

EURL-PH-AMR

EU Reference Laboratory for Public Health in the field of AMR (EURL-PH-AMR)

Grant Agreement Number: 101194806

External Quality Assessment (EQA) of laboratories participating in the European Antimicrobial Resistance Surveillance Network (EARS-Net), 2026

Expected antimicrobial susceptibility testing results for the bacterial strains included in the 2026 EARS-Net EQA exercise



STATENS
SERUM
INSTITUT



CLINICAL MICROBIOLOGY
KRONOBERG AND BLEKINGE
SWEDISH NRL FOR PHENOTYPIC AST
EUCAST DEVELOPMENT LABORATORY



Funded by the
European Union

Disclaimer: Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Health and Digital Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

Expected antimicrobial susceptibility testing results for the bacterial strains included in the 2026 EARS-Net EQA exercise

The 2026 EQA focused on species identification and interpretation of the antimicrobial susceptibility testing (AST) results of the six strains shared with the participating laboratories: *Acinetobacter baumannii*, *Escherichia coli*, *Enterococcus faecium*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Streptococcus pneumoniae*.

For this EQA, the strains were selected from the strain collection at the Technical University of Denmark, National Food Institute (DTU Food). Selection was based on antimicrobial resistance profiles and the recommendations from the European Centre for Disease Prevention and Control (ECDC).

DTU Food is accredited by DANAK (no. 516) under ISO/IEC 17043:2023 to provide proficiency testing schemes including the scheme for EARS-Net EQA, and under ISO/IEC 17025 (no. 350) to provide AST results (broth microdilution).



The expected AST results for each strain were the consensus of AST results from three reference laboratories: DTU Food, the EUCAST Development Laboratory, Växjö, Sweden, and the EUCAST Development Laboratory, Karlskrona, Sweden. All reference laboratories used the same AST methodology, specifically the determination of minimum inhibitory concentration (MIC) values for each strain-antimicrobial combination by broth microdilution (or by determining zone diameters through disk diffusion when applicable) according to EUCAST clinical breakpoints tables v16.0. The consensus AST results were reviewed and validated by ECDC and the ECDC EARS-Net Disease Network Coordination Committee.

The consensus phenotypic AST profiles were compared with whole-genome sequencing (WGS) data to identify acquired antimicrobial resistance genes (ARGs) and chromosomal point mutations (PMs). The WGS analysis was performed at DTU Food using the bioinformatics tools AMRFinderPlus (v4.2.7, database v2026-05-15.1), CARD-RGI (v6.0.5, database v4.0.1) and ResFinder (v4.7.2, databases ResFinder v2.5.1 and PointFinder v4.1.1).

During the preparation of the test swabs, DTU Food performed confirmatory AST of the strains by broth microdilution (or disk diffusion if applicable) to confirm that the vials contained the correct strains with the expected AST results. The EUCAST clinical breakpoints tables v16.0 were applied for the interpretation of the obtained AST results (https://www.eucast.org/clinical_breakpoints/) (Tables 2–7). This allowed for categorisation of the test results into three categories: “resistant” (R), “susceptible, increased exposure” (I), and “susceptible, standard dosing regimen” (S).

The antimicrobial agents selected for this EQA corresponded to the panel of pathogen and antimicrobial agent combinations under surveillance by EARS-Net, presented in the antimicrobial resistance (AMR) reporting protocol 2026¹.

Participating laboratories should perform AST according to the laboratory’s applied routine procedures, i.e. automated systems, broth microdilution, agar dilution, disk/tablet diffusion, gradient-diffusion, or others, following EUCAST recommendations (https://www.eucast.org/ast_of_bacteria/).

If the species of the isolate was identified correctly, then the interpretation of AST results were evaluated using the scoring system of the EQA. Conversely, if the species was not identified correctly, the AST results for that isolate were not evaluated further.

The participants were asked to report AST results, i.e. MIC or zone diameter values, and their corresponding categorisation as S, I or R, following the specific EQA reporting instructions including the adaptations to EUCAST reporting guidelines (as described in the EQA protocol [2] and test forms). Only the qualitative interpretations of AST results were evaluated using the scoring system; quantitative values were used as supplementary information. If a laboratory reported the incorrect

species for an EQA strain, the corresponding interpretations of AST results were not evaluated for that strain.

The 2026 EARS-Net EQA protocol defined the scoring system used to evaluate submitted results (Table 1). Scores were assigned for each strain-antimicrobial combination based on two criteria: the 'level of difficulty' and the 'severity of error' for the submitted AST interpretation.

The level of difficulty reflected the likelihood of misclassification of the AST interpretation and was categorised as either 'easy' or 'difficult'.

The 'Difficult' level included cases where:

- An AST result with a one-fold difference in dilution from the expected MIC value, or with less than four millimetres difference from the expected zone diameter, would result in a different S/I/R interpretation; and/or
- The expected MIC value fell within the area of technical uncertainty (ATU); and/or
- The EUCAST clinical breakpoint had been recently changed or introduced in the latest version of the EUCAST clinical breakpoint tables.

All other situations were categorised as 'Easy'.

Errors were classified into three categories: very major error (VME), major error (ME), and no error. Both VMEs and MEs were penalized in the scoring system.

- VME corresponded to false susceptibility: the expected result was R, but the reported result was S or I.
- ME corresponded to false resistance: the expected result was S or I, but the reported result was R.

The classification of 'no error' included situations where one susceptibility category (S or I) was expected, but the other susceptibility category was reported. However, this resulted in a lower positive score than if the expected susceptibility category had been reported.

The score assigned to each result reflected both the level of difficulty and the severity of error (Table 1). The same scoring system was also applied in the 2023-2025 EARS-Net EQA exercises.

Table 1. Scoring system for reported AST results in the 2026 EARS-Net EQA

		Difficulty of result and expected interpretation					
		Easy			Difficult		
		R	I	S	R	I	S
Obtained interpretation	R	1	-3 (ME)	-3 (ME)	4	0 (ME)	0 (ME)
	I	-4 (VME)	1	-1	-1 (VME)	4	2
	S	-4 (VME)	-1	1	-1 (VME)	2	4

R: resistant, I: susceptible, increased exposure, S: susceptible, standard dosing regimen; VME: very major error, ME: major error.

