Tuberculosis notifications in Australia, 2005

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Abstract

The National Notifiable Disease Surveillance System received 1,072 tuberculosis (TB) notifications in 2005, of which 1,022 were new cases and 50 were relapses. The incidence of TB in Australia was 5.3 cases per 100,000 population in 2005 and has remained at a stable rate since 1985. The high-incidence groups remain people born overseas and Indigenous Australians at 20.6 and 5.9 cases per 100,000 population, respectively. By contrast, the incidence of TB in the non-Indigenous Australian-born population was 0.8 cases per 100,000 population. Rates in the Australian-born, both Indigenous and non-Indigenous have been declining since 1991, while rates in the overseas-born have been increasing. TB control in Australia relies on pre-migration screening and provision of free and effective treatment. *Commun Dis Intell* 2007;31:71–80.

Keywords: disease surveillance, tuberculosis

Introduction

There were reportedly 9 million cases of tuberculosis (TB) globally in 2005 with more than 50% of cases occurring in Australia's neighbouring countries in South East Asia and the Western Pacific.[1] Global TB control is evolving from the Directly Observed Therapy Short-course (DOTS) strategy to the recently launched Stop TB Plan.[2] The key components of this plan are to pursue high quality DOTS expansion and enhancement; address TB and HIV co-infection, multi-drug resistant TB and other challenges (e.g. TB in prisoners); contribute to health system strengthening; engage all care providers; empower people with TB and communities; and enable and promote research. The Stop TB Plan is particularly relevant to high-burden countries and many elements are applicable in low-incidence countries.

Australia has one of the lowest rates of TB in the world with rates between 5 and 6 cases per 100,000 population for the last 10 years. During the same period, people born outside Australia have made up between 69% and 83% of Australia's annual TB notifications. Australia and other low-incidence countries must confront additional challenges such as: maintaining treatment services (including specially-trained staff, drug supplies and funding) for patients with active TB disease, and providing screening and preventative treatment programs for latent tuberculosis infection (LTBI) among high-risk groups.[3]

A crucial component of effective TB control in a low-incidence country is the collection of accurate comprehensive and timely statistics. These data must be compared against performance indicators to ensure that strategic directions are identified, that outcomes are achieved and that Australia's enviable record of TB control is maintained. This paper presents the TB notification data from the National Notifiable Diseases Surveillance System (NNDSS) in 2005. The data are compared against the National Tuberculosis Performance Indicators set by the National TB Advisory Committee (NTAC) in the *National Strategic Plan for TB Control in Australia Beyond 2000*.[4]

Methods

Data collection

TB is a notifiable disease in Australia. Medical practitioners, public health laboratories and other health professionals are legally required to report cases of TB to the state and territory health authorities. Information on notified cases for 2005 was collated by jurisdictions and sent electronically to the National Notifiable Diseases Surveillance System managed by the Australian Government Department of Health and Ageing. Records were dispatched in a de-identified format to ensure confidentiality. The National Tuberculosis Advisory Committee, as a sub-committee of Communicable Diseases Australia Network, was responsible for determining the dataset collected in 2005 and for its transmission to NNDSS. Key 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. While some TB drug susceptibility data on bacteriologically-confirmed cases is collected in NNDSS, the definitive dataset is collected, analysed and reported by the Australian Mycobacterial Reference Laboratory Network in the accompanying report.[5]

Data processing and quality control

Data on all TB notifications reported in 2005 were received by September 2006. Updated information on the outcomes of treatment of patients notified in 2004 was received by December 2006. Data received from the jurisdictions were examined for completeness and accuracy. Any invalid or missing entries were returned to the jurisdictions for review and correction.

