ISSN:1173-1672

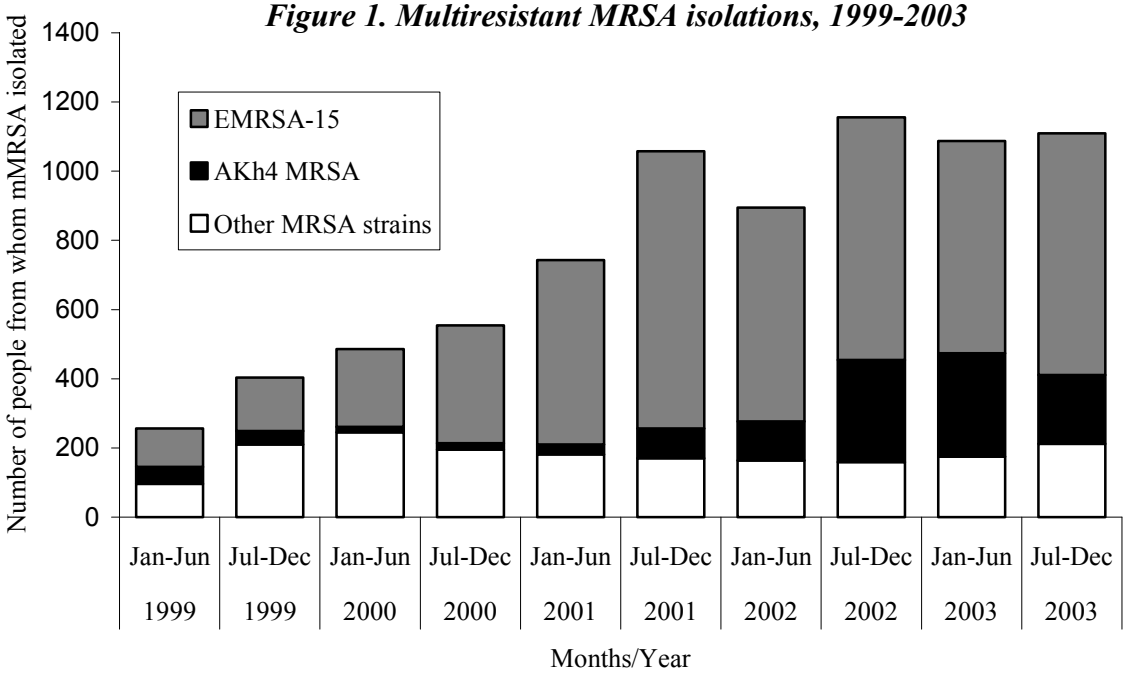
MRSA REPORT

04/20 Suppl: 18 May 2004

Annual summary of the national surveillance of multiresistant methicillin-resistant *Staphylococcus aureus*, 2003

During 2003, multiresistant methicillin-resistant *Staphylococcus aureus* (mMRSA) from 2106 people (1992 patients and 114 healthcare workers) were referred to ESR. mMRSA are defined as MRSA resistant to two or more classes of antibiotics in addition to ß-lactams. The increase in the incidence of mMRSA in 2003 was smaller than in previous years: increasing 9.3% from 52.5 per 100,000 in 2002 to 57.4 per 100,000 (Figure 1). Information on whether mMRSA was causing infection or colonising was reported for 1249 of the patients from whom mMRSA was isolated; 76.9% were infected and 23.1% were colonised.

Figure 1. Multiresistant MRSA isolations, 1999-2003



Three-quarters (75.1%) of the 1992 patients with mMRSA were reported to be hospital patients. Patients were classified as hospital patients if they were in a healthcare facility (including residential-care facility) when MRSA was isolated or had been in a healthcare facility in the previous three months. Among the 114 healthcare workers, 73 had patient contact at the time mMRSA was isolated from them. mMRSA was isolated during pre-employment screening of the other 41 healthcare workers.

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The mMRSA strains that were predominant in 2003 are shown in Table 1. The predominance of the EMRSA-15 strain declined in 2003: from accounting for 63.9% of mMRSA isolations in 2002 to 59.9% in 2003. The majority of patients with EMRSA-15 and AKh4 were reported to be hospital patients: 78.4% and 86.6%, respectively.

