

# Appendix 3: Technical notes

## Definitions

If not otherwise indicated, data elements were defined according to the 2000-01 definitions in the *National Health Data Dictionary* version 9.0 (summarised in the Glossary).

Data presented by State or Territory refer to the State or Territory of the hospital, not to the State or Territory of the usual residence of the patient. The exceptions are Tables 6.6, 6.7, 6.8 and 6.9, in which the State or Territory of usual residence of the patient is reported against the State or Territory of hospitalisation. Data presented in Tables 4.7 and 7.11 are presented by State or Territory of usual residence. The maps in Chapter 7 are also based on data on the State or Territory and Statistical Division of usual residence of the patient (see below).

## Data presentation

Except as noted, where totals are provided in the tables, they include data only for those States and Territories for which data were available, as indicated in the tables. The exceptions relate to tables in which data for some jurisdictions were not published, for confidentiality reasons. The abbreviation 'n.p.' has been used in these tables to denote this.

Throughout the publication, percentages may not add up to 100.0 due to rounding. Percentages and population rates printed as 0.0 or 0 may denote less than 0.05 or 0.5, respectively.

## Population rates

Population rates presented in Chapters 2, 4, 6 and 7 are age-standardised, calculated using the direct standardisation method and 5-year age groups. The total Australian population for 30 June 1991 was used as the population for which expected rates were calculated. The Australian Bureau of Statistics' population estimates for 31 December 2000 (Appendix 6) were used for the observed rates. The exceptions were Tables 7.7, 7.8, 7.9, 7.10 and 7.12, for which the population estimates for the Aboriginal and Torres Strait Islander population (and the remainder of the population), the population for selected countries of birth, and the population for Rural, Remote and Metropolitan Area, for 30 June 2000, were used for the observed rates (Appendix 6).

Crude population rates in Chapters 8, 9 and 11 were calculated using ABS population estimates for 31 December 2000 (Appendix 6). For Figure 7.7, 30 June 2000 estimates for the Aboriginal and Torres Strait Islander population and for the remainder of the population were used for age group-specific rates for the Aboriginal and Torres Strait Islander population and others.

## Newborn episodes of care and the reporting of separations for patients aged less than 10 days

The *Newborn* type of episode of care was introduced in 1998–99 to report a single episode of care for all patients aged 9 days or less at admission, regardless of their qualification status and whether they changed qualification status during their hospital stay. Thus these episodes can include qualified days only, a mixture of qualified days and unqualified days, or only unqualified days. Qualified days are considered to be the equivalent of acute care days and *Newborn* episodes with qualified days only are considered to be equivalent to *Acute care* episodes. *Newborn* episodes with no qualified days are considered to be equivalent to the previous category, *Unqualified neonate*. In this report, *Newborn* episodes with at least one qualified day have been included in all the tables reporting separations.

Two jurisdictions did not implement this *Newborn* definition in 1998–99, 1999–00 or 2000–01; therefore, for these States and Territories, there are no *Newborn* separations with a mixture of qualified and unqualified days reported (see Table 6.10). New South Wales, Queensland and public hospitals in South Australia and Victoria implemented the new definition in 1998–99, the Australian Capital Territory in 1999–00, and Western Australia in 2000–01. For the remaining jurisdictions, separations reported as *Acute care* for patients aged less than 10 days are included in the National Hospital Morbidity Database and in this report as *Newborn* episodes with qualified days only. Separations reported to the Database as *Unqualified neonates* are included as *Newborn* episodes with no qualified days.

Prior to 1998–99, New South Wales, Queensland and South Australia (public hospitals) had counted separate episodes of care within a hospital stay as individual separations. With the implementation of the *Newborn* definition, they began to count each hospitalisation of a patient admitted under the age of 10 days as one separation. This change is likely to have resulted in a slight reduction in the number of separations for these States in 1998–99, 1999–00 and 2000–01, compared with 1997–98, and a slight increase in their average lengths of stay. Victoria had been reporting separations for these patients according to the *Newborn* definition (that is, using a single episode for these patients) prior to 1998–99, so this implementation is not likely to have markedly affected recent Victorian separation or average length of stay data.

