

Chapter 7: Tuberculosis Control in People from Countries with a High Incidence of Tuberculosis

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Summary

- The purpose of TB screening is to detect and treat imported TB disease early, minimise the severity of disease and reduce the risk of TB to others.

Epidemiology

- Sixty-nine percent of TB cases in New Zealand are foreign-born.
- Foreign-born people in New Zealand have a TB rate 10 times that of the New Zealand-born population.
- Almost all cases of TB in foreign-born people occur in the first five years after arrival (60% in the first year, 34% between one and five years).
- People from the following countries have rates of TB in New Zealand of over 1/1000: Somalia, Vietnam, India, Cambodia, Indonesia, Tokelau, Philippines and Thailand.
- The number of foreign-born students entering New Zealand is rising rapidly (up 73% to 73,325 visas and permits issued in 2001). Most of these are not screened before arrival and come from countries that have high rates of TB.

Current TB screening requirements

- All low TB prevalence countries have slightly different TB screening criteria and practices.
- The New Zealand Immigration Service (NZIS) requires all people aged 12 years and over (except those on Australian or New Zealand passports, which includes people of Cook Islands, Tokelauan and Niuean nationality) planning to enter and stay in New Zealand for more than 24 months to have a medical examination and a CXR before arrival. Other exceptions are quota refugees (who currently have an examination on arrival), and asylum seekers (at the time of residence application).
- Pregnant women are not required to have a CXR.

Advice to health professionals

- NZIS does not require TB screening in some foreign-born people. These are: people from the Cook Islands, Tokelau and Niue; overseas adoptions; pregnant women; children under the age of 12 years; and anyone travelling on a New Zealand or Australian passport. Some of these people may have a higher risk of TB than the New Zealand-born population.
- Health professionals need to be aware of the risk of TB in people from, or who have lived in, countries with a high incidence of TB, particularly in the first five years after arrival. History should include any recent overseas travel.
- HIV infection should be considered in all people diagnosed with TB, particularly if they are foreign-born.
- Drug resistance should be considered, and treatment altered accordingly.
- Interpreters should be employed when discussing the diagnosis and treatment of TB with people who have a poor understanding of English.

- Foreign-born people entering New Zealand need to know the following.
 - A normal CXR on NZIS screening does not mean they will not develop TB in future.
 - TB is a treatable disease.
 - They should seek medical advice if they suspect they have TB.
 - The treatment of TB in New Zealand is free (Tuberculosis Act 1948).
 - The greatest risk of TB is in the first five years after arrival in New Zealand.

Proposed changes

- All people intending to stay in New Zealand for six months or more should be required to undergo a CXR for TB.
- Reduce the minimum age at which CXR screening is required to 11 years.
- Investigate the introduction of a health undertaking in New Zealand (similar to the Australian health undertaking).
- Screen all quota refugees for TB offshore, where practicable, during 2002–03.
- Improve communication channels between New Zealand and Pacific nations with respect to mobile TB cases.
- Improve education and awareness of TB among new immigrants.
- Exempt people from low-incidence countries (by passport) from TB screening unless they have risk factors for TB.

Introduction

This chapter:

- reviews the epidemiology of TB in foreign-born people in New Zealand, comparing TB rates in the migrant country of origin with crude rates for foreign-born people in New Zealand, by country of birth
- examines current New Zealand border control practices with respect to TB, comparing these with other countries with low rates of TB, and reviews the role of New Zealand within the Pacific community
- outlines recommendations for the New Zealand Immigration Service (NZIS), the Ministry of Health, and primary and secondary health care providers working in this area.

7.1 Epidemiology

7.1.1 Within New Zealand

There were 230 foreign-born cases of TB in 2001, representing 68.7% of all cases for whom birthplace data were available. This is the highest percentage of foreign-born cases reported in New Zealand (see also Chapter 1: 'Epidemiology and Surveillance'). Over the previous six years (1995–2000) the percentage of foreign-born cases fluctuated between 57.0% (1999) and 65.6% (1997). Over the period 1995–99¹ the geographical regions contributing the highest proportions of cases were:

- Asia (excluding South East Asia): 370 cases (36.8% of overseas-born cases)
- Pacific: 222 cases (22.1%)
- South East Asia: 145 cases (14.4%)
- Africa: 141 cases (14.0%).

While the type of visa or entry requirements for most of these cases (1995–99) is not known, we do know that 49 cases were in the National Refugee Health Screening Centre (NRHSC), Mangere, (and therefore quota refugees) or the Auckland Refugee Council hostel (and therefore asylum seekers) at the time of diagnosis. An Auckland study of 100 TB cases suggests that most foreign-born cases are New Zealand residents. The study found that of the 79 foreign-born cases, 59 were New Zealand residents, seven were seeking residence, seven were visitors, three were refugees, and three fell into other immigration categories.²

Using 2001 New Zealand Census data and ESR 2001 TB notification data:

- the crude rate of TB in people born overseas was 32.64 cases per 100,000 (228/698,628), compared with a rate of 3.63 per 100,000 (105/2,890,869) in New Zealand-born people
- a total of 60.0% (114/191) of overseas-born cases notified during 2001 for which arrival dates were recorded developed TB within the first year of arriving in New Zealand
- a further 34% developed TB between one and five years of arriving in New Zealand.

Using 1996 Census and five-year ESR data (1995–99),¹ Pacific people born in New Zealand had an annual rate of 13.60 TB cases per 100,000 population (81/119208 x 1/5) compared with an annual rate of 46.65 per 100 000 (203/87035 x 1/5) in Pacific people born overseas but now living in New Zealand. This is higher than the rate of notified cases in Pacific nations.³

The epidemiology of TB cases in New Zealand appears to reflect that found in other developed countries in the following ways.

- The majority (over 50%) of TB cases are born overseas. This finding is also reported in Canada,^{4 5 6} Europe,⁷ Denmark^{13 14} and Australia.⁸
- The highest rates of TB in foreign-born people occur in the first five years after arrival in the country.^{9 4 25 10}

- Immigrants from countries with a relatively high prevalence of TB remain at risk for the disease for many years after they immigrate to low-prevalence countries. This risk decreases over time.^{25 11} (DNA testing of immigrants with TB in Israel¹² and Denmark¹³ suggests that most immigrants who developed TB were likely to have been infected before their arrival, irrespective of the length of time they had been in Israel or Denmark. It is not known whether this is the case in New Zealand.)
- The annual incidence of TB in foreign-born populations generally reflects the reported incidence of TB in their regions of birth.^{5 14} However, this does not apply to people from countries with limited access to diagnostic tests or incomplete notification records (see Table 7.1).

Table 7.1 summarises data on people from countries that have had 10 or more notified cases of TB in New Zealand over the 1995–99 period. The annual TB case rate has been calculated based on the New Zealand resident population from that country. This figure will be an overestimate of the true rate of TB in that population if there are high numbers of short-term visitors from that country in New Zealand. This is particularly so if the resident population is small.

Nevertheless, the table provides some evidence to suggest that notified rates of TB are higher in New Zealand than in the country of birth for many foreign-born populations in New Zealand. There are a number of possible explanations for this.

