

Tuberculosis notifications in Australia, 2002

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Abstract

In 2002, there were 1,028 cases of tuberculosis (TB) reported to the National Notifiable Disease Surveillance System, of which 997 were new cases, 30 were relapses and 1 unknown. The incidence rate of TB in Australia in 2002 was 5.2 cases per 100,000 population. The highest incidence of TB was reported in people born overseas (20.2 cases per 100,000 population), followed by Indigenous Australians (8.5 cases per 100,000 population). By contrast, the incidence rate of TB in the non-Indigenous Australian-born population was 1.1 cases per 100,000 population. This pattern of TB incidence rates amongst the sub-populations of Australia has been observed for over 10 years. The rates were evaluated against the performance indicators set by the National Tuberculosis Advisory Committee to ensure that Australia's record of TB control is maintained and improved. *Commun Dis Intell* 2003;27:449–458.

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Introduction

Tuberculosis (TB) represents one of the most significant public health threats to the global population. In 2001, 183 countries notified 3.8 million cases of TB to the World Health Organization (WHO) Global Surveillance Programme,¹ of which, 42 per cent were sputum smear-positive. However, the rates are likely to be underestimates of the global TB burden. WHO reports that the global incidence rate of TB is increasing at approximately 0.4 per cent per year, but that the increase is faster in sub-Saharan Africa and in countries of the former Soviet Union. The Western Pacific Region, of which Australia is a member, accounted for 24 per cent of all cases notified to WHO in 2001. Four countries from the Western Pacific Region were among the top 22 countries with a high TB burden. In contrast, Australia has one of the lowest incidence rates for TB in the world. There remain two sub-populations within Australia who have high incidence rates of TB: Indigenous Australians and people born overseas.

The targets for global TB control, set by the WHO, are to successfully treat 85 per cent of detected sputum smear-positive TB cases and to detect 70 per cent of all active TB cases. To meet the treatment target, the WHO has recommended the Directly Observed Treatment – Short-course (DOTS) program. The five major components of the DOTS

program are political commitment and resources, the use of microscopy to diagnose TB, standardised observed treatment for all patients with active TB, uninterrupted supplies of anti-TB drugs, and a standardised reporting system for monitoring treatment and progress of TB patients (WHO, 2002). The major principles that underpin the DOTS program guide the treatment of TB patients throughout Australia.

In order to address the burden and human impact of TB on the Australian population, the National TB Advisory Committee implemented a *National Strategic Plan for TB Control in Australia Beyond 2000*, which was endorsed by the Communicable Diseases Network Australia (2002). This is the second annual report to match the national surveillance data to the Performance Indicators set by the strategic plan.

In the past, TB notifications in Australia were reported to the National Mycobacterial Surveillance System. Enhanced surveillance for TB notifications was commenced in 2001 as a part of the National Notifiable Diseases Surveillance System. Information about drug susceptibility is published by the Australian Mycobacterium Laboratory Reference Network in the accompanying report.

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Methods

Data collection

Each jurisdiction in Australia has legislation that requires medical practitioners, public health laboratories and other health professionals to report cases of TB to the state and territory health authority. Notifications of TB for 2002 were collated by jurisdictions and sent electronically to the Commonwealth Department of Health and Ageing. Confidentiality was ensured as all records were forwarded in a de-identified format. Data fields in the enhanced TB dataset that are analysed in this report are listed in Table 1 with a brief description of each variable.

The National Tuberculosis Advisory Committee, as a sub-committee of the Communicable Diseases Australia Network, was responsible for determining the dataset collected in 2002. The dataset collected was the same as in 2001.

Data processing and quality control

Data on all TB notifications reported in 2002 were received by September 2003. Each variable was examined for data completeness. Data were checked for validity, whereby any invalid or missing entries were returned to the jurisdictions for review and correction.

Most cases of TB in Australia are reported to the surveillance system.² Reasons for the high level of reporting include the presence of an effective TB screening program, a high standard of health care for all TB patients, and specialised and multi-disciplinary TB services in each jurisdiction. The terms 'notification rate' and 'incidence' are therefore used interchangeably in this report.

Case definition

In 2002, cases were classified as either new or relapsed. A new case required a diagnosis accepted by the Director of TB Control (or equivalent) in the relevant jurisdiction, based on laboratory or clinical evidence. Laboratory evidence includes either the isolation of *Mycobacterium tuberculosis* complex (*M. tuberculosis*, *M. bovis* or *M. africanum*) from a clinical specimen by culture; or nucleic acid testing indicating *M. tuberculosis* complex except where it is likely to be due to previously treated or inactive disease.

