital.

Under-identification factors used for reporting expenditure on health services for Indigenous people

The AIHW used jurisdiction-level factors to adjust for the under-identification of separations for Indigenous people for its reports on hospital expenditure for Indigenous people for 1995–96 (Deeble et al. 1998), for 1998–99 (AIHW 2001) and for 2001 (AIHW 2005b), based on available information on the quality of Indigenous identification in separations data.

The factors used for the 1995–96 report were derived from a mixture of jurisdictional estimates, anecdotal evidence, and consideration of whether the ratios of adjusted separations for Indigenous people to separations for non-Indigenous people were consistent with the demography of the jurisdictions and with the expectation that public hospital separations for Indigenous people would be greatest for those jurisdictions where the proportion of Indigenous people living in remote areas was highest (Deeble et al. 1998). All together, the factors implied a national under-identification factor of 25% for 1995–96.

The factors used for the 1998–99 report (AIHW 2001) took into account analysis of the 1998–99 separations data, the 1998 ATSIHWIU study results and a number of the other data quality assessments, as described in Section 2.1. All together, the factors implied a national under-identification factor of 16% for 1998–99. For Tasmania, a distribution formula derived from the results of a 1997 survey of outpatient clinic use was used instead of an under-identification factor because of the poor quality of Indigenous identification in the state's separations data.

The factors used for analysis of the 2001–02 data were developed in close consultation with state and territory health authorities, using the available data quality assessments, the adjustments that had been applied in the two previous reports, and comparison across jurisdictions of separation rates for Indigenous people for 2001–02 and earlier years.

Included in these considerations were the data quality assessments that had been conducted since the previous expenditure report – notably under-identification estimates obtained for Victoria and Western Australia based respectively on population-based adjustment to hospitals' counts of separations for Indigenous people for 2001–02 and interviews with patients at public hospitals in Western Australia, as described in Section 2.1.

For some jurisdictions it was concluded that identification had not improved since the 1998–99 report. In other cases it was considered that the adjustments applied in that report might have understated the rate of Indigenous under-identification at the time. As a result, the under-identification factors applied in the 1998–99 report for New South Wales, Victoria, Queensland, Western Australia and the Northern Territory were retained for the 2001–02 report. All together, the adjustment factors implied a national under-identification factor of 16% in 2001–02.

No factor was derived for Tasmania. The Tasmanian Department of Health and Human Services advised that Indigenous identification was very poor as a result of poor systems and poor levels of self-identification because of stigma and local factors

associated with Indigenous identity. The department asked that separation numbers be used in an unadjusted form, stating that this would provide a valid baseline for measuring change in the disparity in health outcomes between Indigenous and non-Indigenous people.

Table 7 shows the factors used for the 1998–99 and 2001–02 data.

Table 7: Under-identification factors the AIHW used for estimating hospital expenditure on Indigenous admitted patients, 1998–99 and 2001–02

State/ territory	1998–99		2001–02	
	Under- identification factor	Primary considerations	Under- identification factor	Primary considerations
NSW	30%	Data linkage study and modelling	30%	As before
Vic	25% ^(a)	Data linkage study	25%	Data analysis ^(b) and data linkage study
Qld	20%	Patient interviews plus small-area analysis	20%	As before
WA	6%	A data linking exercise	6%	The data linking exercise and patient interviews (Young 2001)
SA	10%	The factor used in the 1995–96 report	0%	South Australian submission
Tas	No under-identification factor applied		No under-identification factor applied	
ACT	44%	Patient interviews (ATSIHWIU 1999)	30%	As before
NT	0%	Patient interviews (ATSIHWIU 1999)	0%	As before

(a) The Victorian Department of Human Services considers that the true undercount might have been higher.

(b) Victorian Department of Human Services (pers. comm., 19 April 2004).

Sources: Based on *Expenditures on Health Services for Aboriginal and Torres Strait Islander People 1998–99* (AIHW 2001) and *Expenditures on Health for Aboriginal and Torres Strait Islander People 2001–02* (AIHW 2005b).

2.3 The causes of poor Indigenous identification

The reports from past studies into data quality shortcomings have put forward several reasons for the poor quality of Indigenous identification in hospital separations data.

The lack of collecting or reporting of Indigenous status information using the agreed national standards is widely recognised as a major contributor to the poor quality of this information. The reports also point to a range of other interrelated factors.

Commonly mentioned is inadequacy of training in the data collection task, especially a lack of awareness about the importance of collecting accurate patient information. Better Indigenous identification was commonly reported for hospitals where staff understand the importance of accurate and complete patient records, particularly where this message was reinforced by hospital administrators and supported by a culture that encourages follow-up of patient information that is missing.

Inadequate development of interview skills is also mentioned. Some hospital staff are apparently inhibited by concern about negative reactions to the Indigenous status question from Indigenous and non-Indigenous patients or by fear that they could appear foolish or impertinent in asking the question. It has also been suggested that Indigenous patients might be discouraged from identifying as Indigenous if they believe the question has been asked in an inappropriate manner.

The role of various structural factors has also received considerable mention. Prominent among these is hospital staff's lack of day-to-day familiarity with local Indigenous communities – a view supported by a number of studies that have found poorer Indigenous identification at hospitals with catchment areas with relatively low representation of Indigenous people.

Other structural factors mentioned are the work pressures commonly faced by hospital admission staff and their supervisors and the fact that some hospitals lack appropriate organisational structures for ascertaining Indigenous status. Shannon et al. (1997) considered the lack of organisational structures to be more deleterious to data quality than staff concern that Indigenous patients might not wish to identify themselves as Indigenous.

It has been suggested that Indigenous patients might sometimes be discouraged from identifying as Indigenous because of previous negative experiences or concern that their information might be used to discriminate against them or will not be kept confidential. Another suggestion is that non-Indigenous people might also sometimes be unwilling to respond to the identification question if they believe Indigenous people receive special services.

3 Current arrangements for ascertaining Indigenous status

This chapter summarises each jurisdiction's processes and policies for ascertaining the Indigenous status of admitted patients; it also provides information about the methods jurisdictions use to improve ascertainment, examples of best practice, and details of methods that have not been successful.

The account is based on information obtained from the questionnaire (Appendix B) the AIHW sent to health authorities in late 2004 and information provided to the AIHW by the health authorities as part of national reporting of hospital separations data, as published in *Australian Hospital Statistics 2003–04* (AIHW 2005a).

It is usually assumed that 'best practice' includes use of the standard question and categories established by the Australian Bureau of Statistics for ascertainment of Indigenous status, with the question being asked of every patient as part of the admission process for every admission.

3.1 Arrangements at public hospitals

Ascertainment

Information was solicited from state and territory health authorities about the data collection systems and staff procedures used for ascertaining the Indigenous status of patients being admitted to public hospitals in their jurisdiction.

Data collection systems

The standard question and categories established by the Australian Bureau of Statistics for ascertaining Indigenous status are presented to patients at all or most public hospitals in jurisdictions other than New South Wales (not reported), Victoria and the Northern Territory (used in the patient administration systems but not on the patient admission forms).

With the following important exceptions, all states and territories record Indigenous status in keeping with the classification set out in the *National Health Data Dictionary*:

- An additional category 'Declined to respond' is included in New South Wales.
- The category 'Not stated/inadequately described' is not provided in the electronic patient administration systems used at public hospitals in Victoria. As a result, unreported Indigenous status is absent from Victorian public hospital separations records received annually by the AIHW.
- The electronic patient administration system used at rural public hospitals in Western Australia does not provide for responses of 'Not stated/inadequately

described' and 'Neither Aboriginal nor Torres Strait Islander origin'. Such responses are instead coded to the category 'Other'. The two categories are provided in the electronic patient administration system used at metropolitan public hospitals in Western Australia, but they both subsequently default to a category 'Other'. As a result, unreported Indigenous status is absent from Western Australian public hospital separations records received annually by the AIHW.

Follow-up of patients whose Indigenous status is recorded at admission as 'Not stated/inadequately described'

As noted, no category is available for final reporting of unstated or inadequately described Indigenous status at public hospitals in Victoria, and the policy of the state's Department of Human Services is that there should instead be follow-up of patients to obtain a valid response. No information was provided about the rigour of such follow-up, as opposed to arbitrary assignment of Indigenous status by hospital admissions staff.

There is no established practice of follow-up in Western Australia, where separations with unreported Indigenous status become grouped with separations for non-Indigenous patients under the category 'Other'.

A 'Not stated/inadequately described' response is permitted for patients admitted at public hospitals elsewhere, but, with the exception of Tasmania and the Northern Territory, there is no policy for follow-up of these patients, and it is unknown to what extent this policy is followed in practice in Tasmania.

It is also policy in the Northern Territory that, where a patient is admitted by a clinician (usually an after-hours admission), the admission clerk must re-interview the patient and modify the patient's record where necessary.

Aboriginal and Torres Strait Islander liaison officers

Aboriginal and Torres Strait Islander liaison officers are extensively employed to help obtain accurate Indigenous identification at public hospitals in Victoria. They were employed in 18 hospitals at June 2004. The officers have access to hospital admission records and, with the patient's permission, they may correct Indigenous status information in patient records. Among their duties is provision of monthly counts of admitted Indigenous patients to the state's Department of Human Services.

Aboriginal and Torres Strait Islander liaison officers also work to improve Indigenous identification at many public hospitals in Queensland and at public hospitals in the Australian Capital Territory and the Northern Territory.

Use of a protocol for responses by non-Australian indigenous people

Victoria has a protocol specifically excluding non-Australian indigenous people from identification as Aboriginal or Torres Strait Islander, as set out in the Department of Human Services' guidelines *Principles of Recording Aboriginal Status in Victoria*. No protocol is applied in the other jurisdictions.

Updating of Indigenous status data at re-admission

At public hospitals in Western Australia and the Australian Capital Territory a patient's Indigenous status is automatically derived from the record of a previous admission. There is no policy for updating this by checking with the patient.

At public hospitals in all other jurisdictions it is a requirement that a patient's Indigenous status be updated on re-admission. Adherence to this is variable in New South Wales, is unknown in Victoria and is unlikely in Queensland.

Staff training

Provision and frequency

In New South Wales training is provided by individual hospitals and possibly also by area health services, and staff at all or most public hospitals in the state have access to training that includes the asking and recording of Indigenous status.

In Victoria training is provided by individual hospitals and, where requested, by the Koori Human Services Unit of the Department of Human Services. The training occurs on an as-needed basis and is not mandatory for all new staff. A question and answer guide is also available.

In Queensland training is provided by hospital-based trainers, and staff at all or most public hospitals in the state have access to training that includes the asking and recording of Indigenous status. The training occurs on an as-needed basis. Provision of training to new staff varies from hospital to hospital, but larger hospitals would require and supply training. Hospital-based training is supported by trainers organised centrally on a train-the-trainer model.

Training occurs on an as-needed basis in Western Australia and is mandatory for all new staff.

In South Australia training is provided by both the individual hospitals and a central agency, and staff at all or most public hospitals have access to training that includes the asking and recording of Indigenous status. The training occurs on an as-needed basis, but requirements for the training of new staff are unknown.

In Tasmania training is provided by hospital-based trainers, and staff at all or most public hospitals have access to training that includes the asking and recording of Indigenous status. Training is mandatory for all new staff, and there are occasional refresher courses.

In the Northern Territory training is provided by both the individual hospitals and a central agency, and staff at all or most public hospitals have access to training that includes the asking and recording of Indigenous status. Training occurs on an as-needed basis and is mandatory for all new staff.

Training content and usefulness

In all six jurisdictions for which information was reported training covers the reasons for asking the Indigenous status question and the use of Indigenous status data;

guidance is also provided on dealing with queries about and objections to the Indigenous status question.

In Victoria, South Australia, Tasmania and the Northern Territory training is based on the standard package developed by the Australian Bureau of Statistics.

The New South Wales Health Collecting Patient Registration Information Training Program <http://www.health.nsw.gov.au/im/ahisu/training/pr_manual.pdf> has been implemented at all public hospitals in that state. The program incorporates the resources developed by the Australian Bureau of Statistics and is regarded by New South Wales Health as an outstanding example of training. The training raises awareness of data elements, including Indigenous status, that may relate to sensitive matters and it reviews strategies to aid the collection of complete and accurate patient information. (Further comments about the program are made in Section 3.3.)

Training in Queensland does not follow any standard package.

Training is regarded as very useful by staff in New South Wales and Tasmania and as somewhat useful by staff in Queensland, South Australia and the Northern Territory. In Victoria it is regarded as very useful at the small number of hospitals where training has been provided by the Koori Human Services Unit.

Outstanding examples of training

As noted, the New South Wales Health Collecting Patient Registration Information Training Program was identified by New South Wales Health as an outstanding example of training. The Victorian Department of Human Services also identified as outstanding the incidental training provided to data collection staff at the state's Mercy Hospital for Women through participation of those staff in an Indigenous identification audit (described in Section 3.3.) that was conducted at the hospital during 2001 and 2002.

Processes and policies for encouraging or requiring hospitals to ascertain Indigenous status correctly

The following processes and policies designed to encourage or require hospitals to ascertain Indigenous status correctly are in operation:

- Service agreements are in operation in New South Wales and Western Australia.
- Financial incentives are offered in New South Wales, Victoria and South Australia.
 - In New South Wales, an additional 10% cost weighting is allowed for admitted patient episodes for Indigenous patients. This provides an incentive for better identification; however, because hospitals may or may not be actually funded on a casemix basis, the degree of incentive is variable.
 - Victoria had an admitted patient funding supplement of 10% for Indigenous patients in public hospitals before July 2004; and since then the supplement has been 30%. Hospitals in receipt of the supplement are obliged to provide appropriate services to Indigenous patients and to improve the quality of data.

The goals set out in the draft guidelines for improving care for Indigenous patients associated with this funding supplement are: to achieve accurate identification of all Aboriginal and Torres Strait Islander (ATSI) patients; to ensure that ATSI people have access to health services; to ensure that all ATSI patients receive culturally sensitive care and appropriate referrals; to promote partnerships with health services and Aboriginal community-controlled health organisations in the planning of service responses for ATSI patients; and to establish a whole-of-health-service responsibility for meeting the needs of ATSI patients.

- A 30% loading is applied to separations for Indigenous people in public hospitals under South Australia's casemix funding system. Records with invalid values are not eligible for funding, which creates an incentive for hospitals to correct invalid values identified by the Department of Health.
- Feedback or analysis of data is provided in New South Wales, Victoria, Queensland, Tasmania and the Australian Capital Territory.
- The documentation provided includes instruction manuals (New South Wales, Queensland, Western Australia and the Northern Territory), data collection guidelines or best-practice guidelines (New South Wales, Victoria, South Australia and Tasmania), departmental circulars (New South Wales, Victoria and Queensland), and data dictionaries (all jurisdictions other than the Australian Capital Territory where a data dictionary is currently under development).

3.2 Arrangements at private hospitals

Ascertainment

Information was solicited from state and territory health authorities about the data collection systems and staff procedures used for ascertaining the Indigenous status of patients being admitted to private hospitals in their jurisdiction.

Data collection systems

The standard Indigenous status question and categories established by the Australian Bureau of Statistics are presented to patients at all or most hospitals in Western Australia and South Australia and to patients at some hospitals in Victoria. No information was reported on this topic for the other jurisdictions.

Indigenous status is recorded in line with the classification set out in the *National Health Data Dictionary* in all patient administration systems in Victoria and the Australian Capital Territory and in some systems in South Australia. It is not in line with the dictionary in Western Australia, where it appears to be the case that a 'Not stated/inadequately described' response is either unavailable or is amalgamated with the 'Neither Aboriginal nor Torres Strait Islander origin' category. No information was reported on this topic for the other jurisdictions.

Follow-up of patients whose Indigenous status is recorded at admission as 'Not stated/inadequately described'

Processes and policies for patients whose Indigenous status is recorded at admission as 'Not stated/inadequately described' were reported for three jurisdictions.

Although a 'Not stated/inadequately described' response is permitted for patients at private hospitals in Victoria, the category is not permitted in separation records sent to the Department of Human Services. No information was provided to indicate whether staff of private hospitals achieve an absence of separations in this category through appropriate application of the standard Indigenous status question and categories, backed up by follow-up for uncertain cases, or through more arbitrary means.

A 'Not stated/inadequately described' response is permitted for patients admitted at private hospitals in South Australia and the Australian Capital Territory, and there is no established practice for follow-up of these patients.

Aboriginal and Torres Strait Islander liaison officers

Aboriginal and Torres Strait Islander liaison officers are not employed to help obtain accurate Indigenous identification at private hospitals in the five jurisdictions for which information was reported – that is, Victoria, Queensland, Western Australia, South Australia and Tasmania.

Use of a protocol for responses by non-Australian indigenous people

No specific protocol for responses by non-Australian indigenous people was in operation at private hospitals in the three jurisdictions for which information was reported – that is, Queensland, Western Australia and South Australia.

Updating of Indigenous status data at re-admission

Updating Indigenous status data at re-admission was reported as mandatory at private hospitals in New South Wales. It was also reported as mandatory in Victoria, but with the rider that Indigenous status is less likely to be either asked or updated at private hospitals than at public hospitals. It is not mandatory in Western Australia. No information on this topic was reported for the other jurisdictions.

Staff training

Information about staff training in private hospitals was reported for three jurisdictions; no outstanding examples of training were described.

Queensland Health reported that it is not involved in providing training for private hospitals but that each year all private hospitals receive a manual covering all data elements, including information about the Indigenous status data element, its purpose and its method of collection.

Staff at all or most private hospitals in South Australia have access to training that includes the asking and recording of Indigenous status. Training is provided by the Department of Health and takes place on an as-needed basis. Requirements for the

training of all new staff are unknown. The training is based on the standard package developed by the Australian Bureau of Statistics. It includes the reasons for asking the Indigenous status question and the use of Indigenous status data, and it provides guidance on dealing with queries about and objections to the question. The training is reported to be regarded as somewhat useful by hospital staff.

In Tasmania the Department of Health and Human Services offers training, but the offer has been taken up by only one hospital. The training is based on the standard package developed by the Australian Bureau of Statistics. It includes the reasons for asking the Indigenous status question and the use of Indigenous status data, and it provides guidance on dealing with queries about and objections to the question. The training was reported to have been well received by hospital staff.

Processes and policies for encouraging or requiring hospitals to ascertain Indigenous status correctly

Information about processes and policies for encouraging or requiring hospitals to ascertain Indigenous status correctly was reported for all jurisdictions other than the Northern Territory; it indicated an absence of financial incentives and a very limited number of other processes and policies, as follows:

- data provision requirements in the operating license of all private hospitals in Western Australia
- provision of feedback or analysis of data in Victoria
- provision of instruction manuals (New South Wales and Western Australia), data collection guidelines or best-practice guidelines (Victoria and South Australia), departmental circulars (Victoria and Queensland) and data dictionaries (all responding jurisdictions).

3.3 Initiatives to improve data quality

Regular monitoring of Indigenous status data

Non-reporting of Indigenous status is regularly monitored in separations data for every hospital in Queensland, Tasmania and the Australian Capital Territory, with feedback provided to individual hospitals in some cases.

Regular monitoring of the quality of Indigenous status data does not occur in New South Wales at present, but New South Wales Health reported its intention to initiate state-wide and local monitoring together with reporting back to area health services and hospitals.

In Victoria data provided by Koori Hospital Liaison Officers for 18 hospitals are cross-checked with data submitted through the state-wide hospital morbidity collection and the perinatal data collection. These comparisons are reported annually

for each hospital in the publication *Koori Health Counts!* Counts are also checked on a population basis against age, sex and cause of admission.

Regular monitoring of Indigenous status data quality does not take place in Western Australia at present, but the Department of Health advised its intention to implement an annual check.

The monitoring done in South Australia was reported as being limited to the editing of individual separation records to ensure the presence of valid values for Indigenous status and the follow-up of separations for Indigenous patients recorded with an overseas country of birth.

The AIHW contributes to regular monitoring of Indigenous status data in several ways:

- It checks the data provided annually by jurisdictions for the AIHW National Hospital Morbidity Database and seeks clarification or correction of invalid values, unusual distributions of separation numbers across the Indigenous subcategories, and unusual combinations of values (such as an overseas country of birth reported for an Indigenous patient).
- It publishes summary statistics on separations by Indigenous status in *Australian Hospital Statistics*, by jurisdiction, hospital sector and same-day or overnight stay, and by age group and sex. This document includes information on the quality of the data, as presented for 2003–04 in Chapter 2 here.
- It uses Indigenous status data and provides commentary on the quality of the data in other reports, such as the biennial report *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2005* (ABS & AIHW 2005).

Recent, current or planned activities

In its account of Indigenous status data quality provided for publication in *Australian Hospital Statistics 2003–04* (AIHW 2005a), New South Wales Health stated:

...the department continues to be active in the implementation of initiatives aimed at improving the quality of Indigenous status information in separations data. Departmental publications and circulars continue to be used to encourage a uniform approach to the identification of Indigenous patients in addition to providing a framework for continuous improvement in this data collection. To complement these strategies the New South Wales Health Department has developed and implemented its Collecting Patient Registration Information Training Program...

The Victorian Department of Human Services identified Victoria's Koori Information Plan, a response to the 1997 Aboriginal and Torres Strait Islander Health Information Plan, as a vehicle for ongoing improvement to Indigenous identification in health data. It also reported that changes to the Koori Hospital Liaison Officer program and the increase in July 2004 to the admitted patient funding supplement for admitted Indigenous patients in public hospitals would mean the increased employment of these officers.

Queensland Health reported that two project officer positions were to be established to work on improving Indigenous information, including Indigenous status, across the department's health data collections.

The Western Australian Department of Health reported the intention to develop a technical bulletin about the Indigenous status data element, followed by regular training to improve identification of Indigenous admitted patients in the state's hospitals. The department also reported that its Office of Aboriginal Health had been working with the Australian Bureau of Statistics to provide information sessions on Indigenous identification to relevant hospital staff at four country centres and that this training would probably be extended to other hospitals.

The South Australian Department of Health reported that information on the need to record Indigenous status and the appropriate procedures for collection of such data was included in general training sessions recently conducted for metropolitan and country public hospitals. The training was based on the training package produced by the Australian Bureau of Statistics. The department reported that planned future activities mainly involved the provision of additional training.

The Tasmanian Department of Health and Human Services reported the appointment for six months of an Aboriginal health project officer who highlighted the importance of correct Indigenous identification. The department noted that this had been well received in public hospitals.

