

CHAPTER 2

METHODS AND DATA QUALITY

HOSPITAL SEPARATIONS DATA

Data presented in this publication are from the National Hospital Morbidity Database (NHMD), a national collection of de-identified hospital separation records maintained by the Australian Institute of Health and Welfare (AIHW). Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided to the AIHW by State and Territory health departments. Further detail regarding the NHMD is available from the Australian Institute of Health and Welfare (AIHW 2001a).

This publication includes data from all States and Territories for almost all hospitals: public acute hospitals, public psychiatric hospitals, private acute hospitals, private psychiatric hospitals and private free-standing day hospital facilities. No data were available from a few smaller public and private hospitals (for more detail, see AIHW 2001a, pp. 2–3).

Records for 1999–2000 are for hospital separations (discharges, transfers, deaths or changes in type of episode of care) in the period 1 July 1999 to 30 June 2000. A record is included for each separation, not for each patient, so patients who separated more than once in the year have more than one record in the database. Many hospital separations are recorded each year for individual patients with conditions requiring admission several times a week, such as haemodialysis for end stage renal disease. Records for hospital boarders and healthy newborns are excluded (see *Australian Hospital Statistics 1999–00* for more detail (AIHW 2001a)).

Data presented in this publication are for admitted patients only. The number and pattern of hospitalisation can be affected by the variation between hospitals in decisions about whether to admit patients or treat them as non-admitted patients and information concerning non-admitted patients is not routinely reported.

Classification of diagnoses and procedures

This publication reports hospital separations and procedures classified using the first edition of *The International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM)* (National Centre for Classification in Health (NCCCH) 1998). Details of codes and certain adapted terminology used in this publication are provided in Appendix A.

The previous issue of this publication used *The Australian version of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (National Coding Centre 1996). The two coding systems are significantly different and the capacity to undertake time-series analysis of diagnosis and procedure information is limited. Further details on the differences between the two classification systems are provided in Appendix B.

Classification of diagnoses and procedures *continued*

Data on separations are presented in this publication by principal diagnosis. The *National Health Data Dictionary* (NHDD) defines a principal diagnosis as ‘The diagnosis established after study to be chiefly responsible for occasioning the patient’s episode of care in hospital (or attendance at the health care facility)’ (AIHW 1999a, p. 115).

In addition, data are presented on all procedures reported for each separation, as unlike principal diagnosis, no one procedure is considered to be more relevant than any other. The *National Health Data Dictionary* (NHDD) defines a procedure as ‘a clinical intervention that: is surgical in nature; and/or carries a procedural risk; and/or carries an anaesthetic risk; and/or requires special training; and/or requires special facilities or equipment only available in an acute care setting’ (AIHW 1999a, p. 318).

Identifying indigenous patients in hospital separation records

The methods employed by public hospital admission processes to identify Indigenous patients vary between jurisdictions (ATSIHWIU 1999). The ABS recommends using the following standard question for identifying persons as members of the Indigenous population:

*Are you of Aboriginal or Torres Strait Islander origin?
(For person of both Aboriginal and Torres Strait Islander origin, mark both ‘yes’ boxes.)*

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

The standard question is used in the Census of Population and Housing and in other surveys conducted by the ABS, and has also been adopted by Registrars-General throughout Australia. The quality of Indigenous hospitalisation rates is improved when the same Indigenous identification question is asked to establish the numerator (for example, number of Indigenous separations) and the denominator (for example, number of people in the Indigenous population) (Cunningham and Beneforti 2000). The standard question is also supported by, and included in, the *National Health Data Dictionary*, which is the basis of the NHMD (see Appendix D).

There are no national estimates of the level of completeness of coverage of Indigenous identification in hospital morbidity collections. Assessments of the level of completeness of Indigenous identification in hospital morbidity collections are provided annually by each State and Territory to the Australian Institute of Health and Welfare. In 1999–2000, only the Northern Territory and South Australia reported the quality of Indigenous status to be acceptable (see Appendix C). These comments are based on the jurisdiction in which the separation occurred, as opposed to the State or Territory of the patient’s usual residence. This further limits the ability within this publication to provide data quality assessments for each jurisdiction, as data are presented by State and Territory of usual residence.

Identifying indigenous patients in hospital separation records *continued*

Western Australia and the Northern Territory have calculated estimates from data quality audits. The Health Department of Western Australia undertook an assessment of hospital data involving 10,000 patients in 26 hospitals. Results from this project indicated that 86% of hospital records had an accurate indication of Indigenous status (Young 2001). In the Northern Territory, a 1997 data quality audit of all public hospitals showed a 94% agreement in Indigenous status responses recorded between hospital separation records and patient interviews (Condon et al. 1998). Some smaller, localised studies have also been conducted (see table 2.1).

2.1 SELECTED STUDIES ASSESSING DATA QUALITY OF INDIGENOUS STATUS IN HOSPITAL RECORDS

<i>Authors(b)</i>	<i>Year of study</i>	<i>Location and number of hospitals</i>	<i>Total number of patients interviewed</i>	<i>Number of patients who identified as Indigenous at interview</i>	<i>Proportion of Indigenous people(a) correctly identified in hospital records</i>
			<i>no.</i>	<i>no.</i>	<i>%</i>
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	5 public hospitals in the Northern Territory	400	216	94% overall; range 92–100%
ATSIHWIU (1999)	1998	11 hospitals in 5 States and Territories	8 276	648	range 55–100%
Young (2001)	2000	26 hospitals in Western Australia	10 106	754	86% overall; range 78–94
Health Information Centre, Queensland Health (2002)	2000	2 Queensland hospitals	1 090	35	82% and 62%

(a) Based on identification at interview.
(b) See List of References for more details.

