

European Committee on Antimicrobial Susceptibility Testing

Breakpoint tables for interpretation of MICs and zone diameters

Version 1.3, January 5, 2011

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European Committee on Antimicrobial Susceptibility Testing

Breakpoint tables for interpretation of MICs and zone diameters

Version 1.3, January 2011

Notes

1. The EUCAST tables of clinical breakpoints contain clinical MIC breakpoints (determined over the period 2002-2010) and their inhibition zone diameter correlates. From version 1.2 the inhibition zone diameter breakpoints are no longer tentative. This version contains corrected typographical errors, several added or revised MIC breakpoints and updated zone diameter breakpoints. Changes are best seen on screen or on a colour printout since changed cells are yellow.

2. Non-species-related breakpoints (Pk/Pd breakpoints) are listed separately on the last page.

3. Numbered footnotes relate to MIC breakpoints. Lettered footnotes relate to disk diffusion test breakpoints.

4. Highlighted antimicrobial names link to EUCAST rationale documents. Highlighted MIC breakpoints and disk diffusion breakpoints link to EUCAST MIC and zone diameter distributions, respectively.

5. One version of the document is released as an unprotected Excel file to enable users to alter the list of agents to suit the range of agents tested locally and to present breakpoints in the format used locally. The content of single cells cannot be changed.

Hide lines by right-clicking on the line number and choosing "hide".

Hide columns by right-clicking on the column letter and choosing "hide".

If you wish to add the intermediate columns for MICs and/or zone diameters right-click on the column letter and choose "insert". The intermediate values are inferred from the "S" and "R" breakpoints.

6. A disk diffusion test breakpoint of "S \geq 50 mm" is an arbitrary "off scale" zone diameter breakpoint corresponding to MIC breakpoint situations where wild type isolates are categorized as intermediate (i.e. no fully susceptible isolates exist).

7. In order to simplify the EUCAST tables, the intermediate category is not listed. It is readily interpreted as the values between the S breakpoint and the R breakpoint. For example, with MIC breakpoints listed as S \leq 1 mg/L and R $>$ 8 mg/L, the intermediate category is 2-8 (technically $>1-8$) mg/L, and for zone diameter breakpoints listed as S \geq 22 mm and R $<$ 18 mm, the intermediate category is 18-21 mm.

"-" indicates that susceptibility testing is not recommended as the species is a poor target for therapy with the drug. Isolates may be reported as R without prior testing.

"IE" indicates that there is insufficient evidence that the species in question is a good target for therapy with the drug. A MIC with a comment but without an accompanying S, I or R-categorization may be reported.

NA = Not Applicable

IP = In Preparation

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Breakpoint tables for interpretation of MICs and zone diameters

Version 1.3, January 5, 2011

Version number

Version 1.3

2011-01-05

Group of organisms	Changes (cells containing a change, a deletion or an addition are marked yellow)
Enterococcus spp.	• Revised comment on streptomycin.
<i>Haemophilus influenzae</i>	• Updated comment on cefaclor (15 mm changed to 19 mm).
<i>Moraxella catarrhalis</i>	• Erroneous disk content on cefpodoxime was corrected (from 30 to 10 µg) in v 1.2. This correction is now marked yellow.
<i>Neisseria meningitidis</i>	• Breakpoints for miscellaneous agents corrected (an extra row was erroneously inserted). Breakpoints are identical with v 1.1.

Version number

Version 1.2

2010-12-20

Group of organisms	Changes (cells containing a change, a deletion or an addition are marked yellow)
All	• Mupirocin added. • Links added to rationale documents for amoxicillin, benzylpenicillin, cefotaxime, ceftazidime, cefuroxime, colistin, fusidic acid, mecillinam, mupirocin, nitrofurantoin, phenoxymethylpenicillin, piperacillin-tazobactam, rifampicin, teicoplanin, trimethoprim and vancomycin.
Enterobacteriaceae	• Revised comments on ampicillin, ampicillin-sulbactam, piperacillin-tazobactam (typo error) ceftazidime and tigecycline. • Revised or new zone diameter breakpoints for ampicillin-sulbactam, amoxicillin-clavulanate, cefalexin, ceftazidime and tobramycin. • Nalidixic acid zone diameter breakpoints previously recommended for detection of fluoroquinolone resistance removed. Nalidixic acid does not detect qnr-mediated resistance and low-level resistance in Enterobacteriaceae (exception Salmonella spp) is no longer of major interest since high-level resistance is now common in most Enterobacteriaceae species.
<i>Pseudomonas</i> spp.	• Revised or new zone diameter breakpoints for ticarcillin and ticarcillin-clavulanate, netilmicin and tobramycin.
<i>Acinetobacter</i> spp.	• Revised zone diameter breakpoints for levofloxacin, gentamicin, netilmicin and tobramycin. • No zone diameter screen breakpoint for nalidixic acid (previously IP).
<i>Staphylococcus</i> spp.	• Revised comments on penicillins, cephalosporins and quinupristin-dalfopristin. • Revised zone diameter breakpoints for several antibiotics. • Specific breakpoints for <i>S. aureus</i> and coagulase-negative staphylococci for aminoglycosides. • MIC and zone diameter breakpoints for mupirocin added.
Enterococcus spp.	• Revised comments on aminoglycosides and glycopeptides. • Revised breakpoints for aminoglycosides. • Comment on ticarcillin and ticarcillin-clavulanate removed.
Streptococcus A, B, C and G	• New breakpoints for teicoplanin, vancomycin, telithromycin, minocycline and chloramphenicol.
<i>Streptococcus pneumoniae</i>	• Revised comment on penicillins. • Revised or new zone diameter breakpoints for ampicillin, ciprofloxacin, teicoplanin, vancomycin, telithromycin, minocycline and chloramphenicol. • Zone diameter breakpoints for cefepime and cefpodoxime removed.
<i>Haemophilus influenzae</i>	• Revised comments on penicillins and cefaclor. • Revised or new zone diameter breakpoints for ampicillin-sulbactam, cefaclor, telithromycin and minocycline. • Erroneous disk content on cefpodoxime corrected (from 30 to 10 µg).
<i>Moraxella catarrhalis</i>	• Revised or new comments on nalidixic acid and chloramphenicol. • Revised and new zone diameter breakpoints for several antibiotics. New MIC breakpoints and corresponding zone diameter breakpoints will be presented during 2011.
Gram-positive anaerobes	• New comment on <i>Clostridium difficile</i> (separate breakpoints).
Miscellaneous	• New MIC breakpoints for <i>Clostridium difficile</i> .
Non-species related	• A new column listing the dosages on which EUCAST breakpoints are based has been added.

Enterobacteriaceae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. For aminopenicillin breakpoints, the resistant breakpoint of >8 mg/L ensures that all isolates with resistance mechanisms are reported resistant. The wide range of dosages, and intravenous versus oral administration, significantly affect therapeutic efficacy. The unspecified susceptible breakpoint enables the user to categorize wild type <i>E. coli</i> and <i>P. mirabilis</i> as either susceptible or intermediate to the aminopenicillins depending on dosing, route of administration and whether the infection is systemic or affects the urinary tract only.
Benzylpenicillin	-	-		-	-	
Ampicillin	Note ¹	8	10	Note ^A	14	A. Enterobacteriaceae may be categorized as either susceptible or intermediate to aminopenicillins (note 1). If it is common practice to categorize wild type Enterobacteriaceae as susceptible, use breakpoints of S ≥14mm, R <14 mm; to categorize the wild type as intermediate use S ≥50 mm, R <14 mm.
Ampicillin-sulbactam²	Note ¹	8	10-10	Note ^A	14	2. For susceptibility testing purposes, the concentration of sulbactam is fixed at 4 mg/L.
Amoxicillin	Note ¹	8	-	Note ^B	Note ^B	B. Susceptibility inferred from ampicillin.
Amoxicillin-clavulanate³	Note ¹	8	20-10	Note ^C	17	3. For susceptibility testing purposes, the concentration of clavulanate is fixed at 2 mg/L. C. Enterobacteriaceae may be categorized as either susceptible or intermediate to aminopenicillins (note 1). If it is common practice to categorize wild type Enterobacteriaceae as susceptible, use breakpoints of S ≥17mm, R <17 mm; to categorize the wild type as intermediate use S ≥50 mm, R <17 mm.
Piperacillin	8	16	30	18	15	
Piperacillin-tazobactam⁴	8	16	30-6	18	15	4. For susceptibility testing purposes, the concentration of tazobactam is fixed at 4 mg/L.
Ticarcillin	8	16	75	23	22	
Ticarcillin-clavulanate³	8	16	75-10	23	22	
Phenoxymethylpenicillin	-	-		-	-	
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	8 ⁵	8 ⁵	10	15 ^D	15 ^D	5/D. Mecillinam (pivmecillinam) breakpoints relate to <i>E. coli</i> , <i>Klebsiella</i> spp. and <i>P. mirabilis</i> only.

Enterobacteriaceae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Cephalosporins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. The cephalosporin breakpoints for Enterobacteriaceae will detect all clinically important resistance mechanisms (including ESBL and plasmid mediated AmpC). Some strains that produce beta-lactamases are susceptible or intermediate to 3rd or 4th generation cephalosporins with these breakpoints and should be reported as found, i.e. the presence or absence of an ESBL does not in itself influence the categorization of susceptibility. In many areas, ESBL detection and characterization is recommended or mandatory for infection control purposes.
Cefaclor	-	-		-	-	
Cefadroxil (uncomplicated UTI only)	16	16	30	12	12	
Cefalexin (uncomplicated UTI only)	16	16	30	12	12	
Cefazolin	-	-		-	-	
Cefepime	1	4	30	24	21	
Cefixime (uncomplicated UTI only)	1	1	5	17	17	
Cefotaxime	1	2	5	21	18	
Cefoxitin (screen) ²	NA	NA		19	19	2. The cefoxitin ECOFF (8 mg/L) has a high sensitivity, but poor specificity for identification of AmpC-producing Enterobacteriaceae as this antibiotic is also affected by permeability alterations and some carbapenemases. Classical non-AmpC producers are wild type, whereas plasmid AmpC producers or chromosomal AmpC hyperproducers are non-wild type.
Cefpodoxime (uncomplicated UTI only)	1	1	10	21	21	
Ceftazidime	1	4	10	22	19	
Ceftibuten (uncomplicated UTI only)	1	1	30	21	21	
Ceftriaxone	1	2	30	23	20	
Cefuroxime	8 ³	8	30	18	18	3. The breakpoint relates to a dosage of 1.5 g x 3 and to <i>E. coli</i> , <i>P. mirabilis</i> and <i>Klebsiella</i> spp. only.
Cefuroxime axetil (uncomplicated UTI only)	8	8	30	18	18	

Carbapenems ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. The carbapenem breakpoints for Enterobacteriaceae will detect all clinically important resistance mechanisms (including the majority of carbapenemases). Some strains that produce carbapenemase are categorized as susceptible with these breakpoints and should be reported as tested, i.e. the presence or absence of a carbapenemase does not in itself influence the categorization of susceptibility. In many areas, carbapenemase detection and characterization is recommended or mandatory for infection control purposes.
Doripenem	1	4	10	24	18	
Ertapenem	0.5	1	10	25	22	
Imipenem ²	2	8	10	21	15	2. <i>Proteus</i> and <i>Morganella</i> species are considered poor targets for imipenem.
Meropenem	2	8	10	22	16	

Enterobacteriaceae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam ¹	1	4	30	27	24	1. The aztreonam breakpoints for Enterobacteriaceae will detect clinically important resistance mechanisms (including ESBL). Some strains that produce beta-lactamases are susceptible or intermediate to 3rd or 4th generation cephalosporins with these breakpoints and should be reported as found, i.e. the presence or absence of an ESBL does not in itself influence the categorization of susceptibility. In many areas, ESBL detection and characterization is recommended or mandatory for infection control purposes.