The Australian Capital Territory Department of Health and Community Care reported that from 2004-05 it had removed from the patient administration system used at one of its public hospitals the arrangement whereby unreported Indigenous status defaulted to the 'Neither Aboriginal nor Torres Strait Islander origin' category; it also advised new arrangements for the follow-up of patients for whom Indigenous status was not reported. The department noted its intention to inform the development of improved processes by means of a study into why some Indigenous patients are not identified in its admitted and non-admitted patient data collections.

The Northern Territory Department of Health and Community Services reported that greater opportunities now exist for updating patients' Indigenous identification through a system whereby Northern Territory residents receiving treatment across the acute, community and primary health services are issued with a unique identifier that enables the exchange of client demographic information between client information systems. The department retains historical reporting of Indigenous status, and individual client systems receive a report on individuals who have been ascertained as Aboriginal on one occasion and as Torres Strait Islander on another. The department also reported that consideration was being given to a repeat of its 1997 evaluation of the ascertainment of patient's demographic information by hospital staff.

Most successful and least successful activities, and factors that contribute to or limit best practice

The most successful and least successful activities reported by New South Wales Health involved, respectively, the current and former versions of its Collecting Patient Registration Information Training Program. The former version of the program was assessed as having poor effectiveness because of an emphasis on Indigenous identification and the fact that it was presented by Aboriginal health workers, which caused it to be perceived as Aboriginal awareness training. The department found the current program very effective because of its focus on overall data quality, rather than just the quality of Indigenous identification.

The Victorian Department of Human Services identified its most successful activity as a detailed audit involving personal interviews with 443 hospital patients (including 392 obstetric patients) conducted during 2001 and 2002 at the Mercy Hospital for Women. The process assessed the procedures followed at the hospital for ascertainment of patients' Indigenous status – specifically the extent to which the patients had been asked for details of their Indigenous status and the Indigenous status of their babies at the time of admission. The department regards the study as a model for possible future audits at all public hospitals in Victoria, in that it provided reliable findings, highlighted areas in need of improvement (such as the need for a specific question about the Indigenous status of each baby's father) and served as a valuable vehicle for training patient data collection staff about the consequences of their data recording practices. Factors contributing to best practice in ascertainment of Indigenous status were said to be the employment of Koori Hospital Liaison Officers and a higher proportion of Indigenous people among the hospital's patients.

The South Australian Department of Health reported successes with regular training sessions run by the department that reinforced the need to accurately record Indigenous status; hospitals taking responsibility for in-house training, with a focus on training new staff; and provision of guidance about dealing with patients who are reluctant to answer the Indigenous status question. The department said best practice generally occurs at rural and remote hospitals, contributing factors being a higher representation of Indigenous people among the hospital's patients and staff familiarity with Indigenous patients.

The Tasmanian Department of Health and Human Services advised that key limiting factors to improved Indigenous identification were the reluctance of staff to ask the question and the registration of patients without face-to-face interviews – for example, newborns.

The Australian Capital Territory Department of Health and Community Care reported that its most successful activities appeared to be improvements to training and its efforts to increase hospital staff's awareness of the need for accurate Indigenous status information.

The most successful and least successful activities described by the Northern Territory Department of Health and Community Services both involved the training sessions given by the Australian Bureau of Statistics during 2000. This training was found to be of a suitable format for small-group training (such as applies in the

community services sector) but unsuccessful on the large scale of an acute care setting. Outstanding examples of best practice were considered to be Gove District Hospital and Alice Springs Hospital, a contributing factor being the consistent and reinforced training of new and existing staff.

Other considerations

New South Wales Health reported its support for the inclusion of a category 'Declined to respond', in addition to the category 'Not stated/inadequately described', in national standards for the asking of Indigenous status. The department said the inclusion of the category in public hospital patient administration systems in the state had ensured the avoidance of follow-up in relation to Indigenous status for these patients. The question also provided information about whether non-reporting was a matter relating to staff education or community education. The potential usefulness of such a category was also identified by the Tasmanian Department of Health and Human Services and by the Northern Territory Department of Health and Community Services. The Northern Territory department also suggested pilot testing of the categories 'Uncomfortable to ask the question' and 'Difficult to ask the question in the circumstances', with follow-up to determine what led to the discomfort in order to inform the assessment of possible alternative ways of asking the question.

The South Australian Department of Health put forward the view that efforts need to be targeted at hospitals that treat the largest numbers of Indigenous people – that is, rural and remote hospitals in the case of that state.

The Northern Territory Department of Health and Community Services reported that public education would be beneficial, possibly by means of in-hospital videos in emergency department and outpatient settings, pamphlets, websites and occasional television advertisements. The department also said a nationally coordinated, Commonwealth-funded approach to improved data collection would be beneficial but would need input from the states and territories to ensure that the collection processes were relevant to each jurisdiction and its various hospitals.

4 Analysis of Indigenous status information in national hospital separations data

This chapter analyses Indigenous status information in the AIHW National Hospital Morbidity Database for the period 1996–97 to 2003–04 in order to assess the quality of the information and to make recommendations about how the information should be analysed and could be improved.

Slight differences exist between the separations counts reported here and those reported in the AIHW's annual publication *Australian Hospital Statistics* for 2003–04 and earlier years as a result of minor updates to the National Hospital Morbidity Database.

In keeping with the classification structure for the Indigenous status question set out in the *National Health Data Dictionary* (as summarised in Box 1), patients termed Indigenous here are those reported to any of the three Indigenous status subcategories 'Aboriginal but not Torres Strait Islander origin', 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin'; patients termed non-Indigenous are those reported to the category 'Neither Aboriginal nor Torres Strait Islander origin'. An additional grouping, 'Patients not reported as Indigenous', is used here; it comprises patients reported to the category 'Neither Aboriginal nor Torres Strait Islander origin' and patients whose Indigenous status was reported as 'Not stated/inadequately described'.

Section 4.1 provides an account of separation numbers reported for each category of Indigenous status in each jurisdiction and compares (in the form of rate ratios) the separation rates for Indigenous patients and those for patients not reported as Indigenous in each jurisdiction. Section 4.2 provides an analysis of the occurrence and characteristics of separations for which Indigenous status was reported as 'Not stated/inadequately described'. Section 4.3 provides an analysis of the occurrence and characteristics of separations for each of the three Indigenous subcategories.

The separation rates for Indigenous patients presented in Section 4.1 are based on population data published by the Australian Bureau of Statistics in *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians* (ABS 2004b). That publication contains experimental estimates of the resident Indigenous population at 30 June of each year from 1991 to 2001, based on the 2001 census. It also contains two series of experimental projections of the resident Indigenous population at 30 June of each year for the period 2002 to 2009, also based on the 2001 census. In accord with standard AIHW practice, the low-series projections have been used for this report.

Estimates of the population of each of the Indigenous subcategories at June 2001 are given in the Australian Bureau of Statistics publication, and the estimates for each

state and territory are reproduced here in Table A20. Because of the unavailability of later population data for the subcategories, these data were used to calculate the age-specific rates incorporated in the age-standardised separation rates that are presented as rate ratios in Section 4.3 for patients reported to each of the subcategories in 2003–04.

Separation rates are presented in Sections 4.1 and 4.3 for patients not reported as Indigenous, based on population counts derived by subtraction of the estimates and projections for the Indigenous population from the Australian Bureau of Statistics estimates for the total Australian population.

4.1 Overview

Separation numbers, 2003–04

Table 8 provides, for 2003–04, the counts of separations included in the AIHW National Hospital Morbidity Database for the public and private sectors in each jurisdiction categorised as Indigenous (i.e. ‘Aboriginal but not Torres Strait Islander origin’, ‘Torres Strait Islander but not Aboriginal origin’ or ‘Both Aboriginal and Torres Strait Islander origin’), non-Indigenous (i.e. ‘Neither Aboriginal nor Torres Strait Islander origin’) or Not reported (i.e. ‘Not stated/ inadequately described’).

Table 8: Hospital separations, by Indigenous status, hospital sector and jurisdiction, 2003–04

Hospital sector and Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Public hospitals									
Indigenous	39,609	9,162	54,043	37,315	14,485	1,779	1,538 ^(a)	45,095	203,026
Non-Indigenous	1,277,014	1,178,367	654,784	329,931	354,177	74,397	65,176	25,013	3,958,859
Not reported	8,912	0 ^(b)	12,186	0 ^(b)	10,458	4,745	2,315 ^(b)	16	38,632
<i>Total</i>	<i>1,325,535</i>	<i>1,187,529</i>	<i>721,013</i>	<i>367,246</i>	<i>379,120</i>	<i>80,921</i>	<i>69,029</i>	<i>70,124</i>	<i>4,200,517</i>
Private hospitals									
Indigenous	741	232	4,041	7,365	432	n.p.	n.p.	n.p.	13,121
Non-Indigenous	710,715	680,574	482,364	282,828	202,886	n.p.	n.p.	n.p.	2,420,169
Not reported	689	0 ^(b)	153,642	0 ^(b)	2,903	n.p.	n.p.	n.p.	207,418
<i>Total</i>	<i>712,145</i>	<i>680,806</i>	<i>640,047</i>	<i>290,193</i>	<i>206,221</i>	<i>n.p.</i>	<i>n.p.</i>	<i>n.p.</i>	<i>2,640,708</i>
Public and private hospitals									
Indigenous	40,350	9,394	58,084	44,680	14,917	n.p.	n.p.	n.p.	216,147
Non-Indigenous	1,987,729	1,858,941	1,137,148	612,759	557,063	n.p.	n.p.	n.p.	6,379,028
Not reported	9,601	0 ^(b)	165,828	0 ^(b)	13,361	n.p.	n.p.	n.p.	246,050
Total	2,037,680	1,868,335	1,361,060	657,439	585,341	n.p.	n.p.	n.p.	6,841,225

(a) Separation numbers for Indigenous patients in the Australian Capital Territory include a substantial number of same-day separations contributed by a relatively small number of dialysis patients.

(b) As described in Sections 3.1 and 3.2, unreported Indigenous status was not permitted in records for public and private hospitals in Victoria and Western Australia and for a major public hospital in the Australian Capital Territory at the time of data collection.

n.p. Not published for confidentiality reasons.

Source: AIHW National Hospital Morbidity Database.

Nationally, 3.2% of separations (216,147) were for patients recorded as Indigenous and 93.2% (6,379,028) were for patients recorded as non-Indigenous. These

population groups represented 2.4% and 97.6%, respectively, of the Australian population at 30 June 2003.

Only 6.1% of separations for patients reported as Indigenous came from the private sector (13,121 of 216,147 separations), compared with 37.9% of separations for patients reported as non-Indigenous (2,420,169 of 6,379,028 separations). The relatively low representation in private sector separations for Indigenous patients probably reflects the poor arrangements (noted in Section 3.2) for ascertaining Indigenous status at private hospitals and a relatively low use of private hospitals by Indigenous people.

Separation rate ratios, 2003–04

The overall quality of the Indigenous status data can be broadly gauged by examining Indigenous to not Indigenous rate ratios. These are the ratios of the separation rates for Indigenous people to the rates for people not reported as Indigenous. Table 9 shows the ratios for each jurisdiction in 2003–04.

A rate ratio greater than 1.0 indicates a higher separation rate for Indigenous people than for people not identified as Indigenous, and a number substantially in excess of 1.0 would be expected in all or most jurisdictions in view of the relatively poor health status of the Indigenous population. Rate ratios not substantially in excess of 1.0 are therefore suggestive of under-identification of Indigenous patients as a result of non-reporting or misclassification of patients' Indigenous status.

Caution is, however, required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems – for example, the availability of hospital and non-hospital services – can have significant effects that might need to be taken into account.

Rate ratios for the Australian Capital Territory should also be interpreted cautiously, since they can be substantially affected by the age profile of the Indigenous patients in the year in question when rates are derived using direct age standardisation.

The Indigenous to not Indigenous rate ratios for all separations (same-day and overnight) were relatively high in 2003–04 for the Northern Territory, the Australian Capital Territory, Western Australia, South Australia and Queensland (3.96, 3.48, 2.95, 2.50 and 2.17 respectively), relatively low for New South Wales and Victoria (1.46 and 1.29) and very low for Tasmania (0.62).

The Indigenous to not Indigenous rate ratios for overnight separations provide a different guide to the quality of Indigenous identification in separations data. This is because the same-day contributions to the Indigenous separation rates include dialysis patients, for whom better Indigenous identification might be facilitated through repeat visits. Subtraction of the same-day separations has a large effect for the Australian Capital Territory and the Northern Territory, and the rate ratios for solely overnight separations in 2003–04 were relatively high for Western Australia, South Australia, the Northern Territory and Queensland (2.60, 2.24, 2.10 and 1.79 respectively), relatively low for the Australian Capital Territory, New South Wales and Victoria (1.63, 1.52 and 1.15) and very low for Tasmania (0.62).

Table 9: Hospital separation rates^(a), for people reported as Indigenous and people not reported as Indigenous^(b), and the ratio of these rates, by jurisdiction, 2003–04

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Total separations per 1,000 population (public and private hospitals)									
Indigenous	431.2	478.3	768.7	972.5	891.3	171.8 ^(d)	1,087.1 ^(d)	1,264.1 ^(d)	721.7
Not Indigenous ^(b)	296.1	371.4	354.8	329.8	357.0	164.7 ^(d)	234.0 ^(d)	228.8 ^(d)	334.7
Rate ratio ^(c)	1.46	1.29	2.17	2.95	2.50	0.62	3.48	3.96	2.16
Overnight separations per 1,000 population (public and private hospitals)									
Indigenous	222.9	179.9	282.0	399.9	380.4	79.7 ^(d)	220.8 ^(d)	329.4 ^(d)	278.1
Not Indigenous ^(b)	146.6	155.9	157.5	153.8	169.9	83.7 ^(d)	102.0 ^(d)	112.2 ^(d)	153.5
Rate ratio ^(c)	1.52	1.15	1.79	2.60	2.24	0.62	1.63	2.10	1.81

(a) The separation rates were directly age standardised, with the standard population taken as the estimated total resident Australian population for 30 June 2001 and the age-specific rates derived using ABS population estimates and low-series Indigenous population projections for 30 June 2003.

(b) People not identified as Indigenous are those identified as non-Indigenous and those for whom Indigenous status was not reported.

(c) Caution is required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems can have significant effects that might need to be taken into account.

(d) For confidentiality reasons, the separation rates shown for Tasmania, the Australian Capital Territory and the Northern Territory are for public hospitals only. The rate ratio shown for each of these jurisdictions has, however, been derived from the separation rate for public and private hospitals combined.

Source: AIHW National Hospital Morbidity Database.

Separation rate ratios, 1996–97 to 2003–04

Table 10 shows, for each jurisdiction, the change between 1996–97 and 2003–04 in the Indigenous to not Indigenous separation rate ratio. As noted, caution is required when making interstate comparisons between ratios because interstate variations in both population health and health systems can have significant effects that might need to be taken into account.

There were relatively high rate ratios throughout the period for Western Australia, South Australia, the Australian Capital Territory and the Northern Territory – increasingly so for the Northern Territory until 2001–02. (Before 2002–03 the Northern Territory data were for public hospitals only, and a substantial decrease in the ratio in 2002–03 was associated with the introduction of data reporting for Darwin Private Hospital at which ascertainment of Indigenous status did not take place.) There were moderately high and increasing rate ratios throughout the period for Queensland. The rate ratios were relatively low for New South Wales and Victoria but were increasing for Victoria. They were very low, but possibly increasing, for Tasmania.

As noted, the ratios for overnight separations between 1996–97 and 2003–04 (Table 11) provide a somewhat different guide to the quality of Indigenous identification in separations data. There were relatively high rate ratios for overnight separations throughout the period for Western Australia, South Australia and the Northern Territory – increasingly so for the Northern Territory until 2001–02. The rate ratios were moderately high for Queensland and the Australian Capital Territory – increasingly so for Queensland. They were relatively low and not increasing for New South Wales and Victoria and very low, but possibly increasing, for Tasmania.

Table 10: Ratio of the separation rates^(a) for people identified as Indigenous and people not identified as Indigenous^(b), by jurisdiction^(c), 1996–97 to 2003–04

Jurisdiction	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
NSW	1.50	1.17	1.09	1.31	1.21	1.27	1.38	1.46
Vic	1.08	1.11	1.08	1.14	1.22	1.27	1.33	1.29
Qld	1.49	1.51	1.68	1.78	1.82	1.96	2.09	2.17
WA	2.43	2.50	2.54	2.47	2.47	2.50	2.67	2.95
SA	2.05	2.00	2.03	2.28	2.12	2.17	2.19	2.50
Tas	0.11	0.41	0.08	0.46	0.40	0.47	0.58	0.62
ACT	2.06	1.31	0.13	4.40	2.59	3.70	3.59	3.48
NT	3.65	4.39	4.33	4.76	4.69	5.33	3.70 ^(d)	3.96 ^(d)
WA, SA & NT	2.45	2.61	2.63	2.73	2.64	2.78	2.88	3.13
Qld, WA, SA & NT	1.98	2.07	2.17	2.27	2.25	2.38	2.51	2.67
Australia	1.71	1.69	1.72	1.88	1.84	1.96	2.05	2.16

- (a) The separation rates were directly age standardised, with the standard population taken as the estimated total resident Australian population for 30 June 2001 and age-specific rates for a given year derived using ABS population estimates and low-series Indigenous population projections for the preceding 30 June (e.g. 30 June 2003 for the 2003–04 year).
- (b) People not identified as Indigenous are those identified as non-Indigenous and those for whom Indigenous status was not reported.
- (c) Caution is required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems can have significant effects that might need to be taken into account.
- (d) From 2002–03 the Northern Territory data include separations for Darwin Private Hospital. The rate ratio decreased sharply between 2001–02 and 2002–03 as a result of the fact that ascertainment of Indigenous status did not take place at that hospital.

Source: AIHW National Hospital Morbidity Database.

Table 11: Ratio of the overnight separation rates^(a) for people identified as Indigenous and people not identified as Indigenous^(b), by jurisdiction^(c), 1996–97 to 2003–04

Jurisdiction	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
NSW	1.53	1.38	1.29	1.42	1.38	1.37	1.45	1.52
Vic	1.21	1.15	1.11	1.09	1.12	1.20	1.22	1.15
Qld	1.46	1.49	1.72	1.76	1.76	1.80	1.75	1.79
WA	2.82	2.86	2.72	2.59	2.53	2.50	2.59	2.60
SA	1.95	1.87	1.90	2.11	1.97	1.91	1.96	2.24
Tas	0.14	0.52	0.10	0.58	0.41	0.39	0.52	0.62
ACT	1.80	0.81	0.18	1.06	1.14	2.11	1.58	1.63
NT	2.15	2.33	2.38	2.44	2.51	2.83	2.02 ^(d)	2.10 ^(d)
WA, SA & NT	2.17	2.20	2.19	2.21	2.17	2.18	2.23	2.30
Qld, WA, SA & NT	1.83	1.86	1.97	2.00	1.98	2.00	2.02	2.07
Australia	1.66	1.65	1.68	1.75	1.73	1.75	1.76	1.81

- (a) The separation rates were directly age standardised, with the standard population taken as the estimated total resident Australian population for 30 June 2001 and age-specific rates for a given year derived using ABS population estimates or low series Indigenous population projections for the preceding 30 June (e.g. 30 June 2003 for the 2003–04 year).
- (b) People not identified as Indigenous are those identified as non-Indigenous and those for whom Indigenous status was not reported.
- (c) Caution is required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems can have significant effects that might need to be taken into account.
- (d) From 2002–03 the Northern Territory data include separations for Darwin Private Hospital. The rate ratio decreased sharply between 2001–02 and 2002–03 as a result of the fact that ascertainment of Indigenous status did not take place at that hospital.

Source: AIHW National Hospital Morbidity Database.

Included in Tables 10 and 11 are separation rate ratios and overnight separation rate ratios for the aggregate of jurisdictions that had a consistently high rate ratio over the period (Western Australia, South Australia and the Northern Territory) or a consistently high or moderately high rate ratio over the period (Queensland, Western Australia, South Australia and the Northern Territory). These composite rate ratios were consistently high and increasing during the period.

An improvement in identification of Indigenous patients over time is suggested for those jurisdictions for which an increasing rate ratio is noted, and this suggests a need for caution in any time series analysis of separations for Indigenous patients in those jurisdictions. Caution would also be required in time series analysis involving jurisdictions subject to erratic movements in the rate ratios, in particular:

- a large increase in both rate ratios for Queensland between 1997–98 and 1998–99
- a large increase in the separation rate ratio for Western Australia between 2001–02 and 2003–04
- large movements in both rate ratios for South Australia between 1998–99 and 2000–01 and between 2002–03 and 2003–04
- erratic movements in both rate ratios for the Australian Capital Territory.

4.2 Separations for which Indigenous status was not reported

This section provides an account of the non-reporting of Indigenous status in separations data for each jurisdiction between 1996–97 and 2003–04, summarises the overall patient characteristics for separations during 2003–04 for which Indigenous status was not reported, and compares these characteristics with the overall patient characteristics for separations for which status was reported respectively as Indigenous and non-Indigenous.

In interpreting the data, it should be borne in mind that unreported Indigenous status is not accommodated in data systems for some jurisdictions. As described in Sections 3.1 and 3.2, such status is absent from Victorian hospital records as a result of the unavailability of a category for unstated or inadequately described Indigenous status in the patient administration systems used at public hospitals and because the category is not permitted in separation records submitted to the health authority by the private hospitals. An arbitrary assignment of Indigenous status for some cases that would otherwise have Indigenous status recorded as ‘Not stated/inadequately described’ could be occurring as a result of these restrictions. Unreported Indigenous status is absent from Western Australian public hospital records as a result of arrangements whereby separations that have unreported Indigenous status become grouped in patient administration systems with separations for non-Indigenous people. Unreported Indigenous status is also absent from Western Australian private hospital records; the reason for this is unknown. Further, a major hospital in the Australian Capital Territory had, at the time of data collection, a recording system default whereby unidentified Indigenous status was recorded as ‘Neither Aboriginal nor Torres Strait Islander origin’. (This default arrangement has now been removed.)

Separations for which Indigenous status was not reported, 2003–04

Excluding data for Victoria, Western Australia and the Australian Capital Territory hospital just noted, Indigenous status was not reported in 2003–04 for 5.7% of

separations – 12.5% of all private sector separations and 1.5% of all public sector separations (Table 8). Private hospitals contributed 207,418 of the 246,050 separations for which Indigenous status was not reported. These were predominantly from private hospitals in Queensland (153,642 separations), Tasmania, the Australian Capital Territory and the Northern Territory (50,184 separations for these three jurisdictions in aggregate).