In 1998–99 and 1999–00 Western Australia counted separations for patients aged 10 days or less on admission as qualified (*Acute care*) if at least one day was qualified. For 2000–01 the implementation of the new definition may have resulted in a slight reduction in the number of separations reported with qualified days only and a reduction in the average length of stay for these separations. Tasmania and the Northern Territory continued to report a new episode of care for patients aged less than 10 days at admission with each change in qualification status. The reporting method used in Tasmania and the Northern Territory may mean that there were more separations for patients under the age of 10 days for these jurisdictions, relative to others, and that they had a lower average length of stay.

## Hospital in the home care

Most States and Territories have hospital in the home programs in which admitted patients are provided with hospital care in their (permanent or temporary) place of residence as a substitute for hospital accommodation. This care has been defined in the *National Health Data Dictionary* version 10 (NHDC 2001) as occurring within an episode of care for an

admitted patient, and days of hospital in the home care for each separation will be reported to the National Hospital Morbidity Database in 2001–02 data.

In 2000–01, there were no national definitions relating to hospital in the home care, and there was variation in the way in which States and Territories reported it. In Victoria, Queensland (public hospitals), Tasmania, the Australian Capital Territory and the Northern Territory, hospital in the home care was provided in 2000–01 as defined above, and separations including this care were included in the National Hospital Morbidity Database. Queensland reported that hospital in the home care programs are currently very small, with a total of only a few hundred separations during the year, and that private hospitals in Queensland do not provide hospital in the home care. In New South Wales, hospital in the home care data were collected on an inconsistent basis for 2000–01. Western Australia did not operate hospital in the home programs in 2000–01, except to a limited extent in public hospitals. In South Australia, hospital in the home care was defined as separate episodes of care, and reported as having *Other care* as the care type (see Chapter 6). This variation may have had the effect of slightly increasing the relative numbers of separations and reducing the average lengths of stay reported by South Australia compared with other States and Territories.

## ICD-10-AM coded data

Diagnosis, procedure and external cause data for 2000–01 were reported to the National Hospital Morbidity Database by all States and Territories using the second edition of the *International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification* (ICD-10-AM) (NCCH 2000).

### Quality of ICD-10-AM coded data

The quality of coded diagnosis, procedure and external cause data can be assessed using coding audits in which, in general terms, selected records are independently recoded, and the resulting codes compared with the codes originally assigned for the separation. There are no national standards for this auditing, so it is not possible to use information on coding audits to make quantitative assessments of data quality on a national basis. The following information has, however, been provided by the States and Territories to provide some insight into the quality of the coded data in the National Hospital Morbidity Database. Several States and Territories indicated that formal audits were planned for 2001–02.

There was no formal state-wide audit of ICD-10-AM coded data in New South Wales for 2000–01. However, there were no major quality issues in coded data detected in routine input processing and output editing of data. There are plans to introduce formal state-wide audits of coded data quality for the year 2001–02. New South Wales has also obtained a state-wide license for the NCCH's coding benchmark and quality tool products, namely the Performance Indicators for Coding Quality (PICQ) and the Australian Coding Benchmark Audit (ACBA).

Previous audits of ICD-10-AM coded data in Victoria have indicated that the data were of high quality. The results from the 2000–01 audit indicate further improvement.

During 2000–01 Queensland conducted a coding audit on the admitted patient data from thirteen Queensland public hospitals, with the audit report to be finalised in July 2002. Random samples of admitted patient records were selected from particular Diagnosis Related Groups to check the coded data quality. One of the main purposes of the audit was

to identify the cause of coding errors so that these problems can be addressed by education and training programs.

For the year 2000–01 the Western Australian Department of Health performed audits on a random sample of general records from teaching hospitals and a targeted sample of exceptional cases from both teaching and metropolitan non-teaching hospitals. The review was aimed at checking the ICD-10-AM coding (particularly for those cases with the greatest likelihood of error) and to check compliance with other recording requirements.

While no audits were conducted in 2000–01 in South Australia, overall standards for coding are considered to be sound. An assessment of coding quality will be undertaken during 2001–02 using the PICQ software.

There was no formal statewide audit of ICD-10-AM data quality in Tasmania for 2000–01. Individual sites conducted in-house audits using the ACBA tool.