Table 1. Most commonly isolated multiresistant MRSA strains, 2003[1]

Strain[2] (origin)	Number of people the strain isolated from (% of all mMRSA isolations)
EMRSA-15 (UK)	1262 (59.9)
AKh4 (Australia)	474 (22.5)
WR/AK1	174 (8.2)
EMRSA-16 (UK)	36 (1.7)

1 Includes strains isolated from more than 20 people.

2 For a description of the strains see the following *MRSA Report* issues: EMRSA-15, 99/3; AKh4, 01/50; WR/AK1, 98/38; WSPP1, 94/5; and EMRSA-16, 99/32.

The hospitals and other healthcare facilities in which the EMRSA-15 and AKh4 strains were isolated in 2003 are shown in Table 2. The number of hospitals and healthcare facilities in which EMRSA-15 was isolated increased in 2003, although many of the isolations appeared to be sporadic with only a small number (<5) of isolations in many of the facilities (Table 2, footnote 1). EMRSA-15 was most frequently isolated in healthcare facilities in the greater Auckland, Waikato, and Hawkes Bay areas. In 2003, compared to 2002, EMRSA-15 was more frequently isolated in healthcare facilities in the Waikato area and less frequently isolated in healthcare facilities in the greater Wellington area. The AKh4 strain was largely confined to healthcare facilities in the greater Auckland area.

As has been noted in previous years, compared with other mMRSA strains, EMRSA-15 is more frequently isolated from older patients and less frequently isolated from younger patients (Figure 2). Many of the private healthcare facilities in which EMRSA-15 was isolated were residential-care facilities for the elderly.

Figure 2. Multiresistant MRSA isolations by patient age, 2003

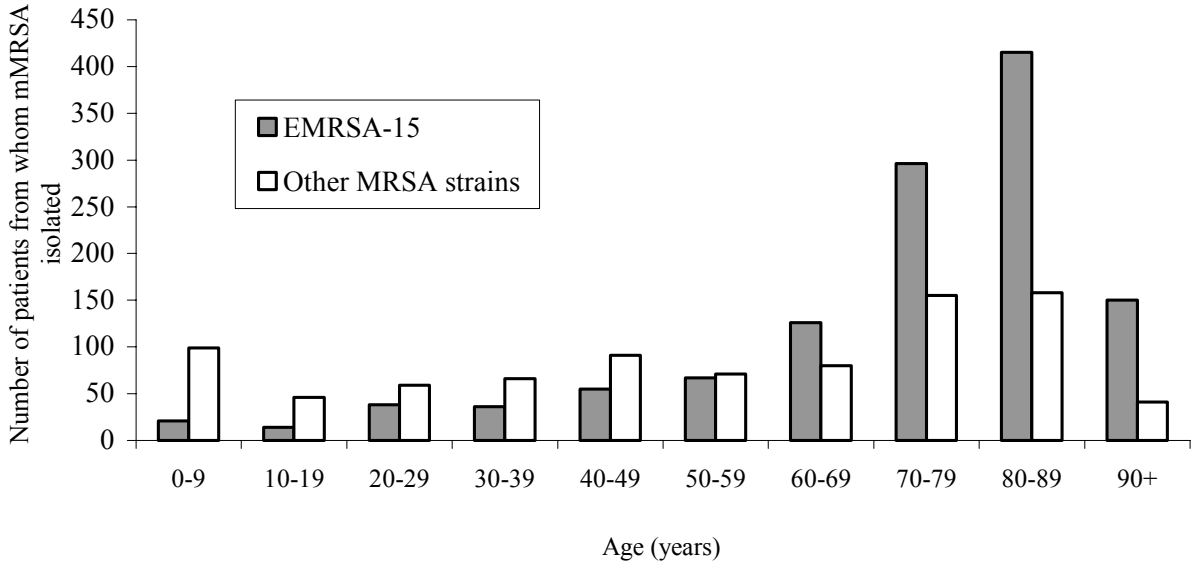


Table 2. Healthcare facilities with patients and staff with EMRSA-15 and AKh4 MRSA, 2003

