

## 1.12 Children's hearing loss

*This indicator includes a number of measures of children's hearing including prevalence rates and hospitalisation rates for diseases of the ear and mastoid process, and rates of ear and hearing problems managed at consultations with general practitioners*

### Data sources

Data for this measure come from the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), the Western Australian Aboriginal Child Health Survey, the Bettering the Evaluation and Care of Health (BEACH) survey and the AIHW's National Hospital Morbidity Database. Limited data are presented on child hearing screening from the state and territory health departments.

#### **National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)**

The 2004–05 NATSIHS collected information from 10,439 Indigenous Australians of all ages. This sample was considerably larger than the supplementary Indigenous samples in the 1995 and 2001 National Health Surveys. The survey was conducted in remote and non-remote areas of Australia and collected a range of information from Indigenous Australians about health-related issues including health-related actions, health risk factors, health status, socioeconomic circumstances and women's health. It is planned to repeat the NATSIHS at six-yearly intervals, with the next NATSIHS to be conducted in 2010–11. Selected non-Indigenous comparisons are available through the 2004–05 National Health Survey (NHS).

#### **Western Australian Aboriginal Child Health Survey**

This survey was a large-scale investigation into the health of 5,289 Western Australian Aboriginal and Torres Strait Islander children aged 0–17 years. It was undertaken in 2001 and 2002 by the Telethon Institute for Child Health Research in conjunction with the Kulunga Research Network. The survey has been the first to gather comprehensive health, educational and developmental information on a population-based sample of Aboriginal and Torres Strait Islander children in their families and communities.

#### **Bettering the Evaluation and Care of Health (BEACH) survey**

Information about encounters in general practice is available from the Bettering the Evaluation and Care of Health (BEACH) survey which is conducted by the AIHW and the University of Sydney. Information is collected from a random sample of approximately 1,000 general practitioners (GPs) from across Australia each year. A sample of 100 consecutive encounters is collected from each GP.

The number of Indigenous patients identified in the BEACH survey is likely to be underestimated. This is because some GPs might not ask about Indigenous status, or the patient may choose not to identify (AIHW 2002). The estimates presented here are also derived from a relatively small sample of GP encounters involving Indigenous Australians.

Due to a late inclusion of a 'not stated' category of Indigenous status in 2001–02, (before which not stated responses were included with non-Indigenous encounters), GP encounters

for which Indigenous status was not reported have been included with encounters for non-Indigenous people under the 'other' category.

Data are presented for the five-year period 2000-01 to 2004-05, during which there were 7,296 GP encounters with Aboriginal and Torres Strait Islander patients recorded in the survey, representing 1.6% of total GP encounters.

## **Hospitalisations**

The National Hospital Morbidity Database is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals in each state and territory. Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments.

Data are presented for the four jurisdictions which have been assessed as having adequate identification of Indigenous hospitalisations in 2003-04 – Queensland, Western Australia, South Australia and the Northern Territory (AIHW 2005). These four jurisdictions represent approximately 60% of the Indigenous population of Australia. Data are presented by state/territory of usual residence of the patient.

Hospitalisations for which the Indigenous status of the patient was not reported have been included with hospitalisations data for non-Indigenous people under the 'other' category. This is to enable consistency across jurisdictions as public hospitals in some states and territories do not have a category for the reporting of 'not stated' or inadequately recorded/reported Indigenous status.

Hospitalisation data are presented for the two-year period July 2002 to June 2004. An aggregate of two years of data has been used as the number of hospitalisations for some conditions is likely to be small for a single year.

The principal diagnosis is the diagnosis established to be the problem that was chiefly responsible for the patient's episode of care in hospital. The additional diagnosis is a condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. The term 'hospitalisation' has been used to refer to a separation which is the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a change in a type of care (for example, from acute to rehabilitation).

## **Child hearing screening data**

No data are currently available on Aboriginal and Torres Strait Islander children's hearing loss in the Australian Capital Territory, Queensland and Western Australia. New South Wales, Victoria, South Australia, Tasmania and the Northern Territory currently have screening programs for hearing loss at school entry, however, comprehensive data are not yet available.

## **Analysis**

Age-standardised rates and ratios have been used for this indicator as a measure of morbidity in the Indigenous population relative to other Australians. Ratios of this type illustrate differences between the rates of morbidity among Indigenous people and those of other Australians, taking into account differences in age distributions.

## Self-reported prevalence

Self-reported data from the National Aboriginal and Torres Strait Islander Health Survey on the prevalence of diseases of the ear and mastoid are presented in Table 1.12.1, Figure 1.12.1 and Table 1.12.2.

- In 2004–05, approximately 10% of Indigenous children aged 0–14 years reported having ear or hearing problems compared with 3% of non-Indigenous children of the same age. Prevalence rates for ear/hearing problems were 95 per 1,000 population among Indigenous children and 30 per 1,000 population among non-Indigenous children.
- Diseases of the ear and mastoid were more prevalent among Indigenous children aged 5–14 years (12%) than among Indigenous children aged 0–4 years (6%) (Figure 1.12.1).
- Complete or partial deafness or hearing loss and otitis media were both more prevalent among Indigenous children than among non-Indigenous children. Approximately 5% of Indigenous children aged 0–14 years reported complete or partial hearing loss or deafness compared to 1% of non-Indigenous children. Approximately 4% of Indigenous children of the same age reported otitis media compared to 2% of non-Indigenous children. Otitis media is infection and inflammation of the middle ear space and ear drum. Symptoms include earache, fever and, in some cases, diminished hearing.
- In 2004–05, prevalence of diseases of the ear and mastoid process was higher among Indigenous children aged 0–14 years in remote areas (12% males and 13% females) than in non-remote areas (9% males and 8% females) (Table 1.12.2).
- Overall, there has been little change in the prevalence of ear and hearing problems among Indigenous children aged 0–14 years between 2001 and 2004–05, however, in remote areas there has been a decline over this period for both Indigenous males (from 18% in 2001 to 12% in 2004–05) and Indigenous females (from 18% in 2001 to 13% in 2004–05).