Table 1. Description of key data fields in the enhanced tuberculosis dataset of the National Notifiable Diseases Surveillance System used in this report*

Data field	Description
TB outcomes	Options are: • cured (bacteriologically confirmed pulmonary cases only); • completed treatment (80% of standard regimen completed); • interrupted treatment for less than 2 months (but still completed); • died of TB during treatment phase; • died of other cause during treatment phase; • defaulter (failed to complete treatment); • treatment failure (completed treatment but failed to be cured); and • transferred out of Australia during treatment phase.
Indigenous status	Whether notified case is Indigenous (Aboriginal and/or Torres Strait Islander) Australian by descent, community acceptance or self-identification
Selected risk factors	Options are: • household member or close contact with a TB patient; • currently or recently residing in a correctional facility within last 5 years; • currently or recently residing in an aged care facility within last 5 years; • currently or previously employed in an institution within last 5 years; • currently or previously employed in the health industry within last 5 years; • HIV status (positive or negative); and • past residence (3 months or more) in a high risk country (as defined by the Department of Immigration and Citizenship).

* Other data collected on each case included country of birth, length of residence in Australia (for overseas-born cases), and site of tuberculosis disease.

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

Case definitions

TB cases were classified as 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, and in the absence of any previous treated or untreated TB diagnosis. 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 amplification testing (NAAT) indicating *M. tuberculosis* complex, except where it is likely to be due to previously treated or inactive disease. The inclusion of NAAT in this definition is to ensure full case ascertainment and does not endorse the use of NAAT for TB diagnosis. Microscopy and culture remain mainstays of TB laboratory diagnosis and provide the capacity for assessing the level of risk for transmission and drug susceptibility testing.

Clinical evidence is a diagnosis made by a clinician experienced in tuberculosis and includes clinical follow-up assessment, with or without supporting radiology.

A relapsed TB case was defined as a case of active TB diagnosed bacteriologically, radiologically or clinically, having been considered inactive or quiescent following previous treatment (as deemed by the state or territory Director of Tuberculosis). Relapses refer to re-treatment cases and some of these may be re-infections rather than a true relapse of prior disease. Relapse cases are sub-divided into relapse after full or partial treatment in Australia or overseas.

Population estimates for 2005

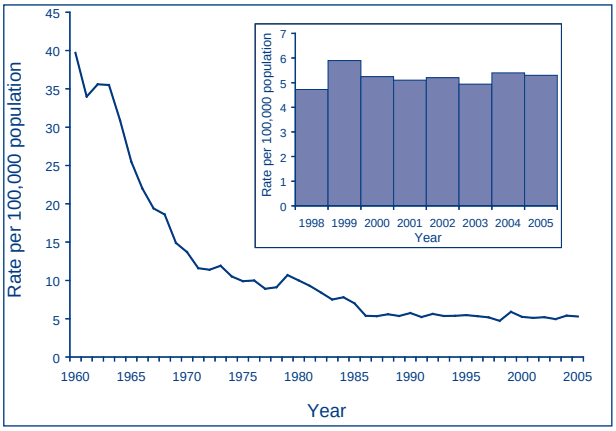
The rates presented in this report were calculated using population data produced by the Australian Bureau of Statistics. The estimated resident population as at 30 June 2005, in each state and territory and in Australia as a whole, was used as the denominator in crude rate calculations. Estimates of the Indigenous Australian population were based on projections from the 2001 census estimate of the Indigenous population in Australia. The 2001 census data were also used to calculate incidence rates of TB in people born overseas.[6]

Results

Tuberculosis notification rates

The total number of cases reported across Australia in 2005 was 1,072 (5.3 cases per 100,000 population). This is similar to that reported in 2004 (1,076 and 5.4 cases per 100,000 population, Figure 1). In 2005, there were 1,022 new cases and 50 relapses. Of the 50 relapsed cases, 15 relapsed after full treatment in Australia, 3 following partial treatment in Australia, 8 following full treatment overseas and 14 following partial treatment overseas. There was no information on the previous treatment given to the remaining 10 relapse cases.