Clinical evidence is a diagnosis made by a clinician experienced in tuberculosis and includes clinical follow-up assessment.

A relapsed TB case was defined as a case of active tuberculosis diagnosed bacteriologically, radiologically or clinically, having been considered inactive or quiescent following previous treatment

Table 1. Description of some of the data fields in the enhanced tuberculosis dataset of the National Notifiable Disease Surveillance System*

Data field	Description
Country of birth	Country in which patient was born.
Extrapulmonary site	Details of extrapulmonary site involved.
New or relapse case	Whether the case was a new case (without previous treatment), relapse following full treatment in Australia, relapse following partial treatment in Australia, relapse following full treatment overseas or relapse following partial treatment overseas.
TB outcomes	Whether the case was cured (bacteriologically confirmed), completed treatment, interrupted treatment (but still completed), died of TB, died of other cause, defaulter (failed to complete treatment), failure (completed treatment but failed to be cured), transferred out of Australia and still under treatment.
Age	Age of patient at diagnosis
Indigenous status	Whether patient is self-identified Indigenous (Aboriginal and/or Torres Strait Islander) Australian or not.
Selected risk factors	Selected risk factors including close contact with a TB patient, residing in a correctional facility, residing in an aged care facility, employed in an institution, employed in the health industry, HIV status or past residence in a high risk country.
Sex	Male or female.

* Other data collected on each case included diagnosis details, therapy and susceptibility. These were analysed in the accompanying TB lab report.

(as deemed by the State or Territory Director of Tuberculosis). Relapses refer to retreatment cases and some of these may be reinfections rather than a true relapse of prior disease.

Population estimates for 2002

The rates presented in this report were calculated using population data produced by the Australian Bureau of Statistics (ABS). The estimated resident population (ABS, 2002) in each state and territory and in Australia as a whole, as at 30 June 2002, was used as the denominator in crude rate calculations.

Estimates of the Indigenous Australian population were based on projections from the 2001 census estimate of the Indigenous population in Australia (ABS, 2001). The ABS calculated the projections based on assumptions about future births, deaths and migrations in the Indigenous population and a 'low' and 'high' estimate provided. For the purpose of this report, the 'low' estimate has been used, which is consistent with previous annual reports for TB notifications in Australia.

The 2001 census data were used to calculate incidence rates of TB in people born overseas. The estimated resident population of overseas-born people (total and by country of birth) in 2001 was used as the denominator in calculating rates.

To estimate the non-Indigenous Australian-born population, the Indigenous population estimate and the overseas-born population estimate were subtracted from the total Australian population. Since some of the TB notifications in the report may include non-permanent residents of Australia in 2002, the rates may be overestimated.

Results

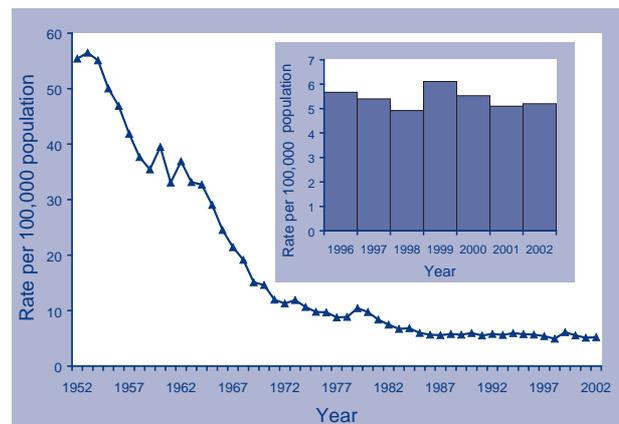
Data quality

Information on age and sex for all notifications were reported. Indigenous status was reported for 198 of the 204 (97.1%) cases born in Australia and country of birth was recorded for 1,023 (99.5%) of the total TB notifications. The site(s) of TB disease were reported for 1,025 cases and whether the case was new or relapse was reported for 1,027 cases. The outcome from treatment was reported for 802 (78%) cases. One data field that was not well reported in 2002 was risk factors for TB (48.7% complete), and it was unclear whether the lack of reporting indicate no underlying risk factors or missing data. Similarly, HIV status was only provided for 27.3 per cent of cases.

