

EUROPEAN ANTIMICROBIAL RESISTANCE SURVEILLANCE SYSTEM (EARSS)



Quarter 1, 2001

June, 2001

Introduction

In Quarter 1 (Q1), 2001, twenty laboratories participated in the *Staphylococcus aureus* arm of the study and twenty-one laboratories participated in the *Streptococcus pneumoniae* component. In addition to reporting data to the National Disease Surveillance Centre (NDSC), participating laboratories referred methicillin-resistant *S. aureus* (MRSA) isolates to the Department of Clinical Microbiology, St. James's Hospital (SJH) and both penicillin-susceptible *S. pneumoniae* (PSSP) and penicillin-nonsusceptible *S. pneumoniae* (PRSP/PNSP) isolates to the Department of Clinical Microbiology, Beaumont/RCSI.

For the purpose of this analysis, Part 1 describes results of data returned from participating laboratories and Part 2 describes results from isolates sent to referral laboratories. The full list of laboratories currently participating is printed overleaf.

Staphylococcus aureus

Part 1: Data from Participating Laboratories

A total of 224 episodes of *S. aureus* bacteraemia were reported. Isolates from 104 patients (46%) with *S. aureus* bacteraemia were resistant to methicillin. Three laboratories did not report any episode of *S. aureus* bacteraemia during the quarter. In comparison, there were 201 isolates in Q1, 2000 yielding 39% MRSA. The MRSA rate for the year 2000 was 39%.

All isolates were susceptible to vancomycin. Susceptibility test results were available for gentamicin on 197 isolates, for ciprofloxacin on 124 isolates and for erythromycin on 179 isolates. Gentamicin, ciprofloxacin and erythromycin resistance rates were 16% (n=31), 51% (n=63) and 44% (n=79), respectively.

Part 2: Data from Referral Laboratory

Ninety-six MRSA isolates from 94 patients were referred to SJH for further evaluation. Antibigram results (shown in table 1) were available on 96 isolates.

Minimum inhibitory concentration (MIC) results (determined by E-test™) were available on 96 isolates. The majority of isolates (74%, 71/96) exhibited oxacillin MIC values of >256 mg/L. All isolates exhibited vancomycin MIC values of ≤4 mg/L.

Streptococcus pneumoniae

Part 1: Data from Participating Laboratories

Eighty-eight *S. pneumoniae* isolates were reported. Isolates from eleven patients (12.5%) with *S. pneumoniae* bacteraemia/meningitis were non-susceptible to penicillin. Four laboratories did not report any episodes of *S. pneumoniae* bacteraemia/meningitis in this quarter.

In comparison, there were 66 isolates in Q1, 2000 yielding 9.1% PRSP. The PRSP rate for the year 2000 was 12.7%.

Table 1. Antibigram results of MRSA isolates (n=96) referred to SJH during Q1, 2001.

| ANTIBIOTIC | S | % | I | % | R | % |
|-----------------|----|-----|----|----|----|----|
| CHLORAMPHENICOL | 94 | 98 | 0 | 0 | 2 | 2 |
| CIPROFLOXACIN | 5 | 5 | 0 | 0 | 91 | 95 |
| ERYTHROMYCIN | 12 | 12 | 0 | 0 | 84 | 88 |
| FUSIDIC ACID | 88 | 92 | 5 | 5 | 3 | 3 |
| GENTAMICIN | 65 | 68 | 1 | 1 | 30 | 31 |
| LINCOMYCIN | 71 | 74 | 0 | 0 | 25 | 26 |
| MUPIROCI | 68 | 71 | 26 | 27 | 2 | 2 |
| RIFAMPICIN | 93 | 97 | 0 | 0 | 3 | 3 |
| TETRACYCLINE | 93 | 97 | 0 | 0 | 3 | 3 |
| TRIMETHOPRIM | 86 | 90 | 1 | 1 | 9 | 9 |
| VANCOMYCIN | 96 | 100 | 0 | 0 | 0 | 0 |

S=SUSCEPTIBLE, I=INTERMEDIATE, R=RESISTANT

Part 2: Data from Referral Laboratory

Fifty-seven isolates were referred to Beaumont/RCSI, four E-tests results were received from laboratories and no information was available on 27 isolates. Two PNSP isolates exhibited high-level penicillin resistance (MIC≥2mg/L) and nine PNSP isolates exhibited low-level penicillin resistance (0.1≤MIC<2mg/L). Fifty-three *S. pneumoniae* isolates exhibited ciprofloxacin MIC values of ≤2mg/L (interpreted as intermediate according to latest BSAC criteria) and one isolate was resistant (MIC=4mg/L). No "susceptible" category for ciprofloxacin against *S. pneumoniae* exists in BSAC guidelines. All *S. pneumoniae* isolates tested against cefotaxime had MIC values of ≤2mg/L (i.e. susceptible by BSAC criteria).

