

EUROPEAN ANTIMICROBIAL RESISTANCE SURVEILLANCE SYSTEM (EARSS)



Introduction:

In 1999, twelve laboratories participated in the *Strep.pneumoniae* component of EARSS and eleven in the *S.aureus* component. In total, 514 isolates of *S.aureus* were received. Methicillin (oxacillin) resistance in *S.aureus* was detected in 201/514 isolates, giving 39.4% resistance. There were no isolates resistant to vancomycin.

For *S.pneumoniae*, 159 isolates were received. Penicillin "resistant" *S.pneumoniae* accounted for 29/159, 18.2%.

Sex Distribution:

Sixty-one percent of *S.aureus* isolates in 1999 came from males and 39% came from females. Fifty-six percent of isolates of *S.pneumoniae* came from males, 44% from females.

Age Breakdown:

Seventy percent of *S.aureus* isolates were derived from patients over 50 years. Sixty-five percent of *S.pneumoniae* strains were isolated from patients over 50 years.

Based on data sent from individual laboratories, the aggregate percentage of resistance in *S.aureus* to selected antimicrobials is seen in Table 1.

Table 1: Percentage resistance in *S.aureus* returned from laboratories in 1999. (CI=Confidence Interval)

All <i>S.aureus</i>	n	Resistant	%Resist (incl 95% CI)
Ox/Meth	514	201	39.1% (34.9%-43.3%)
Erythro	420	174	41.4% (36.7%-46.1%)
Cipro	377	167	44.3% (39.3%-49.3%)
Gent	483	120	24.8% (21.0%-28.7%)
Vanco	477	0	0.0%

Based on the analysis performed at the EARSS Referral Laboratory at St. James's Hospital, the percentage resistance in MRSA based on a complete antibiogram for 177 strains received gave the results seen in Table 2.

Table 2: Percentage resistance seen in MRSA based on testing at EARSS Referral Laboratory.

	Chlor	Cipro	Eryth	Fucid	Gentam	Linco	Mup	Rifamp	Tetrac	Trim	Vanco
S	98.8%	5.2%	4.7%	91.9%	41.3%	48.8%	71.4%	98.3%	98.8%	86.0%	100.0%
M	0.0%	0.0%	0.0%	6.4%	1.2%	0.0%	7.1%	0.6%	0.6%	3.5%	0.0%
R	1.2%	94.8%	95.3%	1.7%	57.6%	51.2%	21.4%	1.2%	0.6%	10.5%	0.0%
n	172	172	172	172	172	172	14	172	172	172	172

Based on data sent from individual laboratories, the aggregate percentage of resistance in *S.pneumoniae* to selected antimicrobials is seen in Table 3.

Table 3: Percentage resistance in *S.pneumoniae* returned from laboratories.

	%Resist	n	95% Confid.Intervals
Pen/Ox	18.24%	159	(12.24%-24.24%)
Erythro	14.88%	121	(8.54%-21.22%)
Tetracyc	1.15%	87	(-1.09%-3.39%)
Vanco	0.00%	75	
Cefotax	0.00%	80	

Definition used:

S.pneumoniae:

Penicillin susceptible - MIC= \leq 0.1ug/ml (PSSP)

Penicillin intermediate - MIC=0.1 to 1.0ug/ml ("PRSP")

Penicillin resistant - MIC $>$ 1ug/ml ("PRSP")

Based on the analysis performed at RCSI/Beaumont EARSS Referral Laboratory, there was no high level resistance detected ($>$ 1ug/ml). All "PRSP" were intermediate level, see figure 1, overleaf. These data are based on those isolates received for MIC tests and not all PRSP detected in laboratories.

Based on most recent BSAC breakpoints, 4 of 148 isolates were ciprofloxacin resistant (resistant=MIC \geq 4mg/L).

Based on most recent BSAC breakpoints, no isolate showed resistance to cefotaxime (resistant=MIC \geq 2mg/L).

Further developments in EARSS:

Given the level of resistance detected in the first year of the project and the interest shown, NDSC recommends continuation of the project into 2000. We will continue to collect information on the first patient isolate of all *S.aureus* isolated from blood cultures and any community acquired *S.pneumoniae* from CSF or blood cultures. We are investigating ways in which we can gather relevant information electronically with participants to decrease the burden of data collection. We also welcome four new participants to the project from the Southern, Mid-Western and Midlands Health Board areas.

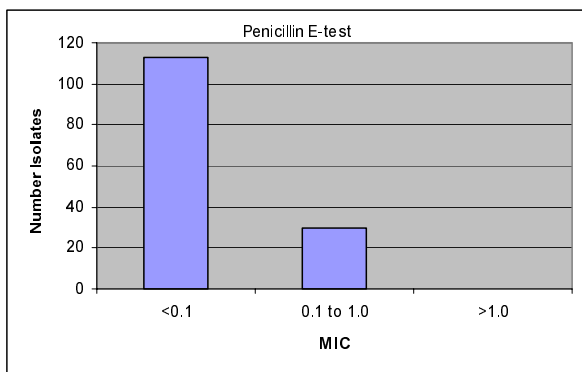


Figure 1: MIC data on Penicillin against *S.pneumoniae* 1999.