**Table 1.12.1: Persons reporting diseases of the ear and mastoid, by Indigenous status and age group, 2004–05<sup>(a)</sup>**

| Age (years)                               | Per cent         |                  |                  |                |                  |                | Rate per 1,000 <sup>(b)</sup> |                |            |                |            |                |
|---|------------------|------------------|------------------|----------------|------------------|----------------|-------------------------------|----------------|------------|----------------|------------|----------------|
|   | 0–4              |                  | 5–14             |                | Total 0–14       |                | 0–4                           |                | 5–14       |                | Total 0–14 |                |
|   | Indigenous       | Non-Indigenous   | Indigenous       | Non-Indigenous | Indigenous       | Non-Indigenous | Indigenous                    | Non-Indigenous | Indigenous | Non-Indigenous | Indigenous | Non-Indigenous |
| Complete/partial deafness or hearing loss | 2 <sup>(c)</sup> | 1 <sup>(c)</sup> | 6*               | 2*             | 5*               | 1*             | 18                            | 5              | 59         | 16             | 45         | 12             |
| Otitis media                              | 4*               | 2 <sup>(c)</sup> | 5*               | 1*             | 4*               | 2*             | 36                            | 18             | 47         | 14             | 44         | 15             |
| Other diseases of the ear and mastoid     | — <sup>(c)</sup> | — <sup>(d)</sup> | 2 <sup>(c)</sup> | 1              | 1 <sup>(c)</sup> | —              | 4                             | 1              | 16         | 5              | 12         | 4              |
| <b>Total<sup>(e)(f)</sup></b>             | <b>6*</b>        | <b>2*</b>        | <b>12*</b>       | <b>3*</b>      | <b>10*</b>       | <b>3*</b>      | <b>55</b>                     | <b>23</b>      | <b>115</b> | <b>34</b>      | <b>95</b>  | <b>30</b>      |
| Total number                              | 60,183           | 1,198,038        | 120,486          | 2,561,973      | 180,669          | 3,760,010      | 60,183                        | 1,198,038      | 120,486    | 2,561,973      | 180,669    | 3,760,010      |

\* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons.

(a) Self-reported data from the National Aboriginal and Torres Strait Islander Health Survey 2004–05 and National Health Survey 2004–05.

(b) Rate per 1,000 population.

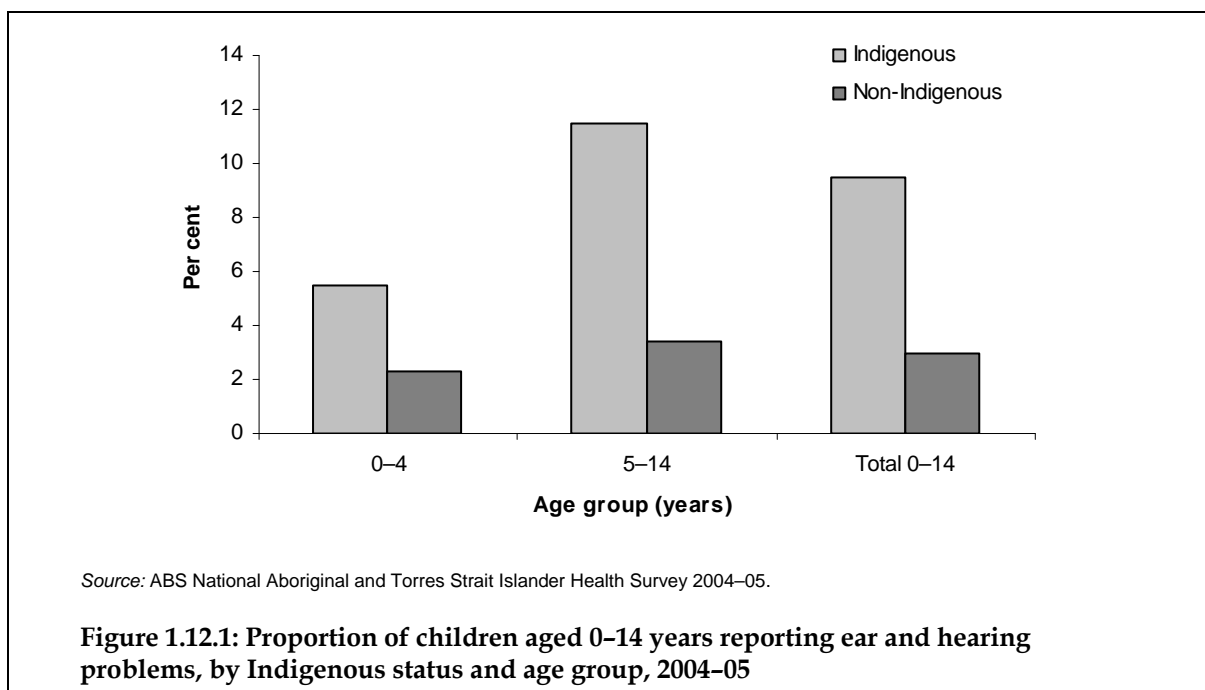
(c) Estimates having a relative standard error of 25% to 50% should be used with caution.

(d) Estimate having a relative standard error greater than 50% are considered too unreliable for general use.

(e) Includes 'Type of ear/hearing problem' not known.

(f) Components may not add to total as persons may have reported more than one type of condition.

Source: ABS and AIHW analysis of 2004–05 National Aboriginal and Torres Strait Islander Health Survey and 2004–05 National Health Survey.



