



Antituberculosis drug resistance, January to June 2003

This biannual 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 2003.

During the six-month period, 127 isolates of *Mycobacterium tuberculosis* and one *M. bovis* isolate 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 2003

Antimicrobial	Number tested	Number resistant ¹	Percent resistance ¹
Isoniazid	128	11	8.6
Rifampicin	128	2	1.6
Ethambutol	128	5	3.9
Pyrazinamide	128	10 ²	7.8
Streptomycin	128	8	6.3

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

Eighty percent (103) of the isolates were fully susceptible to all five antimicrobials tested. The resistance patterns among the 128 isolates are shown in Table 2. Two isolates were multidrug resistant (MDR-TB), that is, resistant to at least isoniazid and rifampicin. Both patients with MDR-TB were recent arrivals in New Zealand; one from Korea and one from India.

Table 2. Distribution of resistance patterns, January-June 2003

	Number (%)	Resistance pattern ¹	Number (%) of isolates with each pattern
Fully susceptible	103 (80.5)		
Resistant to 1 agent	18 (14.1)	H	5 (3.9)
		Z	8 (6.3) ²
		E	2 (1.6)
		S	3 (2.3)
Resistant to 2 agents	4 (3.1)	HE	1 (0.8)
		HS	2 (1.6)
		ZS	1 (0.8)
Resistant to 3 agents	2 (1.6)	HRZ ³	1 (0.8)
		HES	1 (0.8)
Resistant to 4 agents	1 (0.8)	HRES ³	1 (0.8)

Notes: 1 H, isoniazid; R, rifampicin; Z, pyrazinamide; E, ethambutol; S, streptomycin
2 includes the one *M. bovis* isolate
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 2003

Antimicrobial	Percent resistance (number resistant/number tested) ¹			
	Northern ²	Midland ²	Central ²	Southern ²
Isoniazid	9.4 (9/96)	0.0 (0/10)	6.7 (1/15)	14.3 (1/7)
Rifampicin	1.0 (1/96)	0.0 (0/10)	0.0 (0/15)	14.3 (1/7)
Ethambutol	3.1 (3/96)	0.0 (0/10)	0.0 (0/15)	28.6 (2/7)
Pyrazinamide	7.3 (7/96)	10.0 (1/10)	6.7 (1/15)	14.3 (1/7)
Streptomycin	7.3 (7/96)	0.0 (0/10)	0.0 (0/15)	14.3 (1/7)

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 (7.0%) of the total 128 isolates were from cases categorised as tuberculosis reactivations. Compared with new cases of disease, isolates from tuberculosis reactivations were significantly more likely ($P \leq 0.05$) to be resistant to isoniazid ($p=0.0302$) and ethambutol ($p=0.0023$).

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

Compiled by: Helen Heffernan
Scientist
Antibiotic Reference Laboratory
Communicable Disease Group
ESR
P O Box 50 348
PORIRUA
Phone 04 914 0781, Fax 04 914 0770
helen.heffernan@esr.cri.nz