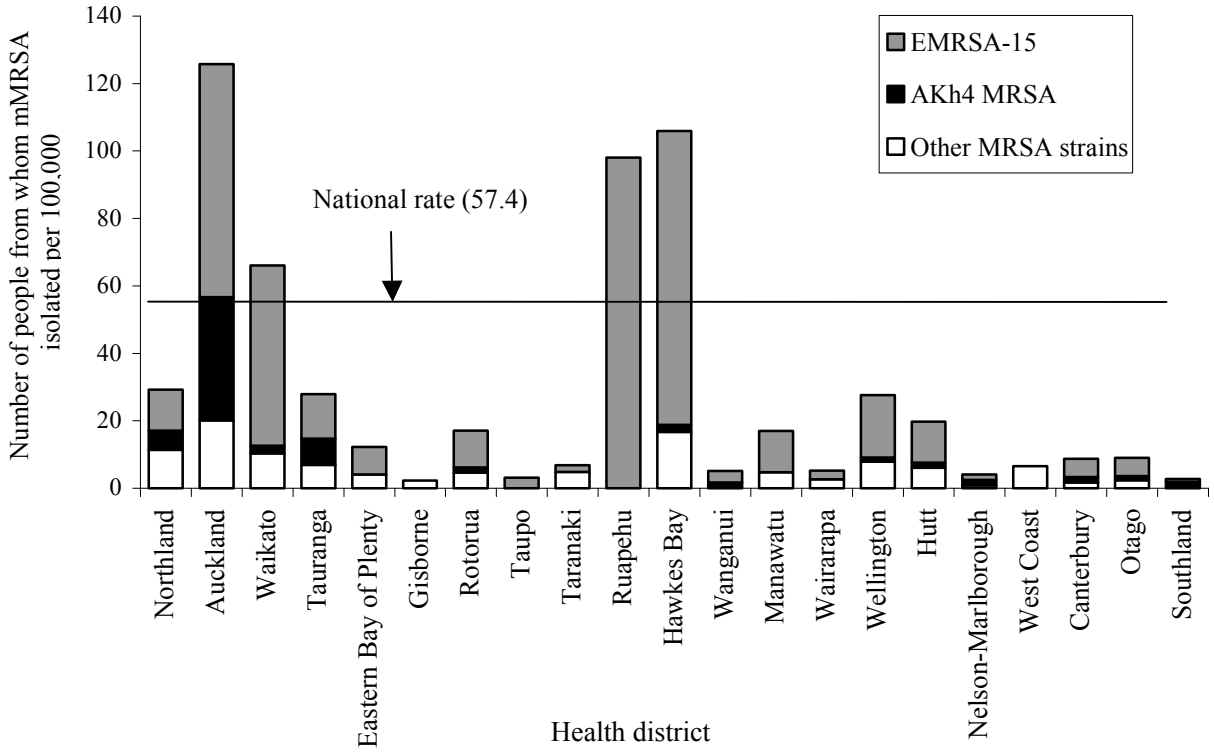
Healthcare facility[1]	Number of people EMRSA-15 isolated from (% of all EMRSA-15 isolations in healthcare facilities, n=1197[2])	Number of people AKh4 MRSA isolated from (% of all AKh4 MRSA isolations in healthcare facilities, n=479[2])
North Shore Hospital	97 (8.1)	69 (14.4)
Waitakere Hospital	31 (2.6)	11 (2.3)
Auckland City Hospital	149 (12.5)	75 (15.7)
Middlemore Hospital	163 (13.6)	210 (43.8)
Other Auckland HCFs[3]	312 (26.1)	78 (16.3)
Taumaranui Hospital	8 (0.7)	
Other Taumaranui HCF[3]	8 (0.7)	
Waikato Hospital	108 (9.0)	
Other Hamilton HCFs[3]	34 (2.8)	
Thames Hospital	17 (1.4)	
Tauranga Hospital		9 (1.9)
Hawkes Bay Hospital	87 (7.3)	
Other Hawkes Bay HCFs[3]	34 (2.8)	
Palmerston North Hospital	10 (0.8)	
Other Palmerston North HCFs[3]	8 (0.7)	
Hutt HCFs[3]	9 (0.8)	
Wellington Hospital	27 (2.3)	
Kenepuru Hospital	9 (0.8)	
Other Wellington HCFs[3]	12 (1.0)	
Christchurch Hospital	10 (0.8)	