Tuberculosis notification rates

The number of cases of TB reported in Australia in 2002 was 1,028 (5.2 cases per 100,000 population). The notification rate of TB in 2002 was similar to that in 2001 (5.1 cases per 100,000 population) (Figure 1). The national notification rate of TB has remained relatively stable since 1985 except for an increase in 1999, due to the number of TB cases amongst the East Timorese refugees evacuated to Australia in that year.

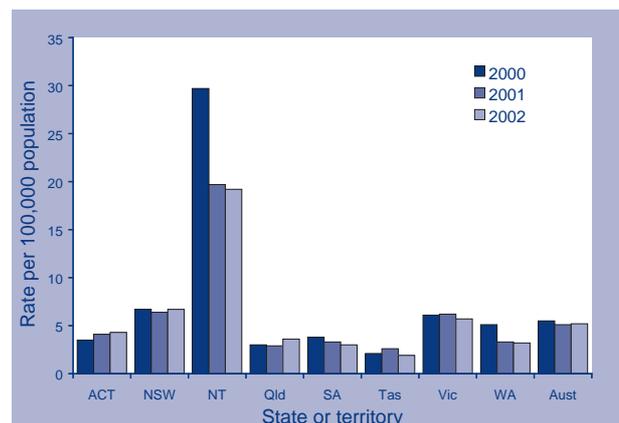
Figure 1. Incidence rates per 100,00 population for tuberculosis notifications, Australia, 1952 to 2002



Tuberculosis notifications by jurisdiction

New South Wales reported the most notifications (447 cases) of TB in 2002, however, the highest rate was recorded in the Northern Territory (19.2 cases per 100,000 population) (Table 2). This rate was lower than the rate for the Northern Territory reported in 2001 (19.7 cases per 100,000 population) and in 2000 (29.7 cases per 100,000 population) (Figure 2). The lowest notification rates in 2002 were reported in Tasmania (1.9 cases per 100,000 population) and South Australia (3 cases per 100,000 population).

Figure 2. Notification rates for tuberculosis, Australia, 2000 to 2002, by state or territory



Of the 1,028 cases reported in 2002, 997 (97%) were new cases of TB, 30 (3%) were relapsed cases and one where relapse status was unknown (Table 2). Of the 30 relapsed cases, 23 relapsed following full treatment in Australia, one relapsed after partial treatment in Australia, four relapsed after full treatment overseas and two relapsed after partial treatment overseas.

Tuberculosis notifications in the Australian-born population

In 2002, 204 (19.8%) cases of TB occurred in the Australian-born population, of whom 167 (82%) were non-Indigenous Australian-born, 37 (18.1%) were Indigenous Australians and 6 (2.9%) were of unknown Indigenous status. For the six cases where Indigenous status was unknown, the numbers were added to the non-Indigenous Australian-born category for the calculations of rates (Table 3).

The incidence of TB in Indigenous Australians for 2002 was 8.5 cases per 100,000 population, which was the second lowest rate reported for this population since 1991. The rate of TB incidence in the non-Indigenous Australian-born population (1.1 cases per 100,000 population) has remained stable over the past 11 years.

The highest notification rate of TB among Australian-born individuals was in the Northern Territory (14.0 cases per 100,000 population) and the lowest was in Western Australia (0.6 cases per 100,000 population) (Table 3). The majority of cases in Indigenous Australians (24/37 cases; 64.9%) were reported in the Northern Territory (41.9 cases per 100,000 population), a jurisdiction where 28 per cent of the population are Indigenous Australians as compared to two per cent nationwide. Queensland reported nine cases of TB in the Indigenous population (7.4 cases per 100,000 population), which was similar to the number of cases reported in the previous year.

Table 2. Notifications of new and relapsed cases of tuberculosis and rates per 100,000 population, Australia, 2002, by state or territory*

State	New cases		Relapsed cases		Total	
	n	%	n	%	n	%
Australian Capital Territory	14	4.3	0	0.0	14	4.3
New South Wales	441	6.6	6	0.1	447	6.7
Northern Territory	37	18.7	1	0.5	38	19.2
Queensland	124	3.3	9	0.2	133	3.6
South Australia	43	2.8	3	0.2	46	3.0
Tasmania	9	1.9	0	0.0	9	1.9
Victoria	272	5.6	7	0.1	279	5.7
Western Australia	57	3.0	4	0.2	61	3.2
Australia	997	5.1	30	0.2	1,027	5.2

* There was one case where relapse status was unknown.