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin ¹	0.5	1	5	22	19	1. <i>Salmonella</i> spp. - there is clinical evidence for ciprofloxacin to indicate a poor response in systemic infections caused by <i>Salmonella</i> spp. with low-level fluoroquinolone resistance (MIC>0.064 mg/L). The available data relate mainly to <i>S. typhi</i> but there are also case reports of poor response with other <i>Salmonella</i> species.
Levofloxacin	1	2	5	22	19	
Moxifloxacin	0.5	1	5	20	17	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin	0.5	1	10	22	19	
Ofloxacin	0.5	1	5	22	19	

Aminoglycosides ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Aminoglycoside breakpoints are based on once-daily administration of high aminoglycoside dosages. Most often aminoglycosides are given in combination with beta-lactam agents.
Amikacin	8	16	30	16	13	
Gentamicin	2	4	10	17	14	
Netilmicin	2	4	10	15	12	
Tobramycin	2	4	10	16	13	

Enterobacteriaceae
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Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	-	-		-	-	
Vancomycin	-	-		-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin ¹	-	-		-	-	1. Azithromycin has been used in the treatment of infections with <i>Salmonella typhi</i> (MIC ≤16 mg/L for wild type isolates) and <i>Shigella</i> spp.
Clarithromycin	-	-		-	-	
Erythromycin ¹	-	-		-	-	
Roxithromycin	-	-		-	-	
Telithromycin	-	-		-	-	
Clindamycin	-	-		-	-	
Quinupristin-dalfopristin	-	-		-	-	

Enterobacteriaceae

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Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	-	-		-	-	
Minocycline	-	-		-	-	
Tetracycline	-	-		-	-	
Tigecycline ¹	1	2	15	18 ^A	15 ^A	1. Tigecycline has decreased activity against <i>Morganella</i> spp., <i>Proteus</i> spp. and <i>Providencia</i> spp. A. Zone diameter breakpoints validated for <i>E. coli</i> only. For other Enterobacteriaceae, use an MIC method.

Miscellaneous agents	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	8	8	30	17	17	
Colistin	2	2		Note ^A	Note ^A	A. Use an MIC method.
Daptomycin	-	-		-	-	
Fosfomycin iv	32	32		-	-	
Fosfomycin-trometamol (uncomplicated UTI only)	32	32		-	-	
Fusidic acid	-	-		-	-	
Linezolid	-	-		-	-	
Metronidazole	-	-		-	-	
Mupirocin	-	-		-	-	
Nitrofurantoin (uncomplicated UTI only)	64 ¹	64 ¹	100	11 ^B	11 ^B	1/B. Breakpoints relate to <i>E. coli</i> only.
Rifampicin	-	-		-	-	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	2	4	5	18	15	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ²	2	4	1.35-23.75	16	13	2. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Pseudomonas spp.

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Penicillins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Benzympenicillin	-	-		-	-	
Ampicillin	-	-		-	-	
Ampicillin-sulbactam	-	-		-	-	
Amoxicillin	-	-		-	-	
Amoxicillin-clavulanate	-	-		-	-	
Piperacillin ¹	16	16	30	19	19	1. Breakpoints are based on high dose therapy (with or without tazobactam, 4 g x 4).
Piperacillin-tazobactam ^{1,2}	16	16	30-6	19	19	2. For susceptibility testing purposes, the concentration of beta-lactamase inhibitor is fixed at 4 mg/L.
Ticarcillin ³	16	16	75	17	17	3. Breakpoints are based on high dose therapy (with or without clavulanate, 3 g x 4).
Ticarcillin-clavulanate ^{2, 3}	16	16	75-10	17	17	
Phenoxymethylpenicillin	-	-		-	-	
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Cephalosporins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	-	-		-	-	
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	-	-		-	-	
Cefepime	8 ¹	8	30	18	18	1. Breakpoints relate to high dose therapy (2 g x 3).
Cefixime	-	-		-	-	
Cefotaxime	-	-		-	-	
Cefoxitin	NA	NA		NA	NA	
Cefpodoxime	-	-		-	-	
Ceftazidime	8 ¹	8	10	16	16	
Ceftibuten	-	-		-	-	
Ceftriaxone	-	-		-	-	
Cefuroxime	-	-		-	-	
Cefuroxime axetil	-	-		-	-	

Pseudomonas spp.

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Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem	1	4	10	22	17	
Ertapenem	-	-		-	-	
Imipenem	4 ¹	8	10	20	17	1. Breakpoints relate to high dose, frequent therapy (1 g x 4).
Meropenem	2	8	10	24	18	

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	1	16 ¹	30	50	16	1. The resistant breakpoint relates to high dose therapy. The susceptible breakpoint is set to ensure that wild type isolates are reported intermediate.

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin	0.5	1	5	25	22	
Levofloxacin	1	2	5	20	17	
Moxifloxacin	-	-		-	-	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin	-	-		-	-	
Ofloxacin	-	-		-	-	

Pseudomonas spp.

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Aminoglycosides ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Aminoglycoside breakpoints are based on once-daily administration of high aminoglycoside dosages. Most often aminoglycosides are given in combination with beta-lactam agents.
Amikacin	8	16	30	18	15	
Gentamicin	4	4	10	15	15	
Netilmicin	4	4	10	12	12	
Tobramycin	4	4	10	16	16	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	-	-		-	-	
Vancomycin	-	-		-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	-	-		-	-	
Clarithromycin	-	-		-	-	
Erythromycin	-	-		-	-	
Roxithromycin	-	-		-	-	
Telithromycin	-	-		-	-	
Clindamycin	-	-		-	-	
Quinupristin-dalfopristin	-	-		-	-	

Pseudomonas spp.

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Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	-	-		-	-	
Minocycline	-	-		-	-	
Tetracycline	-	-		-	-	
Tigecycline	-	-		-	-	

Miscellaneous	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	-	-		-	-	
Colistin	4	4		Note ^A	Note ^A	A. Use an MIC method.
Daptomycin	-	-		-	-	
Fosfomycin iv ¹	32	32		Note ^A	Note ^A	1. Intravenous fosfomycin may be used in combination with other antibiotics to treat <i>P. aeruginosa</i> infections.
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	-	-		-	-	
Metronidazole	-	-		-	-	
Mupirocin	-	-		-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-		-	-	
Rifampicin	-	-		-	-	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ²	4 ³	4 ³	1.35-23.75	16 ^B	16 ^B	2. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration. 3/B. <i>S. maltophilia</i> only.

Acinetobacter spp.

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Susceptibility testing of <i>Acinetobacter</i> spp. to penicillins is unreliable. In most instances <i>Acinetobacter</i> spp. are resistant to penicillins.
Benzympenicillin	-	-		-	-	
Ampicillin	-	-		-	-	
Ampicillin-sulbactam	IE	IE		IE	IE	
Amoxicillin	-	-		-	-	
Amoxicillin-clavulanate	-	-		-	-	
Piperacillin	IE	IE		IE	IE	
Piperacillin-tazobactam	IE	IE		IE	IE	
Ticarcillin	IE	IE		IE	IE	
Ticarcillin-clavulanate	IE	IE		IE	IE	
Phenoxymethylpenicillin	-	-		-	-	
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Cephalosporins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	-	-		-	-	
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	-	-		-	-	
Cefepime	-	-		-	-	
Cefixime	-	-		-	-	
Cefotaxime	-	-		-	-	
Cefoxitin	-	-		-	-	
Cefpodoxime	-	-		-	-	
Ceftazidime	-	-		-	-	
Ceftibuten	-	-		-	-	
Ceftriaxone	-	-		-	-	
Cefuroxime	-	-		-	-	
Cefuroxime axetil	-	-		-	-	

Acinetobacter spp.

Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem	1	4	10	21	15	
Ertapenem	-	-		-	-	
Imipenem	2	8	10	23	17	
Meropenem	2	8	10	21	15	

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	-	-		-	-	

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin	1	1	5	21	21	
Levofloxacin	1	2	5	21	18	
Moxifloxacin	-	-		-	-	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin	-	-		-	-	
Ofloxacin	-	-		-	-	

Acinetobacter spp.

Aminoglycosides ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Aminoglycoside breakpoints are based on once-daily administration of high aminoglycoside dosages. Most often aminoglycosides are given in combination with beta-lactam agents.
Amikacin	8	16	30	18	15	
Gentamicin	4	4	10	17	17	
Netilmicin	4	4	10	16	16	
Tobramycin	4	4	10	17	17	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	-	-		-	-	
Vancomycin	-	-		-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	-	-		-	-	
Clarithromycin	-	-		-	-	
Erythromycin	-	-		-	-	
Roxithromycin	-	-		-	-	
Telithromycin	-	-		-	-	
Clindamycin	-	-		-	-	
Quinupristin-dalfopristin	-	-		-	-	

Acinetobacter spp.

Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	-	-		-	-	
Minocycline	IE	IE		IE	IE	
Tetracycline	-	-		-	-	
Tigecycline	IE	IE		IE	IE	

Miscellaneous	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	-	-		-	-	
Colistin	2	2		Note ^A	Note ^A	A. Use an MIC method.
Daptomycin	-	-		-	-	
Fosfomycin iv	-	-		-	-	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	-	-		-	-	
Metronidazole	-	-		-	-	
Mupirocin	-	-		-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-		-	-	
Rifampicin	-	-		-	-	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ¹	2	4	1.35-23.75	16	13	1. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Staphylococcus spp.

