



Antituberculosis drug resistance in New Zealand, January to June 2005

This brief half-yearly report collates and analyses the antimicrobial susceptibility of isolates referred to and isolated in the Mycobacteriology Reference Laboratories at Auckland, Wellington and Waikato Hospitals during the six months January to June 2005.

During the six-month period, 146 isolates of *Mycobacterium tuberculosis* and two *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 2005

Antimicrobial	Number tested	Number resistant ¹	Percent resistance ¹
Isoniazid	148	13	8.8
Rifampicin	148	3	2.0
Ethambutol	148	3	2.0
Pyrazinamide	148	5 ²	3.4
Streptomycin	148	15	10.1

Notes: 1 includes resistance alone or in combination with other antimicrobials
2 includes the two *M. bovis* isolates

Eighty-four percent (124) of the isolates were fully susceptible to all five antimicrobials tested. The resistance patterns among the 148 isolates are shown in Table 2. Three isolates were multidrug resistant (MDR-TB), that is, resistant to at least isoniazid and rifampicin. These three MDR-TB cases had arrived in New Zealand 3-36 months prior to their TB being diagnosed. Two cases were from Korea and were recorded as TB reactivations. The third case was from China and was recorded as a new case.

Table 2. Distribution of resistance patterns, January-June 2005

	Number (%)	Resistance pattern ¹	Number (%) of isolates with each pattern
Fully susceptible	124 (83.8)		
Resistant to 1 agent	17 (11.5)	S	9 (6.1)
		H	6 (4.1)
		Z ²	2 (1.4)
Resistant to 2 agents	3 (2.0)	HS	3 (2.0)
Resistant to 3 agents	1 (0.7)	HZS	1 (0.7)
Resistant to 4 agents	2 (1.4)	HREZ ³	1 (0.7)
		HRES ³	1 (0.7)
Resistant to 5 agents	1 (0.7)	HREZS ³	1 (0.7)

Notes: 1 H, isoniazid; R, rifampicin; E, ethambutol; Z, pyrazinamide; S, streptomycin
2 the two *M. bovis* isolates
3 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 2005

Antimicrobial	Percent resistance ¹			
	Northern ² (n=90)	Midland ² (n=15)	Central ² (n=20)	Southern ² (n=23)
Isoniazid	11.1	6.7	5.0	4.4
Rifampicin	3.3	0	0	0
Ethambutol	3.3	0	0	0
Pyrazinamide	3.3	0	0	8.7
Streptomycin	8.9	20.0	10.0	8.7

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

Nine (6.1%) of the total 148 isolates were from cases categorised as tuberculosis reactivations. Isolates from reactivations were significantly ($P \leq 0.05$) more likely to be rifampicin resistant, ethambutol resistant and multidrug resistant (ie, resistant to both isoniazid and rifampicin).

Acknowledgements: Ross Vaughan, Mycobacteriology Reference Laboratory, Auckland City Hospital; Leo McKnight, Mycobacteriology Reference Laboratory, Wellington Hospital; and Kathryn Coley, Mycobacteriology Reference Laboratory, Waikato Hospital, for supplying their susceptibility test results.

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