

## Dosages used to define breakpoints

EUCAST Clinical Breakpoint Tables v. 15.0, valid from 2025-01-01

EUCAST breakpoints are based on the following dosages. Alternative dosing regimens may result in equivalent exposure. The table should not be used as a guidance for dosing in clinical practice as dosages can vary widely by indication. It does not replace specific national, regional or local dosing guidelines. However, if national practices significantly differ from those listed below, EUCAST breakpoints may not be valid. Situations where less antibiotic is given as standard or high dose should be discussed locally or regionally. Information on EUCAST breakpoints and dosing for challenging infection sites and on special situations for antimicrobial treatment is available below the dosages table.

Uncomplicated UTI: acute, sporadic or recurrent lower urinary tract infections (uncomplicated cystitis) in patients with no known relevant anatomical or functional abnormalities within the urinary tract or comorbidities.

Penicillins	Standard dosage	High dosage	Uncomplicated UTI	Special situations
<b>Benzylpenicillin</b>	0.6 g (1 MU) x 4 iv	1.2 g (2 MU) x 6 iv		<p><b>Meningitis:</b> 2.4 g (4 MU) x 6 iv Meningitis caused by <i>S. pneumoniae</i>: For a dose of 2.4 g (4 MU) x 6 iv, isolates with MIC ≤0.06 mg/L are susceptible</p> <p><b>Pneumonia caused by <i>S. pneumoniae</i>: breakpoints are related to dosage:-</b> For a dose of 1.2 g (2 MU) x 4 iv, isolates with MIC ≤ 0.5 mg/L are susceptible. For a dose of 2.4 (4 MU) g x 4 iv or 1.2 g (2 MU) x 6 iv, isolates with MIC ≤1 mg/L are susceptible. For a dose of 2.4 g (4 MU) x 6 iv, isolates with MIC ≤2 mg/L are susceptible.</p>
<b>Ampicillin iv</b>	2 g x 3 iv	2 g x 4 iv		<b>Meningitis:</b> 2 g x 6 iv
<b>Ampicillin-sulbactam iv</b>	(2 g ampicillin + 1 g sulbactam) x 3 iv	(2 g ampicillin + 1 g sulbactam) x 4 iv		
<b>Ampicillin-sulbactam oral</b>	None	None	0.75 g x 2 oral	
<b>Amoxicillin iv</b>	1 g x 3-4 iv	2 g x 6 iv		<b>Meningitis:</b> 2 g x 6 iv
<b>Amoxicillin oral</b>	0.5 g x 3 oral	0.75-1 g x 3 oral	0.5 g x 3 oral	
<b>Amoxicillin-clavulanic acid iv</b>	(1 g amoxicillin + 0.2 g clavulanic acid) x 3-4 iv	(2 g amoxicillin + 0.2 g clavulanic acid) x 3 iv		
<b>Amoxicillin-clavulanic acid oral</b>	(0.5 g amoxicillin + 0.125 g clavulanic acid) x 3 oral	(0.875 g amoxicillin + 0.125 g clavulanic acid) x 3 oral	(0.5 g amoxicillin + 0.125 g clavulanic acid) x 3 oral	Amoxicillin-clavulanic acid has separate breakpoints for systemic infections and uncomplicated UTI. When amoxicillin-clavulanic acid is reported for uncomplicated UTI, the report must make clear that the susceptibility category is only valid for uncomplicated UTI.
<b>Piperacillin</b>	4 g x 4 iv	4 g x 4 iv by extended 3-hour infusion		High dosage for more serious infections.
<b>Piperacillin-tazobactam</b>	(4 g piperacillin + 0.5 g tazobactam) x 4 iv 30-minute infusion or x 3 iv by extended 4-hour infusion	(4 g piperacillin + 0.5 g tazobactam) x 4 iv by extended 3-hour infusion		A lower dosage of (4 g piperacillin + 0.5 g tazobactam) x 3 iv, 30-minute infusion, is adequate for some infections such as complicated UTI, intraabdominal infections and diabetic foot infections, but not for infections caused by isolates resistant to third-generation cephalosporins.
<b>Ticarcillin-clavulanic acid</b>	(3 g ticarcillin + 0.1-0.2 g clavulanic acid) x 4 iv	(3 g ticarcillin + 0.1 g clavulanic acid) x 6 iv		
<b>Temocillin</b>	2 g x 2 iv	2 g x 3 iv		The 2 g x 2 iv dose has been used in the treatment of uncomplicated UTI caused by bacteria with beta-lactam resistance mechanisms.
<b>Phenoxymethylpenicillin</b>	0.5-2 g x 3-4 oral depending on species and/or infection type	None		
<b>Oxacillin</b>	1 g x 4 iv	Dosages vary by indication		
<b>Cloxacillin</b>	0.5 g x 4 oral or 1 g x 4 iv	Dosages vary by indication		<b>Meningitis:</b> 2 g x 6 iv
<b>Dicloxacillin</b>	0.5-1 g x 4 oral or 1 g x 4 iv	Dosages vary by indication		
<b>Flucloxacillin</b>	1 g x 3 oral or 2 g x 4 iv (or 1 g x 6 iv)	Dosages vary by indication		<b>Meningitis:</b> 2 g x 6 iv
<b>Mecillinam oral (pivmecillinam)</b>	None	None	0.2-0.4 g x 3 oral	