Table 3. Notifications of tuberculosis and incidence rates in Indigenous and non-Indigenous people born in Australia, 2002, by state or territory

State/territory	Indigenous Australian-born		Non-Indigenous Australian-born		Total Australian-born	
	n	%	n	%	n	%
Australian Capital Territory	0	0.0	1	0.4	1	0.4
New South Wales	2	1.6	60	1.2	62	1.2
Northern Territory	24	41.9	2	1.8	26	14.0
Queensland	9	7.4	34	1.1	43	1.4
South Australia	1	4.0	10	0.8	11	0.9
Tasmania	0	0.0	5	1.2	5	1.2
Victoria	1	4.0	47	1.2	48	1.3
Western Australia	0	0.0	8	0.6	8	0.6
Australia	37	8.5	167	1.1	204	1.3

The more populous states of New South Wales, Victoria and Queensland reported 60, 47 and 34 cases of TB, respectively, in the non-Indigenous population, while the Northern Territory only reported two cases but had the highest rate (1.8 cases per 100,000 population).

The rate of notifications of TB in 2002 was highest in overseas-born people (20.2 cases per 100,000 population), which was a slight increase from the previous two years (19.3 cases per 100,000 population in 2001 and 18.0 cases per 100,000 population in 2000). However, the rate for 2002 remains lower than that of 1999 where 21.6 cases were reported per 100,000 population (Figure 3).

Tuberculosis notifications in people born overseas

Of the 1,028 cases of TB reported in 2002, 819 cases (79.7%) were in people born overseas. Table 4 shows the number of TB notifications and incidence rate of TB based on the estimated Australian resident population for each country. Of these cases, 36.6 per cent (300/819 cases) come from three countries: India (106 cases), Vietnam (102) and the Philippines (92).

The incidence of TB amongst people born overseas in the Australian population was highest in people from Somalia (565.6 cases per 100,000 population), India (111 cases per 100,000 population) and Papua New Guinea (101.6 cases per 100,000 population). Some caution is required in interpreting these results, as the rates may include temporary as well as permanent residents.

Table 4. Notifications of tuberculosis and estimated rate per 100,000 population for selected countries of birth, Australia, 2002

Country of birth	New cases	Relapsed cases	Total cases	Estimated Australian resident population by country of birth, 2001	Rate per 100,000 population in Australia by country of birth, 2002*	WHO incidence rate (per 100,000 population for country, 2001) [†]
India	106	0	106	95,455	111.0	43
Vietnam	98	4	102	154,833	65.9	115
Philippines	91	1	92	103,942	88.5	139
China [‡]	54	1	55	142,778	38.5	38
Indonesia	48	0	48	47,156	101.8	134
Papua New Guinea	21	3	24	23,618	101.6	323
Somalia	22	1	23	3,713	619.4	75
Thailand	22	0	22	23,599	93.2	78
Hong Kong	19	1	20	67,121	29.8	109
Korea [§]	16	1	17	38,958	43.6	79
Malaysia	15	0	15	78,858	19.0	66
United Kingdom	14	0	14	1,083,318	1.3	10
Cambodia	13	0	13	22,979	56.6	143
Sri Lanka	12	0	12	53,460	22.4	39
Others	247	9	259	21,48,140		
Overseas	798	21	819	4,087,928	19.9	
Australia	197	7	204	15,619,272	1.3	
Not stated	2	2	4			
Total	997	30	1,027	19,707,200	5.2	

* Country of birth for denominator is from the 2001 census.

[†] Rates from the World Health Organization 2003 global tuberculosis report.

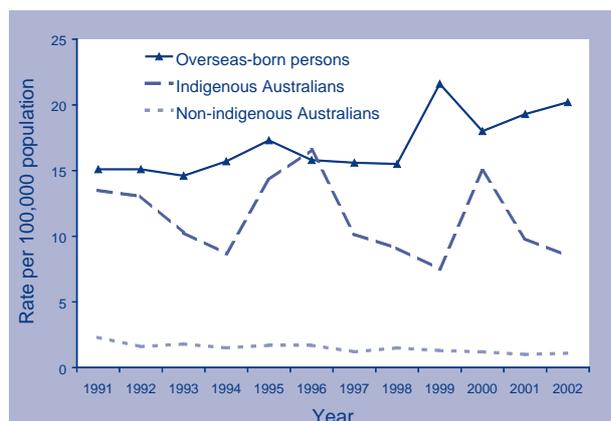
[‡] China excludes Hong Kong SAR and Taiwan.

