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Euro-GASP external quality assessment scheme for *Neisseria gonorrhoeae* antimicrobial susceptibility testing – 2025

July 2026

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2025

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Suggested citation: European Centre for Disease Prevention and Control. Euro-GASP external quality assessment scheme for *Neisseria gonorrhoeae* antimicrobial susceptibility testing – 2025. Stockholm: ECDC; 2026.

Stockholm, July 2026

ISBN: 978-92-9498-913-0
doi: 10.2900/6725704
Catalogue number: TQ-01-26-058-EN-N

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Abbreviations

CLSI	Clinical and Laboratory Standards Institute
ECDC	European Centre for Disease Prevention and Control
ECOFF	Epidemiological cut-off
EEA	European Economic Area
EQA	External quality assessment
ESSTI	European Surveillance of Sexually Transmitted Infections (project)
EU	European Union
EUCAST	European Committee on Antimicrobial Susceptibility Testing
Euro-GASP	European Gonococcal Antimicrobial Surveillance Programme
GC	Gonococcal
I	Increased exposure
MGS	MIC gradient strip test
MIC	Minimum inhibitory concentration
R	Resistant
S	Susceptible
STI	Sexually transmitted infection
UK	United Kingdom
UKHSA	United Kingdom Health Security Agency
UK NEQAS	United Kingdom National External Quality Assessment Service
WHO	World Health Organization
ÖUH	Örebro University Hospital

Executive summary

Introduction

External quality assessment (EQA) is an essential component of any laboratory-based surveillance system, enabling the monitoring of laboratory performance and comparability of results across participating laboratories, as well as the identification of potential issues and deployment of resources and training where necessary. An EQA scheme for antimicrobial susceptibility testing in *Neisseria gonorrhoeae* has been available to laboratories participating in ECDC's European Sexually Transmitted Infections (STI) surveillance network since 2010. Over time, this EQA scheme has demonstrated high levels of inter-laboratory comparability, despite the use of differing methodologies.

Materials and methods

The EQA specimen panel of 10 gonococcal isolates was selected by the UK Health Security Agency (UKHSA) and Örebro University Hospital (ÖUH) and was distributed by the United Kingdom National External Quality Assessment Service (UK NEQAS). Of the 10 gonococcal isolates provided, one strain was in triplicate and two strains were in duplicate to test intra-laboratory concordance. The remaining isolates were provided singly, such that the *N. gonorrhoeae* antimicrobial susceptibility EQA panel comprised six different strains. The strains were representative of a range of different antimicrobial susceptibility profiles and consisted of four WHO reference strains (WHO S2, WHO K, WHO O, and WHO F) and two clinical strains (H25-549 and H25-327). Laboratories were asked to test the EQA panel using local methodology (i.e. minimum inhibitory concentration (MIC) gradient strip test or agar dilution) and relevant breakpoints (i.e. EUCAST, CLSI, etc.). Antimicrobial agents tested included azithromycin, cefixime, ceftriaxone, ciprofloxacin, gentamicin, spectinomycin and tetracycline. Strains were also tested for beta-lactamase production. Results were submitted directly to UK NEQAS, who issued individual laboratory reports. The raw results were supplied to UKHSA and ÖUH, who decoded and analysed them. Antimicrobial susceptibility category concordance (categorical agreement) was assessed using the consensus category (most often reported category) of susceptibility for each tested strain. MIC concordance was assessed by examining MIC results within one (essential agreement) and two doubling dilutions of the modal MIC. Intra-laboratory concordance was examined using the triplicate and the two duplicate strains.

Results

In September 2025, the EQA panel was dispatched to 28 laboratories in 28 European Union/European Economic Area (EU/EEA) countries, 27 (96.4%) of which returned results to UK NEQAS. All laboratories used MIC gradient strip tests for one or more antimicrobials, and all stated that they used EUCAST breakpoints.

Overall categorical agreement ranged from 92.8% (tetracycline) to 100% (ciprofloxacin), exceeding the recommended 90% threshold for all antimicrobials. Compared with the 2024 EQA, categorical agreement increased for azithromycin (94.4% to 95.7%) and ciprofloxacin (99.4% to 100%), but decreased for cefixime (100% to 94.2%), ceftriaxone (99.2% to 94.7%), spectinomycin (100% to 98.8%), beta-lactamase detection (98.2% to 96.7%), and tetracycline (94.8% to 92.8%). Most susceptibility category discrepancies occurred in strains with MICs close to a resistance breakpoint. Overall, 95.9% and 98.6% of MICs were within one (essential agreement) and two doubling dilutions of the modal MIC, respectively, corresponding to a significant increase in essential agreement compared with 2024 (93.3%, $p<0.001$). Essential agreement for individual antimicrobials ranged from 90.7% (ciprofloxacin) to 99.5% (gentamicin). Compared with 2024, essential agreement increased for all antimicrobials except cefixime and ciprofloxacin; the increases were statistically significant for azithromycin (89.5% in 2024 to 95.4% in 2025, $p=0.01$) and tetracycline (92.1% in 2024 to 96.5% in 2025, $p=0.04$).

At the individual laboratory level, the average inter-laboratory categorical concordance score for the core antimicrobials and beta-lactamase decreased from 99.2% in 2024 to 96.3% in 2025. However, 19/27 (70.4%) laboratories scored 95% or higher and 11/27 (40.7%) achieved a perfect score of 100%. The average inter-laboratory MIC concordance score for the core antimicrobials decreased slightly from 90.8% in 2024 to 89.2% in 2025. Four laboratories reported >5% of MIC results greater than two doubling dilutions from the modal MIC across the core antimicrobials. Intra-laboratory MIC concordance remained stable and high (96.2% in 2024 and 96.3% in 2025), with 21/27 (77.8%) laboratories scoring 95% or higher, including three laboratories with a perfect score of 100%.

Discussion and conclusion

Antimicrobial susceptibility testing methods and breakpoints have largely been harmonised across laboratories participating in the 2025 European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP) EQA. Laboratories generally performed well, demonstrating good levels of competency in testing *N. gonorrhoeae* isolates of unknown phenotype. Both categorical and essential agreement exceeded the recommended 90% threshold across all antimicrobials. Although categorical agreement and inter-laboratory categorical concordance decreased slightly compared with 2024, these changes were primarily linked to challenging strains with MICs close to resistance breakpoints rather than systemic testing failures. Overall, MIC essential agreement improved significantly from 2024, and intra-laboratory MIC concordance remained high and stable. The 2025 EQA results therefore continue to support confidence in the comparability and reliability of Euro-GASP antimicrobial susceptibility data. Targeted support will be offered to the eight laboratories with substantial MIC discrepancies to help them achieve the Euro-GASP recommended target of 95% of MICs within two doubling dilutions of the modal MIC.

1. Introduction

The European Centre for Disease Prevention and Control (ECDC) commissions and supports EQA exercises across public health microbiology laboratories in the EU/EEA Member States with the objective of:

- verifying the quality and comparability of surveillance data reported at European level; and
- ensuring threat detection capability for emerging and epidemic disease or drug resistance.

EQAs are conducted within a quality management system and evaluate the performance of laboratories. They are carried out by an outside agency and with materials supplied specially for this purpose. ECDC's disease-specific networks organise a series of EQsA for EU/EEA countries. The aim of these EQAs is to identify weak points in the diagnostic capacities of EU/EEA laboratories that are relevant to the surveillance of diseases listed in Commission Implementing Decision (EU) 2018/945[1]; another aim is to ensure comparability of laboratory results from all EU/EEA countries.

The main purposes of EQA schemes include:

- assessment of the general standard of performance ('state of the art');
- assessment of the effects of analytical procedures (method principle, instruments, reagents, calibration);
- evaluation of individual laboratory performance;
- identification of vulnerabilities;
- provision of continuing education for participating laboratories; and
- identification of needs for training activities.

A major aim of the European Sexually Transmitted Infections (STI) surveillance network is to strengthen the surveillance of *Neisseria gonorrhoeae* antimicrobial susceptibility in EU/EEA Member States. The EQA has been part of the ECDC STI microbiology project since 2009, with the first ECDC EQA distributed in 2010.

The EQA scheme is available to all laboratories in the STI surveillance network. An EQA scheme is an essential component of the laboratory-based surveillance programme, ensuring comparability of data between and within testing centres, and successful performance in EQA is a requirement for laboratories participating in decentralised testing as part of antimicrobial resistance surveillance across Europe [1,2].

Since 2010, participation in the *N. gonorrhoeae* antimicrobial susceptibility testing EQA has increased from 18 to 27 laboratories and, despite the use of differing antimicrobial susceptibility testing methodologies, the scheme has consistently demonstrated high levels of inter-laboratory comparability. Problems identified in previous EQA distributions included reduced comparability of results determined using discs compared with those determined by agar dilution and minimum inhibitory concentrations (MIC) gradient strip tests; agar media not supporting gonococcal growth, and reduced comparability of results among laboratories using MIC gradient strip tests from a particular manufacturer.

The United Kingdom National External Quality Assessment Service (UK NEQAS) collaborated with the United Kingdom Health Security Agency (UKHSA), Örebro University Hospital (ÖUH) and ECDC for the EQA described in this report. UK NEQAS is accredited by the United Kingdom Accreditation Service to ISO 17043 (Conformity Assessment – General Requirements for Proficiency Testing). Participation in this EQA scheme for *N. gonorrhoeae* antimicrobial susceptibility provides a mechanism for laboratories in the network to meet the requirements of their local standards, such as ISO 15189:2012 or ISO 15189:2022.

[1] Commission Implementing Decision (EU) 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions: https://eur-lex.europa.eu/eli/dec_impl/2018/945/oj/eng

2. Materials and methods

2.1 Antimicrobial susceptibility testing external quality assessment panel

Members of the STI network and Euro-GASP contact points were invited by ECDC to participate in the EQA scheme. All laboratories that expressed interest in the EQA received 10 gonococcal isolates from UK NEQAS. The isolates included in the panel were selected by UKHSA and ÖUH to demonstrate a range of susceptibility profiles for relevant therapeutic antimicrobial agents and consisted of four WHO reference gonococcal strains (WHO S2, WHO K, WHO O, and WHO F [3]), and two clinical strains (H25-549 and H25-327). To measure intra-laboratory reproducibility, one of these strains was supplied in triplicate (Strain 5 (H25-549), coded in the EQA as IDs 6007G/6007H/6007J, and two strains were supplied in duplicate (Strain 1 (WHO S2), EQA IDs 6007A/6007B and Strain 2 (WHO K), EQA IDs 6007C/6007D). The remaining three strains were supplied as individual isolates (Strain 3 (WHO O), EQA ID 6007E; Strain 4 (WHO F), EQA ID 6007F; and Strain 6 (H25-327), EQA ID 6007K). A total of six different strains were therefore included in the distribution.