The Australian Capital Territory has continued to undertake quality improvements in admitted patient care data. An external coding audit of data is planned for the second half of 2002 and will include coder education to address coding matters.

The Northern Territory Coders' Forum commenced monthly mini-audits late in the 2000–01 financial year, in which each hospital coder codes the same specific case and the answers are reviewed by forum members. In addition to the mini-audits, the hospitals regularly run reports on DRGs and review of these reports can result in coding being checked and revised.

## **Patient days as an activity measure**

Patient day statistics can be used to provide information on hospital activity that, unlike separation statistics, accounts for differences in length of stay. Patient days provide information on the length of stay of patients and are calculated as the difference between the separation date and the admission date, less any leave days. Same day patients are allocated a length of stay of one day.

As the National Hospital Morbidity Database contains records for patients separating from hospital during the year, this definition means that not all patient days reported will have occurred in the reporting period (1 July 2000 to 30 June 2001) and, therefore, cannot be used to calculate accurate financial year-based activity estimates. It is expected, however, that in acute hospitals, patient days for patients who separated in 2000–01, but who were admitted before 1 July 2000, would be counterbalanced by the patient days for patients in hospital on 30 June 2001 who will separate in future reporting periods.

Because of the more variable lengths of stay in long-stay establishments (such as public psychiatric hospitals), the numbers of separations and patient days can be a less accurate measure of the activity of these establishments.

## **Codes used for selected diagnoses and procedures**

Tables 4.8 and 4.9 present separation rates for selected diagnoses and procedures. The selected procedures were originally specified using ICD-9-CM codes. With the introduction of ICD-10-AM, they were respecified using ICD-10-AM first edition codes, as described in Appendix 6 of *Australian Hospital Statistics 1998–99* (AIHW 2000a). For this report, the codes have been specified using ICD-10-AM second edition (Table A3.1). Three new diagnoses

and procedures have been included for this report: *Asthma, Type 2 diabetes* and *Revision of hip replacement*.

**Table A3.1: ICD-10-AM codes for the selected procedures and diagnoses in Tables 4.8 and 4.9**

Selected separation category	ICD-10-AM codes
<b>Procedures</b>	
Appendicectomy	Block [926]
Coronary artery bypass graft	Blocks [672]–[679]
Angioplasty	Blocks [669], [671], codes 35304-00, 35305-00
Caesarean section	Block [1340]
Cholecystectomy	Block [965]
Diagnostic gastrointestinal endoscopies	Codes 30473-03, 41822-00, 30473-04, 30473-00, 30473-05, 30473-01, 32090-0, 132084-01 Blocks [894], [905], [1005]–[1008] (without 30473-02)
Hip replacement	Block [1492], codes 4752200, 4931500, 4931800, 4931900
Revision of hip replacement	Block [1492] (Note: a subset of Hip replacements)
Hysterectomy	Blocks [1268], [1269], codes 90450-00 and 90450-01
Lens insertion	Codes 42701-01, 42702-00 to 42702-11, 42703-00, 42710-00, 42707-00, 42701-00
Myringotomy	Codes 41632-00, 41632-01
Knee replacement	Blocks [1518], [1519], [1523], code 49527-00
Prostatectomy	Blocks [1165], [1167], codes 37200-06, 37207-00, 37207-01, 90407-00, 36839-01, 36839-03
Arthroscopic procedures	Codes 50100-00, 49118-00, 49218-00, 49360-00, 49557-00, 49700-00, 53215-00, 48945-00, 53218-02, 53218-00, 53218-01, 48954-00, 48948-01, 90600-00, 48945-01, 48948-00, 48948-02, 48951-00, 48957-00, 48960-00, 49121-00, 49121-01, 49121-04, 49118-01, 49109-00, 49121-02, 49121-03, 49221-00, 49221-01, 49221-02, 49218-01, 49224-00, 49224-01, 49224-02, 49227-00, 49366-01, 49366-00, 49363-00, 49560-00, 49560-02, 49557-01, 49557-02, 49558-00, 49560-01, 49560-03, 49566-00, 49561-02, 49562-02, 49561-00, 49562-00, 49561-01, 49562-01, 49558-01, 49558-02, 49559-00, 49563-00, 49539-00, 49542-00, 49703-00, 49703-02, 49700-01, 49703-01, 49703-04, 49703-03, 50100-01, 50102-00, 49703-05
Tonsillectomy	Codes 41789-00, 41789-01, 41787-01, 41786-01
<b>Diagnoses</b>	
Asthma	J45, J46 (principal diagnosis)
Type 2 diabetes	E11 (principal diagnosis and any diagnosis)
In-hospital births	Z37 (any diagnosis)

