

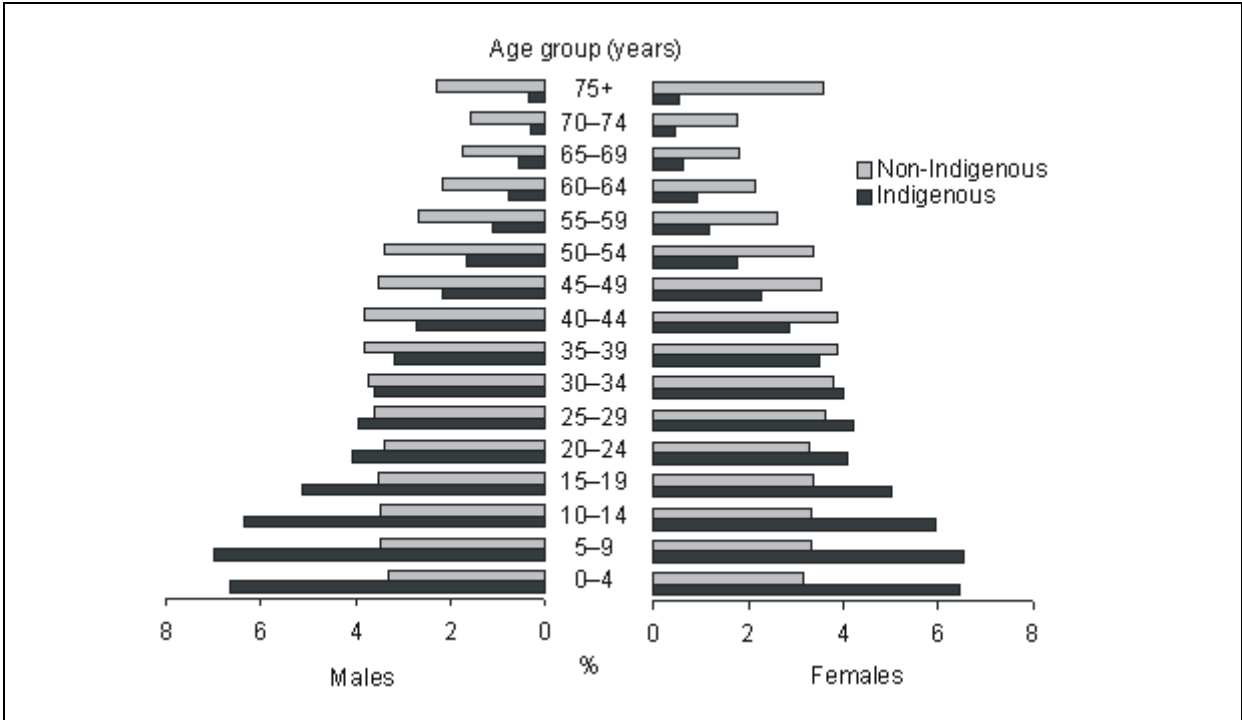
# 6 Aboriginal and Torres Strait Islander patients

Salma Fahridin, Helena Britt

## 6.1 The Indigenous population

In this chapter the term ‘Indigenous’ is used often to refer to people who identify themselves as Aboriginal and/or Torres Strait Islander. The health of the Indigenous population of Australia is of significant concern due to disparities in life expectancy, access issues and other barriers to receiving adequate and appropriate health services. The National Aboriginal and Torres Strait Islander Healthy Survey 2004–05, found that almost two-thirds of Indigenous Australians surveyed, and 97% of those aged 55 years and over, reported at least one long-term health condition. Conditions that contribute most to disparities in morbidity and mortality among the Indigenous population include asthma, diabetes, cardiovascular diseases, kidney disease, as well as drug and alcohol use-related problems.<sup>1</sup>

The 2006 Australian Census found that Aboriginal and Torres Strait Islander peoples made up 2.5% of the total Australian population.<sup>2</sup> Figure 6.1 shows a pyramidal age distribution of the Indigenous population, depicting a population much younger than the non-Indigenous population, with far fewer people in the older age groups as a proportion of the total population. The sex distribution is similar in the Indigenous and non-Indigenous population.



Source: Australian Bureau of Statistics 2006.<sup>1</sup>

Figure 6.1: Age-sex distribution of Indigenous and non-Indigenous populations, 2004-05

## 6.2 Policies and initiatives

There have been many policies and initiatives directed at the Indigenous population of Australia, with the aim of eliminating life expectancy disparities and improving health outcomes. Often, the policy initiatives focus on primary care as the centre of service provision. Some effects of the following policies have the potential to be measured through BEACH data.

- Section 100 of the *National Health Act 1953* was amended in 1999 to allow Aboriginal and Torres Strait Islander peoples special access arrangements where pharmaceutical benefits cannot be conveniently accessed.<sup>3</sup>
- Items for Aboriginal and Torres Strait Islander health assessments for children, adults and older people, have been progressively introduced into the Medicare Benefits Schedule since 1999.<sup>4</sup>
- The National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000–2010 provides a framework for improving the nutritional status of Aboriginal and Torres Strait Islander peoples, and recognises the effect of poor diet on preventable illness.<sup>5</sup>
- The Aboriginal and Torres Strait Islander Health Performance Framework, designed to inform policy analysis, planning and program implementation, contains a number of measures across three domains: Health status and outcomes; Determinants of health including socioeconomic and behavioural factors; and Health system performance. Reports against the measures in the framework are delivered biennially.<sup>6</sup>
- The Practice Incentives Program (PIP) practice nurse incentives were first introduced for rural practices in 2001 and were extended to urban areas with workforce shortages in 2003 to support general practices to employ a practice nurse and/or Aboriginal Health Worker.<sup>7</sup>
- The National Indigenous Pneumococcal and Influenza Immunisation Program began in 1999, and provides free influenza and pneumococcal vaccinations to Aboriginal and Torres Strait Islander peoples aged over 50 years, or to those aged 15 to 49 years considered 'high risk'. Hepatitis A vaccines are also free to children aged under 5 years living in certain states of Australia.<sup>8</sup>
- The National Strategic Framework for Aboriginal and Torres Strait Islander Peoples' Mental Health and Social and Emotional Well Being 2004–2009 is a 5-year plan to guide government and non-government agencies that are working towards improving the mental health and social and emotional wellbeing of Aboriginal and Torres Strait Islander peoples.<sup>9</sup>
- The National Aboriginal and Torres Strait Islander Sexual Health and Blood Borne Virus Strategy 2005–2008, a continuation of the National Indigenous Australians' Sexual Health Strategy 1996–97 to 2003–04 aimed to prevent the spread of HIV, other sexually transmitted infections and blood-borne viruses in Aboriginal and Torres Strait Islander communities.<sup>10</sup>
- The Australia 2020 Summit facilitated debate and drafted proposals led by Aboriginal and Torres Strait Islander representatives for the future of Aboriginal and Torres Strait Islander peoples.<sup>11</sup>

- ‘Close the Gap, National Indigenous Health Equality Targets’ (2008) identifies health and primary care targets designed to reduce or eliminate disparities in health outcomes. An overarching goal of the campaign is to increase access to culturally appropriate comprehensive primary health care services.<sup>12</sup>
- In October 2008, the Council of Australian Governments signed the Indigenous Early Childhood Development National Partnership providing \$564 million over six years (2008-09 to 2013-14) to address the needs of Indigenous children in their early years, with an initial focus from birth to three years. The national partnership has three priority areas: integration of early childhood services through the establishment of thirty five children and family centres; increased access to antenatal, reproductive and sexual health care; and increased access and use of maternal and child health services.