1. The most likely explanation is that New Zealand has better diagnostic and notification records than many of the countries listed in the table.
2. Some people may be coming to New Zealand seeking TB treatment, or there may be age or other characteristics that could bias the crude rate. There is some evidence to suggest self-selection by individuals in need of TB treatment – as it is often not available in developing countries. Individuals who would otherwise die of untreated TB or incur considerable health care costs in their own country may take substantial personal and financial risks to seek life-saving therapy in an industrialised country. This may include concealing illness at time of entry, or during interviews later.¹⁵
3. Screening for permanent residence in those applying within New Zealand (as required by NZIS) may identify new cases.
4. The higher rate in some foreign-born people living in New Zealand may reflect a real difference in risk between the two populations. Possible explanations for this could be stress or socioeconomic conditions, particularly overcrowding in New Zealand, which may lead to increased exposure to TB, or reactivation of latent TB.

Table 7.1: Number of TB cases in foreign-born people, by country of birth, compared with TB rates in birth country

<i>Country of birth</i>	<i>Number of TB cases in NZ (1995–99)</i>	<i>NZ TB rate by birth country (per 100,000 people)^a</i>	<i>Birth country TB rate (per 100,000 people)^b</i>	<i>Rate ratio (NZ rate by birth country/rate in birth country)</i>
Somalia	86	1977.0	31	63.8
Vietnam	40	230.9	112.2 ³	2.1
India	147	229.5	130	1.8

Cambodia	29	157.8	142	1.1
Indonesia	19	140.0	16	8.8
Tokelau	10	132.8	0 ³	
Philippines	46	131.4	198.1 ³	0.7
Thailand	22	131.4	77	1.7
China	74	75.8	36.3 ³	2.1
Tonga	53	75.5	22 ³	3.5
Sri Lanka	14	69.6	32	2.2
Cook Islands	42	61.0	15 ³	4.1
Korea	36	59.1	51.5 ³	1.2
Samoa	73	34.6	18 ³	1.9
Hong Kong	19	32.3	106.4 ³	0.3
Malaysia	14	23.5	68.1 ³	0.4
Taiwan	12	22.0	Not available	
Fiji	18	19.2	23 ³	0.8
New Zealand	861	6.0	10.3 ¹	0.6
United Kingdom	43	3.7	11.2 ²²	0.3
Other	60			

a) Annualised rate calculated by dividing number of cases (1995–99) by 5, then by the total number of people who identified themselves as being born in that country at the 1996 NZ Census, expressed as number of cases per 100,000 people.

b) National TB rates data from 1995. Accessed online at: http://www.overpopulation.com/faq/Health/infectious_diseases/tuberculosis/asia.html and http://www.overpopulation.com/faq/health/infectious_diseases/tuberculosis/africa.html with information sourced from World Resources Institute, *World Resources 1998-99*. 1999: 260–1.

7.1.2 TB rates in the Western Pacific region

The Western Pacific region encompasses Pacific Island nations together with Pacific Rim countries in Asia. In New Zealand, approximately 60% of all foreign-born cases are born in Western Pacific nations and territories.

The Western Pacific region, one of the six regions of the World Health Organization, is home to approximately 1.6 billion people, nearly one-third of the world's population. It stretches over a vast area, from China in the north and west, to New Zealand in the south, and French Polynesia in the east. One of the most diverse of the WHO regions, the Western Pacific constitutes some of the world's least developed countries as well as the most rapidly emerging economies. In 2000 there were about 2 million estimated cases of all types of TB in the region, of which only 41% were detected and notified. Figure 7.1 illustrates the countries of the Western Pacific region.

Figure 7.1: WHO Western Pacific region nations and territories



Source: www.wpro.who.int

New Zealand has an interest in the control of TB in Pacific nations for the following reasons.

- In 1996 there were more than 200,000¹⁶ Pacific people in New Zealand. Over the next 50 years this population is expected to grow at a faster pace than the total New Zealand population due to a higher birth rate. Pacific peoples' share of the total population is expected to double from 6% at the 1996 Census to about 12% in 2051.
- New Zealand is in relatively close proximity to its Pacific neighbours.
- There are higher rates of TB cases in some Pacific nations (particularly Niue, Fiji, Tonga, Samoa and Cook Islands) than in New Zealand.
- There were 222¹ cases of TB reported in New Zealand between 1995 and 1999 in people born in Pacific nations (22.1% of the 1005 cases born overseas).
- Pacific people are very mobile, with frequent air travel between Pacific nations and New Zealand.

The overall rate of notified cases in the Western Pacific Region in 1999 was 49.2 per 100,000 population.¹⁷ The New Zealand rate was 9.4 per 100,000. New Zealand receives a number of visitors, and permanent and long-term arrivals from countries within the Western Pacific Region that have high rates of TB. These include Hong Kong, Philippines, Vietnam, Malaysia, Korea, China and Japan. The notification rates of these countries should be interpreted with caution, as there are differing reporting systems and TB control policy between countries, changing definitions of a notifiable case, and possible under- or over-reporting. For example, while the notified rate of TB in China is 36.3 per 100,000, the estimated rate is 103 per 100,000.¹⁸

7.1.3 Antibiotic-resistant TB

Antibiotic-resistant TB can be divided into the following categories.

- *Resistant to one or more antibiotics* – 31 of the 40 cases of antibiotic-resistant TB in 2001 were foreign-born. The birth countries contributing the greatest number of cases with drug resistance were China (five cases), Philippines (four) and India (three). At a regional level, 17 of the 31 cases were from the Western Pacific Region (see also Chapter 1: ‘Epidemiology and Surveillance’).
- *Resistant to two or more antibiotics* – in 2001 there were seven cases resistant to two or more antibiotics, down from a high of 14 in 1998. All of these cases were foreign-born.
- *Multi-drug-resistant TB* – there were no cases of multi-drug-resistant TB (MDR-TB) in 2001 (defined as resistant to at least isoniazid and rifampicin). New Zealand currently has a low rate of MDR-TB (0.0–1.1% of all new TB cases per year during 1995–2001). The number of cases of MDR-TB has remained between 0 and four per year since 1995.

The main reason for antibiotic-resistant TB in foreign-born people entering New Zealand is likely to be inadequate treatment regimens. This may be because treatment was not given for long enough (eg, three months instead of six months), compliance with treatment regimens has not been documented, or two drugs were used instead of the recommended three or four.

The introduction and expansion of DOTS (directly observed therapy short-course) coverage, particularly in the WHO Western Pacific Region, may help to prevent an increase in antibiotic-resistant TB. As almost all of those with antibiotic-resistant TB in New Zealand are foreign-born, New Zealand’s best way to prevent antibiotic resistance here is to ensure complete and efficient identification, appropriate treatment and contact tracing of TB, especially in people not born in New Zealand.

7.1.4 HIV / AIDS and TB co-infection

In 2001 there were six cases of AIDS/HIV with TB co-infection. All of these cases were in foreign-born people from Asia and Africa. The percentage of new TB cases that also had HIV/AIDs was 1.6% (2001 data) compared with a rate of 1.2% for the 1995–99 period.

While HIV/TB co-infection is low in New Zealand (1.6%) and in much of the Western Pacific region,³⁸ the prevalence rate of HIV in new TB cases in some countries in the region is expected to rise in the next few years, particularly in Cambodia (7.9%), Malaysia (4.9%) and Fiji (3%). In some countries in sub-Saharan Africa more than 70% of patients with active TB are also HIV-seropositive. New Zealand could experience an increase in HIV/TB co-infection in future if the number of people migrating from countries with a high rate of HIV or HIV/TB co-infection increases.