The separations in each jurisdiction in 2003–04 that had Indigenous status categorised as Indigenous (i.e. ‘Aboriginal but not Torres Strait Islander origin’, ‘Torres Strait Islander but not Aboriginal origin’ or ‘Both Aboriginal and Torres Strait Islander origin’), non-Indigenous and Not reported are shown in percentage terms in Table 12. For public hospitals the non-reporting of Indigenous status ranged from less than 0.1% of separations in the Northern Territory to 5.9% of separations in Tasmania. For private hospitals it ranged from 0.1% of separations in New South Wales to 24.0% in Queensland, 56.1% in Tasmania and 100% in the Northern Territory.

Table 12: Hospital separations, by Indigenous status, hospital sector and jurisdiction, 2003–04

Hospital sector and Indigenous status	Per cent								
	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
Public hospitals									
Indigenous	3.0	0.8	7.5	10.2	3.8	2.2	2.2	64.3	4.8
Non-Indigenous	96.3	99.2	90.8	89.8	93.4	91.9	94.4	35.7	94.2
Not reported	0.7	0.0 ^(b)	1.7	0.0 ^(b)	2.8	5.9	3.4 ^(b)	< 0.1	0.9
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Private hospitals									
Indigenous	0.1	0.0	0.6	2.5	0.2	0.2	0.5	0.0	0.5
Non-Indigenous	99.8	100.0	75.4	97.5	98.4	43.7	96.4	0.0	91.6
Not reported	0.1	0.0 ^(b)	24.0	0.0 ^(b)	1.4	56.1	3.1	100.0	7.9
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Public and private hospitals									
Indigenous	2.0	0.5	4.3	6.8	2.5	n.p.	n.p.	n.p.	3.2
Non-Indigenous	97.5	99.5	83.5	93.2	95.2	n.p.	n.p.	n.p.	93.2
Not reported	0.5	0.0 ^(b)	12.2	0.0 ^(b)	2.3	n.p.	n.p.	n.p.	3.6
Total	100.0	100.0	100.0	100.0	100.0	n.p.	n.p.	n.p.	100.0

(a) Separation numbers for Indigenous patients in the Australian Capital Territory include a substantial number of same-day separations contributed by a relatively small number of dialysis patients.

(b) As described in Sections 3.1 and 3.2, unreported Indigenous status was not permitted in records for public and private hospitals in Victoria and Western Australia and for a major public hospital in the Australian Capital Territory at the time of data collection.

n.p. Not published for confidentiality reasons.

Source: AIHW National Hospital Morbidity Database.

Separations for which Indigenous status was not reported, 1996–97 to 2003–04

Changes between 1996–97 and 2003–04 in the non-reporting of Indigenous status are shown in Table 13 for the public and private sectors of each jurisdiction. Excluding isolated exceptions (noted later in this section), and including states for which unreported Indigenous status is not accommodated in data systems, this occurrence varied little at the national level during the period, fluctuating between:

- 0.7% and 1.5% of separations at public hospitals
- 5.2% and 9.1% of separations at private hospitals
- 2.5% and 3.6% of all separations.

Table 13: Proportion of separations that had Indigenous status not reported, by hospital sector and jurisdiction, 1996–97 to 2003–04

Hospital sector and jurisdiction	Per cent							
	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
Public hospitals								
NSW ^(a)	0.0	0.0	0.0	0.0	0.5	0.5	0.6	0.7
Vic ^(b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Qld	2.9	6.1	3.6	3.5	2.7	1.7	1.8	1.7
WA ^(b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SA	1.9	2.4	2.4	2.9	2.6	2.6	2.5	2.8
Tas	0.0	9.7	66.3	6.4	5.9	6.2	6.7	5.9
ACT ^(b)	0.0	0.1	2.0	1.2	2.7	3.5	3.2	3.4
NT	0.0	0.2	2.3	0.2	0.4	0.4	0.3	< 0.1
<i>Australia</i>	<i>0.7</i>	<i>1.5</i>	<i>2.3</i>	<i>1.0</i>	<i>1.0</i>	<i>0.9</i>	<i>0.9</i>	<i>0.9</i>
Private hospitals								
NSW ^(a)	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1
Vic ^(b)	0.0	100.0	1.0	0.0	0.0	0.0	0.0	0.0
Qld	31.8	29.1	28.6	19.9	20.4	21.9	22.2	24.0
WA ^(b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SA	11.9	6.0	5.4	5.0	3.8	2.6	2.1	1.4
Tas	39.6	40.5	74.8	16.1	61.3	67.0	63.6	56.1
ACT	0.0	0.4	5.8	0.0	1.2	5.8	5.3	3.1
NT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	100.0	100.0
<i>Australia</i>	<i>9.1</i>	<i>34.5</i>	<i>8.9</i>	<i>5.2</i>	<i>6.9</i>	<i>7.6</i>	<i>7.6</i>	<i>7.9</i>
Public and private hospitals								
NSW ^(a)	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.5
Vic ^(b)	0.0	33.4	0.3	0.0	0.0	0.0	0.0	0.0
Qld	13.3	14.3	12.8	9.9	10.3	11.0	11.2	12.2
WA ^(b)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SA	5.0	3.4	3.3	3.5	3.0	2.6	2.4	2.3
Tas	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
ACT	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
NT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.p.	n.p.
Australia	3.4	12.0	4.5	2.5	3.2	3.4	3.5	3.6

(a) Between 1996–97 and 1999–00 unreported Indigenous status appears to have been not permitted in records for public and private hospitals in New South Wales.

(b) For most of the period 1996–97 to 2003–04 unreported Indigenous status was not permitted in records for public and private hospitals in Victoria and Western Australia and for a major public hospital in the Australian Capital Territory.

n.a. Not available.

n.p. Not published for confidentiality reasons.

Source: AIHW National Hospital Morbidity Database.

More marked non-reporting of Indigenous status occurred at the national level in 1997–98 and 1998–99:

- 34.5% and 12.0% of separations in data for private hospitals and all hospitals, respectively, in 1997–98, reflecting the total non-reporting of Indigenous status in data for private hospitals in Victoria

- 2.3% and 4.5% of separations in data for public hospitals and all hospitals, respectively, in 1998–99, reflecting one-off increases for public hospitals in Tasmania, the Australian Capital Territory and the Northern Territory.

The absence of separations that had unreported Indigenous status is apparent in Table 13 for various jurisdictions in 1996–97 and in all New South Wales data before 2000–01. It has not been established whether these absences reflect procedures in operation at that time for unreported Indigenous status to receive default coding as ‘Neither Aboriginal nor Torres Strait Islander origin’. If this were the case, the fact that such absences no longer occur could be considered an improvement in data quality for those jurisdictions.

With the exception of the foregoing, the picture for the individual states and territories other than Victoria and Western Australia is as follows:

- New South Wales since 2000–01 – a static level of 0.5–0.7% for public hospitals and about 0.1% for private hospitals and not the total absence of unreported Indigenous status of earlier years, which suggests an improved methodology for collecting Indigenous status data and therefore possibly improved data quality
- Queensland – a steady decrease for public hospitals to under 2% in 2003–04, and a decrease for private hospitals from about 32% in 1996–97 to about 24% in 2003–04, suggestive of improving data quality
- South Australia – a static level of 2–3% for public hospitals and a steady decrease for private hospitals, from about 12% in 1996–97 to 1.4% in 2003–04, suggestive of improving quality of data for private hospitals
- Tasmania – a static level of 6–7% since 1999–00 for public hospitals and erratic levels of between 56% and 67% since 2000–01 for private hospitals, with no apparent improvement over time other than the fact that the total absence of unreported Indigenous status in data for public hospitals ceased after 1996–97
- Australian Capital Territory – a static level of 1–3% for public hospitals and erratic levels of up to 6% for private hospitals, with no apparent improvement over time other than the fact that since 1999–00 there has been no total absence of unreported Indigenous status in data for either public or private hospitals
- Northern Territory – Indigenous status not reported for 100% of separations for Darwin Private Hospital since the introduction of data reporting for that hospital in 2002–03 but improvement in the quality of data for public hospitals, as evidenced by the fact that the total absence of unreported Indigenous status ceased to occur after 1997–98 and the fact that the non-reporting of Indigenous status had decreased to less than 0.1% by 2003–04.

Patient characteristics of separations for which Indigenous status was not reported, 2003–04

The patient characteristics of separations during 2003–04 for which Indigenous status was not reported were examined in order to identify the main demographic, regional and other contributors to the non-reporting of Indigenous status (Tables A1–A12).

It was found that the non-reporting of Indigenous status differed only marginally between male and female patients and with the length of hospital stay. Meaningful differences in non-reporting of Indigenous status occurred with the patient's age, the patient's election status (that is, whether they were a public or private patient), Australian or overseas birthplace, the remoteness of the patient's usual residence, the remoteness of the hospital, the urgency of admission, and groups of principal diagnoses and procedures.

Age

In public hospitals, non-reporting was least among people aged 70 year or more (1.1–1.3%) and children aged 1–14 years (0.9–1.4%); it was greatest for children aged less than 1 year (2.8%). In private hospitals, non-reporting was least among people aged 75 or more (10.6%) and greatest for children aged less than 1 year (14.8%) and children aged 1–14 (13.8–15.0%) (Table A2).

Among children aged less than 1 year (Table A3), non-reporting was greatest for separations for newborns – in particular, separations for newborns for whom admission occurred between one and six days after birth (6.8% for public hospitals and 18.3% for private hospitals). The newborns included in these data are those whose separations included some 'qualified' days – for example, requiring care in an intensive or special care facility.

Non-reporting was also high for separations for newborns for whom all days were 'unqualified' days (Table A4). Putting aside results based on too few separations to be considered reliable, non-reporting for this group was greatest where admission occurred on the day of birth (3.7% for public hospitals and 17.8% for private hospitals).

Patient election status

Non-reporting was greater for public patients than for private patients, being 1.5% compared with 1.2% in public hospitals and 24.5% compared with 12.1% in private hospitals (Table A5).

Australian or overseas birthplace

Non-reporting was greater for Australian-born patients than for overseas-born patients, being 1.3% compared with 0.9% in public hospitals and 11.2% compared with 8.6% in private hospitals (Table A6). The non-reporting of Indigenous status occurred in tandem with the non-reporting of country of birth: 31.6% of public sector separations and 58.8% of private sector separations that had no country of birth reported also had Indigenous status not reported.

Remoteness of patient's usual residence

In public hospitals non-reporting was slightly greater for patients usually resident in regional and remote areas (1.6–1.9%) than for patients resident in major cities or very remote areas (both 1.3%). In private hospitals non-reporting was highly elevated for patients resident in outer regional and very remote areas (30.2% and 35.3% respectively), was somewhat elevated for patients resident in inner regional and

remote areas (16.6% and 18.3% respectively) and relatively low for patients resident in major cities (8.0%) (Table A7).

Remoteness of hospital

Non-reporting was greater at public hospitals in very remote areas (2.8%) than at other public hospitals (1.4–1.6%). Non-reporting was substantially greater at private hospitals in outer regional areas (32.0%) than at other private hospitals, all of which were in major cities and inner regional areas – 8.8–9.9% (Table A8).

Urgency of admission

Non-reporting was greater for patients for whom an urgency status was not assigned than for those for whom an urgency status was assigned, being 1.8% compared with 1.4–1.5% in public hospitals and 24.0% compared with 9.9–11.2% in private hospitals (Table A10). An urgency status is not assigned for most obstetric cases and for planned re-admissions for limited treatment for current conditions such as dialysis and chemotherapy.

Principal diagnosis

Non-reporting differed only marginally across most principal diagnosis groups, but it was relatively elevated for the principal diagnosis of ‘Certain conditions originating in the perinatal period’ (P00–P96) (5.0% in public hospitals and 19.3% in private hospitals), and relatively elevated for ‘Mental and behavioural disorders’ in public hospitals (2.5%) (Table A11).

Procedures

Non-reporting differed only marginally across most procedure groups. In public hospitals it was, however, relatively elevated for ‘Procedures on respiratory system’ (520–569), ‘Gynaecological procedures’ (1240–1299) and ‘Chemotherapeutic and radiation oncology procedures’ (1780–1799), being 2.4%, 2.7% and 2.2% respectively. In private hospitals it was relatively elevated for ‘Procedures on cardiovascular system’ (600–767), ‘Procedures on blood and blood forming organs’ (800–817) and ‘Chemotherapeutic and radiation oncology procedures’ (1780–1799), being 16.6%, 18.4% and 18.5% respectively (Table A12).

Summary

These findings point to a need for specific arrangements directed at ensuring that data collection staff ascertain the Indigenous status of all babies born at the hospital and other patients under the age of 1 year. Such arrangements might need to take into consideration the Indigenous status of both the mother and the father.

Comparison of the patient characteristics for separations that had Indigenous status not reported with those for separations reported as Indigenous or non-Indigenous

The patient characteristics for separations during 2003–04 for which Indigenous status was not reported were compared with those for separations for which Indigenous status was reported as Indigenous or non-Indigenous in order to provide an indication of whether the patients for whom Indigenous status was not reported were more likely to have been Indigenous or non-Indigenous and hence an indication of how these separations should be treated in analysis of the Indigenous status data.

When making this assessment, it was borne in mind that, given the relatively small representation of Indigenous people in the Australian population (2.4% at 30 June 2003), one would expect the patient characteristics of the group of separations that had Indigenous status not reported to be most like those of the non-Indigenous group unless non-reporting was substantially more common among Indigenous patients than among non-Indigenous patients.

The patient characteristics examined were sex, age, patient election status, Australian or overseas birthplace, remoteness of usual residence, hospital remoteness, length of stay, urgency of admission and principal diagnosis and procedure.

Excluded from the comparisons are separations for Victoria, Western Australia and a major hospital in the Australian Capital Territory, where, as noted, unreported Indigenous status was not accommodated in data systems in 2003–04.

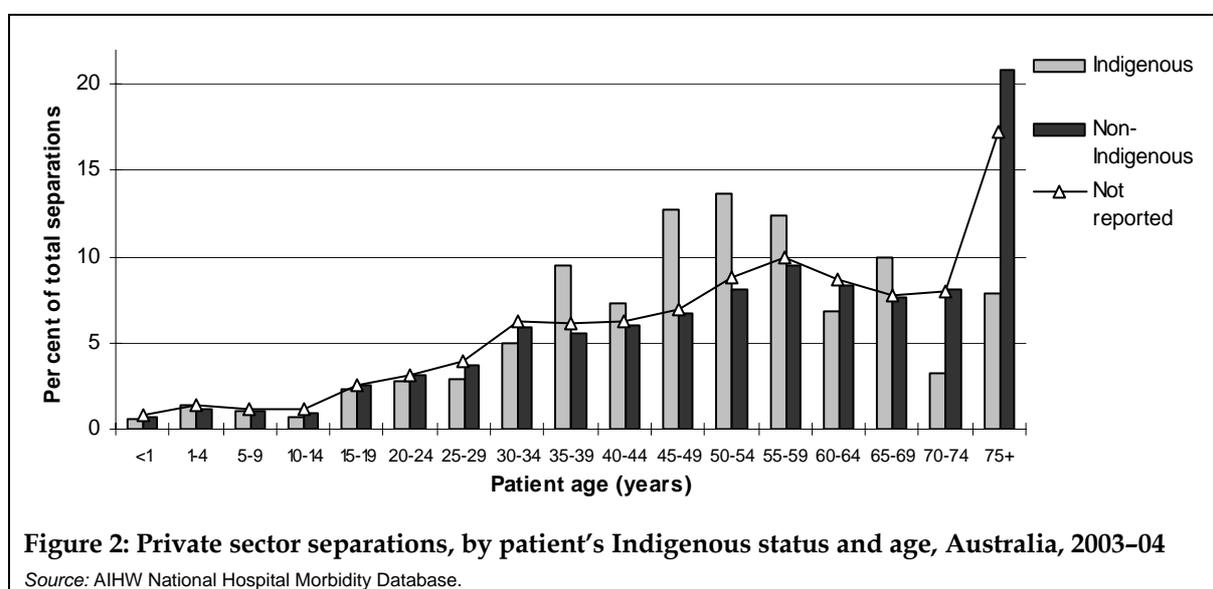
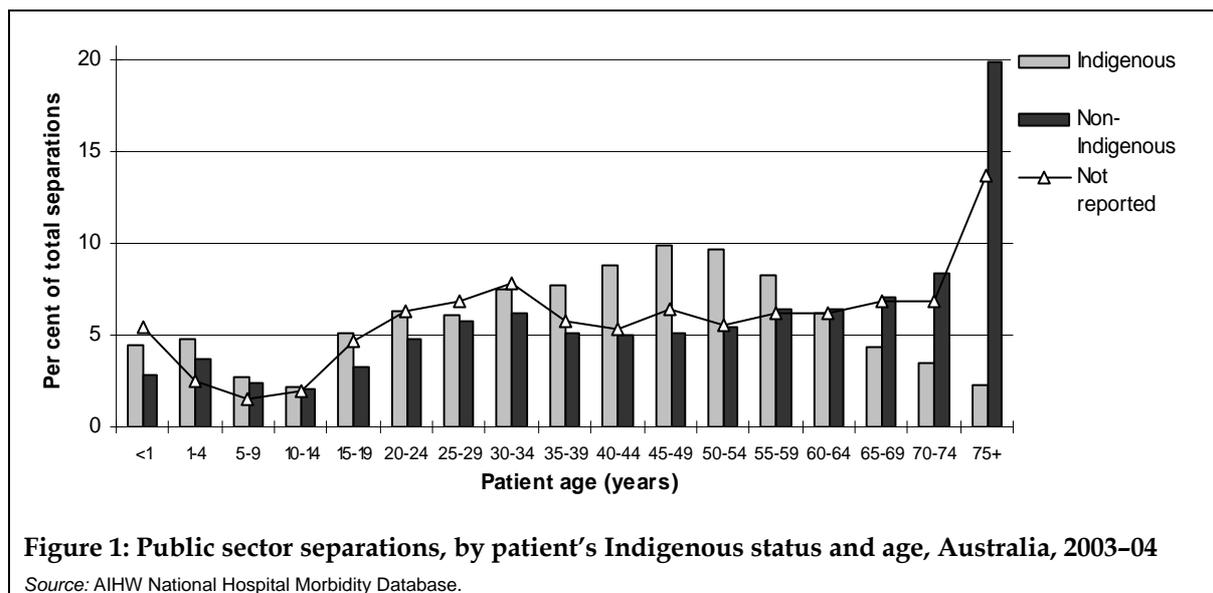
Sex

In public hospitals 51% of separations in 2003–04 for which Indigenous status was not reported were females, compared with 52% of separations for non-Indigenous patients and 56% of separations for Indigenous patients (Table A1).

In private hospitals 55% of separations for which Indigenous status was not reported were females, compared with 55% of separations for non-Indigenous patients and 53% of separations for Indigenous patients.

Age

With the exception of public hospital patients aged less than 1 year and aged 15–34 years, the age profiles for separations from both public and private hospitals for which Indigenous status was not reported in 2003–04 were much more like the age profiles for separations for non-Indigenous patients than the age profiles for separations for Indigenous patients (Table A2 and Figures 1 & 2).



Patient election status

For patient election status, little similarity exists between separations for which Indigenous status was not reported and separations for Indigenous people (Table A5). In public hospitals 12% of separations in 2003-04 for which Indigenous status was not reported were private patients, compared with 15% of separations for non-Indigenous people and of 2% of separations for Indigenous people. In private hospitals 96% of separations for which Indigenous status was not reported were private patients, compared with 99% of separations for non-Indigenous people and 54% of separations for Indigenous people.

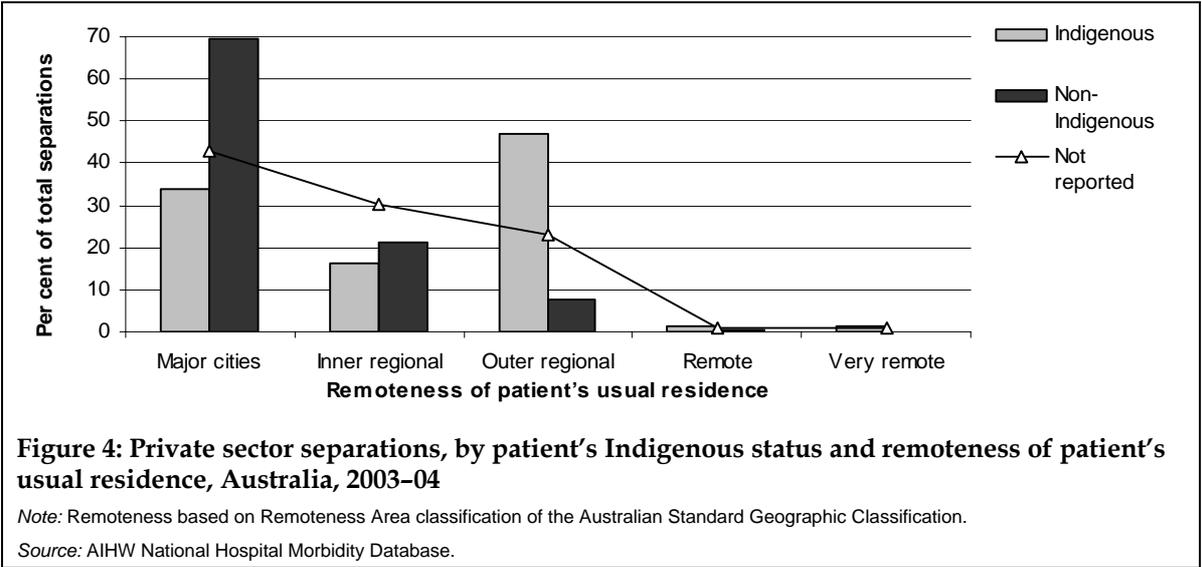
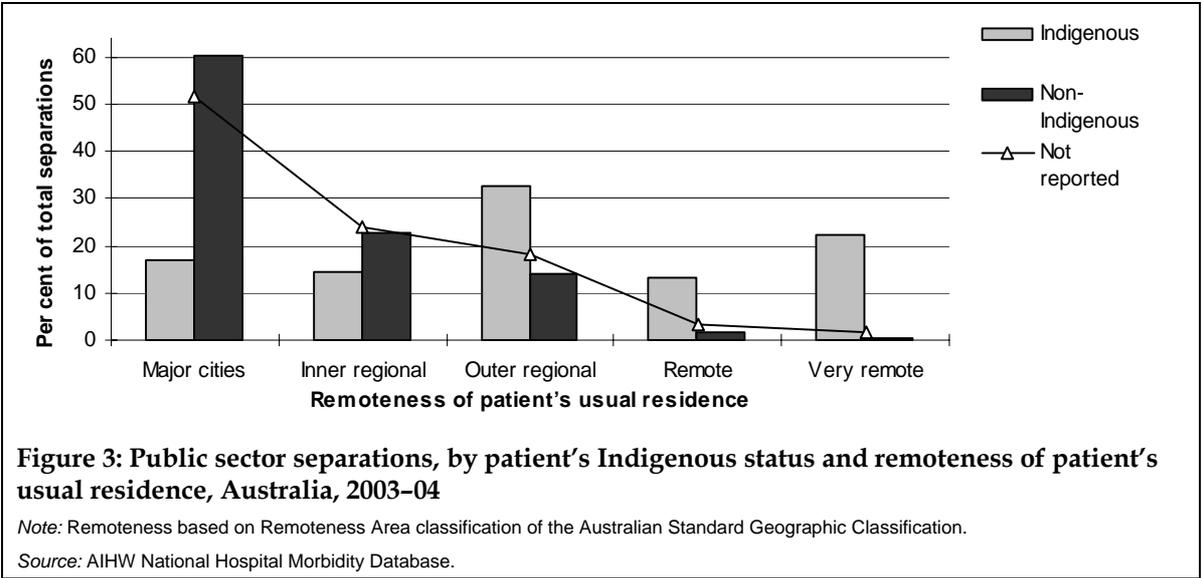
Australian or overseas birthplace

For birthplace, little similarity exists between separations for which Indigenous status was not reported and separations for Indigenous people (Table A6). In public hospitals 13% of separations in 2003-04 for which Indigenous status was not

reported were born overseas, compared with 24% of separations for non-Indigenous people and 0.3% of separations for Indigenous people. In private hospitals 13% of separations for which Indigenous status was not reported were born overseas, compared with 19% of separations for non-Indigenous people and 0.6% of separations for Indigenous people.

