

Antimicrobial resistance of clinical isolates in Hong Kong

To the Editor—We read with interest the recent article on antimicrobial resistance by Ling et al.¹ Since 1988, we have been collecting antimicrobial susceptibility data from clinics and hospitals in Hong Kong. The method of antibiotic testing and data collection has been reported in a previous article by us.² From the data collected, it is obvious the antimicrobial resistance of some of the commonly isolated organisms (from 1989 to 1994) is changing.

Of the Gram-positive organisms isolated and tested, the most alarming finding has been the recent increase in resistance of *Streptococcus pneumoniae* isolates to penicillin (Table 1). Resistance to penicillin increased from less than 1% in 1991 to 6% in 1992 and 26.6% in 1994 among respiratory isolates and from 5% in 1992 to 17.2% in 1994 for blood isolates. The minimum inhibitory concentration (MIC) of these isolates remained at below 1 mg/ml until 1994 when five isolates with a MIC of more than 1 mg/ml were detected—two of these isolates were from blood/CSF specimens.

Increasing resistance to b-lactams was also seen among the enterococci, where ampicillin resistance increased from 4.2% in 1989 to 12% in 1994. To our relief, we have not isolated any vancomycin-resistant

enterococci, which currently is of great concern in the United States where it is posing an infection control problem.³ In agreement with the findings of Ling et al, we found the proportion of methicillin-resistant *Staphylococcus aureus* (MRSA) isolates to be constant at 30% over the past few years.

For the Gram-negative organisms isolated and tested, resistance to the commonly used antibiotics ampicillin, gentamicin and co-trimoxazole is common. Increased resistance to both cefuroxime and ofloxacin among *Escherichia coli* isolates has been seen in recent years (Table 2) and this most probably reflects the increased use of these antibiotics in the community.

Of the *Pseudomonas aeruginosa* isolates tested, there seems to be a trend of decreasing resistance to aminoglycosides, fluoroquinolones and piperacilin, when 1993 and 1994 figures are compared with 1990, 1991 and 1992 figures (Table 3). Reasons for this decline remain to be elucidated. We need to continue monitoring antibiotic resistance of this organism in order to be certain that this trend is sustained.

It is essential that we continue surveillance of the antibiotic resistance of important human patho-

Table 1. Resistance found in *Streptococcus pneumoniae* isolates, 1989 to 1994

Year	1989 % (No. of isolates)	1990 % (No. of isolates)	1991 % (No. of isolates)	1992 % (No. of isolates)	1993 % (No. of isolates)	1994 % (No. of isolates)
Penicillin	0.6 (796)	1.4 (722)	0.5 (542)	5.9 (356)	5.2 (420)	26.0 (511)
Erythromycin	11.6 (787)	10.6 (719)	12.4 (530)	10.9 (357)	17.3 (415)	28.0 (502)
Tetracycline	47.4 (582)	47.1 (121)	45.5 (312)	39.0 (120)	39.0 (118)	47.7 (272)
Co-trimoxazole	22.5 (659)	21.8 (605)	32.7 (440)	37.8 (230)	32.9 (337)	44.7 (503)
Chloramphenicol	3.0 (405)	7.0 (338)	12.7 (235)	20.4 (235)	5.5 (55)	3.1 (32)

Table 2. Resistance found in *Escherichia coli* isolates, 1989 to 1994

Year	1989 % (No. of isolates)	1990 % (No. of isolates)	1991 % (No. of isolates)	1992 % (No. of isolates)	1993 % (No. of isolates)	1994 % (No. of isolates)
Ampicillin	56.4 (8319)	57.9 (9154)	58.0 (9778)	57.1 (5002)	59.4 (6636)	59.0 (7528)
Cefuroxime	1.8 (7075)	2.0 (8052)	2.4 (7801)	2.6 (3460)	2.8 (4095)	5.5 (4110)
Gentamicin	23.8 (8323)	23.0 (9348)	23.3 (9714)	21.9 (5181)	24.9 (6390)	24.1 (6443)
Ofloxacin	0.2% (1336)	0.5% (3720)	2.0% (4040)	1.0% (925)	6.5% (1966)	6.4% (4264)
Co-trimoxazole	35.7 (7900)	41.6 (8558)	39.6 (9037)	43.0 (4410)	47.0 (6699)	46.0 (7764)
Nalidixic acid*	5.6 (5123)	7.4 (5515)	8.1 (5576)	10.0 (3459)	13.5 (4646)	15.1 (5017)
Nitrofurantoin*	5.0 (5134)	5.4 (3580)	5.6 (3317)	7.0 (3457)	7.7 (5234)	8.2 (6158)

* Urinary isolates tested only

gens in order to detect trends of increasing resistance. In Hong Kong, penicillin-resistant *Streptococcus pneumoniae* organisms are being isolated increasingly and continued close monitoring is absolutely warranted. As for vancomycin-resistant enterococci, early detection would enable appropriate infection control measures to be implemented promptly.³ The speedy and accurate recognition of

resistant bacteria is a fundamental responsibility of the clinical laboratories, which should perform isolation, identification, and antimicrobial susceptibility testing using standard methods and good quality control. The rational use of antibiotics plus appropriate infection control practices in health care settings are essential for the prevention and control of transmission of antibiotic-resistant bacteria.

Table 3. Resistance found in *Pseudomonas aeruginosa* isolates, 1989 to 1994

Year	1989 % (No. of isolates)	1990 % (No. of isolates)	1991 % (No. of isolates)	1992 % (No. of isolates)	1993 % (No. of isolates)	1994 % (No. of isolates)
Gentamicin	20.0 (3904)	23.4 (5079)	20.5 (5473)	27.0 (2522)	17.1 (2907)	15.5 (2793)
Amikacin	4.2 (3789)	3.4 (4832)	3.9 (5466)	5.0 (2514)	2.5 (2703)	2.3 (2687)
Ofloxacin	16.1 (3066)	24.1 (4406)	25.5 (4602)	29.0 (1807)	23.6 (2318)	17.6 (1169)
Piperacillin	16.7 (647)	19.9 (2038)	15.9 (2494)	18.0 (1805)	11.0 (2015)	9.3 (2024)

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2. Lim W, Tint KK, Ng TK, et al. Current status of bacterial resistance to antibiotics in Hong Kong. J Hong Kong Med Assoc 1991;43:152-8.
3. Recommendations for preventing the spread of vancomycin resistance. MMWR 1995;44(Sept 22):No.RR-12.

In reply—We also noted the increasing antimicrobial resistance of *Streptococcus pneumoniae* as highlighted

by Dr Tint et al. We did not isolate any *S pneumoniae* with reduced penicillin susceptibility in 1987 but isolated 10% in 1993 and 52% in 1995. Most of these isolates were from sputum and were multiply-resistant to tetracycline, chloramphenicol, co-trimoxazole and erythromycin. A change in antimicrobial resistance was also noted in *Escherichia coli* and in *Pseudomonas aeruginosa* although we found that resistance to cefuroxime remained unchanged at 6% to 9% in *E coli*. Although we did not mention ampicillin-resistance in enterococci in our recent article, we have data to show that it increased from 0.7% in 1987 to 7% in 1993. We also have not isolated any vancomycin-resistant enterococcus.¹

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Reference

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