[§] The notifications for Korea include both the Republic of Korea and the Democratic Peoples Republic of Korea.

^{||} The WHO figure quoted is for the Republic of Korea, as virtually all of Korean-born people in Australia are from the Republic of Korea.

There was one case where relapse status was unknown.

Figure 3. Trends of tuberculosis incidence rates, Australia, 1991 to 2002, by Indigenous status and country of birth



Tuberculosis notifications by age and sex

There were a total of 40 cases of TB in children under 15 years of age and the overall notification rate for this age range was one case per 100,000 population. The notification rate was highest in overseas-born children (6.9 cases per 100,000 population, 14 cases), but was only slightly higher than the notification rate in Indigenous Australian-born children (4.3 cases per 100,000 population, 7 cases) (Table 5). The rate for Indigenous Australian-born children increased from the 2001 figures, where there were 2.4 cases per 100,000 population (4 cases) for the same age group. The rate in non-Indigenous Australian-born children remained low at 0.5 cases per 100,000 population (19 cases).

The notification rate in the Indigenous Australians was highest in the 55–64 year age range (43.4 cases per 100,000 population). The rate for Indigenous Australians in the 65+ year age group (26.2 cases per 100,000 population) was lower than that in 2001 (52.2 cases per 100,000 population). Amongst the non-Indigenous Australian-born population, the notification rate was highest in people aged over 65 years (4.1 cases per 100,000 population). For people born overseas, the notification rate was highest in the 25–34 year age range (31.6 cases per 100,000 population).

The age- and sex-stratified incidence rates for TB in overseas-born and Australian-born (Indigenous and non-Indigenous combined) populations are shown in Figure 4. The pattern of distribution of TB cases was different in the overseas-born population and Australian-born population. In the Australian-born population, there was approximately one case per 100,000 population for people up to the 45–54 year age range for both males and females, after which the incidence rate increased gradually for both sexes. The highest rates of TB for the Australian-born population were in the 65+ age group, where the rate for males was 5.6 cases per 100,000 population and 3.3 cases per 100,000 population for females. The overall male:female ratio in Australian-born TB cases was 1.3:1, which was similar to that in 2001.

The highest rate of TB in overseas-born females was in the 25–34 year age range (34.3 cases per 100,000 population). The rate decreased for the 55–64 year age range (9.7 cases per 100,000 population) and then increased again to 15.5 cases

Table 5. Notifications and estimated incidence rate of tuberculosis per 100,000 population, Australia, 2002, by age group, Indigenous status and country of birth

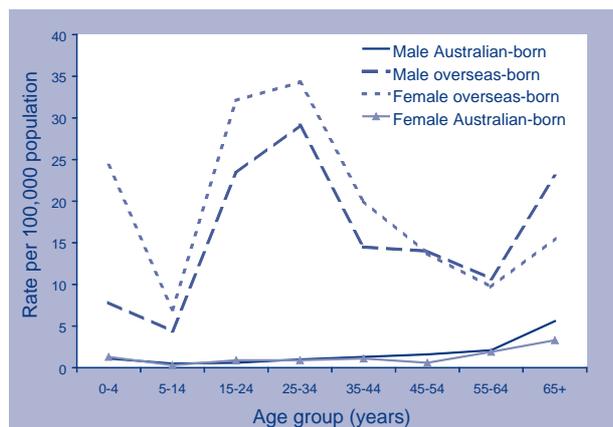
Age group	Indigenous Australian-born		Non-Indigenous Australian-born		Overseas-born	
	n	%	n	%	n	%
0-4	3	5.7	12	1.0	4	15.9
5-14	4	3.7	7	0.3	10	5.6
Sub total for <15 years	7	4.3	19	0.5	14	6.9
15-24	2	2.7	15	0.7	109	27.7
25-34	6	9.4	15	0.7	191	31.6
35-44	9	17.8	17	0.8	148	17.1
45-54	3	9.3	16	0.9	120	13.7
55-64	7	43.4	18	1.5	69	9.9
65+	3	26.2	67	4.1	159	18.8
Australia	37	9.0	167	1.1	810	18.1

The denominator used for total non-Indigenous Australian-born population is from the 2001 census, whilst age group breakdowns use denominators from estimated resident population in 2000 based on the 1996 census results.