Overview of submitted AST results at European level

Figures 1-6 show the interpretation of AST results submitted by all participants, for the six EQA strains. Laboratories may use these results to assess their individual performance. A Summary Report will be published at a later date containing the full results from the EQA.

References

1. Antimicrobial resistance (AMR) reporting protocol 2026. European Antimicrobial Resistance Surveillance Network (EARS-Net) surveillance data for 2025. Available from: <https://www.ecdc.europa.eu/en/publications-data/reporting-protocol-antimicrobial-resistance-amr>.
2. 2026 EARS-Net EQA protocol. DTU Food, 2026. Available from: <https://www.food.dtu.dk/english/topics/antimicrobial-resistance/ears-net>

2026 EARS-Net 1 (*Enterococcus faecium*)

Table 2. EUCAST clinical breakpoints for '2026 EARS-Net 1' (*Enterococcus faecium*) and the expected AST results, level of difficulty in interpretation and expected interpretations, by antimicrobial agent

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a		EUCAST zone diameter breakpoints (mm) ^a			Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	S ≥	R <	ATU				
Ampicillin iv	4	4	2	10	10	Easy	>16	R	None
Amoxicillin iv	4	4	NA	Note	Note	Easy	>256	R	None
Vancomycin	4	4	5	12	12	Easy	≤1	S	None
Teicoplanin	2	2	30	16	16	Easy	≤1	S	None
Linezolid	4	4	10	20	20	Difficult	8	R	23S G2576T
Gentamicin (HLAR)	Note	Note	30	Note	Note	Easy	>1024	R	<i>aac(6')-Ie-aph(2'')-Ia</i>

MALDI-TOF by DTU: *Enterococcus faecium* (score 2.54). MLST: ST-16 (2 mismatches)

^a EUCAST Clinical Breakpoint Tables v16.0, valid from 01-01-2026. Note: Please refer to notes in the breakpoint tables.

^b The level of difficulty reflects the challenge for participating laboratories to report the expected AST interpretation. See Section 2.3 for further details.

^c The expected value corresponds to the MIC expressed in 'mg/L'.

^d Generated using EUCAST Clinical Breakpoint Tables v16.0, and the adjustments to the EUCAST reporting guidelines described in the 2026 EARS-Net EQA protocol [2].

^e Additional determinants of AMR: *aph(3')-IIIa*, *aac(6')-II* (intrinsic), *erm(B)*, *tet(M)*, *msr(C)* (intrinsic), *gyrA* S83I, *parC* S80R.

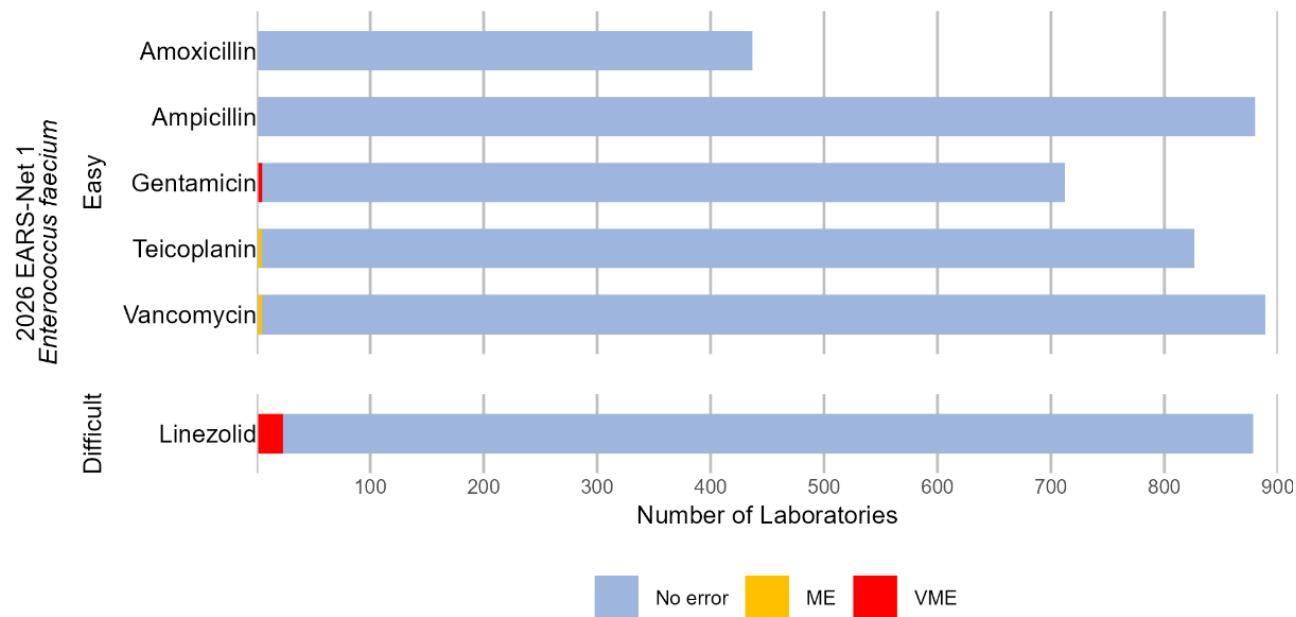


Figure 1. Reported interpretation of AST results for strain '2026 EARS-Net 1' (*Enterococcus faecium*) by antimicrobial and anticipated difficulty of identification, for all participating laboratories

2026 EARS-Net 2 (*Streptococcus pneumoniae*)

Table 3. EUCAST clinical breakpoints for '2026 EARS-Net 2' (*Streptococcus pneumoniae*) and the expected AST results, level of difficulty in interpretation and expected interpretations, by antimicrobial agent

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a		EUCAST zone diameter breakpoints (mm) ^a		Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	S ≥	R <				
Benzylopenicillin	0.06	1	Note	Note	Difficult	2	R	Alterations in <i>pbp1a</i> , <i>pbp2b</i> and <i>pbp2x</i>
Oxacillin	-	-	20	20	Easy	6 mm	R	Alterations in <i>pbp1a</i> , <i>pbp2b</i> and <i>pbp2x</i>
Cefotaxime	0.5	2	Note	Note	Difficult	2	I	None
Ceftriaxone	0.5	2	Note	Note	Difficult	2	I	None
Levofloxacin	0.001	2	50	16	Difficult	≤2	I	None
Moxifloxacin	0.5	0.5	22	22	Easy	≤0.25	S	None
Norfloxacin	-	-	10	10	Easy	≥13 mm	S	None
Azithromycin	0.25	0.25	Note	Note	Easy	>2	R	<i>msr(D)</i> , <i>mef(A)</i>
Clarithromycin	0.25	0.25	Note	Note	Easy	>2	R	<i>msr(D)</i> , <i>mef(A)</i>
Erythromycin	0.25	0.25	22	22	Easy	>2	R	<i>msr(D)</i> , <i>mef(A)</i>

MALDI-TOF by DTU: *Streptococcus pneumoniae* (score 2.31). MLST: ST-11921.