Participating laboratories tested the EQA panel of isolates using their own routine methodologies against the following therapeutic antimicrobials where possible:

- Azithromycin
- Cefixime
- Ceftriaxone
- Ciprofloxacin
- Gentamicin
- Spectinomycin
- Tetracycline.

The antimicrobials listed are detailed in 'ECDC Instructions. External Quality Assessment 2025' [4]. Azithromycin, cefixime, ceftriaxone, and ciprofloxacin were the 'core' antimicrobials, which are tested annually in Euro-GASP. Tetracycline testing and collection was added for the first time in 2023 due to the interest in whether doxycycline post-exposure prophylaxis could reduce incident gonorrhoea cases across Europe [5,6]. Gentamicin and spectinomycin are 'snapshot' antimicrobials, which are tested every three years. Participating countries were asked to test any of the above antimicrobials that are routinely tested in their laboratories. Where possible, participating laboratories also tested the EQA panel of isolates for beta-lactamase production.

2.2 Antimicrobial susceptibility testing methods

Laboratories were asked to provide information on the methodology and the clinical breakpoints/guidelines (e.g. European Committee on Antimicrobial Susceptibility Testing (EUCAST) breakpoints (Table 1) [7]) used to determine the category of susceptibility for each antimicrobial. Antimicrobial susceptibility testing results for each isolate were reported as both the category of susceptibility (resistant (R), susceptible, increased exposure (I), susceptible (S)), and the MIC for the MIC gradient strip test (MGS) and agar dilution methods.

Table 1. 2025 European Committee on Antimicrobial Susceptibility Testing (EUCAST) breakpoints

Antimicrobial	MIC breakpoint (mg/L)		
	S ≤	I	R >
Azithromycin	*		*
Cefixime	0.125		0.125
Ceftriaxone	0.125		0.125
Ciprofloxacin	0.03	0.06	0.06
Spectinomycin	64		64
Tetracycline	0.5		0.5

**: From January 2019, the EUCAST 'SIR' categories have been removed for azithromycin and replaced with an epidemiological cut-off (ECOFF) value of 1 mg/L. Isolates with azithromycin MIC >1 mg/L are hereafter referred to as resistant. Please note there are currently no EUCAST interpretive criteria for gentamicin [7].*

2.3 Analysis and interpretation of the results

Raw results for the EQA were submitted by each participating laboratory directly to UK NEQAS for the production of individual laboratory reports. The results were also forwarded to UKHSA and ÖUH for further collated analysis.

For the analysis, all MIC results that fell between any whole MIC doubling dilutions on the MGS were rounded up to the next whole MIC doubling dilution. The minimum, maximum, and modal MIC for each strain was established. The number of MIC measurements within one, two, and greater than two doubling dilutions of the modal MIC were established for each strain.

For each laboratory a percentage of overall MIC concordance was calculated based on the number of isolates within two doubling dilutions of the modal MIC for all antimicrobials, including beta-lactamase. Essential agreement (MICs within one doubling dilution of the modal MIC) was also examined and used as the basis for an overall MIC score for each participating laboratory. The overall MIC score for each laboratory was calculated based on minor and major faults in the MIC for the core antimicrobials ceftriaxone, cefixime, azithromycin, and ciprofloxacin. Where the MIC result matched the modal result, a score of five was assigned; a one MIC doubling dilution difference from the modal MIC was considered a minor fault and a score of four was given; a difference of two doubling dilutions from the modal MIC was classed as a major fault and given a score of one. An MIC greater than two doubling dilutions from the modal was classed as a very major fault and a score of zero was given. The total score was then converted into a percentage of the maximum score achievable ((10x5) + (10x5) + (10x5) + (10x5) = 200 = 100%).

Consensus categories of susceptibility (categorical agreement) for each strain tested (six in total in this distribution; consensus calculated from all isolates in the triplicate or duplicate sets) were determined once all participating laboratories had reported back their results. The 'consensus' was assigned to the category reported most often. The overall concordance for each antimicrobial was established by taking the average of each strain's percentage concordance. The total categorical concordance score was calculated by assigning a score of five for results the same as the consensus, four for a minor fault (susceptible or resistant miscategorised as intermediate or vice versa), three for a major fault (susceptible miscategorised as resistant), and one for a very major fault (resistant miscategorised as susceptible). The overall categorical concordance score for each laboratory was based on the core antimicrobials and beta-lactamase production, and the score was normalised based on the number of agents tested.

Intra-laboratory concordance was examined using the triplicate (Strain 5 (H25-549)) and two duplicate strains (Strain 1 (WHO S2) and Strain 2 (WHO K)). All MIC results for these strains were assigned a score based on the core antimicrobials: five if the same as the other results, four if one MIC doubling dilution different (minor fault), three if two MIC doubling dilutions different (major fault) and zero if greater than two MIC doubling dilutions different (very major fault). These results were then averaged for the total number of results observed and given a percentage fault score by comparing them to the maximum score possible if there were no faults. The higher the percentage, the more consistent the laboratory MIC test results were. For example, a laboratory testing a single antimicrobial against one triplicate and two duplicate strains would achieve a perfect score as follows:

(triplicate score + duplicate score + duplicate score) / (maximum possible score) * 100

(((5+5+5)/3) + ((5+5)/2) + ((5+5)/2)) / (3*5) * 100 = 100%

3. Results

3.1 2025 EQA panel strain characteristics

Table 2 shows the consensus susceptibility category, the modal MIC, and the susceptibility category concordance percentage for all tests and all strains in the 2025 EQA panel. The reference MIC is also shown for each strain tested. The strains demonstrated a range of phenotypes, and one was fully susceptible to all antimicrobials tested:

- Strain 1 (WHO S2) was resistant to azithromycin and tetracycline.
- Strain 2 (WHO K) was resistant to cefixime, ciprofloxacin, and tetracycline.
- Strain 3 (WHO O) was resistant to spectinomycin and tetracycline.
- Strain 4 (WHO F) was fully susceptible to all antimicrobials tested.
- Strain 5 (H25-549) was resistant to cefixime, ceftriaxone, and ciprofloxacin.
- Strain 6 (H25-327) was resistant to azithromycin, cefixime, ceftriaxone, ciprofloxacin, and tetracycline.

3.2 EQA participation

In September 2025, 28 laboratories in 28 EU/EEA countries were dispatched 10 gonococcal isolates (QA25) by UK NEQAS for antimicrobial susceptibility testing. In total, 27/28 (96.4%) laboratories returned results to UK NEQAS (Figure 1). Liechtenstein did not return susceptibility testing results during the EQA period, and Poland and Lithuania did not participate in the 2025 EQA. The number of countries participating in the 2025 EQA was the same as the 2024 EQA, however Romania joined the scheme in 2025, and Liechtenstein left. Of the laboratories that returned results, 20/27 (74%) participated in Euro-GASP via decentralised testing (70% in the 2024 EQA), including all decentralised laboratories.

Figure 1. Countries participating in the 2025 *N. gonorrhoeae* susceptibility testing EQA scheme

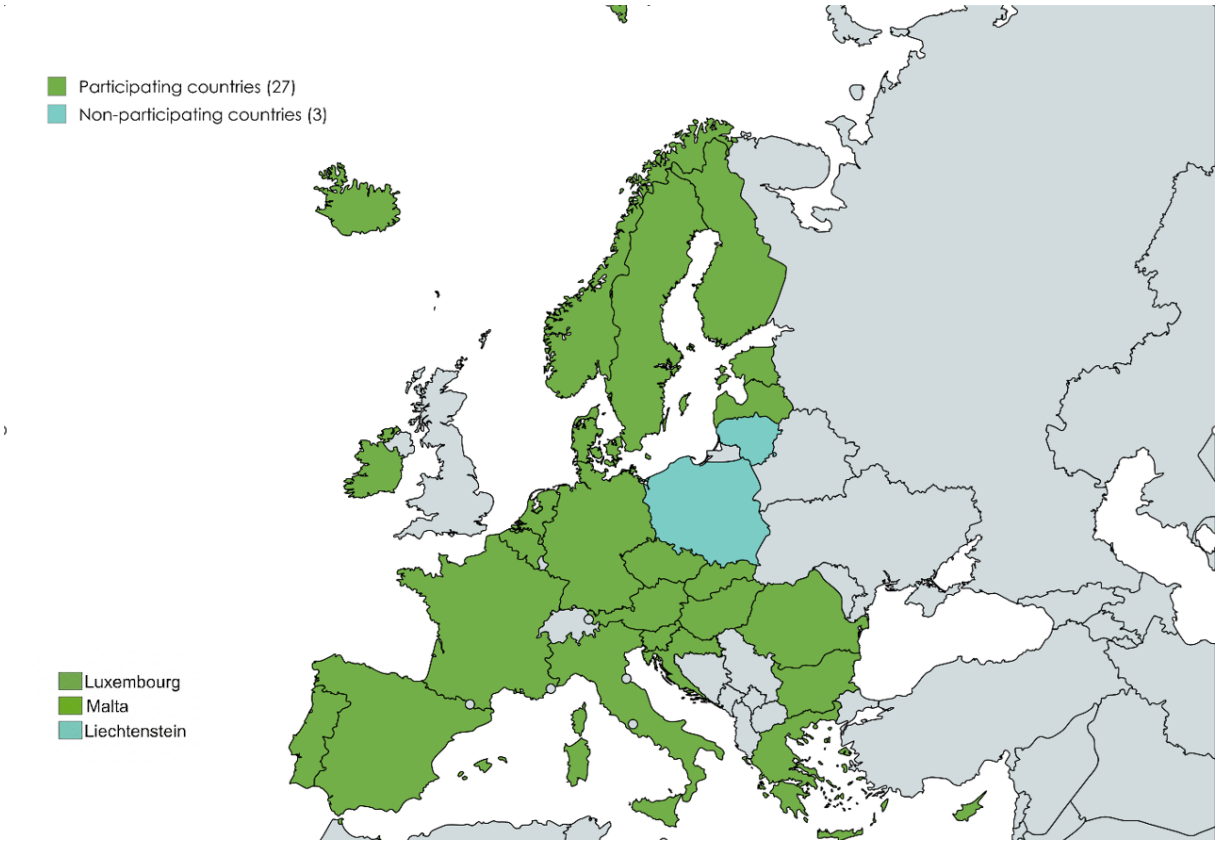


Table 2. Consensus category, modal MIC (range) for MIC gradient strip test and agar dilution (mg/L) and the percentage concordance of susceptibility category for the 2025 EQA panel