Figure 1. Incidence rates for tuberculosis notifications, Australia, 1960 to 2005

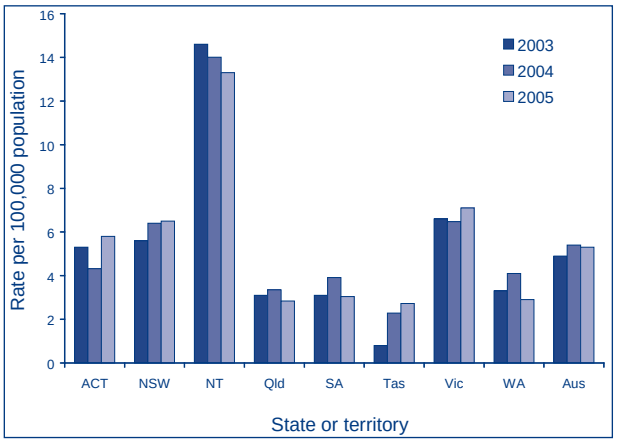


Tuberculosis notifications by state or territory

New South Wales reported the largest number of TB cases (442), however the highest rate was recorded in the Northern Territory (13.3 cases per 100,000 population, Table 2).

Figure 2 presents the TB notifications rates by state or territory for 2003 to 2005. The small increases and decreases over time are often difficult to interpret due to the small number of cases within jurisdictions.

Figure 2. Tuberculosis notification rates, Australia, 2003 to 2005, by state or territory



Tuberculosis in the non-Indigenous Australian-born population

Indigenous status was reported for 148 of 149 (99%) Australian-born patients. The incidence of TB in non-Indigenous Australians for 2005 was 0.8 cases per 100,000 population, which is the lowest rate reported for this population since 1991 (Figure 3 and Table 3).

Tuberculosis in Indigenous Australians

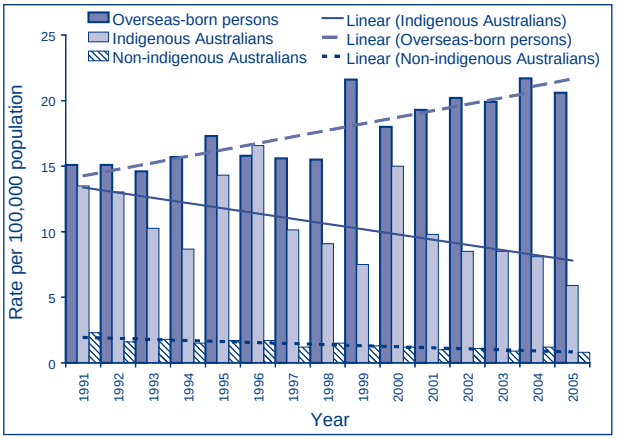
The TB incidence rate in the Indigenous Australian-born population (5.9 cases per 100,000 population) continued the decline in the incidence of TB among Indigenous people from 15 per 100,000 in the year

Table 2. New and relapsed cases and rates per 100,000 population, Australia, 2005, by state or territory

	New cases	New cases rate	Relapse cases	Relapse case rate	Total notifications	Total rate
Australian Capital Territory	19	5.8	0	0.0	19	5.8
New South Wales	420	6.2	22	0.3	442	6.5
Northern Territory	26	12.8	1	0.5	27	13.3
Queensland	104	2.6	6	0.2	110	2.8
South Australia	44	2.9	2	0.1	46	3.0
Tasmania	12	2.5	1	0.2	13	2.7
Victoria	343	6.8	13	0.3	356	7.1
Western Australia	54	2.7	5	0.2	59	2.9
Australia	1,022	5.0	50	0.2	1,072	5.3

2000. The TB incidence in Indigenous Australians in 2005 was 7.4 times the rate in non-Indigenous Australian-born people.