^a EUCAST Clinical Breakpoint Tables v16.0, valid from 01-01-2026. Note: Please refer to notes in the breakpoint tables.

^b The level of difficulty reflects the challenge for participating laboratories to report the expected AST interpretation. See Section 2.3 for further details.

^c For most antimicrobials the expected value corresponds to the MIC expressed in 'mg/L'. For oxacillin and norfloxacin the expected value corresponds to the inhibition zone diameter expressed in 'mm', because the latest EUCAST guidelines or EUCAST warnings recommend a disk diffusion test instead of broth microdilution.

^d Generated using EUCAST Clinical Breakpoint Tables v16.0, and the adjustments to the EUCAST reporting guidelines described in the 2026 EARS-Net EQA protocol [2].

^e Additional determinants of AMR: *tet(M)*.

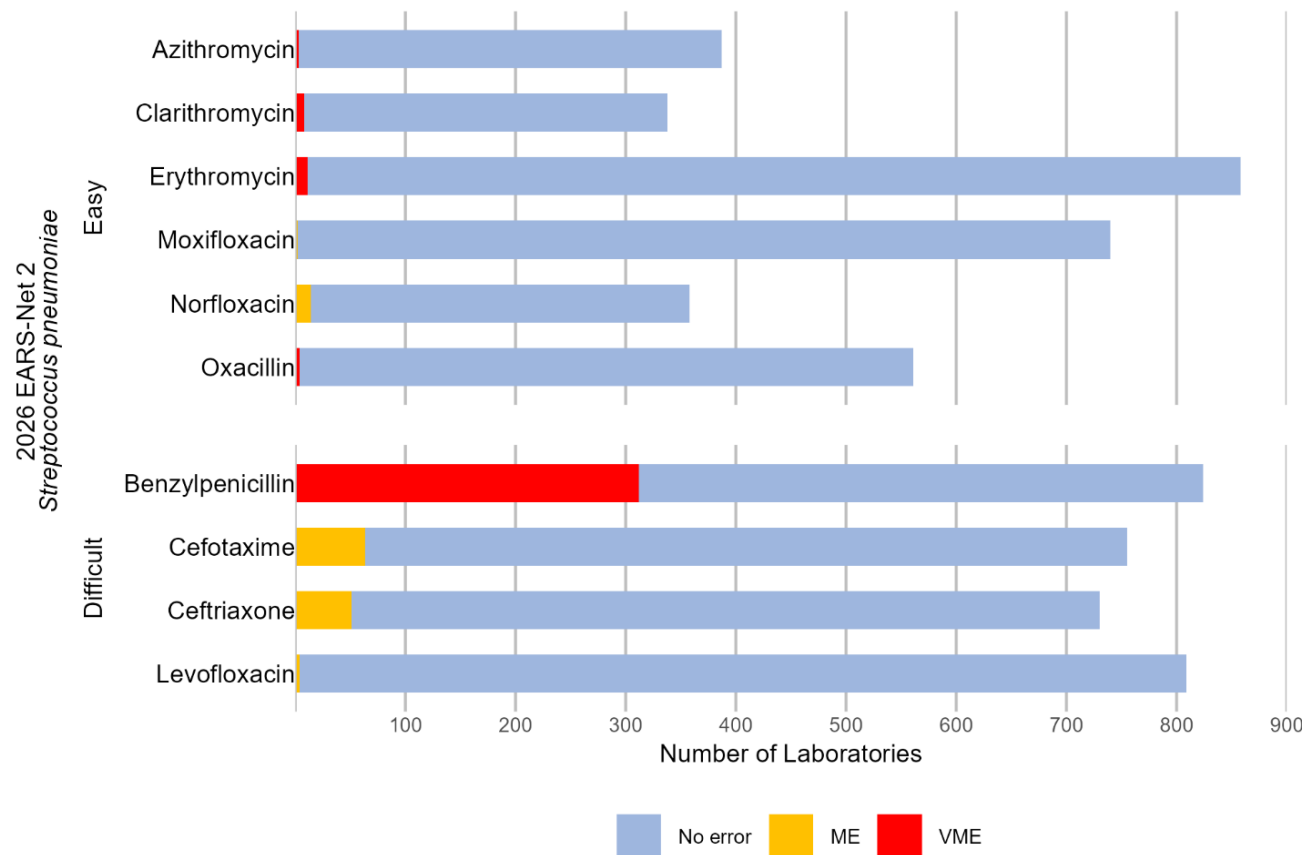


Figure 2. Reported interpretation of AST results for strain '2026 EARS-Net 2' (*Streptococcus pneumoniae*) by antimicrobial and anticipated difficulty of identification, for all participating laboratories

2026 EARS-Net 3 (*Pseudomonas aeruginosa*)

Table 4. EUCAST clinical breakpoints for '2026 EARS-Net 3' (*Pseudomonas aeruginosa*) and the expected AST results, level of difficulty in interpretation and expected interpretations, by antimicrobial agent