There were five cases where country of birth was unknown and nine cases where Indigenous status was unknown.

per 100,000 population for the 65+ year age group (Figure 4). The pattern of TB rates in overseas-born males was similar to that of overseas-born females, but there was a greater increase in incidence of TB for males aged 65+ (23 cases per 100,000 population) than females in the same age group. The overall male:female ratio of TB cases in the overseas-born population was 1.4:1, which was the same as in 2001.

Figure 4. Incidence rate of tuberculosis in Australian-born and overseas-born people, 2002, by age group and sex



There were five cases where country of birth was unknown.

Tuberculosis and selected risk factors

Information on selected risk factors, excluding HIV were reported for 220 of the 1,028 (21.4%) cases. Caution must be taken in interpreting these results as it is unclear whether there were no risk factors identified in the other TB notifications or if the information was not collected. Of the notifications where risk factors were identified, 139 cases were household members or close contacts of TB cases, nine cases either resided or had recently resided in a correctional service and 17 cases either resided or recently resided in an aged care facility. For individuals working in high risk settings, three cases were employed or recently employed in institutions such as correctional facilities or aged care facilities and 10 cases were employed or recently employed in the health industries. There were 140 cases identified as having previously resided for three or more months in high risk countries as defined by the Department of Immigration, Multicultural and Indigenous Affairs.

Tuberculosis and HIV status

Information on HIV status was reported for 281 of the 1,028 (27.3%) TB cases notified in Australia in 2002. Of the TB cases where HIV status was known, there were 11 persons who were HIV positive. Two of these cases were born in Australia and nine were born overseas. The National Strategic Plan recommends that HIV status of all TB cases be collected. Australia is working towards reporting HIV status on all TB patients. In 2002, reporting of HIV status was higher than in 2001 when only 4.2 per cent of cases had HIV status reported.

Anatomical site of disease

In 2002, 602 (58.7%) of the TB cases had pulmonary disease. This was the only identified site of disease for 510 (84.7%) of the pulmonary TB cases (Table 6). Of the TB cases amongst both Indigenous and non-Indigenous Australian-born populations, 76 per cent had pulmonary TB as a site of disease. In contrast, 54.3 per cent of the overseas-born cases had pulmonary as a site of disease. The second most common site of disease in TB cases in 2002 was the lymphatic system (165 cases; 16.1%), followed by pleurae (97 cases; 9.5%).

Table 6. New and relapsed cases in Australia, 2002, by site of disease

Site	New cases	Relapse cases	Total cases	Per cent of cases
Pulmonary	585	17	602	58.7
Lymphatic	160	5	165	16.1
Pleural	93	4	97	9.5
Bone/joint	51	1	52	5.1
Meningeal	21	0	21	2.0
Genitourinary	19	1	20	2.0
Miliary	11	0	11	1.1
Peritoneal	7	0	7	0.7
Other	23	0	23	2.2

The total number of cases does not add up to 1,028 and the per cent of cases is greater than 100 per cent as some cases had multiple sites of infection.

Antimicrobial therapy

The antimicrobial drug regimen given to cases was reported for 930 (90.5%) cases of TB. In 2002, there were 23 cases on a two drug regimen, 101 on a three drug regimen, 804 on a four drug regimen and two cases on a regimen of five or more antimicrobial TB drugs. Of the cases provided with a four drug regimen, 801 (99.6%) were prescribed the four drug regimen of isoniazid, rifampicin, pyrazinamide and ethambutol, which is commonly used as the standard short course treatment for active TB in those aged eight years and above. Ethambutol is not recommended for use in young children where visual testing cannot be assured and of the 17 cases under eight years of age for which antimicrobial therapy was reported, 13 had the three drug regimen of isoniazid, rifampicin and pyrazinamide.

Treatment outcomes

Treatment outcomes were reported for 802 (78%) cases in September 2003. The remaining 226 (22%) cases were either still under treatment or their treatment status was unknown. Satisfactory outcomes were reported for 652 (80%) cases, comprising 74 patients with bacteriologically confirmed cure and 578 who had completed treatment (Table 7). Of the rest, 3 (0.4%) cases had interrupted treatment for TB and 6 (0.7%) cases were reported as defaulters. One case was reported to have failed treatment (0.1%).

The proportion of cases who completed treatment by September 2003 was highest amongst Indigenous Australians (84.8%). The proportion of cases who completed treatment was 76.6 per cent for the non-Indigenous Australian-born population and 82.7 per cent for the overseas-born population. There were 18 deaths reported in 2002 due to TB and the case fatality rate was 2.2 per cent.