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Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1/A. Most staphylococci are penicillinase-producers. The benzylpenicillin breakpoint will mostly, but not unequivocally, separate beta-lactamase producers from non-producers. Isolates positive for beta-lactamase are resistant to benzylpenicillin, phenoxymethylpenicillin, amino-, carboxy- and ureidopenicillins. Isolates negative for beta-lactamase and susceptible to ceftiofur (ceftiofur is used to screen for "methicillin resistance") can be reported susceptible to these drugs. Isolates positive for beta-lactamase and susceptible to ceftiofur are susceptible to penicillin-beta-lactamase inhibitor combinations and penicillinase-resistant penicillins (oxacillin, cloxacillin, dicloxacillin and flucloxacillin). Isolates resistant to ceftiofur are methicillin resistant and resistant to beta-lactam agents, including beta-lactamase inhibitor combinations, except for cephalosporins with approved anti-MRSA activity and clinical breakpoints.
Benzyloxacillin	0.125 ¹	0.125 ^{1,2}	1 unit	26 ^{A,B}	26 ^{A,B}	B. Isolates with inhibition zones above the breakpoint and a fuzzy zone edges can be reported susceptible to benzyloxacillin.
Ampicillin	Note ¹	Note ¹	2	15 ^{A,C}	15 ^{A,C}	C. Breakpoints relate to <i>S. saprophyticus</i> only.
Ampicillin-sulbactam	Note ¹	Note ¹		Note ^A	Note ^A	
Amoxicillin	Note ¹	Note ¹		Note ^A	Note ^A	
Amoxicillin-clavulanate	Note ¹	Note ¹		Note ^A	Note ^A	
Piperacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Piperacillin-tazobactam	Note ¹	Note ¹		Note ^A	Note ^A	
Ticarcillin	Note ¹	Note ¹		Note ^A	Note ^A	
Ticarcillin-clavulanate	Note ¹	Note ¹		Note ^A	Note ^A	
Phenoxymethylpenicillin	Note ¹	Note ¹		Note ^A	Note ^A	
Oxacillin²	Note ^{1,2}	Note ^{1,2}		Note ^A	Note ^A	2. <i>S. aureus</i> and <i>S. lugdunensis</i> with oxacillin MIC values >2 mg/L are mostly methicillin resistant due to the presence of the <i>mecA</i> gene. The corresponding oxacillin MIC for coagulase-negative staphylococci is >0.25 mg/L.
Cloxacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Dicloxacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Flucloxacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Staphylococcus spp.

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Cephalosporins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Susceptibility of staphylococci to cephalosporins is inferred from the cefoxitin susceptibility except for ceftazidime, cefixime and ceftibuten, which do not have breakpoints and should not be used for staphylococcal infections.
Cefaclor ²	Note ¹	Note ¹		Note ^A	Note ^A	2. High-dose therapy is required for treatment of staphylococcal infections. A. Susceptibility inferred from cefoxitin.
Cefadroxil	Note ¹	Note ¹		Note ^A	Note ^A	
Cefalexin	Note ¹	Note ¹		Note ^A	Note ^A	
Cefazolin	Note ¹	Note ¹		Note ^A	Note ^A	
Cefepime	Note ¹	Note ¹		Note ^A	Note ^A	
Cefixime	-	-		-	-	
Cefotaxime	Note ¹	Note ¹		Note ^A	Note ^A	
Cefoxitin (screen) <i>S. aureus</i> , <i>S. lugdunensis</i>	Note ³	Note ³	30	22 ^A	22 ^A	3. <i>S. aureus</i> and <i>S. lugdunensis</i> with cefoxitin MIC values >4 mg/L are mostly methicillin resistant due to the presence of the <i>mecA</i> gene. For coagulase-negative staphylococci other than <i>S. lugdunensis</i> the cefoxitin MIC is a poorer predictor of methicillin resistance than the disk diffusion test.
Cefoxitin (screen) Coagulase-negative staphylococci	Note ³	Note ³	30	25 ^A	25 ^A	
Cefpodoxime	Note ¹	Note ¹		Note ^A	Note ^A	
Ceftazidime	-	-		-	-	
Ceftibuten	IE	IE		IE	IE	
Ceftriaxone	Note ¹	Note ¹		Note ^A	Note ^A	
Cefuroxime	Note ¹	Note ¹		Note ^A	Note ^A	
Cefuroxime axetil	Note ¹	Note ¹		Note ^A	Note ^A	

Carbapenems ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1/A. Susceptibility of staphylococci to carbapenems is inferred from the cefoxitin susceptibility.
Doripenem	Note ¹	Note ¹		Note ^A	Note ^A	
Ertapenem	Note ¹	Note ¹		Note ^A	Note ^A	
Imipenem	Note ¹	Note ¹		Note ^A	Note ^A	
Meropenem	Note ¹	Note ¹		Note ^A	Note ^A	

Staphylococcus spp.

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Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	-	-	-	-	-	

Fluoroquinolones ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. For breakpoints for other fluoroquinolones (eg. pefloxacin and enoxacin) - refer to breakpoints determined by national breakpoint committees.
Ciprofloxacin ²	1	1	5	20	20	2. Breakpoints relate to high dose therapy.
Levofloxacin	1	2	5	22	19	
Moxifloxacin	0.5	1	5	24	21	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin (screen)	NA	NA	10	17 ^A	17 ^A	A. The norfloxacin disk diffusion test can be used to screen for fluoroquinolone resistance. Isolates categorized as susceptible can be reported susceptible to ciprofloxacin, levofloxacin, moxifloxacin and ofloxacin. Isolates categorized as resistant should be tested for susceptibility to individual agents.
Ofloxacin ²	1	1	5	20	20	

Aminoglycosides ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Aminoglycoside breakpoints are based on once-daily administration of high aminoglycoside dosages. Most often aminoglycosides are given in combination with beta-lactam agents.
Amikacin ² <i>S. aureus</i>	8	16	30	18	16	2. Resistance to amikacin is most reliably determined by testing with kanamycin (zone diameter breakpoints under development).
Amikacin ² Coagulase-negative staphylococci	8	16	30	22	19	
Gentamicin <i>S. aureus</i>	1	1	10	18	18	
Gentamicin Coagulase-negative staphylococci	1	1	10	22	22	
Netilmicin <i>S. aureus</i>	1	1	10	18	18	
Netilmicin Coagulase-negative staphylococci	1	1	10	22	22	
Tobramycin <i>S. aureus</i>	1	1	10	18	18	
Tobramycin Coagulase-negative staphylococci	1	1	10	22	22	

Staphylococcus spp.

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Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin , <i>S. aureus</i> , <i>S.lugdunensis</i>	2 ¹	2 ¹		Note ^A	Note ^A	1. <i>S. aureus</i> with vancomycin MIC values of 2 mg/L are on the border of the wild type MIC distribution and there may be an impaired clinical response. The resistant breakpoint has been reduced to 2 mg/L to avoid reporting "GISA" isolates intermediate as serious infections with "GISA" isolates are not treatable with increased doses of vancomycin or teicoplanin. Glycopeptide MICs are method dependent and should be determined by broth microdilution (reference ISO 20776). A. Disk diffusion is unreliable and cannot distinguish between wild type organisms and those with non- <i>vanA</i> -mediated resistance.
Teicoplanin , <i>Coagulase-negative staphylococci</i>	4 ¹	4 ¹		Note ^A	Note ^A	
Vancomycin ¹	2 ¹	2 ¹		Note ^A	Note ^A	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	1 ¹	2 ¹		Note ^A	Note ^A	1/A. Erythromycin can be used to determine susceptibility to azithromycin, clarithromycin and roxithromycin.
Clarithromycin	1 ¹	2 ¹		Note ^A	Note ^A	
Erythromycin	1	2	15	21	18	
Roxithromycin	1 ¹	2 ¹		Note ^A	Note ^A	
Telithromycin	IE	IE		IE	IE	
Clindamycin ²	0.25	0.5	2	22 ^B	19 ^B	2/B. Inducible clindamycin resistance can be detected only in the presence of a macrolide antibiotic. In disk diffusion tests look for apparent antagonism of clindamycin by erythromycin (D-test).
Quinupristin-dalfopristin	1	2	15	21 ^C	18 ^C	C. Isolates non-susceptible by disk diffusion should be confirmed by MIC testing.

Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	1 ¹	2 ¹		Note ^A	Note ^A	1/A. Staphylococci susceptible to tetracycline are also susceptible to doxycycline and minocycline. Some staphylococci resistant to tetracycline may be susceptible to minocycline and/or doxycycline.
Minocycline	0.5 ¹	1 ¹	30	23 ^A	20 ^A	
Tetracycline	1 ¹	2 ¹	30	22 ^A	19 ^A	
Tigecycline	0.5 ²	0.5	15	18	18	2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.

Staphylococcus spp.

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Miscellaneous	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	8	8	30	18	18	
Colistin	-	-		-	-	
Daptomycin	1	1 ¹		Note ^A	Note ^A	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Use an MIC method.
Fosfomicin iv	32	32		Note ^A	Note ^A	
Fosfomicin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	1	1	10	24	24	
Linezolid	4	4	10	19	19	
Metronidazole	-	-		-	-	
Mupirocin	1 ²	256 ²	200	30 ^B	18 ^B	2/B. Breakpoints relate to nasal decolonization of <i>S. aureus</i> . Intermediate isolates are initially cleared as effectively as susceptible isolates but recolonisation is very common
Nitrofurantoin (uncomplicated UTI only)	64 ³	64 ³	100	13 ^C	13 ^C	3/C. Breakpoints relate to <i>S. saprophyticus</i> only.
Rifampicin	0.064	0.5	5	26	23	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	2	4	5	17	14	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ⁴	2	4	1.35-23.75	17	14	4. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Enterococcus spp.

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Penicillins ^{1,2}	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Refer to national or international endocarditis guidelines for breakpoints for <i>Enterococcus</i> spp. in endocarditis. 2. <i>E. faecium</i> resistant to penicillins can be considered resistant to all other beta-lactam agents including carbapenems.
Benzylopenicillin	-	-		-	-	
Ampicillin	4	8	2	10	8	
Ampicillin-sulbactam³	4	8		Note ^A	Note ^A	3/A. Susceptibility to ampicillin, amoxicillin and piperacillin with and without beta-lactamase inhibitor can be inferred from the ampicillin susceptibility test.
Amoxicillin³	4	8		Note ^A	Note ^A	
Amoxicillin-clavulanate³	4	8		Note ^A	Note ^A	
Piperacillin³	Note ³	Note ³		Note ^A	Note ^A	
Piperacillin-tazobactam³	Note ³	Note ³		Note ^A	Note ^A	
Ticarcillin	-	-		-	-	
Ticarcillin-clavulanate	-	-		-	-	
Phenoxymethylpenicillin	-	-		-	-	
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Cephalosporins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	-	-		-	-	
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	-	-		-	-	
Cefepime	-	-		-	-	
Cefixime	-	-		-	-	
Cefotaxime	-	-		-	-	
Cefoxitin	-	-		-	-	
Cefpodoxime	-	-		-	-	
Ceftazidime	-	-		-	-	
Ceftibuten	-	-		-	-	
Ceftriaxone	-	-		-	-	
Cefuroxime	-	-		-	-	
Cefuroxime axetil	-	-		-	-	

Enterococcus spp.