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a		EUCAST zone diameter breakpoints (mm) ^a			Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	S ≥	R <	ATU				
Piperacillin	0.001	16	50	18	18-19	Difficult	32	R	<i>bla</i> _{GES-5}
Piperacillin-tazobactam	0.001	16	50	18	18-19	Difficult	>16/4	R	<i>bla</i> _{GES-5}
Cefepime	0.001	8	50	21	19-23	Difficult	8	I	None
Ceftazidime	0.001	8	50	17		Difficult	16	R	<i>bla</i> _{GES-5}
Imipenem	0.001	4	50	20		Easy	>16	R	<i>bla</i> _{GES-5} , <i>oprD</i> Q402HfsTer99
Meropenem	2	8	20	14		Easy	>32	R	<i>bla</i> _{GES-5} , <i>oprD</i> Q402HfsTer99
Ciprofloxacin	0.001	0.5	50	26		Easy	>8	R	<i>gyrA</i> T83I, <i>parC</i> S87L
Levofloxacin	0.001	2	50	18		Easy	>8	R	<i>gyrA</i> T83I, <i>parC</i> S87L
Amikacin	16	16	15	15		Difficult	>16	R	<i>aac</i> (6')-Ib4
Tobramycin	2	2	18	18		Easy	>16	R	<i>aac</i> (6')-Ib4
Colistin	4	4	Note	Note		Easy	≤2	S	None
Cefiderocol	2	2	22	22	20-21	Easy	≥26 mm	S	None
Ceftazidime-avibactam (fixed 4 mg/L)	8	8	17	17	16-17	Easy	2/4	S	None
Ceftolozane-tazobactam (fixed 4 mg/L)	4	4	23	23		Difficult	8/4	R	<i>bla</i> _{GES-5}
Imipenem-relebactam (fixed 4 mg/L)	2	2	22	22		Easy	>16/4	R	None
Meropenem-vaborbactam (fixed 8 mg/L)	8	8	14	14		Easy	>16/8	R	None

MALDI-TOF by DTU: *Pseudomonas aeruginosa* (score 2.20). MLST: ST-235.

^a EUCAST Clinical Breakpoint Tables v16.0, valid from 01-01-2026. Note: Please refer to notes in the breakpoint tables.

^b The level of difficulty reflects the challenge for participating laboratories to report the expected AST interpretation. See Section 2.3 for further details.

^c For most antimicrobials the expected value corresponds to the MIC expressed in 'mg/L'. For cefiderocol the expected value corresponds to the inhibition zone diameter expressed in 'mm', because the latest EUCAST guidelines or EUCAST warnings recommend a disk diffusion test instead of broth microdilution.

^d Generated using EUCAST Clinical Breakpoint Tables v16.0, and the adjustments to the EUCAST reporting guidelines described in the 2026 EARS-Net EQA protocol [2].

^e Additional determinants of AMR: *bla*_{PDC-35} (intrinsic), *bla*_{OXA-488} (intrinsic, OXA-50-like), *fosA* (intrinsic), *catB7* (intrinsic), *aph*(3')-Ib (intrinsic), *aph*(3')-XV, *aadA6*, *floR2*, *crpP*, *tet*(G), *sul1*.

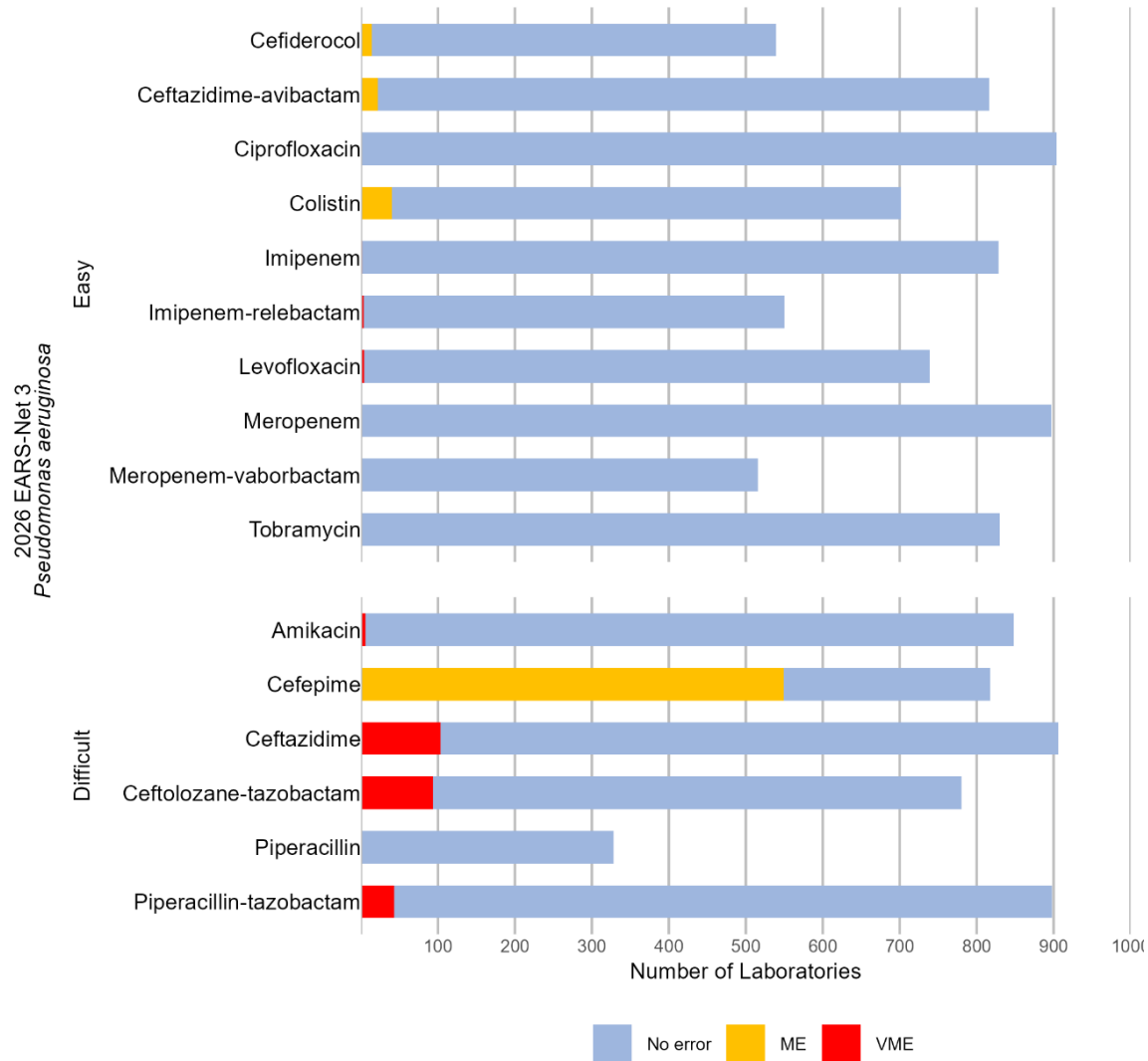


Figure 3. Reported interpretation of AST results for strain '2026 EARS-Net 3' (*Pseudomonas aeruginosa*) by antimicrobial and anticipated difficulty of identification, for all participating laboratories