**Table 1.12.2: Indigenous children aged 0-14 years reporting conditions of the ear and mastoid process, by remoteness, 1995, 2001 and 2004-05**

|              | 1995 <sup>(a)</sup> |             | 2001      |             | 2004-05   |             |
|--------------|---------------------|-------------|-----------|-------------|-----------|-------------|
|              | Males (%)           | Females (%) | Males (%) | Females (%) | Males (%) | Females (%) |
| Remote       | n.a.                | n.a.        | 18        | 18          | 12        | 13          |
| Non-remote   | 7                   | 4           | 6         | 11          | 9         | 8           |
| <b>Total</b> | <b>n.a.</b>         | <b>n.a.</b> | <b>10</b> | <b>13</b>   | <b>10</b> | <b>9</b>    |
| Total number | 54,392              | 52,401      | 90,615    | 85,878      | 92,767    | 87,902      |

(a) Data for the National Aboriginal and Torres Strait Islander Health Survey 1995 are available for non-remote regions only. Total numbers are therefore for non-remote areas only.

Source: ABS and AIHW analysis of 2004-05 National Aboriginal and Torres Strait Islander Health Survey.

## Hospitalisations

- For the two-year period July 2002 to June 2004, in Queensland, Western Australia, South Australia and the Northern Territory, there were 27,149 hospitalisations from diseases of the ear and mastoid process among children aged 0–14 years, 6.8% of which were hospitalisations of Aboriginal and Torres Strait Islander children.
- Diseases of the ear and mastoid process accounted for 4.5% of total hospitalisations among Indigenous children aged 0–14 years.

### Hospitalisations by age and principal diagnosis

- For the two-year period July 2002 to June 2004, in Queensland, Western Australia, South Australia and the Northern Territory, there were 809 hospitalisations among Indigenous children aged 0–4 years; and 1,037 hospitalisations among Indigenous children aged 5–14 years for diseases of the ear and mastoid process. This represented 3% and 7% of total hospitalisations among Indigenous children respectively (Table 1.12.3).
- While Indigenous children aged 0–4 years were less likely to be hospitalised from diseases of the ear and mastoid process as other children, Indigenous children aged 5–14 years were 1.3 times more likely to be hospitalised from these diseases as other children.
- Diseases of the middle ear, which include otitis media, were the most common type of ear disease causing hospitalisation among Indigenous children. Indigenous children aged 0–4 years were less likely to be hospitalised for diseases of the middle ear than other children, while Indigenous children aged 5–14 years were 1.4 times more likely to be hospitalised than other children.
- Indigenous children aged 0–14 years were hospitalised for tympanoplasmy procedures due to middle ear infection at almost five times the rate of other children. Differences observed in hospitalisations from middle ear infections may be due to the chronic nature of the disease among Indigenous children resulting in greater damage to the ear drum.

**Table 1.12.3: Hospitalisations for diseases of the ear and mastoid process, by Indigenous status, Qld, WA, SA and NT, July 2002–June 2004<sup>(a)(b)(c)(d)(e)</sup>**

|  | Number       |                      | Per cent <sup>(e)</sup> |                      | Indigenous                    |                        |                        | Other <sup>(f)</sup>          |                        |                        | Rate ratio <sup>(j)</sup> |
|--|--------------|----------------------|-------------------------|----------------------|-------------------------------|------------------------|------------------------|-------------------------------|------------------------|------------------------|---------------------------|
|  | Indigenous   | Other <sup>(f)</sup> | Indigenous              | Other <sup>(f)</sup> | Rate per 1,000 <sup>(g)</sup> | LCL 95% <sup>(h)</sup> | UCL 95% <sup>(i)</sup> | Rate per 1,000 <sup>(g)</sup> | LCL 95% <sup>(h)</sup> | UCL 95% <sup>(i)</sup> |                           |
| <b>Aged 0–4 years</b>                        |              |                      |                         |                      |                               |                        |                        |                               |                        |                        |                           |
| Diseases of middle ear and mastoid (H65–H75) | 744          | 13,913               | 2.7                     | 6.5                  | 10.4                          | 9.6                    | 11.1                   | 15.6                          | 15.4                   | 15.9                   | 0.7*                      |
| Other disorders of ear (H90–H95)             | 36           | 561                  | 0.1                     | 0.3                  | 0.5                           | 0.3                    | 0.7                    | 0.6                           | 0.6                    | 0.7                    | 0.8                       |
| Diseases of the external ear (H60–H62)       | 29           | 250                  | 0.1                     | 0.1                  | 0.4                           | 0.3                    | 0.6                    | 0.3                           | 0.2                    | 0.3                    | 1.4*                      |
| Diseases of inner ear (H80–H83)              | 0            | 17                   | 0.0                     | —                    | 0.0                           | 0.0                    | 0.0                    | —                             | —                      | —                      | —                         |
| <b>Total</b>                                 | <b>809</b>   | <b>14,741</b>        | <b>3.0</b>              | <b>6.9</b>           | <b>11.3</b>                   | <b>10.5</b>            | <b>12.0</b>            | <b>16.6</b>                   | <b>16.3</b>            | <b>16.8</b>            | <b>0.7*</b>               |
| <b>Aged 5–14 years</b>                       |              |                      |                         |                      |                               |                        |                        |                               |                        |                        |                           |
| Diseases of middle ear and mastoid (H65–H75) | 976          | 9,687                | 6.9                     | 5.8                  | 6.8                           | 6.4                    | 7.2                    | 5.0                           | 4.9                    | 5.1                    | 1.4*                      |
| Other disorders of ear (H90–H95)             | 30           | 352                  | 0.2                     | 0.2                  | 0.2                           | 0.1                    | 0.3                    | 0.2                           | 0.2                    | 0.2                    | 1.2                       |
| Diseases of the external ear (H60–H62)       | 28           | 501                  | 0.2                     | 0.3                  | 0.2                           | 0.1                    | 0.3                    | 0.3                           | 0.2                    | 0.3                    | 0.8                       |
| Diseases of inner ear (H80–H83)              | 3            | 32                   | —                       | —                    | —                             | —                      | —                      | —                             | —                      | —                      | 1.3                       |
| <b>Total</b>                                 | <b>1,037</b> | <b>10,572</b>        | <b>7.3</b>              | <b>6.3</b>           | <b>7.2</b>                    | <b>6.8</b>             | <b>7.7</b>             | <b>5.4</b>                    | <b>5.3</b>             | <b>5.5</b>             | <b>1.3*</b>               |

\* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the p<.05 level.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Categories are based on the ICD-10-AM (National Centre for Classification in Health 2004); ICD-10-AM codes H60-H95.