Strain		Azithromycin consensus	Cefixime consensus	Ceftriaxone consensus	Ciprofloxacin consensus	Gentamicin consensus	Spectinomycin consensus	Tetracycline consensus	Beta-lactamase consensus
Strain 1: 6007A/6007B (WHO S2 [3]) AziR, TetR	Consensus category	R	S	S	S	N/A	S	R	NEG
	Modal MIC (range)	2 (0.5–4)	<0.016 (<0.016–0.064)	≤0.016 (0.002–0.016)	0.016 (0.008–0.032)	4 (2–8)	16 (4->1024)	1 (0.5–4)	N/A
	Susceptibility category concordance (%)	73.9	100	100	100	N/A	97.7	90.4	93.5
	Reference MIC [3]	2	<0.016	0.008	0.032	8	16	2	NEG
Strain 2: 6007C/6007D (WHO K [3]) CfmR, CipR, TetR	Consensus category	S	R	S	R	N/A	S	R	NEG
	Modal MIC (range)	0.5 (0.25–1)	0.25 (0.064–2)	0.064 (0.016–0.125)	>32 (32–>32)	4 (2–8)	16 (8–32)	2 (1–4)	N/A
	Susceptibility category concordance (%)	100	65.4	100	100	N/A	100	100	95.7
	Reference MIC [3]	0.5	0.25	0.064	>32	4	16	2	NEG
Strain 3: 6007E (WHO O [3]) SpcR,TetR	Consensus category	S	S	S	S	N/A	R	R	POS
	Modal MIC (range)	0.5 (0.25–1)	<0.016 (<0.016–0.032)	0.016 (0.002–0.125)	0.008 (0.008–0.016)	8 (4–16)	>1024 (>64–>1024)	2 (1–8)	N/A
	Susceptibility category concordance (%)	100	100	100	100	N/A	95	100	100
	Reference MIC [3]	0.5	0.016	0.032	0.008	4	>1 024	2	POS
Strain 4: 6007F (WHO F [3])	Consensus category	S	S	S	S	N/A	R	R	NEG
	Modal MIC (range)	0.125 (<0.016–0.5)	<0.016 (<0.016–0.125)	≤0.016 (<0.002–≤0.016)	0.004 (<0.002–0.004)	8 (4–16)	16 (8–32)	0.25 (0.125–1)	N/A
	Susceptibility category concordance (%)	100	100	100	100	N/A	100	96.2	100
	Reference MIC [3]	0.25	<0.016	<0.002	0.004	4	16	0.25	NEG

Strain		Azithromycin consensus	Cefixime consensus	Ceftriaxone consensus	Ciprofloxacin consensus	Gentamicin consensus	Spectinomycin consensus	Tetracycline consensus	Beta-lactamase consensus
Strain 5: 6007G/6007H/ 6007J (H25-549) CfmR, CroR, CipR	Consensus category	S	R	R	R	N/A	S	S	POS
	Modal MIC (range)	0.064 (<0.016–0.125)	1 (0.25–2)	0.25 (0.125–0.5)	4 (2–>32)	4 (2–16)	8 (4–16)	0.5 (0.25–2)	N/A
	Susceptibility category concordance (%)	100	100	75.3	100	N/A	100	70.5	100
	Reference MIC*	0.032	0.5	0.25	4	4	4	0.5	POS
Strain 6: 6007K (H25-327) CfmR, CroR, AziR, CipR, TetR	Consensus category	R	R	R	R	N/A	S	R	NEG
	Modal MIC (range)	>256 (256–>256)	1 (0.5–2)	0.25 (0.125–0.5)	4 (2–>32)	4 (2–4)	16 (8–32)	32 (8–128)	N/A
	Susceptibility category concordance (%)	100	100	92.6	100	N/A	100	100	91.3
	Reference MIC*	>256	1	0.25	4	2	8	16	NEG

** MICs taken from UK NEQAS reference MIC results.*
S: susceptible; R: resistant; N/A: not available; MIC: minimum inhibitory concentration; WHO: World Health Organization; AziR: azithromycin-resistant; CfmR: cefixime-resistant; CroR: ceftriaxone-resistant; CipR: ciprofloxacin-resistant; SpcR: spectinomycin-resistant; TetR: tetracycline-resistant; NEG: negative; POS: positive. [3]: see 3 in reference list.

Note: No consensus category of susceptibility was assigned to gentamicin as there are currently no published breakpoints for this antimicrobial.

3.3 Antimicrobial susceptibility testing methods

All laboratories returned information on the type of antimicrobial susceptibility test, breakpoints/guidelines, and agar base used in the 2025 EQA (Table 3). All laboratories used MGSs for one or more antimicrobials, with 26/27 (96.3%) laboratories providing manufacturer details. Laboratories reported using MGSs from the following manufacturers: bioMérieux (19/26, 73.1%), Liofilchem (5/26, 19.2%), bioMérieux and Liofilchem (1/26, 3.8%), and Liofilchem and Bioanalyse (1/26, 3.8%). With respect to media used, the breakdown in 2025 was similar to that for 2024, with GC agar base being the most commonly used (44.4%, Table 3). Since 2020 when it peaked before decreasing, the use of GC agar base has recovered (44% in 2020, 42% in 2021, 35.0% in 2023, and 33.3% in 2024).

Table 3. Antimicrobial susceptibility testing methods used by participating laboratories, 2025 EQA

	Number of participating laboratories (n (%))	
Type of susceptibility test used	**2024**	**2025**
MIC gradient strip tests	27 (100)	27 (100)
Agar dilution	2 (7.4)*	1 (3.7)*
Testing guidelines used		
EUCAST	27 (100)	27 (100)
Agar base used		
GC agar base	9 (33.3)	12 (44.4)
Chocolatised blood agar	7 (25.9)	6 (22.2)
Mueller-Hinton/Thayer-Martin	6 (22.2)	4 (14.8)
Other^	5 (18.5)	5 (18.5)

**Laboratories that reported using agar dilution also reported use of gradient strips for a subset of antimicrobials*
^All 'other' media used in 2024 and 2025 was PolyViteX
Some percentages may not add up to 100% due to rounding.

3.4 Interpretation of MICs

All 27 laboratories reported adherence to the EUCAST breakpoints [7] (Table 3). Most laboratories that tested gentamicin did not interpret categories of susceptibility as there are currently no internationally defined interpretive criteria for this antimicrobial. Although five laboratories did submit categories of susceptibility for gentamicin, using local interpretive criteria, these data were not analysed in the report.

3.5 Coded breakdown of completeness and concordance

Due to the confidential nature of the EQA scheme, only coded laboratory breakdowns for category of susceptibility concordance, beta-lactamase detection concordance, and MIC values for MIC gradient strip tests and agar dilution method are shown in the Annex (Tables A1.1 – A1.14).

A subset of laboratories did not submit results for one or more of the antimicrobials of interest (Table 4). In addition, incomplete MIC results were submitted by two laboratories: 94937 did not submit any cefixime results for isolate 6007J and 6007K, and 98594 did not submit any results for isolates 6007E.

Table 4. Summary of testing completeness across antimicrobials of interest

Antimicrobial	Details of laboratories that did not submit results for antimicrobials of interest		Annex tables
	n	Laboratory identifiers	
Azithromycin	1	92629	A1.1 and A1.2
Cefixime	1	92629	A1.3 and A1.4
Ceftriaxone	0	N/A	A1.5 and A1.6
Ciprofloxacin	0	N/A	A1.7 and A1.8
Gentamicin	6	92613, 92624, 92629, 92784, 94936 and 95587	A1.9
Spectinomycin	5	92613, 92624, 92629, 93997 and 94936	A1.10 and A1.11
Tetracycline	1	92624	A1.12 and A1.13
Beta-lactamase production	4	92613, 92629, 94936, and 95589	A1.14

Laboratories that did not test a particular antimicrobial did not return any corresponding susceptibility category results. Five laboratories submitted incomplete antimicrobial susceptibility category results for one or more antimicrobials (Table 5).

Table 5. Summary of completeness of antimicrobial susceptibility category results across antimicrobials tested

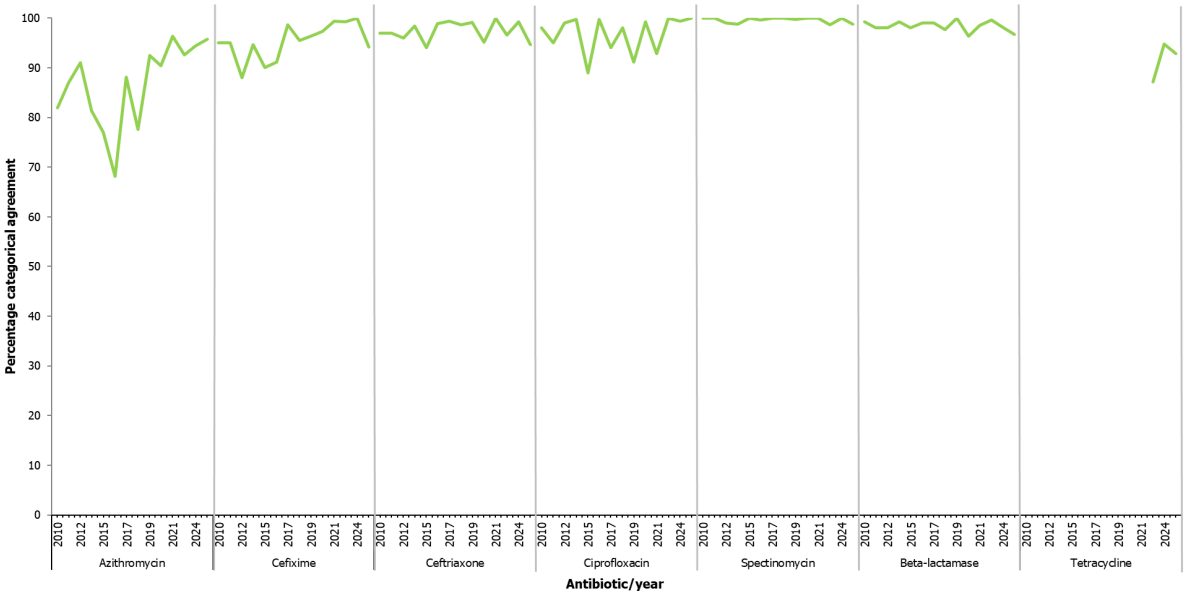
Antimicrobial	Details of incomplete antimicrobial susceptibility category results		Annex table
	Laboratory identifier	Specimens without results	
Azithromycin	92623	All	A1.1
	92784	All	
	94929	All	
Cefixime	94937	6007J, 6007K	A1.3
Ceftriaxone	92784	6007D	A1.5
Spectinomycin	96244	6007B, 6007C, 6007E, 6007F, 6007G, 6007H, 6007J and 6007K	A1.10
Tetracycline	94937	6007E	A1.12

3.6 Susceptibility category concordance

The highest levels of categorical agreement were seen for ciprofloxacin (100%, Table A1.7), followed by spectinomycin (98.8%, Table A1.10). The lowest level of categorical agreement was for tetracycline, with 92.8% concordance (Table A1.12). Consensus susceptibility categories were not assigned for gentamicin as there are currently no published breakpoints for interpretation of results.