As a result of a 1998 pilot study conducted by the Aboriginal and Torres Strait Islander Health and Welfare Information Unit (ATSIHWIU), a set of procedures was developed, detailing steps that hospitals and jurisdictions can follow to assess Indigenous status data quality within their collection(s). The procedures included sample selection procedures and a training package for interviewers who undertake data collection (ATSIHWIU 1999). This methodology was used in the Western Australian audit (Young 2001).

The Australian Health Ministers' Advisory Council (AHMAC) has allocated resources to promote improved Indigenous identification in all State and Territory hospitals. As part of this process, all jurisdictions were asked to assess the completeness of recording of Indigenous status in their hospital morbidity collections, by the end of 2001. Most States and Territories are now implementing or planning training programs for staff, and/or conducting data quality audits. Other activities include awareness-raising for data collectors and the general public, and research and documentation of best practice guidelines, which includes research into less confronting strategies for collecting Indigenous status information. The project also involves joint partnership arrangements between hospitals and health departments.

Missing data In this publication, where Indigenous status was not reported, the separation was regarded as being for a non-Indigenous patient. There were approximately 147,000 separations for which Indigenous status was not reported, compared to approximately 170,000 separations identified as Indigenous. The proportion of records where Indigenous status was not reported declined from approximately 12% of all separations presented in the National Hospital Morbidity Database in 1997–98 (AIHW 1999b) to approximately 3% of all separations in 1999–2000.

As noted previously, in 1999–2000, data were not provided for a few smaller public hospitals and for a number of private hospitals. It is estimated that approximately 5.7% of private hospital separations were not provided to the National Hospital Morbidity Database (for more detail see AIHW 2001 pp 2–3, 239).

POPULATION ESTIMATES

While experimental resident Indigenous population estimates for 30 June 2001, based on the 2001 Census of Population and Housing, have been compiled, interpolated estimates for earlier years will not be available until mid-2003. Therefore, for the calculation of hospitalisation rates in this publication, the experimental resident Indigenous population projections (low series, based on 1996 Census results) for 30 June 1999 and 30 June 2000 are used to produce a 31 December 1999 estimate (the 1999–00 financial year mid-point), by age, sex, State and Territory. Population estimates for the non-Indigenous population were derived by subtracting the Indigenous estimates from the total population.

The Census count for the total Indigenous population increased by 16% from 1996 to 2001. Natural increase (births minus deaths) accounted for a 12% increase, with a further 4% increase due to other factors, such as an increasing propensity for people to be identified as Indigenous on Census forms. The 'low series' population projections assume no unexplained increase in the Indigenous population since 1996. The 'low series' population projections therefore slightly underestimate the Indigenous population and slightly overestimate hospitalisation rates. However, for most of the analyses in this publication a slight understatement in the population denominator will be more than offset by a larger understatement in the numerator (due to under-identification of Indigenous patients in hospital separations records) and Indigenous hospitalisation rates are therefore likely to be understated.

RATES OF HOSPITALISATION

There are a number of ways to quantify the morbidity experience of a population. For example, dividing the number of separations by the population would provide a 'crude separation rate', which could be expressed as separations per 1,000 or per 100,000 population.

RATES OF HOSPITALISATION
continued

It is important to note that the likelihood of hospitalisation is closely related to age and, as the age structure of the Indigenous population is very different to that of the total population, it is necessary to adjust for the effect of age before meaningful comparisons can be made. Adjustment for the differences in age structure can be made using various age-standardisation measures. Those presented in this publication are age-specific rates, directly age-standardised rates (ASR) and rate ratios.

Age-specific rates are the number of separations (or procedures) for a specified age group, per 1,000 of the estimated resident population of the same age group at the mid-point of the year. Directly age-standardised rates (ASR) for a specific sub-population (e.g. the Indigenous population) are the overall separation (or procedure) rate that would have prevailed in the total Australian population if it had experienced, at each age, the hospital separation (or procedure) rate of the sub-population (e.g. Indigenous population). Rate ratios are the age-standardised rate of the Indigenous population, divided by the age-standardised rate for the non-Indigenous population. This enables a single figure comparison of the hospitalisation experience of two separate population groups. A rate ratio of 1.0 indicates that the Indigenous and non-Indigenous population both experience the same hospital separation (or procedure) rate. A rate ratio greater than 1.0 indicates that Indigenous people are more likely to be hospitalised, or have a particular procedure performed.

Effects of data inadequacies
on rate calculations

The accuracy of the Indigenous population projections (used in the denominator when calculating hospitalisation rates), and the completeness of Indigenous identification in hospital morbidity collections (used as the numerator in hospitalisation rates), will separately affect the accuracy of the information presented here. As noted previously, the Northern Territory and South Australia reported the quality of Indigenous status to be acceptable in their hospital morbidity collections. The additional issue of under-identification, therefore, is not as relevant for these jurisdictions.

The omission of some public and private hospitals from the NHMD will also impact on rate calculations. For example, the restriction of Northern Territory data to only public hospitals is likely to understate the non-Indigenous hospitalisation rates and overstate the Indigenous to non-Indigenous separation rate ratios for that jurisdiction. This is due to the relatively lower attendance at private hospitals by Indigenous patients than non-Indigenous patients (see table 3.1).

Readers are advised to observe overall differences, similarities and trends rather than focus on the actual numbers presented. In some instances, numbers of separations/procedures presented in this publication are small, and caution should be used in analysing associated rate ratios. This publication has not presented measures of statistical significance, as this would suggest a greater level of precision than exists (Cunningham and Beneforti 2000).