(c) Financial year reporting.

(d) Data are reported by state/territory of usual residence of the patient hospitalised and are for Western Australia, South Australia, the Northern Territory and Queensland only. These four jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Data for these four jurisdictions over-represent Indigenous populations in less urbanised and more remote locations. Hospitalisation data for four jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.

(e) Per cent total hospitalisations for Indigenous and non-Indigenous people in that age group for the period 2002–03 to 2003–04.

(f) Other includes hospitalisations of non-Indigenous people and those for whom Indigenous status was 'not stated'.

(g) Age-specific hospitalisation rate using the average Indigenous December populations for the relevant years.

(h) LCL = lower confidence limit.

(i) UCL = upper confidence limit.

(j) Rate ratio Indigenous:other.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.

## Time series analysis

Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians for diseases of the ear and mastoid process over the five-year period 1998–99 to 2003–04 are presented in Table 1.12.4 and Figure 1.12.2.

- In Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant declines in hospitalisation rates for diseases of the ear and mastoid process among Indigenous children aged 0–14 years during the period 1998–99 to 2003–04, with an average yearly decline in the rate of around 0.2 per 1,000 population. The declines in hospitalisation rates were significant for both males and females. Most of these declines were attributable to declines in rates between 2001–02 and 2002–03.
- There were also significant declines in hospitalisation rates among other Australian children, with an average yearly decline in the rate of 0.2 per 1,000.
- There was no significant change in the hospitalisation rate ratios or rate difference between Indigenous and other children during the period 1998–99 to 2003–04.

It should be noted that changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospital separations for Indigenous Australians. Also, changes in access, hospital policies and practices all impact on the level of hospitalisation over time. Caution should be used in interpreting changes over time as it is not possible to ascertain whether a change in reported hospitalisation is due to changes in the accuracy of Indigenous identification or real changes in the rates at which Indigenous people are hospitalised. An increase in hospitalisation rates may reflect better access rather than a worsening of health but is likely to be a combination of both.

**Table 1.12.4: Age-standardised hospitalisation rates, rate ratios and rate differences from diseases of the ear and mastoid process, children aged 0–14 years, Qld, WA, SA & NT, 1998–99 to 2003–04**

|  | 1998–99 | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | Annual change <sup>(a)</sup> |
|--|---------|---------|---------|---------|---------|---------|------------------------------|
| <b>Indigenous rate per 1,000</b>                     |         |         |         |         |         |         |                              |
| Males  | 10.1    | 10.4    | 10.4    | 9.4     | 8.5     | 9.5     | -0.3*                        |
| Females  | 9.2     | 9.0     | 8.6     | 9.2     | 7.8     | 8.2     | -0.2*                        |
| Persons  | 9.7     | 9.7     | 9.5     | 9.3     | 8.1     | 8.9     | -0.2*                        |
| <b>Other Australian<sup>(b)</sup> rate per 1,000</b> |         |         |         |         |         |         |                              |
| Males  | 11.4    | 11.1    | 11.2    | 10.8    | 10.8    | 10.5    | -0.2*                        |
| Females  | 8.2     | 8.0     | 8.1     | 7.8     | 7.5     | 7.3     | -0.2*                        |
| Persons  | 9.9     | 9.6     | 9.7     | 9.4     | 9.2     | 9.0     | -0.2*                        |
| <b>Rate ratio<sup>(c)</sup></b>                      |         |         |         |         |         |         |                              |
| Males  | 0.9     | 0.9     | 0.9     | 0.9     | 0.8     | 0.9     | 0.0                          |
| Females  | 1.1     | 1.1     | 1.1     | 1.2     | 1.0     | 1.1     | 0.0                          |
| Persons  | 1.0     | 1.0     | 1.0     | 1.0     | 0.9     | 1.0     | 0.0                          |
| <b>Rate difference<sup>(d)</sup></b>                 |         |         |         |         |         |         |                              |
| Males  | -1.3    | -0.7    | -0.8    | -1.4    | -2.4    | -0.9    | -0.2                         |
| Females  | 0.9     | 0.9     | 0.4     | 1.4     | 0.3     | 0.9     | 0.0                          |
| Persons  | -0.2    | 0.1     | -0.2    | 0.0     | -1.1    | -0.1    | -0.2                         |

\* Represents results with statistically significant increases or declines at the p<.05 level over the period 1998–99 to 2003–04.