It is not known how many TB cases in New Zealand are tested for HIV, or how many HIV patients are Mantoux tested. The WHO has called for improved collaboration between TB and HIV programmes with the 'Promote HIV voluntary counselling and testing initiative' (ProTEST). ProTEST aims to promote voluntary testing for HIV as a key to a more coherent response to TB in areas with a high prevalence of HIV. At present, new immigrants to New Zealand who are detained at the NRHSC, Mangere, are offered HIV testing. This service needs to be extended to all people who are diagnosed with active TB (see 'Testing for HIV and other co-morbidities', in Chapter 14: 'Clinical Investigation and Assessment of Tuberculosis'). Screening must be accompanied by culturally appropriate counselling and support, but should remain voluntary. The issue of whether HIV screening should be part of the NZIS medical examination is beyond the scope of this chapter.

Currently there is no official regular matching of the TB notification database (held by ESR) and the HIV/AIDS database (held by the Department of Social and Preventive Medicine, University of Otago). See Chapter 18: 'Tuberculosis and HIV' for further discussion of surveillance of co-infection.

7.1.5 Immigration

New Zealand receives a large – and currently increasing – number of permanent and long-term arrivals, visitors, students and people on work visas each year. Permanent and long-term arrivals are those planning to stay in New Zealand for at least 12 months. For the year to October 2001 there were 76,700¹⁹ permanent and long-term arrivals to New Zealand. The largest proportion of these were born in Asia (36.0%). People from Pacific nations made up 6.6% of the total.

7.1.6 Temporary workers

NZIS issued 49,300 temporary work permits and visas in 2000, an increase of 3800 from 1999. Some of these were issued to refugee status claimants (asylum seekers) and some to people intending to apply for residence (eg, spouses of New Zealanders), but much of the increase resulted from New Zealand employers recruiting skilled people from offshore.

7.1.7 Foreign-born students

The number of foreign-born students in New Zealand is rising rapidly. In 2001 NZIS issued 73,325 student permits and visas, up 73% on the 42,387 issued in 2000. Chinese nationals accounted for 40% of these, with 28,739. A large number of student visas were also granted to nationals from South Korea (17%), Japan (8%), Thailand and Taiwan (4% each), and Hong Kong, Fiji and Malaysia (3% each). All of these countries have TB rates much higher than in New Zealand. Only those planning to stay for more than two years are screened prior to arrival.

In 2000 there were 22 new cases of TB notified in foreign-born students. Five of these had been in the country for less than one year and only two had been in the country over five years. The crude rate of new TB cases in foreign-born students within a year of arrival in New Zealand for the year 2000 was between 11.8 (5/42,400) and 16.9 (5/29,600) cases per 100,000 foreign-born students. A range is given, as it is not known in which year (2000 or 1999) the students obtained their permits or visas. Also, this is only an estimate, as the denominator does not include foreign students entering on a visitor's visa.

7.2 Review of current screening practice

7.2.1 Purpose of TB screening

TB screening in people from countries with a high incidence of TB has personal health, public health and economic implications. At a personal health level, screening detects imported TB disease in those arriving from high TB incidence countries so that early, effective medical intervention can be offered.²⁰

From a public health perspective, screening reduces the risk of TB, particularly multi-drug-resistant TB, for people already residing in New Zealand. Ideally, those with TB would be identified and treated before arriving in New Zealand. From an economic perspective, screening reduces the burden of TB on New Zealand health services and reduces treatment costs by minimising the severity of disease, and the risk of infection in close contacts.

7.2.2 NZIS requirements

Medical and X-ray information

A new medical and X-ray certificate form was released by NZIS in February 2002 (see Table 7.2).

Table 7.2: Relevant questions on NZIS medical and X-ray certificate forms (February 2002)

<i>Section of form</i>	<i>Question asked</i>
History	Are you suffering from, or have you ever suffered from, any of the following: (a) TB (or have you had contact with a person who has had tuberculosis)? [no/yes] <i>Comment:** An interpreter should be used if the applicant cannot speak English sufficiently well. Also general medical history should be undertaken.</i>
Examination of respiratory system	Any signs of abnormalities, including nose, lungs and chest disorders (if CXR is abnormal or shows signs of past TB, attach a respiratory physician's (pulmonologist's) report as to whether there is any active or chronic lung disease) [no/yes]. <i>Comment: Lymph node groups should be examined.</i>
Summary	Is the applicant suffering from any infectious or communicable disease: [no/yes]
Chest X-ray (in those aged 12 years and over excluding pregnant women)	Is there any evidence of pulmonary tuberculosis (past or present)? [no/yes] (CXR must be signed by radiologist, not just the report form.) <i>Comment: Always ask if previous films can be obtained for comparison if none are offered. If the person is asymptomatic, films taken 3-4 weeks earlier are satisfactory. Otherwise a repeat X-ray is needed. If chest or systemic symptoms of TB are present, the chest radiograph should not be more than about a week old.</i>

* For indications for detailed mycobacteriological testing, refer to Chapter 12.

** Comments provided by Dr A Harrison, Respiratory Physician, Auckland DHB.

* See Table 14.1, Chapter 14: 'Clinical Investigation and Assessment of Tuberculosis'.

The Medical and X-ray Certificate Form must be completed by an approved NZIS panel doctor. Completed forms must not be more than three months old at the time the application is lodged, or the application will not be accepted for consideration, and the applicant would be required to undergo another examination and X-ray.

There is no requirement for applicants to have tuberculin skin tests because of:

- a lack of standardisation of tuberculin skin tests done in different countries
- a lack of ensuring quality control of testing materials and procedures in different countries
- difficulty in interpreting the results in people from countries where BCG vaccine is used.

If an abnormality is detected on medical examination or X-ray, the results are forwarded to a doctor in New Zealand contracted by NZIS.

New Zealand entry requirements

Table 7.3 outlines the medical requirements for the various visas and permits for people entering New Zealand. In addition, NZIS reserves the right to ask any person applying for a visa to enter New Zealand to undertake a medical examination and CXR prior to visa issue, even if their stay is less than 24 months.

Table 7.3: Forms of New Zealand entry visa/permits and medical requirements, at March 2002

<i>Form of entry</i>	<i>Description</i>	<i>Permitted length of stay</i>	<i>Medical exam and X-ray^a</i>
Visitor's visa	Required for visits to New Zealand unless from a visa waiver country (<i>see below</i>)	Nine months in an 18-month period (may be extended for three extra months)	Required if intending to stay in New Zealand over 24 months ^b
Work permits and work visas	Required for those offered employment in New Zealand	Up to three years	Required if planning to stay in New Zealand over 24 months
Student visa	Required for study in New Zealand of over three months' duration	Three months or longer	Required if intended study course is 24 months or longer ^b
Residence	Required if wanting to live in New Zealand indefinitely	Indefinite	Required ^b
Limited purpose visa/permit	Required if entering New Zealand for a specific purpose	No maximum applied – depends on the purpose of visit but is usually brief	Not required ^b
Asylum seekers			Required on application for residence
Quota refugees (residence)			Required on arrival
Samoan quota (residence)			Required prior to arrival ^b

a Must be completed before arriving in New Zealand if stay is intended to be at least 24 months, and must be completed in New Zealand if stay is extended to longer than 24 months.

- b Applicants must fulfil the following requirements:
- not likely to be a danger to public health
 - not likely to be a burden on the health service
 - fit for the purposes of entry.

New Zealand uses panel doctors in 108 countries. People who are applying for a New Zealand visa from these countries, and fit the criteria for a medical examination and X-ray, are required to have these carried out by one of the panel doctors.