2026 EARS-Net 4 (*Escherichia coli*)

Table 5. EUCAST clinical breakpoints, expected AST results for '2026 EARS-Net 4' (*Escherichia coli*) and the level of difficulty in interpretation and expected interpretations, by antimicrobial agent

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a			EUCAST zone diameter breakpoints (mm) ^a			Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	ATU	S ≥	R <	ATU				
Ampicillin iv	8	8		14	14		Easy	>32	R	<i>bla</i> _{OXA-181} , <i>bla</i> _{OXA-1} , <i>bla</i> _{CMY-2}
Amoxicillin iv	8	8		Note	Note		Easy	>32	R	<i>bla</i> _{OXA-181} , <i>bla</i> _{OXA-1} , <i>bla</i> _{CMY-2}
Amoxicillin-clavulanic acid iv (fixed 2 mg/L)	8	8		19	19	19-20	Easy	>64/2	R	<i>bla</i> _{OXA-181} , <i>bla</i> _{OXA-1} , <i>bla</i> _{CMY-2}
Piperacillin-tazobactam (fixed 4 mg/L)	8	8	16	20	20	19	Easy	>64/4	R	<i>bla</i> _{OXA-181} , <i>bla</i> _{OXA-1} , <i>bla</i> _{CMY-2}
Cefepime	1	4		27	24		Difficult	16	R	<i>bla</i> _{OXA-181} , <i>bla</i> _{OXA-1}
Cefotaxime	1	2		20	17		Easy	>8	R	<i>bla</i> _{CMY-2}
Ceftazidime	1	4		22	19		Easy	>16	R	<i>bla</i> _{CMY-2}
Ceftriaxone	1	2		27	24		Easy	>4	R	None
Ertapenem	0.5	0.5		23	23		Easy	>4	R	<i>bla</i> _{OXA-181}
Imipenem	2	4		22	19		Difficult	≤2	S	<i>bla</i> _{OXA-181}
Meropenem	2	8		22	16		Difficult	≤2	S	<i>bla</i> _{OXA-181}
Ciprofloxacin	0.25	0.5	0,5	25	22	22-24	Easy	>4	R	<i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87N, <i>gyrA</i> S83L, <i>parC</i> S80I, <i>parE</i> S458A
Levofloxacin	0.5	1		23	19		Easy	>4	R	<i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87N, <i>gyrA</i> S83L, <i>parC</i> S80I, <i>parE</i> S458A
Moxifloxacin	0.25	0.25		22	22		Easy	>8	R	<i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87N, <i>gyrA</i> S83L, <i>parC</i> S80I, <i>parE</i> S458A
Ofloxacin	0.25	0.5		24	22		Easy	>2	R	<i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87N, <i>gyrA</i> S83L, <i>parC</i> S80I, <i>parE</i> S458A
Amikacin	8	8		18	18		Easy	4	S	<i>aac</i> (6')-Ib-cr
Gentamicin	2	2		17	17		Easy	≤1	S	ND

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a			EUCAST zone diameter breakpoints (mm) ^a			Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	ATU	S ≥	R <	ATU				
Tobramycin	2	2		16	16		Easy	>4	R	<i>aac(6')-Ib-cr</i>
Tigecycline	0.5	0.5		18	18		Difficult	≤0.5	S	ND
Colistin	2	2		Note	Note		Easy	≤0.5	S	ND
Cefiderocol	2	2		23	23	21-23	Difficult	≥24 mm	S	<i>ftsI</i> N337NYRIN
Ceftazidime-avibactam (fixed 4 mg/L)	8	8		13	13		Easy	≤2/4	S	<i>ftsI</i> N337NYRIN
Ceftolozane-tazobactam (fixed 4 mg/L)	2	2		22	22	19-21	Easy	≥8/4	R	<i>bla_{OXA-181}</i> , <i>bla_{CMY-2}</i> , <i>ftsI</i> N337NYRIN
Imipenem-relebactam (fixed 4 mg/L)	2	2		22	22	20-22	Difficult	≤2/4	S	<i>bla_{OXA-181}</i>
Meropenem-vaborbactam (fixed 8 mg/L)	8	8		20	20	15-19	Easy	≤2/8	S	<i>bla_{OXA-181}</i>
Aztreonam-avibactam (fixed 4 mg/L)	4	4		25	25	22-24	Easy	2/4	S	<i>ftsI</i> N337NYRIN

MALDI-TOF by DTU: *Escherichia coli* (score 2.43). MLST: ST-410 (Achtman); ST-692 (Pasteur).

^a EUCAST Clinical Breakpoint Tables v16.0, valid from 01-01-2026. Note: Please refer to notes in the breakpoint tables.

^b The level of difficulty reflects the challenge for participating laboratories to report the expected AST interpretation. See Section 2.3 for further details.

^c For most antimicrobials the expected value corresponds to the MIC expressed in 'mg/L'. For cefiderocol the expected value corresponds to the inhibition zone diameter expressed in 'mm', because the latest EUCAST guidelines or EUCAST warnings recommend a disk diffusion test instead of broth microdilution.

^d Generated using EUCAST Clinical Breakpoint Tables v16.0, and the adjustments to the EUCAST reporting guidelines described in the 2026 EARS-Net EQA protocol [2].

^e Additional determinants of AMR: *bla_{TEM-1}*, *tet(B)*, *dfra17*, *sul1*, *catB3*, *aadA5*.