(a) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

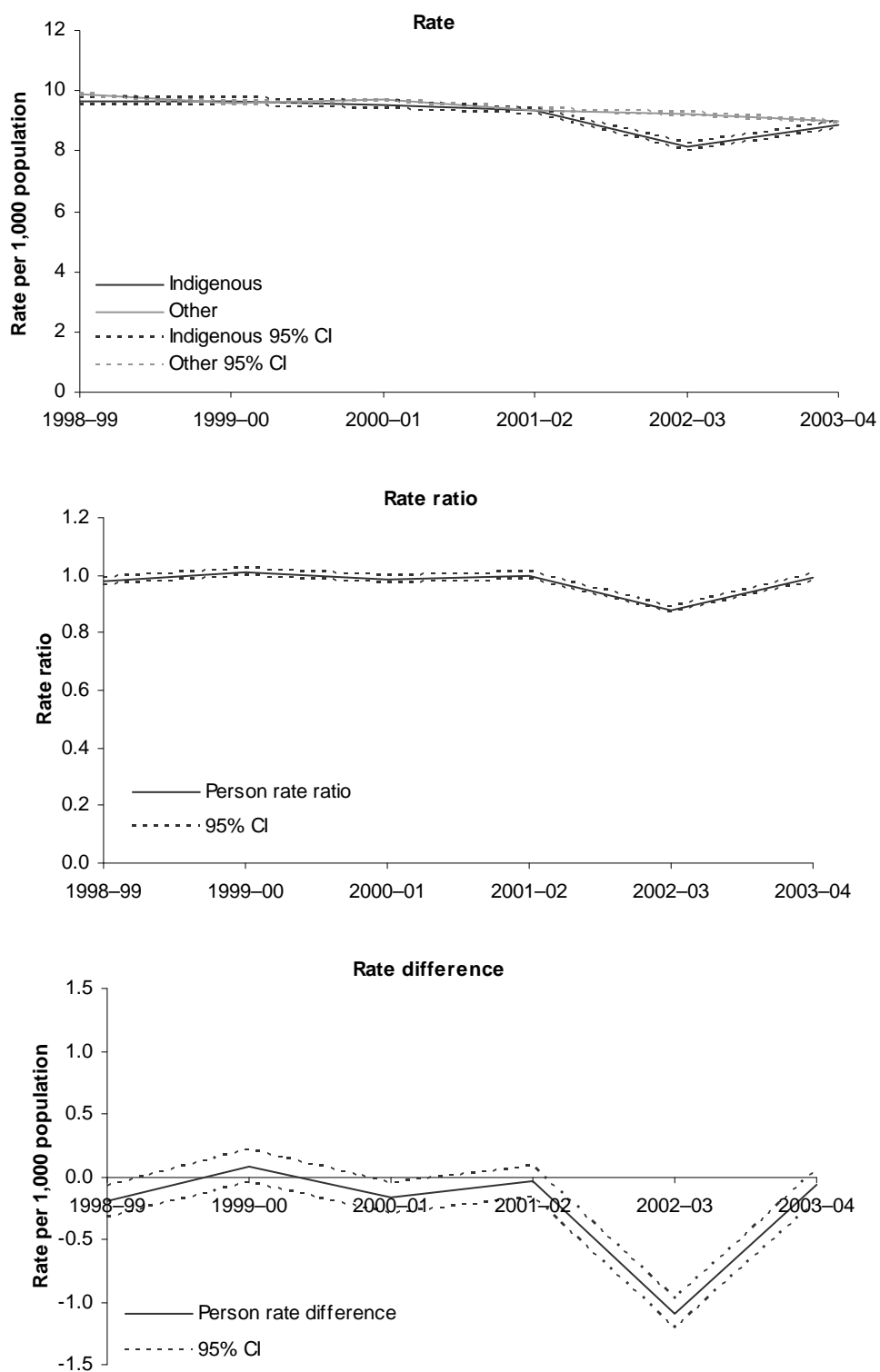
(b) 'Other' includes hospitalisations for non-Indigenous people and those for whom Indigenous status was not stated.

(c) Hospitalisation rates for Indigenous Australians divided by hospitalisation rates for other Australians.

(d) Hospitalisation rates for Indigenous Australians minus hospitalisation rates for other Australians.

Note: Rates have been directly age standardised using the 2001 Australian standard population.

Source: AIHW analysis of AIHW National Hospital Morbidity Database.



Source: AIHW analysis of AIHW National Hospital Morbidity Database.

**Figure 1.12.2: Hospitalisation rates, rate ratios and rate differences between Indigenous and other children aged 0-14 years from diseases of the ear and mastoid process, Qld, WA, SA and NT, 1998-99 to 2003-04**

## General practitioner encounters

Information about general practitioner encounters is available from the BEACH survey. Information is collected from a random sample of approximately 1,000 General practitioners GPs from across Australia each year. A sample of 100 consecutive encounters is collected from each GP. Data for the five-year period 2000–01 to 2004–05 are presented in Table 1.12.5 below.

- In the period 2000–01 to 2004–05 there were a total of 58,466 GP encounters with patients aged 0–14 years, 1,657 (2.8%) of which were with Aboriginal and Torres Strait Islander patients recorded in the survey.
- Ear and hearing problems were responsible for 11% of total problems managed among Indigenous patients aged 0–14 years and 10% of total problems managed among other patients of the same age.
- Ear and hearing problems were managed at GP encounters with Indigenous children at similar rates to encounters with other children (at rates of 13.5 and 11.7 per 100 encounters for Indigenous and other children aged 0–14 years respectively).
- Acute otitis media/myringitis was the most common ear and hearing problem managed at GP encounters, responsible for 6.7% of total problems managed among Indigenous patients aged 0–14 years and made up a greater proportion of problems managed in the 0–4 year age group (7.9%) than at encounters with children of 5–14 years (5.2%).
- Acute otitis media/myringitis was managed at GP encounters with Indigenous children aged 0–14 years at similar rates to encounters with other children of the same age (8.3 per 100 encounters compared with 7.6 per 100 encounters respectively).