Table 2. Susceptibility category based on MIC data on *S. pneumoniae* isolates (n=61) referred to RCSI or laboratories during Q1, 2001.

| Antibiotic | MIC (mg/L) | | |
|---------------|-------------|--------------|-----------|
| | Susceptible | Intermediate | Resistant |
| | <0.1 | 0.1 - 1.0 | ≥2 |
| Oxacillin | 50 | 9 | 2 |
| | ≤1 | >2 | |
| Cefotaxime | 57 | 0 | |
| | | ≤2 | >2 |
| Ciprofloxacin | | 53 | 1 |

WHONET 5 and Baclink

Since January 2001, many laboratories have requested and been supplied with the data collection and analysis application – WHONET 5. The software has been installed in eleven of the twenty-one participant laboratories. Two other laboratories may shortly use the Baclink translation programme for laboratory information management system (LIMS) downloads. Three other centres are scheduled for installation. The software allows laboratories enter data electronically and eliminates the need for paper forms. It allows a local copy of the quarterly data and previous data on *S. aureus* and *S. pneumoniae* bacteraemia to be stored locally and analysed. Baclink can facilitate the translation of all antimicrobial resistance (AMR) data from LIMS downloads where a structured file format is produced.

For the purpose of EARSS, named data is not requested. All information submitted will be kept confidential, in keeping with the memorandum of understanding. Patient identifiable data stored on any database is subject to data protection legislation.

An updated version of this software will be distributed to all centres in the coming months to take into account changes in the EARSS dataset in 2001. **We would ask all laboratories to destroy older paper forms where used and change over to the Version 2001 forms.**

If any other laboratories would like to avail of this software, we would be happy to arrange the installation. It is hoped that a workshop might be organised later in the year to bring all WHONET users together. Users would look at analysis in WHONET and also at using Baclink to translate LIMS downloads into WHONET for analysis.

Interactive Database

The EARSS Project has launched a new interactive DATABASE on the EARSS website (www.earss.rivm.nl). AMR data from all participant countries can be accessed by country and by year. Output displays can be charts, maps or tables. There are several other documents and resources available on the website.

It is hoped that this may prove a timely and valuable source of feedback on AMR data to all countries.

SARI Launch

The Strategy for Antimicrobial Resistance in Ireland (SARI) was launched on 19th June 2001. The document was prepared by a multi-disciplinary committee, under the auspices of the Scientific Advisory Committee of the NDSC. The document outlines the scale of antimicrobial resistance in Ireland and highlights the deficiencies in the currently available data. The committee makes a number of recommendations to deal with this problem in Ireland. These include improved surveillance of

antimicrobial resistance and antimicrobial usage, improved infection control services, strategies to encourage appropriate prescribing of antimicrobials in community, hospital and educational strategies for health care workers, patients and the general public.

Ireland has a high rate of antimicrobial resistance, compared with other northern European countries. Implementation of the SARI recommendations will help combat the problems of infection and antimicrobial resistance in Ireland. This should ultimately lead to considerable benefits to patients, with improved care, reduced morbidity and mortality related to infections with resistant organisms, as well as significant financial savings to the health service.

EARSS Laboratory Questionnaire

NDSC would like to thank laboratories for their assistance in completing the questionnaire that updates the denominator originally collected in 1997. These data are an important context within which to examine Irish AMR data. Accompanying the questionnaire was a certificate of participation in EARSS.

Annual Report on EARSS

The EARSS Management Team have compiled an annual report on all individual countries involved in the project. The report is available on the EARSS website and a copy will be sent to all participant centres in Ireland. This was presented to the European Commission (DG Sanco) by the EARSS Management Team in March. The report contains a wealth of data from the original participant countries and from the newer participant countries.

A summary of the EARSS project and results from Ireland will be prepared for the Annual Report of the NDSC for 2000. This report is expected to be published in Autumn 2001.

EARSS Posters

Several posters on EARSS were presented at the 11th ECCMID conference in April 2001. Electronic copies of the posters (PDF format) prepared by the EARSS Management Team in RIVM and by NDSC are available from NDSC. These cover topics such as new results and implications for intervention efforts, the evaluation of EARSS and EARSS in Ireland 1999-2000.

<http://www.earss.rivm.nl/PAGINA/DOC/abstracts.htm>

Prepared by Dominic Whyte and the EARSS Steering Committee (Dr Robert Cunney, Dr Lynda Fenelon, Prof Hilary Humphreys, Prof Conor Keane, Dr Olive Murphy, Dr Darina O Flanagan and Dr Angela Rossney).

Participant Laboratories:

Adelaide, Meath and National Children's Hospital, Tallaght;
Cavan General Hospital;
Limerick Regional Hospital;
Our Lady's Hospital for Sick Children, Crumlin;
St Vincent's Hospital, Dublin;
Waterford Regional Hospital.

Beaumont Hospital, Dublin;
Cherry Orchard Hospital, Dublin;
Mater Misericordiae Hospital, Dublin;
Sligo General Hospital;
Tralee General Hospital;

Bon Secours Hospital, Cork;
Cork University Hospital;
Mercy Hospital, Cork;
St Columcille's Hospital, Loughlinstown;
Rotunda/Temple St Hospital, Dublin;

Bon Secours Hospital, Glasnevin;
Letterkenny General Hospital;
Mullingar General Hospital;
St James's Hospital, Dublin;
University College Hospital, Galway;