



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive



EARSS EQA exercise 2004: Summary report of Irish results

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Introduction

Thirty of the 36 EARSS laboratories in Ireland (as of July 2004) took part in the annual EARSS EQA exercise and reported back to UK-NEQAS by the Friday 3rd October deadline. One additional laboratory completed the exercise but its results were not received by UK-NEQAS. At least two of the five laboratories that did not participate did not receive the EQA package.

Specimen 7213 *S. aureus*

This strain was a community-acquired MRSA from the Netherlands (minus the gene for Panton-Valentine Leukocidin).

Six out of the 29 Irish laboratories reporting back on this specimen failed to identify this strain as oxacillin/methicillin-resistant. One laboratory reported the strain to be methicillin-resistant but oxacillin-susceptible with an MIC of 0.25 mg/L. Another laboratory reported the oxacillin MIC as 0.125 mg/L. Of the six laboratories, three followed NCCLS, two modified-Stokes and one BSAC guidelines.

This isolate was checked and confirmed to be methicillin resistant by NMRSARL. Careful examination within the zone of inhibition after the full incubation period (i.e. 24h and not 18h) is essential in order to detect any signs of growth that may be the only indication of oxacillin resistance. NMRSARL reported that the isolate was unequivocally resistant when tested by the cefoxitin disk diffusion screening method recommended by NCCLS (zone diameter, 14 mm; resistant breakpoint, ≤ 19 mm) (M100-S14).

All Irish laboratories correctly reported the other antibiotics listed (see attached sheet).

Specimen 7214 *S. pneumoniae*

This strain was non-susceptible (I/R) to penicillin and resistant to erythromycin and ciprofloxacin. Due to the variation of MICs obtained by reference laboratories involved, no reference interpretation for penicillin was given.

All 30 labs reporting back on this specimen identified the strain as being either intermediately resistant (n=18), high-level resistant (n=3) or non-susceptible, i.e. with no MIC available (n=5) to penicillin. One lab reported an MIC of 0.38 mg/L but did not provide an interpretation of this while one other lab interpreted an MIC of 1.5 mg/L to be intermediately resistant. One lab reported oxacillin as susceptible but penicillin as resistant (MIC 1.5 mg/L). This is most unusual, as screening with oxacillin is generally considered to be 100% sensitive (i.e. results in no false negatives).

One lab reported the strain to be ciprofloxacin-susceptible (using mod-Stokes) while 18 labs correctly reporting the strain to be ciprofloxacin-resistant. Five labs that only use NCCLS reported a result for this antibiotic. However, it should be pointed out that there are no NCCLS interpretive criteria for this particular antibiotic and according to BSAC guidelines isolates are only classified as either intermediate or resistant (there is no susceptible category).

One lab (using modified-Stokes) reported the strain to be erythromycin-susceptible.

Specimen 7215 *E. coli*

This strain was an ESBL-producing (CTX-M-15) *E. coli* and was resistant to ampicillin, piperacillin, cefotaxime, ceftriaxone and ceftazidime with additional resistance to ciprofloxacin and gentamicin. It was susceptible to amikacin, imipenem and meropenem.

Twenty-eight laboratories reported back on this specimen. Of these, 27 correctly identified this strain as *E. coli* while one identified it as *Citrobacter freundii*.

Two labs (both using modified-Stokes) failed to identify this strain as an ESBL-producer with both reporting either cefotaxime or ceftriaxone and ceftazidime as susceptible. In addition, one of the labs reported ampicillin and gentamicin to be susceptible.

One further lab (using BSAC) reported gentamicin as susceptible.

One lab reported ampicillin as resistant but amoxicillin as susceptible. It may be that this lab confused amoxicillin for amoxicillin-clavulanic acid (augmentin), which was not listed/requested.

Specimen 7216 *E. coli*

This strain was an ESBL-producing (TEM-26) *E. coli* and was resistant to ampicillin, piperacillin, cefotaxime, ceftriaxone and ceftazidime. It was susceptible to ciprofloxacin, gentamicin (plus amikacin and tobramycin), imipenem and meropenem.

All 29 laboratories that reported back on this specimen correctly identified the strain as *E. coli*. Twenty-seven of the 28 Irish labs that looked for ESBLs (96%) correctly reported that this was an ESBL-producer. One lab failed to detect the ESBL and reported cefotaxime as intermediately-resistant (with no result for ceftazidime). One lab did not look for ESBLs but reported both cefotaxime and ceftazidime to be resistant. One lab (of 28) reported the strain to be cefotaxime-susceptible (using NCCLS) but ESBL-positive.

Two of four labs reported amoxicillin as susceptible but as with specimen 7215, this may well be due to the labs confusing amoxicillin for amoxicillin-clavulanic acid (augmentin).

Specimen 7217 *E. faecalis*

This strain was resistant to high-level gentamicin (HLG) and vancomycin.

Four of 28 labs (14%) failed to identify this strain as *E. faecalis* with three labs reporting it as *Enterococcus* spp and one as β -haemolytic streptococcus – Group D.

All but one lab (using NCCLS) correctly reported the strain to be vancomycin-resistant.

All labs correctly reported that this strain was ampicillin-susceptible and HLG-resistant. However, one lab (using NCCLS) reported the strain to be amoxicillin-resistant (no result for ampicillin). This same lab correctly reported the strain as HLG-resistant but using a cut-off of >120 mg/L.