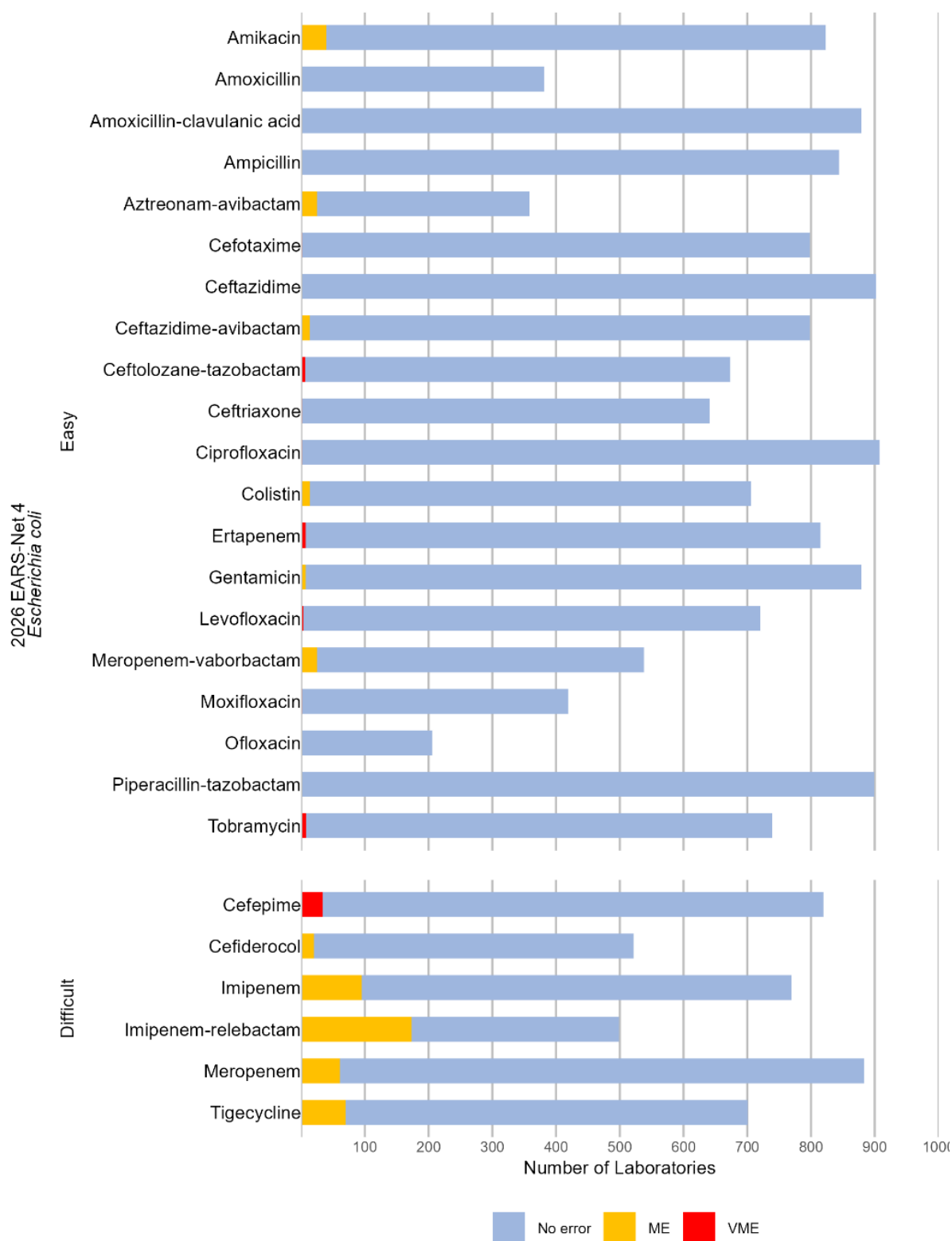


Figure 4. Reported interpretation of AST results for strain '2026 EARS-Net 4' (*Escherichia coli*) by antimicrobial and anticipated difficulty of identification, for all participating laboratories

2026 EARS-Net 5 (*Acinetobacter baumannii*)

Table 6. EUCAST clinical breakpoints for '2026 EARS-Net 5' (*Acinetobacter baumannii*) and the expected AST results, level of difficulty in interpretation and expected interpretations, by antimicrobial agent

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a		EUCAST zone diameter breakpoints (mm) ^a		Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	R <	S ≤				
Imipenem	2	4	24	21	Easy	>16	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-565}
Meropenem	2	8	21	15	Easy	>16	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-565}
Ciprofloxacin	0.001	1	50	21	Easy	0,125	I	<i>parC</i> V104I, <i>parC</i> D105E
Levofloxacin	0.5	1	23	20	Easy	≤0.125	S	<i>parC</i> V104I, <i>parC</i> D105E
Amikacin	8	8	19	19	Difficult	≤8	S	None
Gentamicin	4	4	17	17	Difficult	≤4	S	None
Tobramycin	4	4	17	17	Easy	1	S	None
Colistin	2	2	Note	Note	Easy	>4	R	<i>mcr-4.3</i>
Cefiderocol	Note	Note	Note	Note	Difficult	≥21 mm	S	None

MALDI-TOF by DTU: *Acinetobacter baumannii* (score 2.50). MLST: ST-1591 (Oxford); ST-329 (Pasteur).

^a EUCAST Clinical Breakpoint Tables v16.0, valid from 01-01-2026. Note: Please refer to notes in the breakpoint tables.

^b The level of difficulty reflects the challenge for participating laboratories to report the expected AST interpretation. See Section 2.3 for further details.

^c For most antimicrobials the expected value corresponds to the MIC expressed in 'mg/L'. For cefiderocol the expected value corresponds to the inhibition zone diameter expressed in 'mm', because the latest EUCAST guidelines or EUCAST warnings recommend a disk diffusion test instead of broth microdilution.

^d Generated using EUCAST Clinical Breakpoint Tables v16.0, and the adjustments to the EUCAST reporting guidelines described in the 2026 EARS-Net EQA protocol [2].

^e Additional determinants of AMR: *bla*_{OXA-67} (intrinsic; OXA-51-like), *bla*_{ADC-6} (intrinsic), *ant*(3'')-Ila (intrinsic).