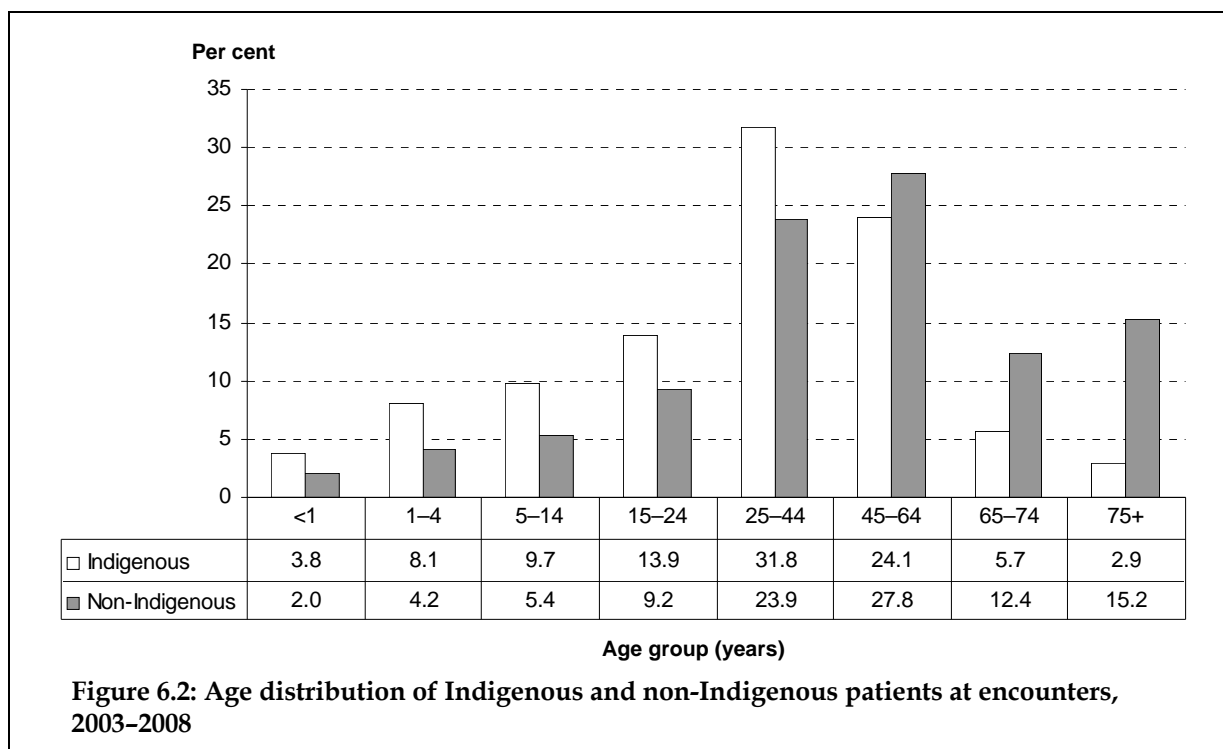
### **6.3 BEACH encounters with Indigenous patients**

Identification of Aboriginal and/or Torres Strait Islander status in the BEACH program is self-reported. GPs participating in the BEACH program are instructed to ask each patient whether he/she is of Aboriginal and/or Torres Strait Islander origin. Over 8 years of BEACH data (April 2000 to March 2008), of the 1.4% of patients who were recorded as being Aboriginal and/or Torres Strait Islander, 88.4% stated they were Aboriginal only, 9.0% reported being Torres Strait Islander only, and 2.6% reported being both Aboriginal and Torres Strait Islander.

A previous BEACH report<sup>13</sup> showed that Aboriginal and Torres Strait Islander peoples at general practice encounters were more likely to be younger and live in the regional areas of Australia. They were more likely to hold a Commonwealth concession card, and to suffer from vaccine preventable infections. Some of these issues will be considered in this chapter with reference to policies and their effect on general practice encounters with Indigenous Australians.

#### **Age distribution**

Between April 2003 and March 2008, there were 485,300 encounters recorded in BEACH, 7,292 (1.5%) of which were with Indigenous patients. Of these, 35.5% were with patients under the age of 25 years, and 67.3% were with patients under the age of 45 years (Figure 6.2). This vastly differs from encounters with non-Indigenous patients, where 20.8% of the patients were aged less than 25 years, and 44.7% were aged less than 45 years. In contrast, patients aged 45 years and over accounted for 32.7% of Indigenous encounters, but 55.4% of non-Indigenous encounters (Figure 6.2).



## Sex distribution

The sex distribution of Indigenous patients (41% males; 59% females) was similar to ABS population data (Figure 6.1) and was not significantly different from the sex distribution of patients at all BEACH encounters.<sup>14</sup>

## Problems managed

There was no significant difference in the average number of problems managed at encounters with Indigenous and non-Indigenous patients. Table 6.1 compares the management rates of selected problems at encounters with Indigenous and non-Indigenous patients. Some problem and concept labels include grouped ICPC-2 and ICPC-2 PLUS codes (see Chapter 2). A full list of code groups is provided in Appendix 3. The problems presented are a combination of frequently managed problems, and problems that stand out as having a marked difference between the two population groups.

Table 6.1 shows that among the largest differences were the:

- higher management rates of diabetes, asthma and drug use at Indigenous encounters
- lower management rates of cardiovascular diseases, particularly hypertension, as well as lipid disorders and oesophageal disease at Indigenous encounters
- lower rates of preventive measures such as immunisations/vaccinations and cardiac check-ups (mainly blood pressure checks) at encounters with Indigenous patients.

Some of the problems listed with significantly higher management rates at Indigenous patient encounters have also been recognised as having a higher prevalence among Aboriginal and Torres Strait Islander patients in the *Burden of disease and injury in Aboriginal and Torres Strait Islander peoples* report.<sup>15</sup>

When compared with non-Indigenous encounters, at Indigenous encounters:

- renal failure was managed at almost 5 times the rate
- drug use problems were managed at 4 times the rate
- teeth/gum disease was managed 3.5 times more often
- schizophrenia was managed more than twice as often
- cardiomyopathy, (which is not mentioned in the *Burden of disease* report, but is mentioned elsewhere<sup>16</sup>), was managed at 3 times the rate.

Despite the severity of the problems managed at encounters with Indigenous patients, their encounters involved the management of fewer chronic problems (as defined by O'Halloran et al.<sup>17</sup>) (46.8 per 100 encounters, 95% CI: 43.7–49.8), when compared with the non-Indigenous population (51.6 per 100 encounters, 95% CI: 50.9–52.3).