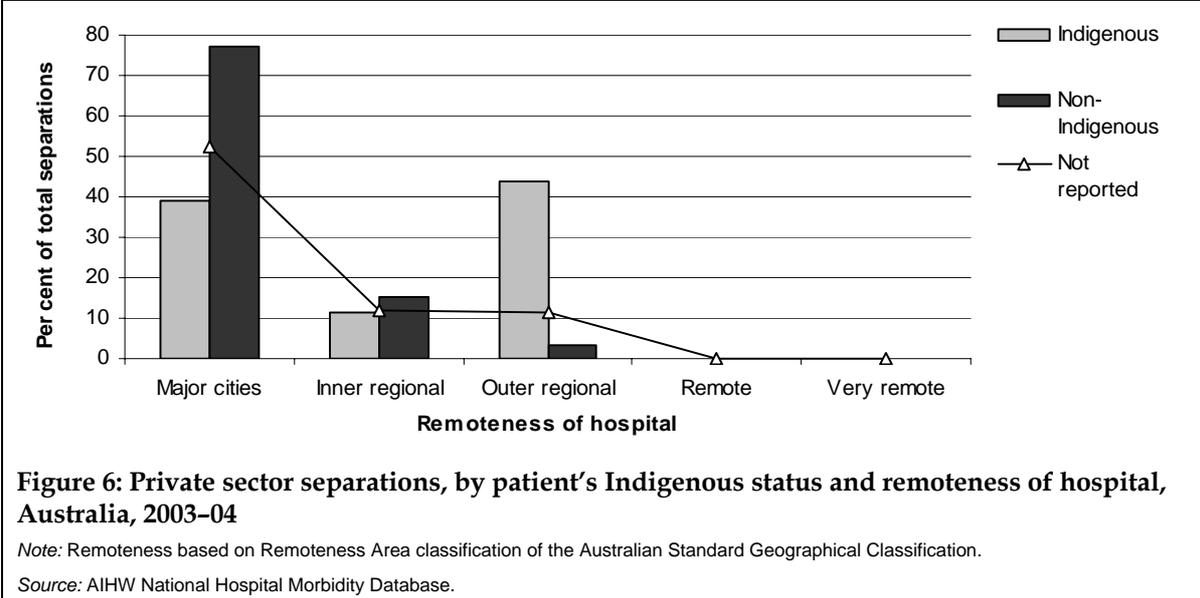
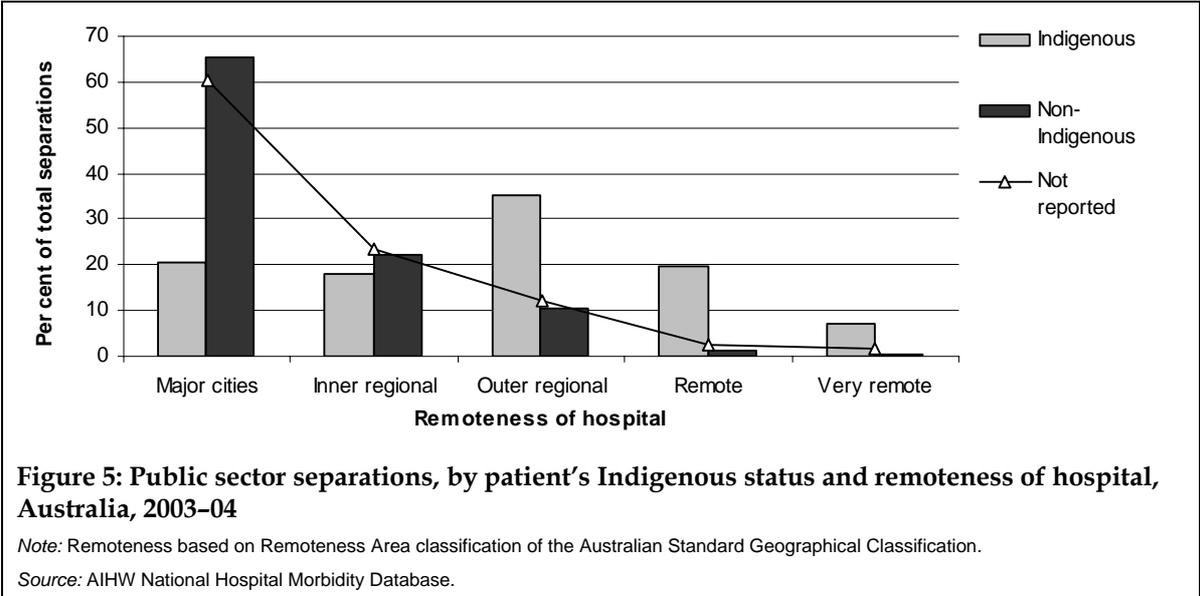
Remoteness of patient’s usual residence

Public hospital separations for which Indigenous status was not reported in 2003–04 had a distribution of remoteness of patient’s usual residence substantially more like that for separations for non-Indigenous people than that for separations for Indigenous people. In contrast, private hospital separations for which Indigenous status was not reported had a distribution of remoteness of patient’s usual residence that was not like either of the corresponding distributions of separations for Indigenous and non-Indigenous people (Table A7 and Figures 3 & 4).



Remoteness of hospital

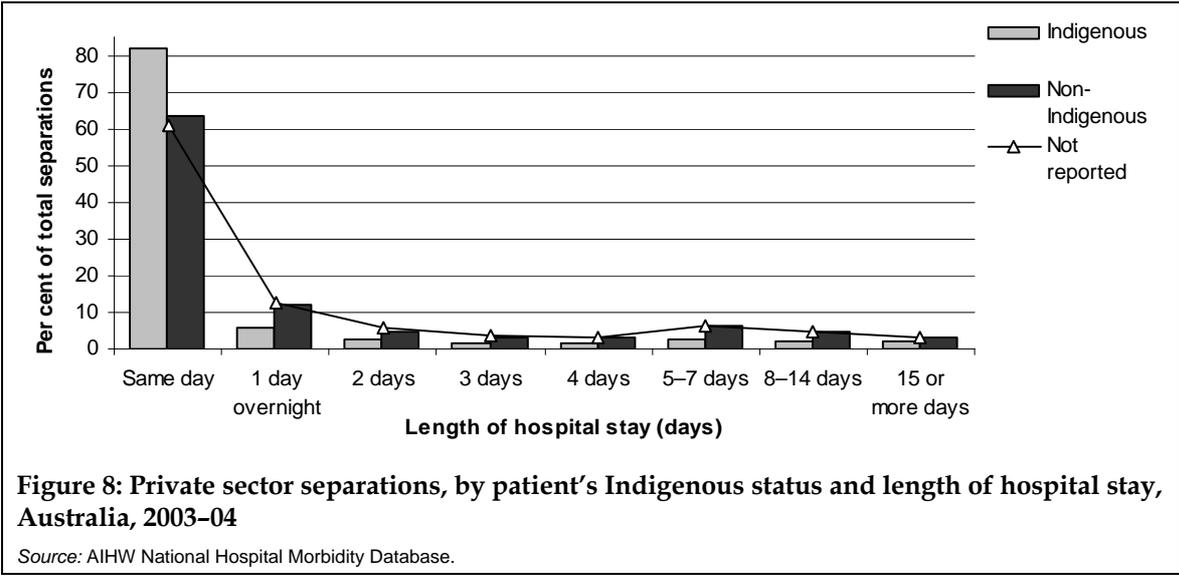
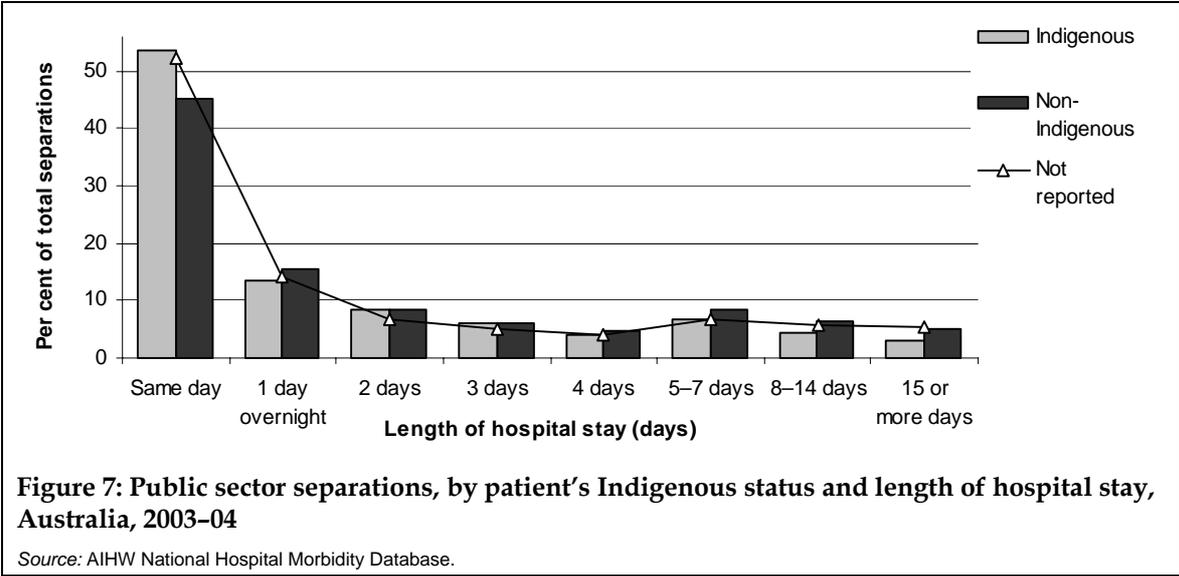
Public hospital separations for which Indigenous status was not reported in 2003-04 had a distribution of hospital remoteness substantially more like that of separations for non-Indigenous people than that of separations for Indigenous people. In contrast, private hospital separations for which Indigenous status was not reported had a distribution of hospital remoteness that was not like either of the corresponding distributions of separations for Indigenous and non-Indigenous people (Table A8 and Figures 5 & 6).



Length of hospital stay

Public hospital separations for which Indigenous status was not reported in 2003-04 had a distribution of length of hospital stay that was not like either of the corresponding distributions of separations for Indigenous and non-Indigenous people (Table A9 and Figure 7).

Private hospital separations for which Indigenous status was not reported had a distribution of length of hospital stay that was more like the corresponding distribution of separations for non-Indigenous people than the distribution of separations for Indigenous people (Table A9 and Figure 8).



Urgency of admission

For both public and private hospitals in 2003-04 the urgency of admission profiles of separations for which Indigenous status was not reported were midway between the corresponding profiles of separations for Indigenous and non-Indigenous people (Table A10 and Figures 9 & 10).

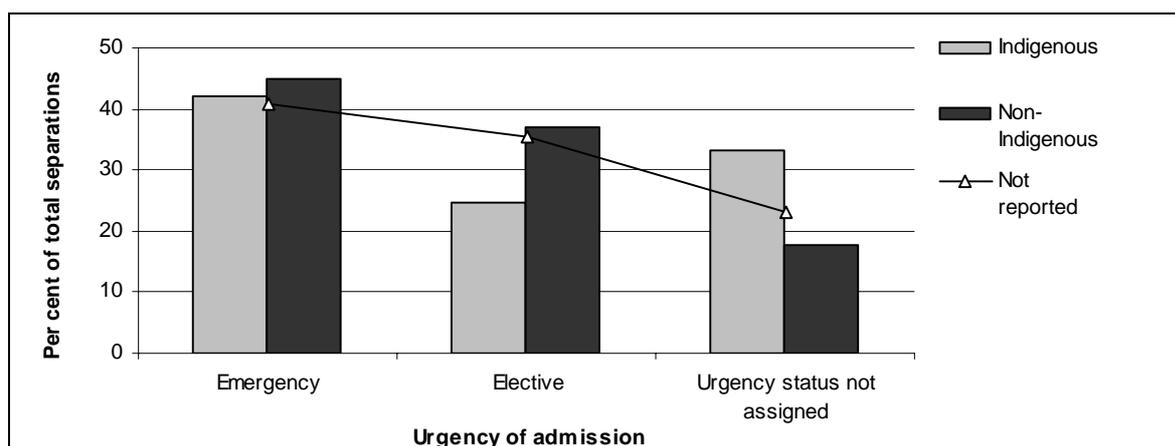


Figure 9: Public sector separations, by patient's Indigenous status and urgency of admission, Australia, 2003-04

Source: AIHW National Hospital Morbidity Database.

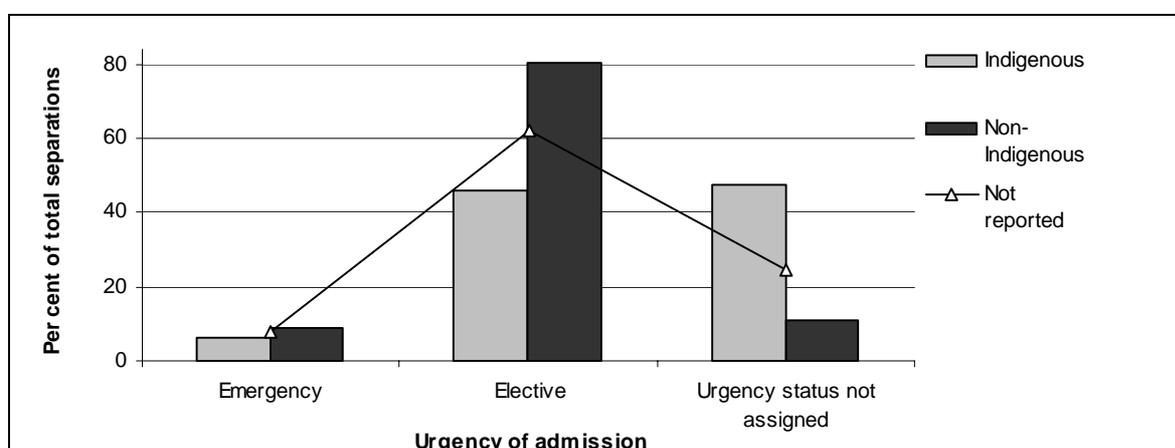


Figure 10: Private sector separations, by patient's Indigenous status and urgency of admission, Australia, 2003-04

Source: AIHW National Hospital Morbidity Database.

Principal diagnosis and procedure

Separations for which Indigenous status was not reported in 2003-04 had an occurrence of a principal diagnosis of care involving dialysis similar to that observed among separations for non-Indigenous patients and substantially lower than that observed among separations for Indigenous patients. In public hospitals 10% of separations for which Indigenous status was not reported had a principal diagnosis of care involving dialysis, compared with 12% of separations for non-Indigenous patients and 37% of separations for Indigenous patients. In private hospitals 5% of separations for which Indigenous status was not reported had a principal diagnosis of care involving dialysis, compared with 5% of separations for non-Indigenous patients and 47% of separations for Indigenous patients (Table A11).

Similar results are apparent for the procedure of haemodialysis (Table A12).

Little significance should perhaps be attached to these results since the repeat nature of dialysis treatment may present a greater opportunity for precise ascertainment of the Indigenous status of Indigenous patients.

Excluding care involving dialysis, separations from both public and private hospitals for which Indigenous status was not reported had a distribution of principal diagnoses somewhat closer to that observed among separations for non-Indigenous people than to that observed among separations for Indigenous people. Excluding haemodialysis, a similar result is apparent across procedures.

Summary

At both public and private hospitals, the 'Not stated/inadequately described' category of Indigenous status in hospital separations during 2003–04 tended to have substantially greater similarities with the non-Indigenous category than with the Indigenous category for most of the patient characteristics examined. The similarity was most apparent for sex composition, patient election status and overseas-born representation. There were, however, several exceptions:

- the representation of patients aged less than 1 year and aged 15–34 years in public hospitals – the 'Not stated/inadequately described' category was more like the Indigenous category
- the remoteness of the patient's usual residence and the remoteness of the hospital for private hospital patients – no similarity between the 'Not stated/inadequately described' category and either of the other categories
- the length of stay for public hospital patients – no similarity between the 'Not stated/inadequately described' category and either of the other categories
- the urgency of admission for both public and private hospital patients – no similarity between the 'Not stated/inadequately described' category and either of the other categories.

4.3 The Indigenous subcategories

Reporting of the Indigenous subcategories in national hospital separations data was examined with a view to informing the development of the recommendations presented in Chapter 5 in relation to the suitability of using the subcategories in data analysis and reporting.

The Indigenous subcategories are specified in the *National Health Data Dictionary* as 'Aboriginal but not Torres Strait Islander origin', 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin'. Population counts at 30 June 2001 for the subcategories are provided in Table A20 for each state and territory.

The assessment was made up of the following elements:

- an account of the reporting of the subcategories in each jurisdiction in 2003–04

- an account of changes in the reporting of the subcategories in each jurisdiction between 1997–98 and 2003–04
- a comparison of separation rate ratios for each subcategory across jurisdictions in 2003–04
- a comparison of patients' characteristics of separations for each of the subcategories in 2003–04 with those for the category 'Neither Aboriginal nor Torres Strait Islander origin'
- an examination of separation numbers for each subcategory in 2003–04 for which an overseas country of birth was reported.

Reporting of the subcategories, 2003–04

Table 14 shows the number of separations in 2003–04 for each of the Indigenous subcategories for the public and private sectors of each state and territory.

Nationally, there were 200,746 separations for patients reported as 'Aboriginal but not Torres Strait Islander origin'. They accounted for the overwhelming majority of separations for Indigenous patients. There were 9,748 separations reported as 'Torres Strait Islander but not Aboriginal origin', largely contributed by Queensland (8,375 separations) and New South Wales (833). There were 5,653 separations reported as 'Both Aboriginal and Torres Strait Islander origin'. Much of this subcategory was also contributed by Queensland (2,856 separations) but large contributions also came from New South Wales, Victoria, the Northern Territory and Western Australia.

Nationally, the private sector contributed 5.7% of the 'Aboriginal but not Torres Strait Islander origin' subcategory, 6.7% of the 'Torres Strait Islander but not Aboriginal origin' subcategory, and 17.7% of the 'Both Aboriginal and Torres Strait Islander origin' subcategory. With the exception of Queensland, the private sector contributed less to the 'Aboriginal but not Torres Strait Islander origin' subcategory than to the other two subcategories in all jurisdictions for which information can be published.

After excluding from the counts any same-day admissions that were likely to have represented repeat visits for procedures such as dialysis and chemotherapy (data not shown), the private sector contribution to the 'Both Aboriginal and Torres Strait Islander origin' subcategory remains substantially higher than the private sector contribution to the 'Aboriginal but not Torres Strait Islander origin' subcategory for all jurisdictions for which information can be published. This suggests that in the private sector there is a greater tendency for the 'Both Aboriginal and Torres Strait Islander origin' subcategory, compared with the other Indigenous subcategories, to include misidentified Indigenous or non-Indigenous patients. This question is revisited in the following section.

An alternative explanation is relatively greater under-identification in public hospitals than in private hospitals for patients belonging to this Indigenous subcategory, but this is unlikely in view of the generally poorer practices at private hospitals for recording Indigenous status, as noted in Section 3.2.