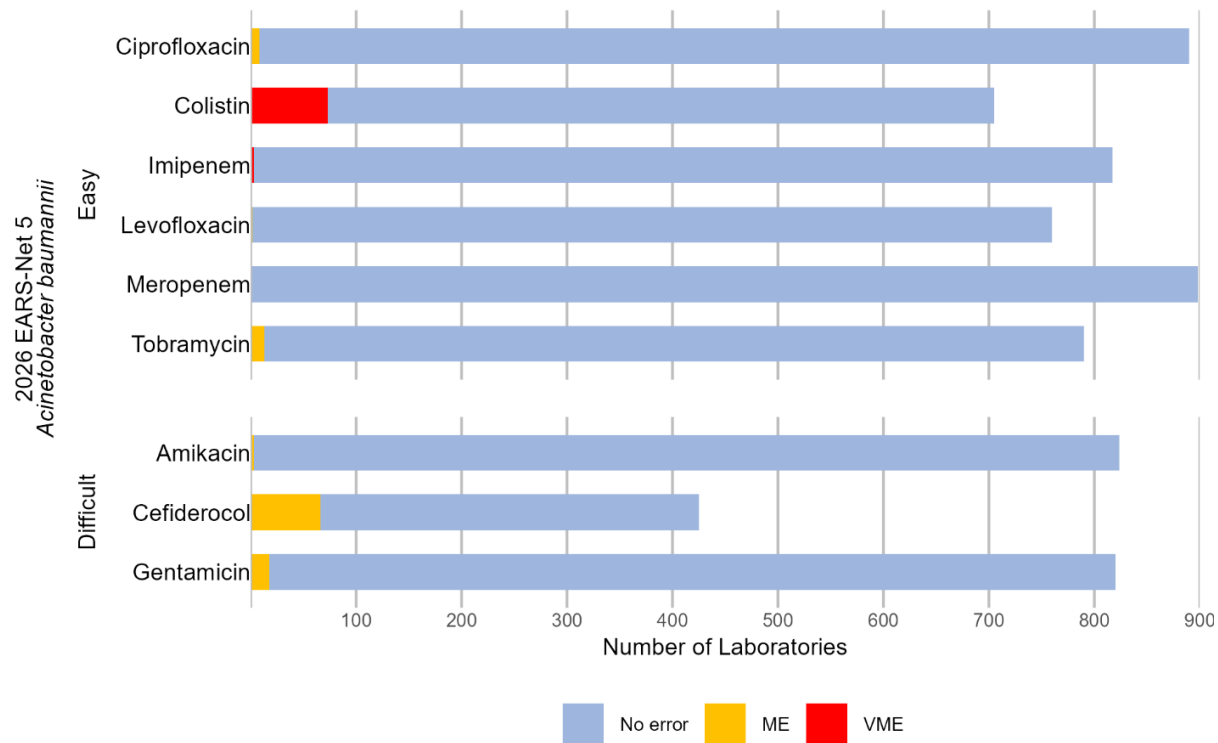


Figure 5. Reported interpretation of AST results for strain '2026 EARS-Net 5' (*Acinetobacter baumannii*) by antimicrobial and anticipated difficulty of identification, for all participating laboratories

2026 EARS-Net 6 (*Klebsiella pneumoniae*)

Table 7. EUCAST clinical breakpoints for '2026 EARS-Net 6' (*Klebsiella pneumoniae*) and the expected MIC value, level of difficulty in interpretation and interpretation, by antimicrobial agent

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a			EUCAST zone diameter breakpoints (mm) ^a			Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	ATU	S ≥	R <	ATU				
Amoxicillin-clavulanic acid iv (fixed 2 mg/L)	8	8		19	19	19-20	Easy	>64/2	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48} , <i>bla</i> _{OXA-1} , <i>bla</i> _{CMY-4}
Piperacillin-tazobactam (fixed 4 mg/L)	8	8	16	20	20	19	Easy	>64/4	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48} , <i>bla</i> _{OXA-1} , <i>bla</i> _{CMY-4}
Cefepime	1	4		27	24		Easy	>16	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48} , <i>bla</i> _{OXA-1} , <i>bla</i> _{SHV-12}
Cefotaxime	1	2		20	17		Easy	>8	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{CMY-4} , <i>bla</i> _{SHV-12}
Ceftazidime	1	4		22	19		Easy	>16	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{CMY-4} , <i>bla</i> _{SHV-12}
Ceftriaxone	1	2		27	24		Easy	>4	R	<i>bla</i> _{SHV-12}
Ertapenem	0.5	0.5		23	23		Easy	>4	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48}
Imipenem	2	4		22	19		Easy	>8	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48}
Meropenem	2	8		22	16		Difficult	>8	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48}
Ciprofloxacin	0.25	0.5	0,5	25	22	22-24	Easy	>4	R	<i>qnrB9</i> , <i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87A, <i>gyrA</i> S83F, <i>parC</i> S80I
Levofloxacin	0.5	1		23	19		Easy	>4	R	<i>qnrB9</i> , <i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87A, <i>gyrA</i> S83F, <i>parC</i> S80I
Moxifloxacin	0.25	0.25		22	22		Easy	>8	R	<i>qnrB9</i> , <i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87A, <i>gyrA</i> S83F, <i>parC</i> S80I
Ofloxacin	0.25	0.5		24	22		Easy	>2	R	<i>qnrB9</i> , <i>aac</i> (6')-Ib-cr, <i>gyrA</i> D87A, <i>gyrA</i> S83F, <i>parC</i> S80I
Amikacin	8	8		18	18		Easy	≤4	S	<i>aac</i> (6')-Ib-cr, <i>aph</i> (3')-VI
Gentamicin	2	2		17	17		Easy	>16	R	<i>aac</i> (3)-IId
Tobramycin	2	2		16	16		Easy	16	R	<i>aac</i> (6')-Ib-cr, <i>aac</i> (3)-IId
Colistin	2	2		Note	Note		Easy	≤0.5	S	None

Antimicrobial	EUCAST clinical breakpoints MIC (mg/L) ^a			EUCAST zone diameter breakpoints (mm) ^a			Level of difficulty ^b	Expected result ^c	Expected interpretation ^d	Genetic determinants of AMR ^e
	S ≤	R >	ATU	S ≥	R <	ATU				
Cefiderocol	2	2		23	23	21-23	Difficult	<22 mm	R	None
Ceftazidime-avibactam (fixed 4 mg/L)	8	8		13	13		Easy	>32/4	R	<i>bla</i> _{NDM-1}
Ceftolozane-tazobactam (fixed 4 mg/L)	2	2		22	22	19-21	Easy	>8/4	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48} , <i>bla</i> _{CMY-4}
Imipenem-relebactam (fixed 4 mg/L)	2	2		22	22	20-22	Easy	>8/4	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48}
Meropenem-vaborbactam (fixed 8 mg/L)	8	8		20	20	15-19	Difficult	>8/8	R	<i>bla</i> _{NDM-1} , <i>bla</i> _{OXA-48}
Aztreonam-avibactam (fixed 4 mg/L)	4	4		25	25	22-24	Easy	≤1/4	S	None

MALDI-TOF by DTU: *Klebsiella pneumoniae* (score 2.51). MLST: ST-15.