Figure 3. Tuberculosis incidence rates, Australia 1991 to 2005, by indigenous status and country of birth

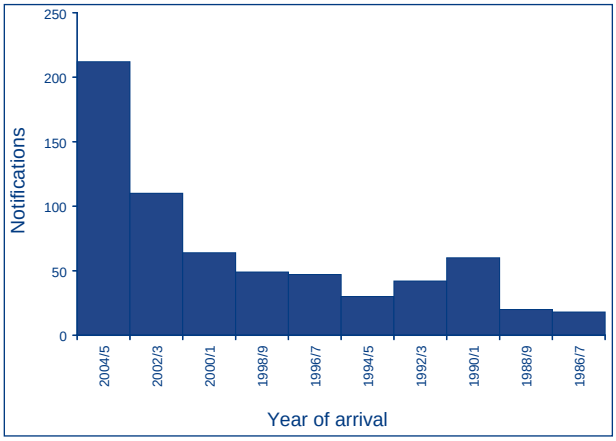


Tuberculosis notifications in the overseas-born population

In 2005, the country of birth was reported for 1,070 of the 1,072 cases. Of these, 923 (86%) cases were overseas-born. The rate of notification, 20.6 cases per 100,000 population, was similar to rates in this population in the previous 2 years (21.7 and 19.1 cases per 100,000 population in 2004 and 2003 respectively, Figure 3). Rates of TB in the overseas-born have shown an increase since 1991. Amongst people born overseas in the Australian population, the largest numbers of TB cases were in those born in India, Vietnam, the Philippines and China as in previous years (Table 4). TB rates were highest among those born in Somalia, Sudan and Ethiopia, although these represent a relatively small number of cases in a small resident population.

Data on the year of arrival was available for 791 of the 923 overseas-born cases in 2005. Two hundred and twelve (26%) of the 2005 cases presented within 2 years of arrival in Australia and 652 (82%) within 20 years of arrival (Figure 4).

Figure 4. Notifications of tuberculosis in the overseas-born population, Australia, 2005, by year of arrival in Australia



Tuberculosis notifications by age and sex

Information on the age of TB cases was available for all cases in 2005 and sex was identified in all but one case (Figure 5). The male to female ratio in TB notifications was 1.5:1 in non-Indigenous Australian-born TB cases, 1.4:1 in Indigenous cases and 0.9:1 in overseas-born cases.

One of the most important measures of TB control is the incidence in children less than 15 years of age because these cases represent recent TB infection. TB was notified in 65 children aged less than 15 years. These were 25 Australian-born non-Indigenous children, 39 children born overseas and one Indigenous child. The overall notification rate for the less than 15 year age group was 1.6 cases per 100,000 popula-

Table 3. Tuberculosis notifications and incidence rates in all Australian-born, Australia, 2005, by state or territory

	Indigenous	Indigenous rate	Non-Indigenous	Non-Indigenous rate	Total Australian-born	Total rate
ACT	0	0.0	3	1.2	3	1.2
NSW	4	3.1	50	1.0	54	1.0
NT	11	18.4	0	0.0	11	6.4
Qld	8	6.1	14	0.4	22	0.7
SA	1	3.8	10	0.8	11	0.9
Tas	1	5.6	5	1.2	6	1.4
Vic	1	3.8	37	1.0	38	1.0
WA	1	1.5	3	0.2	4	0.3
Australia	27	5.9	122	0.8	149	0.9

Table 4. Notification of tuberculosis and estimated rate per 100,000 population for selected countries of birth, Australia, 2005

Country of birth	New	Relapse	Total cases	ERP x COB 2005	Rate per 100,000 population in Australia 2005*	WHO incidence rate per 100,000 2004†
India	137	4	141	138,662	101.7	168
Vietnam	108	9	117	177,728	65.8	176
Philippines	75	4	79	129,401	61.1	293
China‡	58	2	60	191,194	31.4	101
Indonesia	43	1	44	65,914	66.8	245
Sudan	36	2	38	23,787	159.8	411
PNG	26	1	27	26,212	103.0	233
Somalia	24	2	26	5,431	478.7	220
Cambodia	21	0	21	27,490	76.4	510
Bangladesh	19	0	19	12,577	151.1	229
Pakistan	18	1	19	18,083	105.1	181
Hong Kong SAR	18	1	18	76,218	23.6	75
Greece	15	0	15	127,226	11.8	19
Thailand	12	3	15	30,885	48.6	142
Ethiopia	12	1	13	6,925	187.7	353
Other overseas-born	257	11	271	3,771,768	7.1	
Total overseas-born	879	42	923	4,829,501	19.1	
Australia†	141	8	149	20,328,609	0.7	
Total	1,020	50	1,072			

