

MRSA REPORT

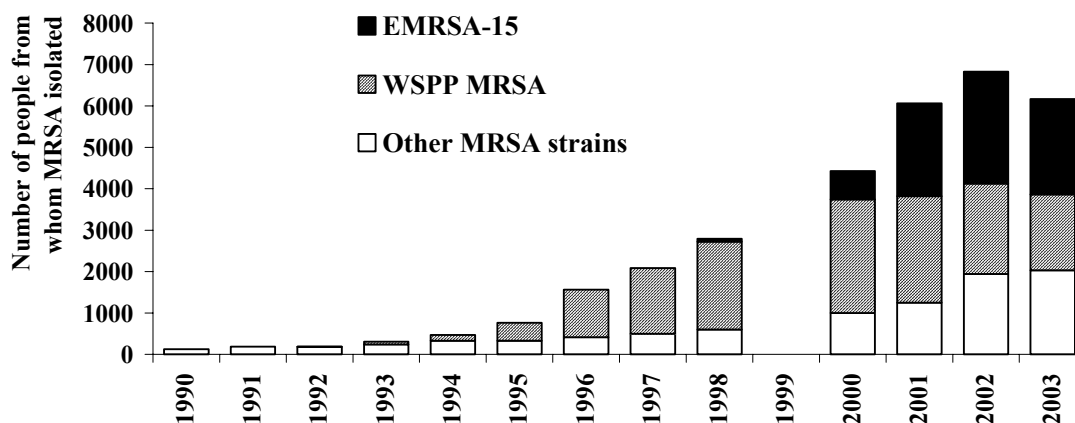
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Annual survey of methicillin-resistant *Staphylococcus aureus* (MRSA), 2003

Each year since 2000, ESR has conducted a one-month survey of all methicillin-resistant *Staphylococcus aureus* (MRSA), that is, multiresistant and non-multiresistant isolates, to complement the ongoing routine surveillance of multiresistant MRSA and to provide information on the overall epidemiology of MRSA in New Zealand. This supplement reports the 2003 survey, which was conducted in August 2003.

In August 2003, MRSA were referred from 513 people (492 patients and 21 staff). This number of referrals equates to an annual incidence rate of 164.7 per 100 000; a 9.9 % decrease on the rate in 2002 (182.7 per 100 000) (Figure 1). MRSA was reported as causing infection in 82.1% of the 313 patients for whom this information was provided.

Figure 1. MRSA isolations, 1990-2003



Data for 1990 to 1998 are based on continuous surveillance of all MRSA isolations. Data for 2000 to 2003 are annualised and based on one-month surveys conducted in these years. No survey was undertaken in 1999.

The majority of the MRSA isolates were the EMRSA-15 strain (37.4%), WSPP MRSA strain (29.8%), AKh4 MRSA strain (8.9%) or WR/AK1 MRSA strain (3.7%). The increase in MRSA in New Zealand from the mid-1990s to 2000 was driven by the spread and almost total dominance of the non-multiresistant, community WSPP MRSA. However, since 2000 the WSPP MRSA has represented a decreasing proportion of the MRSA isolations, and since 2001 the actual number of WSPP MRSA isolations has also decreased (Figure 1). There has been a concomitant rise in isolations of the EMRSA-15 strain and other multiresistant MRSA strains, such as AKh4 and WR/AK1. For a description of these strains, see earlier issues of the *MRSA Report*: EMRSA-15,

MRSA Report 99/3; WSPP MRSA, MRSA Report 94/5 and 94/17; AKh4 MRSA, MRSA Report 01/50; and WR/AK1 MRSA, MRSA Report 98/38.

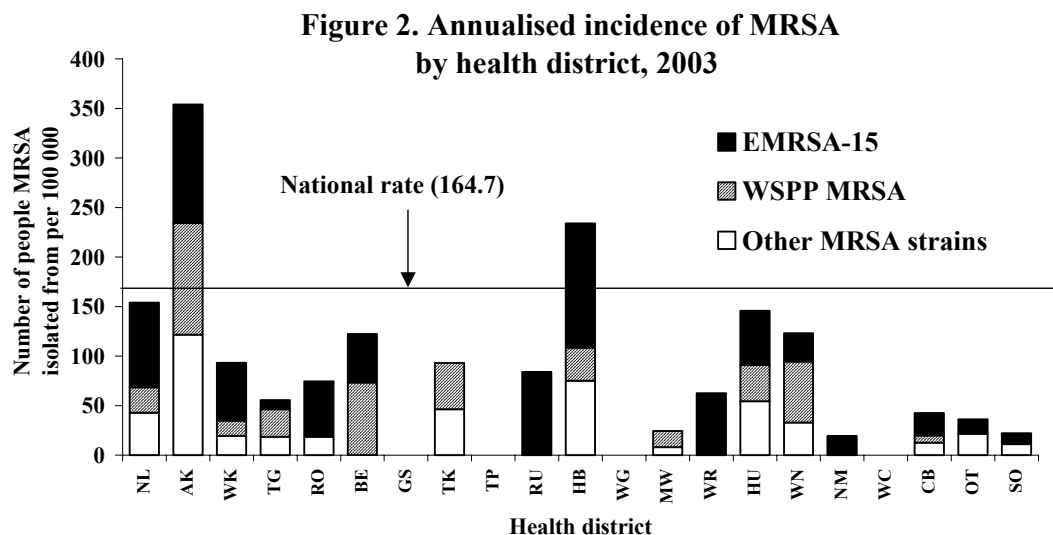
Among the 492 patients with MRSA, 52.0% were categorised as hospital patients and 48.0% as community patients. Patients were classified as hospital patients if they were in a healthcare facility (including residential-care facility) when MRSA was isolated or had been in a healthcare facility in the previous three months. The majority of EMRSA-15 and AKh4 MRSA (70.3% and 69.6%, respectively) were isolated from hospital patients or staff, whereas most (75.8%) WSPP MRSA were isolated from people in the community (Table 1).