Categorical agreement data were compared with previous EQA distributions from ECDC Euro-GASP (QA2010–24) [8-20] (Figure 2). Categorical agreement scores achieved in 2025 were consistent with, or slightly lower than those for the 2024 EQA for most antimicrobials tested (Figure 2). The exceptions were ciprofloxacin, for which concordance increased to 100% in 2025 compared with 99.4% in 2024, and azithromycin which increased from 94.4% in 2024 to 95.7% in 2025. Lower concordance was observed in 2025 for cefixime (100% in 2024 and 94.2% in 2025) and ceftriaxone (99.2% in 2024 and 94.7% in 2025), representing the largest decreases from 2024, at 5.8 and 4.6 percentage points, respectively. Smaller decreases were observed for spectinomycin (100% in 2024 and 98.8% in 2025), beta-lactamase detection (98.2% in 2024 and 96.7% in 2025), and tetracycline (94.8% in 2024 and 92.8% in 2025).

Figure 2. Longitudinal comparison of EQA interlaboratory antimicrobial categorical agreement, EU/EEA, 2010–2025



Note: Tetracycline was added to the EQA scheme in 2023.
The number of laboratories participating in the EQA changed over time: 18 laboratories (2010), 20 laboratories (2011), 19 laboratories (2012), 21 laboratories (2014), 26 laboratories (2015), 27 laboratories (2016), 28 laboratories (2017), 27 laboratories (2018), 28 laboratories (2019), 25 laboratories (2020), 26 laboratories (2021), 24 laboratories (2023), 27 laboratories (2024), and 27 laboratories (2025).

3.7 MIC concordance

MIC essential agreement (results within one doubling dilution of the modal MIC) was at 95.9% for all antimicrobials tested (Table 6), which was higher than the level of essential agreement achieved in the 2024 EQA (93.3%, p<0.001) [20]. The highest level of essential agreement was for gentamicin (99.5%) and the lowest was for ciprofloxacin (90.7%) (Table 6). This contrasted with the results of the 2024 EQA in which the highest level of essential agreement was for cefixime (99.5%) and the lowest was for spectinomycin (87.2%) [20]. For all MIC results combined, 98.6% were within two doubling dilutions of the modal MIC (Table 6). When MIC concordance data were compared with previous ECDC Euro-GASP EQA distributions (QA2010–24) [8-20], essential agreement was higher than in 2024 for all antimicrobials except cefixime and ciprofloxacin (Figure 3). The only significant difference compared to 2024 was for azithromycin (89.5% in 2024 and 95.4% in 2025, p=0.01) and for tetracycline (92.1% in 2024 and 96.5% in 2025, p=0.04).

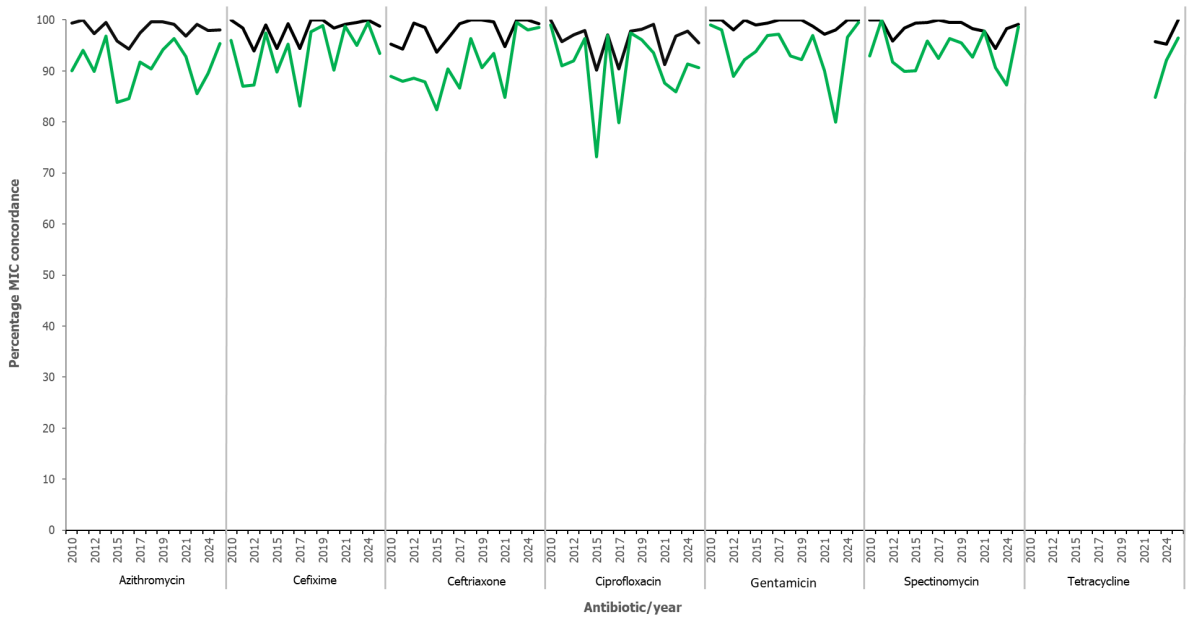
Overall, 1.4% of MIC results were greater than two doubling dilutions from the modal MIC. Ciprofloxacin had the highest proportion of isolates with an MIC greater than two doubling dilutions from the modal MIC (4.5%), while gentamicin and tetracycline had the lowest (0.0%) (Table 6). As in 2024, a total of 7/27 (25.9%) laboratories had one or more MIC results greater than two doubling dilutions from the modal MIC across all antimicrobials tested in 2025. Three of the seven laboratories reported >5% of results greater than two doubling dilutions from the modal MIC. These three laboratories plus one additional laboratory reported >5% of results greater than two doubling dilutions from the modal MIC across the core antimicrobials. Of these laboratories, two used MGS from Liofilchem and one from Bioanalyse. Of the four laboratories displaying >5% of results greater than two doubling dilutions from the modal MIC across the core antimicrobials, two had not participated in Euro-GASP in recent years, one participates via centralised testing, and one participates via decentralised testing with discrepancies for azithromycin, ceftriaxone, and ciprofloxacin, and will be supported to improve the quality of their susceptibility testing. Both laboratories participating in Euro-GASP via decentralised testing that reported >5% of results greater than two doubling dilutions from the modal MIC in the 2024 EQA improved their performance in 2025 with no results more than two doubling dilutions from the modal MIC in the 2025 EQA.

Table 6. Variation from modal MIC for QA25

QA25	Azi		Cfm		Cro		Cip		Gen		Spc		Tet		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Within +/- 1 doubling dilution	247	95.4	240	93.4	265	98.5	244	90.7	208	99.5	216	98.6	250	96.5	1670	95.9
Within +/- 2 doubling dilutions	254	98.1	254	98.8	267	99.3	257	95.5	209	100	217	99.1	259	100	1717	98.6
More than +/- 2 doubling dilutions	5	1.9	3	1.2	2	0.7	12	4.5	0	0.0	2	0.9	0	0.0	24	1.4
Total no. of isolates with MIC data	259		257		269		269		209		219		259		1741	

Azi: azithromycin; Cfm: cefixime; Cro: ceftriaxone; Cip: ciprofloxacin; Gen: gentamicin; Spc: spectinomycin; Tet: tetracycline; No.: number of isolates.
Some percentages may not add up to 100% due to rounding.

Figure 3. Longitudinal comparison of EQA interlaboratory MIC concordance, percentage of essential agreement (green line) and percentage of results within two doubling dilutions of the modal MIC (black line), EU/EEA, 2010–2025



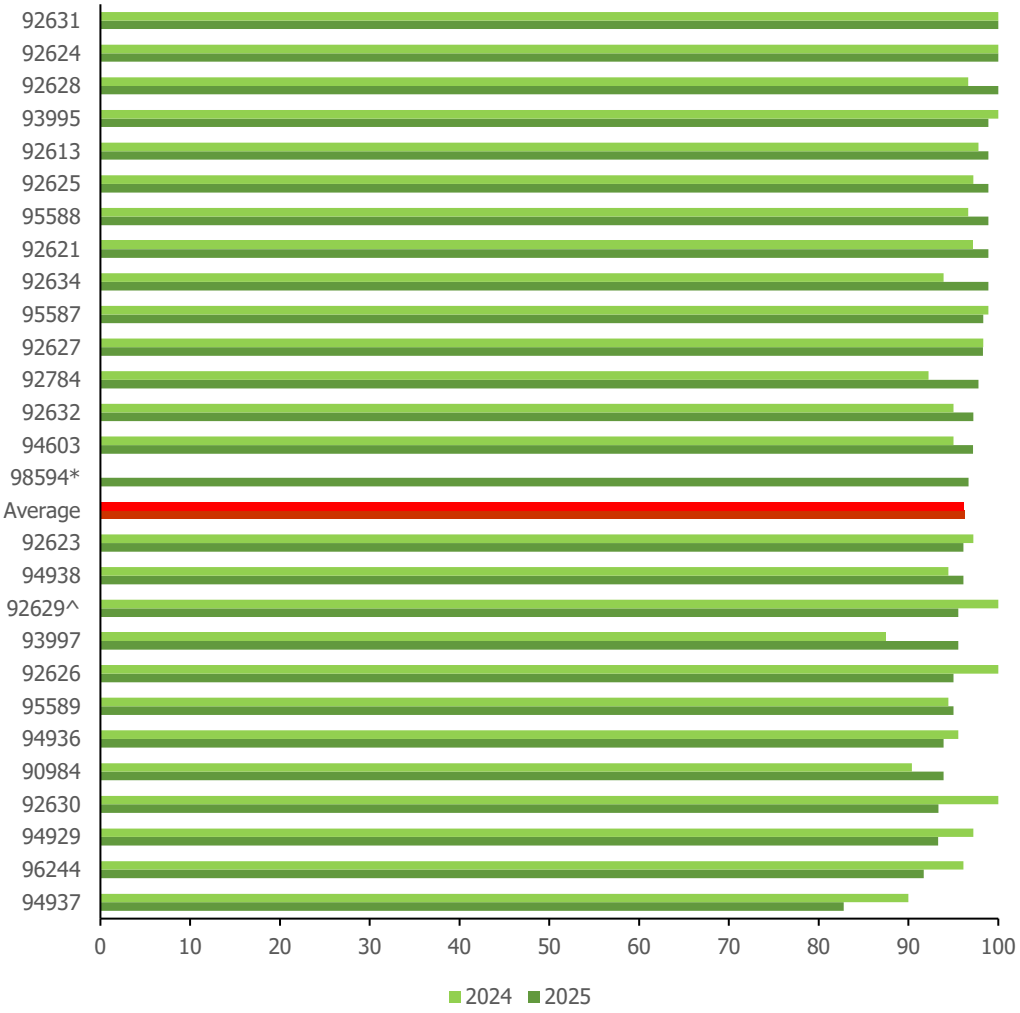
Note: Tetracycline was added to the EQA scheme in 2023.

