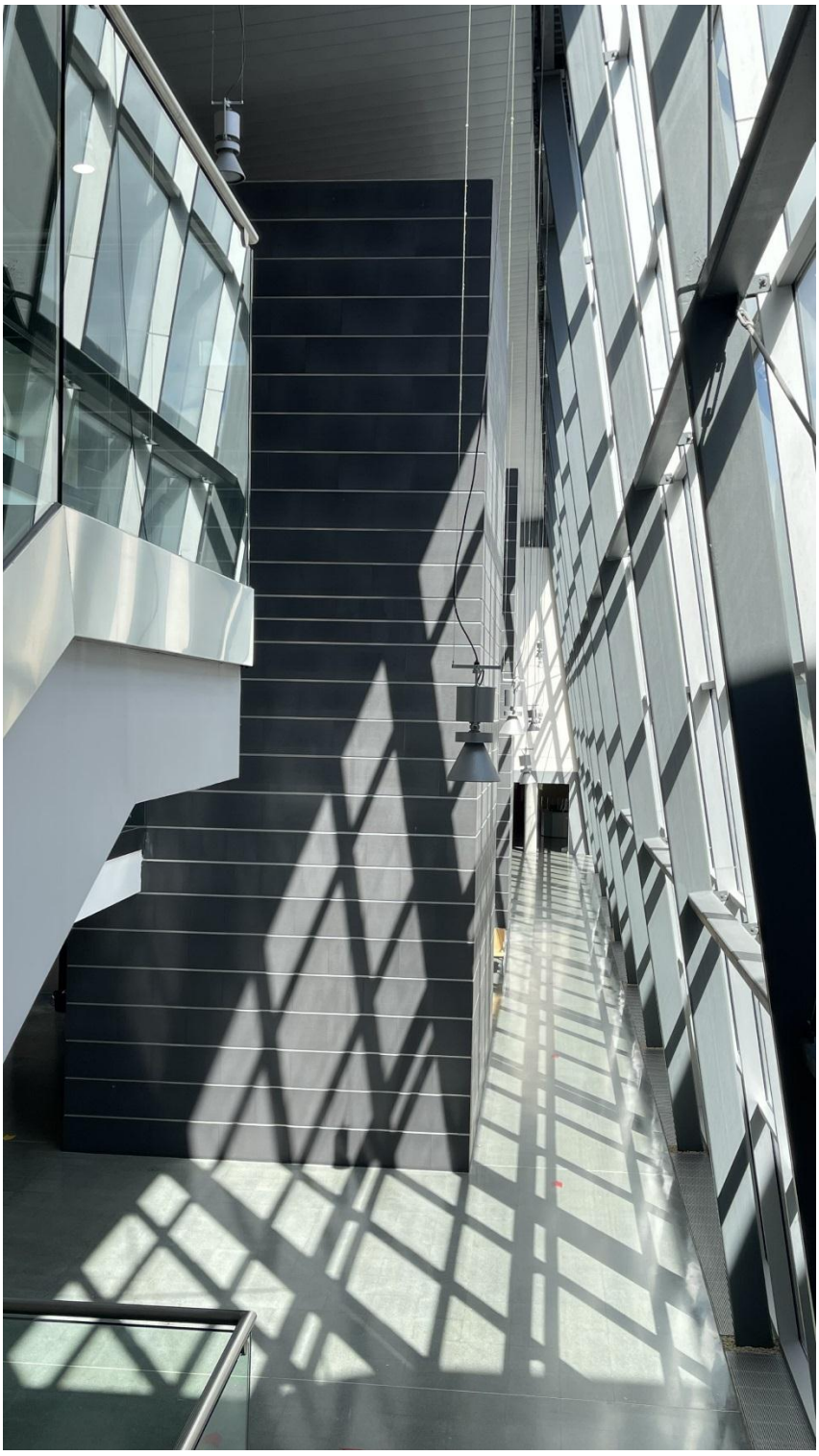

HOSPITAL SANTIAGO APOSTOL

MIRANDA DE EBRO

MAPA DE SENSIBILIDAD ANTIBIOTICA 2023-2024

ATENCION PRIMARIA

MICROBIOLOGÍA

INTRODUCCIÓN

El objetivo del Mapa de Sensibilidad es ayudar a realizar una adecuada elección del tratamiento empírico teniendo en cuenta la microbiología local y las guías de tratamiento empírico.

El tratamiento antibiótico debe individualizarse en función del paciente, tipo y gravedad de la infección.

Para una buena actividad del antibiótico es importante ajustar la dosis a las recomendadas según EUCAST (Comité Europeo de Evaluación de la Sensibilidad Antimicrobiana) para alcanzar concentraciones terapéuticas adecuadas en el foco de infección.