Table 14: Hospital separations, by Indigenous subcategory, hospital sector and jurisdiction, 2003–04

Indigenous subcategory and hospital sector	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
	Number								
Aboriginal but not Torres Strait Islander origin									
Public hospitals	38,026	8,384	43,939	37,033	14,364	1,682	1,476	44,371	189,275
Private hospitals	578	94	2,914	7,234	408	n.p.	n.p.	n.p.	11,471
<i>Public and private hospitals</i>	<i>38,604</i>	<i>8,478</i>	<i>46,853</i>	<i>44,267</i>	<i>14,772</i>	<i>n.p.</i>	<i>n.p.</i>	<i>n.p.</i>	<i>200,746</i>
Torres Strait Islander but not Aboriginal origin									
Public hospitals	762	154	7,873	79	63	47	12	108	9,098
Private hospitals	71	19	502	32	13	n.p.	n.p.	n.p.	650
<i>Public and private hospitals</i>	<i>833</i>	<i>173</i>	<i>8,375</i>	<i>111</i>	<i>76</i>	<i>n.p.</i>	<i>n.p.</i>	<i>n.p.</i>	<i>9,748</i>
Both Aboriginal and Torres Strait Islander origin									
Public hospitals	821	624	2,231	203	58	50	50	616	4,653
Private hospitals	92	119	625	99	11	n.p.	n.p.	n.p.	1,000
<i>Public and private hospitals</i>	<i>913</i>	<i>743</i>	<i>2,856</i>	<i>302</i>	<i>69</i>	<i>n.p.</i>	<i>n.p.</i>	<i>n.p.</i>	<i>5,653</i>
	Per cent								
Aboriginal but not Torres Strait Islander origin									
Public hospitals	98.5	98.9	93.8	83.7	97.2	n.p.	n.p.	n.p.	94.3
Private hospitals	1.5	1.1	6.2	16.3	2.8	n.p.	n.p.	n.p.	5.7
<i>Public and private hospitals</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Torres Strait Islander but not Aboriginal origin									
Public hospitals	91.5	89.0	94.0	71.2	82.9	n.p.	n.p.	n.p.	93.3
Private hospitals	8.5	11.0	6.0	28.8	17.1	n.p.	n.p.	n.p.	6.7
<i>Public and private hospitals</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Both Aboriginal and Torres Strait Islander origin									
Public hospitals	89.9	84.0	78.1	67.2	84.1	n.p.	n.p.	n.p.	82.3
Private hospitals	10.1	16.0	21.9	32.8	15.9	n.p.	n.p.	n.p.	17.7
<i>Public and private hospitals</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

(a) Separation numbers for Indigenous patients in the Australian Capital Territory include a substantial number of same-day separations contributed by a relatively small number of dialysis patients.

n.p. Not published for confidentiality reasons.

Source: AIHW National Hospital Morbidity Database.

Reporting of the Indigenous subcategories, 1997–98 to 2003–04

Table 15 shows the total annual separations for each Indigenous subcategory between 1997–98 and 2003–04 for each state and territory. With some exceptions, a fairly smooth time series and an increasing number of separations are apparent for each subcategory. This suggests both consistent interpretation of the Indigenous subcategories and improved ascertainment of Indigenous status for each subcategory in most jurisdictions.

Exceptions to the smooth time series were:

- relatively low counts in 1998–99 for all subcategories in Tasmania and the Australian Capital Territory
- erratic counts for separations in New South Wales reported as ‘Both Aboriginal and Torres Strait Islander origin’, notably a relatively large count in 1997–98
- a relatively low count in 1997–98 for separations in Queensland reported as ‘Both Aboriginal and Torres Strait Islander origin’

- a relatively large count for separations in Tasmania in 1999–00 reported as ‘Torres Strait Islander but not Aboriginal origin’.

Table 15: Hospital separations, by Indigenous subcategory and jurisdiction, 1997–98 to 2003–04

Indigenous subcategory and jurisdiction	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
Aboriginal but not Torres Strait Islander origin							
NSW	29,794	29,129	31,958	32,660	33,977	36,588	38,604
Vic	n.a.	n.a.	6,457	7,096	7,615	8,427	8,478
Qld	34,311	36,020	37,794	40,308	44,165	44,747	46,853
WA	n.a.	33,755	34,422	36,208	36,987	40,624	44,267
SA	11,214	10,941	12,269	12,143	12,757	13,150	14,772
Tas ^(a)	n.a.	246	917	1,026	1,443	1,737	1,682
ACT ^{(a)(b)}	n.a.	42	1,146	1,080	1,258	1,384	1,476
NT ^(a)	31,043	31,210	33,703	34,402	39,117	41,337	44,371
<i>Australia</i>	<i>106,362</i>	<i>141,369</i>	<i>158,669</i>	<i>165,082</i>	<i>177,449</i>	<i>188,152</i>	<i>200,746</i>
Torres Strait Islander but not Aboriginal origin							
NSW	601	643	567	723	710	832	833
Vic	n.a.	n.a.	123	115	215	274	173
Qld	6,909	7,424	7,776	7,978	7,868	7,995	8,375
WA	n.a.	45	82	125	102	91	111
SA	27	33	25	77	63	36	76
Tas ^(a)	n.a.	0	258	69	47	73	47
ACT ^(a)	n.a.	0	16	16	37	8	12
NT ^(a)	127	78	72	100	134	116	108
<i>Australia</i>	<i>7,664</i>	<i>8,223</i>	<i>8,919</i>	<i>9,207</i>	<i>9,181</i>	<i>9,432</i>	<i>9,748</i>
Both Aboriginal and Torres Strait Islander origin							
NSW	1,220	272	148	404	745	945	913
Vic	n.a.	n.a.	382	444	566	777	743
Qld	581	1,985	1,881	1,742	2,502	2,503	2,856
WA	n.a.	425	193	308	279	408	302
SA	29	35	68	71	45	75	69
Tas ^(a)	n.a.	6	30	41	35	38	50
ACT ^(a)	n.a.	0	11	26	66	40	50
NT ^(a)	372	476	548	476	399	461	616
<i>Australia</i>	<i>2,202</i>	<i>3,199</i>	<i>3,278</i>	<i>3,525</i>	<i>4,688</i>	<i>5,283</i>	<i>5,653</i>

(a) For confidentiality reasons, the number of separations for public hospitals only is shown for Tasmania, the Australian Capital Territory and the Northern Territory.

(b) Separation numbers for Indigenous patients in the Australian Capital Territory include a substantial number of same-day separations contributed by a relatively small number of dialysis patients.

n.a. Not available because the jurisdictions in question reported only a single Indigenous category at that time, in line with the former ‘Aboriginality’ data element in the *National Health Data Dictionary*.

Source: AIHW National Hospital Morbidity Database.

Separation rate ratios for the Indigenous subcategories, 2003–04

The overall quality of the data for each Indigenous subcategory can be broadly gauged by examining the ratio of the separation rate for patients reported to that subcategory to the separation rate for patients not identified as Indigenous (termed the rate ratio). Table 16 shows the rate ratios for each Indigenous subcategory in 2003–04 for each jurisdiction.

As noted in Section 4.1, rate ratios not substantially in excess of 1.0 are suggestive of under-identification of Indigenous patients stemming from non-reporting of Indigenous status and misidentification involving the other Indigenous subcategories or the category 'Neither Aboriginal nor Torres Strait Islander origin'. Caution is, however, required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems can have effects that might need to be taken into account. Another reason for caution is the possible inaccuracy of population data for the subcategories 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin' for jurisdictions where the numbers are small.

Table 16: Ratio^{(a)(b)} of the separation rates for people identified as Indigenous and people not identified as Indigenous^(c), by Indigenous subcategory and jurisdiction, 2003-04

Indigenous subcategory	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Aboriginal but not Torres Strait Islander origin	1.53	1.41	2.16	3.07	2.86	0.71	4.28 ^(d)	3.72	2.13
Torres Strait Islander but not Aboriginal origin	0.74	0.24	2.14	0.44	0.26	0.17	n.p.	0.50	1.46
Both Aboriginal and Torres Strait Islander origin	1.13	2.18	1.83	0.89	0.39	0.36	n.p.	2.86	1.46
Total of the Indigenous subcategories	1.47	1.32	2.14	2.97	2.60	0.63	4.07	3.66	2.06

(a) The separation rates were directly age standardised, with the estimated total resident Australian population for 30 June 2001 used as the standard population. Due to the unavailability of later population data for Indigenous subcategories, population data for 30 June 2001 were used to calculate the age-specific rates. The rate ratios are therefore not directly comparable with those shown in Tables 9 and 10.

(b) Caution is required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems can have significant effects that might need to be taken into account.

(c) People not identified as Indigenous are those identified as non-Indigenous and those for whom Indigenous status was not reported.

(d) Separation numbers for Indigenous patients in the Australian Capital Territory include a substantial number of same-day separations contributed by a relatively small number of dialysis patients.

n.p. Rate ratio not published because it is unreliable for this jurisdiction when derived using direct age standardisation.

Source: AIHW National Hospital Morbidity Database.

The subcategory 'Aboriginal but not Torres Strait Islander origin'

Nationally, the separation rate for people reported as 'Aboriginal but not Torres Strait Islander origin' was 2.13 times the rate for people not reported as Indigenous, which is consistent with the relatively poor health status of the Indigenous population. The relationship varied, however, between individual jurisdictions and would have been influenced both by variations in the extent to which Indigenous people were accurately identified in the separations data and in the data used to construct estimates of resident population and by possible variations in the health status of the Indigenous population between jurisdictions.

The largest rate ratios were reported for Queensland, Western Australia, South Australia, the Australian Capital Territory and the Northern Territory, although, as noted in Section 4.1, it should be borne in mind that the rate ratios for the Australian Capital Territory and the Northern Territory include substantial complements of dialysis patients, for whom better Indigenous identification may be facilitated through repeat visits.

Somewhat smaller rate ratios were reported for New South Wales and Victoria, and a relatively very small rate ratio is apparent for Tasmania (0.71), suggesting substantial under-identification of the subcategory in New South Wales and Victoria and very substantial under-identification in Tasmania.

The subcategory 'Torres Strait Islander but not Aboriginal origin'

Only in Queensland (rate ratio of 2.14) did the separation rate for people reported as 'Torres Strait Islander but not Aboriginal origin' exceed the rate for people not reported as Indigenous. This suggests substantial under-identification of this Indigenous subcategory beyond Queensland, particularly in Victoria, South Australia and Tasmania (rate ratios of 0.24, 0.26 and 0.17 respectively). It is not known how much of this under-identification stemmed from non-reporting of Indigenous status and how much stemmed from misidentification involving other Indigenous subcategories, or the non-Indigenous category.

The subcategory 'Both Aboriginal and Torres Strait Islander origin'

With the exception of Queensland, the rate ratios for the subcategory 'Both Aboriginal and Torres Strait Islander origin' were substantially larger than their counterparts reported for the subcategory 'Torres Strait Islander but not Aboriginal origin', which suggests misclassification into this subcategory. This was most notable in Victoria and the Northern Territory. It could be that this subcategory is used as a residue group for patients of unknown Indigenous status or patients identified as Indigenous and not further specified. Alternatively, the subcategory might be inadvertently selected because of its proximity to the 'Neither Aboriginal nor Torres Strait Islander origin' category on recording forms and data recording screens.

Notwithstanding this suggested misclassification, the national separation rate for the 'Aboriginal but not Torres Strait Islander origin' subcategory was only 1.46 times the rate for people not reported as Indigenous, and the rate ratios for this subcategory were smaller than their counterparts reported for the subcategory 'Aboriginal but not Torres Strait Islander origin' in all jurisdictions other than Victoria. This suggests widespread under-reporting in comparison with the subcategory 'Aboriginal but not Torres Strait Islander origin'.

Patient characteristics for the subcategories, 2003–04

Key characteristics of the patients separating from hospital during 2003–04 were compared between each of the Indigenous subcategories and the category 'Neither Aboriginal nor Torres Strait Islander origin' in order to gauge the extent to which non-Indigenous patients might be reported to the Indigenous subcategories. The comparison covered the patient's sex, age, election status, Australian or overseas birthplace, and the remoteness of the patient's usual residence.

Sex

Of the three Indigenous subcategories, the subcategory 'Torres Strait Islander but not Aboriginal origin' was least unlike the category 'Neither Aboriginal nor Torres Strait

Islander origin' in terms of the sex composition of public hospital separations. Separations of females made up 55% of the subcategory, compared with 52% of the category 'Neither Aboriginal nor Torres Strait Islander origin', 57% of the subcategory 'Aboriginal but not Torres Strait Islander origin', and 59% of the subcategory 'Both Aboriginal and Torres Strait Islander origin' (Table A13).

The subcategory 'Both Aboriginal and Torres Strait Islander origin' was least unlike the category 'Neither Aboriginal nor Torres Strait Islander origin' in terms of the sex composition of private hospital separations. Separations of females made up 51% of the subcategory, compared with 55% of the category 'Neither Aboriginal nor Torres Strait Islander origin', 60% of the subcategory 'Aboriginal but not Torres Strait Islander origin', and 68% of the subcategory 'Torres Strait Islander but not Aboriginal origin'.

Age

At both public and private hospitals the age profiles of the three Indigenous subcategories differed to some extent but appear to have been equally unlike the age profile of the 'Neither Aboriginal nor Torres Strait Islander origin' category (Table A14 and Figures 11 & 12).

In terms of patients' age broadly grouped as 0-14 years, 15-64 years and 65 years or more (data not shown), the subcategory 'Torres Strait Islander but not Aboriginal origin' had closer similarities to the category 'Neither Aboriginal nor Torres Strait Islander origin' than did the other Indigenous subcategories. In particular, at public hospitals 18% of separations reported as 'Torres Strait Islander but not Aboriginal origin' were for patients aged 65 or more, compared with 36% of separations reported as 'Neither Aboriginal nor Torres Strait Islander origin' and 7-9% of separations reported to the other Indigenous subcategories. At private hospitals 41% of separations reported as 'Torres Strait Islander but not Aboriginal origin' were for patients aged 65 or more, compared with 36% of separations reported as 'Neither Aboriginal nor Torres Strait Islander origin' and 13-14% of separations reported to the other Indigenous subcategories.

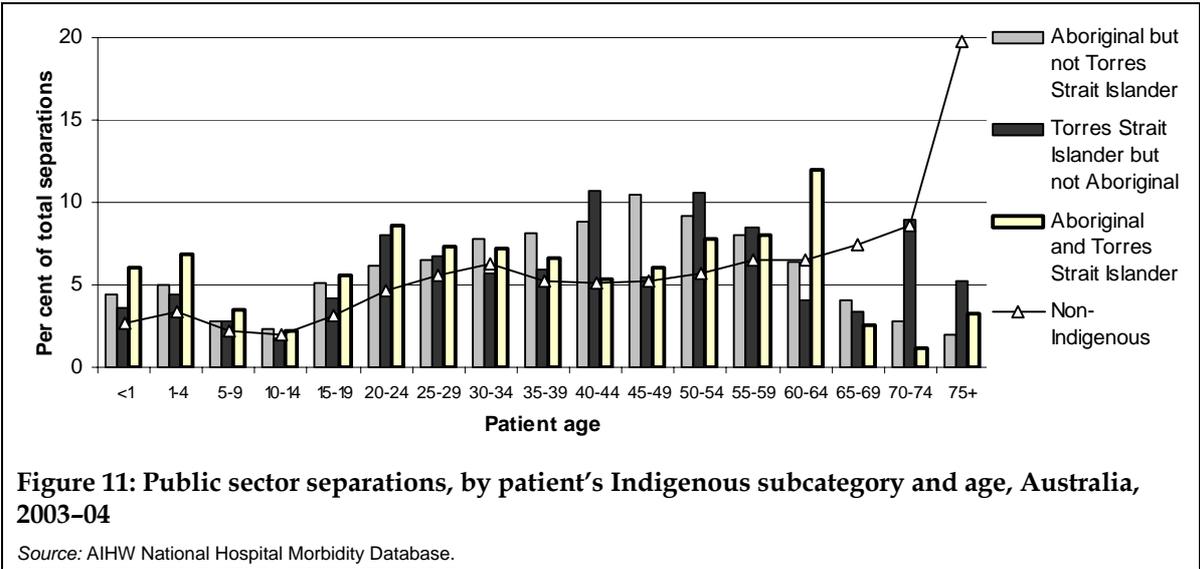
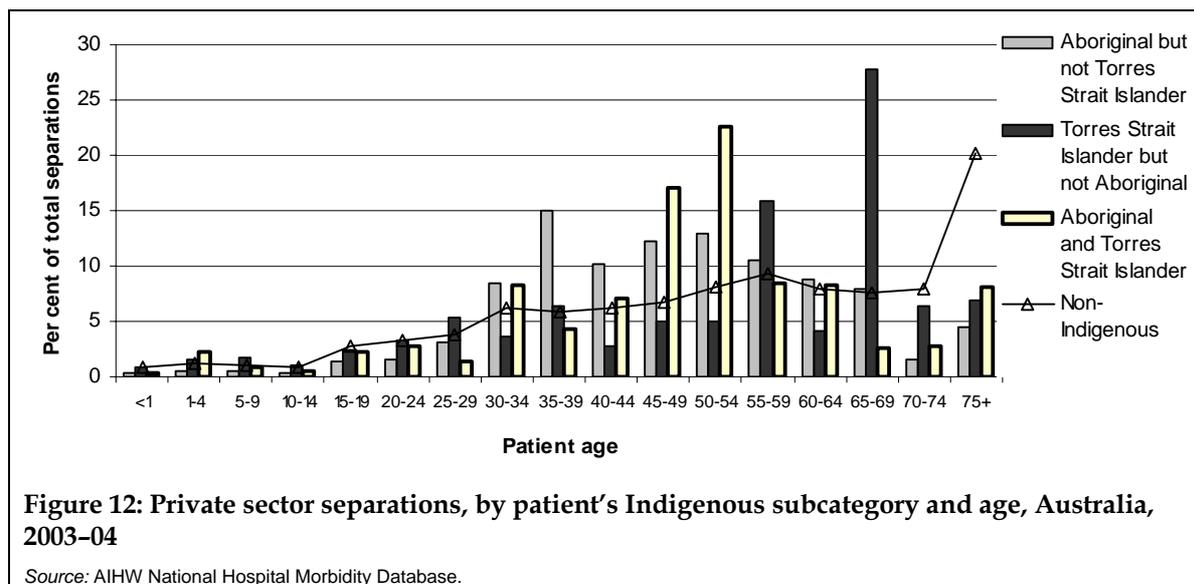


Figure 11: Public sector separations, by patient's Indigenous subcategory and age, Australia, 2003-04

Source: AIHW National Hospital Morbidity Database.



Patient election status

Of the Indigenous subcategories, the subcategory 'Both Aboriginal and Torres Strait Islander origin' was least unlike the category 'Neither Aboriginal nor Torres Strait Islander origin' in terms of private patient representation (Table A15).

At public hospitals 6% of separations for this Indigenous subcategory were for private patients, compared with 14% for the category 'Neither Aboriginal nor Torres Strait Islander origin' and 2-3% for the other Indigenous subcategories. At private hospitals 68% of separations for the subcategory were for private patients, compared with 97% for the category 'Neither Aboriginal nor Torres Strait Islander origin', 22% for the subcategory 'Aboriginal but not Torres Strait Islander origin', and 64% for the subcategory 'Torres Strait Islander but not Aboriginal origin'.

Australian or overseas birthplace

Of the Indigenous subcategories, the subcategory 'Both Aboriginal and Torres Strait Islander origin' was least unlike the category 'Neither Aboriginal nor Torres Strait Islander origin' in terms of the representation of overseas-born patients in public hospital separations. Overseas-born patients contributed 3% of separations for this Indigenous subcategory, compared with 27% of separations for the category 'Neither Aboriginal nor Torres Strait Islander origin' and 0.1-1% of separations for the other Indigenous subcategories (Table A16).

Numbers of overseas-born private hospital separations for the Indigenous subcategories were very small.

Remoteness of patient's usual residence

Although none of the Indigenous subcategories showed any marked similarity with the category 'Neither Aboriginal nor Torres Strait Islander origin' in terms of the remoteness of the patient's usual residence, the subcategory 'Both Aboriginal and Torres Strait Islander origin' showed the least difference in relation to the

representation of patients usually resident in major cities, inner regional areas and very remote areas (Table A17 and Figures 13 & 14).

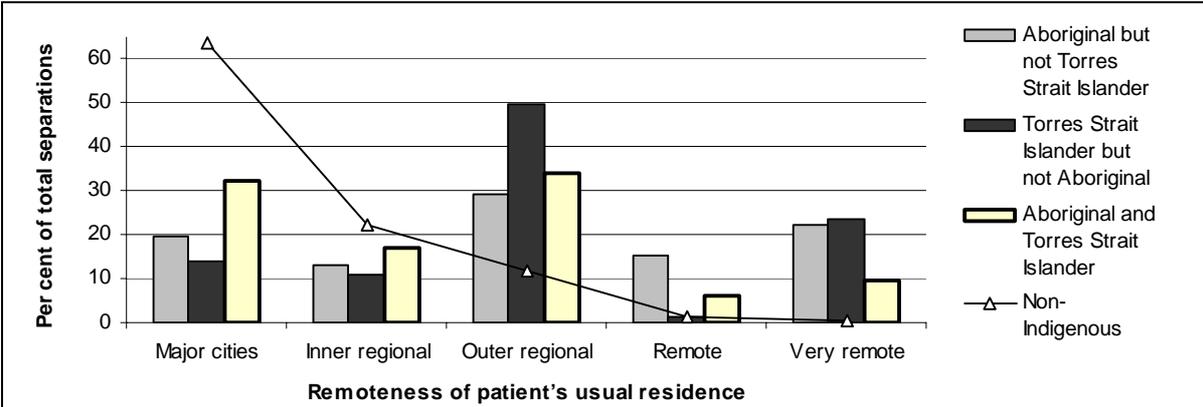


Figure 13: Public sector separations, by patient's Indigenous subcategory and remoteness of patient's usual residence, Australia, 2003-04

Note: Remoteness based on Remoteness Area classification of the Australian Standard Geographic Classification.
 Source: AIHW National Hospital Morbidity Database.

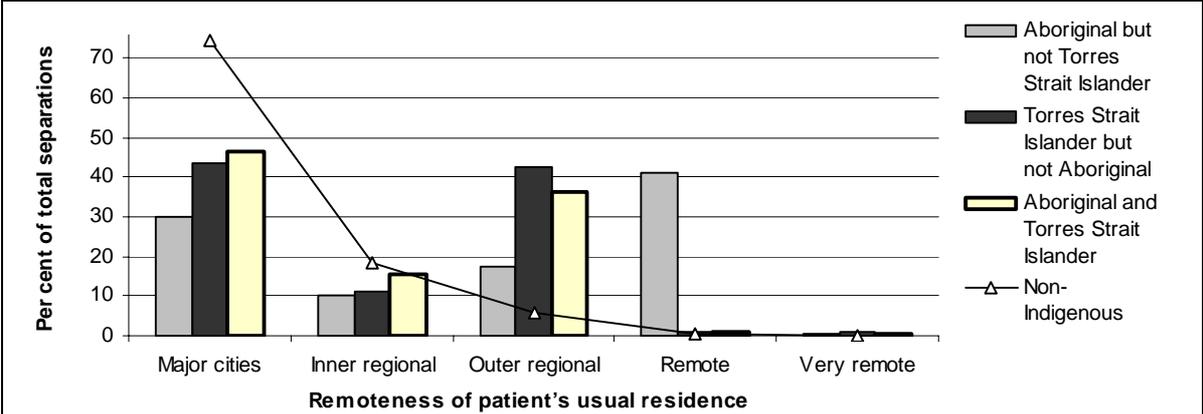


Figure 14: Private sector separations, by patient's Indigenous subcategory and remoteness of patient's usual residence, Australia, 2003-04

Note: Remoteness based on Remoteness Area classification of the Australian Standard Geographic Classification.
 Source: AIHW National Hospital Morbidity Database.