The number of laboratories participating in the EQA changed over time: 18 laboratories (2010), 20 laboratories (2011), 19 laboratories (2012), 21 laboratories (2014), 26 laboratories (2015), 27 laboratories (2016), 28 laboratories (2017), 27 laboratories (2018), 28 laboratories (2019), 25 laboratories (2020), 26 laboratories (2021), 24 laboratories (2023), 27 laboratories (2024), and 27 laboratories (2025).

3.8 Intra-laboratory concordance

Intra-laboratory concordance was examined based on the core antimicrobials using the triplicate (Strain 5) and the two duplicate strains (Strain 1 and Strain 2). Figure 4 below shows the 2025 intra-laboratory concordance scores compared with the average scores for 2025 (96.3%) and 2024 (96.2%). The average scores for 2025 were comparable to 2024 and, many laboratories performed well: 21/27 (77.8%) laboratories scored 95% or higher, including three laboratories that obtained a perfect score of 100%. Of the eight laboratories that scored below 95% in 2024, seven participated again in 2025, with five of them improving their scores to over 95%. Among the six laboratories scoring below 95% in 2025, four achieved essential agreement, while two showed discrepancies of two or more double dilutions. All four laboratories achieving essential agreement participate in Euro-GASP via decentralised testing and of the remaining two, one participates via centralised testing and one has not participated in Euro-GASP in recent years.

Figure 4. Intra-laboratory MIC concordance percentage 2024 versus 2025

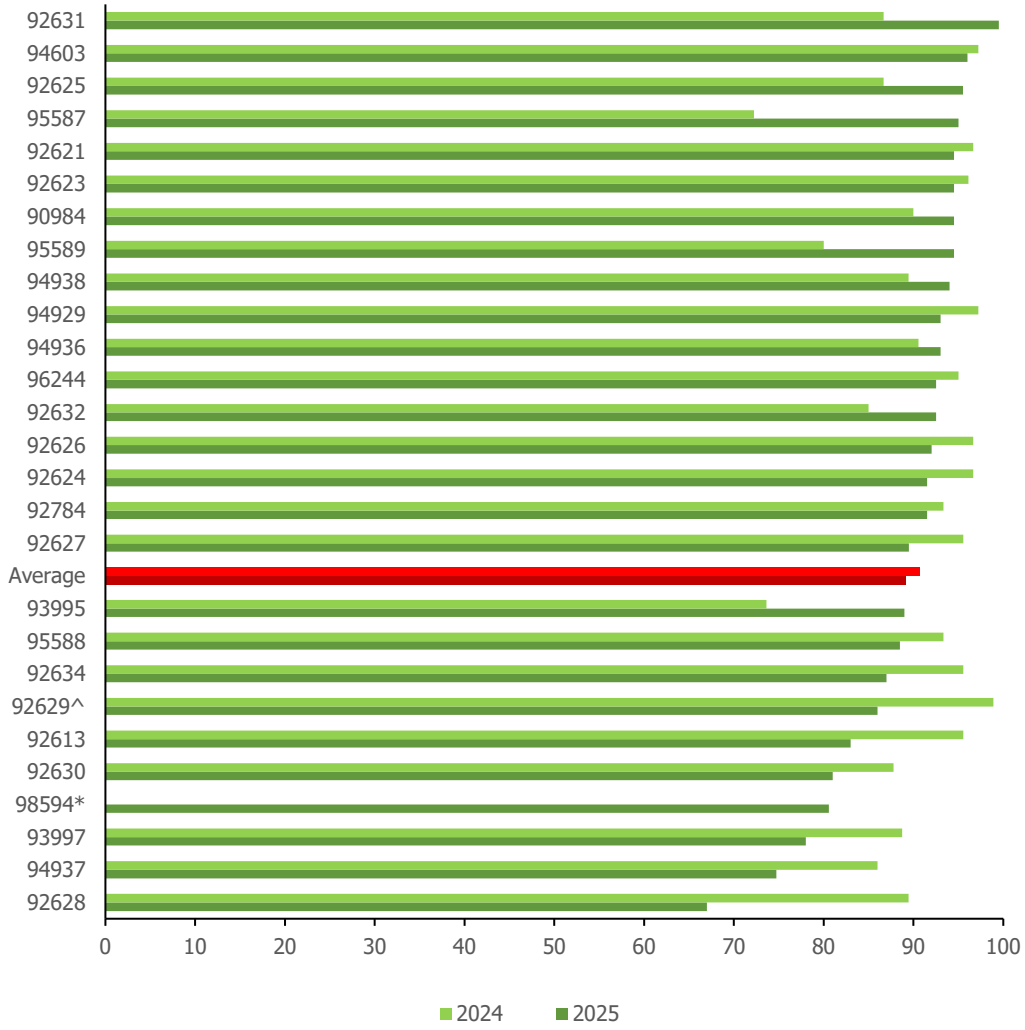


** Did not participate in the 2024 EQA*
^ MIC values are missing for azithromycin and cefixime in 2024 or 2025

3.9 Overall EQA scores

Figure 5 shows the overall inter-laboratory MIC concordance scores for the core antimicrobials, including the average scores for 2025 (89.2%) and 2024 (90.8%). Although only four laboratories scored 95% or higher, 65.2% of all MICs for the core antimicrobials were perfect, 29.3% within essential agreement, 3.4% within two double dilutions and 2.1% displayed MICs more than two double dilutions from the modal MIC.

Figure 5. EQA overall MIC scores, 2024 versus 2025

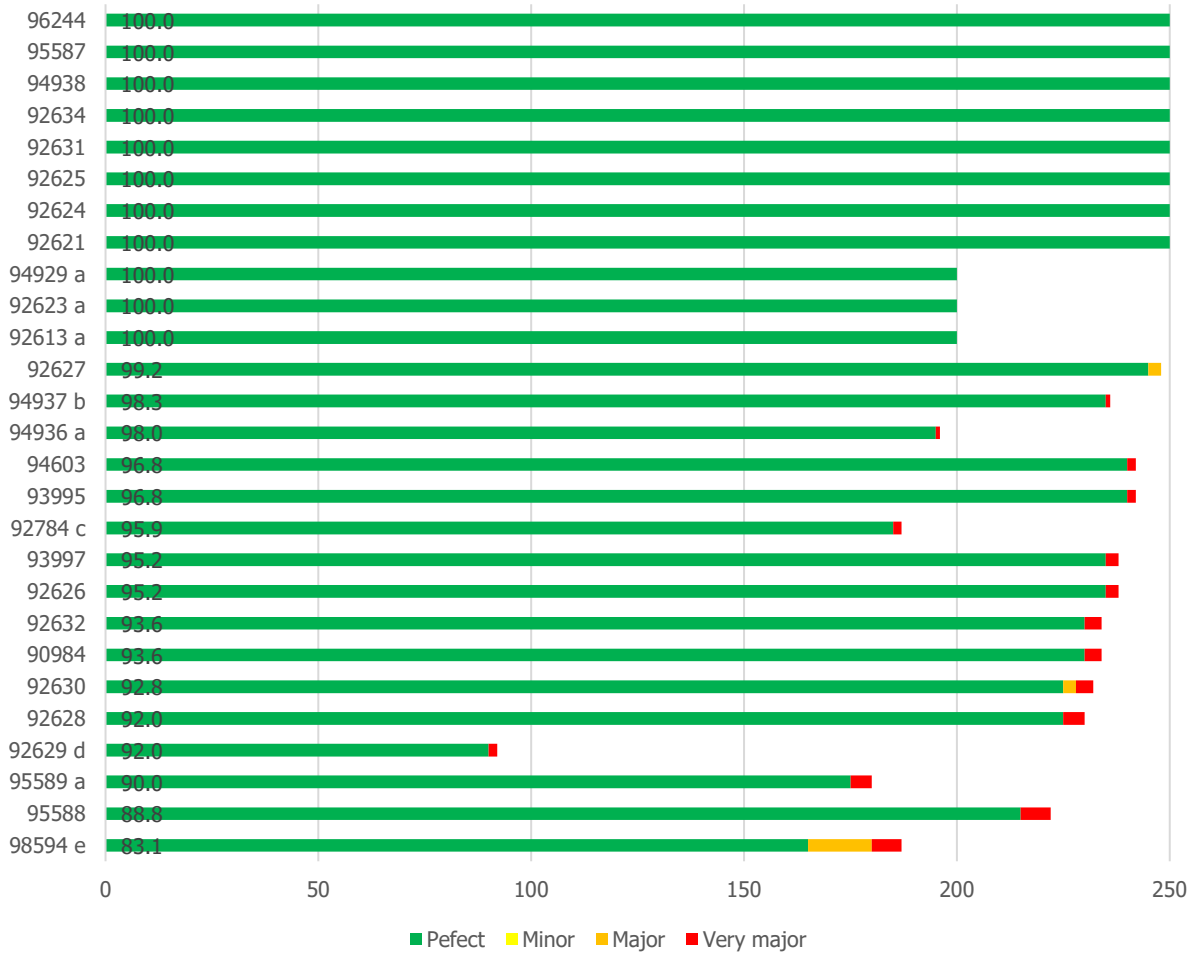


** Did not participate in the 2024 EQA*
^ MIC values are missing for azithromycin and cefixime in 2024 or 2025

The average inter-laboratory categorical concordance score for the core antimicrobials and beta-lactamase decreased slightly between 2024 (99.2%) and 2025 (96.3%). The scores for overall categorical agreement are shown in Figure 6. Eight laboratories scored below 95% in 2025, two of them scoring below 90%. Eleven laboratories achieved a perfect score of 100%. Fifteen laboratories had very major faults (reporting a resistant isolates susceptible) across the core antimicrobials and beta-lactamase detection. Seven laboratories correctly interpreted the reported azithromycin MIC for the duplicate Strain 1 (WHO S2), however, the MICs detected were one (*n*=5) to two (*n*=2) doubling dilutions below the modal MIC (2 mg/L), resulting in a very major fault in susceptibility category interpretation.