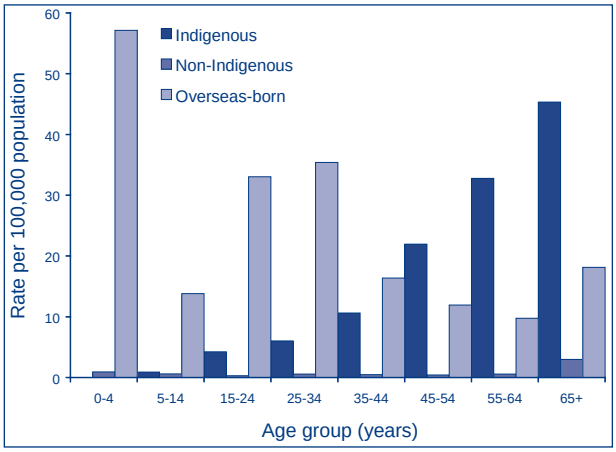
* The denominator for the rate calculation is the estimated resident population (ERP) from the 2001 census.

† Rates from the World Health Organization 2005 Global tuberculosis report.

‡ China excludes Hong Kong SAR and Taiwan.

tion (target of less than 0.1 cases per 100,000 population for all groups). The rate was highest in overseas-born children (18 cases per 100,000 population) and remained low in the non-Indigenous (0.7 cases per 100,000 population) and Indigenous Australian-born children (0.6 cases per 100,000 population, Table 5). Of the 65 children, 41 had bacteriological investigations performed [1/1 Indigenous, 11/25 (44%) non-Indigenous Australian-born and 29/39 (74%) overseas-born children]. Other cases were diagnosed on the basis of positive non-bacteriological laboratory tests (such as histology or NAAT), an abnormal chest X-ray or positive tuberculin skin testing in children with exposure to TB or clinical symptoms. Among the 41 children with bacteriological investigations there were 2 sputum smear positive cases, 8 sputum culture positive cases, 4 cases positive by microscopy of body fluid other than sputum, and 17 cases culture positive in body fluids other than sputum.

Figure 5. Tuberculosis incidence in Australian-born and overseas-born, Australia, 2005, by age and sex



The age group incidence rates for TB in overseas-born, Indigenous Australian-born, and non-Indigenous Australian-born populations are shown in Figure 5 and Table 5. As in previous years, TB incidence in the overseas-born population showed 2 peaks: 1 among infants aged less than 5 years and a second among young adults (15 to 34 years). TB rates among Indigenous and non-Indigenous Australians showed increasing rates throughout adult life with the highest TB rates in those aged 65 years or more.

Table 5. Tuberculosis notifications and estimated incidence rate, Australia, 2005, by age group, indigenous status and country of birth

	Indigenous Australian-born		Non-Indigenous Australian-born		Overseas-born	
Age group	n	Rate	n	Rate	n	Rate
0–4	0	0.0	11	0.9	12	57.1
5–14	1	0.9	14	0.6	27	13.8
Subtotal < 15 years	1	0.6	25	0.7	39	18.0
15–24	4	4.2	7	0.3	148	33.0
25–34	4	6.0	12	0.6	241	35.4
35–44	5	10.6	10	0.5	145	16.4
45–54	6	22.0	8	0.4	106	11.9
55–64	4	32.8	8	0.6	77	9.8
65+	3	45.3	52	3.0	167	18.1

Tuberculosis and selected risk factors

Information on risk factors for TB disease excluding HIV was reported of the 1,072 cases (Table 6). Household contact and residence in a TB high risk endemic country (incidence greater than 12.5 cases per 100,000 population) for more than 3 months were the most common risk factors in all 3 populations. Two non-Indigenous Australian-born and 9 overseas-born TB cases were working or had been employed as a health care worker in the past 5 years.