New Zealand does not currently select any of its own panel doctors. NZIS uses the same panel doctors as the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA), Australia, and therefore relies on DIMIA's selection and review process for panel doctors. One of DIMIA's selection criteria is that all panel doctors be able to communicate in English. DIMIA employs two regional medical directors, one in Bangkok and one in London. The current quality control measures are annual visits to all panel doctors in major centres, and visits to panel doctors in smaller centres once every three years. NZIS does not currently pay for these audit or liaison visits or have any influence on how they are carried out.

Countries from which people are exempt visas

Visa waiver agreements apply to the nationals of a specified list of countries (51 as at the beginning of 2002) who are visiting New Zealand for three months or less.²¹ Western Pacific countries on this list that have TB rates much higher than New Zealand include Malaysia, Kiribati, Hong Kong, Japan and Korea.

7.2.3 Other low-prevalence countries' medical requirements

Australia

People seeking permanent residence in Australia or temporary residence for a period of more than 12 months (and in some instances for stays shorter than 12 months) must have medical and CXR examinations. From 25 March 2002 the minimum recommended age for X-ray screening for TB in Australia was reduced from 16 to 11 years. This was to bring Australia into line with Canada and the US, which will also be making the change in the next few months.

Changes on the CXR film are considered the principal indicator of past or current TB. A Mantoux test is not part of the routine examination for assessment of migrants, but may be requested. All migrants who are identified as having a history of TB and/or have an abnormal CXR film must sign an undertaking before leaving their country of origin that they will continue under surveillance in Australia (see also section 7.2.7, 'Review of Australian health undertaking'). Those with a health undertaking need to report within a designated period – either one week or one month – of their arrival in Australia. A health undertaking is valid for only six months from the date of issue. If a migrant has not travelled to Australia in that time, he or she must have a further CXR examination and the case has to be cleared again by a medical officer.²²

Further information is available at: <http://www.immi.gov.au/faq/general/general03.htm>

Canada

A medical examination and X-ray are required for anyone planning to stay in Canada for over six months who is from a designated country/territory, irrespective of the reason for entry or visa type. No medical examination is required for those spending less than six months in Canada unless they are planning to work in a specified list of occupations or work sites, such as hospitals or schools.

Further information is available at: <http://www.cic.gc.ca/english/visit/medexams-e.html>

United States

A medical examination is required for all refugees going to the US and all applicants outside the US applying for an immigrant visa and aged 11 years and over. Aliens in the US who apply for adjustment of their immigration status to that of permanent resident also require a medical examination. Aliens applying for non-immigrant visas (temporary admission) may be required to undergo a medical examination at the discretion of the consular officer overseas or immigration officer at the US port of entry, if there is reason to suspect that an inadmissible health-related condition exists.²³

United Kingdom

The UK does not routinely screen everyone, although:

- some screening is done prior to entry ‘at certain centres in a few countries’²⁴
- nearly 100% of political asylum seekers are screened with a CXR at the port of arrival
- there is random CXR screening of (other) new immigrants
- new immigrants not screened on arrival are notified ‘to the Consultant in Communicable Disease Control for the eventual area of residence, who initiates investigation and follow-up at local chest clinics’.

Table 7.4: TB screening requirements for migrants to selected countries

Country	Requirements		
	Persons subject to screening	Age for CXR	Exemptions
New Zealand*	Persons wishing to stay longer than 24 months	12 years and over	Australia
Australia	Persons wishing to stay longer than 12 months	11 years and over	New Zealand
Canada	Persons wishing to stay longer than six months	11 years and over	
US	Permanent immigration only	11 years and over	Temporary visitors, workers and students
UK	Screening on arrival for asylum seekers and those from TB-endemic countries	13 years and over	

* Persons entitled to travel on New Zealand passports (and therefore enter New Zealand by right, without being subject to any immigration controls or health checks) include citizens of the Cook Islands, Tokelau and Niue, and overseas-born children to New Zealand parents (including children adopted overseas).

General

Table 7.4 outlines the current screening practices of selected English-speaking countries. In all countries pregnant women are exempt from a CXR. In Australia they are recalled postnatally for a CXR. If New Zealand were to adopt a health-undertaking scheme similar to Australia's then it would be possible to recall women who were pregnant at the time of entry. Australia recently reduced the age at which applicants are required to undergo a CXR from 16 to 11 years and over, to bring it into line with other countries. While New Zealand's current policy is 12 years and over, it would seem appropriate to lower the age of screening to those aged 11 years and over for consistency.

Some European and Scandinavian countries have different screening practices. Finland and Denmark have no mandatory screening, but may ask asylum seekers and refugees to be screened if symptomatic for TB. Norway only requires asylum seekers and refugees to be screened.* The different screening policies and practices may reflect the perceived risk of TB in migrants to these countries, and the common source countries of migrants. Numerous articles have looked at the optimal screening practice of immigrants but no consensus has been reached. What is known is that foreign-born people living in developed countries have a higher rate of TB than native-born members of the population.²⁵ An Australian study²⁵ estimated that a 35-year-old refugee with a >15 mm tuberculin skin test reaction had a cumulative risk of TB to age 75 of 6.7%.

Weis et al³⁶ do not recommend the use of CXRs to screen for TB in non-immigrant visitors, citing Canada's findings of a low yield among new arrivals. They also report that 23% of people developing TB within one year of arrival to the US had a 'normal' CXR before their arrival. However, it is possible that there is a selection bias in the Canadian findings, where those who found they had TB on screening might not have submitted their application for admission. While the US results may be partly explained by fraudulent X-rays prior to entry, they are most likely to reflect the findings of other studies showing that new immigrants are most at risk of TB in the first year after arriving in a new country.^{26 27}

7.2.4 Cost effectiveness of immigrant screening for TB

No formal cost-effectiveness analysis has been carried out in New Zealand. However, a Canadian analysis of adult immigrant applicants²⁹ found that while tuberculin skin testing detected the most active TB cases over a 20-year timeframe, it was considerably more expensive than CXR screening. Radiographic screening of immigrants at high risk of TB was found to be cost effective (preventing 4.3% of expected active TB cases at a cost of \$3,943 CA per active case prevented [1997 dollars]). Tuberculin skin testing was considerably less cost effective relative than CXR screening (\$32,601 CA per additional case prevented), and screening of immigrants from low-incidence countries was extremely costly for both interventions (\$236,496 CA per case for radiographic screening and \$68,799 CA per additional case prevented by tuberculin testing in the lowest risk group). This study only analysed the costs to third-party payers (federal and provincial government), and is based on Canadian Healthcare costs, so these figures do not include the cost to the individuals.

* Source: Dr B Gushulak to Dr L Calder, personal communication, 23 October 1998.