## Data on geographical location of hospital

Information on the Rural, Remote and Metropolitan Area (RRMA) of hospital is derived from data supplied by the States and Territories for the National Public Hospital Establishments Database on the geographical location of the establishment. The *National Health Data Dictionary* specifies that these data should be provided as the State or Territory and the Statistical Local Area (SLA) of the establishment. SLAs are small units within the Australian Bureau of Statistics' Australian Standard Geographical Classification (ASGC). The Rural, Remote and Metropolitan Areas Classification allocates each SLA to a category based primarily on population numbers and an index of remoteness. The classification is as follows:

- Capital cities: capital city statistical divisions
- Other metropolitan centres: urban centres with a population greater than or equal to 100,000
- Large rural centres (index of remoteness <10.5): urban centres with a population between 25,000 and 99,000
- Small rural centres (index of remoteness <10.5): urban centres with a population between 10,000 and 24,999
- Other rural areas (index of remoteness <10.5): urban centres with a population less than 10,000
- Remote centres (index of remoteness >10.5): urban centres with a population greater than 4,999
- Other remote areas (index of remoteness >10.5): urban centres with a population less than 5,000.

For more information see *Rural, Remote and Metropolitan Areas Classification, 1991 Census Edition* (DPIE & DSHS 1994).

## Data on geographical location of usual residence

Data on the Statistical Division of usual residence of admitted patients are presented in maps in Chapter 7 (Figures 7.8 and 7.9). Data on the Rural, Remote and Metropolitan Area (RRMA, see above) of usual residence of admitted patients are presented in Table 7.12. The data used for the maps and Table 7.12 were derived from data supplied for each separation by the States and Territories for the National Hospital Morbidity Database on the area of usual residence of the patients. The *National Health Data Dictionary* specifies that these data should be provided as the State or Territory and the SLAs of usual residence. SLAs can be aggregated to Statistical Divisions for reporting, as in the maps in this publication, or to Rural Remote and Metropolitan Areas, as in Table 7.12. The data on the State or Territory of usual residence are reported in Chapter 6 (Tables 6.6, 6.7, 6.8 and 6.9).

Although most separations included data on the State or Territory of usual residence, not all States and Territories were able to provide information on the area of usual residence in the form of an SLA code, using the 2000 edition of the ASGC. If SLA information was unavailable for a patient then postcode was requested. The Institute mapped the supplied data to 2000 and 1996 SLAs, as far as possible. SLAs were derived from postcodes based on the probabilities that persons for whom a postcode was reported were resident in each SLA. Similarly, 2000 and 1996 SLA codes were derived from SLA codes from earlier and later editions of the ASGC on a probabilistic basis. The standardised 1996 SLA data were then aggregated to Statistical Division data for presentation in maps. Standardised 1996 SLA data were used for the maps because the MapInfo program used to generate them is based on 1996 Census data. The standardised 2000 SLA data were aggregated to RRMA categories for Table 7.12.

New South Wales, Victoria, Tasmania, the Australian Capital Territory and the Northern Territory were able to provide SLA codes for both patients usually resident in the jurisdiction and patients not usually resident in the jurisdiction. Queensland and South Australia provided SLA codes for patients usually resident in the jurisdiction and postcodes for patients usually resident elsewhere. Western Australia provided postcodes for both patients usually resident in the jurisdiction and patients not usually resident in the

jurisdiction. The mapping process identified missing, invalid and superseded codes, but resulted in 99.7% of records being assigned SLA codes. Data for the two Statistical Divisions in the Australian Capital Territory were combined for mapping purposes because of the very small population of one of the Statistical Divisions.