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Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem	-	-		-	-	
Ertapenem	-	-		-	-	
Imipenem	4	8	10	21	18	
Meropenem	-	-		-	-	

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	-	-		-	-	

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin	-	-		-	-	
Levofloxacin	-	-		-	-	
Moxifloxacin	-	-		-	-	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin	-	-		-	-	
Ofloxacin	-	-		-	-	

Enterococcus spp.

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Aminoglycosides ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Aminoglycoside monotherapy is ineffective against enterococci. There is synergism between aminoglycosides and beta-lactam agents against enterococci without acquired aminoglycoside resistance mechanisms.
Amikacin	IE	IE		Note ^A	Note ^A	
Gentamicin	Note ²	Note ²	30	Note ^A	Note ^A	2/A. Isolates with gentamicin MIC >128 mg/L or an inhibition zone diameter <8 mm have acquired resistance mechanisms and can be reported as high-level aminoglycoside resistant (with the exception of streptomycin, which must be tested separately). There is no synergistic effect between aminoglycosides and beta-lactam agents in enterococci with high-level resistant to aminoglycosides.
Netilmicin	IE	IE		Note ^A	Note ^A	
Streptomycin	Note ³	Note ³	300	Note ^B	Note ^B	3/B. Isolates with high-level gentamicin resistance may not be high-level resistant to streptomycin. High-level resistance to streptomycin is defined as MIC >512 mg/L and/or an inhibition zone diameter <19 mm. There is no synergistic effect between streptomycin and beta-lactam agents in enterococci with high-level resistance to streptomycin.
Tobramycin	IE	IE		Note ^A	Note ^A	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	2 ¹	2	30	16 ^A	16 ^A	1. The susceptible breakpoint for vancomycin has been raised to 4 mg/L to avoid dividing the wild type MIC distributions of some species. The resistant breakpoint for teicoplanin has been reduced to 2 mg/L to avoid erroneous reporting of isolates with <i>vanA</i> -mediated resistance. A. Glycopeptide susceptible enterococci exhibit sharp zone edges. Suspect resistance when the zone edge is fuzzy or colonies grow within the inhibition zone. Some <i>vanB</i> isolates (vancomycin resistant, teicoplanin susceptible) are particularly difficult to detect with disk diffusion.
Vancomycin	4 ¹	4	5	12 ^A	12 ^A	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	-	-		-	-	
Clarithromycin	-	-		-	-	
Erythromycin	-	-		-	-	
Roxithromycin	-	-		-	-	
Telithromycin	-	-		-	-	
Clindamycin	-	-		-	-	
Quinupristin-dalfopristin	1 ¹	4 ¹	15	22 ^A	20 ^A	1/A. Quinupristin/dalfopristin breakpoints are valid for <i>E. faecium</i> only.

Enterococcus spp.

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Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	-	-		-	-	
Minocycline	-	-		-	-	
Tetracycline	-	-		-	-	
Tigecycline	0.25 ¹	0.5	15	18	15	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.

Miscellaneous	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	-	-		-	-	
Colistin	-	-		-	-	
Daptomycin	IE	IE		IE	IE	
Fosfomycin iv	-	-		-	-	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	4	4	10	19	19	
Metronidazole	-	-		-	-	
Mupirocin	IE	IE		IE	IE	
Nitrofurantoin (uncomplicated UTI only)	64	64	100	15	15	
Rifampicin	-	-		-	-	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only) ¹	0.032	1	5	50	21	1. The activity of trimethoprim is uncertain against enterococci, hence the wild type population is categorized as intermediate.
Trimethoprim-sulfamethoxazole (co-trimoxazole) ²	0.032	1	1.35-23.75	50	21	2. Trimethoprim-sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Streptococcus groups A, B, C and G

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Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1/A. The beta-lactam susceptibility of beta-haemolytic streptococcus groups A, B, C and G is inferred from the penicillin susceptibility.
Benzylopenicillin²	0.25	0.25	1 unit	18	18	2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Ampicillin	Note ¹	Note ¹		Note ^A	Note ^A	
Ampicillin-sulbactam ³	Note ¹	Note ¹		Note ^A	Note ^A	3. Streptococcus groups A, B, C and G do not produce beta-lactamase. The addition of a beta-lactamase inhibitor does not add clinical benefit.
Amoxicillin	Note ¹	Note ¹		Note ^A	Note ^A	
Amoxicillin-clavulanate ³	Note ¹	Note ¹		Note ^A	Note ^A	
Piperacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Piperacillin-tazobactam ³	Note ¹	Note ¹		Note ^A	Note ^A	
Ticarcillin	-	-		-	-	
Ticarcillin-clavulanate	-	-		-	-	
Phenoxymethylpenicillin	Note ¹	Note ¹		Note ^A	Note ^A	
Oxacillin	NA	NA		NA	NA	
Cloxacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Dicloxacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Flucloxacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Streptococcus groups A, B, C and G

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Cephalosporins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1/A. The beta-lactam susceptibility of beta-haemolytic streptococcus groups A, B, C and G is inferred from the penicillin susceptibility.
Cefaclor	Note ¹	Note ¹		Note ^A	Note ^A	
Cefadroxil	Note ¹	Note ¹		Note ^A	Note ^A	
Cefalexin	Note ¹	Note ¹		Note ^A	Note ^A	
Cefazolin	Note ¹	Note ¹		Note ^A	Note ^A	
Cefepime	Note ¹	Note ¹		Note ^A	Note ^A	
Cefixime	-	-		-	-	
Cefotaxime	Note ¹	Note ¹		Note ^A	Note ^A	
Cefoxitin	NA	NA		NA	NA	
Cefpodoxime	Note ¹	Note ¹		Note ^A	Note ^A	
Ceftazidime	-	-		-	-	
Ceftibuten	Note ¹	Note ¹		Note ^A	Note ^A	
Ceftriaxone	Note ¹	Note ¹		Note ^A	Note ^A	
Cefuroxime	Note ¹	Note ¹		Note ^A	Note ^A	
Cefuroxime axetil	Note ¹	Note ¹		Note ^A	Note ^A	

Carbapenems ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1/A. The beta-lactam susceptibility of beta-haemolytic streptococcus groups A, B, C and G is inferred from the penicillin susceptibility.
Doripenem	Note ¹	Note ¹		Note ^A	Note ^A	
Ertapenem	Note ¹	Note ¹		Note ^A	Note ^A	
Imipenem	Note ¹	Note ¹		Note ^A	Note ^A	
Meropenem	Note ¹	Note ¹		Note ^A	Note ^A	

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	-	-		-	-	

Streptococcus groups A, B, C and G

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Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin	-	-		-	-	
Levofloxacin	1	2	5	18	15	
Moxifloxacin	0.5	1	5	18	15	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin (screen)	NA	NA	10	12 ^A	12 ^A	A. The norfloxacin disk diffusion test can be used to screen for fluoroquinolone resistance. Isolates categorized as susceptible can be reported susceptible to levofloxacin and moxifloxacin. Isolates categorized as resistant should be tested for susceptibility to individual agents.
Ofloxacin	-	-		-	-	

Aminoglycosides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Amikacin	-	-		-	-	
Gentamicin	-	-		-	-	
Netilmicin	-	-		-	-	
Tobramycin	-	-		-	-	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	2 ¹	2	30	15 ^A	15 ^A	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Zone diameter breakpoints are based on wild type distributions as there are currently no resistant isolates.
Vancomycin	2 ¹	2	5	13 ^A	13 ^A	

Streptococcus groups A, B, C and G

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Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	0.25 ¹	0.5 ¹		Note ^A	Note ^A	1/A. Erythromycin can be used to determine susceptibility to azithromycin, clarithromycin and roxithromycin.
Clarithromycin	0.25 ¹	0.5 ¹		Note ^A	Note ^A	
Erythromycin	0.25	0.5	15	21	18	
Roxithromycin	0.5 ¹	1 ¹		Note ^A	Note ^A	
Telithromycin	0.25	0.5	15	22	19	
Clindamycin ²	0.5	0.5	2	17 ^B	17 ^B	2/B. Inducible clindamycin resistance can be detected only in the presence of a macrolide antibiotic. In disk diffusion tests look for apparent antagonism of clindamycin by erythromycin (D-test).
Quinupristin-dalfopristin	-	-		-	-	

Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	1 ¹	2 ¹		Note ^A	Note ^A	1/A. Isolates susceptible to tetracycline are also susceptible to doxycycline and minocycline. Some isolates resistant to tetracycline may be susceptible to minocycline and/or doxycycline.
Minocycline	0.5 ¹	1 ¹	30	23 ^A	20 ^A	
Tetracycline	1 ¹	2 ¹	30	23 ^A	20 ^A	
Tigecycline	0.25 ²	0.5	15	19	16	2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.