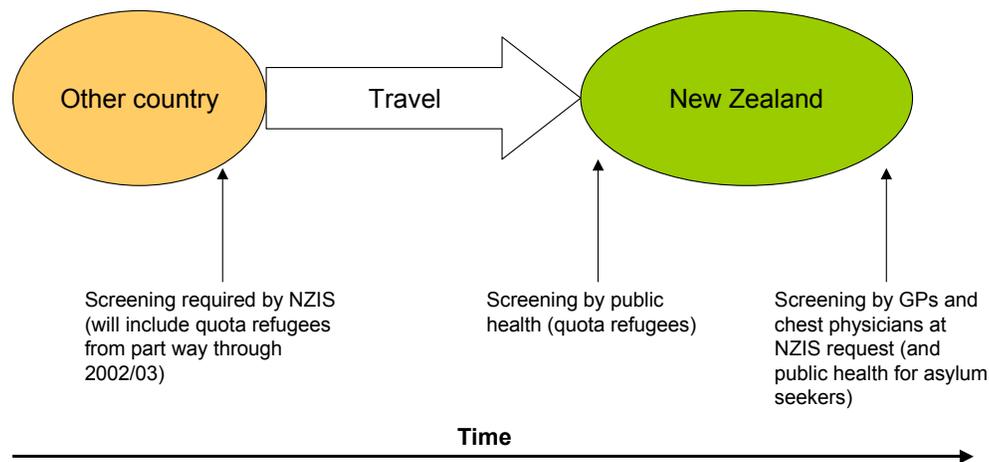
Their high-risk group was a cohort where 50% were TB-infected and 10% had HIV. New Zealand does not currently define high risk. A rate of TB cases (applicable to other countries), over which any person applying for a visa to enter New Zealand is screened, needs to be set. A rate such as 20 per 100,000 may be appropriate. New Zealand should not require CXRs for the purpose of TB screening from immigrants of low-incidence countries, unless indicated on medical examination. The ideal would be to define risk by the country where the immigration applicant has resided for the last five years. However, this is not currently practical. A proxy is to determine a person's risk in relation to the nationality stated in their passport.

While radiographic screening alone is the most cost-effective screening tool for TB, screening of close contacts is the most cost-effective population to screen.³⁰ Screening of close contacts produces net savings of \$815 CA for each prevalent case detected and treated, and \$2186 CA for each future active case prevented. This emphasises the importance of contact tracing, especially in those screened within New Zealand.

7.2.5 Border control

Figure 7.1 outlines the three opportunities for screening people entering New Zealand: prior to arrival, on arrival, or at some later date (within two years of arriving in New Zealand).

Figure 7.1: Opportunities for screening migrants to New Zealand



Screening before arrival

Screening prior to arrival in New Zealand applies to those who intend to reside in New Zealand for at least two years. It generally does not include students. In terms of reducing the burden of TB to those resident in New Zealand, screening prior to arrival would be the ideal, although it is not always practical as many people entering New Zealand extend their visit or wish to change their permit status while in New Zealand. The main problem with screening pre-arrival is ensuring the quality of screening. The use of foreign-trained doctors, language barriers and the opportunity for fraudulent screening or papers are problems that can only be addressed through quality control, audit, and evaluation processes.

Screening on arrival

Screening immediately on arrival in New Zealand occurs in only a small percentage of total arrivals, and mainly applies to quota refugees and those who claim asylum on arrival in New Zealand. People in this category are likely to be at high risk of being infected with TB through exposure in refugee camps and overcrowding. The current practice for people who ask for asylum at the border is to send them to the National Refugee Health Screening Centre (NRHSC), at the Mangere Refugee Reception Centre (MRRC), or, in a few cases, to Mt Eden Prison.

If they can satisfactorily prove their identity (eg, by getting documents sent from overseas) then they are released on a work permit (only a small number satisfy this criterion). The 2002 Budget together with the passing of the Transnational Organised Crime Act 2002 mean that many refugee status seekers will be able to be released without a permit, but on conditions, to reside at an approved place (such as the Auckland Refugee Council hostel).

At present all or almost all people applying for asylum at New Zealand's border have a full medical examination and screening before their application is decided. The presence or absence of TB or any other condition cannot affect the outcome of their refugee status application. The cost of screening of these groups is borne by the New Zealand government, as are all costs related to refugee status claimants. The refugee status claims are prioritised, with all being interviewed within two weeks of arriving at the MRRC and determinations are made within a month of arrival.

Delays in this process do occur, particularly if there is legal involvement. If a claimant does not fulfil the definition of a refugee because they do not have a well-founded fear of persecution, they may appeal to the independent Refugee Status Appeal Authority. This can considerably lengthen the time before their claim is finally determined and they are either granted residence or required to leave New Zealand.

At this stage there is funding for all quota refugees, and for around 600 'other refugee' (broadly defined) people to be fully medically screened annually. Around 1600 people currently claim refugee status in New Zealand per year, and around 20% of those claims are made at the border. Everyone who claims at the border receives information on screening and most or all appear to take up the offer of screening. However, there are insufficient resources to enable all claimants to be offered health screening. This means screening is carried out on most or all border claimants, but on few of those who apply after arrival.

Currently some people claiming asylum-seeker status from within New Zealand undergo two medical examinations: one on applying for asylum-seeker status (if they do so at the border) to satisfy health requirements, and another if their application is successful (fewer than 20% are successful) to satisfy immigration health requirements. A more efficient use of resources would be an initial TB screen in the form of a CXR for everyone, with no screening for other medical conditions. Asylum seekers would be entitled to the same level of health care as all New Zealanders while waiting for their application to be processed. This means they would be able to access free hospital care. If the application for asylum-seeker status is successful, a complete medical could then be undertaken.

There would be no need to repeat the TB screening unless indicated on medical examination.

This would bring asylum-seeker screening into line with that to be investigated for offshore visa applicants planning to enter New Zealand for more than six months. As less than 20% of asylum-seeker applicants are successful, it should reduce the cost of initial screening and substantially reduce duplication, while identifying at an early stage those with active TB so that treatment can be commenced. Mantoux testing with treatment of latent TB infection is most likely to be cost effective if done early after arrival. If this process were adopted, then it would be important for asylum-seeker applicants to be provided with information, advice and support on how to access health care in New Zealand.

Screening some time after arrival

Screening after arrival applies to those people who have arrived on a temporary visa (of less than two years' duration) and who seek to extend their stay to more than two years. This covers a large number of people, and includes those on student visas who have satisfactorily completed at least one year of study and wish to further their studies. It also includes those wishing to apply for residence, extension of work visas, and some people seeking asylum. Those seeking asylum are required to have a CXR only if their application is successful.

7.2.6 Review of offshore screening of quota refugees

Three of the 10 countries that take quota refugees have adopted the practice of screening quota refugees for a range of diseases prior to arrival. They are Australia, the US and Canada.

NZIS have proposed screening quota refugees for TB in an approved offshore facility. The current plan is for screening to be focused on TB, with other conditions screened for as priorities and funding indicate. If refugees are found to have infectious TB, they will not be allowed to enter New Zealand on international flights until they have received treatment and are cleared for travel. Quota refugees would still be required to undergo medical examination and a CXR at NRHSC, Mangere, on arrival. This section looks at the advantages and disadvantages of this proposal for offshore screening of quota refugees from a New Zealand perspective, with particular emphasis on screening for TB.

Currently refugees arriving in New Zealand are sent to NRHSC, Mangere, where they undergo general screening and medical assessment. They are tested for TB, HIV infection, schistosomiasis, hepatitis B and C, syphilis, enteric parasites, typhoid and paratyphoid. They are also tested for iron deficiency, haemoglobinopathies, liver defects and urinary problems. Women are also screened for cervical cancer. Personal examination and assessment includes psychosocial assessment. Approximately 70% of refugees require referral to some secondary service for further management, and virtually every refugee requires some sort of intervention.