^a EUCAST Clinical Breakpoint Tables v16.0, valid from 01-01-2026. Note: Please refer to notes in the breakpoint tables.

^b The level of difficulty reflects the challenge for participating laboratories to report the expected AST interpretation. See Section 2.3 for further details.

^c For most antimicrobials the expected value corresponds to the MIC expressed in 'mg/L'. For cefiderocol the expected value corresponds to the inhibition zone diameter expressed in 'mm', because the latest EUCAST guidelines or EUCAST warnings recommend a disk diffusion test instead of broth microdilution.

^d Generated using EUCAST Clinical Breakpoint Tables v16.0, and the adjustments to the EUCAST reporting guidelines described in the 2026 EARS-Net EQA protocol [2].

^e Additional determinants of AMR: *bla*_{TEM-1}, *bla*_{SHV-28}, *OqxA* (intrinsic), *OqxB* (intrinsic), *fosA* (intrinsic), *sul1*, *sul2*, *dfrA14*, *tet(A)*, *floR*, *ARR-3*, *catB3*, *aph(3'')-Ib*, *aph(6)-Id*, *ramR* A19V, *acrR* mutations potentially associated with decreased susceptibility towards fluoroquinolones (P161R, G164A, F172S, R173G, L195V, F197I, K201M), *ompK36* mutations potentially associated with decreased susceptibility towards cephalosporins (N49S, L59V, G189T, F198Y, F207Y, T222L, D223G, E232R, N304E), *ompK36* mutations potentially associated with decreased susceptibility towards carbapenems (A217S), *ompK37* mutations potentially associated with decreased susceptibility towards carbapenems (I70M, I128M).

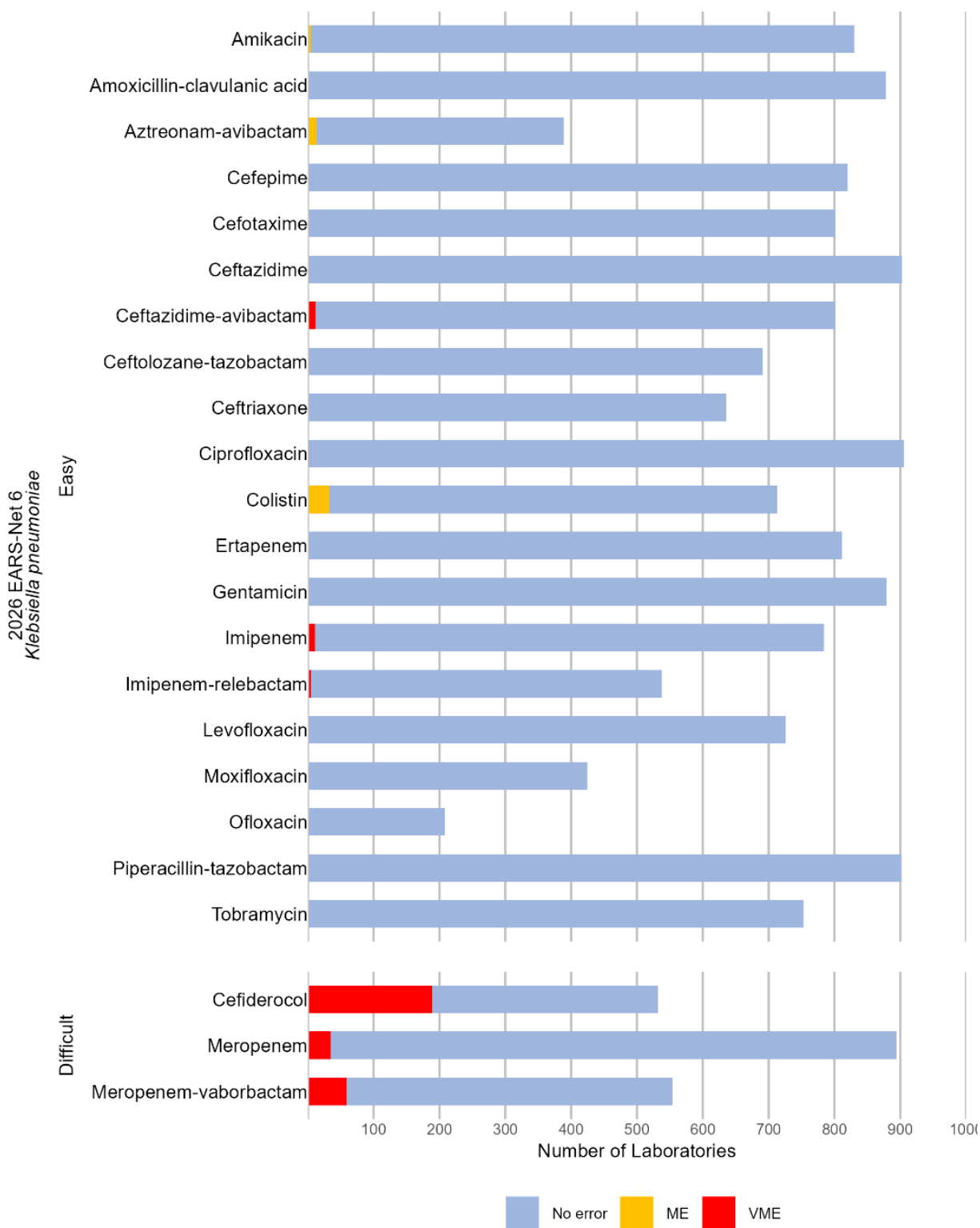


Figure 6. Reported interpretation of AST results for strain '2026 EARS-Net 6' (*Klebsiella pneumoniae*) by antimicrobial and anticipated difficulty of identification, for all participating laboratories