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Cephalosporins	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Cefaclor	0.25-0.5 g x 3 oral depending on species and/or infection type	1 g x 3 oral		<u>S. aureus</u> : Minimum dose 0.5 g x 3 oral
Cefadroxil	0.5-1 g x 2 oral	None	0.5-1 g x 2 oral	
Cefalexin	0.25-1 g x 2-3 oral	None	0.25-1 g x 2-3 oral	
Cefazolin	1 g x 3 iv	2 g x 3 iv		<u>S. aureus</u> : High dose only
Cefepime	1 g x 3 iv or 2 g x 2 iv	2 g x 3 iv		Severe <i>P. aeruginosa</i> infections: 2 g x 3 with extended 4-hour infusion <u>S. aureus</u> : High dose only
Cefepime-enmetazobactam (UTI)	(2 g cefepime + 0.5 g enmetazobactam) x 3 iv over 2 hours			
Cefepime-enmetazobactam (hospital-acquired pneumonia, including ventilator-associated pneumonia)	(2 g cefepime + 0.5 g enmetazobactam) x 3 iv over 4 hours			
Cefiderocol	2 g x 3 iv over 3 hours	None		
Cefixime	0.2-0.4 g x 2 oral	None	0.2-0.4 g x 2 oral	Uncomplicated gonorrhoea: 0.4 g oral as a single dose
Cefotaxime	1 g x 3 iv	2 g x 3 iv		Meningitis: 2 g x 4 iv <u>S. aureus</u> : High dose only
Cefpodoxime	0.1-0.2 g x 2 oral	None	0.1-0.2 g x 2 oral	
Ceftaroline	0.6 g x 2 iv over 1 hour	0.6 g x 3 iv over 2 hours		<u>S. aureus</u> in complicated skin and skin structure infections: There is some PK-PD evidence to suggest that isolates with MICs of 4 mg/L could be treated with high dose.
Ceftazidime	1 g x 3 iv	2 g x 3 iv or 1 g x 6 iv		
Ceftazidime-avibactam	(2 g ceftazidime + 0.5 g avibactam) x 3 iv over 2 hours			
Ceftibuten	0.4 g x 1 oral	None		
Ceftobiprole	0.5 g x 3 iv over 2 hours	None		
Ceftolozane-tazobactam (intra-abdominal infections and UTI)	(1 g ceftolozane + 0.5 g tazobactam) x 3 iv over 1 hour	None		
Ceftolozane-tazobactam (hospital-acquired pneumonia, including ventilator-associated pneumonia)	(2 g ceftolozane + 1 g tazobactam) x 3 iv over 1 hour	None		
Ceftriaxone	2 g x 1 iv	2 g x 2 iv or 4 g x 1 iv		Meningitis: 2 g x 2 iv or 4 g x 1 iv <u>S. aureus</u> : High dose only Uncomplicated gonorrhoea: 0.5-1 g im as a single dose
Cefuroxime iv	0.75 g x 3 iv	1.5 g x 3 iv		<u>S. aureus</u> : High dose only
Cefuroxime oral	0.25 g x 2 oral	0.5 g x 2 oral	0.25 g x 2 oral	