The goals of offshore screening, in those countries that undertake it, are to:

- diagnose and treat refugees prior to resettlement in another country
- reduce the risk of disease to those travelling on the same air flights
- reduce the importation of active disease such as TB
- reduce the risk of disease in nationals of the resettlement country
- in some cases, to refuse access to people with certain diseases or conditions.

The main advantage of screening quota refugees offshore in an approved facility is that diagnosis and treatment for those who require it is initiated at an earlier stage, reducing exposure to fellow refugees and enabling those identified with TB to complete treatment prior to travel and arrival in their new country. This also reduces the potential risk of TB to those travelling in the same aircraft or living in the destination country. There is some evidence that transmission of *M. tuberculosis* may occur during long (more than eight hours) flights, from an infectious source (a passenger or crew member) to other passengers or crew members.³¹ Screening and treatment prior to embarkation would help reduce the potential risk to fellow travellers.

The quality of screening that can be offered in refugee camps or settlements is the main concern with offshore screening of TB in quota refugees. This includes ensuring that:

- an X-ray belongs to a particular individual
- the quality of the film is sufficient to interpret
- laboratory facilities are adequate
- antibiotic sensitivity is tested for in those who are diagnosed with active TB
- antibiotics are stored correctly and are not past their expiry date
- there is full adherence with daily treatment.

On arrival in New Zealand refugees would still need to be reviewed by a chest physician in addition to undergoing a complete medical examination for TB and other health concerns.

From an economic perspective it is unlikely that offshore screening for TB alone would be cost effective, unless it could be shown that the risk to fellow travellers was reduced significantly. All refugees would still require a full medical examination, CXR and other screening tests on arrival. There is also the risk that refugees identified with TB offshore may receive inadequate treatment or be non-compliant with treatment, resulting in the development of antibiotic-resistant TB.

New Zealand is a small country that lacks the resources to establish its own dedicated clinics for screening refugees offshore. It would therefore have to rely on medical staff from other countries to carry out screening. This may lead to differences in the management of TB cases, or misunderstandings over information transfer. The decision to screen quota refugees for TB offshore therefore depends on the quality of screening available. To monitor the quality of screening, quota refugees should be given their X-ray films and treatment notes to be passed on to NRHSC medical staff. This will also enable continuation of treatment on arrival.

7.2.7 Review of Australian health undertaking

The Australian health undertaking is a requirement for all migrants who are identified as having a history of TB, and/or who have an abnormal CXR film.

- They must sign an undertaking before leaving their country of origin that they will continue under surveillance in Australia.
- Those with a health undertaking need to report within a designated period – either one week or one month – of their arrival in Australia.
- A health undertaking is valid for only six months from the date of issue. If a migrant has not travelled to Australia in that time, he or she has to have a further CXR examination and the case has to be cleared again by a medical officer.
- Although the Migration Regulations may require an individual to sign a health undertaking, there are no penalties for failure to comply.
- Follow-up and treatment for TB through a health undertaking are paid for by the individual states with money from the Australian government. Students and temporary residents who have offshore insurance may be required to seek payment from their insurer.

A prospective study by King et al³² in Victoria, Australia, in 1993 found that overall 58% of the 1660 migrants with a health undertaking made contact with the appropriate authorities. Of those who made contact, 89% were compliant with their undertakings. Factors associated with compliance were recent active TB or extensive bilateral tuberculous lesions on CXR (94% compliant), and country of origin. Changes to the undertakings system as a result of the study, together with the implementation of a tracing system using Medicare address information, have increased the final compliance rate to around 75%.³³ Holders of temporary protection visas are now required to notify DIMIA of their current addresses, a change that should further increase compliance with health undertakings.³³

Compliance is just one way to evaluate the health undertaking. Pang et al,³⁴ in a retrospective analysis of the records of immigrants to Western Australia in 1994 and 1995, assessed the effectiveness and efficiency of the health undertaking. As a result of pre-migration medical examination, 69 of the 1344 immigrants (5%) were diagnosed with active TB requiring full treatment; 65 (94%) of these were Asian. A total of 373 people (28%) required ongoing surveillance as they had radiological changes consistent with inactive TB, with seven more cases of active TB identified during reassessment and follow-up over a two-year period after arrival. All but one of the seven came from Asia.

All of the 1344 in this study attended their initial examinations. The authors identified three reasons for the high compliance rate:

- the early receipt of the pre-migration documents and CXRs in the study period resulted in sufficient time to remind the new immigrants before they moved
- no prior appointment was required to attend the chest clinic
- there was only one clinic in the state they could contact or attend.

The authors found that the efficiency of the surveillance programme was unsatisfactory, because almost 13% of the immigrants were put on health undertakings due to repeated poor-quality chest films, the majority of which were subsequently found to be normal. Rather than being an inefficiency of the health undertakings, this appears to be an inefficiency of pre-migration screening where quality control is not adequate. The second reason given was that nearly 50% were considered to have non-TB conditions that were obvious from the past medical history and/or further examinations. If these conditions only became obvious on further examinations then it would seem wrong to label them as inefficiencies of the system. It was reported that these 'inefficiencies' placed an increased burden and stress on both the immigrants and the chest clinic.

While health undertakings may be effective, an historical cohort study³⁵ among 24,610 predominantly South East Asian refugees in Australia found that over a 10-year follow-up period the crude annual incidence of TB was 74.9 per 100,000 person-years. Only 29.6% of these were diagnosed as a result of routine follow-up procedures (at six months and 18 months after initial post-arrival screening). This suggests that 70% of cases in this cohort were not identified through the follow-up screening (similar to a health undertaking), raising awareness that those not followed up may still be at risk of TB for years after arrival.

Review of the Australian Health Undertaking Scheme has identified a number of factors that should be borne in mind if the scheme is adopted in New Zealand.

- Compliance can be improved by ensuring rapid contact with immigrants on arrival (within four weeks). This would require immigrants with an undertaking to ring a toll-free number giving contact details.
- Pang et al³⁴ suggested that appointment-less visits at the chest clinic improved the effectiveness of the service. Adoption of appointment-less visits in New Zealand would depend on the number of health undertakings issued (demand), and the number of chest clinics offering the service and competing demands for their services (supply). Before a scheme is introduced into New Zealand it would be important to have an estimate of both of these.
- An efficient scheme requires good-quality screening prior to migration. Currently New Zealand uses overseas doctors contracted to provide screening to those travelling to Australia, and relies on DIMIA to ensure that quality and audit checks are carried out. It would be better if New Zealand could acknowledge the service that DIMIA provides and work with DIMIA to establish a system for addressing any concerns that New Zealand doctors or applicants may have about the panel doctors. This would require migrants to pay, through their fees, for auditing and monitoring.

In terms of the screening process, both Australia and Canada have forms of follow-up or health undertakings for those with a known history of TB disease or changes on CXR. The success of these has been evaluated and suggests that while compliance is an issue, those most at risk of TB disease – new or reactivation – tend to comply with the undertaking.

The Ministry of Health and NZIS should investigate the feasibility and practicality of introducing a health undertaking scheme in New Zealand. The purpose of the scheme would be to follow up immigrants to New Zealand who have been identified as having abnormal X-rays on TB screening, or with a past history of TB. The Australian Health Undertaking Scheme should be used as a starting point, taking into account their experience and lessons learnt.

The key factors for New Zealand would be:

- ensuring the quality of offshore screening
- determining whether New Zealand has enough resources in terms of chest clinics, time and staff to ensure an effective system
- developing a way of tracing and communicating with immigrants on arrival.