**Table 6.1: Management rates of selected problems at encounters with Indigenous and non-Indigenous patients, 2003–2008**

Problem	Indigenous patients (n = 7,292)		Non-Indigenous patients (n = 478,008)		Change <sup>(a)</sup>
	Number	Rate per 100 encounters (95% CI)	Number	Rate per 100 encounters (95% CI)	
Cardiovascular problems	927	12.71 (11.6–13.8)	81,705	17.09 (16.8–17.4)	↓
Hypertension	439	6.02 (5.3–6.8)	44,756	9.36 (9.2–9.6)	↓
Cardiac check-up	51	0.70 (0.5–0.9)	5,587	1.17 (1.1–1.2)	↓
Cardiomyopathy	19	0.26 (0.10–0.40)	412	0.09 (0.08–0.10)	↑
Diabetes, non-gestational	574	7.87 (6.8–8.9)	15,778	3.30 (3.2–3.4)	↑
Depression	262	3.59 (3.0–4.2)	19,483	4.08 (4.0–4.2)	—
Asthma	225	3.09 (2.6–3.5)	10,995	2.30 (2.2–2.4)	↑
Immunisation/vaccination—all	226	3.10 (2.4–3.8)	24,574	5.14 (4.9–5.3)	↓
Pregnancy	166	2.28 (1.8–2.8)	5,211	1.09 (1.2–1.1)	↑
Lipid disorders	145	1.99 (1.6–2.4)	16,294	3.41 (3.3–3.5)	↓
Drug use <sup>(b)</sup>	135	1.85 (1.0–2.7)	2,221	0.46 (0.38–0.55)	↑
Fracture	124	1.70 (1.3–2.1)	4,794	1.00 (0.97–1.04)	↑
Oesophageal disease	109	1.49 (1.2–1.8)	10,586	2.21 (2.2–2.3)	↓
Teeth/gum disease	94	1.29 (1.0–1.6)	1,702	0.36 (0.34–0.37)	↑
Pre/postnatal check-up	73	1.00 (0.7–1.3)	2,686	0.56 (0.51–0.61)	↑
Schizophrenia	72	0.99 (0.6–1.3)	2,220	0.46 (0.43–0.50)	↑
Renal failure (acute/chronic/NOS)	66	0.91 (0.58–1.23)	1,022	0.21 (0.20–0.23)	↑
Chronic alcohol use <sup>(c)</sup>	58	0.80 (0.5–1.0)	1,248	0.26 (0.24–0.28)	↑
Housing/neighbourhood problems	13	0.18 (0.01–0.34)	91	0.02 (0.01–0.02)	—
<i>Subtotal (n, percentage of total)</i>	<i>2,835</i>	<i>25.87</i>	<i>168,849</i>	<i>23.38</i>	<i>..</i>
<b>Total problems</b>	<b>10,960</b>	<b>150.3 (146.2–154.4)</b>	<b>722,067</b>	<b>151.1 (150.2–151.9)</b>	<b>—</b>

(a) The change in management rates are indicated for each result: ↑/↓ indicates significantly higher/lower management rate at encounters with Indigenous patients, ↑/↓ indicates a marginal difference, and — indicates there was no difference.

(b) Drug use—as classified in ICPC-2 as drug abuse (code P19).

(c) Chronic alcohol use—as classified in ICPC-2 as chronic alcohol abuse (code P15).

Note: NOS—not otherwise specified; CI—confidence interval. Some rates and/or 95% confidence intervals are presented to two decimal places where required to show statistical significance.

Infectious and parasitic diseases are responsible for 4% of the total disease burden in Indigenous Australians<sup>15</sup> and are therefore presented separately in Table 6.2, using the ICPC-2<sup>18</sup> definition of infections, and using 8 years of data to increase statistical power.

**Table 6.2: Management rates of infections at encounters with Indigenous and non-Indigenous patients, 2000–2008**

Infection	Indigenous patients (n = 10,701)		Non-Indigenous patients (n = 773,599)		Change <sup>(a)</sup>
	Number	Rate per 100 encounters (95% CI)	Number	Rate per 100 encounters (95% CI)	
Upper respiratory infection, acute	574	5.36 (4.72–6.00)	42,799	5.53 (5.42–5.65)	—
Acute bronchitis/bronchiolitis	369	3.45 (2.93–3.96)	18,597	2.4 (2.35–2.46)	↑
Acute otitis media/myringitis	244	2.28 (1.94–2.62)	9,209	1.19 (1.16–1.23)	↑
Urinary tract infection	211	1.97 (1.69–2.25)	13,072	1.69 (1.66–1.72)	—
Gastroenteritis	202	1.89 (1.55–2.23)	11,628	1.50 (1.47–1.54)	↑
Boil/carbuncle	181	1.69 (1.41–1.98)	3,640	0.47 (0.45–0.49)	↑
Impetigo	145	1.36 (1.03–1.68)	1,508	0.19 (0.18–0.21)	↑
Tonsillitis	129	1.21 (0.97–1.44)	7,584	0.98 (0.95–1.01)	↑
Dermatophytosis	126	1.18 (0.93–1.43)	4,592	0.59 (0.57–0.61)	↑
Conjunctivitis, infectious	109	1.02 (0.79–1.25)	5,504	0.71 (0.69–0.73)	↑
Skin infection, post-traumatic	108	1.01 (0.79–1.23)	4,112	0.53 (0.51–0.55)	↑
Sinusitis acute/chronic	101	0.94 (0.74–1.15)	10,376	1.34 (1.31–1.38)	↓
Otitis externa	97	0.91 (0.70–1.11)	5,112	0.66 (0.64–0.68)	↑
Infectious disease, other/NOS	95	0.89 (0.70–1.07)	3,087	0.40 (0.38–0.42)	↑
Viral disease, other/NOS	88	0.82 (0.63–1.01)	9,726	1.26 (1.21–1.30)	↓
Scabies/other acariasis	88	0.82 (0.60–1.04)	358	0.05 (0.04–0.05)	↑
Respiratory infection, other	78	0.73 (0.42–1.04)	3,579	0.46 (0.43–0.50)	↓
Pneumonia	77	0.72 (0.46–0.98)	2,424	0.31 (0.30–0.33)	↓
Skin infection, other	59	0.55 (0.36–0.74)	2,158	0.28 (0.27–0.29)	↑
Influenza	39	0.36 (0.22–0.51)	2,561	0.33 (0.30–0.36)	—
Rheumatic fever/heart disease	38	0.36 (0.22–0.49)	48	0.01 (0.00–0.01)	↑
Warts	34	0.32 (0.20–0.43)	5,139	0.66 (0.64–0.69)	↓
Genital candidiasis (female)	31	0.29 (0.18–0.40)	1,997	0.26 (0.24–0.27)	—
Viral hepatitis	30	0.28 (0.16–0.40)	1,167	0.15 (0.14–0.16)	↑
Chronic otitis media	30	0.28 (0.16–0.40)	640	0.08 (0.07–0.09)	↑
Serous otitis media	25	0.23 (0.13–0.34)	957	0.12 (0.11–0.13)	↑
Pelvic inflammatory disease	21	0.20 (0.10–0.29)	405	0.05 (0.05–0.06)	↑
<i>Subtotal (n, percentage of total)</i>	<i>3,329</i>	<i>91.66</i>	<i>171,979</i>	<i>89.44</i>	<i>..</i>
<b>Total Infectious problems</b>	<b>3,632</b>	<b>33.9 (32.4–35.5)</b>	<b>192,293</b>	<b>24.9 (24.6–25.1)</b>	<b>↑</b>

(a) The change in management rates are indicated for each result: ↑/↓ indicates significantly higher/lower management rate at encounters with Indigenous patients, ↗/↘ indicates a marginal difference, and — indicates there was no difference.

Note: NOS—not otherwise specified; CI—confidence interval. Rates and 95% confidence intervals are presented to two decimal places to ensure identification of statistically significant differences

Indigenous patients had 33.9 infections managed per 100 encounters, far more often than non-Indigenous patients who had infections managed at a rate of 24.9 per 100 encounters.