EARSS Data for Quarter 4 in 1999

In quarter 4 of 1999, 138 isolates of *S.aureus* were received. Methicillin (oxacillin) resistance in *S.aureus* was detected in 45/138 isolates, giving 32.6% resistance. There were no isolates resistant to vancomycin.

For *S.pneumoniae*, 41 isolates were received. Penicillin “resistant” *S.pneumoniae* accounted for 4/41, 9.76%.

Based on data sent from individual laboratories, the aggregate percentage of resistance in *S.aureus* to selected antimicrobials is seen in Table 3.

Table 3: Percentage resistance in *S.aureus* returned from laboratories in Quarter 4. (C.I.=Confidence Interval)

	n	Resist	%Resist(incl 95% C.I.)
Ox/Meth	138	45	32.6% (24.8%-40.4%)
Erythro	110	43	39.1% (30.0%-48.2%)
Cipro	88	29	33.0% (23.1%-42.8%)
Gent	123	23	18.7% (11.8%-25.6%)
Vanco	132	0	0.0%

Based on the analysis performed at the EARSS Referral Laboratory at St. James’s Hospital, the percentage resistance in MRSA based on a complete antibiogram for 38 strains received gave the results seen in Table 4.

Table 4: Percentage resistance seen in MRSA based on testing at EARSS Referral Laboratory in quarter 4.

	Chlor	Cipro	Eryth	Fucid	Gentam
S	97.4%	13.2%	7.9%	84.2%	44.7%
M	0.0%	0.0%	0.0%	10.5%	0.0%
R	2.6%	86.8%	92.1%	5.3%	55.3%
n	38	38	38	38	38
	Linco	Rifamp	Tetrac	Trim	Vanco
S	57.9%	100.0%	100.0%	81.6%	100.0%
M	0.0%	0.0%	0.0%	2.6%	0.0%
R	42.1%	0.0%	0.0%	15.8%	0.0%
n	38	38	38	38	38

(S-sensitive, M-moderate, R-resistant)

Based on data sent from individual laboratories, the aggregate percentage of resistance in *S.pneumoniae* to selected antimicrobials in quarter 4, is seen in Table 5.

Table 5: Percentage resistance in *S.pneumoniae* returned from laboratories in Quarter 4.

	%Resist	n	Resist	95% CI
Pen/Ox	9.8%	41	4	(0.67%-18.84%)
Erythro	20.7%	29	6	(5.95%-35.43%)
Tetracycl	0.0%	16	0	
Vanco	0.0%	21	0	
Cefotax	0.0%	18	0	

Based on the analysis performed at RCSI/Beaumont EARSS Referral Laboratory, there was no high level resistance detected ($>1\mu\text{g/ml}$). All “PRSP” showed intermediate level resistance, see figure 2 below.

Based on most recent BSAC breakpoints, no isolate showed resistance to ciprofloxacin (resistant= $\text{MIC}\geq 4$).

Based on most recent BSAC breakpoints, no isolate showed resistance to cefotaxime (resistant= $\text{MIC}\geq 2$).

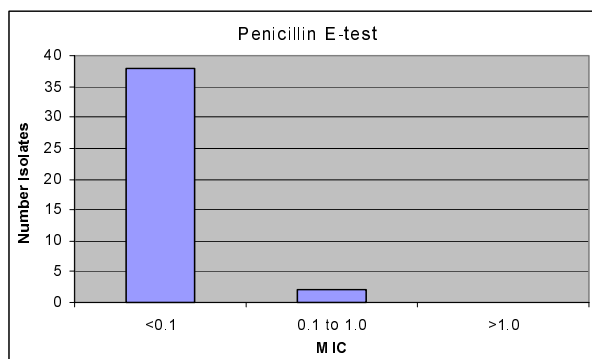


Figure 2: MIC data on Penicillin against *S.pneumoniae* in Quarter 4.

Acknowledgement:

Significant time and resources were given by consultant microbiologists and laboratory technical staff to check the quality of the data received during the quarter and at the end of the year. This was extremely worthwhile, as during the initial phase of EARSS it is important to be assured of the integrity of data, so that we can be confident of conclusions reached. NDSC would like to thank all participants for their patience and co-operation in this very topical and timely project.

Estimates of the expected number of *S.aureus* and *S.pneumoniae* in 1997 (1998 in two cases) were received by NDSC at the start of the project. According to these estimates, NDSC have received 100% of *S.aureus* isolates in the case of five laboratories, 83-85% in case of four, and 60% in one. Overall, the percentage was 88% for *S.aureus*. For *S.pneumoniae*, expected numbers were well above 100% in most centres.

Participant Laboratories:

Adelaide, Meath and National Childrens Hospital, Tallaght;
Cherry Orchard Hospital, Dublin;
St Vincents Hospital, Dublin;
Waterford Regional Hospital.

Beaumont Hospital, Dublin;
Mater Misericordiae Hospital, Dublin;
The Rotunda/Temple St Hospital, Dublin;

Bon Secours Hospital, Cork; Bon Secours Hospital, Glasnevin;
Sligo General Hospital; St James’s Hospital, Dublin;
University College Hospital, Galway;