The cost of implementing and maintaining a health undertaking scheme in New Zealand must also be considered. Trends in immigrant arrivals, particularly flow from high-risk regions, will be important when deciding whether there is a need for a health undertaking scheme in New Zealand.

7.2.8 Duration of stay and screening requirement

The length of stay permitted in New Zealand before which TB screening is required is currently 24 months. Other 'peer' countries have lower thresholds (eg, Canada has six months). If New Zealand adopted a period of six months, students intending to study for one or more academic years would require TB screening before arrival. What we do not know is whether people arriving from high-risk countries on student or work visas are representative of the general population in that country, and what effect if any a change in screening time would have on the incidence of TB in New Zealand.

The current crude rate of new TB cases in foreign-born students in New Zealand of 11.8 per 100,000 within a year of arrival is not too dissimilar to the New Zealand population rate. An American review of screening in students³⁶ suggests that the epidemiology of TB in foreign-born students is changing, with more students developing the disease.

A reduction in the length of stay in New Zealand without screening could have a number of effects.

- There would be a sharp increase in the number of radiographic screens required by the NZIS.
- The inconvenience and cost of screening could act as a significant barrier to entry. There may also be a possible negative reaction from the education sector if the Export Education strategy was negatively impacted by such changes.

- There would be some pressure on existing screening facilities if demand increased suddenly by several hundred percent, even if that demand was all self-funded. This implies that careful planning for implementation, with considerable communication with service providers, would be necessary.
- NZIS is moving towards electronic and on-line mechanisms for renewing permits, but does not yet have the direct links to chest physicians or medical laboratories that a change in TB screening policy would require.

People from countries with a low incidence of TB are currently required to undergo TB screening if they are planning to stay in New Zealand for more than 24 months. As they are at low risk of TB, increasing screening (to all those planning to stay more than six months) in this group is not required unless there are risk factors for TB (such as signs or symptoms of TB, recent close contact, or a past history of TB).

Another issue is whether screening on initial entry is adequate. Individuals often return to their homeland for prolonged periods. As reported by Weis et al,³⁶ 23% of all foreign-born individuals had travelled to TB endemic areas within the preceding two-years – for a median of 42 days (see Chapter 10: ‘TB Control in Non-Clinical Settings’). The question is, should they be screened at each re-entry? Doing so would consume a large amount of resources and be difficult to enforce. A better way to address the potential TB risk to foreign-born immigrants when revisiting their homeland might be to inform them of the symptoms of TB and treatment availability through a pamphlet or in-flight video.

7.2.9 Risk communication

Risk communication is important because of the ethnic and cultural diversity of migrants and evidence that the risk of TB remains for years after arrival in a Western country. Migrants need to be made aware of:

- the symptoms of TB
- the continued risk of TB even if there was no evidence of TB on the immigration medical examination (in many countries there is a stigma attached to TB because of its infectivity and often-inadequate treatment, and this may act as a barrier to migrants seeking medical advice)
- the fact that that TB is treatable and that it is important to seek medical help as soon as TB is suspected: this can reduce the risk to family and friends.

Health professionals in primary care should be aware of the continued risk of TB in migrants to New Zealand even if the migrants have been in the country for a number of years.

7.2.10 Pacific regional infrastructure for TB control

Communication

Communication between health care providers in different countries – particularly between New Zealand and Pacific nations and territories – is important in the control of TB in the region. Communication is important to ensure that supervision and medication supply are maintained for those diagnosed with active TB.

An informal arrangement currently operates. When a person receiving treatment for TB travels between New Zealand and a Pacific nation, the local public health service informs the New Zealand Ministry of Health, which in turn informs the Ministry of Health in the destination country. The destination Ministry then informs the local public health service of the person's arrival. This arrangement does not appear to be working well at present* due to inaccurate overseas address lists, and possibly a lack of awareness of the arrangement.

Measures needed to improve communication

- Communication between New Zealand and Pacific nations with respect to TB case travel should continue to be between the relevant health bodies in each country rather than via customs or immigration. However, direct communication between those providing the treatment (local public health services) in each country is preferred.
- Efforts should be made to update contact lists and emphasise the importance of communication to ensure that treatment is continued, reducing the risk of reactivation, development of resistance and risk to close contacts. The responsibility of maintaining an updated list and communicating information should rest with one person within the Ministry of Health.
- Better use could also be made of PACNET – an email and telefax supported communication network for health professionals from the Pacific Islands and the Pacific Rim (part of the Pacific Public Health Surveillance Network established by the Secretariat of the Pacific Community – see below).

7.2.11 Key agencies involved in TB control in the Pacific region

Secretariat of the Pacific Community (SPC)

Established in 1947, this was formally known as the South Pacific Commission. All 22 island countries and territories are now full members. SPC is a technical and development organisation with work programmes in a number of areas, of which health is just one.

* Dr L Calder, Medical Officer of Health, ADHB, personal communication, 12/3/02.

World Health Organization – Western Pacific Region (WHO-WPR)

WHO–WPR is one of six WHO regions. It has a population of 1.6 billion and covers the area from China to New Zealand and French Polynesia (see Figure 7.1). In September 1999 the Regional Committee for the Western Pacific declared a TB crisis in the region and urged member states to give high priority and to allocate sufficient resources to strengthen TB control. ‘Stop TB in the Western Pacific Region’ was also endorsed as a special project of WHO by the Western Pacific Regional Committee. The Stop TB special project aims to reduce the morbidity and mortality due to TB in the region by half within 10 years.

As part of the Stop TB project the Committee has outlined four key areas:

- directly observed therapy short course (DOTS) implementation
- health sector development
- drug supply and quality
- monitoring and evaluation.

They have set targets of an 85% cure rate and 70% case detection rate in the region, and co-ordinate data on new cases and incidence rates. WHO-WPR has also produced guidelines for the control of TB through DOTS strategy in Pacific countries.³⁷

New Zealand Agency for International Development (NZAID)

NZAID is a semi-autonomous agency of the Ministry of Foreign Affairs and Trade superseding New Zealand’s Official Development Assistance Programme (NZODA). NZAID’s purpose is to secure lasting improvements in the living conditions of poorer people in developing countries. New Zealand’s support is concentrated on Pacific nations and the poorer East and South East Asian countries. Currently, just under half of NZAID is directed to the Pacific.

Further information is available at: <http://www.nzaid.govt.nz>

7.2.12 The Pacific Regional TB Control Project

This is a joint project between SPC and WHO-WPR, with some funding from NZAID. Phase one involved introducing DOTS (see Chapter 5: ‘DOT’) to Kiribati, Samoa, Tonga and the Cook Islands. The goal of phase two of the project is to control TB through extending DOTS in Pacific Island countries and territories (PICT), with a focus on the countries involved in phase one together with Niue, Tokelau and Wallis and Futuna. This phase is due to run for three years, from November 2001 to October 2004.

The five components of phase two are:

1. introduce DOTS to Niue, Tokelau, Wallis and Futuna (the Pacific Regional TB Control Project will conduct baseline studies and assist in the design and implementation of country-specific DOTS strategies)
2. strengthen DOTS strategies in the Cook Islands, Kiribati, Samoa, and Tonga (ie, build on the recently introduced programmes in these areas)

3. provide laboratory staff training and systems development, including the establishment of quality assurance systems (this will be done through an Australian non-government organisation (CHATA), which the SPC helped to develop)
4. support the development of strategies to address TB/HIV co-infection (to be piloted in Kiribati), and help conduct a pre-feasibility study as a first step towards a comprehensive study of TB prevalence in the Pacific
5. recognise the work of SPC and WHO in the area of TB control and DOTS programmes in the Pacific.