When compared with non-Indigenous encounters, at Indigenous encounters, the management rate of:

- acute otitis media/myringitis, and serous otitis media were twice as high, while chronic otitis media was 3 times higher
- pneumonia, dermatophytosis and post-traumatic skin infection (including localised skin infection and wound infection) were twice as high
- boil/carbuncle was almost 4 times higher
- impetigo was 7 times higher
- other infectious diseases (not otherwise specified) were more than twice as high
- scabies/other acariasis were 16 times higher
- rheumatic fever/heart disease were 36 times higher
- pelvic inflammatory disease was 4 times higher.

## Medications

The overall rate of medications prescribed/supplied or advised was significantly higher at encounters with Aboriginal and Torres Strait Islander patients, but this was due to the vast difference in the rates of GP-supplied medications, which were 3 times higher at Indigenous encounters. Rates of prescribed medications showed no significant difference, and medications advised for over-the-counter purchase were significantly lower at Indigenous encounters (Table 6.3). Rates of GP-supplied medications by Australian Standard Geographical Classification areas<sup>19</sup> are discussed in Section 6.4.

Specifically, vaccines were prescribed/supplied at a rate of 6.4 (95% CI: 5.2–7.6) per 100 encounters with Indigenous patients, compared with 7.5 (95% CI: 7.2–7.7) per 100 encounters with non-Indigenous patients. The policy that provided Indigenous patients with free pneumococcal and influenza vaccines at younger ages than in the non-Indigenous population<sup>8</sup> did not appear to have a significant effect on the overall rate of these vaccines at encounters with Indigenous patients from the time it was introduced in 2004.

## Treatments

There was no difference in the overall rate at which clinical treatments (advice/education and counselling) were given at encounters with Indigenous and non-Indigenous patients (Table 6.3). However, advice about smoking was provided more often and other administrative procedures/documentations were more frequently recorded at Indigenous encounters, while advice about exercise was provided less often than at non-Indigenous encounters.

While the rate at which procedures were undertaken by the GP did not differ, excision/removal tissue/biopsy/destruction/debridement/cauterisation occurred more than 3 times as often at encounters with non-Indigenous patients. This is likely to be due to the lower management rate of skin lesions at Indigenous encounters (0.2 per 100 encounters, 95% CI: 0.1–0.3 compared with 1.4 per 100 encounters, 95% CI: 1.3–1.4).

Dressings were undertaken more frequently at encounters with Indigenous patients, and this is due to a higher rate of injury management at Indigenous encounters (9.9 per 100 encounters, 95% CI: 9.0–10.7 compared with 8.1 per 100 encounters, 95% CI: 7.3–8.3). Glucose tests, performed by the GP, were also significantly more frequent among Indigenous patients than at encounters with non-Indigenous patients.

**Table 6.3: Management actions at encounters with Indigenous and non-Indigenous patients, 2003–08**

Type of management	Indigenous patients (n = 7,292)	Non-Indigenous patients (n = 478,008)	Change <sup>(a)</sup>
	Rate per 100 encounters (95% CI)	Rate per 100 encounters (95% CI)	
<b>Medications (prescribed/supplied or advised)</b>	<b>122.8 (115.8–129.7)</b>	<b>101.6 (100.6–102.5)</b>	↑
Prescribed	88.3 (80.4–96.3)	82.4 (81.5–83.4)	—
GP-supplied	27.3 (19.6–34.9)	9.4 (9.0–9.7)	↑
Advised for over-the-counter purchase	7.2 (5.9–8.4)	9.7 (9.5–10.0)	↓
<b>Clinical treatments</b>	<b>39.3 (34.6–44.0)</b>	<b>35.5 (34.6–36.3)</b>	—
Advice/education—smoking	1.8 (1.4–2.3)	0.6 (0.58–0.65)	↑
Other admin procedures/documentation	2.6 (2.0–3.1)	1.5 (1.4–1.6)	↑
Advice/education—exercise	0.1 (0.0–0.2)	1.4 (1.3–1.5)	↓
<b>Procedural treatments</b>	<b>18.6 (18.2–19.0)</b>	<b>19.1 (16.2–22.1)</b>	—
Excision/removal tissue/biopsy/destruction/debridement/cauterisation	1.0 (0.7–1.2)	3.4 (3.2–3.6)	↓
Dressing/pressure/compression/tamponade	2.8 (2.3–3.4)	2.0 (2.0–2.1)	↑
Glucose test	0.7 (0.3–1.2)	0.2 (0.16–0.20)	↑
<b>Referrals</b>	<b>16.2 (14.0–18.5)</b>	<b>12.2 (11.6–12.7)</b>	↑
Hospital	1.9 (1.1–2.7)	0.5 (0.4–0.5)	↑
<b>Pathology</b>	<b>57.1 (49.4–64.8)</b>	<b>46.4 (44.3–48.5)</b>	↑
Electrolytes, urea and creatinine	10.5 (9.3–11.6)	7.0 (6.7–7.2)	↑
Liver function test	8.3 (7.4–9.2)	6.6 (6.4–6.8)	↑
Pap smear	2.3 (1.6–3.0)	5.3 (5.1–5.6)	↓

(a) The change in management rates is indicated for each result: ↑/↓ indicates significantly higher/lower management rate at encounters with Indigenous patients, and — indicates there was no difference.

Note: CI—confidence interval.

## Referrals

Total referrals (to all service types) were significantly more frequent at Indigenous encounters. However, this was not reflected in significantly higher rates of referrals to either specialists or allied health professionals.

Aboriginal and Torres Strait Islander patients were referred to other health services significantly more often than non-Indigenous patients. Specifically, referrals to hospitals were almost 4 times higher at encounters with Indigenous patients.