Table 1.12.5: Ear and hearing problems<sup>(a)</sup> managed by general practitioners, by Indigenous status of patient, 2000–01 to 2004–05<sup>(b)(c)(d)</sup>

| Age                               | Number     |                      | Per cent total problems <sup>(e)</sup> |                      | Indigenous                             |                        |                        | Other <sup>(f)</sup>                   |                        |                        | Ratio <sup>(i)</sup> |
|-----------------------------------|------------|----------------------|--|----------------------|--|------------------------|------------------------|--|------------------------|------------------------|----------------------|
|                                   | Indigenous | Other <sup>(f)</sup> | Indigenous                             | Other <sup>(f)</sup> | Rate per 100 encounters <sup>(g)</sup> | 95% LCL <sup>(h)</sup> | 95% UCL <sup>(i)</sup> | Rate per 100 encounters <sup>(g)</sup> | 95% LCL <sup>(h)</sup> | 95% UCL <sup>(i)</sup> |                      |
| <b>0–4 years</b>                  |            |                      |  |                      |  |                        |                        |  |                        |                        |                      |
| Acute otitis media/myringitis     | 90         | 2,753                | 7.9                                    | 7.6                  | 9.7                                    | 7.1                    | 12.3                   | 9.2                                    | 8.8                    | 9.7                    | 1.1                  |
| Other infections of ear           | 25         | 523                  | 2.2                                    | 1.4                  | 2.7                                    | 0.7                    | 4.7                    | 1.7                                    | 1.4                    | 2.1                    | 1.5                  |
| <i>Subtotal infections of ear</i> | <i>115</i> | <i>3,276</i>         | <i>10.1</i>                            | <i>9.0</i>           | <i>12.4</i>                            | <i>7.1</i>             | <i>12.3</i>            | <i>11.0</i>                            | <i>8.8</i>             | <i>9.7</i>             | <i>1.1</i>           |
| Hearing loss                      | 0          | 16                   | 0.0                                    | 0.0                  | 0.0                                    | 0.0                    | 0.0                    | 0.1                                    | 0.0                    | 0.1                    | —                    |
| Other diseases of the ear         | 13         | 446                  | 1.1                                    | 1.2                  | 1.4                                    | 0.5                    | 2.3                    | 1.5                                    | 1.1                    | 1.9                    | 0.9                  |
| <b>Total diseases of the ear</b>  | <b>128</b> | <b>3,738</b>         | <b>11.2</b>                            | <b>10.3</b>          | <b>13.8</b>                            | <b>8.3</b>             | <b>19.3</b>            | <b>12.5</b>                            | <b>11.3</b>            | <b>13.7</b>            | <b>1.1</b>           |
| <b>5–14 years</b>                 |            |                      |  |                      |  |                        |                        |  |                        |                        |                      |
| Acute otitis media/myringitis     | 47         | 1,545                | 5.2                                    | 4.7                  | 6.4                                    | 4.2                    | 8.6                    | 5.7                                    | 4.9                    | 5.5                    | 1.1                  |
| Other infections of ear           | 32         | 858                  | 2.8                                    | 2.4                  | 3.5                                    | 1.4                    | 7.6                    | 3.2                                    | 2.5                    | 3.3                    | 1.1                  |
| <i>Subtotal infections of ear</i> | <i>79</i>  | <i>2,403</i>         | <i>8.8</i>                             | <i>7.3</i>           | <i>10.8</i>                            | <i>4.2</i>             | <i>8.6</i>             | <i>8.9</i>                             | <i>4.9</i>             | <i>5.5</i>             | <i>1.2</i>           |
| Hearing loss                      | 0          | 25                   | 0.0                                    | 0.1                  | 0.0                                    | 0.0                    | 0.0                    | 0.1                                    | 0.1                    | 0.1                    | —                    |
| Other diseases of the ear         | 17         | 482                  | 1.9                                    | 1.5                  | 2.3                                    | 1.1                    | 4.1                    | 1.8                                    | 1.2                    | 1.7                    | 1.3                  |
| <b>Total diseases of the ear</b>  | <b>96</b>  | <b>2,910</b>         | <b>10.7</b>                            | <b>8.9</b>           | <b>13.2</b>                            | <b>6.8</b>             | <b>20.4</b>            | <b>10.8</b>                            | <b>8.6</b>             | <b>10.5</b>            | <b>1.2</b>           |

(continued)

**Table 1.12.5 (continued): Ear and hearing problems<sup>(a)</sup> managed by general practitioners, by Indigenous status of patient, 2000–01 to 2004–05<sup>(b)(c)(d)</sup>**

| Age                               | Number     |                      | Per cent total problems <sup>(e)</sup> |                      | Indigenous                             |                        |                        | Other <sup>(f)</sup>                   |                        |                        | Ratio <sup>(j)</sup> |
|-----------------------------------|------------|----------------------|--|----------------------|--|------------------------|------------------------|--|------------------------|------------------------|----------------------|
|                                   | Indigenous | Other <sup>(f)</sup> | Indigenous                             | Other <sup>(f)</sup> | Rate per 100 encounters <sup>(g)</sup> | 95% LCL <sup>(h)</sup> | 95% UCL <sup>(i)</sup> | Rate per 100 encounters <sup>(g)</sup> | 95% LCL <sup>(h)</sup> | 95% UCL <sup>(i)</sup> |                      |
| <b>0–14 years</b>                 |            |                      |  |                      |  |                        |                        |  |                        |                        |                      |
| Acute otitis media/myringitis     | 137        | 4,298                | 6.7                                    | 6.2                  | 8.3                                    | 6.3                    | 10.3                   | 7.6                                    | 7.3                    | 7.9                    | 1.1                  |
| Other infections of ear           | 57         | 1,381                | 5.0                                    | 3.8                  | 3.4                                    | 1.6                    | 5.4                    | 2.4                                    | 2.1                    | 2.7                    | 1.4                  |
| <i>Subtotal infections of ear</i> | <i>194</i> | <i>5,679</i>         | <i>9.5</i>                             | <i>8.2</i>           | <i>11.7</i>                            | <i>6.3</i>             | <i>10.3</i>            | <i>10.0</i>                            | <i>7.3</i>             | <i>7.9</i>             | <i>1.2</i>           |
| Hearing loss                      | 0          | 41                   | 0.0                                    | 0.1                  | 0.0                                    | 0.0                    | 0.0                    | 0.1                                    | 0.1                    | 0.1                    | —                    |
| Other diseases of the ear         | 30         | 928                  | 1.5                                    | 1.3                  | 1.8                                    | 1.0                    | 2.9                    | 1.6                                    | 1.3                    | 1.8                    | 1.1                  |
| <b>Total diseases of the ear</b>  | <b>224</b> | <b>6,648</b>         | <b>11.0</b>                            | <b>9.6</b>           | <b>13.5</b>                            | <b>8.8</b>             | <b>18.5</b>            | <b>11.7</b>                            | <b>10.7</b>            | <b>12.5</b>            | <b>1.2</b>           |