Streptococcus groups A, B, C and G
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Miscellaneous agents	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	8	8	30	21	21	
Colistin	-	-		-	-	
Daptomycin	1 ¹	1		Note ^A	Note ^A	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Use an MIC method.
Fosfomicin iv	-	-		-	-	
Fosfomicin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	IE	IE		IE	IE	
Linezolid	2	4	10	19	16	
Metronidazole	-	-		-	-	
Mupirocin	IE	IE		IE	IE	
Nitrofurantoin (uncomplicated UTI only)	64 ²	64 ²	100	15 ^B	15 ^B	2/B. Nitrofurantoin breakpoints apply to <i>S. agalactiae</i> (Group B streptococci) only.
Rifampicin	0.064	0.5	5	21	15	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ³	1	2	1.35-23.75	18	15	3. Trimethoprim-sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Most MIC values for penicillin, ampicillin, amoxicillin and piperacillin (with or without a beta-lactamase inhibitor) differ by no more than one dilution step and isolates fully susceptible to benzylpenicillin (MIC ≤0.064 mg/L; susceptible by oxacillin disk screen, see note A) can be reported susceptible to beta-lactam agents that have been given breakpoints. A. Screen for beta-lactam resistance with the oxacillin 1 µg disk. Isolates categorized as susceptible can be reported susceptible to benzylpenicillin, phenoxymethylpenicillin and aminopenicillins (with or without beta-lactamase inhibitor) irrespective of clinical indication. Isolates categorized as oxacillin resistant can be reported resistant to benzylpenicillin and phenoxymethylpenicillin in meningitis. For other beta-lactams, determine the MIC of the agent considered for clinical use.
Benzylpenicillin	0.064 ^{1,2}	2 ^{1,2}	1 unit	Note ^A	Note ^A	2. In pneumonia, when a dose of 1.3 g x 4 is used, isolates with MIC ≤0.5 mg/L should be regarded as susceptible to benzylpenicillin. In pneumonia, when a dose of 2.4 g x 4 or 1.3 g x 6 is used, isolates with MIC ≤1 mg/L should be regarded as susceptible to benzylpenicillin. In pneumonia, when a dose of 2.4 g x 6 is used, isolates with MIC ≤2 mg/L should be regarded as susceptible. In meningitis, only isolates with MIC ≤0.064 mg/L (susceptible by oxacillin disk screen, see note A) should be categorized susceptible to benzylpenicillin, otherwise report resistant. For indications other than meningitis and pneumonia, use breakpoints of 0.064/2 mg/L.
Ampicillin	0.5 ^{1,3}	2 ^{1,3}	2	23 ^{A,B}	20 ^{A,B}	3/B. Isolates fully susceptible to benzylpenicillin (MIC≤0.064 mg/L; susceptible by oxacillin disk screen, see note A) can be reported susceptible to ampicillin, amoxicillin and piperacillin (with or without beta-lactamase inhibitor) without further testing. Otherwise use ampicillin to categorize susceptibility to ampicillin, amoxicillin and piperacillin.
Ampicillin-sulbactam	Note ^{1,3}	Note ^{1,3}		Note ^{A,B}	Note ^{A,B}	
Amoxicillin	Note ^{1,3}	Note ^{1,3}		Note ^{A,B}	Note ^{A,B}	
Amoxicillin-clavulanate	Note ^{1,3}	Note ^{1,3}		Note ^{A,B}	Note ^{A,B}	
Piperacillin	Note ^{1,3}	Note ^{1,3}		Note ^{A,B}	Note ^{A,B}	
Piperacillin-tazobactam	Note ^{1,3}	Note ^{1,3}		Note ^{A,B}	Note ^{A,B}	
Ticarcillin	-	-		-	-	
Ticarcillin-clavulanate	-	-		-	-	
Phenoxymethylpenicillin	Note ⁴	Note ⁴		Note ^{A,C}	Note ^{A,C}	4/C. Isolates fully susceptible to benzylpenicillin (MIC ≤0.064 mg/L; susceptible by oxacillin disk screen, see note A) can be reported susceptible to phenoxymethylpenicillin. Otherwise report as phenoxymethylpenicillin resistant without further testing.
Oxacillin (screen)	NA	NA	1	20 ^A	20 ^A	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Cephalosporins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	0.032	0.5	30	50	28	
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	-	-		-	-	
Cefepime	1 ¹	2		Note ^A	Note ^A	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Screen for beta-lactam resistance with the oxacillin 1 µg disk. Isolates categorized as susceptible can be reported susceptible to cefepime, cefotaxime, cefpodoxime, ceftriaxone and cefuroxime and cefuroxime axetil. Isolates categorized as oxacillin resistant should be tested with an MIC method with the agent considered for clinical use.
Cefixime	-	-		-	-	
Cefotaxime	0.5 ¹	2		Note ^A	Note ^A	
Cefoxitin	NA	NA		NA	NA	
Cefpodoxime	0.25	0.5		Note ^A	Note ^A	
Ceftazidime	-	-		-	-	
Ceftibuten	IE	IE		IE	IE	
Ceftriaxone	0.5 ¹	2		Note ^A	Note ^A	
Cefuroxime	0.5	1		Note ^A	Note ^A	
Cefuroxime axetil	0.25	0.5		Note ^A	Note ^A	

Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem ¹	1 ²	1		Note ^A	Note ^A	1. Not for meningitis (meropenem is the only carbapenem used for meningitis). 2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Screen for beta-lactam resistance with the oxacillin 1 µg disk. Isolates categorized as susceptible can be reported susceptible to doripenem, ertapenem, imipenem and meropenem. Isolates categorized as oxacillin resistant should be tested by an MIC method.
Ertapenem ¹	0.5 ²	0.5		Note ^A	Note ^A	
Imipenem ¹	2 ²	2		Note ^A	Note ^A	
Meropenem (infections other than meningitis) ³	2	2		Note ^{A,B}	Note ^{A,B}	3. Meropenem is the only carbapenem used for meningitis. Meropenem breakpoints in meningitis are S ≤0.25 mg/L and R >1 mg/L. B. For use in meningitis determine the meropenem MIC.

Streptococcus pneumoniae

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Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	-	-		-	-	

Fluoroquinolones ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1/A. The norfloxacin disk diffusion test can be used to screen for fluoroquinolone resistance. Isolates categorized as susceptible can be reported susceptible to levofloxacin and moxifloxacin and intermediate to ciprofloxacin and ofloxacin. Isolates categorized as resistant should be tested for susceptibility to individual agents.
Ciprofloxacin ²	0.125	2	5	50 ^A	18 ^A	2. Wild type <i>S. pneumoniae</i> are not considered susceptible to ciprofloxacin and are therefore categorized as intermediate.
Levofloxacin ³	2	2	5	19 ^A	19 ^A	3. The breakpoints for levofloxacin relate to high dose therapy.
Moxifloxacin	0.5	0.5	5	22 ^A	22 ^A	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin (screen)	NA	NA	10	12 ^A	12 ^A	
Ofloxacin ⁴	0.125	4	5	50 ^A	15 ^A	4. Wild type <i>S. pneumoniae</i> are not considered susceptible to ofloxacin and are therefore categorized as intermediate.

Aminoglycosides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Amikacin	-	-		-	-	
Gentamicin	-	-		-	-	
Netilmicin	-	-		-	-	
Tobramycin	-	-		-	-	

Streptococcus pneumoniae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	2 ¹	2	30	18 ^A	18 ^A	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Zone diameter breakpoints are based on wild type distributions as there are currently no resistant isolates.
Vancomycin	2 ¹	2	5	16 ^A	16 ^A	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	0.25 ¹	0.5 ¹		Note ^A	Note ^A	1/A. Erythromycin can be used to determine susceptibility to azithromycin, clarithromycin and roxithromycin.
Clarithromycin	0.25 ¹	0.5 ¹		Note ^A	Note ^A	
Erythromycin	0.25	0.5	15	22	19	
Roxithromycin	0.5 ¹	1 ¹		Note ^A	Note ^A	
Telithromycin	0.25	0.5	15	25	22	
Clindamycin²	0.5	0.5	2	19 ^B	19 ^B	2/B. Inducible clindamycin resistance can be detected only in the presence of a macrolide antibiotic. In disk diffusion tests look for apparent antagonism of clindamycin by erythromycin (D-test).
Quinupristin-dalfopristin	-	-		-	-	

Streptococcus pneumoniae

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Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	1 ¹	2 ¹		Note ^A	Note ^A	1/A. Isolates susceptible to tetracycline are also susceptible to doxycycline and minocycline. Some isolates resistant to tetracycline may be susceptible to minocycline and/or doxycycline.
Minocycline	0.5 ¹	1 ¹	30	24 ^A	21 ^A	
Tetracycline	1 ¹	2 ¹	30	23 ^A	20 ^A	
Tigecycline	IE	IE		IE	IE	

Miscellaneous agents	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	8	8	30	21	21	
Colistin	-	-		-	-	
Daptomycin	IE	IE		IE	IE	
Fosfomycin iv	IE	IE		IE	IE	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	4	4	10	20	20	
Metronidazole	-	-		-	-	
Mupirocin	IE	IE		IE	IE	
Nitrofurantoin (uncomplicated UTI only)	-	-		-	-	
Rifampicin	0.064	0.5	5	22	17	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ¹	1	2	1.35-23.75	18	15	1. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Other streptococci

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Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. In endocarditis, refer to national or international endocarditis guidelines for breakpoints for viridans streptococci.
Benzylpenicillin	0.25	2	1 unit	18	12	
Ampicillin	0.5	2	2	21	15	A. Use the ampicillin disk to categorize susceptibility to ampicillin, amoxicillin and piperacillin (with or without beta-lactamase inhibitor).
Ampicillin-sulbactam	Note ¹	Note ¹		Note ^A	Note ^A	
Amoxicillin	0.5	2		Note ^A	Note ^A	
Amoxicillin-clavulanate	Note ¹	Note ¹		Note ^A	Note ^A	
Piperacillin	Note ¹	Note ¹		Note ^A	Note ^A	
Piperacillin-tazobactam	Note ¹	Note ¹		Note ^A	Note ^A	
Ticarcillin	IE	IE		IE	IE	
Ticarcillin-clavulanate	IE	IE		IE	IE	
Phenoxymethylpenicillin	IE	IE		IE	IE	
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Cephalosporins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	-	-		-	-	
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	0.5	0.5	30	IP	IP	
Cefepime	0.5	0.5	30	25	25	
Cefixime	-	-		-	-	
Cefotaxime	0.5	0.5	5	23	23	
Cefoxitin	NA	NA		NA	NA	
Cefpodoxime	-	-		-	-	
Ceftazidime	-	-		-	-	
Ceftibuten	-	-		-	-	
Ceftriaxone	0.5	0.5	30	27	27	
Cefuroxime	0.5	0.5	30	26	26	
Cefuroxime axetil	-	-		-	-	

Other streptococci

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Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem	1 ¹	1	10	25	25	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Ertapenem	0.5 ¹	0.5	10	22	22	
Imipenem	2 ¹	2	10	30	30	
Meropenem	2 ¹	2	10	25	25	

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	-	-		-	-	

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin	-	-		-	-	
Levofloxacin	IE	IE		IE	IE	
Moxifloxacin	IE	IE		IE	IE	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin	-	-		-	-	
Ofloxacin	-	-		-	-	

Other streptococci

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Aminoglycosides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Amikacin	-	-		-	-	
Gentamicin	-	-		-	-	
Netilmicin	-	-		-	-	
Tobramycin	-	-		-	-	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	2 ¹	2	30	16 ^A	16 ^A	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. A. Zone diameter breakpoints are based on wild type distributions as there are currently no resistant isolates.
Vancomycin	2 ¹	2	5	15 ^A	15 ^A	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	IE	IE		IE	IE	
Clarithromycin	IE	IE		IE	IE	
Erythromycin	IE	IE		IE	IE	
Roxithromycin	IE	IE		IE	IE	
Telithromycin	IE	IE		IE	IE	
Clindamycin ¹	0.5	0.5	2	19 ^A	19 ^A	1/A. Inducible clindamycin resistance can be detected only in the presence of a macrolide antibiotic. In disk diffusion tests look for apparent antagonism of clindamycin by erythromycin (D-test).
Quinupristin-dalfopristin	IE	IE		IE	IE	

Other streptococci

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	-	-		-	-	
Minocycline	-	-		-	-	
Tetracycline	-	-		-	-	
Tigecycline	IE	IE		IE	IE	

Miscellaneous agents	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	-	-		-	-	
Colistin	-	-		-	-	
Daptomycin	-	-		-	-	
Fosfomycin iv	-	-		-	-	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	-	-		-	-	
Metronidazole	-	-		-	-	
Mupirocin	-	-		-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-		-	-	
Rifampicin	-	-		-	-	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole)	-	-		-	-	

