

# TUBERCULOSIS IN NSW: STATUS AND PRIORITIES

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This article provides a profile of tuberculosis occurrence in NSW, based on an analysis of surveillance data for 1995.

TB has re-emerged globally as a major threat to human health. It now causes more deaths worldwide than any other infectious disease, and is responsible for a quarter of preventable adult deaths worldwide<sup>1,2</sup>. Abetted by HIV/AIDS, the brunt of TB disease is borne by the developing world<sup>3</sup>. However, the USA, the UK and several European countries have also encountered increasing rates of active TB<sup>4</sup>. Outbreaks of multi-drug-resistant TB in urban and hospital settings in the USA have posed the additional threat of untreatable disease<sup>5</sup>. While TB rates in NSW (as in most other Australian States) have remained among the world's lowest, there is no room for complacency.

## METHODS

NSW TB notification data for 1995 were obtained from the NSW Health Department's Infectious Diseases Surveillance System (IDSS) database for notifiable infectious diseases. Australian Bureau of Statistics (ABS) 1991 census data were used to calculate disease rates by country of birth and Aboriginality. All other rates were calculated using ABS estimated mid-year populations.

## Definitions

In NSW, the surveillance definition of active TB (for notification purposes) is:

- signs and symptoms compatible with pulmonary TB, and an abnormal, unstable chest x-ray, (i.e. one which suggests disease progression); OR
- signs and symptoms compatible with extrapulmonary TB; OR
- evidence of disease where treatment with two or more anti-TB drugs have been prescribed; OR

TABLE 1

TUBERCULOSIS NOTIFICATIONS BY SITE OF DISEASE, NSW, 1995

Site of disease		No of cases	%
Pulmonary	Respiratory	240	(52)
	Primary	20	(4)
Extrapulmonary	Genito-urinary	22	(5)
	Bone/joint	20	(4)
	Gastrointestinal	9	(2)
	CNS/meningitis	4	(1)
	Miliary	4	(1)
	Other (incl. lymphatic)	119	(26)
Not specified		24	(5)
Total		462	(100)

- isolation of *Mycobacterium tuberculosis* complex organisms from a clinical specimen; OR
- demonstration of acid fast bacilli (AFB) in a clinical specimen from a person with signs and symptoms compatible with pulmonary TB.

A **new case** of active TB is an individual who has not previously received anti-TB chemotherapy for more than one month. A **reactivated case** is one where active TB has recurred more than one year after completion of therapy for proven disease.

**Treatment default** is defined as interruption of treatment for more than two months, after completing the first month of chemotherapy.

## RESULTS

### Disease classification and site

By August 1996, 462 cases of active TB had been reported in NSW with onset in 1995 (7.5/100,000 population). Of these, 334 notifications (72 per cent) were new cases, 34 (7 per cent) were reactivated cases, and for 95 (21 per cent) a case classification was not specified. The principal anatomical site of disease was extrapulmonary for 178 notifications (38 per cent) (Table 1).

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(CHATA) has supported TB-related research in Australia (through the Harry Windsor Scholarship scheme) and TB control activities in Asia – particularly Vietnam. The Public Health Association of Australia convened the National Tuberculosis Conference in November 1994 and is planning a second meeting during 1997.

CHATA's support of TB control activities in Asia is part of Australia's increasing recognition of its regional responsibilities in TB control. Since 1995, the Australian Government, through the Australian Agency for International Development, has supported TB control efforts in Indonesia and throughout the Pacific region under the World Health Organization's Global Tuberculosis Program. Australian-trained public health professionals are guiding TB control activities in Indonesia, China and