Tuberculosis and HIV status

Information on HIV status was reported in 393 cases (37%). Nine people were identified with HIV infection at the time of diagnosis with TB; 1 was Indigenous; 2 were non-Indigenous Australians; and 6 were overseas-born. The *National Strategic Plan for TB Control in Australian Beyond 2000*[4] recommends that HIV status of all TB cases be reported. In 2005, the proportion of cases with HIV status reported was similar to that in 2004.

Anatomical site of disease

The anatomical site of TB infection was recorded in 989 cases. Of these, 465 (47%) cases had pulmonary disease only, a further 86 (8.7%) cases had pulmonary disease and disease at an extrapulmonary site. Pulmonary TB was reported in 70% of the Australian-born cases and 52% of the overseas-born cases. Four hundred and thirty-eight (44%) cases had extrapulmonary disease only. The sites of disease in new and relapse cases are shown in Table 7.

Treatment outcomes of 2004 tuberculosis patient cohort

Treatment outcomes for TB cases reported in 2004 were reported by December 2006 for 1,056 of the 1,076 (98%) cases. Treatment success,s including those with bacteriologically confirmed cure and those who completed treatment without bacteriological evidence of cure, were reported for 920 (96.9%) of 949 cases with assessable outcomes (Table 8).

There was no treatment failure recorded. Seventeen (1.8%) cases were reported as defaulting treatment. The proportion of cases cured or who completed treatment was 94% among Indigenous Australians, 95% among non-Indigenous Australian-born, and 97% among overseas-born. In the 2004 patient cohort there were 11 deaths due to TB reported and the case fatality rate was 1.2% of assessable outcomes.

Table 6. Selected risk factors* in tuberculosis notifications, Australia, 2005, by indigenous status

Risk factor	Indigenous	Non-Indigenous	Overseas-born
Household contact	9	23	51
Currently or recently resident in correctional facility	–	–	4
Currently or recently resident in aged care facility	–	2	–
Currently or recently employed in an institution	–	1	3
Currently or previously employed in health industry	–	2	9
Past residence in high risk country	2	12	864

* Excludes HIV status (see below); includes multiple risk factors.

Table 7. New and relapsed tuberculosis cases, Australia, 2005, by site of disease

Site	New	Relapse	Total	Per cent of cases
Total pulmonary disease	528	23	551	55.7
Pulmonary only	446	19	465	47.0
Pulmonary plus other sites	82	4	86	8.7
Extrapulmonary only	423	15	438	44.3
Pleural	50	1	51	5.2
Lymph nodes	151	7	158	16.0
Bone/joint	31	2	33	3.3
Genito/urinary	23		23	2.3
Milliary	10	1	11	1.1
Meningeal	20		20	2.0
Peritoneal	8		8	0.8
Other	54	3	57	5.8

Table 8. Tuberculosis treatment outcomes, Australia, 2004, by population group

Outcomes	Indigenous		Non-Indigenous Australian-born		Overseas-born		Total cases	
Assessable outcomes	**n**	**% assessable**	**n**	**% assessable**	**n**	**% assessable**	**n**	**% assessable**
Treatment success	34	91.9	121	92.4	765	95.5	920	94.9
Cured* (bacteriologically confirmed)	9	24.3	15	11.5	51	6.4	75	7.7
Completed treatment	25	67.6	106	80.9	714	89.1	845	87.2
Interrupted treatment†	0	0.0	0	0.0	1	0.1	1	0.1
Died of TB	0	0.0	3	2.3	8	1.0	11	1.1
Defaulted‡	2	5.4	3	2.3	12	1.5	17	1.8
Failure§	0	0.0	0	0.0	0	0.0	0	0.0
Not followed up, outcome unknown	1	2.7	4	3.1	15	1.9	20	2.1
Total assessable	37	100.0	131	100.0	801	100.0	969	100.0
Non-assessable outcomes	**n**	**% total**	**n**	**% total**	**n**	**% total**	**n**	**% total**
Transferred out of Australia	0	0.0	2	1.3	42	4.7	44	4.1
Died of other causes	2	5.1	19	12.5	38	4.3	59	5.5
Still under treatment	0	0.0	0	0.0	4	0.5	4	0.4
Total	39		152		885		1,076	

* Cured is defined as the bacteriologically confirmed cure of smear or culture positive pulmonary cases.