7.3 Future developments

As a result of discussions between NZIS and the Ministry of Health, a number of changes to TB screening of foreign-born migrants have been proposed, either for direct implementation or for investigation with a view to implementing.

7.3.1 Who to screen

- All people 11 years of age and over from countries with a high incidence of TB planning to stay in New Zealand for more than six months in any three-year period (to exclude re-screening) should be required to undergo TB screening by CXR prior to arrival.
- Immigrants from a low-incidence country (determined by nationality listed in their passport) will not be required to undergo TB screening unless indicated on medical examination. Low-incidence countries will be specifically identified in a list format.
- The term ‘high incidence of TB’ should refer to all countries not specifically listed as a low-incidence country. In practice the term would be used to refer to countries with TB rates of over approximately 20 cases per 100,000. ‘High-incidence’ countries should also include countries where the notification rate is likely to be inaccurately low due to poor diagnosis and notification.
- The government has invested resources into the refugee status determination process so that people claiming asylum in New Zealand now wait no more than six months from the time of application to the time of ultimate acceptance or rejection (down from over two years four years ago). These people will only be screened if their application is successful – unless symptoms warrant earlier investigation.
- Women who are pregnant at the time of their NZIS medical examination (and are therefore currently exempt a CXR) should be required to undergo a CXR after the birth of their child. This could be done by inserting an alert in the medical warning system section of the National Health Index (NHI) number of the woman. The Ministry of Health would need to develop a way to insert the alert when a pregnant woman from a high-incidence country first seeks medical attention (and obtains an NHI number).

7.3.2 Where to screen

- NRHSC at the Mangere Refugee Reception Centre should continue to be responsible for full medical examinations and TB screening of quota refugees entering New Zealand.
- Quota refugees will be screened for TB in an approved offshore facility within three months before embarkation to New Zealand. Refugees diagnosed with active TB would be required to undergo treatment prior to travel. The X-ray and treatment notes should accompany refugees to New Zealand to ensure continuation of care and to provide quality review. Refugees will still be required to undergo a full medical examination, and TB screening on arrival in New Zealand. The repeat CXR will provide an audit of the quality of offshore screening, and may not be required once quality is assured.

7.3.3 Quality

- There need to be clear guidelines for NZIS consultant doctors as to what is acceptable on a CXR and what is not.
- All abnormal NZIS CXRs (and their reports) from applicants applying from within New Zealand (even if they are reported as inactive or old TB) should be immediately referred by NZIS, via the Ministry of Health, to the local medical officer of health for follow-up.
- It is important that New Zealand have effective immigration procedures to identify those with active TB at the earliest possible time. Audit and monitoring procedures need to be established to ensure that overseas panel doctors undertake appropriate medical examinations.

7.3.4 Monitoring and review

- Surveillance of HIV/TB co-infection needs improvement (see Chapter 18: ‘Tuberculosis and HIV’).
- TB notification forms to ESR need to be completed, particularly the sections on birth country and length of time since arrival. Additional information such as residency status, type of entry (eg, general skills, Samoan quota, family, quota refugee) and a list of all the countries that the person has lived in for more than one year would be useful for monitoring current screening practice and identifying at-risk groups.
- A review of TB trends and data similar to the one carried for the period 1995–99¹ should be undertaken for the period 2000–04, especially if the screening period is reduced from 24 months to six months. Particular attention should be paid to the country of birth and for how long cases have been in New Zealand.

7.3.5 Resources

- NZIS should investigate increasing their health operations resources. This should include more medical consultants and operations staff as immigration numbers increase.
- The Ministry of Health needs to ensure that there are sufficient funds and resources to cover any increase in screening generated by a change in screening policy.
- Provision should be made for increasing staff levels, space and access to X-ray facilities if a New Zealand Health Undertaking Scheme is introduced. The increased number of people arriving from countries with a high incidence of TB would increase demand on chest clinics, particularly in Auckland but also in Wellington and Christchurch.

- The distribution of overseas panel doctors currently contracted to undertake NZIS medical examinations and X-rays should be reviewed in response to demand.

7.3.6 Communication and support

- Primary and secondary health providers need to be informed of TB rates in different countries so that they can be alert to the risk of TB when seeing people who were born in or have resided in countries with a high incidence of TB, especially if there has been recent travel to that country.
- Communication to migrants is the responsibility of NZIS, Ministry of Health, the Office of Ethnic Affairs, and health workers. They need to ensure that the relevant information about TB is supplied to new migrants. The key information that needs to be disseminated is that, if arriving from a country with a high incidence of TB, even if the individual is not found to have TB on CXR screening, this does not mean they will not develop TB later. The symptoms of TB need to be made known, as well as what to do, and that full treatment is available and works, to enable early recognition and treatment.
- The stress associated with moving to a new country coupled with overcrowding can contribute to active TB. New Zealand has improved the settlement process, including provision of adequate housing, education, and access to local cultural and support groups. Ways to support and assist new immigrants should continue to be developed and improved.

7.3.7 Pacific Island region

- The most effective long-term strategy for control of TB in Pacific populations is through control (diagnosis, management, treatment, follow-up and contact tracing) of TB in Pacific countries. This is because Pacific-born people travel frequently between New Zealand and their homeland, and many of New Zealand's notified TB cases occur in Pacific-born people. Increasing awareness of TB treatment combined with the currently low rate of MDR-TB and HIV infection in most Pacific nations creates an opportune time for action; in particular, DOT, treatment of smear-negative cases, contact tracing and treatment of latent TB infection.
- New Zealand should take a more active role in WHO and SPC programmes for TB control in the Pacific. The specific type of support would need to be determined through discussion with those involved in these programmes, but it may be in the form of training, equipment, etc.
- There needs to be a clearer line of communication between public health units in the different countries with respect to the management of mobile TB cases and contact tracing.
- Education and information about TB needs to be provided in an appropriate format to Pacific peoples living in New Zealand (particularly those living in urban centres) about the lifelong risk of TB, signs and symptoms, and (most importantly) seeing a doctor for treatment, as TB is a treatable disease.

7.3.8 Health undertaking

- A feasibility study into the introduction of a health undertaking scheme for TB should be undertaken. This will examine current resources, the projected number of undertakings issued and the distribution of these immigrants, together with a strategy to ensure that immigrants contact the service.

7.3.9 General conclusions

We need to improve TB screening policy and practice because the number of people entering New Zealand from countries with a high incidence of TB is increasing, as is the number of TB cases in foreign-born people in New Zealand. Suggested changes to screening include:

- reducing the age and duration of stay at which screening occurs
- limiting screening to those from high-incidence countries
- improving communication at all levels (this means communicating the reasons for screening to those applying for entry to New Zealand, communicating the importance of adhering to treatment if TB is diagnosed, the importance of identifying close contacts and communicating the risk to them, communicating to primary care providers and immigrants the long-term risk of TB if from a high-incidence country, and communication between countries, particularly Pacific nations when a person with TB is intending to travel).

If the length of stay allowed in the country without screening is reduced from 24 months to six months, this will increase the number of TB screening tests performed offshore. It will become vital for the NZIS and the Ministry of Health to ensure that quality screening occurs. While some steps have been recently introduced, such as radiologists signing the X-rays, quality can only be assured through audit and review.

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