Table 1. Distribution of EMRSA-15, AKh4 MRSA and WSPP MRSA among hospital patients/staff and community patients, August 2003

| | Number (% ¹) of people with: | | |
|---------------------------|--|-----------------|------------------|
| | EMRSA-15 | AKh4 MRSA | WSPP MRSA |
| Hospital patient or staff | 135 (70.3) | 32 (69.6) | 37 (24.2) |
| Community patient | 57 (29.7) | 14 (30.4) | 116 (75.8) |
| Total | 192 (100) | 46 (100) | 153 (100) |

¹ proportion of all isolations of the strain

The wide geographic variation in the incidence of MRSA observed in previous years was again evident in 2003, with the highest annualised incidence rates in the Auckland (353.9 per 100 000), Hawkes Bay (234.1), Northland (154.1), Hutt (145.6), Wellington (123.0) and Eastern Bay of Plenty (122.3) Health Districts (Figure 2). All South Island districts had rates below 50 per 100 000.



The antimicrobial susceptibility of the MRSA isolates referred during August 2003 is shown in Table 2. Overall, 43.7% of the MRSA tested were multiresistant, that is, resistant to ≥ 2 classes of antibiotics in addition to β -lactams. The EMRSA-15 strain is invariably resistant to ciprofloxacin and usually resistant to erythromycin, with inducible clindamycin resistance. However, in 2003, 34.0% of the EMRSA-15 isolates were erythromycin susceptible. The WSPP MRSA remain predominantly non-multiresistant, with only infrequent resistance to any antibiotics other than β -lactams. The AKh4 is typically multiresistant to ciprofloxacin, clindamycin (constitutive resistance), co-trimoxazole, erythromycin, gentamicin and tetracycline. The WR/AK1 strain is invariably resistant to fusidic acid and high-level mupirocin. In 2003, 36.8% of the isolates of this strain were also erythromycin resistant. All MRSA tested were susceptible to linezolid and vancomycin.

Table 2. Resistance among MRSA referred during August 2003

| Antimicrobial agent (resistance breakpoint, mg/L) ¹ | Percent resistance | | | | |
|--|---|------------------------------------|-------------------|------------------|--------------------|
| | All isolates (n = 513) ² | EMRSA-15 (n = 191) ³ | WSPP (n = 153) | AKh4 (n = 46) | WR/AK1 (n = 19) |
| Chloramphenicol (MIC ≥ 32) | 1.0 | 0 | 0.7 | 2.2 | 0 |
| Ciprofloxacin (MIC ≥ 4) | 48.7 | 100 | 0 | 97.8 | 0 |
| Clindamycin (MIC ≥ 4) ⁴ | 14.0 | 5.2 | 0.7 | 93.5 | 0 |
| Co-trimoxazole (MIC $\geq 4/76$) | 9.4 | 0 | 0 | 100 | 0 |
| Erythromycin (MIC ≥ 8) | 43.5 | 66.0 | 4.6 | 100 | 36.8 |
| Fusidic acid (MIC ≥ 2) | 7.8 | 1.6 | 0 | 0 | 100 |
| Gentamicin (MIC ≥ 16) | 11.1 | 0 | 0.7 | 97.8 | 0 |
| Mupirocin (MIC ≥ 8) ⁵ | 9.8 | 0 | 0.7 | 2.2 | 100 |
| High-level mupirocin (MIC ≥ 512) | 8.6 | 0 | 0.7 | 0 | 100 |
| Rifampicin (MIC ≥ 4) | 0.8 | 0 | 0 | 4.4 | 0 |
| Tetracycline (MIC ≥ 16) | 12.1 | 3.7 | 1.3 | 100 | 0 |
| Multiresistance ⁶ | 43.7 | 67.0 | 2.0 | 100 | 100 |

¹ all isolates were susceptible to linezolid and vancomycin

² includes isolates of two different strains from one patient

³ the susceptibility of one EMRSA-15 isolate was not tested

⁴ erythromycin-resistant, clindamycin-susceptible isolates were not tested for inducible clindamycin resistance. The EMRSA-15 strain has previously been shown, by the disc approximation test, to have inducible clindamycin resistance.

⁵ includes low-level (MIC 8-256 mg/L) and high-level (MIC ≥ 512 mg/L) mupirocin resistance

⁶ resistance ≥ 2 classes of antibiotics in addition to β -lactams

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