Summary

Patients in each of the Indigenous subcategories who separated from hospital during 2003-04 had many more characteristics in common than any of them shared with their counterparts in the category 'Neither Aboriginal nor Torres Strait Islander origin'.

Similarities with the category 'Neither Aboriginal nor Torres Strait Islander origin' (associated with more than very small numbers of separations) were restricted to the subcategories 'Both Aboriginal and Torres Strait Islander origin' and 'Torres Strait Islander but not Aboriginal origin', particularly the former. Separations for this subcategory were least unlike the subcategory 'Neither Aboriginal nor Torres Strait Islander origin' in relation to sex composition at private hospitals, patient election status at public and private hospitals, overseas birthplace at public hospitals, and

major city, inner regional and very remote usual residence at public and private hospitals.

Overall, these similarities suggest somewhat greater levels of misclassification of non-Indigenous patients to this Indigenous subcategory than to the other Indigenous subcategories. This was also suggested – most notably for Victoria and the Northern Territory – by the examination of separation rate ratios (as just described).

Separations for Indigenous people for whom an overseas country of birth was reported

Nationally, Indigenous status was reported as Indigenous and birthplace was reported as overseas for 476 separations during 2003–04. The country of birth and Indigenous subcategory of these separations were examined to provide insights into the possible reporting of non-Indigenous patients in each of the Indigenous subcategories, in particular the possible use of the Indigenous subcategories to identify non-Australian indigenous people (Tables A18 and A19).

These separations occurred predominantly in New South Wales (63%), Queensland (22%) and Western Australia (8%). About 86% (407) were from the public sector and the remainder from the private sector.

Country of birth groups

Seventy-six separations that were reported to the Indigenous subcategories ‘Torres Strait Islander but not Aboriginal origin’ and ‘Both Aboriginal and Torres Strait Islander origin’ had a country of birth of Papua New Guinea. In view of Papua New Guinea’s proximity to Torres Strait, the reporting as Indigenous of these patients may have been correct in many instances.

Excluding these cases, the remaining 400 separations that were reported as Indigenous and born overseas belonged to the following country groups:

- *Papua New Guinea* – About 3% of the separations (13) were reported to the ‘Aboriginal but not Torres Strait Islander origin’ subcategory and had Papua New Guinea as their country of birth.
- *New Zealand* – About 21% of the separations (83) had New Zealand as their country of birth. These cases perhaps reflect the misidentification of patients of Maori origin. They occurred in all three Indigenous subcategories – ‘Aboriginal but not Torres Strait Islander origin’ (39), ‘Torres Strait Islander but not Aboriginal origin’ (22) and ‘Both Aboriginal and Torres Strait Islander origin’ (22).
- *Micronesia, Polynesia and other Oceania* – About 12% of the separations (46) had a country of birth in Micronesia, Polynesia and other Oceania. These cases perhaps reflect the misidentification of indigenous Pacific Islanders. The majority of these separations (33) were reported to the subcategory ‘Torres Strait Islander but not Aboriginal origin’.

- *Other countries* – About 65% of the separations (258) had a country of birth other than those just discussed. They were predominantly reported to the Indigenous subcategories ‘Aboriginal but not Torres Strait Islander origin’ (121 separations) and ‘Both Aboriginal and Torres Strait Islander origin’ (123). The group was made up of 138 separations with a country of birth in Europe, 61 separations with a country of birth in Asia, 40 separations with a country of birth in Africa or the Middle East, and 19 separations with a country of birth in the Americas.

The Indigenous subcategories

The 476 separations that were reported as Indigenous and born overseas were reported to the Indigenous subcategories as follows:

- *Aboriginal but not Torres Strait Islander origin* – Some 176 of the separations were reported to this subcategory, mainly from New South Wales (94 separations, 53%), Queensland (28 separations, 16%) and Western Australia (33 separations, 19%). The subcategory included about half of the separations for patients reported as Indigenous and born in New Zealand and about half of the separations for patients reported as Indigenous and born in the ‘Other countries’ grouping. These inclusions nevertheless represented less than 0.1% of total separations reported to this subcategory.
- *Torres Strait Islander but not Aboriginal origin* – Some 138 of the separations were reported to this subcategory, mainly from New South Wales (54 separations, 39%) and Queensland (69 separations, 50%). Excluding the 69 separations that had a country of birth of Papua New Guinea, separations with an overseas country of birth represented 0.7% of all separations reported to this subcategory. They included about one-quarter of separations for patients reported as Indigenous and born in New Zealand (0.2% of separations) and the majority of separations for patients reported as Indigenous and born in Micronesia, Polynesia and other Oceania (0.3%).
- *Both Aboriginal and Torres Strait Islander origin* – Some 162 of the separations were reported to this subcategory, mainly from New South Wales (152 separations, 94%) and Queensland (8 separations, 5%). Excluding the 7 separations that had a country of birth of Papua New Guinea, separations with an overseas country of birth represented 2.7% of separations for this subcategory. They included about one-quarter of the separations for patients reported as Indigenous and born in New Zealand (0.4% of separations), about one-quarter of the patients reported as Indigenous and born in Micronesia, Polynesia and other Oceania (0.2%) and about half of the separations for patients reported as Indigenous and born in the ‘Other countries’ grouping (2.2%).

5 Data analysis guidelines

The information presented in Chapters 2, 3 and 4 shows that the quality of Indigenous status information in hospital separations data varies among jurisdictions, between the public and private sectors, and by remoteness area. This presents significant challenges for quantifying the volume and characteristics of hospital admissions for Indigenous people, for which a number of analytical approaches could be used. This chapter presents a set of guidelines to guide the data analyst in dealing with the data quality constraints that exist at this time. This set is rounded out with some guidelines about the use of age standardisation and population data in the analysis of separations data for Indigenous people.

Responses in questionnaires the AIHW sent to state and territory health authorities indicate that few guidelines have been developed for analysis of Indigenous status information in hospital separations data, and no agency has guidelines for how the category 'Not stated/inadequately described' is to be used in analysis and reporting. A set of broad guidelines for analysis of Indigenous status information in hospital separations data is used by Queensland Health. These state that the subcategory 'Torres Strait Islander but not Aboriginal origin' is reported separately in many analyses of Queensland separations data, often by means of a geographic categorisation of separations rather than through the use of the Indigenous status subcategory; the guidelines also state that a correction factor (20%) is sometimes applied to state-wide counts of separations for Indigenous people but not applied at the regional level. The Victorian Department of Human Services reported that, in view of the small counts for the Indigenous subcategories 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin', Victorian counts of separations for Indigenous people are always reported in aggregate as 'Aboriginal and/or Torres Strait Islander origin'.

The guidelines that follow are intended to provide sure grounds for a broad range of analytical purposes, and their application will facilitate comparison of analyses of hospitalisation for Indigenous patients by different analysts and at different times.

For particular analytical purposes, however, there might be defensible reasons for taking a different approach – for example, the use of data for jurisdictions other than those recommended in Guideline 5 (i.e. Queensland, Western Australia, South Australia and the Northern Territory) – provided the analyst understands and explains the extent to which that approach is valid for the purpose in question.

The guidelines have been primarily developed for users of national hospital separations data, but they would also be generally applicable for analysis of data that are not national in coverage.

Primarily directed towards the use of Indigenous status information for analytical purposes, the guidelines are not intended to preclude routine reporting of all separations classified by Indigenous status. Such reporting has an important role in enabling users to ascertain the overall volume of separations and those reported by

each jurisdiction and in providing a mechanism for monitoring differences and changes in Indigenous identification data quality. Accordingly, the AIHW will continue its routine reporting of Indigenous status information in *Australian Hospital Statistics* for all jurisdictions, for all Indigenous subcategories, and for both the public and private sectors.

5.1 Summary of the guidelines

Use of factors to adjust for under-identification of separations for Indigenous patients

1. In the absence of an up-to-date and robust set of factors based on a uniform methodology for all jurisdictions, factors should not be used to adjust for under-identification in the analysis of Indigenous status information in hospital separations data.
2. Use of under-identification factors as currently available is, however, acceptable for analyses for which adjustment is a necessary component – for example, in the estimation of health expenditures for Indigenous people.

Treatment of separations for which Indigenous status is unreported

3. The ‘Not stated/inadequately described’ separations should be amalgamated with the separations for non-Indigenous people in all analyses of Indigenous status information in hospital separations data.
4. Any reporting of separations for which Indigenous status is ‘Not stated/inadequately described’ should be accompanied by a warning that this category is not accommodated in the data systems of certain jurisdictions.

Use of state and territory data

5. When using Indigenous status information for analytical purposes, the data for only Queensland, Western Australia, South Australia and the Northern Territory should be used, individually or in aggregate.
6. Analyses based on data for Queensland, Western Australia, South Australia and the Northern Territory in aggregate should be accompanied by caveats about limitations imposed by jurisdictional differences in data quality and about the data not necessarily being representative of the jurisdictions excluded.
7. Caution should be exercised in time series analysis of data for Queensland, Western Australia, South Australia and the Northern Territory (individually or in aggregate) and findings should include a caveat about the possible contribution to changes in hospitalisation rates for Indigenous people of changes in ascertainment of Indigenous status for Indigenous patients.

Use of private hospital data

8. In the case of Indigenous status information in relation to public and private hospitals, data should be analysed for the combined public and private sectors or the public sector alone. Data for the private sector alone should not be used.

Use of data for the Indigenous subcategories

9. Use of data reported for the 'Aboriginal but not Torres Strait Islander origin' subcategory is recommended for Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate.
10. Use of data reported for the 'Torres Strait Islander but not Aboriginal origin' subcategory is recommended for Queensland and (with caution) for Queensland, Western Australia, South Australia and the Northern Territory in aggregate.
11. Separate use of data reported for the 'Both Aboriginal and Torres Strait Islander origin' subcategory is not recommended.
12. Use of the combined subcategories 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin' is recommended for Queensland and (with caution) for Queensland, Western Australia, South Australia and the Northern Territory in aggregate.
13. Use of the combined subcategories 'Aboriginal but not Torres Strait Islander origin' and 'Both Aboriginal and Torres Strait Islander origin' is recommended for Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate.

Regional analysis of separations data

14. Analysis of separations for Indigenous people should generally not be undertaken by remoteness area of either the patient's usual residence or the hospital's location.

Use of age standardisation and population data

15. Indirect age standardisation is recommended for comparing the separation rate for a single Indigenous population of interest with the rate for a single not-reported-as-Indigenous comparison group.
16. For comparing separation rates for Indigenous and not-reported-as-Indigenous populations across multiple jurisdictions, time periods or other groupings, direct age standardisation should be used whenever populations are large enough to provide reliable results.
17. When deriving age-standardised Indigenous separation rates, age groups should be amalgamated where greater than an age determined by analysis of the data in question, as necessary, to ensure that all age groups have sufficient numbers for reliable results.

18. When deriving separation rates for Indigenous populations, the official Australian Bureau of Statistics population estimates or projections should be used without adjustment for possible under-identification in those data.
19. Reporting of Indigenous separation rates based on the Australian Bureau of Statistics population projections should indicate whether the high or low projection series was used. The low series is recommended.

5.2 Use of factors to adjust for under-identification of separations for Indigenous patients

This guideline concerns the proposition to adjust overall counts of separations for Indigenous people by applying under-identification factors. Full elaboration of this arrangement might see a corresponding set of factors applied to separations for non-Indigenous people (reflecting the corresponding over-identification of that group).

The factors would account for the net understatement or overstatement in separations for Indigenous and non-Indigenous people stemming from various types of errors in the reporting of Indigenous status – that is, patients being recorded to the category ‘Not stated/inadequately described’, Indigenous patients being recorded to the category ‘Neither Aboriginal nor Torres Strait Islander origin’ or in an incorrect Indigenous subcategory, and non-Indigenous patients being recorded in one of the Indigenous subcategories.

Data users would apply such adjustment as a step in data analysis. It is not proposed that state and territory health authorities would make adjustments to separations records in advance of those records being provided to organisations such as the AIHW or to any other recipient of unanalysed data.

Findings

A need for under-identification factors to be applied to Indigenous separation numbers is suggested by examination of jurisdictions’ policies for ascertainment of Indigenous status, the findings from analysis of national hospital morbidity data, and jurisdictions’ assessments of their Indigenous status data quality.

Jurisdictions’ processes for ascertaining Indigenous status

A ‘Not stated/inadequately described’ response to Indigenous status is not accommodated in data systems in Victoria and Western Australia. Such a response is permitted elsewhere but, with the exception of Tasmania and the Northern Territory, there is no common practice for follow-up of these patients, and it is unknown to what extent the policy is adhered to in Tasmania. There are two implications for Indigenous identification:

- In Victoria and Western Australia some Indigenous patients will be misclassified as non-Indigenous.

- The lack of follow-up in New South Wales, Queensland, South Australia, the Australian Capital Territory and possibly Tasmania could mean that Indigenous patients are under-identified.

The occurrence of separations for which Indigenous status is not reported

Analysis of national hospital separations data revealed that most instances of non-reporting of Indigenous status during 2003–04 and earlier years were contributed by Queensland, Tasmania and the Northern Territory, predominantly from the private sectors of these jurisdictions. Overall, the non-reporting of Indigenous status has been as follows since 1996–97:

- New South Wales – about 0.5–0.7% of separations at public hospitals and about 0.1% of separations at private hospitals
- Victoria – unreported Indigenous status not accommodated in data systems
- Queensland – a steady decrease for public hospitals, to under 2% in 2003–04, and a decrease for private hospitals, to about 24% in 2003–04
- Western Australia – unreported Indigenous status not accommodated in data systems
- South Australia – about 2–3% for public hospitals and a steady decrease for private hospitals, to 1.4% in 2003–04
- Tasmania – about 6–7% since 1999–00 for public hospitals and erratic levels of between 56% and 67% since 2000–01 for private hospitals
- Australian Capital Territory – about 1–3% for public hospitals and erratic levels of up to 6% for private hospitals
- Northern Territory – 100% for private hospitals and a steady decrease, to less than 0.1%, for public hospitals.

Analysis of separation rate ratios in national hospital separations data

Separation rate ratios give a more complete picture of the quality of Indigenous status data, although caution is required when interpreting interstate comparisons between the ratios because interstate variations in both population health and health systems can have significant effects that might need to be taken into account.

The rate ratios were relatively high from 1996–97 to 2003–04 for Western Australia, South Australia, the Australian Capital Territory and the Northern Territory – increasingly so for the Northern Territory. They were moderately high and increasing for Queensland. They were relatively low for New South Wales and Victoria but were increasing for Victoria. They were very low but possibly increasing for Tasmania.

The overnight separation rate ratios (which exclude dialysis patients, for whom better Indigenous identification may be expected) were relatively high during the period for Western Australia, South Australia and the Northern Territory – increasingly so for the Northern Territory. They were moderately high for Queensland and the Australian Capital Territory – increasingly so for Queensland.

They were relatively low and not increasing for New South Wales and Victoria, and very low but possibly increasing for Tasmania.

Separation rate ratios and overnight separation rate ratios for Western Australia, South Australia and the Northern Territory in aggregate and for Queensland, Western Australia, South Australia and the Northern Territory in aggregate were both consistently high and increasing during the period.

Jurisdictions' assessments of Indigenous identification in their separations data

Jurisdictions' assessments of Indigenous identification in their separations data for 2003–04 (reported in Section 2.2) can be summarised as follows:

- reliable for the Northern Territory public sector but underestimated for the Northern Territory private sector
- acceptable for both the public sector and the private sector in Western Australia
- acceptable for the public sector in South Australia but not acceptable for the private sector
- underestimated for New South Wales, Victoria and Queensland (although Victoria considers that its data quality has steadily increased and anticipates a substantial improvement following implementation of the Improving Care for Aboriginal Patients goals, noted in Section 3.1)
- substantially underestimated for the Australian Capital Territory and Tasmania.

Under-identification factors used by the AIHW

Based on a range of information, including data quality assessments sought from health authorities, the AIHW used factors to adjust for under-identification of separations for Indigenous patients for use in its report on health expenditure for Indigenous people for 2001–02 (AIHW 2005b). The factors were New South Wales, 30%; Victoria, 25%; Queensland, 20%; Western Australia, 6%; and the Australian Capital Territory, 30%. (Adjustment was deemed unnecessary for the South Australia and Northern Territory data, and no factor was provided for the Tasmania data.)

Discussion

The need for adjustment factors that provide more accurate separation numbers and separation rates for Indigenous people is indicated by the findings just summarised, which suggest that separation numbers and separation rates for Indigenous people are substantially underestimated in a number of jurisdictions. Use of adjustment factors relies, however, on the availability of factors that are sufficiently accurate to give better estimates than those provided by the unadjusted data.

If the shortfall in separations for Indigenous people stemmed solely or largely from reporting Indigenous patients to the 'Not stated/inadequately described' category of Indigenous status, it might be appropriate to derive truer separation numbers and rates for Indigenous and non-Indigenous people by apportioning the count of the 'Not stated/inadequately described' category between the Indigenous and non-

Indigenous counts by some means, such as the relative proportions of reported separations for Indigenous and non-Indigenous people, if that means was assessed to be reliable. The findings of a number of data quality assessments based on patient interviews (summarised in Section 2.1) suggest, however, that a numerically larger contribution to the shortfall probably stems from misclassification of Indigenous people as non-Indigenous.

Because the relative sizes of the two contributions are not known, it would also not be possible to adjust separation numbers for Indigenous patients by a method that apportioned to the Indigenous category some of the count of the 'Not stated/inadequately described' category and some of the count of the non-Indigenous category.

Simple adjustment of the count of separations for Indigenous people would thus be required for the time being. At the national level the only set of such adjustment factors currently available is the set used by the AIHW for analysing hospital expenditure for Indigenous people (described in Section 2.2). There are a number of concerns about use of these factors:

- The factors have been developed solely for reporting hospital expenditure, a significant consideration being consistency with adjustments that had been applied in previous expenditure reports. The suitability of the factors for purposes beyond this expenditure reporting is untested.
- No factor was provided for Tasmania.
- Through necessity, there were substantial differences in the inputs used to determine the factors pertaining to the different jurisdictions. It was not possible to derive a set of factors based on a uniform method for all jurisdictions.
- Whereas the derivation of the factors included consideration of all available qualitative assessments and quantitative evidence, there were substantial differences between jurisdictions in the age of this information, its robustness and the reliability with which it could be extrapolated to represent the overall picture for a jurisdiction.

There are two important general considerations in relation to the use of adjustment factors:

- Limitations on the use of adjustment factors need to be acknowledged. Whatever their method of derivation, the factors would reflect the average level of under-identification of Indigenous patients across a given group of separations. The current factors were derived, for example, on a jurisdiction-wide basis. Use of the factors might therefore be problematic in analyses directed at demographic, regional or clinical subgroups of separations for Indigenous people.
- Use of adjustment factors would impose unwieldiness on some standard calculations. Derivation of a directly age standardised national separation rate based on adjusted jurisdictional counts would, for example, require derivation of an adjusted separation count for each age group by summation of the adjusted counts for that age group for each jurisdiction. Similarly, certain multi-jurisdiction analyses would require application of adjustment weights to

individual separations. Such adjustment would be unwieldy and only possible where the data analyst had access to unit record data.

Guidelines

Guideline 1

In the absence of an up-to-date and robust set of factors based on a uniform methodology for all jurisdictions, factors should not be used to adjust for under-identification in the analysis of Indigenous status information in hospital separations data.

The foregoing makes it clear that these conditions are not satisfied at present.

If suitable adjustment factors were available, their application could be done in parallel with arrangements to amalgamate separations for which Indigenous status was not reported with separations for non-Indigenous people (Guideline 3). Any under-identification adjustment would require an explanation in accompanying documentation.

Application of adjustment factors is recommended only within the limits of sophistication of the available factors. Adjustment is not, for example, generally recommended for analyses involving demographic or clinical breakdowns unless the adjustment factors were available by age, sex, region, principal diagnosis etc.

Guideline 2

Use of under-identification factors as currently available is, however, acceptable for analyses for which adjustment is a necessary component – for example, in the estimation of health expenditures for Indigenous people.

The methodology the AIHW uses for estimating health expenditures for Indigenous people is based, for example, on the apportionment of total health expenditure between the Indigenous and non-Indigenous populations. This necessitates apportionment of total separations between the two groups which in turn necessitates use of adjustment factors.

5.3 Treatment of separations for which Indigenous status is unreported

This guideline concerns the treatment of ‘Not stated/inadequately described’ separations in the analysis and reporting of Indigenous status information in separations data.

It is desirable that a consistent treatment of these separations be established for analysis purposes – for example, the derivation of separation rates for Indigenous and non-Indigenous people. A consistent approach is less crucial for basic reporting of separations counts, and it would be expected that the reporting of ‘Not stated/inadequately described’ separations would be retained in some contexts, such as the AIHW’s reporting of Indigenous status data in *Australian Hospital Statistics*.

There are five options for treatment of the 'Not stated/inadequately described' separations:

1. Amalgamate them with counts of separations for non-Indigenous people.
2. Exclude them from the analysis.
3. Distribute them between the counts of separations reported for Indigenous people and non-Indigenous people in accord with the representation of Indigenous and non-Indigenous people in the population in question.
4. Distribute them between the counts of separations reported for Indigenous and non-Indigenous people in accord with the relative sizes of those counts.
5. Include them in counts of separations for Indigenous people.

Findings

The occurrence of separations for which Indigenous status is not reported

See Section 5.2.

The composition of the 'Not stated/inadequately described' category

Excluding Victoria and Western Australia and a major hospital in the Australian Capital Territory, where unreported Indigenous status was not accommodated in data systems at that time, Indigenous status was unreported in 2003–04 for 12.5% of private sector separations and 1.5% of public sector separations. Nationally, 207,418 of the 246,050 separations for which Indigenous status was not reported were contributed by the private sector. Taken together with an assumption that Indigenous people are not often hospitalised in the private sector, this fact suggests that separations for which Indigenous status is not reported are substantially more likely to pertain to non-Indigenous patients than to Indigenous patients.