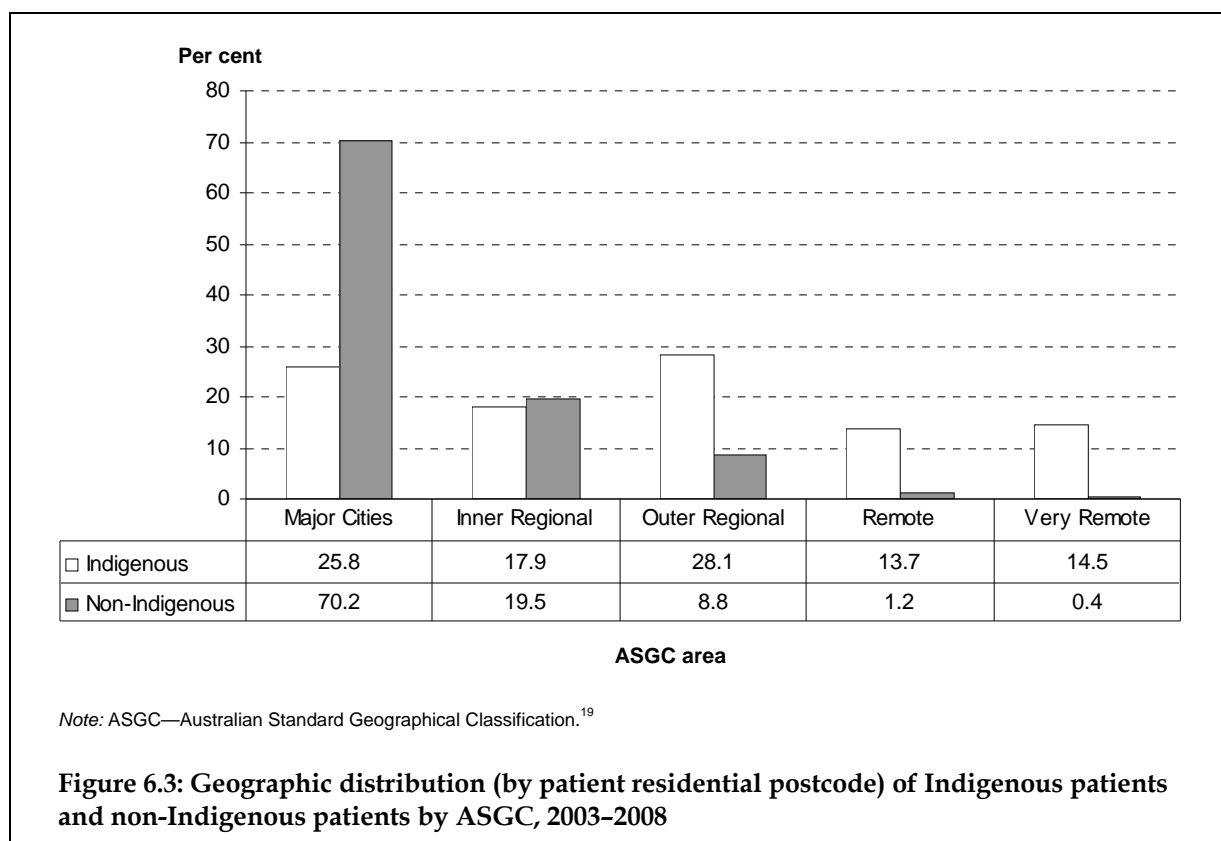
## Pathology and imaging

GPs ordered significantly more pathology tests at Indigenous patient encounters than at non-Indigenous encounters. The largest differences were higher rates for electrolyte/urea/creatinine tests and liver function tests. In contrast, there were significantly fewer Pap smears ordered at encounters with Indigenous patients than at non-Indigenous encounters.

No significant differences were apparent in the overall rate of imaging orders, however chest X-rays were ordered more often at encounters with Indigenous patients (1.7 per 100 encounters, 95% CI: 1.3–2.1) than at those with non-Indigenous patients (1.1 per 100 encounters, 95% CI: 1.0–1.1), which may reflect more frequent investigations for suspected pneumonia and a higher management rate of diagnosed pneumonia (Table 6.2).

## 6.4 Encounters by patient residential location

Patient postcode, rather than the practice postcode, was used to classify the patient's area of residence using the Australian Standard Geographic Classes (ASGC)<sup>19</sup>. The geographic location of residence of Indigenous and non-Indigenous patients differed substantially (Figure 6.3). Of the 7,292 Indigenous patients encountered between April 2003 and March 2008 inclusive, residential postcode was provided for 7,035. Of these, 1,815 (25.8%) resided in Major Cities, 1,258 (17.9%) resided in Inner Regional areas, 1,976 (28.1%) were from Outer Regional areas, 963 (13.7%) were from Remote areas and 1,023 (14.5%) were from Very Remote areas. Together, those from Outer Regional, Remote or Very Remote areas accounted for 56.3% ( $n = 3,962$ ) of the total Indigenous encounter sample, compared with 10.4% of non-Indigenous patients encountered.



While BEACH has reported the content of Indigenous encounters in the past<sup>13,20</sup>, comparisons of encounters with Aboriginal and Torres Strait Islander patients of different geographic locations have not been previously investigated. Many differences were found among these patients, and some of the main findings are presented in Table 6.4.

- A Commonwealth concession card was held by a greater proportion of Indigenous patients seen from the Inner Regions of Australia than those from Major City and Outer Regional/Remote/Very Remote Regions.
- Non-English-speaking background is patient self-reported. A higher percentage of Indigenous patients from Outer Regional/Remote/Very Remote areas spoke an Indigenous language as their first language when compared with encounters with Indigenous patients residing in Inner Regional areas. There was no significant difference in the proportion of Indigenous patients who primarily spoke a language other than English at home from Outer Regional/Remote/Very Remote areas than among those from Major Cities.
- Overall, Indigenous patients from Inner Regional areas had significantly more problems managed at an encounter than those from Major Cities and from Outer Regional/Remote/Very Remote areas.

**Table 6.4: Indigenous patients and their encounters by ASGC area, 2003–2008**

	Major Cities (n = 1,788)	Inner Regional (n = 1,153)	Outer Regional/Remote/ Very Remote (n = 4,098)
	Rate per 100 encounters (95% CI)	Rate per 100 encounters (95% CI)	Rate per 100 encounters (95% CI)
<b>Commonwealth concession cardholders</b>	<b>65.1 (60.7–69.5)</b>	<b>76.4 (70.6–82.2)</b>	<b>61.6 (54.2–69.0)</b>
<b>Non-English-speaking background</b>	<b>6.3 (4.2–8.3)</b>	<b>1.0 (0.3–1.8)</b>	<b>15.3 (7.0–23.7)</b>
<b>Problems managed</b>	<b>147.8 (142.2–153.3)</b>	<b>166.2 (156.4–176.0)</b>	<b>147.3 (141.6–153.0)</b>
Psychological	20.3 (16.6–23.9)	19.5 (15.6–23.4)	10.7 (8.9–12.5)
Diabetes, non-gestational	5.4 (4.1–6.6)	7.5 (5.7–9.2)	8.9 (7.3–10.4)
Upper respiratory infection, acute	7.8 (5.9–9.6)	4.8 (3.0–6.6)	4.8 (3.8–5.8)
Immunisation/vaccination—all	4.4 (3.3–5.5)	4.6 (2.7–6.5)	2.1 (1.3–2.9)
Drug use <sup>(a)</sup>	4.5 (1.9–7.1)	1.8 (0.7–3.0)	0.7 (0.3–1.1)
<b>Medications (presc/advised/supplied)</b>	<b>114.1 (107.6–120.5)</b>	<b>121.0 (109.8–132.2)</b>	<b>125.7 (115.0–136.5)</b>
GP-supplied	14.0 (8.6–19.4)	13.8 (9.3–18.3)	36.4 (23.8–48.9)
<b>Pathology</b>	<b>37.6 (29.9–45.4)</b>	<b>53.5 (45.9–61.1)</b>	<b>57.3 (49.3–65.3)</b>
<b>Imaging</b>	<b>6.3 (4.9–7.7)</b>	<b>9.9 (6.9–12.8)</b>	<b>9.9 (8.2–11.6)</b>
X-ray—chest	0.9 (0.4–1.3)	1.7 (1.0–2.5)	2.1 (1.4–2.8)

(a) Drug use—as classified in ICP-2 as drug abuse (code P19).

Note: CI—confidence interval; presc—prescribed. ASGC—Australian Standard Geographical Classification.<sup>19</sup> Shading indicates statistical significance between areas. Missing data removed—postcode was missing for 253 patients.

- Encounters with Indigenous patients who reside in a Major City or an Inner Regional area of Australia had almost twice the management rate of psychological problems, upper respiratory tract infection, diabetes and immunisations/vaccinations than Outer Regional/Remote/Very Remote Indigenous patients.
- Encounters with Indigenous patients from Major Cities had drug use managed at 6 times the rate of Indigenous patients from Outer Regional/Remote/Very Remote areas, and twice the rate of those from Inner Regional areas.
- The rate of prescribed/supplied or advised medications increased with remoteness, with medications supplied by the GP at Outer Regional/Remote/Very Remote encounters being 2.5 times higher than at Major City Indigenous encounters.
- Pathology and imaging ordering rates increased with remoteness.