Similarly, ten laboratories correctly interpreted the reported cefixime MICs for the duplicate Strain 2 (WHO K); however, the MICs detected were one (*n*=8) to two (*n*=2) doubling dilutions below the modal MIC (0.25 mg/L), resulting in a very major fault in susceptibility category concordance. For the triplicate Strain 5 (H25-549), again nine laboratories correctly interpreted the reported ceftriaxone MICs, however the MICs detected were one doubling dilution below the modal MIC (0.25 mg/L), resulting in a very major fault in susceptibility category interpretation. Two of the laboratories also reported one doubling dilution below the modal MICs (0.25 mg/L) for Strain 6 (H25-327). Among the 15 laboratories that reported very major faults in categorical agreement, nine participate in Euro-GASP via decentralised testing, with two providing small number of isolates to Euro-GASP. Two laboratories participate via centralised testing, and four have not participated in recent years.

Figure 6. EQA overall categorical agreement scores, 2025



The maximum possible score for all laboratories was 250 unless otherwise specified.

a Maximum possible score was 200
b Maximum possible score was 240
c Maximum possible score was 195
d Maximum possible score was 100
e Maximum possible score was 225.

4. Discussion

Participation in the 2025 Euro-GASP EQA was high, with the panel distributed to 28 laboratories in 28 countries. In total, 27/28 (96.4%) laboratories returned results for between three and eight tests each. The QA25 panel included four WHO reference strains: WHO F, K, O and S2 [3] and two clinical isolates collected in 2025.

Antimicrobial susceptibility testing methods and breakpoints used by Euro-GASP EQA participants have changed over time, although there has been greater consistency in recent years [21]. Susceptibility testing methods and breakpoints were largely consistent among participating laboratories in 2025. All laboratories reported using EUCAST guidelines to interpret MIC results. Similarly, all laboratories used MGSs to perform antimicrobial susceptibility testing for at least one antimicrobial. With respect to MGS manufacturers, bioMérieux (77.8%) and Liofilchem (25.9%) were the most commonly used, while there was more variation in the agar base used for testing. The most commonly used were GC agar base (44.4%), followed by chocolatised blood agar (22.2%).

Categorical agreement and essential agreement should both be at least 90% for each antimicrobial [21]. This standard was exceeded for categorical agreement in the 2025 EQA, with scores ranging from 92.8% for tetracycline to 100% for ciprofloxacin. However, categorical agreement decreased slightly for all antimicrobials, except azithromycin (94.4% in 2024 to 95.7% in 2025) and ciprofloxacin (99.4% in 2024 to 100% in 2025). Fluctuations in categorical agreement over time have often been due to the inclusion or exclusion of strains with a modal MIC on or close to the resistance breakpoint, as was the case for the overall decline in 2025 compared to 2024. In contrast, faults in categorical agreement for beta-lactamase detection in the 2025 EQA were limited to a single laboratory. In terms of overall MIC concordance, essential agreement increased between 2024 and 2025 (93.3% to 95.9%, $p<0.001$). At the individual antimicrobial level, the only significant difference was for azithromycin (89.5% in 2024 to 95.4% in 2025, $p=0.01$) and tetracycline (92.1% in 2024 to 96.5% in 2025, $p=0.04$). The recommended minimum standard of 90% essential agreement was met for all antimicrobials ranging from 90.7% for ciprofloxacin to 99.5% for gentamicin.

Breakdown of EQA susceptibility testing results by laboratory allowed for detailed analysis of individual laboratory performance. Inter-laboratory categorical concordance scores based on the core antimicrobials and beta-lactamase detection were good, however the average decreased slightly between 2024 (99.2%) and 2025 (96.3%). Nevertheless, 70.4% of the laboratories scored 95% or higher, including 40.7% of the laboratories achieving a perfect score of 100%. Fifteen laboratories reported very major faults, classifying resistant isolates as susceptible across core antimicrobials and beta-lactamase detection, restricted to MIC values one to two doubling dilutions below the modal MIC. These faults affected susceptibility interpretation for azithromycin, cefixime, and ceftriaxone, and occurred primarily in strains with modal MICs near the resistance breakpoint, highlighting the importance of considering the MIC alongside the susceptibility category when interpreting susceptibility results.

The average inter-laboratory MIC concordance score based on the core antimicrobials decreased slightly between 2024 (90.8%) and 2025 (89.2%). Intra-laboratory MIC concordance remained comparable (96.2% in 2024 and 96.3% in 2025), with 77.8% of the laboratories reaching or exceeding the 95% target, including three perfect scores. Among the six laboratories that scored below 95%, four participate in Euro-GASP via decentralised testing, and all the reported discrepancies were within essential agreement. With regard to the two laboratories that reported discrepancies of two or more doubling dilutions: one participates via centralised testing, and one has not participated in the programme in recent years. Although the potential impact on Euro-GASP data quality is likely to be limited, support will be provided to these laboratories to address discrepancies and help them reach the Euro-GASP recommended target of 95% of MICs within two doubling dilutions of the modal MIC.

5. Conclusion

The Euro-GASP EQA is important to ensure that results from different laboratories participating in Euro-GASP are comparable and that significant over- and under-reporting of antimicrobial resistance does not occur. It is also important that reference laboratories have access to appropriate internal quality control strains such as the WHO reference strain panel [3] to routinely ensure their own quality assurance in a variety of diagnostic and antimicrobial susceptibility testing. Antimicrobial susceptibility results from Euro-GASP contribute to the evidence base of gonorrhoea treatment guidelines and local susceptibility testing can be used for individual patient management, so confidence in reporting is essential.

The 2025 Euro-GASP EQA scheme results confirm that participating laboratories continue to demonstrate a high level of competency in the recovery and susceptibility testing of *N. gonorrhoeae*. With 27 countries participating and universal adherence to EUCAST guidelines, the network shows strong methodological consistency. In particular, overall MIC concordance (essential agreement) improved significantly between 2024 and 2025, exceeding the 90% quality standard for all antimicrobials tested.

While categorical agreement and inter-laboratory concordance saw slight declines, these fluctuations were primarily linked to strains with MICs near resistance breakpoints rather than systemic testing failures. Intra-laboratory consistency remained high and stable, with the vast majority of laboratories meeting or exceeding the 95% target. Collectively, these findings provide strong assurance that Euro-GASP antimicrobial surveillance data maintain a high standard of comparability and reliability across Europe.

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Annex. External quality assessment 2025 detailed results

Table A1.1 Country coded category of susceptibility concordance – azithromycin

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	Total	No. S	No. I	No. R	Consensus	Concordance (%)
6007A	S	R	R	N	R	R	S	R	R	N	S	R	S	R	N	R	R	R	N	R	R	R	R	S	S	R	R	46	12	0	34	R	73.9
6007B	S	R	R	N	R	R	S	R	R	N	S	R	S	R	N	R	R	R	N	R	R	R	R	S	R	R	S						
6007C	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	S	46	46	0	0	S	100
6007D	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	S						
6007E	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	N	22	22	0	0	S	100
6007F	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	S	23	23	0	0	S	100
6007G	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	S	69	69	0	0	S	100
6007H	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	S						
6007J	S	S	S	N	S	S	S	S	S	N	S	S	S	S	N	S	S	S	N	S	S	S	S	S	S	S	S						
6007K	R	R	R	N	R	R	R	R	R	N	R	R	R	R	N	R	R	R	N	R	R	R	R	R	R	R	R	23	0	0	23	R	100
																																Total	95.7

N: no result; not retrieved or susceptibility category not supplied.

**The submitted result was excluded from analyses due to the lack of an underlying MIC result.*

Table A1.2 Country coded MIC values (mg/L) – azithromycin

	Laboratory codes																											Modal MIC	Min MIC	Max MIC	2 dilutions different	>2 dilutions different
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594					
6007A	1	2	2	2	2	2	0.5	2	2	N	0.5	2	1	2	4	2	2	2	2	2	4	2	2	1	1	2	2	2	0.5	4	3	0
6007B	1	2	2	2	2	2	1	2	2	N	0.5	2	1	2	4	2	2	2	2	2	4	2	2	1	2	2	1					
6007C	0.5	0.5	0.25	0.5	0.5	0.5	0.25	0.5	1	N	0.25	0.5	0.25	0.5	1	0.5	0.25	0.5	0.5	0.5	1	0.25	0.5	0.25	0.25	0.25	0.25	0.5	0.25	1	0	0
6007D	0.5	0.5	0.25	0.5	0.5	0.5	0.25	0.5	1	N	0.25	0.5	0.25	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.25	0.5	0.25	0.25	0.5	0.25					
6007E	0.5	0.5	0.25	0.5	0.5	0.5	0.25	0.5	1	N	0.5	0.5	0.25	1	0.5	0.5	0.5	0.5	1	0.5	1	0.25	0.5	0.25	0.5	0.5	N	0.5	0.25	1	0	0
6007F	0.125	0.25	0.125	0.125	0.125	0.125	0.125	0.064	<0.016	N	0.064	0.125	0.125	0.25	0.125	0.125	0.5	0.125	0.125	0.25	0.5	0.125	0.125	0.064	0.25	0.125	0.25	0.125	<0.016	0.5	2	1
6007G	0.064	0.032	0.064	0.064	0.064	0.032	0.032	0.064	<0.016	N	0.032	0.064	0.064	0.032	0.064	0.032	0.016	0.064	0.064	0.064	0.064	0.064	0.032	0.064	0.064	0.064	0.064					
6007H	0.064	0.032	0.064	0.064	0.064	0.032	0.032	0.064	<0.016	N	0.032	0.064	0.064	0.032	0.125	0.032	<0.016	0.064	0.064	0.125	0.125	0.064	0.032	0.032	0.064	0.064	0.064	0.064	<0.016	0.125	2	4
6007J	0.125	0.064	0.064	0.064	0.064	0.032	0.032	0.064	<0.016	N	0.032	0.064	0.064	0.032	0.064	0.032	0.016	0.064	0.064	0.064	0.125	0.064	0.032	0.032	0.064	0.032	0.064					
6007K	>256	>256	>256	>256	>256	>256	>256	>256	>256	N	>256	>256	>256	>256	≥256	>256	>256	>256	>256	>256	>256	>256	>256	>256	>256	256	>256	>256	256	>256	0	0

N: no result; not retrieved, not tested or MIC not supplied.