(a) ICP-2 codes: H00–H99. Acute otitis media/myringitis = H71; other ear infections = H70, H72, H73, H74; hearing loss = H28, H84, H85, H86; other diseases of the ear = H00–H27, H29–H69, H75–H83, H87–H99.

(b) These survey results are likely to undercount the number of Indigenous Australians visiting doctors.

(c) Combined financial year data for five years.

(d) Data for Indigenous and Other Australians have not been weighted.

(e) Per cent of total problems within age group.

(f) Includes non-Indigenous patients and patients for whom Indigenous status was 'not stated'.

(g) Age specific rate per 100 encounters. Figures do not add to 100 as more than one problem can be managed at each encounter.

(h) LCL = lower confidence interval.

(i) UCL = upper confidence interval.

(j) Rate ratio Indigenous:other.

Source: AIHW analysis of BEACH data.

## **Additional information**

### **Ear and hearing problems among Aboriginal children in Western Australia**

The Western Australian Aboriginal Child Health Survey collected information on ear and hearing problems among Aboriginal children living in Western Australia in 2001 and 2002.

- Approximately 18% of Aboriginal children were assessed by their carers as having recurring ear infections. Children aged 12–17 years were less likely to have recurring ear infections (14%) than younger children aged 0–3 and 4–11 years (20%). Of those children with recurring ear infections, over two-thirds (69%) had at least one episode in which infection ruptured the ear drum causing ear discharge.
- Overall, approximately 13% of Aboriginal children aged 4–17 years had recurring ear infections with at least one instance of discharging ears and a further 9% had had an isolated case of discharging ears. The risk of discharging ears in children with recurring ear infections was highest in areas of high and extreme isolation (83%).
- Carers of children aged 4–17 years were also asked about their child's hearing and learning ability. Approximately 7% of children were assessed as having abnormal hearing, 9% with unintelligible speech, 10% as having difficulty with sounds, 5% with a stammer and 9% as having learning difficulties. Younger children aged 4–11 years were more likely to have language difficulties such as unintelligible speech (11%) and difficulty with sounds (13%) than children aged 12–17 years (5% and 4% respectively).
- Aboriginal children with ear infections had a significantly greater risk of abnormal hearing, language problems and learning difficulties. Approximately 30% of children with recurrent ear infections with discharge had abnormal hearing compared to 2% of children with no ear infections. Children with recurring ear infections with discharge were around three times as likely to have difficulty with sounds and twice as likely to have learning difficulties as children with no ear infection.

### **Child hearing screening**

Limited data are currently available on the screening of Aboriginal and Torres Strait Islander children's hearing in most states and territories. Available data are summarised below.

- In South Australia, in 2003, the prevalence of otitis media leading to hearing loss and contributing to communication problems and long-term disability was estimated to be 11.1% for Aboriginal children compared to 4.7% for the general community (SIMC 2004).
- In Victoria, all children are screened for hearing loss at 500 Hz at 30 dB and 1,000, 2,000 and 4,000 Hz at 20 dB through two universal programs – Maternal and Child Health (2–8 weeks) and School Nursing (prep school 5–6 years). In 2004, 58,793 prep children were screened, of whom 724 were recorded as Aboriginal and/or Torres Strait Islander. Of the Indigenous children screened, 598 were recorded with hearing within normal limits and 141 were referred for further action.
- In the Northern Territory in 2004, 62% of school-aged children (aged 4–16 years) tested in remote communities in the Northern Territory were identified with varying degrees of hearing loss in one or both ears. The tests were performed by audiologists and nurse audiometrists who travelled to remote communities. The numbers tested included mostly children who failed hearing screening at school entry (aged 4–5 years) and

children with hearing concerns but also older children who have had existing hearing loss and were being monitored.

## **Data quality issues**

### **National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)**

*The NATSIHS uses the standard Indigenous status question. The NATSIHS sample was specifically designed to select a representative sample of Aboriginal and Torres Strait Islander Australians and thus overcomes the problem inherent in most national surveys with small and unrepresentative Indigenous samples. As with other surveys, the NATSIHS is subject to sampling and non-sampling errors. Calculations of standard errors and significance testing help to identify the accuracy of the estimates and differences.*

*Information recorded in this survey is essentially 'as reported' by respondents. The ABS makes every effort to collect accurate information from respondents, particularly through careful questionnaire design, pre-testing of questionnaires, use of trained interviewers and assistance from Indigenous facilitators. Nevertheless, some responses may be affected by imperfect recall or individual interpretation of survey questions.*

*Non-Indigenous comparisons are available through the National Health Survey (NHS). The NHS was conducted in major cities, regional and remote areas, but very remote areas were excluded from the sample. Time series comparisons are available through the 1995 and 2001 National Health Survey.*

*In remote communities there were some modifications to the NATSIHS content in order to address language and cultural appropriateness in traditional communities, as well as to assist respondents in understanding the concepts. Some questions were excluded and some reworded. Also, paper forms were used in communities in remote areas and computer-assisted interview (CAI) instruments were used in non-remote areas. The CAI process included built in edit checks and sequencing.*