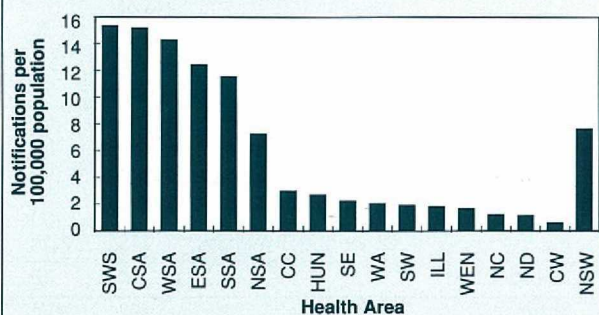
Mongolia. Australians have been prominent in working with refugees in Hong Kong and Vietnam; guidelines for control of TB among refugees and displaced persons are being devised through the Macfarlane Burnet Centre for International Health; and economic analyses of TB control activities in China are being undertaken through the National Centre for Epidemiology and Population Health at the Australian National University in Canberra. Australian laboratories are participating in a global network for the monitoring of *Mycobacterium tuberculosis* drug resistance.

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**FIGURE 1**

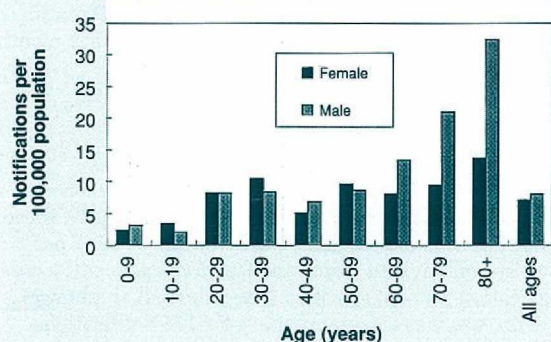
**TUBERCULOSIS NOTIFICATION RATES  
BY REGION, NSW, 1995**



CSA = Central Sydney Area; ESA = Eastern Sydney Area; SWS = South Western Sydney; SSA = Southern Sydney; WSA = Western Sydney Area; NSA = Northern Sydney Area; ILL = Illawarra; ND = Northern Districts; HUN = Hunter; SW = South Western; North Coast; WEN = Wentworth; CC = Central Coast; WA = Western Area; SE = South Eastern; CW = Central West; NSW = New South Wales.

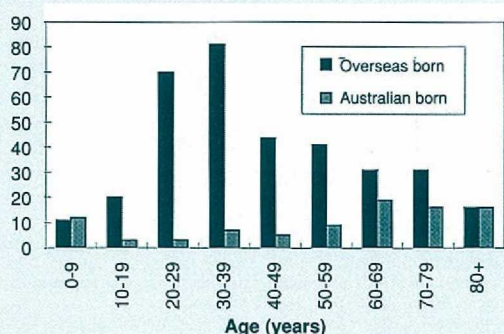
**FIGURE 2**

**TUBERCULOSIS NOTIFICATION RATES  
BY AGE AND SEX, NSW, 1995**



**FIGURE 3**

**TUBERCULOSIS NOTIFICATIONS BY AGE  
AND PLACE OF BIRTH, NSW, 1995**



## Tuberculosis in NSW

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### Infectivity and drug resistance

A sputum or bronchoscopic microscopy result was reported for 178 of the 260 pulmonary cases (68 per cent), and of these 97 (54 per cent) were positive for AFB on direct smear. Sputum from 85 pulmonary cases was direct smear positive on at least one occasion. A culture result was reported for 324 of all TB notifications (70 per cent), and 243 of these (75 per cent) were culture positive – 241 for *M. tuberculosis*, and two for *M. bovis*.

Fourteen isolates (6 per cent of culture positive notifications) were reported as isoniazid-resistant. Three isolates were resistant to pyrazinamide, including two *M. bovis* isolates which are intrinsically resistant to pyrazinamide. Only one isolate was resistant to both isoniazid and rifampicin.

### Demographic characteristics of people notified with TB

TB notification rates were much higher in the Sydney metropolitan area than in rural NSW (Figure 1). Notification rates were highest among the elderly, but a smaller peak occurred in the 20-40 year age range (Figure 2). The peak in young adults largely represented overseas-born cases (median age 38 years), while most Australian-born cases notified were in older age groups (median 65 years) (Figure 3). The sex distribution for TB notifications was approximately equal (male:female = 1.1:1.0).