National Performance Indicators

The performance criteria for the National Performance Indicators were set by the National Tuberculosis Advisory Committee in 2002 and reviewed in 2003. Some of the indicators remain under review.

As in last year's TB annual report, the performance criteria for people born overseas applies to people who have been living in Australia for more than five years. Based on this, of the 819 cases born overseas, 471 had been living in Australia for more than five years. The incidence rate for people born overseas who have been living in Australia for more than five years was 11.5 cases per 100,000 population.

The incidence of TB in children less than 15 years of age in the Indigenous population increased from the previous year (2.4 cases per 100,000 population in 2001 and 4.3 cases per 100,000 population in 2002).

Table 7. Outcome of treatment for tuberculosis amongst cases evaluated, Australia, 2002, by Australian-born (Indigenous and non-Indigenous) and overseas-born individuals

Treatment outcomes	Indigenous Australian-born	Non-Indigenous Australian-born	Overseas-born	Unknown	Total	Per cent of cases
Cured (bacteriologically confirmed)	19	11	43	1	74	9.2
Completed treatment	9	87	482	0	578	72.1
Interrupted treatment	0	1	2	0	3	0.4
Died of TB	2	5	10	1	18	2.2
Died of other cause	2	20	40	2	64	8.0
Defaulted*	0	2	4	0	6	0.7
Failed†	0	0	1	0	1	0.1
Transferred out of Australia	1	2	53	2	58	7.2
Total	33	128	635	6	802	

* Defaulted means failed to complete treatment.

† Failed means treatment completed but failed to be cured.

Table 8. National tuberculosis performance indicators, performance criteria and the current status of tuberculosis in Australia, 2002

National TB performance indicator	Performance criteria	Annual incidence of TB (per 100,000 population)	
		2001 %	2002 %
Crude incidence			
Indigenous Australians	<1	9.8	8.5
Non-Indigenous Australian-born	<1	1.0	1.1
Overseas-born persons*	†	10.2	11.5
Relapse cases initially treated in Australia	<2% of total treated cases	NA	2.3
Incidence in children <15 years, by risk group			
Indigenous Australian children	<0.1	2.4	4.3
Non-Indigenous Australian-born children	<0.1	0.5	0.5
Overseas-born children*	†	1.0	0.1
Collection of HIV status in TB cases (% of cases with data collected)	100% over next 3 years	4.2	27.3
Treatment outcome measures (%)			
Cases evaluated for outcomes‡	100	76.9	78.0§
Cases that have treatment completed and are cured	>90	83.6	80.0
Cases recorded as treatment failures‡	<2	0.9	0.1

* The performance criteria for overseas born are applied to people who have been living in Australia for more than 5 years. The denominator for this rate is the total overseas born population living in Australia in 2002.

† Performance criteria currently under review.

‡ The denominator used for both 2001 and 2002 was the number of cases evaluated for treatment outcome.

§ Evaluation was at September 2003.

NA Not available (data incomplete).

Data for 2001 have been recalculated using the denominators specified above.

Discussion

Australia has one of the lowest incidence rates of TB in the Western Pacific Region of the World Health Organization and in the world. In 2002, the incidence rate was 5.2 cases per 100,000 population, which is the third lowest rate ever recorded in Australia. The incidence of TB in Australia has remained between five and six cases per 100,000 population since the mid-1980s.

There was an overall decrease in the incidence rates of TB in Indigenous Australians, where the rate dropped from 9.8 cases per 100,000 population in 2001 to 8.5 cases per 100,000 population in 2002. However, TB incidence was still eight times higher in the Indigenous Australian population than in the non-Indigenous Australian-born population. Two-thirds of TB cases in Indigenous Australians occurred in the Northern Territory, where the Indigenous population comprises 28 per cent of the overall population compared to two per cent nationwide. The highest rates of TB in Indigenous Australians were in people over the age of 55, which was similar to the non-Indigenous Australian-born

population. The treatment outcome data indicate that among Indigenous Australians, the proportion of people who complete treatment and are cured was higher than that of non-Indigenous Australian-born people.

The incidence of TB in Indigenous Australians for 2002 was the second lowest rate reported for this group since 1991. Yet, despite the overall decrease in the incidence of TB in Indigenous Australians, there was an increase in the incidence rate of TB for Indigenous Australians under 15 years of age. These rates should be interpreted with caution however, as the identification of cases may vary depending on screening campaigns and any small changes in the numerator when dealing with such a small population, can affect rates considerably. For the seven cases of TB in Indigenous Australians under 15 years of age, six of the seven were identified in the Northern Territory, where five were identified as a result of contact tracing and extended community screening.³ All these cases were diagnosed early in their disease and had good treatment outcomes. Early detection and management of cases will help Australia achieve the goal set by the National

Strategic Plan to bring the incidence of TB among Indigenous Australians down to that in non-Indigenous Australian-born people.