Penicillins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Benzylicillin	IE	IE		IE	IE	
Ampicillin ^{1,2,3}	1	1	2	16	16	1. Report beta-lactamase positive strains resistant to penicillins without beta-lactamase inhibitors. 2. Breakpoints relate only to beta-lactamase negative strains. Strains may be resistant to penicillins, aminopenicillins, cephalosporins and/or carbapenems due to changes in PBPs (BLNAR, beta-lactamase negative ampicillin resistant) and a few strains have both resistance mechanisms (BLPACR, beta-lactamase positive, amoxicillin/clavulanate resistant). 3. Isolates susceptible to ampicillin and amoxicillin are also susceptible to piperacillin and piperacillin-tazobactam and isolates susceptible to amoxicillin-clavulanate, are also susceptible to ampicillin-sulbactam and piperacillin-tazobactam.
Ampicillin-sulbactam ^{3,4}	1	1	10-10	Note ^A	Note ^A	4. For susceptibility testing purposes, the concentration of sulbactam is fixed at 4 mg/L. A. Susceptibility inferred from amoxicillin-clavulanate.
Amoxicillin ^{1,2,3}	1	1		Note ^B	Note ^B	B. Susceptibility inferred from ampicillin.
Amoxicillin-clavulanate ^{3,5}	1	1	20-10	20	20	5. For susceptibility testing purposes, the concentration of clavulanate is fixed at 2 mg/L.
Piperacillin ³	Note ³	Note ³		Note ^B	Note ^B	
Piperacillin-tazobactam ³	Note ³	Note ³		Note ^A	Note ^A	
Ticarcillin	IE	IE		IE	IE	
Ticarcillin-clavulanate	IE	IE		IE	IE	
Phenoxymethylpenicillin (screen)	IE	IE	10	NA	15 ^C	C. Phenoxymethylpenicillin can be used to screen for but not to distinguish between beta-lactamase producing and BLNAR <i>H. influenzae</i> . Isolates categorized as resistant with the screen breakpoint should be checked for beta-lactamase and non-beta-lactamase-mediated resistance to ampicillin, cephalosporins and/or carbapenems. See "Cephalosporins, note A".
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Haemophilus influenzae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Cephalosporins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	0.5 ¹	0.5	30	NA	19 ^A	1. MIC breakpoints render all <i>H.influenzae</i> resistant for cefaclor. A. The disk diffusion test can be used to screen for BLNAR. Isolates with zone diameters <19 mm should be checked for ampicillin and cephalosporin resistance.
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	-	-		-	-	
Cefepime	0.25 ²	0.25	30	25	25	2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Cefixime	0.125 ²	0.125	5	22	22	
Cefotaxime	0.125 ²	0.125	5	22	22	
Cefoxitin	NA	NA		NA	NA	
Cefpodoxime	0.25 ²	0.5	10	24	21	
Ceftazidime	-	-		-	-	
Ceftibuten	1 ²	1	30	24	24	
Ceftriaxone	0.125 ²	0.125	30	27	27	
Cefuroxime	1	2	30	25	22	
Cefuroxime axetil	0.125	1	30	50	25	

Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem ¹	1 ²	1	10	20	20	1. Not for meningitis (meropenem is the only carbapenem used for meningitis). 2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Ertapenem ¹	0.5 ²	0.5	10	20	20	
Imipenem ¹	2 ²	2	10	16	16	
Meropenem (infections other than meningitis) ³	2 ²	2	10	20 ^A	20 ^A	3. Meropenem is the only carbapenem used for meningitis. Meropenem breakpoints in meningitis are S ≤0.25 mg/L, R >1 mg/L. A. For use in meningitis determine the meropenem MIC value.

Haemophilus influenzae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	IE	IE		IE	IE	

Fluoroquinolones ^{1,2}	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Low-level fluoroquinolone resistance (ciprofloxacin MICs of 0.12-0.5 mg/L) may occur but there is no evidence that this resistance is of clinical importance in respiratory tract infections with <i>H. influenzae</i> .
Ciprofloxacin	0.5 ²	0.5	5	23	23	2. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Levofloxacin	1 ²	1	5	21	21	
Moxifloxacin	0.5 ²	0.5	5	23	23	
Nalidixic acid (screen)	NA	NA	30	23 ^A	23 ^A	A. The nalidixic acid disk diffusion test can be used to screen for fluoroquinolone resistance. Isolates with zone diameters ≥23 mm can be reported susceptible to levofloxacin, ciprofloxacin, moxifloxacin and ofloxacin. Isolates with zone diameters <23 mm may have fluoroquinolone resistance and should be tested against the appropriate agent.
Norfloxacin	-	-		-	-	
Ofloxacin	0.5 ²	0.5	5	21	21	

Aminoglycosides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Amikacin	IE	IE		IE	IE	
Gentamicin	IE	IE		IE	IE	
Netilmicin	IE	IE		IE	IE	
Tobramycin	IE	IE		IE	IE	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	-	-		-	-	
Vancomycin	-	-		-	-	

Haemophilus influenzae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Macrolides ¹ , lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Correlation between macrolide MICs and clinical outcome is weak for <i>H. influenzae</i> . Therefore, breakpoints for macrolides and related antibiotics have been set to categorize wild type <i>H. influenzae</i> as intermediate.
Azithromycin	0.125 ²	4 ²		Note ^A	Note ^A	2/A. Erythromycin can be used to determine susceptibility to azithromycin, clarithromycin and roxithromycin.
Clarithromycin	1 ²	32 ²		Note ^A	Note ^A	
Erythromycin	0.5	16	15	50	12	
Roxithromycin	1 ²	16 ²		Note ^A	Note ^A	
Telithromycin	0.125	8	15	50	14	
Clindamycin	-	-		-	-	
Quinupristin-dalfopristin	-	-		-	-	

Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	1 ¹	2 ¹		Note ^A	Note ^A	1/A. Isolates susceptible to tetracycline are also susceptible to doxycycline and minocycline, but some resistant to tetracycline may be susceptible to minocycline and/or doxycycline.
Minocycline	1 ¹	2 ¹	30	25 ^A	22 ^A	
Tetracycline	1 ¹	2 ¹	30	24 ^A	21 ^A	
Tigecycline	IE	IE		IE	IE	

Miscellaneous agents	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	1	2	30	28	25	
Colistin	-	-		-	-	
Daptomycin	-	-		-	-	
Fosfomycin iv	IE	IE		IE	IE	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	-	-		-	-	
Metronidazole	-	-		-	-	
Mupirocin	-	-		-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-		-	-	
Rifampicin	0.5	0.5	5	18	18	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ¹	0.5	1	1.35-23.75	23	20	1. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Moraxella catarrhalis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins ¹	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
						1. Most <i>M. catarrhalis</i> produce beta-lactamase, although beta-lactamase production is slow and may give weak results with in vitro tests. Beta-lactamase producers should be reported resistant to penicillins and aminopenicillins without inhibitors.
Benzympenicillin	-	-		-	-	
Ampicillin	1	1		-	-	
Ampicillin-sulbactam²	1 ³	1 ³		Note ^A	Note ^A	2. For susceptibility testing purposes, the concentration of sulbactam is fixed at 4 mg/L. 3/A. Susceptibility can be inferred from testing amoxicillin-clavulanate.
Amoxicillin	1	1		-	-	
Amoxicillin-clavulanate⁴	1	1	20-10	28	28	4. For susceptibility testing purposes, the concentration of clavulanate is fixed at 2 mg/L.
Piperacillin	IP	IP		-	-	
Piperacillin-tazobactam	Note ³	Note ³		Note ^A	Note ^A	
Ticarcillin	IE	IE		IE	IE	
Ticarcillin-clavulanate	IE	IE		IE	IE	
Phenoxymethylpenicillin	-	-		-	-	
Oxacillin	-	-		-	-	
Cloxacillin	-	-		-	-	
Dicloxacillin	-	-		-	-	
Flucloxacillin	-	-		-	-	
Mecillinam (uncomplicated UTI only)	-	-		-	-	

Cephalosporins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Cefaclor	0.5	0.5	30	IP	IP	
Cefadroxil	-	-		-	-	
Cefalexin	-	-		-	-	
Cefazolin	-	-		-	-	
Cefepime	0.25	0.25	30	IP	IP	
Cefixime	0.5 ¹	1	5	IP	IP	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Cefotaxime	1 ¹	2	5	20	17	
Cefoxitin	NA	NA		NA	NA	
Cefpodoxime	0.25 ¹	0.5	10	IP	IP	
Ceftazidime	-	-		-	-	
Ceftibuten	1 ¹	1	30	IP	IP	
Ceftriaxone	1 ¹	2	30	24	21	
Cefuroxime	1	2	30	IP	IP	
Cefuroxime axetil	0.125	2	30	IP	IP	

Carbapenems	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doripenem	1 ¹	1	10	30	30	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate must be sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Ertapenem	0.5 ¹	0.5	10	29	29	
Imipenem	2 ¹	2	10	29	29	
Meropenem	2 ¹	2	10	33	33	

Monobactams	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Aztreonam	IE	IE		IE	IE	

Moraxella catarrhalis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin	0.5 ¹	0.5	5	23	23	
Levofloxacin	1 ¹	1	5	23	23	
Moxifloxacin	0.5 ¹	0.5	5	23	23	
Nalidixic acid (screen)	NA	NA		23 ^A	23 ^A	A. The nalidixic acid disk diffusion test can be used to screen for fluoroquinolone resistance. Isolates with zone diameters ≥23 mm can be reported susceptible to levofloxacin, ciprofloxacin, moxifloxacin and ofloxacin. Isolates with zone diameters <23 mm may have fluoroquinolone resistance and should be tested against the appropriate agent.
Norfloxacin	-	-		-	-	
Ofloxacin	0.5 ¹	0.5	5	25	25	

Aminoglycosides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Amikacin	IE	IE		IE	IE	
Gentamicin	IE	IE		IE	IE	
Netilmicin	IE	IE		IE	IE	
Tobramycin	IE	IE		IE	IE	

Glycopeptides	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Teicoplanin	-	-		-	-	
Vancomycin	-	-		-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Azithromycin	0.5 ¹	0.5 ¹		Note ^A	Note ^A	1/A. Erythromycin can be used to determine susceptibility to azithromycin, clarithromycin and roxithromycin.
Clarithromycin	0.25 ¹	0.5 ¹		Note ^A	Note ^A	
Erythromycin	0.25	0.5	15	23	20	
Roxithromycin	0.5 ¹	1 ¹		Note ^A	Note ^A	
Telithromycin	0.25	0.5	15	23	20	
Clindamycin	-	-		-	-	
Quinupristin-dalfopristin	-	-		-	-	

Moraxella catarrhalis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Tetracyclines	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Doxycycline	1 ¹	2 ¹		Note ^A	Note ^A	1/A. Isolates susceptible to tetracycline are also susceptible to doxycycline and minocycline, but some resistant to tetracycline may be susceptible to minocycline and/or doxycycline.
Minocycline	1 ¹	2 ¹	30	25 ^A	22 ^A	
Tetracycline	1 ¹	2 ¹	30	28 ^A	25 ^A	
Tigecycline	IE	IE		IE	IE	

Miscellaneous agents	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Chloramphenicol	1 ¹	2 ¹	30	30 ^A	30 ^A	1/A. Breakpoints relate to the topical use of chloramphenicol.
Colistin	-	-		-	-	
Daptomycin	-	-		-	-	
Fosfomycin iv	IE	IE		IE	IE	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-		-	-	
Fusidic acid	-	-		-	-	
Linezolid	-	-		-	-	
Metronidazole	-	-		-	-	
Mupirocin	-	-		-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-		-	-	
Rifampicin	0.5	0.5	5	IP	IP	
Spectinomycin	-	-		-	-	
Trimethoprim (uncomplicated UTI only)	-	-		-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole) ²	0.5	1	1.35-23.75	18	15	2. Trimethoprim:sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.