En el año 2020 EUCAST realizó una actualización importante, cambiando la definición de «I». Desde entonces, tanto «S» como «I» hacen referencia a aislamientos sensibles. La diferencia es que los aislamientos categorizados como «S» podrían ser tratados con una dosis estándar, mientras que los «I» precisarían una dosis optimizada. Así, los aislamientos clasificados como «I» se definen como sensibles al antibiótico, siempre que aumentemos la exposición al mismo. El aumento en la exposición puede alcanzarse modificando el modo de administración, dosis, intervalo de administración o tiempo de perfusión o utilizando antibióticos con una distribución, metabolismo y excreción favorable según la localización y gravedad de la infección. Por tanto, la «I» corresponde a «increased exposure» (exposición aumentada) en lugar de «intermediate susceptibility» (sensibilidad intermedia).

En el mapa de sensibilidades se muestra el porcentaje de cepas sensibles que sería la suma de % de cepas "S" más la suma de % de cepas "I".
Para facilitar la interpretación visual de las tablas, utilizaremos tres colores según el siguiente esquema:

Más del 85% de las cepas son sensibles
Entre el 50-85% de las cepas son sensibles
Menos del 50% de las cepas son sensibles

Una vez que se recibe el informe microbiológico con el microorganismo y su sensibilidad es importante optimizar el tratamiento adecuándolo al antibiograma y ajustando la duración del mismo.
Ver en las tablas EUCAST de dosis de antibióticos. Documento adjunto.

Nota:

n: número de cepas aisladas. La significación de los porcentajes de sensibilidad disminuye cuando "n" es inferior a 30. Por esta razón agrupamos dos años en los estudios para conseguir resultados más fiables (a pesar de hacerlo así hay determinados microorganismos que no se llega a 30).

Microorganismos GRAM NEGATIVOS: Orina

	Nº	Ampicilina/amoxi	Amoxicilina/ac cllavulanico	Cefuroxima oral	Cefota/ceftriaxona	Gentamicina	Ciprofloxacino	Levofloxacino	Nitrofurantoína	Trimetropin/ sulfametoxazol	Fosfomicina
E. coli	1710	55	75	97	99	92	77	82	99	80	96
E. coli R C3ªG/BLEE	228		48		3	79	12	15	100	40	86
K. pneumoniae	272		88	96	100	99	92	96		97	78
K. pneumoniae R C3ªG/BLEE	13				0	92	30	46		38	
P. mirabilis	168	49	89	99	99	67	61	62		54	64
K.oxytoca	71		97	94	100	100	99	100		99	
P. aeruginosa	74					100 *	77				

*Referido a tobramicina

Microorganismos GRAM NEGATIVOS: Otras muestras

	Nº	Penicilina	Amoxicilina Ampicilina	Amoxicilina/ Ac clavulánico	Ceftriaxona/ cefotaxima	Ciprofloxacino	Levofloxacino	Trimetropín/ sulfametoxazol	Eritromicina/ Azitromicina
Salmonella spp*	21		67	96	100	76		100	100
Campylobacter spp*	137					23			100
Haemophilus influenzae	11		18	91	100	100	100	82	91
Neisseria gonorrhoeae*	12	67			100	42	42		75

*Se incluyen aislamientos hospitalarios

Microorganismos GRAM POSITIVOS (orina y otras muestras):

	Nº	Penicilina	Oxacilina/cloxa	Amoxicilina /Ampicilina	Cefota/ceftriaxona	Gentamicina	Eritromicina	Clindamicina	Ciprofloxacino	Levofloxacino	Trimetropin/ sulfametoxazol	Ácido fusídico	Nitrofurantoína*
S. aureus	400		100			93	70	74	86	88	100		
S. aureus SARM	104		0			79	32	75	24	27	94		
S. pneumoniae	12	83		83	92		75	83		100			
S. pyogenes	62	100		100			98	98					
S. agalactiae	131	100					47						
E. faecalis	658			100						72			99
E. faecium	51			16						8			

*Solo ITU no complicada

Microorganismos GRAM NEGATIVOS y GRAM POSITIVOS más prevalentes de ORIGEN URINARIO del CENTRO SOCIOSANITARIO RESIDENCIA MIXTA 3ª EDAD. (Consideramos relevante el realizar una tabla propia)

	Nº	Ampicilina/amoxi	Amoxicilina/ac cllavulanico	Cefuroxima oral	Cefota/ceftriaxona	Gentamicina	Ciprofloxacino	Levofloxacino	Nitrofurantoína	Trimetropin/ sulfametoxazol	Fosfomicina
E. coli	55	56	69	95	100	93	76	76	100	64	85
E. coli R C3ªG/BLEE	27		37		11	63	11	11	100	15	63
P. mirabilis	12	0	83	100	100	33	0	0		54	33
Enterococcus faecalis	29	100						0	99		