† Interrupted treatment means treatment interrupted for two months or more but completed.

‡ Defaulted means failed to complete treatment.

§ Failed means treatment completed but failed to be cured.

National Performance Indicators

The performance criteria for the National Performance Indicators were set by NTAC in 2002 and reviewed in 2003 (Table 9). In previous TB annual reports, the performance criteria for people born overseas applied to people who have been living in Australia for more than 5 years. In this report, the criteria has been applied to all cases regardless of length of residence.

In 2005, Australia met the key performance indicators of maintaining the incidence of TB in the non-Indigenous Australian-born below 1 case per 100,000 population. Key performance indicators for treatment outcome measures in the 2004 patient cohort were also met.

Discussion

In 2005, rates of TB in Australia continued to remain low with the largest proportion of cases in people born outside Australia. While overall rates in Australia have remained between 5 and 6 cases

Table 9. National tuberculosis performance indicators, performance criteria and the current status of tuberculosis in Australia, 2004 and 2005

National TB performance indicator	Performance criteria	2004	2005
Annual incidence of TB (per 100,000 population)			
Crude incidence			
Indigenous Australians	<1	8.1	5.9
Non-Indigenous Australian-born	<1	1.2	0.8
Overseas-born persons	*	21.7	20.6
Relapse cases initially treated in Australia	<2% of total treated cases	1.0	TBA
Incidence in children <15 years, by risk group			
Indigenous Australian children	<0.1	0	0.6‡
Non-Indigenous Australian-born children	<0.1	0.4	0.7
Overseas-born children	*	11.4	18.0
Collection of HIV status in TB cases (% of cases with data collected)	100% over next 3 years	34	37
Treatment outcome measures (%)			
Cases evaluated for outcomes†	100	98	TBA
Cases that have treatment completed and are cured	>90	96.9	TBA
Cases recorded as treatment failures	<2	0	TBA

* Performance criteria currently under review.

† Evaluation of outcomes of 2004 patient cohort re-assessed in December 2006.

‡ A single case of TB in Indigenous children <15 y in 2005.

per 100,000 population since 1991, rates in the Australian-born show a decline, while rates in the overseas-born have increased.

Although rates vary year by year, the overall rates of tuberculosis in Indigenous Australians are declining (from 13.5 cases per 100,000 population in 1991 to 5.9 cases per 100,000 population in 2005). In 2005, there was only 1 case of TB in an Indigenous child aged less than 15 years and the highest rates were in adults aged 65 years and above – an age distribution similar to that seen in non-Indigenous Australians. Two five-year audits of tuberculosis cases in Far North Queensland in 1993–1997 and 1998–2002 showed significant declines in the number of new cases and relapse cases of TB in Indigenous Australians.[7]

Notification rates of TB in the non-Indigenous Australian-born have also declined in the same period (from 2.3 cases per 100,000 population to 0.8 cases per 100,000 population). Although rates of TB generally increase with age in this group, the number of cases reported in non-Indigenous children aged less than 15 years increased from 15 in 2004 to 25 in 2005. This may reflect cases of TB in the Australian-born children of overseas-born parents: of these 25 children, 15 were reported to have household contact with a TB case.