Neisseria gonorrhoeae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins ¹	MIC breakpoint (mg/L)		Notes
	S ≤	R >	
			Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
			1. Always test for beta-lactamase. If positive, report resistant to benzylpenicillin, ampicillin and amoxicillin. The susceptibility of beta-lactamase negative isolates to ampicillin and amoxicillin can be inferred from the susceptibility to benzylpenicillin.
Benzylpenicillin	0,064	1	
Ampicillin ¹	Note ¹	Note ¹	
Ampicillin-sulbactam	IE	IE	
Amoxicillin ¹	Note ¹	Note ¹	
Amoxicillin-clavulanate	Note ¹	Note ¹	
Piperacillin	-	-	
Piperacillin-tazobactam	-	-	
Ticarcillin	-	-	
Ticarcillin-clavulanate	-	-	
Phenoxymethylpenicillin	-	-	
Oxacillin	-	-	
Cloxacillin	-	-	
Dicloxacillin	-	-	
Flucloxacillin	-	-	
Mecillinam (uncomplicated UTI only)	-	-	

Neisseria gonorrhoeae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Cephalosporins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Cefaclor	-	-	
Cefadroxil	-	-	
Cefalexin	-	-	
Cefazolin	-	-	
Cefepime	-	-	
Cefixime ¹	0.125	0.125	1. <i>Neisseria gonorrhoeae</i> without resistance mechanisms to cefixime have MICs of ≤0.064 mg/L and can be treated with current standard dosing. The implications of alternative dosing schedules and recent data relating MIC to outcome are under consideration.
Cefotaxime	0.125	0.125	
Cefoxitin	-	-	
Cefpodoxime	IE	IE	
Ceftazidime	-	-	
Ceftibuten	IE	IE	
Ceftriaxone	0.125	0.125	
Cefuroxime	-	-	
Cefuroxime axetil	-	-	

Carbapenems	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Doripenem	IE	IE	
Ertapenem	IE	IE	
Imipenem	IE	IE	
Meropenem	IE	IE	

Monobactams	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Aztreonam	IE	IE	

Neisseria gonorrhoeae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Fluoroquinolones ¹	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Ciprofloxacin	0.032	0.064	
Levofloxacin	IE	IE	
Moxifloxacin	IE	IE	
Nalidixic acid (screen)	NA	NA	
Norfloxacin	IE	IE	
Ofloxacin	0.125	0.25	

Aminoglycosides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Amikacin	-	-	
Gentamicin	-	-	
Netilmicin	-	-	
Tobramycin	-	-	

Glycopeptides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Teicoplanin	-	-	
Vancomycin	-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Azithromycin	0.25	0.5	
Clarithromycin	-	-	
Erythromycin	-	-	
Roxithromycin	-	-	
Telithromycin	-	-	
Clindamycin	-	-	
Quinupristin-dalfopristin	-	-	

Neisseria gonorrhoeae

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Tetracyclines ¹	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
			1. Isolates susceptible to tetracycline are also susceptible to doxycycline and minocycline, but some resistant to tetracycline may be susceptible to minocycline and/or doxycycline.
Doxycycline	IE	IE	
Minocycline	0.5	1	
Tetracycline	0.5	1	
Tigecycline	IE	IE	

Miscellaneous agents	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Chloramphenicol	-	-	
Colistin	-	-	
Daptomycin	-	-	
Fosfomicin iv	-	-	
Fosfomicin-trometamol (uncomplicated UTI only)	-	-	
Fusidic acid	-	-	
Linezolid	-	-	
Metronidazole	-	-	
Mupirocin	-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-	
Rifampicin	-	-	
Spectinomycin	64	64	
Trimethoprim (uncomplicated UTI only)	-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole)	-	-	

Neisseria meningitidis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Benzylpenicillin	0.064	0.25	
Ampicillin	0.125	1	
Ampicillin-sulbactam	IE	IE	
Amoxicillin	0.125	1	
Amoxicillin-clavulanate	-	-	
Piperacillin	-	-	
Piperacillin-tazobactam	-	-	
Ticarcillin	-	-	
Ticarcillin-clavulanate	-	-	
Phenoxymethylpenicillin	-	-	
Oxacillin	-	-	
Cloxacillin	-	-	
Dicloxacillin	-	-	
Flucloxacillin	-	-	
Mecillinam (uncomplicated UTI only)	-	-	

Neisseria meningitidis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Cephalosporins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Cefaclor	-	-	
Cefadroxil	-	-	
Cefalexin	-	-	
Cefazolin	-	-	
Cefepime	-	-	
Cefixime	-	-	
Cefotaxime	0.125 ¹	0.125	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant.
Cefoxitin			
Cefpodoxime	-	-	
Ceftazidime	-	-	
Ceftibuten	-	-	
Ceftriaxone	0.125 ¹	0.125	
Cefuroxime	-	-	
Cefuroxime axetil	-	-	

Carbapenems	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Doripenem	IE	IE	
Ertapenem	-	-	
Imipenem	-	-	
Meropenem ¹	0.25 ²	0.25	1. Strains with MIC values above the susceptible breakpoint are very rare or not yet reported. The identification and antimicrobial susceptibility tests on any such isolate must be repeated and if the result is confirmed the isolate sent to a reference laboratory. Until there is evidence regarding clinical response for confirmed isolates with MIC above the current resistant breakpoint they should be reported resistant. 2. Breakpoints relate to meningitis only.

Monobactams	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Aztreonam	-	-	

Neisseria meningitidis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Fluoroquinolones	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Ciprofloxacin	0.032 ¹	0.064 ¹	1. Breakpoints apply only to use in the prophylaxis of meningococcal disease.
Levofloxacin	IE	IE	
Moxifloxacin	IE	IE	
Nalidixic acid (screen)	NA	NA	
Norfloxacin	-	-	
Ofloxacin	IE	IE	

Aminoglycosides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Amikacin	-	-	
Gentamicin	-	-	
Netilmicin	-	-	
Tobramycin	-	-	

Glycopeptides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Teicoplanin	-	-	
Vancomycin	-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Azithromycin	-	-	
Clarithromycin	-	-	
Erythromycin	-	-	
Roxithromycin	-	-	
Telithromycin	-	-	
Clindamycin	-	-	
Quinupristin-dalfopristin	-	-	

Neisseria meningitidis

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Tetracyclines	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Doxycycline	-	-	
Minocycline ¹	1	2	1. Tetracycline can be used to predict susceptibility to minocycline for prophylaxis against <i>N. meningitidis</i> infections.
Tetracycline	1	2	
Tigecycline	IE	IE	

Miscellaneous agents	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Chloramphenicol	2	4	
Colistin	-	-	
Daptomycin	-	-	
Fosfomycin iv	-	-	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-	
Fusidic acid	-	-	
Linezolid	-	-	
Metronidazole	-	-	
Mupirocin	-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-	
Rifampicin	0.25	0.25	1. For prophylaxis of meningitis only (refer to national guidelines).
Spectinomycin	-	-	
Spectinomycin	-	-	
Trimethoprim (uncomplicated UTI only)	-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole)	-	-	

Gram-positive anaerobes
except *Clostridium difficile*

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Benzylpenicillin¹	0.25	0.5	1. Susceptibility to ampicillin, amoxicillin and piperacillin without beta-lactamase inhibitors can be inferred from susceptibility to benzylpenicillin.
Ampicillin	4	8	
Ampicillin-sulbactam	4	8	
Amoxicillin	4	8	
Amoxicillin-clavulanate	4	8	
Piperacillin	8	16	
Piperacillin-tazobactam	8	16	
Ticarcillin	8	16	
Ticarcillin-clavulanate	8	16	
Phenoxymethylpenicillin	IE	IE	
Oxacillin	-	-	
Cloxacillin	-	-	
Dicloxacillin	-	-	
Flucloxacillin	-	-	
Mecillinam (uncomplicated UTI only)	-	-	

Cephalosporins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Cefaclor	-	-	
Cefadroxil	-	-	
Cefalexin	-	-	
Cefazolin	-	-	
Cefepime	-	-	
Cefixime	-	-	
Cefotaxime	-	-	
Cefoxitin	-	-	
Cefpodoxime	-	-	
Ceftazidime	-	-	
Ceftibuten	-	-	
Ceftriaxone	-	-	
Cefuroxime	-	-	
Cefuroxime axetil	-	-	

Gram-positive anaerobes
except *Clostridium difficile*

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Carbapenems	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Doripenem	1	1	
Ertapenem	1	1	
Imipenem	2	8	
Meropenem	2	8	

Monobactams	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Aztreonam	-	-	

Fluoroquinolones	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Ciprofloxacin	-	-	
Levofloxacin	-	-	
Moxifloxacin	IE	IE	
Nalidixic acid (screen)	NA	NA	
Norfloxacin	-	-	
Ofloxacin	-	-	

Aminoglycosides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Amikacin	-	-	
Gentamicin	-	-	
Netilmicin	-	-	
Tobramycin	-	-	

Gram-positive anaerobes
except *Clostridium difficile*

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Glycopeptides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Teicoplanin	-	-	
Vancomycin	2	2	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Azithromycin	-	-	
Clarithromycin	-	-	
Erythromycin	IE	IE	
Roxithromycin	-	-	
Telithromycin	-	-	
Clindamycin	4	4	
Quinupristin/dalfopristin	-	-	

Tetracyclines ¹	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined. 1. For anaerobic bacteria there is clinical evidence of activity in mixed intra-abdominal infections, but no correlation between MIC values, Pk/Pd data and clinical outcome. Therefore no breakpoints for susceptibility testing are given.
	S ≤	R >	
Doxycycline ¹	Note ¹	Note ¹	
Minocycline ¹	Note ¹	Note ¹	
Tetracycline ¹	Note ¹	Note ¹	
Tigecycline ¹	Note ¹	Note ¹	

Gram-positive anaerobes
except *Clostridium difficile*

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Miscellaneous agents	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Chloramphenicol	8	8	
Colistin	-	-	
Daptomycin	-	-	
Fosfomycin iv	-	-	
Fosfomycin-trometamol (uncomplicated UTI only)	-	-	
Fusidic acid	-	-	
Linezolid	-	-	
Metronidazole	4	4	
Mupirocin	-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-	
Rifampicin	-	-	
Spectinomycin	-	-	
Trimethoprim (uncomplicated UTI only)	-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole)	-	-	