## 6.5 Aboriginal Community Controlled Health Services

From 2004, GPs who participated in the BEACH program were asked if any or all of their encounters took place in an Aboriginal Community Controlled Health Service (ACCHS). Of the 485,300 encounters recorded by 4,853 GPs between 2004 and 2008, there were 4,926 encounters from 61 participating GPs that took place in an ACCHS, representing 1% of encounters recorded during the 4-year period. Of these encounters, 59% were with an Aboriginal and/or Torres Strait Islander patient.

The age and sex distribution of these Indigenous patients encountered was similar to that of all Indigenous encounters. More than half the ACCHS encounters took place in Outer Regional/Remote/Very Remote areas (59.2%), 27.0% took place in Inner Regional areas and 13.8% took place in Major Cities. Therefore, since most of the ACCHS encounters were in regional areas, the differences found were similar to those seen earlier between all regional and Major City Indigenous patients.

## 6.6 Patient risk factors

Data about patient risk factors (body mass index, smoking status and alcohol consumption) are requested on 40 out of the 100 encounter forms provided to each GP participant, in a section of the form referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods are detailed in Chapter 2 of this report.

Information for all three risk factors was available for 213,389 patients encountered in general practice between 2001 and 2008, and 1,900 (0.9%) of these respondents were Aboriginal and Torres Strait Islander peoples. These data allow a comparison of the prevalence of multiple risk factors in the Indigenous subsample and in the total subsample. As shown in Table 6.5, Indigenous patients were almost 4 times as likely to have all three risk factors (overweight/obesity, daily smoking, and at-risk alcohol consumption), when compared with all respondents (including Indigenous patients).

**Table 6.5: Risk factor profile of adult Indigenous respondents and all adult respondents**

Number of risk factors	Indigenous respondents (n = 1,900) <sup>(a)</sup>		All respondents (n = 213,389) <sup>(a)</sup>	
	Per cent	95% CI	Per cent	95% CI
None	11.1	9.4–12.7	27.2	26.9–27.5
One	42.3	39.8–44.7	49.1	48.8–49.4
Two	32.3	29.7–34.8	19.9	19.6–20.1
Three	14.4	12.6–16.2	3.9	3.7–4.0

(a) Missing data removed—data for at least one risk factor was missing for 282 of 2,182 Indigenous respondents and for 17,812 of the 231,201 patients in the total sample who were asked questions about all 3 risk factors. (body mass, smoking, and alcohol consumption).

Note: CI—confidence interval.

Patients are classed as obese, overweight, normal or underweight by body mass index (BMI) categories. Adult BMI cut-offs are classified according to the World Health Organization guidelines.<sup>21</sup> For more detail, refer to Chapter 7.

Overweight/obesity was more prevalent in the adult Indigenous population (65.7%, 95% CI: 62.9–68.6) than in the total sample of adults (56.7%, 95% CI: 56.4–57.1). However, Indigenous patients were more likely to be obese and less likely to be overweight than the total patient sample. Obesity was more prevalent among Indigenous women than men, but Indigenous men were more likely to be overweight than Indigenous women (Table 6.6).

**Table 6.6: Body mass index of Indigenous adult respondents (18+ years) and all adult respondents**

BMI	Indigenous adult respondents <sup>(a)</sup>						All adult respondents	
	Male (n = 755)		Female (n = 1,245)		Total (n = 2,012)		Total (n = 223,019)	
	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI
Obese	28.1	24.4–31.8	43.6	39.5–47.8	37.6	34.3–40.9	22.3	22.0–22.6
Overweight	33.8	30.2–37.4	24.7	21.8–27.6	28.1	25.8–30.5	34.4	34.2–34.7
Normal	33.9	29.5–38.3	28.7	25.6–31.8	30.7	28.1–33.4	40.5	40.2–40.9
Underweight	4.2	2.3–5.9	3.1	2.0–4.1	3.5	2.6–4.5	2.7	2.7–2.8

(a) Missing data removed—patient sex was not recorded for 12 Indigenous respondents.

Note: BMI—body mass index; CI—confidence interval.

Adult Indigenous patients were almost 3 times as likely to be daily smokers (46.6%) than were those in the total adult sample (17.3%). The distribution of smoking status among male and female Indigenous patients was similar, except that females were more likely to have never smoked (Table 6.7).

**Table 6.7: Smoking status of Indigenous adult respondents (18+ years) and all adult respondents**

Smoking status	Indigenous adult respondents <sup>(a)</sup>						All adult respondents	
	Male (n = 776)		Female (n = 1,276)		Total (n = 2,064)		Total (n = 225,016)	
	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI
Daily	49.5	45.3–53.6	44.9	41.8–48.0	46.6	43.9–49.3	17.3	17.0–17.5
Occasional	6.3	4.2–8.4	5.4	4.1–6.7	5.8	4.6–7.0	3.7	3.6–3.8
Previous	21.5	18.2–24.8	18.7	16.2–21.1	19.7	17.6–21.7	27.8	27.5–28.1
Never	22.7	19.3–26.1	31.0	27.8–34.3	28.0	25.5–30.5	51.2	50.8–51.6

(a) Missing data removed— patient sex was not recorded for 12 Indigenous respondents.

Note: CI—confidence interval.

Alcohol consumption was measured using the World Health Organization’s Alcohol Use Disorders Identification Test (AUDIT)<sup>22</sup> with scoring for an Australian setting.<sup>23</sup> The methods for calculating at-risk and responsible drinkers have been described elsewhere.<sup>14</sup> At-risk drinking was more prevalent among Indigenous adult patients than among all adults sampled. Indigenous men were more likely to be at-risk drinkers than Indigenous women, who were more likely to be non-drinkers (Table 6.8). Indigenous patients were half as likely to be responsible drinkers when compared with the total sample, but were also more likely to be non-drinkers.

**Table 6.8: Alcohol consumption among Indigenous adult respondents (18+ years) and all adult respondents**

Alcohol consumption	Indigenous respondents <sup>(a)</sup>						All respondents	
	Male (n = 756)		Female (n = 1,239)		Total (n = 1,995)		Total (n = 219,730)	
	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI
At-risk drinker	47.4	43.1–51.6	33.7	30.2–37.1	38.8	35.8–41.9	26.3	26.0–26.7
Responsible drinker	22.1	18.3–25.9	23.1	20.2–26.0	22.7	20.2–25.2	44.6	44.3–44.9
Non-drinker	30.6	26.4–34.7	43.3	39.6–46.9	37.4	35.5–41.4	29.1	28.7–29.5

(a) Missing data removed— patient sex was not recorded for 12 Indigenous respondents.

Note: CI—confidence interval.

## 6.7 Discussion

The age distribution of the Indigenous patients encountered in BEACH was very different from that of the non-Indigenous patient sample. Indigenous patients were far more likely to be in the younger age groups and less likely to be aged 65 years and over, reflecting shorter life expectancy. The majority (75%) of Indigenous patients lived in Regional/Remote areas, the reverse of non-Indigenous patients, 70% of whom lived in Major Cities.