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Carbapenems	Standard dosage	High dosage	Uncomplicated UTI	Special situations
<b>Doripenem</b>	0.5 g x 3 iv over 1 hour	1 g x 3 iv over 1 hour		HAP/VAP* due to non-fermenting Gram-negative pathogens (such as <i>Pseudomonas</i> spp. and <i>Acinetobacter</i> spp.) should be treated with 1 g x 3 iv over 4 hours.
<b>Ertapenem</b>	1 g x 1 iv over 30 minutes	None		
<b>Imipenem</b>	0.5 g x 4 iv over 30 minutes	1 g x 4 iv over 30 minutes		
<b>Imipenem-relebactam</b>	(0.5 g imipenem + 0.25 g relebactam) x 4 iv over 30 minutes	None		
<b>Meropenem</b>	1 g x 3 iv over 30 minutes	2 g x 3 iv over 3 hours		<b>Meningitis:</b> 2 g x 3 iv over 30 minutes (or 3 hours)
<b>Meropenem-vaborbactam</b>	(2 g meropenem + 2 g vaborbactam) x 3 iv over 3 hours			

\* HAP/VAP = hospital-acquired pneumonia/ventilator-associated pneumonia

Monobactams	Standard dosage	High dosage	Uncomplicated UTI	Special situations
<b>Aztreonam</b>	1 g x 3 iv	2 g x 4 iv		<b>Severe <i>P. aeruginosa</i> infections:</b> 2 g x 4 with extended 3-hour infusion
<b>Aztreonam-avibactam</b>	(2 g aztreonam + 0.67 g avibactam) x 1 followed by (1.5 g aztreonam + 0.5 g avibactam) x 4 iv over 3 hours			

Fluoroquinolones	Standard dosage	High dosage	Uncomplicated UTI	Special situations
<b>Ciprofloxacin</b>	0.5 g x 2 oral or 0.4 g x 2 iv	0.75 g x 2 oral or 0.4 g x 3 iv		<b>Meningitis:</b> 0.4 g x 3 iv
<b>Delafoxacin</b>	0.45 g x 2 oral or 0.3 g x 2 iv	None		
<b>Levofloxacin</b>	0.5 g x 1 oral or 0.5 g x 1 iv	0.5 g x 2 oral or 0.5 g x 2 iv		
<b>Moxifloxacin</b>	0.4 g x 1 oral or 0.4 g x 1 iv	None		<b>Meningitis:</b> 0.4 g x 1 iv
<b>Norfloxacin</b>	None	None	0.4 g x 2 oral	
<b>Ofloxacin</b>	0.2 g x 2 oral or 0.2 g x 2 iv	0.4 g x 2 oral or 0.4 g x 2 iv		

Aminoglycosides	Standard dosage	High dosage	Uncomplicated UTI	Special situations
<b>Amikacin</b>	25-30 mg/kg x 1 iv	None		
<b>Gentamicin</b>	6-7 mg/kg x 1 iv	None		
<b>Netilmicin</b>	6-7 mg/kg x 1 iv	None		
<b>Tobramycin</b>	6-7 mg/kg x 1 iv	None		

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Glycopeptides and lipoglycopeptides	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Dalbavancin	1 g x 1 iv over 30 minutes on day 1 If needed, 0.5 g x 1 iv over 30 minutes on day 8	None		
Oritavancin	1.2 g x 1 (single dose) iv over 3 hours	None		
Teicoplanin	0.4 g x 1 iv	Dosages vary by indication		
Telavancin	10 mg/kg x 1 iv over 1 hour	None		
Vancomycin	0.5 g x 4 iv or 1 g x 2 iv or 2 g x 1 by continuous infusion	None		Based on body weight. Therapeutic drug monitoring should guide dosing.

Macrolides, lincosamides and streptogramins	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Azithromycin	0.5 g x 1 oral or 0.5 g x 1 iv	None		Uncomplicated gonorrhoea: 2 g oral as a single dose
Clarithromycin	0.25 g x 2 oral	Dosages vary by indication		In some countries clarithromycin is available for intravenous administration at a dose of 0.5 g x 2, principally for treating pneumonia.
Erythromycin	0.5 g x 2-4 oral or 0.5 g x 2-4 iv	Dosages vary by indication		
Roxithromycin	0.15 g x 2 oral	None		
Clindamycin	0.3 g x 2 oral or 0.6 g x 3 iv	Dosages vary by indication		The high exposure dosing regimen pertains to the severity of the infection or drug exposure at the site of infection.
Quinupristin-dalfopristin	7.5 mg/kg x 2 iv	Dosages vary by indication		