Gram-negative anaerobes

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Benzylpenicillin¹	0.25	0.5	1. Susceptibility to ampicillin, amoxicillin and piperacillin without beta-lactamase inhibitors can be inferred from susceptibility to benzylpenicillin.
Ampicillin¹	0.5	2	
Ampicillin-sulbactam¹	4	8	
Amoxicillin¹	0.5	2	
Amoxicillin-clavulanate¹	4	8	
Piperacillin¹	16	16	
Piperacillin-tazobactam¹	8	16	
Ticarcillin¹	16	16	
Ticarcillin-clavulanate¹	8	16	
Phenoxymethylpenicillin	IE	IE	
Oxacillin	-	-	
Cloxacillin	-	-	
Dicloxacillin	-	-	
Flucloxacillin	-	-	
Mecillinam (uncomplicated UTI only)	-	-	

Cephalosporins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Cefaclor	-	-	
Cefadroxil	-	-	
Cefalexin	-	-	
Cefazolin	-	-	
Cefepime	-	-	
Cefixime	-	-	
Cefotaxime	-	-	
Cefoxitin	NA	NA	
Cefpodoxime	-	-	
Ceftazidime	-	-	
Ceftibuten	-	-	
Ceftriaxone	-	-	
Cefuroxime	-	-	
Cefuroxime axetil	-	-	

Gram-negative anaerobes

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Carbapenems	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Doripenem	1	1	
Ertapenem	1	1	
Imipenem	2	8	
Meropenem	2	8	

Monobactams	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Aztreonam	-	-	

Fluoroquinolones	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Ciprofloxacin	-	-	
Levofloxacin	-	-	
Moxifloxacin	IE	IE	
Nalidixic acid (screen)	NA	NA	
Norfloxacin	-	-	
Ofloxacin	-	-	

Aminoglycosides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Amikacin	-	-	
Gentamicin	-	-	
Netilmicin	-	-	
Tobramycin	-	-	

Gram-negative anaerobes

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Glycopeptides	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Teicoplanin	-	-	
Vancomycin	-	-	

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Azithromycin	-	-	
Clarithromycin	-	-	
Erythromycin	IE	IE	
Roxithromycin	-	-	
Telithromycin	-	-	
Clindamycin	4	4	
Quinupristin/dalfopristin	-	-	

Tetracyclines ¹	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
			1. For anaerobic bacteria there is clinical evidence of activity in mixed intra-abdominal infections, but no correlation between MIC values, PK/Pd data and clinical outcome. Therefore no breakpoints for susceptibility testing are given.
Doxycycline ¹	Note ¹	Note ¹	
Minocycline ¹	Note ¹	Note ¹	
Tetracycline ¹	Note ¹	Note ¹	
Tigecycline ¹	Note ¹	Note ¹	

Gram-negative anaerobes

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Miscellaneous agents	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Chloramphenicol	8	8	
Colistin	-	-	
Daptomycin	-	-	
Fosfomicin iv	-	-	
Fosfomicin-trometamol (uncomplicated UTI only)	-	-	
Fusidic acid	-	-	
Linezolid	-	-	
Metronidazole	4	4	
Mupirocin	-	-	
Nitrofurantoin (uncomplicated UTI only)	-	-	
Rifampicin	-	-	
Spectinomycin	-	-	
Trimethoprim (uncomplicated UTI only)	-	-	
Trimethoprim-sulfamethoxazole (co-trimoxazole)	-	-	

Miscellaneous organisms

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Clostridium difficile

	MIC breakpoint (mg/L)		Notes Numbers for comments on MIC breakpoints Disk diffusion criteria for antimicrobial susceptibility testing of anaerobes have not yet been determined.
	S ≤	R >	
Metronidazole	1	1	
Vancomycin	2	2	

Campylobacter spp. IP

Cepacia burkholderia IP

Corynebacterium spp. IP

Helicobacter pylori IP

Listeria monocytogenes IP

Nocardia spp. IP

Pasteurella spp. IP

Non-species related breakpoints

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Penicillins	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Benzympenicillin	0.25	2	The non-species-related S/I and I/R breakpoints are based on 600 mg x 4 (2.4g/day) and 2.4g x 6 (14.4g/day) doses respectively.
Ampicillin	2	8	The non-species-related breakpoints are based on doses of at least 0.5 g x 3-4 (1.5-2 g/day).
Ampicillin-sulbactam	2	8	Rationale document in preparation.
Amoxicillin	2	8	The non-species-related breakpoints are based on doses of at least 0.5 g x 3-4 (1.5-2 g/day).
Amoxicillin-clavulanate	2	8	Rationale document in preparation.
Piperacillin	4	16	Breakpoints apply to piperacillin-tazobactam dosage of 4 g x 3.
Piperacillin-tazobactam	4	16	Breakpoints apply to piperacillin-tazobactam dosage of 4 g x 3.
Ticarcillin	8	16	
Ticarcillin-clavulanate	8	16	
Phenoxymethylpenicillin	IE	IE	
Oxacillin	IE	IE	
Cloxacillin	IE	IE	
Dicloxacillin	IE	IE	
Flucloxacillin	IE	IE	
Mecillinam (uncomplicated UTI only)	IE	IE	

Cephalosporins	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Cefaclor	IE	IE	
Cefadroxil	IE	IE	
Cefalexin	IE	IE	
Cefazolin	1	2	Rationale document in preparation.
Cefepime	4	8	Breakpoints apply to a daily intravenous dose of 2g x 2 and a high dose of at least 2g x 3.
Cefixime	IE	IE	
Cefotaxime	1	2	Breakpoints apply to a daily intravenous dose of 1 g x 3 and a high dose of at least 2 g x 3.
Cefoxitin	IE	IE	
Cefpodoxime	IE	IE	
Ceftazidime	4	8	Breakpoints apply to a daily intravenous dose of 1 g x 3 and a high dose of at least 2 g x 3.
Ceftibuten	IE	IE	
Ceftriaxone	1	2	Breakpoints apply to a daily intravenous dose of 1 g x 1 and a high dose of at least 2 g x 1.
Cefuroxime	4	8	Breakpoints apply to a daily intravenous dose of 750 mg x 3 and a high dose of at least 1.5 g x 3.
Cefuroxime axetil	IE	IE	

Non-species related breakpoints

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Carbapenems	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Doripenem	1	4	EUCAST breakpoints apply to doripenem 500 mg x 3 daily administered intravenously over 1 hour as the lowest dose. 500 mg x 3 daily administered over 4 hours was taken into consideration for severe infections and in setting the I/R breakpoint.
Ertapenem	0.5	1	EUCAST breakpoints apply to ertapenem 1000 mg x 1 daily administered intravenously over 30 minutes as the only dose.
Imipenem	2	8	EUCAST breakpoints apply to imipenem 500 mg x 4 daily administered intravenously over 30 minutes as the lowest dose. 1g x 4 daily was taken into consideration for severe infections and in setting the I/R breakpoint.
Meropenem	2	8	EUCAST breakpoints apply to meropenem 1000 mg x 3 daily administered intravenously over 30 minutes as the lowest dose. 2g x 3 daily was taken into consideration for severe infections and in setting the I/R breakpoint.

Monobactams	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Aztreonam	4	8	Rationale document in preparation.

Fluoroquinolones	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Ciprofloxacin	0.5	1	Breakpoints apply to an oral dose of 500 mg x 2 (or as low as 250 mg x 2 for uncomplicated urinary tract infections) to 750 mg x 2 and an intravenous dose of 400 mg x 2 to 400 mg x 3.
Levofloxacin	1	2	Breakpoints apply to an oral dose of 500 mg x 1 to 500 mg x 2 and an intravenous dose of 500 mg x 1 to 500 mg x 2.
Moxifloxacin	0.5	1	Breakpoints apply to an oral and iv dose of 400 mg x 1.
Nalidixic acid (screen)	NA	NA	
Norfloxacin	0.5	1	Breakpoints apply to an oral dose of 400 mg x 2.
Ofloxacin	0.5	1	Breakpoints apply to an oral dose of 200 mg x 2 to 400 mg x 2 and an intravenous dose of 200 mg x 2 to 400 mg x 2.

Aminoglycosides	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Amikacin	8	16	EUCAST breakpoints apply to intravenous amikacin dosage of 15 mg/kg/day. In the absence of Pk/Pd data these have been determined mainly on the basis of Pk data and pre-existing breakpoints.
Gentamicin	2	4	Breakpoints apply to intravenous gentamicin dosage of 3-4.5 mg/kg/day. In the absence of Pk/Pd data these have been determined mainly on the basis of Pk data and pre-existing breakpoints.
Netilmicin	2	4	Breakpoints apply to intravenous netilmicin dosage of 4-6 mg/kg/day. In the absence of Pk/Pd data these have been determined mainly on the basis of Pk data and pre-existing breakpoints.
Tobramycin	2	4	EUCAST breakpoints apply to intravenous tobramycin dosage of 3-4.5 mg/kg/day. In the absence of Pk/Pd data these have been determined mainly on the basis of Pk data and pre-existing breakpoints.

Non-species related breakpoints

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Glycopeptides	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Teicoplanin	2	4	Breakpoints apply to an intravenous dose of 400 mg x 1 to 800mg x 1 or 400 mg x 2.
Vancomycin	2	4	Breakpoints apply to an intravenous dose of 1000 mg x 2, 500 mg x 4 or 2g/day by continuous infusion.

Macrolides, lincosamides and streptogramins	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Azithromycin	IE	IE	
Clarithromycin	IE	IE	
Erythromycin	IE	IE	
Roxithromycin	IE	IE	
Telithromycin	IE	IE	
Clindamycin	IE	IE	
Quinupristin/dalfopristin	IE	IE	

Tetracyclines	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Doxycycline	IE	IE	
Minocycline	IE	IE	
Tetracycline	IE	IE	
Tigecycline	0.25	0.5	Breakpoints apply to a tigecycline intravenous dose of 100 mg followed by 50mg 12 hourly for CSSSI and CIAI.

Non-species related breakpoints

EUCAST Clinical Breakpoint Table v. 1.3 2011-01-05

Miscellaneous	MIC breakpoint (mg/L)		Non-species related breakpoints are based on the following dosages (See section 8 in Rationale Documents)
	S ≤	R >	
Chloramphenicol	IE	IE	
Colistin	IE	IE	
Daptomycin	IE	IE	
Fosfomicin iv	IE	IE	
Fosfomicin-trometamol (uncomplicated UTI only)	IE	IE	
Fusidic acid	IE	IE	
Linezolid	2	4	Breakpoints apply to a linezolid intravenous and oral dosage of 600 mg x 2.
Metronidazole	IE	IE	
Mupirocin	IE	IE	
Nitrofurantoin (uncomplicated UTI only)	IE	IE	
Rifampicin	IE	IE	
Spectinomycin	IE	IE	
Trimethoprim (uncomplicated UTI only)	IE	IE	
Trimethoprim-sulfamethoxazole (co-trimoxazole)	IE	IE	