The average number of problems managed at encounters with Indigenous and non-Indigenous patients did not differ, but there were large differences in the types of problems managed. Encounters with Indigenous patients included higher management rates of diabetes, asthma, pregnancy, drug use, chronic alcohol use and renal failure, yet lower management rates of cardiovascular diseases including hypertension. Infections were also

more commonly managed, particularly those related to the skin and to the ears (mainly otitis media). Previous literature demonstrated that despite Indigenous children being 5 times more likely to be diagnosed with severe otitis media than non-Indigenous children, the management was not different, and was inconsistent with the national guidelines.<sup>24</sup>

Given the greater burden of illness and higher mortality rates for Indigenous patients, it could have been expected that chronic disease management rates would equate with, or be higher than the management rates at non-Indigenous encounters. However, chronic conditions were managed less often at encounters with Indigenous patients. This may be due partially to the younger age of the Indigenous population, specifically those attending general practice. One of the aims of the Indigenous-specific health assessment MBS item numbers is to provide opportunities for early diagnosis of chronic disease, particularly asthma, diabetes, kidney disease and cardiovascular disease. The first three of these were more frequently managed at encounters with Indigenous patients, possibly indicating high detection rates through screening and preventive care; however, cardiovascular diseases were less frequently managed, which may reflect a low detection rate caused by lower rates of preventive care, such as blood pressure check-ups. It should also be noted that whatever improvements may have occurred in the general practice care of Aboriginal and Torres Strait Islander peoples, and whatever benefits this may have brought, Indigenous Australians still have at least a 12–14 year lesser life expectancy than do other Australians.<sup>25</sup>

The high rate at which medications were supplied directly by the GP to patients from Outer Regional/Remote/Very Remote areas relates to the amendment made to the *National Health Act 1953* in 1999, allowing pharmaceuticals to be directly received at the point of consultation where pharmaceuticals cannot be conveniently accessed through other means.<sup>3</sup> These results provide support to those who suggest that the amendment led to improved access to prescribed pharmaceuticals for about 36% of Indigenous people.<sup>26</sup>

With the MBS item number for health assessments available to younger age groups, and the broader funded availability of some vaccines, it could also have been anticipated that Indigenous patients would have a higher management frequency of cardiovascular check-ups and immunisations/vaccinations than non-Indigenous patients. However, this is not the case as both cardiovascular check-ups and immunisations/vaccinations were less often provided at Indigenous encounters than at non-Indigenous encounters.

The lower levels of these preventive activities may be the result of:

- limited access to services in rural areas where 75% of the Indigenous patients reside, leading to poor continuity of care, and less opportunities for GP intervention
- an unwillingness of 'well' people to attend for preventive services
- time and workforce constraints. The funded health assessments are comprehensive and require a considerable amount of time. Since the introduction of the Indigenous health assessment item numbers, less than 10% of eligible adults have participated<sup>4</sup>, and to date, there has not been a single BEACH encounter for which any one of these item numbers were recorded.

Reasons for low uptake have been investigated and some of the surprising findings were that GPs did not know about the Indigenous health assessments; furthermore, some felt it unnecessary to apply special treatment to Indigenous patients when many cultural groups require this attention, although they did acknowledge that Indigenous status is relevant to health care delivery.<sup>4</sup>

However, to provide preventive care specifically aimed at the known health risk of Indigenous Australians, and in line with RACGP guidelines<sup>27</sup>, one must first be aware that the patient is an Indigenous Australian. Lack of knowledge of Indigenous status has been recognised by others as a contributing factor to the low uptake of Indigenous-specific health checks, with reasons for not knowing including not wanting to discriminate, being unfamiliar with who qualifies as Indigenous, and procedural barriers, where general practice software does not provide for routine identification.<sup>4</sup>

The findings of a BEACH substudy confirmed this suspected under-identification. In the data period reported here, 1.4% of patients encountered identified themselves as Indigenous. In contrast, in a BEACH substudy that asked 9,245 patients a complete set of questions about their cultural background (including Indigenous status) 2.2% (95% CI: 1.6–2.9) of respondents identified themselves as Indigenous.<sup>28</sup> This rate is similar to the ABS estimates of Indigenous Australians as a proportion of the total population.<sup>1</sup>

However, the BEACH substudy included Indigenous Australians seen at Community Controlled Health Services funded through Medicare claims, and the estimate of 2.2% could have been an overestimate for the proportion of encounters that are with Indigenous patients in general practice as a whole. Deeble et al. (2008) conducted further investigations on this data and estimated that the BEACH encounter identification was an underestimate of about 10%, and that a more reliable estimate of the Indigenous population would be about 1.6% of all encounters.<sup>29</sup>

The findings of these studies are that some GPs are not routinely asking patients at the encounter about their Indigenous status, even when this is a variable specifically collected for each patient encountered, as it is in BEACH encounter data.

Unpublished work on the relationship between measured Indigenous proportions in rural and metropolitan practice compared the 'expected' proportions in each area (from the substudy mentioned above) with the 'observed' proportions from the encounter data, and found that the vast majority of the under-identification is occurring in Major Cities, and not in rural areas.

This may suggest that there are still some social barriers to asking the question, and that this is largely in Major City practice. The risk of offending the patient has been mentioned as a reason for low identification in a study done in a Major City area.<sup>4</sup> Perhaps wide public education (beyond the Indigenous population) about the importance of identifying people's Indigenous status is necessary before changes to the health of the Indigenous population can occur. This is of particular importance to mainstream services. The inclusion of a question on Indigenous status as a matter of course on all forms requiring completion for government, hospitals, general practice, and other health services, may then be better understood by health professionals and patients alike.

Other findings included the higher rate of dressings/pressure/compressions provided at Indigenous patient encounters, which might reflect the high management rate of skin infections seen earlier in this chapter. Glucose tests, also recorded at Indigenous encounters more often, may be a reflection of the higher management rate of diabetes (double that at non-Indigenous encounters), but may also be included as part of a routine check-up.

Pathology tests for electrolytes, urea and creatinine and liver function test, which were ordered more frequently at Indigenous encounters, would partially reflect the higher management rate of chronic alcohol use, and perhaps reflects acknowledgement of the prevalence of alcohol-related problems in some Indigenous communities and the subsequent testing for related kidney and liver problems.

Additionally, the higher rate at which Indigenous patients were referred to a hospital is likely to reflect reduced access to primary care and specialist services in many rural, regional and remote areas.

For the first time, differences between the content of encounters with Indigenous patients from different regions of Australia are presented in this chapter. Some of the interesting differences to emerge were that:

- psychological problems were managed far more often at encounters with Indigenous Australians from Major Cities and Inner Regional areas than at those with patients from Outer Regional/Remote/Very Remote areas
- the management of drug use was 4 times higher at encounters with Major City Indigenous Australians than at encounters with those from Outer Regional/Remote/Very Remote areas
- patients from Outer Regional/Remote/Very Remote areas had the highest management rates for diabetes.

Factors that are also considered as contributing to the increased risk of disease in Indigenous patients are higher rates of overweight/obesity, smoking and dangerous levels of alcohol consumption. The BEACH substudy that has measured the prevalence of these three risk factors in a sample of more than 200,000 patients to date, of whom 1,900 were Indigenous Australians, demonstrated that only 1 in 10 had none of the measured risk factors, and almost half had all three risk factors, double the proportion found in non-Indigenous patients. Though Indigenous patients were more likely to be obese than overweight, this was particularly so among women. However, it has been suggested that BMI is not as good an indicator, as measurement of central obesity is among the Indigenous population, particularly in Indigenous women.<sup>30</sup> Unfortunately BEACH relies on patient reported height and weight to measure BMI, as asking the GP to measure the patient would add further time to the consultation.