Note: Laboratories 90984, 92629, and 93995 did not submit azithromycin data.

Table A1.3 Country coded category of susceptibility concordance – cefixime

	Laboratory codes																														
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Total**	**No. S**	**No. I**	**No. R**	**Consensus**	**Concordance (%)**
6007A	S	S	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	52	52	0	0	S	100
6007B	S	S	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S						
6007C	R	R	R	R	R	R	R	R	S	N	S	R	S	R	S	S	R	S	R	R	R	R	R	S	S	R	S	52	18	0	34	R	65.4
6007D	R	R	R	R	R	R	S	R	S	N	S	R	S	R	S	S	R	S	R	R	R	R	R	S	R	R	S						
6007E	S	S	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	N	25	25	0	0	S	100
6007F	S	S	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	26	26	0	0	S	100
6007G	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
6007H	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	77	0	0	77	R	100
6007J	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R						
6007K	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R	25	0	0	25	R	100
																																Total	94.2

N: no result; not retrieved or susceptibility category not supplied. ND: not determined.

**Results excluded from susceptibility category concordance calculations.*

Table A1.4 Country coded MIC values (mg/L) – cefixime

	Laboratory codes																														
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Modal MIC**	**Min MIC**	**Max MIC**	**2 dilutions different**	**>2 dilutions different**
6007A	<0.016	<0.016	0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	N	0.016	<0.016	<0.016	<0.016	<0.016	≤0.016	<0.016	≤0.016	<0.016	<0.016	<0.016	0.016	<0.016	<0.016	<0.016	<0.016	0.016	0.016	<0.016	<0.016	0.064	0	1
6007B	<0.016	<0.016	0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	N	0.064	<0.016	<0.016	<0.016	<0.016	≤0.016	<0.016	≤0.016	<0.016	<0.016	<0.016	0.016	<0.016	<0.016	<0.016	<0.016	0.016	0.016					
6007C	0.25	0.25	0.5	0.25	0.25	0.25	0.25	0.25	0.064	N	0.064	0.25	0.125	0.25	0.125	0.125	0.25	0.125	0.25	0.25	2	0.25	0.25	0.125	0.125	0.25	0.125	0.25	0.064	2	4	1
6007D	0.25	0.25	0.5	0.5	0.25	0.25	0.125	0.25	0.064	N	0.064	0.25	0.125	0.25	0.125	0.125	0.25	0.125	0.25	0.25	0.5	0.25	0.25	0.125	0.25	0.25	0.25					
6007E	<0.016	0.032	<0.016	0.016	<0.016	0.016	<0.016	0.016	0.016	N	0.016	<0.016	<0.016	0.032	<0.016	0.032	<0.016	≤0.016	0.032	0.032	0.032	0.016	<0.016	<0.016	0.016	0.016	N	<0.016	<0.016	0.032	6	0
6007F	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	N	<0.016	<0.016	<0.016	<0.016	<0.016	≤0.016	<0.016	≤0.016	<0.016	<0.016	0.125	<0.016	<0.016	<0.016	<0.016	0.016	0.016	<0.016	<0.016	0.125	0	1
6007G	1	2	1	1	1	1	1	2	0.5	N	1	1	1	2	1	2	0.25	1	2	1	0.25	2	1	1	1	1	2					
6007H	2	2	>1	1	1	1	1	2	0.5	N	1	1	1	2	1	2	0.25	1	2	1	1	1	1	1	1	2	2	1	0.25	2	4	0
6007J	2	2	>1	2	1	1	1	2	0.5	N	1	1	1	2	1	2	0.25	0.5	1	2	N	2	1	1	1	1	2					
6007K	1	2	>1	1	2	1	1	2	1	N	1	1	1	2	1	2	0.5	1	1	1	N	1	1	1	1	1	2	1	0.5	2	0	0

N: no result; not retrieved, not tested or MIC not supplied.

**Results excluded from MIC concordance calculations.*

Note: Laboratories 90902 and 92629 did not submit cefixime data.

Table A1.5 Country coded category of susceptibility concordance – ceftriaxone

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	Total	No. S	No. I	No. R	Consensus	Concordance (%)
6007A	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	54	54	0	0	S	100
6007B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S						
6007C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	53	53	0	0	S	100
6007D	S	S	S	S	S	S	S	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	S	S	S						
6007E	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	N	26	26	0	0	S	100
6007F	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	27	27	0	0	S	100
6007G	S	R	R	R	R	R	R	R	S	S	R	R	R	R	R	R	S	R	R	S	R	R	R	S	S	R	S						
6007H	S	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	S	R	R	R	R	R	R	S	S	R	S	81	20	0	61	R	75.3
6007J	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	S	R	R	R	S	R	R	S	S	R	S						
6007K	R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	27	2	0	25	R	92.6
																																Total	94.7

N: no result; not retrieved or susceptibility category not supplied.

**Results excluded from susceptibility category concordance calculations.*

Table A1.6 Country coded MIC values (mg/L) – ceftriaxone

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	Modal MIC	Min MIC	Max MIC	2 dilutions different	>2 dilutions different
6007A	<0.016	0.008	0.004	0.008	0.004	<0.016	0.002	0.004	0.004	0.008	0.016	0.008	0.002	0.008	0.004	0.008	<0.016	<=0.016	<0.016	0.008	0.008	0.008	0.008	0.002	0.004	0.008	0.002	≤0.016	0.002	0.016	0	0
6007B	<0.016	0.008	0.004	0.008	0.004	<0.016	0.004	0.008	0.004	0.008	<0.016	0.008	0.004	0.008	0.004	0.008	<0.016	<=0.016	<0.016	0.008	0.004	0.008	0.004	0.002	0.004	0.008	0.002					
6007C	0.064	0.064	0.064	0.125	0.064	0.064	0.032	0.064	0.032	0.125	0.016	0.064	0.032	0.064	0.032	0.064	0.064	0.064	0.125	0.064	0.064	0.064	0.064	0.032	0.032	0.032	0.032	0.064	0.016	0.125	2	0
6007D	0.064	0.064	0.064	0.125	0.064	0.064	0.032	0.064	0.032	0.125	0.016	0.064	0.032	0.064	0.032	0.064	0.125	0.032	0.064	0.125	0.064	0.125	0.064	0.032	0.064	0.064	0.032					
6007E	0.016	0.016	0.016	0.032	0.016	0.032	0.008	0.016	0.002	0.032	0.016	0.016	0.016	0.032	0.008	0.016	<0.016	≤0.016	0.032	0.032	0.125	0.032	0.016	0.008	0.016	0.016	N	0.016	0.002	0.125	0	2
6007F	<0.016	<0.002	<0.002	<0.002	<0.002	<0.016	<0.002	<0.002	<0.002	<0.002	<0.016	<0.002	<0.002	<0.002	<0.002	≤0.002	<0.016	≤0.016	<0.016	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.002	≤0.016	<0.002	≤0.016	0	0
6007G	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.25	0.5	0.125	0.25	0.25	0.25	0.125	0.125	0.25	0.125					
6007H	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.125	0.25	0.125	0.25	0.125	0.5	0	0
6007J	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.25	0.25	0.25	0.125	0.25	0.25	0.125	0.125	0.25	0.125					
6007K	0.25	0.25	0.25	0.25	0.25	0.5	0.25	0.25	0.25	0.125	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.25	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.125	0.25	0.125	0.5	0	0

N: no result; not retrieved, not tested or MIC not supplied.

**Results excluded from MIC concordance calculations.*

***The submitted result did not correspond to a standard MIC value. The submitting laboratory proposed a correction, which was rounded up to the next full MIC gradient strip dilution.*

Table A1.7 Country coded category of susceptibility concordance – ciprofloxacin

	Laboratory codes																														
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Total**	**No. S**	**No. I**	**No. R**	**Consensus**	**Concordance (%)**
6007A	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	54	54	0	0	S	100
6007B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S						
6007C	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	54	0	0	54	R	100
6007D	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
6007E	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	N	26	26	0	0	S	100
6007F	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	27	27	0	0	S	100
6007G	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	81	0	0	81	R	100
6007H	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
6007J	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
6007K	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	27	0	0	27	R	100
																																Total	100

N: no result; not retrieved or susceptibility category not supplied.

**The submitting laboratory proposed a correction to the underlying MIC result, which also required a correction to the category of susceptibility.*

Table A1.8 Country coded MIC values (mg/L) – ciprofloxacin

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Modal MIC**	**Min MIC**	**Max MIC**	**2 dilutions different**	**>2 dilutions different**
6007A	0.016	0.032	0.016	0.032	0.032	0.016	0.016	0.032	0.016	0.032	0.008	0.016	0.016	0.032	0.016	0.032	0.016	0.016	0.032	0.032	0.016	0.032	0.032	0.016	0.016	0.032	0.016	0.016	0.008	0.032	0	0
6007B	0.008	0.032	0.016	0.032	0.032	0.016	0.016	0.032	0.016	0.032	0.016	0.016	0.016	0.032	0.016	0.032	0.016	0.016	0.016	0.032	0.016	0.032	0.032	0.016	0.016	0.016	0.016					
6007C	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	≥32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	32	>32	>32	32	>32	0	0
6007D	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	≥32	>32	>32	>32	>32	>32	>32	>32	>32	>32	>32	32	>32					
6007E	0.008	0.016	0.008	0.016	0.016	0.008	0.008	0.016	0.016	0.008	0.008	0.008	0.008	0.008	0.008	0.016	0.008	0.008	0.008	0.008	0.008	0.008	0.016	0.008	0.008	0.008	N	0.008	0.008	0.016	0	0
6007F	0.002	0.004	0.002	0.004	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.002	<0.002	0.004	0.002	≤0.002	0.002	≤0.002	0.002	0.004	0.004	0.002	0.004	<0.002	0.004	0.002	0.002	0.004	<0.002	0.004	2	0
6007G	2	>32	4	8	16	2	4	16	>32	16	4	4	2	16	2	8	8	4	8	4	32	8	8	8	4	4	>32					
6007H	2	>32	4	8	16	2	4	16	>32	8	4	4	4	8	2	8	8	4	4	8	16	4	8	8	4	8	>32	4	2	>32	10	10
6007J	4	>32	4	4	16	4	4	16	>32	8	4	4	4	16	4	4	8	4	4	8	4	4	8	8	4	4	>32					
6007K	4	>32	4	4	8	4	2	4	>32	8	4	4	2	8	2	4	16	4	4	4	8	4	8	4	2	2	8	4	2	>32	1	2

N: no result; not retrieved, not tested or MIC not supplied.