Analysis of selected patient characteristics in all hospital separations for 2003–04 also indicates that in both the public and private sectors the 'Not stated/inadequately described' category of Indigenous status had substantially greater similarities with the non-Indigenous category than with the Indigenous category across the patient characteristics that were examined.

These findings are supported by the results of the 1998 ATSIHWIU study described in Section 2.1. Although the results should be interpreted with some caution since the study was intended as a restricted pilot test of the patient interview methodology, it was found that, whereas separations for Indigenous people make a greater relative contribution to the 'Not stated/inadequately described' category, the predominant contribution is nevertheless made by separations for non-Indigenous people. Overall, 95 of 110 patients for whom Indigenous status was not recorded at admission were later identified as non-Indigenous (86%) and 13 were identified as Indigenous (12%).

Evaluation of options

Table 17 shows separation numbers and separation rates for Indigenous and non-Indigenous people in 2003–04 for each of the five options for treatment of ‘Not stated/inadequately described’ separations. These data are for Australia as a whole – not for solely Queensland, Western Australia, South Australia and the Northern Territory, as recommended in Guideline 5.

Table 17: Separations, separation rates and rate ratios derived under various treatments of separations for which Indigenous status was not reported, Australia, 2003–04

Separations count, separation rate or separation rate ratio	Type of treatment of separations for which Indigenous status was not reported				
	Include with non-Indigenous (Option 1)	Exclude altogether (Option 2)	Distribute using population counts (Option 3)	Distribute using separations counts (Option 4)	Include with Indigenous (Option 5)
Separations for Indigenous patients	216,147	216,147	219,912	224,369	462,197
Separations for non-Indigenous patients	6,625,078	6,379,028	6,621,313	6,616,856	6,379,028
Crude separation rate for Indigenous patients	454.7	454.7	462.6	471.9	972.2
Crude separation rate for non-Indigenous patients	341.5	328.9	341.4	341.1	328.9
Age-standardised ^(a) separation rate for Indigenous patients	721.7	721.7	733.9	750.1	2,115.6
Age-standardised ^(a) separation rate for non-Indigenous patients	334.7	322.3	334.5	334.3	322.3
Indigenous to non-Indigenous separation rate ratio ^(b)	2.16	2.24	2.19	2.24	6.56

(a) The separation rates were directly age standardised, with the standard population taken as the estimated total resident Australian population for 30 June 2001 and the age-specific rates derived using ABS population estimates and low-series Indigenous population projections for 30 June 2003.

(b) The separation rate ratio is the age-standardised separation rate for Indigenous people divided by the age-standardised separation rate for non-Indigenous people.

Option 1: Amalgamate the separations with counts of separations for non-Indigenous people

Under Option 1, separations for which Indigenous status was not reported would be amalgamated with counts of separations for non-Indigenous people in a new category termed ‘Not reported as Indigenous’. This option is supported by findings about the composition of the ‘Not stated/inadequately described’ category from the analysis of national hospital separations data and the 1998 ATSIHWIU study.

A distinct advantage of Option 1 is that it is the only one of the five options that results in the data from all jurisdictions being treated in a fairly consistent manner. As noted in Section 3.1, unreported Indigenous status effectively defaults to ‘Neither Aboriginal nor Torres Strait Islander origin’ at public hospitals in Western Australia. Similarly, where hospital admissions staff make an arbitrary assignment of Indigenous status (as perhaps sometimes occurs when the recording of a ‘Not stated/inadequately described’ response is not accommodated in the electronic patient administration system, as is the case at public hospitals in Victoria) this assignment is perhaps more likely to be to the category ‘Neither Aboriginal nor

Torres Strait Islander origin' than to an Indigenous subcategory. This could be particularly the case in Victoria, where Indigenous people account for a relatively small proportion of the population.

Separation numbers and separation rates derived for Indigenous people under this approach would be identical to those derived under Option 2 (Table 17). Slightly larger separation numbers and separation rates would be derived for the non-Indigenous category than under Option 2, and the non-Indigenous category would also include a number of separations for Indigenous people. The overall impact on both the size and characteristics of the non-Indigenous category would, however, be negligible. Other than resulting in a slight reduction in the Indigenous to non-Indigenous separation rate ratio, there would be little impact on the principal role of the category as a base for comparison with separations for Indigenous people.

Option 2: Exclude the separations from the analysis

Under Option 2, separations for which Indigenous status was not reported would be excluded altogether from the analysis.

As noted, this option would produce separation numbers and separation rates for Indigenous people that are identical to those derived under Option 1 and it would produce an Indigenous to non-Indigenous separation rate ratio only marginally larger than that derived under Option 1. Unlike Option 1, however, Option 2 would effectively result in the data for Victoria and Western Australia being treated in a manner different from the data for the other jurisdictions.

Option 3: Distribute the separations between the Indigenous and non-Indigenous counts in accord with population

Under Option 3, separations for which Indigenous status was not reported would be distributed between the counts of separations reported for Indigenous and non-Indigenous people for a given jurisdiction in proportion to the representation of Indigenous and non-Indigenous people in the population of that jurisdiction. Results for a group of jurisdictions in aggregate would be derived by summation of the adjusted counts for the individual jurisdictions. Results for an individual Indigenous subcategory would require a distribution of the 'Not stated/inadequately described' separations that took into account the representation of that Indigenous subcategory in the population in question.

This option would result in relatively small differences in the separation rate for Indigenous people and the Indigenous to non-Indigenous separation rate ratio compared with those derived under exclusion of the 'Not stated/inadequately described' separations or amalgamation of them with the separations for non-Indigenous people (Table 17).

There are four concerns with this option:

- The option incorporates the assumption that the representation of Indigenous people in the 'Not stated/inadequately described' category is likely to approximate that in the population in question. There is no evidence for this assumption. Whereas both the 1998 ATSIHWIU study and analysis of the patient

characteristics of national hospital separations data support the proposition that the majority of cases in the 'Not stated/inadequately described' category are separations for non-Indigenous people, the 1998 ATSIHWIU study found that the category is nevertheless likely to contain a greater representation of separations for Indigenous people than the representation of Indigenous people in the population.

- Application of this method is not entirely straightforward. In order to permit derivation of directly age standardised separation rates, a separate distribution of 'Not stated/inadequately described' separations would need to be done for each of the five-year age groups (with each distribution applied in proportion to the representation of Indigenous and non-Indigenous people in that age group of the population).
- For analytical purposes beyond the examination of overall separation numbers and rates (e.g. analysis relating to diagnosis groups), it would be necessary to allocate the individual 'Not stated/inadequately described' separations between the Indigenous and non-Indigenous categories. This would only be possible where the data analyst had access to unit record data. Also, in the absence of a method for reliably determining which of the 'Not stated/inadequately described' separations most likely pertained to the Indigenous and non-Indigenous categories, the prospect exists of data analyses producing different results depending on which of the separations are assigned to the Indigenous category and which are assigned to the non-Indigenous category.
- Unlike Option 1, this option would effectively result in the data for Victoria and Western Australia being treated in a manner different from the data for the other jurisdictions.

Option 4: Distribute the separations between the Indigenous and non-Indigenous counts on the basis of the relative sizes of those counts

Under Option 4, separations for which Indigenous status was not reported would be distributed between the counts of separations reported for Indigenous and non-Indigenous people for each jurisdiction on the basis of the relative sizes of those counts. Results for a group of jurisdictions in aggregate would be derived by summation of the adjusted counts for the individual jurisdictions. Results for an individual Indigenous subcategory would require a distribution of the 'Not stated/inadequately described' separations that took into account the representation of that Indigenous subcategory in the separations reported for Indigenous people.

As with Option 3, this option would result in relatively small differences in the separation rate for Indigenous people and the Indigenous to non-Indigenous separation rate ratio compared with those derived under either the exclusion of the 'Not stated/inadequately described' separations or the amalgamation of them with the separations for non-Indigenous people (Table 17).

This option presents concerns similar to those described for Option 3:

- The option incorporates the assumption that the representation of Indigenous patients in the 'Not stated/inadequately described' category is likely to

approximate the representation of Indigenous patients in total separations. There is no evidence for this assumption.

- Application of this method is not entirely straightforward. There would need to be individual distributions for each age group, applied in proportion to the representation of reported separations for Indigenous and non-Indigenous people in that age group.
- The prospect exists of data analysis producing different results depending on which 'Not stated/inadequately described' separations are assigned to the Indigenous category and which are assigned to the non-Indigenous category.
- Unlike Option 1, this option would effectively result in the data for Victoria and Western Australia being treated in a manner different from the data for the other jurisdictions.

Option 5: Include the separations in counts of separations for Indigenous people

Under Option 5, separations for which Indigenous status was not reported would be included in counts of separations for Indigenous people or, where required, distributed in some way among the counts reported for each of the individual Indigenous subcategories.

There are substantial grounds militating against adoption of this option:

- The available evidence suggests that most of the 'Not stated/inadequately described' separations pertain to non-Indigenous patients.
- This treatment of the 'Not stated/inadequately described' separations causes separation numbers and separation rates for Indigenous people and the Indigenous to non-Indigenous separation rate ratio to be substantially different from those derived under any of the alternative treatments (Table 17).
- No method exists for accurately distributing the 'Not stated/inadequately described' separations among the individual Indigenous subcategories should such a distribution be required.
- Unlike Option 1, this option would effectively result in the data for Victoria and Western Australia being treated in a manner different from the data for the other jurisdictions.

Guidelines

Guideline 3

The 'Not stated/inadequately described' separations should be amalgamated with the separations for non-Indigenous people in all analyses of Indigenous status information in hospital separations data.

The new category made up of these amalgamated separations would be termed 'Not reported as Indigenous' or, if space considerations require it, 'Not Indigenous' or 'Other'.

Such a treatment of the data would need to be explained in accompanying documentation. It would generally be necessary for this reporting to include an account of the overall representation of 'Not stated/inadequately described' separations in the composite category, but reporting on the contribution of 'Not stated/inadequately described' separations from each jurisdiction is also likely to be needed in some contexts.

Guideline 4

Any reporting of separations for which Indigenous status is 'Not stated/inadequately described' should be accompanied by a warning that this category is not accommodated in the data systems of certain jurisdictions.

For 2003–04 data this warning would state, for example, that:

- (a) 'Not stated/inadequately described' separations are amalgamated with separations for non-Indigenous people in Western Australia and at a major hospital in the Australian Capital Territory.
- (b) 'Not stated/inadequately described' separations are not accommodated in the reporting arrangements adopted in Victoria, leading to uncertainty about the quality of classification for separations that would otherwise be reported as 'Not stated/inadequately described'.

5.4 Use of state and territory data

Whereas a great deal of evidence exists to suggest a poorer health status for the Indigenous population, the volume and characteristics of hospital use by this population cannot be precisely established at a national level because of poor identification of Indigenous patients in the hospital separations data for some jurisdictions. One approach to deal with this circumstance is to analyse the data for solely the jurisdictions assessed to have a reasonable level of identification of Indigenous patients in order to form a reasonably precise quantification of hospital use across the largest achievable section of the Indigenous population.

Interpretation of such an analysis as representative of the national picture should, however, be discouraged: the hospitalisation experience of the 60% of the Indigenous population covered by, for example, by Queensland, Western Australia, South Australia and the Northern Territory should not be assumed to be representative of the hospitalisation experience of the remainder.

Three options are assessed for the analysis of Indigenous status information in state and territory hospital separations data, given current data quality:

1. Use the data from all jurisdictions.
2. Use data for solely those jurisdictions where the quality of the data has been reported as acceptable – namely, Western Australia, South Australia and the Northern Territory.
3. Use data for Queensland, Western Australia, South Australia and the Northern Territory only.

This question is primarily concerned with data analysis, and it is envisaged that data on Indigenous status for all jurisdictions would continue to be shown for contexts of monitoring data quality and of providing information on total numbers of separations for Indigenous patients reported for each jurisdiction (including reporting by the AIHW in *Australian Hospital Statistics*).

Findings

Jurisdictions' processes for ascertaining Indigenous status

See Section 5.2.

Assessments of jurisdictions' data and summary of under-identification factors used by the AIHW

See Section 5.2.

Analysis of national hospital separations data

See Section 5.2.

Time series considerations from the analysis of national hospital separations data

The analysis of national hospital separations data suggests that identification of Indigenous patients has been improving over time for a number of jurisdictions, which suggests a need for caution in any time series analysis of separations for Indigenous patients for those jurisdictions. The following changes between 1996–97 and 2003–04 are noteworthy:

- substantial decreases in the non-reporting of Indigenous status for public and private hospitals in Queensland, for private hospitals in South Australia, and for public hospitals in the Northern Territory
- significant increases in separation rate ratios for Victoria and Queensland, for public hospitals in the Northern Territory, for Queensland, Western Australia, South Australia and the Northern Territory in aggregate, and for Western Australia, South Australia and the Northern Territory in aggregate
- significant increases in overnight separation rate ratios for Queensland, for public hospitals in the Northern Territory, and for Queensland, Western Australia, South Australia and the Northern Territory in aggregate.

For various jurisdictions, the need for caution is reinforced by the occurrence of isolated large movements in separation rate ratios (see Section 4.1).

Evaluation of options

Option 1: Use the data from all jurisdictions

Under Option 1, data for all jurisdictions would be used, either individually or in aggregate, when analysing information about Indigenous status in separations data.

A concern with using data for all jurisdictions in aggregate is that this approach assumes that under-identification is randomly distributed or negligible in its effects on the focus of the analysis, and this is not the case. Under-identification is higher in jurisdictions that have a greater proportion of their Indigenous population resident in urban areas (New South Wales, Victoria, Tasmania and the Australian Capital Territory) (Table A21). It is also relatively high in Queensland, which has a larger proportion of people of Torres Strait Islander but not Aboriginal origin and of both Aboriginal and Torres Strait Islander origin (Table A20).

Option 2: Use solely the data for Western Australia, South Australia and the Northern Territory

When analysing Indigenous status information under Option 2, data would be used, either individually or in aggregate, for solely those jurisdictions for which the quality of the data is reported as acceptable (currently Western Australia, South Australia and the Northern Territory). Adding other jurisdictions as the quality of their data reached a level of acceptability would perhaps serve as an incentive for improved Indigenous identification.

A concern with this approach is that the use of data for these three jurisdictions in aggregate does not reflect the diversity of social and economic circumstances within the Indigenous and non-Indigenous populations. These jurisdictions account for only 18% of the population of Australia and only 19% of national hospital separations. Similarly, they account for only 32% of the Indigenous population of Australia and only 48% of national hospital separations reported as being for Indigenous people (Tables 8 and A20). Only jurisdictions containing substantial proportions of the Indigenous population resident in less urbanised and more remote locations are included (Table A21).

Another concern is the exclusion of Queensland, which contributes a majority of the 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin' population groups and a majority of the separations for these groups.

This type of approach would have its greatest relevance in analyses specifically requiring a high degree of precision in Indigenous identification, but the limitations would represent serious shortcomings in many other analyses of national data.

Option 3: Use solely the data for Queensland, Western Australia, South Australia and the Northern Territory

Under Option 3, data for Queensland are added to the data for the three jurisdictions specified in Option 2, notwithstanding 22% non-reporting of Indigenous status in separations at Queensland private hospitals in 2003–04 and an estimated 20% overall under-identification of Indigenous patients in the state for 2001–02.

Inclusion of Queensland would be in recognition of the relatively high Indigenous population in that state. It would also be in recognition of the need to monitor hospitalisations for Torres Strait Islander people and of the predominant contribution of Queensland to the 'Torres Strait Islander but not Aboriginal origin' and 'Both

Aboriginal and Torres Strait Islander origin' population groups (59% in 2001) and to the hospital separations for these groups (73% in 2003–04).

In aggregate, these four jurisdictions better reflect the diversity of social and economic circumstances in the Indigenous and non-Indigenous populations than the three jurisdictions of Option 2. They account for 38% of the population of Australia and 39% of national hospital separations. Similarly, they account for 60% of the Indigenous population of Australia and 75% of national hospital separations reported as being for Indigenous people.

Inclusion of Queensland data would mean that jurisdictions with under-identification factors of 20% or less in the AIHW's expenditure study for 2001–02 would be included, but those with higher under-identification factors (including Victoria at 25%) would not be included.

Guidelines

Guideline 5

When using Indigenous status information for analytical purposes, the data for only Queensland, Western Australia, South Australia and the Northern Territory should be used, individually or in aggregate.

This guideline is intended to reflect the quality of Indigenous status information in the hospital separations data for each jurisdiction, as assessed at the time of publication of this report, but with the intention that over time it would be modified to include any jurisdiction that had attained a reasonable level of identification of Indigenous patients in its data.

Use of data for the Northern Territory is specified in the guideline, but, in view of the need to preserve the confidentiality of data for Darwin Private Hospital, the guideline should be interpreted to mean the use of data solely for Northern Territory public hospitals.

In applying this guideline, the data analyst should bear in mind that the purpose for using data for Queensland, Western Australia, South Australia and the Northern Territory in aggregate is to form a reasonably precise quantification of hospital use for a majority of the Indigenous population. The purpose should not be to attempt to represent the national picture: the hospitalisation experience of the 60% of the Indigenous population covered by Queensland, Western Australia, South Australia and the Northern Territory cannot be assumed to be representative of the hospitalisation experience of the remainder.

For particular analytical purposes, there may be defensible reasons for including data for jurisdictions other than the recommended ones, provided the analyst understands and explains the extent to which the other data are usable for the particular purpose.

As noted, the guidelines put forward here are directed at the use of Indigenous status information for analytical purposes, and it is not intended to preclude routine reporting of separations classified by Indigenous status for all jurisdictions. Such

reporting has an important role in enabling users to ascertain the overall volume of separations and those accounted for by particular jurisdictions and in providing a mechanism for monitoring differences and changes in the quality of Indigenous identification data. The AIHW will continue its routine reporting of Indigenous status information in *Australian Hospital Statistics* for all jurisdictions.

Guideline 6

Analyses based on data for Queensland, Western Australia, South Australia and the Northern Territory in aggregate should be accompanied by caveats about limitations imposed by jurisdictional differences in data quality and about the data not necessarily being representative of the jurisdictions excluded.

These caveats should specifically warn as follows:

- Interpretation of results should take into account the relative quality of the data from the jurisdictions included in the analysis (currently a degree of Indigenous under-identification in Western Australian data and relatively marked Indigenous under-identification in Queensland data).
- Analysis and reporting of this restricted set of data are intended to provide a reasonably precise quantification of hospital use for a majority of the Indigenous population. They do not necessarily provide an accurate representation of the national picture because the hospitalisation experience of the 60% of the Indigenous population covered by the analysis cannot be assumed to be representative of the hospitalisation experience of the remainder.

In addition, all tables and charts based on aggregated data for the four jurisdictions should include a footnote such as 'Data are for Queensland, South Australia, Western Australia and the Northern Territory combined'.

Data analysts might also find it beneficial to accompany their findings with contextual remarks giving the total number of separations for Indigenous people reported throughout Australia in the year(s) in question and the proportion of the national separations for Indigenous people accounted for by the four jurisdictions included in the analysis (e.g. 75% of 216,147 total separations in 2003–04) and the proportion of the total Indigenous population covered by them (60% at 30 June 2003).

Guideline 7

Caution should be exercised in time series analysis of data for Queensland, Western Australia, South Australia and the Northern Territory (individually or in aggregate), and findings should include a caveat about the possible contribution to changes in hospitalisation rates for Indigenous people of changes in ascertainment of Indigenous status for Indigenous patients.

The available evidence suggests that identification of Indigenous patients has been improving over time for Queensland, Western Australia and South Australia and for public hospitals in the Northern Territory, so caution should be used in any time series analysis of separations for Indigenous patients in these jurisdictions, and caveats should be included to state that any increase in hospitalisation rates for Indigenous patients might be the result of improved identification.

5.5 Use of private hospital data

This section deals with the question of whether hospital separations data should be used for the private sector alone or used solely for the combined public and private sectors or the public sector alone.

Findings

Admission procedures at private hospitals

The admission procedures summarised in Section 3.2 indicate only partial use of the standard Indigenous status question and response categories established by the Australian Bureau of Statistics and only partial recording of Indigenous status in keeping with the classification set out in the *National Health Data Dictionary*. No policies were reported for the follow-up of patients whose Indigenous status is not reported at admission. Indigenous hospital liaison officers are not employed to assist in obtaining accurate Indigenous identification. Few processes and policies are in operation to encourage or require private hospitals to record Indigenous status in a standard manner.

Analysis of national hospital separations data

The relatively poor arrangements for ascertaining the Indigenous status of patients at private hospitals were reflected in the analysis of national hospital separations data.

This showed that the private sector contributes about 84% of all separations for which Indigenous status is not reported (207,418 of 246,050 separations in 2003–04). Excluding Victoria and Western Australia and a major hospital in the Australian Capital Territory, where unreported Indigenous status was not accommodated in data systems at that time, Indigenous status was not reported in 2003–04 for 12.5% of private sector separations. Indigenous status was not reported for 24.0%, 56.1% and 100% of separations from private hospitals in Queensland, Tasmania and the Northern Territory respectively.

Discussion

The case against separate use of data for the private sector centres on the relatively poor arrangements for ascertaining the Indigenous status of patients at private hospitals, as reflected in the analysis of national hospital separations data.

Indigenous people also apparently make relatively little use of private hospitals, although there is a need to properly quantify the extent of this use. Nationally, only 6% of separations for patients reported as Indigenous came from the private sector in 2003–04 (13,121 of 216,147 separations), although the poor arrangements noted in Section 3.2 for obtaining information about Indigenous status at private hospitals suggest that this figure should be treated with considerable caution. Much lower levels of private hospital insurance among Indigenous people than among non-

Indigenous people is indicated by sample survey data (ABS 1995), which also suggests relatively low use of private hospitals by Indigenous people.

Guideline

Guideline 8

In the case of Indigenous status information in relation to public and private hospitals, data should be analysed for the combined public and private sectors or the public sector alone. Data for the private sector alone should not be used.

Use of data for the public sector alone is considered reasonable because the public sector is the main contributor to the quality of Indigenous status data for each jurisdiction.

Use of data for the combined sectors is also considered reasonable. Given that the private sector contribution to separations for Indigenous people is apparently relatively small, under-identification in the private sector would be expected to have a relatively limited effect on the analysis of separations for Indigenous people based on data for the combined sectors.