*Further information on NATSIHS data quality issues can be found in the national publication (ABS 2006).*

### **Western Australian Aboriginal Child Health Survey**

*Survey data are subject to sampling and non-sampling errors. Confidence intervals are published with the data to provide a guide to the reliability of the estimates. Non-sampling errors can occur in surveys due to questionnaire design problems, respondent difficulty recalling information/lack of appropriate records, and errors made in the recording and processing of the data. Every effort was made to minimise non-sample errors in this survey (Zubrick et al. 2004).*

### **General practitioner data (BEACH)**

*Information about general practitioner encounters is available from the Bettering the Evaluation and Care of Health (BEACH) survey. The BEACH data on Indigenous Australians should be treated with care. First, the sample frame has not been designed to produce statistically significant results for population subgroups such as Indigenous Australians. Second, the identification of Indigenous Australians is not complete. In the BEACH survey 'not stated' responses to the Indigenous identification question are often higher than the 'yes' responses. It can be assumed, therefore, that the survey consistently undercounts the number of Indigenous Australians visiting general practitioners, but the extent of this undercount is not measurable.*

### **Hospital separation data**

#### **Separations**

*The number and pattern of hospitalisations can be affected by differing admission practices between regions and jurisdictions and from year to year, and differing levels and patterns of service delivery.*

*(continued)*

## **Data quality issues (continued)**

### ***Indigenous status question***

*Some jurisdictions have slightly different approaches to the collection and storage of the standard Indigenous status question and categories in their hospital collections. The not stated category is missing from several collections. It is recommended that the standard wording and categories be used in all jurisdictions (AIHW 2005).*

### ***Under identification***

*The incompleteness of Indigenous identification means the number of hospital separations recorded as Indigenous is an underestimate of hospitalisations of Aboriginal and Torres Strait Islander people. While the identification of Indigenous people in hospitalisations is incomplete in all States and Territories, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed as having adequate identification (AIHW 2005). It has been recommended that reporting of Indigenous hospital separations be limited to aggregated information from Queensland, Western Australia, South Australia and the Northern Territory. The proportion of the Indigenous population covered by these four jurisdictions is 60%. The following caveats have also been recommended:*

- *Interpretation of results should take into account the relative quality of the data from the jurisdictions included (currently a degree of Indigenous under-identification in WA and relatively marked Indigenous under- identification in Qld data);*
- *Data for these four jurisdictions over-represent Indigenous populations in less urbanised and more remote locations;*
- *Hospitalisation data for four jurisdictions should not be assumed to represent the hospitalisation experience in other jurisdictions (ABS & AIHW 2005).*

### ***Numerator and denominator***

*Rate and Ratio calculations rely on good numerator and denominator data. The changes in the completeness of identification of Indigenous people in hospital records may take place at different rates than changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used here are sourced from the ABS experimental estimates and projections: Aboriginal and Torres Strait Islander Australians (ABS 2004).*

### ***Child Hearing Screening***

*The Australian Capital Territory, Queensland and Western Australia reported that there were no data available on Aboriginal and Torres Strait Islander children's hearing loss. Victoria reported that children are screened for hearing through two universal programs Maternal and Child Health (2-8 weeks), and School Nursing (Prep school 5-6 years). Screening relies on a consent form being completed by the parent. The form is still valid if Indigenous status is not completed. All children are screened for hearing loss at 500 Hz at 30 dB and 1000, 2000 and 4000 Hz at 20 dB. School Nursing has made efforts to improve the quality of the data but the level of accurate identification is uncertain. Tasmanian enrolment cards are completed by parents or nurses; asking for Indigenous status is compulsory but responding is voluntary. Children whose hearing loss has been detected and who attend the Australian Hearing Service have their Indigenous status collected (Statistical Information Management Committee, 2004).*

*In 2004-05, NSW Health has commenced a state-wide otitis media screening initiative for 0-6 year old Aboriginal children over a 4 year term. Data is not yet available.*

*In the Northern Territory, remote nurses from the Maternal and Child Health team perform hearing screening at 1,000 Hz and 4,000 Hz at 25dB at school entry. Children who fail the hearing screening are then referred to hearing services within the Department of Health and Community Services for follow-up diagnostic assessments.*

## References

- ABS (Australian Bureau of Statistics) 2004. Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2009. ABS cat. no. 3238.0. Canberra: ABS.
- ABS 2006. National Aboriginal and Torres Strait Islander Health Survey 2004–05. ABS cat. no. 4715.0. Canberra: ABS
- ABS & AIHW (Australian Bureau of Statistics and Australian Institute of Health and Welfare) 2005. The Health and Welfare of Australia's Aboriginal and Torres Strait Islander peoples 2005. ABS cat. no. 4704.0; AIHW cat. no. IHW 14. Canberra: ABS & AIHW.
- AIHW (Australian Institute of Health and Welfare) 2002. Australia's children 2002. AIHW cat. no. PHE 36. Canberra: AIHW.
- AIHW 2005. Improving the quality of Indigenous identification in hospital statistics. Health Services Series no. 25. AIHW cat. no. HSE 101. Canberra: AIHW.
- National Centre for Classification in Health 2004. International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification. 4th Edition. National Centre for Classification in Health.
- SIMC (Statistical Information Management Committee) 2004. National summary of the 2001 and 2002 jurisdictional reports against the Aboriginal and Torres Strait Islander health performance indicators. AIHW cat. no. IHW 12. Canberra: AIHW.
- Zubrick SR, Lawrence DM, Silburn SR, Blair E, Milroy H, Wilkes T, Eades S, D'Antoine H, Read A, Ishiguchi P & Doyle S 2004. Western Australian Aboriginal Child Health Survey: the health of Aboriginal children and young people. Perth: Telethon Institute for Child Health Research.