## 6.8 Conclusion

The inequalities experienced by the Indigenous population of Australia have long been a recognised problem. The high prevalence of multiple risk factors in the Indigenous population supports other findings<sup>20</sup>, and reinforces the growing need of early intervention through educational programs that cover healthy choices about food, tobacco and alcohol. Tackling their health issues through general practitioner intervention is one approach, however the first hurdle to be overcome is the inadequate identification of the Indigenous status of patients, particularly those in Major Cities. Progressive early detection seems to be affecting the management of some diseases, but not those of the cardiovascular system. Attention to extra preventive services, early diagnosis and ongoing management – all encouraged by current health policies – can only be given if the patient is known to be of Aboriginal or Torres Strait Islander descent. GP use of a routine question to each attending patient on one occasion, and careful recording of Aboriginal and/or Torres Strait Islander descent in the health record, would ensure that GP-mediated specific health interventions (health assessments, immunisation, and PBS listings) are offered. This, together with broad educational programs delivered at an early age, may help in reducing the health disparities evident in Australia's Indigenous population.



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## References

1. Australian Bureau of Statistics 2006. National Aboriginal and Torres Strait Islander Health Survey 2004–05. Cat. no. 4715.0. Canberra: ABS.
2. Australian Bureau of Statistics 2006. Population distribution, Aboriginal and Torres Strait Islander Australians. Cat. no. 4705.0. Canberra: ABS.
3. Australasian Legal Information Institute 2008. *National Health Act 1953*—Section 100. Viewed 12 January 2009, <[http://www.austlii.edu.au/au/legis/cth/consol\\_act/nha1953147/s100.html](http://www.austlii.edu.au/au/legis/cth/consol_act/nha1953147/s100.html)>.
4. Kehoe H & Lovett RW 2008. Aboriginal and Torres Strait Islander health assessments—barriers to improving uptake. *Aust Fam Physician* 37(12):1033-1038.
5. National Public Health Partnership (NPHP) 2000. National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000–2010. Canberra: NPHP. Viewed 15 December 2008. <<http://www.nphp.gov.au/publications/signal/natsinsa1.pdf>>.
6. Australian Government Department of Health and Ageing 2007. National Strategic Framework for Aboriginal and Torres Strait Islander Health 2003–2013, Australian Government Implementation Plan 2007–2013.
7. Medicare Australia 2003. Practice nurses and/or allied health workers for urban areas of workforce shortage—guidelines. Canberra: Medicare Australia. Viewed 11 December 2008. <[http://www.medicareaustralia.gov.au/provider/incentives/pip/files/ma\\_guidelines\\_for\\_practice\\_nurses\\_allied\\_health\\_workers\\_for\\_urban\\_areas.pdf](http://www.medicareaustralia.gov.au/provider/incentives/pip/files/ma_guidelines_for_practice_nurses_allied_health_workers_for_urban_areas.pdf)>.
8. Australian Government Department of Health and Ageing 2008. National Indigenous Pneumococcal and Influenza Immunisation Program. Canberra: DoHA. Viewed 16 December 2008, <<http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/atsi>>.
9. Australian Government Department of Health and Ageing 2004. National Strategic Framework for Aboriginal and Torres Strait Islander Peoples' Mental Health and Social and Emotional Well Being 2004–2009. Canberra: DoHA.
10. Australian Government Department of Health and Ageing 2005. Aboriginal and Torres Strait Islander Sexual Health and Blood Borne Virus Strategy 2005–2008. Canberra: DoHA.
11. Australian Government 2008. Australia 2020 Summit: final report. Canberra: Government of Australia.
12. Aboriginal and Torres Strait Islander Social Justice Commissioner and the Steering Committee for Indigenous Health Equality 2008. Close the Gap: National Indigenous Health Equality Targets. Canberra: Human Rights and Equal Opportunity Commission
13. Britt H, Miller GC, Knox S, Charles J, Valenti L, Henderson J et al. 2003. General practice activity in Australia 2002–03. General practice series no. 14. Cat. no. GEP 14. Canberra: Australian Institute of Health and Welfare.

14. Britt H, Miller GC, Charles J, Henderson J, Bayram C, Harrison C et al. 2008. General practice activity in Australia 2007–08. General practice series no. 22. Cat. no. GEP 22. Canberra: Australian Institute of Health and Welfare.
15. Vos T, Barker B, Stanley L, Lopez AD 2003. The burden of disease and injury in Aboriginal and Torres Strait Islander Peoples. Brisbane: The University of Queensland.
16. Nugent AW, Daubeney PE, Chondros P, Carlin JB, Cheung M, Wilkinson LC et al. 2003. The epidemiology of childhood cardiomyopathy in Australia. *N Engl J Med* 348(17):1639-1646.
17. O'Halloran J, Miller GC, Britt H 2004. Defining chronic conditions for primary care with ICPC-2. *Fam Pract* 21(4):381-386.
18. Norwegian Centre for Informatics in Health and Social Care (KITH) ICPC-2e 2006. Trondheim: KITH. Viewed 15 December 2008. <[http://www.kith.no/templates/kith\\_WebPage\\_\\_\\_\\_1062.aspx](http://www.kith.no/templates/kith_WebPage____1062.aspx)>.
19. Australian Bureau of Statistics 2006. Australian Standard Geographical Classification. Cat. no. 1216.0. Canberra:ABS. Viewed 16 December 2008, <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/1216.0Contents12005?opendocument&tabname=Summary&prodno=1216.0&issue=2005&num=&view=>>>.
20. Britt H, Miller GC, Knox S, Charles J, Valenti L, Henderson J et al. 2002. General practice activity in Australia 2001–02. General practice series no. 10. Cat. no. GEP 10. Canberra: Australian Institute of Health and Welfare.
21. World Health Organization 2006. Global database on body mass index. Geneva: WHO. Viewed 4 September 2008, <[http://www.who.int/bmi/index.jsp?introPage=intro\\_3.html](http://www.who.int/bmi/index.jsp?introPage=intro_3.html)>.
22. Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M 1993. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction* 88(6):791-804.
23. Centre for Drug and Alcohol Studies. 1993. The alcohol use disorders identification test. Sydney: Royal Prince Alfred Hospital and the University of Sydney.
24. Gunasekera H, Knox S, Morris P, Britt H, McIntyre P, Craig JC 2007. The spectrum and management of otitis media in Australian Indigenous and non-Indigenous children: a national study. *Pediatr Infect Dis J* 26(8):689-692.
25. Australian Bureau of Statistics 2007. Deaths, Australia. Cat. no. 3302.0. Canberra: ABS.
26. Couzos S 2005. PBS medications – improving access for Aboriginal and Torres Strait Islander peoples. *Aust Fam Physician* 34(10):841-844.
27. Royal Australian College of General Practitioners 2005. National guide to a preventive assessment in Aboriginal and Torres Strait Islander peoples. Sydney: RACGP.
28. Britt H, Miller GC, Henderson J, Bayram C 2007. Patient-based substudies from BEACH: abstracts and research tools 1999–2006. General practice series no. 20. Cat. no. GEP 20. Canberra: Australian Institute of Health and Welfare.
29. Deeble L, Shelton AJ, Goss J 2008. Expenditures on health for Aboriginal and Torres Strait Islander peoples 2004–05. Health and welfare expenditure series no. 33. Cat. no. HWE 40. Canberra: Australian Institute of Health and Welfare.
30. Bambrick H 2005. Relationships between BMI, waist circumference, hypertension and fasting glucose: Rethinking risk factors in Indigenous diabetes. *Australian Indigenous Health Bulletin* 5(4).