[1] Hospitals and other healthcare facilities (HCFs) with ≥5 patients or staff with EMRSA-15 are listed in the table. EMRSA-15 was also isolated from people in Whangarei Hospital (2 patients or staff), Whangarei HCF (1), Dargaville Hospital (1), Dargaville HCF (1), Kaitaia Hospital (1), Starship Children's (4), Kidz First (1), Raglan HCF (1), Te Awamutu HCF (1), Tokoroa Hospital (3), Tokoroa HCF (1), Whangamata HCF (1), Waihi HCF (1), Tauranga Hospital (3), Tauranga HCF (1), Rotorua Hospital (4), Rotorua HCF (1), Whakatane Hospital (4), Taupo Hospital (2), Waipukurau Hospital (1), Wairoa Hospital (1), Wairoa HCF (1), Taranaki Base Hospital (2), Wanganui Hospital (1), Levin HCF (1), Masterton Hospital (2), Masterton HCF (1), Hutt Hospital (4), Paraparaumu HCF (4), Porirua HCF (2), Wairau Hospital (1), Christchurch Women's Hospital (1), Ashburton Hospital (1), Timaru Hospital (1), Oamaru Hospital (3), Dunedin Hospital (2), and Southland Hospital (1). AKh4 MRSA was also isolated from people in Whangarei Hospital (4), Whangarei HCF (1), Dargaville Hospital (1), Waikato Hospital (1), Hamilton HCFs (3), Tauranga HCF (1), Rotorua Hospital (1), Hawkes Bay Hospital (1), Palmerston North Hospital (1), Hutt Hospital (2), Wellington Hospital (3), Wairau Hospital (1), Nelson Hospital (1), Christchurch Hospital (3), Ashburton Hospital (1), and Dunedin Hospital (2).

[2] The same person may be recorded in more than one healthcare facility.

[3] An aggregated total for private healthcare facilities in the area, many of whom have withheld publication of their name.

Figure 3. Incidence of multiresistant MRSA by health district, 2003



The geographic distribution of mMRSA in 2003 displayed the usual pattern, with the highest rate in the Auckland health districts (Figure 3). The next highest rates were in the Hawkes Bay, Ruapehu and Waikato Health Districts and were comprised predominantly of EMRSA-15 isolations. Compared with 2002, rates have remained about the same in the Auckland health districts, and increased in the Waikato, Ruapehu, and Hawkes Bay Health Districts, with these increases being mostly due to an increase in the incidence of EMRSA-15.

The susceptibility of mMRSA isolates referred in 2003 was not routinely tested. However, based on previous testing, the typical resistance patterns of the most common strains are shown in Table 3. In addition to multiresistant EMRSA-15 isolates, which are typically resistant to ciprofloxacin and erythromycin, non-multiresistant (ciprofloxacin-resistant and erythromycin-susceptible) isolates also occur. These non-multiresistant EMRSA-15 are not included in the above analyses of mMRSA. In 2003, non-multiresistant EMRSA-15 were isolated from 451 people in addition to the 1262 people with multiresistant EMRSA-15 (Table 1).

Table 3. Resistance patterns of the most common multiresistant MRSA

Strain	Resistance pattern[1]
EMRSA-15	Cip Em[2]
AKh4	Cip Cl Co Em Gm Tc
WR/AK1	Fa Mu^{HL} [3]
EMRSA-16	Cip Em

[1] Cip, ciprofloxacin; Cl, clindamycin; Co, co-trimoxazole; Em, erythromycin; Fa, fusidic acid; Gm, gentamicin; Mu^{HL}, high-level mupirocin; Tc, tetracycline.

[2] EMRSA-15 also has inducible clindamycin resistance.

[3] Some isolates of WR/AK1 also have erythromycin resistance.