As Australia's migrant intake changes to include a larger proportion of entrants from TB-endemic countries, the rate of TB in overseas-born Australians has increased (from 15.1 to 20.6 cases per 100,000 population between 1991 and 2005). In 2005, 864 (94%) of the 923 cases reported in overseas-born Australians had resided for more than 3 months in a country with an incidence above 12.5 cases per 100,000 population, defined by the Australian Government Department of Immigration and Citizenship as a high risk country.

Migrants to Australia from TB-endemic countries are required to undergo health checks, including a chest X-ray depending on the TB incidence in their country of residence, their intended length of stay and their occupation. If active untreated TB is found, migrants are asked to undergo a course of treatment. If TB has been successfully treated or if there is evidence of previous but now inactive TB infection, migrants are asked to sign an undertaking whereby they agree to contact health authorities on arrival for follow-up and monitoring.

The effectiveness of Australia's migrant screening is supported by the lower rate of TB among the overseas-born population relative to the United Kingdom (152 cases per 100,000 population) and the United States of America (40.2 cases per 100,000 population).[8] The United Kingdom has recently proposed to screen visa applicants from high risk countries for tuberculosis before entry.[9] The rate of TB diagnosed in migration applicants exceeds the published rates of some countries[10] and rates in resident populations in Australia of people born in

certain countries may also exceed the World Health Organization (WHO) estimates of TB incidence in those countries. For example, in this report (Table 4) the rate of TB in Somali-born Australian residents is more than double that estimated for Somalia by the WHO.

In 2005, 27 cases of TB in people born in Papua New Guinea (PNG) were reported in Australia. This is nearly a 10-fold increase on the number (3) reported in 2001. Many of these cases are reported from Far North Queensland, where the number of patients from PNG increased from 7 (8%) of the 87 cases notified between 1993 and 1997 to 44 (48%) of the 92 cases reported in the following 5 years (1998–2002).[7] In 2005, 6 patients with multi-drug resistant tuberculosis from the PNG/Torres Strait Islands cross-border region, who accessed health services in Queensland, were reported.[5] The increase in TB patients from PNG, including a substantial number with multi-drug resistance, accessing health services in Queensland is a significant emerging problem for local public health, and potentially for national TB control.

Household contact with another TB case was the most significant risk factor in Indigenous and non-Indigenous Australian-born and the second most common risk factor in overseas-born cases, after residence in a high-risk country. Higher incidence rates for tuberculosis may persist within ethnic communities in low TB prevalence countries due to ongoing local transmission within the community and reactivation of latent TB.

Internationally, the greatest risk factor for TB infection is underlying infection with HIV. In 2005, only 37% of TB patients had an HIV test recorded and of these 9 were HIV positive. The proportion of TB patients who have been tested for HIV has not increased. The National Tuberculosis Advisory Committee aims to increase the proportion of Australian TB patients who are tested for HIV by alerting treating physicians to the importance of testing their TB patients for HIV.

The outcomes of the 2004 patient cohort, shown in this report, demonstrate treatment success (defined as bacteriological cure or completion of therapy) in more than 90% of patients. Outcomes were equivalent in the Australian and overseas-born. There were no treatment failures recorded and less than 2% of patients defaulted. There were 20 patients (1.9%) on whom an outcome could not be ascertained. The case fatality rate of 1.2% compared favourably with 5.3% reported in New Zealand (2000 to 2004) and 5.8% reported in Canada in 2001.

Nine overseas-born cases and 2 non-Indigenous Australian-born cases were, or had been employed in the health care industry. Transmission of tuberculosis from health care workers is an emerging issue of concern in the USA and other countries, as the proportion of health care workers born in TB-endemic regions increases.[11] In 2003, a nurse from the Philippines worked in a hospital nursery in New York with undiagnosed pulmonary tuberculosis for 2 months. Fifteen hundred people had contact with the nurse, but only one-third of these could be traced for follow-up. Among those followed-up, at least 4 infants were infected with TB.[12] Latent TB had been detected in the nurse 11 years earlier but not treated. The National TB Advisory Committee is reviewing the Australian data to document the risk of TB in health care settings and is developing strategies to best protect both workers and patients in this setting.

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