The other sub-population in Australia in which the TB burden is high is for those born overseas. In the 2002 TB notifications, the highest rate of TB in the overseas-born population occurred in persons aged 15–34 years, which is characteristic of areas where TB is endemic. Nevertheless, the proportion of cases that completed treatment and were cured was similar to that of the Australian-born population.

In 2002, 34.5 per cent of all TB cases notified in Australia were in people born in India, Vietnam, the Philippines and China, all of which have been identified by WHO as high TB incidence countries.¹ Recent research on the association between TB rates among migrants and the estimated incidence of TB in the country of birth has highlighted that for people born overseas, the prevalence of TB in the country of birth is likely to be the most important risk factor upon coming to Australia.⁴ Furthermore, for people from high-prevalence countries, research has indicated that the prevalence of resistance to current treatment drugs is high and that this should guide treatment protocols for this group.⁵

The TB notifications for 2002 were the second set of surveillance data matched to the National TB Performance Indicators set by the National Strategic Plan. The report highlighted that Australia is close to meeting the annual incidence of TB performance criteria for the non-Indigenous Australian-born population but not for other groups. In particular, the gap between TB rates for Indigenous Australian-born and non-Indigenous Australian-born is not narrowing.

The reporting of HIV status for TB cases has increased from 4.2 per cent in 2001 to 27.3 per cent in 2002, which is slowly addressing the performance criteria set by the plan. Knowledge about HIV status for people infected with TB is critical in the public health management of cases as it has been estimated that an individual who is infected with both HIV and TB has a 7–10 per cent risk per year of developing active TB, as opposed to the 10 per cent lifetime chance of someone who is infected with TB alone.⁶ An evaluation of TB cases in Queensland between 1989 and 1998 also highlighted that HIV infection in TB patients increased the risk of dying but was nevertheless, uncommon.⁷

The performance of treatment outcome measures against the performance criteria need to be interpreted with caution as at the time of data collection, not all cases had completed treatment. In 2002, Australia did not achieve the 90 per cent treatment completion and cure targets set by the

Plan but achieved the target for the number of cases recorded as treatment failures (less than 2% of cases). This pattern was similar to that in 2001.

In October 2002, the Australian public health system demonstrated its capacity to respond quickly to the exposure of approximately 1,500 people to an untreated active case of TB in a worker in a Queensland resort.⁸ Screening was offered to people both in Australia and overseas, and Queensland Health was tasked with the collation of the national information. To date, there has been no evidence of local transmission of TB from the case to people exposed at the resort. Through the National Strategic Plan, the surveillance data and the global trends, public health practitioners can best tailor campaigns for the screening, case finding and management of TB cases. Such action will help ensure that Australia can progress towards the goals set in the National Strategic Plan in the future.

References

1. World Health Organization. Global tuberculosis control: surveillance, planning, financing. Geneva: World Health Organization, 2003.
2. Gilroy N. Bound volume for the Degree of Master of Applied Epidemiology. Canberra: Australian National University, 2000.
3. Krause V. Update on Top End community fighting TB. *Northern Territory Disease Control Bulletin* 2002;9: 13.
4. Watkins R, Plant A, Gushulak B. Tuberculosis rates among migrants in Australia and Canada. *Int J Tuberc Lung Dis* 2002;6:641–644.
5. Khan K, Muenning P, Behta M, Zivin JG. Global drug resistance patterns and the management of latent tuberculosis infection in immigrants to the United States. *N Engl J Med* 2002;347:1850–1859.
6. National Institute of Allergy and Infectious Diseases. Available from: <http://www.niaid.nih.gov/factsheets/tb.htm> Accessed 16 October 2003.
7. Walpola HC, Siskind V, Patel AM, Konstantinos A, Derhy P. Tuberculosis-related deaths in Queensland, Australia, 1989–1998: characteristics and risk factors. *Int J Tuberc Lung Dis* 2003;7:742–50.
8. Australian Government Department of Health and Ageing. Communicable Diseases Surveillance: Highlights for 4th quarter 2002. *Commun Dis Intell* 2003;27:135.