5.6 Use of data for the Indigenous subcategories

This guideline concerns use of the Indigenous subcategories (and combinations of them) in the analysis and reporting of information on Indigenous status in hospital separations data. As recommended in the *National Health Data Dictionary*, the subcategories are 'Aboriginal but not Torres Strait Islander origin', 'Torres Strait Islander but not Aboriginal origin', and 'Both Aboriginal and Torres Strait Islander origin'.

Findings and discussion

In 2003–04 there were 200,746 separations for patients reported as 'Aboriginal but not Torres Strait Islander origin'. They accounted for the overwhelming majority of separations for Indigenous patients. There were 9,748 separations reported as 'Torres Strait Islander but not Aboriginal origin', largely contributed by Queensland and New South Wales. There were 5,653 separations reported as 'Both Aboriginal and Torres Strait Islander origin', again mainly in Queensland but with a wider geographic distribution than for the subcategory 'Torres Strait Islander but not Aboriginal origin'.

An examination of counts of annual separations between 1997–98 and 2003–04 indicated a fairly smooth time series and an increasing number of separations for each subcategory in most jurisdictions. This suggests both consistent interpretation of the Indigenous subcategories and improved ascertainment of Indigenous status for each subcategory in most jurisdictions.

Given that most separations for Indigenous patients are for people of Aboriginal but not Torres Strait Islander origin, the apparent quality of Indigenous identification for this subcategory has a large influence on the quality of Indigenous status data overall. Although interpretation of interstate differences in separation rate ratios is complicated by the possible presence of interstate variations in population health and health systems, the differences seen in these ratios strongly suggest there is substantial under-identification of the subcategory in data for New South Wales and Victoria and very substantial under-identification in data for Tasmania.

The examination of separation rate ratios also suggests the substantial under-identification of the subcategory 'Torres Strait Islander but not Aboriginal origin' in all jurisdictions other than Queensland. Separation numbers for this subcategory in Queensland and New South Wales also appear to include relatively small numbers of misidentified New Zealanders and other people born in the Pacific region.

The rate ratios also suggest the under-identification of the subcategory 'Both Aboriginal and Torres Strait Islander origin' in most jurisdictions, notwithstanding that some non-Indigenous patients are apparently recorded in this subcategory in some jurisdictions (most notably in Victoria and the Northern Territory) and at private hospitals generally. This phenomenon includes the apparent misclassification of some overseas-born patients in New South Wales and to a much smaller extent Queensland. Separations with an overseas country of birth other than Papua New Guinea represented 2.7% of total separations for the subcategory.

For the subcategories 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin' there are possible questions about the reliability of separation rates for jurisdictions where population numbers are small; this is because of concerns about the reliability of population estimates for these subcategories in those jurisdictions.

Guidelines

Guideline 9

Use of data reported for the 'Aboriginal but not Torres Strait Islander origin' subcategory is recommended for Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate.

There are no compelling arguments against using data reported for the 'Aboriginal but not Torres Strait Islander origin' subcategory. The subcategory represents a large proportion of separations for Indigenous people in each jurisdiction, and the available evidence suggests consistent interpretation and improving ascertainment over time for the subcategory in most jurisdictions.

In keeping with the guidelines in Section 5.4, use of this subcategory would be restricted to data for Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate. Use of data for the Northern Territory is specified in the guideline but, in view of the need to preserve the

confidentiality of data for Darwin Private Hospital, the guideline should be interpreted to mean use of data solely for Northern Territory public hospitals. Caveats about under-identification of Indigenous patients would need to be included.

Guideline 10

Use of data reported for the 'Torres Strait Islander but not Aboriginal origin' subcategory is recommended for Queensland and (with caution) for Queensland, Western Australia, South Australia and the Northern Territory in aggregate.

Separate monitoring of hospitalisations for the Torres Strait Islander population group is desirable, particularly in Queensland, which contributes about 63% of the population of those identifying as of Torres Strait Islander but not Aboriginal origin and about 52% of those identifying as of both Aboriginal and Torres Strait Islander origin.

In view of the apparently substantial under-identification of this subcategory outside Queensland, use of the subcategory is not recommended for data for individual jurisdictions other than Queensland. Cautious use of data for Queensland, Western Australia, South Australia and the Northern Territory in aggregate is recommended.

As noted, use of data for the Northern Territory should be interpreted to mean use of data solely for Northern Territory public hospitals.

Guideline 11

Separate use of data reported for the 'Both Aboriginal and Torres Strait Islander origin' subcategory is not recommended.

Separate use of the subcategory 'Both Aboriginal and Torres Strait Islander origin' is not recommended in view of its apparently substantial under-enumeration, except in Victoria (which is not recommended for inclusion in the analysis of national separations data) and the Northern Territory, and suggestions that the subcategory includes separations for misclassified non-Indigenous people.

Guideline 12

Use of the combined subcategories 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin' is recommended for Queensland and (with caution) for Queensland, Western Australia, South Australia and the Northern Territory in aggregate.

Combined use of the subcategories 'Torres Strait Islander but not Aboriginal origin' and 'Both Aboriginal and Torres Strait Islander origin' might be appropriate for analysis of hospital separations for people identifying as being of Torres Strait Islander origin (without specifying whether they also identify as being of Aboriginal origin), and this is recommended for Queensland and, with caution, for Queensland, Western Australia, South Australia and the Northern Territory in aggregate (as is the case for the subcategory 'Torres Strait Islander but not Aboriginal origin' alone).

As noted, use of data for the Northern Territory should be interpreted to mean the use of data solely for Northern Territory public hospitals.

Guideline 13

Use of the combined subcategories 'Aboriginal but not Torres Strait Islander origin' and 'Both Aboriginal and Torres Strait Islander origin' is recommended for Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate.

Combined use of the subcategories 'Aboriginal but not Torres Strait Islander origin' and 'Both Aboriginal and Torres Strait Islander origin' can apply to people identifying as being of Aboriginal origin (without specifying whether they also identify as being of Torres Strait Islander origin). The apparent quality problems for the latter subcategory would have a relatively small impact when the two subcategories are combined. Combined use of the subcategories is recommended for Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate (as is the case for the subcategory 'Aboriginal but not Torres Strait Islander origin' alone).

As noted, use of data for the Northern Territory should be interpreted to mean the use of data solely for Northern Territory public hospitals.

5.7 Regional analysis of hospital separations data

This guideline concerns the regional analysis of separations data for Indigenous people. A typical example would be analysis based on the Remoteness Area classification of the Australian Standard Geographic Classification.

Findings

As described in Chapter 2, assessments of the quality of Indigenous identification conducted via data linkage in New South Wales and via patient interviews in the 1998 ATSIHWIU study and in Western Australia in 2000 all found that Indigenous identification is better at hospitals with relatively higher proportions of Indigenous people in the hospital catchment area. Such hospitals tend to be predominantly located in rural and remote areas. This implies the variation in the rate of Indigenous identification of hospital patients with the location of the patient's hospital and, in consequence of that, variation in the rate of Indigenous identification with the location of the patient's usual residence.

Such variation is supported by findings from the analysis of national hospital separations data for 2003–04, which found differences in the rate of non-reporting of Indigenous status across remoteness area groupings of both the patient's hospital location and the patient's usual residence.

Non-reporting was greater at public hospitals in very remote areas than at other public hospitals. It was substantially greater at private hospitals in outer regional areas than at other private hospitals (in major cities and inner regional areas).

In public hospitals, non-reporting was greater for patients usually resident in regional or remote areas than for patients resident in major cities or very remote

areas. In private hospitals, non-reporting was very elevated for patients resident in outer regional or very remote areas, somewhat elevated for patients resident in inner regional or remote areas, and relatively low for patients resident in major cities.

Guideline

Guideline 14

Analysis of separations for Indigenous people should generally not be undertaken by remoteness area of either the patient's usual residence or the hospital's location.

In circumstances of probable variation in the rate of Indigenous identification of hospital patients with the location of the patient's usual residence and the patient's hospital, one could not be sure that an apparent variation in a condition of interest for Indigenous hospital patients across remoteness area of either the patient's usual residence or the patient's hospital location is not simply an artefact of that regional variation in the rate of Indigenous identification.

Analysis by remoteness area may, however, be acceptable in some limited circumstances:

- There were persuasive reasons to undertake the analysis, such as evidence of a relationship between remoteness area and the subset of separations of interest based on a known relationship for the population as a whole or for non-Indigenous people, or evidence of a relationship based on a known relationship between remoteness area and the condition of interest for Indigenous people demonstrated with other data (e.g. mortality or population survey data).
- The relationship between remoteness area and the subset of separations of interest would still exist if under-identification factors were applied that were specific to individual remoteness areas. Because such under-identification factors do not currently exist, the analysis would need to include application of assumed under-identification estimates and/or sensitivity testing with a range of under-identification estimates to demonstrate that the relationship was not just an artefact of varying levels of Indigenous identification by remoteness area.
- Appropriate caveat information was included.

5.8 Use of age standardisation and population data

These guidelines concern the use of age-standardisation methods and population data in the derivation of hospital separation rates for Indigenous people. They cover:

- the choice between direct and indirect age standardisation
- the age categories to be used in age standardisation
- appropriate use of official population data for Indigenous people
- the choice between the low-series and high-series Australian Bureau of Statistics population projections for Indigenous people.

Discussion: age-standardisation methods

The choice between direct and indirect age standardisation

One question concerns the choice between direct age standardisation and indirect age standardisation, and an important consideration in this choice is that a consistent approach be adopted in like types of data analysis.

The two methods achieve different weightings of separations data, but neither can be preferred over the other in all circumstances. Data quality and the type of analysis to be conducted should guide selection of the most appropriate method. The direct method gives higher weighting to separations for older Indigenous people.

The direct method is the one most commonly adopted in comparisons between study groups. In the Australian context, the standard population is the estimated Australian population at June 2001, and the directly age standardised rate derived for a population of interest in a given jurisdiction at a particular time period can be related not only to the directly age standardised rate derived for a comparison group in the same jurisdiction at the same time period – as, for example, a ratio of the separation rates for patients reported as Indigenous and those not reported as Indigenous – but it can also be related to directly age standardised rates derived for the populations of other jurisdictions and other time periods.

Valid application of the indirect method applies to a more limited range of contexts. Because the standard population generally adopted with this method is the population of the comparison group (or, sometimes, the pooled populations of all groups being compared), the indirectly age standardised rate derived for a group of interest can be related only to the indirectly age standardised rate derived for that comparison group (or to the rates derived for other members of the pooled comparison group). It cannot be validly related to indirectly age standardised rates derived using different comparison groups (e.g. for an equivalent population in a different jurisdiction or at a different time period).

Within its restricted range of use, the indirect method has the advantage of enabling direct comparisons between the observed numbers of events for a population of interest and the numbers expected under the age-specific rates of the comparison group. It also provides more reliable results than the direct method (within its restricted range of use) when rates are to be calculated for populations subject to fluctuations in age-specific rates (e.g. because of small population sizes), and it can be used in certain circumstances in which a directly age standardised rate cannot be calculated (e.g. where the total number of events is known for the population of interest but the age-specific rates are not known).

Indirect age standardisation is therefore recommended for comparison of the separation rate for a single Indigenous population of interest with the separation rate for a single not-reported-as-Indigenous comparison group.

For comparison of separation rates for Indigenous and not-reported-as-Indigenous populations across multiple jurisdictions, time periods or other groupings, direct age standardisation is recommended whenever populations are sufficiently large to provide reliable results.

Age standardisation is considered here for those analyses of Indigenous data recommended in the guidelines of Sections 5.3, 5.4 and 5.5 – that is, data be analysed solely for Queensland, Western Australia, South Australia and the Northern Territory, there be no analysis of data from the private sector alone, there be no use of the subcategory ‘Both Aboriginal and Torres Strait Islander origin’ alone, and there be no use of the subcategory ‘Torres Strait Islander but not Aboriginal origin’ (or of the combined subcategories ‘Torres Strait Islander but not Aboriginal origin’ and ‘Both Aboriginal and Torres Strait Islander origin’) other than for data from Queensland and for data from Queensland, Western Australia, South Australia and the Northern Territory in aggregate. Given those exclusions, direct age standardisation should provide reliable age-standardised separation rates for broad groupings of separations for Indigenous and non-Indigenous people at a jurisdiction level – for example, overnight separations for patients reported in all Indigenous subcategories, by jurisdiction. In particular, direct age standardisation should provide reliable results for basic time series of separation rates and rate ratios for patients reported as Indigenous and those not reported as Indigenous.

The appropriate age categories for the Indigenous population

When deriving age-standardised Indigenous separation rates via the direct method (or via the indirect method with the standard population taken as another Indigenous population), it is necessary to ensure that the individual age groups included in the calculations have sufficient numbers to provide reliable results. In view of the relatively young age distribution of the Indigenous population, in order to achieve adequate reliability it might be necessary to amalgamate a number of the oldest age groups – for example, as a 65+ age group.

The age above which the age groups should be amalgamated will depend on the age structure of the Indigenous population in question and would need to be determined by prior examination of those data.

Guidelines: age-standardisation methods

Guideline 15

Indirect age standardisation is recommended for comparing the separation rate for a single Indigenous population of interest with the rate for a single not-reported-as-Indigenous comparison group.

Guideline 16

For comparing separation rates for Indigenous and not-reported-as-Indigenous populations across multiple jurisdictions, time periods or other groupings, direct age standardisation should be used whenever populations are large enough to provide reliable results.

Guideline 17

When deriving age-standardised Indigenous separation rates, age groups should be amalgamated where greater than an age determined by analysis of the data in

question, as necessary, to ensure that all age groups have sufficient numbers for reliable results.

Discussion: use of population data

Based on population census counts, the Australian Bureau of Statistics publishes estimates of the Indigenous population for each census year and for each intercensal year. It also generates projections of the Indigenous population for years beyond the year of the latest census.

Advice is issued with the published estimates and projections to warn of possible under-enumeration in the figures stemming from difficulty in ascertaining Indigenous status for Indigenous people at population censuses and in official birth, death and migration records (although the figures incorporate an apportionment between the Indigenous and non-Indigenous categories of the census count of people whose Indigenous status was not reported).

In the interests of supporting comparability between analyses, it is desirable that the Australian Bureau of Statistics estimates and projections are used without additional under-identification adjustment when used in the derivation of Indigenous separation rates.

The Australian Bureau of Statistics generates two series of projections of the Indigenous population – the high and low series – based on a single set of assumptions about fertility, mortality and migration and differing assumptions about future unexplained growth in the census counts. Reporting of separation rates for Indigenous people based on the projections should advise whether the high series or the low series was used.

In the interest of supporting the comparability of Indigenous separation rates derived at different times and places, it is desirable that use of the Australian Bureau of Statistics projections be standardised to either the low series or the high series. The low series is currently used for the derivation of Indigenous rates by both the AIHW and the Australian Bureau of Statistics, and it is recommended as the standard.

Guidelines: use of population data

Guideline 18

When deriving separation rates for Indigenous populations, the official Australian Bureau of Statistics population estimates or projections should be used without adjustment for possible under-identification in those data.

Guideline 19

Reporting of Indigenous separation rates based on the Australian Bureau of Statistics population projections should indicate whether the high or low projection series was used. The low series is recommended.

6 Recommendations for improving Indigenous identification in hospital separations data

Following are recommendations relating to the policies and processes needed to improve the quality of Indigenous identification in hospital separations data. These recommendations reflect the material presented in Chapters 2, 3 and 4. Actions considered to be of high priority are flagged, and a target date of December 2006 is suggested for them.

Data collection processes

1. [High priority] Procedures should be established in all hospitals to ensure ascertainment of Indigenous status for every patient at every admission. In particular:
 - (a) [High priority] It should be standard practice to attempt to obtain the information from the companions of an admitting patient who is unable to provide Indigenous status information personally.
 - (b) [High priority] Non-responses should be followed up, and mechanisms should exist to distinguish between patients who have been followed up and for whom a response was not elicited and patients for whom follow-up is pending.
 - (c) [High priority] It should be standard practice for there to be bedside follow-up with patients by ward clerks whenever the information could not be obtained at admission – for example, emergency and after-hours admissions.
 - (d) [High priority] In order to allow for people changing their Indigenous identification, it should be a requirement that Indigenous status be sought at all repeat admissions – for example, through the use of patient administration systems that record Indigenous status on an episode-level basis – rather than being automatically refreshed from pre-existing records.
 - (e) Procedures and training should be developed and introduced to ensure that reliance on pre-existing records occurs solely as a last resort.
 - (f) For multiple, planned admissions for same-day care – for example, for dialysis – it is acceptable to have a protocol that allows for Indigenous status not to be sought for every admission but to be sought at the first admission and periodically at subsequent admissions.
2. [High priority] Indigenous status information should be ascertained for patients being admitted at all public and private hospitals, using the standard Indigenous identification question formulated by the Australian Bureau of Statistics, as set out in the *National Health Data Dictionary*. In particular:

- (a) [High priority] The question should be asked regardless of data collectors' perceptions based on appearance or other factors.
 - (b) In Tasmania the standard Indigenous identification question formulated by the Australian Bureau of Statistics should continue to be used rather than modified Indigenous identification arrangements, as suggested by some parties.
3. [High priority] The data recording systems of all hospitals and health authorities should classify Indigenous status using the standard in the *National Health Data Dictionary*. In particular:
- (a) [High priority] With the exception of forms for patients to complete, a 'Not stated/inadequately described' category should always be provided.
 - (b) [High priority] Responses of 'Not stated/inadequately described' should be permitted in separations records hospitals forward to health authorities.
 - (c) [High priority] Data recording systems should not include arrangements whereby the category 'Not stated/inadequately described' (or no category selected at all) defaults either manually or automatically to the 'Neither Aboriginal nor Torres Strait Islander origin' category.
 - (d) If deemed necessary for local purposes, non-response subcategories be provided to enable the collection of information on the type of non-response – for example, 'Patient refused to answer' and 'Question unable to be asked'.
4. Procedures and training should be introduced to ensure that data collection staff ascertain the Indigenous status of all babies born at the hospital and other patients aged less than 1 year. These arrangements should take into consideration the Indigenous status of both the mother and the father, as necessary.
5. A protocol should be established to specifically exclude non-Australian indigenous patients from identification as Aboriginal or Torres Strait Islander.

Training of data collection staff

- 6. [High priority] Comprehensive training in data collection and data quality should be provided to all staff involved in the collection of patient information at all public and private hospitals. It should be provided on an as-needs basis to all new staff and as periodic refresher training to established staff.
- 7. [High priority] The training should include the asking about and recording of Indigenous status, and it should accord with the standard package developed by the Australian Bureau of Statistics. It should be directed towards a specific set of outcomes for hospital staff, among them the following:
 - development of strong values for accurate collection of data about hospital patients and for follow-up of missing patient information
 - understanding the importance of accurate Indigenous statistics

- acquisition of strong interview techniques, including an ability to ask, in an appropriate manner, the standard Indigenous identification question
 - reduced apprehension about appearing foolish in asking the Indigenous status question
 - ability to clearly explain to clients why the data are being collected and to explain that the data will remain confidential
 - an appreciation of how the Indigenous status question can be considered sensitive by some people and development of confidence in being able to deal with that as it arises.
8. [High priority] The training efforts of both public and private hospitals should be supported by provision of:
- a centrally organised scheme for the training of those training staff that are attached to individual hospitals or to individual area health services
 - a regularly updated policy and procedures manual that provides information about how and why Indigenous status and other personal data are collected
 - a question and answer guide to assist staff in fielding queries and dealing with objections to the Indigenous status question.
9. At all hospitals the adequacy of training should be periodically assessed by means of direct evaluation of training outcomes and audits of Indigenous identification.
10. Training of data collection staff should be augmented by their direct participation in the conduct and evaluation of hospital-based data quality audits and acquisition of knowledge about the consequences of data collection practices.

Organisational policies and practices

11. [High priority] Health authorities should give consideration to the carrying out of a thorough review of state-wide procedures for the collection, recording and verification of Indigenous status information as the basis for planning action to improve Indigenous status data quality.
12. Mechanisms should be established to increase hospital administrators' commitment to improved Indigenous status data quality. In particular:
- (a) Service agreements with public hospitals should incorporate specific requirements dealing with patient data quality.
 - (b) Specific attention should be given to encouraging and supporting the administrators of private hospitals to improve arrangements for the collection of patient information. Sources of funding for this might need to be identified.
13. Hospital administrators should be encouraged to accompany improved data collection practices with sound managerial arrangements. In particular:

- (a) There should be a clear delegation of responsibility and accountability for the collection of Indigenous status information.
 - (b) The employment of Indigenous hospital liaison officers should be considered for all hospitals at risk of substantial under-identification of Indigenous patients as a means of improving identification through greater knowledge of the local Indigenous community and facilitation of greater cross-cultural understanding between Indigenous people and hospital staff.
14. Consideration should be given to instituting a scheme for public recognition of best practice in ascertaining the Indigenous status of hospital patients.
 15. An assessment should be made of the potential role of public education in relation to asking about the Indigenous status of hospital patients – for example, by means of in-hospital videos and brochures.

Data monitoring and audit

16. [High priority] Each jurisdiction should introduce arrangements for regular monitoring of Indigenous status information in separation records, as a basis for providing continuing feedback on data quality at the hospital level and evaluating changes in data quality stemming from the adoption of new data collection practices. In particular:
 - (a) This could be done using simple data analysis focused on rate ratios, proportions of separations for which Indigenous status was not reported, and (where possible) record linkage within hospital separations data sets.
 - (b) Where a jurisdiction is able to link hospital separations data to other data (such as cancer registry data or deaths data) for which Indigenous ascertainment is considered reasonable, this should be done as a basis for continuing monitoring of the quality of Indigenous identification in separations data.
17. An audit of Indigenous identification using patient interviews or another robust methodology should be periodically conducted for public and private hospitals on a nationally coordinated basis, in order to assess data quality and generate comparable and up-to-date under-identification factors. In particular:
 - (a) Consideration should be given to using a methodology based on patient interviews. In the interest of a nationally consistent approach, it is recommended that any uptake of this methodology be based on the methods set out in *Assessing the Quality of Identification of Aboriginal and Torres Strait Islander People in Hospital Data* (ATSIHWIU 1999).
 - (b) These audits should be conducted with a sample of a size that is sufficient to provide a reliable measure of data quality for each jurisdiction, as a minimum.
 - (c) The possibility of conducting such audits in association with other audit tasks (such as checking for Department of Veterans' Affairs eligibility or other information about compensable status) should be investigated.