Specimen 7218 *E. faecium*

This strain was resistant to vancomycin but susceptible to ampicillin, HLG and teicoplanin (N.B. this was subsequently determined to be a *vanA* strain genotypically but with a *vanB* phenotype. Such strains are not commonly encountered).

Six of the 29 labs (21%) failed to identify this strain as *E. faecium* with three labs reporting it as *Enterococcus* spp, two as *E. gallinarum* and one as *E. durans*. Overall, identification of this EQA strain throughout Europe was problematic with just 83% of labs correctly identifying it.

Five labs reported the strain as vancomycin-susceptible (2 NCCLS and 3 modified-Stokes). MICs were available for two of these: 2 mg/L (NCCLS) and 4 mg/L (modified-Stokes). Four labs (2 NCCLS and 2 modified-Stokes) reported the strain to be intermediately-resistant to vancomycin. MICs were available for all of these. For one of the labs following NCCLS guidelines, the strain should have been interpreted as resistant. All 29 labs correctly reported that teicoplanin was susceptible.

Two labs (both modified-Stokes) reported this strain as ampicillin-resistant.

All 22 labs that examined the strain for HLG resistance correctly determined that this was not present.

Conclusion

The response to the EARSS EQA exercise for 2004 was not as good as in previous years. Five of the 36 Irish EARSS laboratories did not participate as a result of either not receiving the EQA package (n=2) or due to resource issues (n=3), primarily because these are small labs with very few staff. One laboratory completed the exercise but its results were not received by UK-NEQAS.

The results for the Irish laboratories are mostly equivalent to, if not better than, the European average with just a few exceptions: oxacillin/methicillin interpretation of *S. aureus* strain 7213, species identification of *E. faecalis* strain 7217 and vancomycin interpretation of *E. faecium* strain 7218.

A number of issues should be highlighted that may help to overcome some of the problems experienced in this year's EQA exercise:

1. When testing staphylococci for resistance to oxacillin by disc diffusion, carefully examine inside the zone of inhibition after the full incubation period (i.e. 24h and not 18h) for any signs of growth as this may be the only indication that the organism is resistant and not susceptible (this also applies to other drug-bug combinations).
2. When performing Etests to determine MICs, please refer to the testing guidelines being followed in order to correctly interpret the results. In the final laboratory report, amend the interpretation to reflect this. For example, penicillin Etests should be performed for all oxacillin non-susceptible pneumococcal isolates. The final report should state whether the isolate was intermediate (low-level resistant) or resistant (high-level resistant) or even susceptible to penicillin.
3. Speciation of enterococci remains problematic.

EARSS European quality assurance exercise 2004
Country: IE

	Reference interpretation	%correct of IE labs	%correct of EU labs
Specimen 7213 <i>S. aureus</i>			
Species identification		100%	100%
Ciprofloxacin	S	100%	94%
Cefoxitin	R	100%	89%
Erythromycin	S	100%	96%
Fusidic acid	S	100%	99%
Gentamicin	S	100%	98%
Methicillin	R	100%	77%
Oxacillin	R	73%	89%
Penicillin	R	85%	88%
Rifampicin	S	100%	100%
Teicoplanin	S	100%	99%
Tetracycline	S	100%	98%
Vancomycin	S	100%	99%
Specimen 7214 <i>S. pneumoniae</i>			
Species identification		100%	99%
Ciprofloxacin	R	78%	72%
Erythromycin	R	97%	93%
Oxacillin	R	96%	97%
Penicillin	I/R	100%	96%
Specimen 7215 <i>E. coli</i>			
Species identification		96%	99%
Amikacin	S	100%	99%
Amoxicillin	R	33%	94%
Ampicillin	R	96%	99%
Ceftazidime	R	89%	77%
Cefotaxime	R	96%	96%
Ceftriaxone	R	75%	98%
Ciprofloxacin	R	100%	100%
Gentamicin	R	93%	96%
Imipenem	S	100%	99%
Meropenem	S	100%	99%
Piperacillin	R	100%	98%
ESBL	positive	93%	91%
Specimen 7216 <i>E. coli</i>			
Species identification		100%	99%
Amikacin	S	100%	100%
Amoxicillin	R	50%	96%
Ampicillin	R	100%	100%
Ceftazidime	R	100%	98%
Cefotaxime	R	93%	89%
Ceftriaxone	R	100%	88%
Ciprofloxacin	S	100%	99%
Gentamicin	S	100%	99%
Imipenem	S	100%	100%
Meropenem	S	100%	100%
Piperacillin	R	100%	99%
Tobramycin	S	100%	99%
ESBL	positive	97%	99%
Specimen 7217 <i>Enterococcus faecalis</i>			
Species identification		86%	96%
Amoxicillin	S	50%	95%
Ampicillin	S	100%	97%
High level Gentamicin	yes	100%	99%
Vancomycin	R	96%	94%
Specimen 7218 <i>Enterococcus faecium</i>			
Species identification		79%	83%
Amoxicillin	S	0%	96%
Ampicillin	S	93%	97%
High level Gentamicin	no	100%	96%
Teicoplanin	S	100%	96%
Vancomycin	R	69%	78%