Tetracyclines	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Doxycycline	0.1 g x 1 oral	Dosages vary by indication		
Eravacycline	1 mg/kg x 2 iv	None		
Minocycline	0.1 g x 2 oral	None		
Tetracycline	0.25 g x 4 oral	Dosages vary by indication		
Tigecycline	0.1 g loading dose followed by 50 mg x 2 iv	None		

Oxazolidinones	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Linezolid	0.6 g x 2 oral or 0.6 g x 2 iv	None		Meningitis: 0.6 g x 2 iv
Tedizolid	0.2 g x 1 oral or 0.2 g x 1 iv	None		

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Miscellaneous agents	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Chloramphenicol	1 g x 4 oral or 1 g x 4 iv	2 g x 4 oral or 2 g x 4 iv		Meningitis: 2 g x 4 iv
Colistin	4.5 MU x 2 iv with a loading dose of 9 MU	None		
Daptomycin (cSSTI** without concurrent <i>S. aureus</i> bacteraemia)	4 mg/kg x 1 iv	None		
Daptomycin (cSSTI** with concurrent <i>S. aureus</i> bacteraemia; right-sided infective endocarditis due to <i>S. aureus</i> )	6 mg/kg x 1 iv	None		Enterococcal bloodstream infection and endocarditis, see <a href="https://www.eucast.org/eucastguidancedocuments">https://www.eucast.org/eucastguidancedocuments</a> .
Fidaxomicin	0.2 g x 2 oral	None		
Fosfomycin iv	16-18 g/day divided in 3-4 doses	Dosages vary by indication		
Fosfomycin oral	None	None	3 g x 1 oral as a single dose	
Fusidic acid	0.5 g x 2 oral or 0.5 g x 2 iv	Dosages vary by indication		
Lefamulin	0.15 g x 2 iv or 0.6 g x 2 oral	None		
Metronidazole	0.4 g x 3 oral or 0.4 g x 3 iv	Dosages vary by indication		
Nitrofurantoin	None	None	50-100 mg x 3-4 oral	Dosing is dependent on drug formulation.
Nitroxoline	None	None	0.25 g x 3 oral	
Rifampicin	0.6 g x 1 oral or 0.6 g x 1 iv	None		
Spectinomycin	2 g x 1 im	None		
Trimethoprim	None	None	0.16 g x 2 oral	
Trimethoprim-sulfamethoxazole	(0.16 g trimethoprim + 0.8 g sulfamethoxazole) x 2 oral or (0.16 g trimethoprim + 0.8 g sulfamethoxazole) x 2 iv	(0.24 g trimethoprim + 1.2 g sulfamethoxazole) x 2 oral or (0.24 g trimethoprim + 1.2 g sulfamethoxazole) x 2 iv	(0.16 g trimethoprim + 0.8 g sulfamethoxazole) x 2 oral	Meningitis: (5 mg/kg up to 0.48 g trimethoprim + 25 mg/kg up to 2.4 g sulfamethoxazole) x 3 iv

\*\* cSSTI = complicated skin and skin structure infection

### Information on EUCAST breakpoints and dosing for challenging infection sites and on special situations for antimicrobial treatment

EUCAST breakpoints are based on standard and, if applicable, high exposure to antimicrobial agents. The dosing regimens are either those listed in the Summary of Product Characteristics approved by EMA (European Medicines Agency) or, especially with older agents, doses that are commonly administered in European countries. For some more common infections or when the usual severity of the infection requires special attention, EUCAST has produced additional dosing guidance (e.g. urinary tract infections) and/or breakpoints (e.g. meningitis).

There are other sites and infections where the antibiotic exposure of the organism may be impaired and where therapy may require higher dosing or a change in the mode of administration to ensure the desired exposure. Such situations include, but are not limited to, endocarditis, bone and joint infections, and abscesses in the central nervous system.

Since EUCAST is a breakpoint committee it will not give dosing or other treatment recommendations for such conditions, but will list specific breakpoints for challenging infections when applicable. Refer to textbooks or national/international treatment guidelines for more information on dosing regimens in challenging infections.

In addition to these clinical situations, rare resistance mechanisms may require tailored or unusual therapeutic approaches and often these therapies are still discussed in the community. Examples include borderline resistant *S. aureus* (BORSA), vancomycin-variable enterococci and *A. baumannii* producing KPC. For such isolates, EUCAST currently does not give specific recommendations, neither for testing nor for selection of the appropriate antimicrobial agent.