



Antituberculosis drug resistance in New Zealand, January to June 2006

This brief half-year report collates and analyses the antimicrobial susceptibility of isolates referred to and isolated in the Mycobacteriology Reference Laboratories at Auckland City, Wellington and Waikato Hospitals during the six months January to June 2006.

During the six-month period, 115 isolates of *Mycobacterium tuberculosis* and five *M. bovis* isolates were identified. All isolates were tested for susceptibility to isoniazid, rifampicin, ethambutol, pyrazinamide and streptomycin. The proportion of isolates resistant to each antimicrobial is shown in Table 1.

Table 1. Resistance to each antimicrobial, January-June 2006

Antimicrobial	Number resistant ¹	Percent resistance ¹
Isoniazid (0.1 mg/L)	8	6.7
Isoniazid (0.4 mg/L) ²	7	5.8
Rifampicin	1	0.8
Ethambutol	1	0.8
Pyrazinamide	6 ³	5.0
Streptomycin	8	6.7

Notes: 1 includes resistance alone or in combination with other antimicrobials
2 all isolates resistant to the standard breakpoint concentration of 0.1 mg/L were also tested at the higher concentration of 0.4 mg/L
3 includes the five *M. bovis* isolates

Eighty-five percent (102/120) of the isolates were fully susceptible to all five antimicrobials tested. The resistance patterns among the 120 isolates are shown in Table 2. One isolate was multidrug resistant (MDR-TB), that is, resistant to at least isoniazid and rifampicin. This MDR-TB case was from China and had arrived in New Zealand in late 2002.

Table 2. Distribution of resistance patterns, January-June 2006

	Number (%)	Resistance pattern ¹	Number (%) of isolates with each pattern
Fully susceptible	102 (85.0)		
Resistant to 1 agent	14 (11.7)	S	5 (4.2)
		Z	5 ² (4.2)
		H	4 (3.3)
Resistant to 2 agents	3 (2.5)	HS	2 (1.7)
		HZ	1 ³ (0.8)
Resistant to 4 agents	1 (0.8)	HRES ⁴	1 (0.8)

Notes: 1 H, isoniazid resistance at the standard concentration of 0.1 mg/L; R, rifampicin; E, ethambutol; Z, pyrazinamide; S, streptomycin
2 includes four of the five *M. bovis* isolates
3 the fifth *M. bovis* isolate
4 MDR-TB, multidrug-resistant tuberculosis, that is, resistant to at least isoniazid and rifampicin

The geographic distribution of resistant isolates, based on aggregated health districts, is shown in Table 3.

Table 3. Geographic distribution of resistance, January-June 2006

Antimicrobial	Percent resistance ¹			
	Northern ² (n=69)	Midland ² (n=14)	Central ² (n=22)	Southern ² (n=15)
Isoniazid ³	5.8	0	4.6	20.0
Rifampicin	1.5	0	0	0
Ethambutol	1.5	0	0	0
Pyrazinamide	1.5	0	4.6	26.7
Streptomycin	7.3	0	9.1	6.7

Notes: 1 includes resistance alone or in combination with other antimicrobials

2 the Northern area includes the Northland, North West Auckland, Central Auckland, and South Auckland Health Districts; the Midland area includes the Waikato, Tauranga, Eastern Bay of Plenty, Gisborne, Rotorua, Taupo, Taranaki, and Ruapehu Health Districts; the Central area includes the Hawkes Bay, Wanganui, Manawatu, Wairarapa, Hutt, Wellington, and Nelson-Marlborough Health Districts; and the Southern area includes the Canterbury, South Canterbury, West Coast, Otago, and Southland Health Districts

3 isoniazid resistance at the standard concentration of 0.1 mg/L

Seven (5.8%) of the total 120 isolates were from cases categorised as tuberculosis reactivations. There were no significant ($P \leq 0.05$) differences in resistance among new cases compared with resistance among reactivations.

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