**The submitted result did not correspond to a standard MIC value. The submitting laboratory proposed a correction, which was rounded up to the next full MIC gradient strip dilution.*

Table A1.9 Country coded MIC values (mg/L) – gentamicin

	Laboratory codes																														
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Modal MIC**	**Min MIC**	**Max MIC**	**2 dilutions different**	**>2 dilutions different**
6007A	2	N	8	4	N	4	4	8	8	N	4	8	2	4	N	4	4	4	8	N	4	4	N	8	4	4	2	4	2	8	0	0
6007B	4	N	8	4	N	4	4	8	8	N	4	8	2	4	N	4	4	4	8	N	4	4	N	8	4	4	2					
6007C	2	N	8	4	N	4	4	8	8	N	4	4	2	4	N	4	4	8	8	N	8	4	N	8	4	4	4	4	2	8	0	0
6007D	4	N	8	4	N	4	4	8	8	N	4	4	2	4	N	4	4	8	8	N	8	4	N	8	4	8	4					
6007E	4	N	8	4	N	8	8	16	16	N	4	8	4	8	N	4	4	4	16	N	8	8	N	16	8	8	N	8	4	16	0	0
6007F	2	N	8	4	N	4	4	4	4	N	4	4	2	4	N	2	8	4	8	N	4	2	N	4	4	4	2	4	2	8	0	0
6007G	2	N	4	4	N	4	8	8	4	N	4	8	4	4	N	4	2	8	8	N	4	8	N	8	4	8	4					
6007H	4	N	8	4	N	4	8	16	4	N	4	8	4	4	N	4	2	8	8	N	4	8	N	8	4	8	4	4	2	16	1	0
6007J	4	N	8	4	N	4	8	8	4	N	4	8	4	4	N	2	2	8	4	N	4	8	N	8	8	8	4					
6007K	4	N	4	4	N	4	4	4	4	N	2	4	2	4	N	2	4	4	4	N	4	4	N	4	4	4	4	4	2	4	0	0

N: no result; not retrieved, not tested or MIC not supplied.

Note: Laboratories 90902, 90984, 92613, 92621, 92623, 92624, 92629, 92784, 93997, 94936, 94938, and 95587 did not submit gentamicin data.

Table A1.10 Country coded category of susceptibility concordance – spectinomycin

	Laboratory codes																														
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Total**	**No. S**	**No. I**	**No. R**	**Consensus**	**Concordance (%)**
6007A	S	N	S	S	N	S	S	S	S	N	R	S	S	S	S	S	N	S	S	N	S	S	S	S	S	S	S	43	42	0	1	S	97.7
6007B	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S						
6007C	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S	43	43	0	0	S	100
6007D	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	S	S						
6007E	R	N	S	R	N	R	R	R	R	N	R	R	R	R	R	R	N	R	R	N	R	R	R	R	R	N	N	20	1	0	19	R	95.0
6007F	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S	21	21	0	0	S	100
6007G	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S						
6007H	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S	63	63	0	0	S	100
6007J	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S						
6007K	S	N	S	S	N	S	S	S	S	N	S	S	S	S	S	S	N	S	S	N	S	S	S	S	S	N	S	21	21	0	0	S	100
																																Total	98.8

N – not retrieved or susceptibility category not supplied.

Table A1.11 Country coded MIC values (mg/L) – spectinomycin

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Modal MIC**	**Min MIC**	**Max MIC**	**2 dilutions different**	**>2 dilutions different**
6007A	16	N	32	16	N	8	8	16	16	N	>1024	16	8	16	32	16	N	4	16	N	8	16	16	16	16	8	8	16	4	>1024	1	1
6007B	16	N	32	16	N	8	8	16	16	N	8	16	8	16	32	16	N	8	16	N	8	16	8	8	32	8	16					
6007C	16	N	32	16	N	16	16	16	16	N	8	16	16	16	32	32	N	8	16	N	32	16	16	16	32	16	16	16	8	32	0	0
6007D	32	N	32	16	N	16	16	16	16	N	8	16	16	16	32	16	N	8	16	N	16	16	16	16	32	16	16					
6007E	>1024	N	>64	>1024	N	>1024	>1024	>1024	>1024	N	>1024	>1024	>1024	>1024	≥1024	>1024	N	>1024	>1024	N	>1024	>1024	>1024	>1024	>1024	1024	N	>1024	>64	>1024	0	1
6007F	16	N	32	16	N	16	16	16	16	N	16	32	16	16	16	32	N	8	16	N	16	16	16	16	32	16	8	16	8	32		
6007G	8	N	16	16	N	8	8	8	8	N	4	8	8	8	16	8	N	4	8	N	4	16	8	8	16	8	8					
6007H	8	N	16	8	N	8	8	8	8	N	4	8	8	8	16	8	N	4	8	N	8	16	8	8	16	8	8	8	4	16	0	0
6007J	16	N	16	8	N	8	8	16	8	N	4	8	8	8	16	8	N	4	8	N	4	8	8	8	16	8	8					
6007K	32	N	32	16	N	16	8	8	16	N	8	32	16	16	32	16	N	16	16	N	16	16	16	16	32	16	32	16	8	32	0	0

N: no result; not retrieved, not tested or MIC not supplied.

Note: Laboratories 90902, 90984, 92613, 92621, 92624, 92629, 93997, 94936, and 94938 did not submit spectinomycin data.

Table A1.12 Country coded category of susceptibility concordance – tetracycline

	Laboratory codes																														
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Total**	**No. S**	**No. I**	**No. R**	**Consensus**	**Concordance (%)**
6007A	R	R	R	R	N	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	R	S	52	5	0	47	R	90.4
6007B	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	R	R	S						
6007C	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	52	0	0	52	R	100
6007D	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R						
6007E	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	N	24	0	0	24	R	100
6007F	S	S	S	S	N	S	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	26	25	0	1	S	96.2
6007G	S	S	S	S	N	S	R	R	R	S	S	S	S	S	S	R	R	S	S	S	R	R	R	S	S	S	S						
6007H	S	S	S	S	N	S	R	R	R	S	S	S	S	S	S	R	S	S	S	S	R	R	R	S	S	S	S	78	55	0	23	S	70.5
6007J	S	S	S	S	N	S	R	R	R	S	S	S	S	S	S	R	R	S	S	S	R	R	R	S	S	S	S						
6007K	R	R	R	R	N	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	26	0	0	26	R	100
																																Total	92.8

N – not retrieved or susceptibility category not supplied.

Table A1.13 Country coded MIC values (mg/L) – tetracycline

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Modal MIC**	**Min MIC**	**Max MIC**	**2 dilutions different**	**>2 dilutions different**
6007A	1	1	2	1	N	1	2	4	2	1	2	1	1	1	1	2	1	1	2	2	1	2	2	2	0.5	1	0.5	1	0.5	4	2	0
6007B	1	1	2	1	N	1	2	4	2	1	2	1	1	2	1	2	2	1	2	2	1	2	2	0.5	1	2	0.5					
6007C	2	4	4	2	N	2	2	4	4	2	2	2	2	2	2	4	1	2	2	4	2	4	4	4	2	2	4	2	1	4	0	0
6007D	4	4	4	4	N	2	4	4	4	2	2	2	2	2	2	4	1	2	2	2	2	4	4	4	2	4	4					
6007E	2	2	4	2	N	2	4	8	4	1	2	1	2	2	2	4	1	2	2	2	2	4	4	4	2	2	N	2	1	8	1	0
6007F	0.125	0.125	0.25	0.25	N	0.25	0.5	1	0.5	0.25	0.5	0.125	0.25	0.25	0.125	0.5	0.125	0.125	0.25	0.25	0.25	0.5	0.5	0.25	0.125	0.125	0.125	0.25	0.125	1	1	0
6007G	0.5	0.5	0.5	0.5	N	0.25	1	2	1	0.5	0.5	0.5	0.5	0.5	0.5	1	1	0.5	0.5	0.5	1	1	1	0.5	0.25	0.5	0.5					
6007H	0.5	0.5	0.5	0.5	N	0.25	1	2	1	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	0.5	0.5	0.25	2	3	0
6007J	0.5	0.5	0.5	0.5	N	0.5	1	2	1	0.5	0.5	0.5	0.5	0.5	0.5	1	1	0.5	0.25	0.5	1	1	1	0.5	0.25	0.5	0.5					
6007K	32	32	32	32	N	16	32	128	32	16	8	16	16	16	16	64	16	32	32	32	16	32	32	64	16	32	32	32	8	128	2	0

N: no result; not retrieved, not tested or MIC not supplied.

Note: Laboratories 90902, 92624, and 92629 did not submit tetracycline data.

**MIC results >8 mg/L were scored equivalently. Only laboratories with MIC results ≤8 mg/L were penalised.*

Table A1.14 Country coded concordance – beta-lactamase

	Laboratory codes																															
Strain	90984	92613	92621	92623	92624	92625	92626	92627	92628	92629	92630	92631	92632	92634	92784	93995	93997	94603	94929	94936	94937	94938	95587	95588	95589	96244	98594	**Total**	**No. S**	**No. I**	**No. R**	**Consensus**	**Concordance (%)**
6007A	S	N	S	S	S	S	S	S	S	N	R	S	S	S	S	S	S	S	S	N	S	S	S	S	N	S	R	46	43	0	3	S	93.5
6007B	S	N	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	N	S	S	S	S	N	S	R						
6007C	S	N	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	N	S	S	S	S	N	S	R	46	44	0	2	S	95.7
6007D	S	N	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	N	S	S	S	S	N	S	R						
6007E	R	N	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	N	R	R	R	R	N	R	N	22	0	0	22	R	100
6007F	S	N	S	S	S	S	S	S	S	N	S	S	S	S	S	S	S	S	S	N	S	S	S	S	N	S	S	23	23	0	0	S	100
6007G	R	N	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	N	R	R	R	R	N	R	R						
6007H	R	N	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	N	R	R	R	R	N	R	R	69	0	0	69	R	100
6007J	R	N	R	R	R	R	R	R	R	N	R	R	R	R	R	R	R	R	R	N	R	R	R	R	N	R	R						
6007K	S	N	S	S	S	S	S	R	S	N	S	S	S	S	S	S	S	S	S	N	S	S	S	S	N	S	R	23	21	0	2	S	91.3
																																Total	96.7

N: no result; not retrieved or beta-lactamase result not supplied.

Note: Laboratories 92629, 94936, and 95589 did not submit beta-lactamase testing results.

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