Country of birth was reported for 435 TB notifications in NSW (94 per cent), and of these 345 (79 per cent) were of people born overseas. The notification rate for the overseas-born population in NSW was thus 26.3/100,000, compared to 2.1 notifications per 100,000 Australian-born people, and 4.3/100,000 Aboriginal and Torres Strait Island people. Language spoken at home was recorded for 420 people and 53 per cent of these were from a non-English speaking background. Time since arrival in Australia was reported for 285 overseas-born cases (83 per cent), and of these more than 80 per cent were notified more than 2½ years after immigration (median six years; range one month to 46 years).

### HIV-TB

HIV status was reported for 25 TB notifications (5 per cent of the total). Six were HIV seropositive, and two of these were Australian-born. All the *M. tuberculosis* isolates cultured from people with HIV-TB co-infection were fully drug-susceptible.

### DISCUSSION

During the past 10 years, the annual number of TB notifications in NSW has increased steadily by more than half to 462 cases, from 290 cases in 1986<sup>6</sup>. The factors underlying this increase are complex. They reflect changes in population structure, including age structure, and infection acquired in high-prevalence countries. This has resulted in increased demands on available TB services, particularly in metropolitan Sydney where most TB notifications occur.

In NSW, TB is predominantly an imported disease, and consequently TB services must serve a wide spectrum of non-English speaking backgrounds and cultural beliefs. This places demands on available services, because



culturally appropriate explanation and language services are essential if optimal compliance with TB treatment and screening is to be achieved.

So far, TB notification rates for Australian-born residents in NSW have remained very low, suggesting either that transmission is not occurring between immigrant and Australian-born populations, or that transmission has not yet expressed itself as active disease. A recent cross-sectional Mantoux survey of children at school entry in Central, Southern and South Western Sydney found that 2.8 per cent of Australian-born children were Mantoux positive (diameter of induration  $\geq 10$  mm) compared with 17.8 per cent of overseas born children. Mantoux positivity was much lower among Australian-born children whose parents were born overseas (3.0 per cent) than for overseas-born children<sup>7</sup>. Of Australian-born children whose parents were also born in Australia, 2.1 per cent were Mantoux positive.

A previous survey in the same region found that 2 per cent of year 8 Australian-born school children were Mantoux positive, similar to that found in the school entry study<sup>8</sup>. Thus children are at greater risk of TB infection if they were born overseas than if they were born to immigrant families in Australia. It also appears that relatively little TB transmission is occurring between overseas-born and Australian-born school children, perhaps because children with active TB are not usually contagious. Less is known about the extent of TB transmission between immigrant and Australian-born adult populations in NSW.

Drug resistance has not yet emerged as a major problem in NSW. One of the important measures designed to prevent drug resistance is directly observed therapy (DOT). To maintain drug susceptibility, resources must be made available for DOT, and DOT programs must be implemented effectively.

Although case finding and DOT are the first priorities for TB control, screening high-risk groups is also important in populations with low TB endemicity such as the NSW population<sup>9</sup>. The most important screening programs are contact tracing and immigrant screening, but enhanced surveillance is needed for other groups at high risk for TB. Information on these groups is sub-optimal. They include people living with HIV-AIDS, injecting drug users, the homeless, prison inmates, others living in institutions on a long-term basis, hospitalised patients and health care workers. Prompt notification and contact tracing in these settings is critical, because these groups are particularly prone to clusters of TB disease.

Preventive therapy (chemoprophylaxis) can greatly reduce the incidence of active disease in TB-infected people, and consequently it is an important component of TB screening<sup>10</sup>. With immigrant screening, a minority of those screened develop active disease during the 2½-year observation period following arrival in Australia. Therefore this observation period is unlikely to contribute greatly to TB case finding and prevention, unless preventive therapy is also promoted as an integral part of immigrant screening.

Further analysis of surveillance data is required to determine the relative contributions of the factors underlying the observed increase in TB notifications over the past decade. There are more cases of TB in NSW than in any other Australian State, so our approach to TB surveillance and control will be pivotal to the Australian response<sup>11</sup>.

## ACKNOWLEDGMENTS

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