INDICADORES DE MULTIRRESISTENCIA

MICROORGANISMO	MUESTRA	Nº AISLADOS	Nº AISLADOS RESISTENTES	% AISLADOS RESISTENTES
E. coli resistente a amoxicilina/clavulánico	Orina	1938	427	25
E. coli resistente a ciprofloxacino	Orina	1938	595	30
E. coli BLEE	Orina	1938	228	12
E. coli productor carbapenemasa	Orina	1938	0	0
Klebsiella pneumoniae BLEE	Orina	272	13	5
Klebsiella pneumoniae productor de carbapenemasa	Orina	272	0	0
P. aeruginosa resistente a quinolonas	Orina	74	17	23
Staphylococcus aureus resistente a meticilina (SARM)	Todas	504	104	21
Streptococcus pneumoniae resistente a penicilina	Tracto respiratorio	6	2	33
Streptococcus pneumoniae resistente a CF3ªG	Tracto respiratorio	6	1	17
Streptococcus pyogenes resistente a Eritromicina	Tracto respiratorio	20	1	5
Haemophilus influenzae resistente a amoxicilina-clavulánico	Tracto respiratorio	11	9	81
Salmonella spp. resistente a ciprofloxacino	Heces	21	5	24

Dosages used to define breakpoints

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
Benzylpenicillin	0.6 g (1 MU) x 4 iv	1.2 g (2 MU) x 6 iv		**Meningitis:** 2.4 g (4 MU) x 6 iv ~~Meningitis caused by S. pneumoniae:~~ ~~For a dose of 2.4 g (4 MU) x 6 iv, isolates with MIC ≤0.06 mg/L are susceptible~~ ~~**Pneumonia caused by *S. pneumoniae:* breakpoints are related to dosage:**~~ ~~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.~~
Ampicillin iv	2 g x 3 iv	2 g x 4 iv		**Meningitis:** 2 g x 6 iv
Ampicillin-sulbactam iv	(2 g ampicillin + 1 g sulbactam) x 3 iv	(2 g ampicillin + 1 g sulbactam) x 4 iv		
Ampicillin-sulbactam oral	None	None	0.75 g x 2 oral	
Amoxicillin iv	1 g x 3-4 iv	2 g x 6 iv		**Meningitis:** 2 g x 6 iv
Amoxicillin oral	0.5 g x 3 oral	0.75-1 g x 3 oral	0.5 g x 3 oral	
Amoxicillin-clavulanic acid iv	(1 g amoxicillin + 0.2 g clavulanic acid) x 3-4 iv	(2 g amoxicillin + 0.2 g clavulanic acid) x 3 iv		
Amoxicillin-clavulanic acid oral	(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.
Piperacillin	4 g x 4 iv	4 g x 4 iv by extended 3-hour infusion		High dosage for more serious infections.
Piperacillin-tazobactam	(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.
Ticarcillin-clavulanic acid	(3 g ticarcillin + 0.1-0.2 g clavulanic acid) x 4 iv	(3 g ticarcillin + 0.1 g clavulanic acid) x 6 iv		
Temocillin	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.
Phenoxymethylpenicillin	0.5-2 g x 3-4 oral depending on species and/or infection type	None		
Oxacillin	1 g x 4 iv	Dosages vary by indication		
Cloxacillin	0.5 g x 4 oral or 1 g x 4 iv	Dosages vary by indication		**Meningitis:** 2 g x 6 iv
Dicloxacillin	0.5-1 g x 4 oral or 1 g x 4 iv	Dosages vary by indication		
Flucloxacillin	1 g x 3 oral or 2 g x 4 iv (or 1 g x 6 iv)	Dosages vary by indication		**Meningitis:** 2 g x 6 iv
Mecillinam oral (pivmecillinam)	None	None	0.2-0.4 g x 3 oral	

Dosages used to define breakpoints

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

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		***S. aureus*:** 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		***S. aureus:*** High dose only
Cefepime	1 g x 3 iv or 2 g x 2 iv	2 g x 3 iv		**Severe *P. aeruginosa* infections:** 2 g x 3 with extended 4-hour infusion ***S. aureus:*** 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 ***S. aureus:*** 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		***S. aureus* 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 ***S. aureus:*** 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		***S. aureus:*** High dose only
Cefuroxime oral	0.25 g x 2 oral	0.5 g x 2 oral	0.25 g x 2 oral	

Dosages used to define breakpoints

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

Carbapenems	Standard dosage	High dosage	Uncomplicated UTI	Special situations
Doripenem	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 *Pseudomonas* spp. and *Acinetobacter* spp.) should be treated with 1 g x 3 iv over 4 hours.
Ertapenem	1 g x 1 iv over 30 minutes	None		
Imipenem	0.5 g x 4 iv over 30 minutes	1 g x 4 iv over 30 minutes		
Imipenem-relebactam	(0.5 g imipenem + 0.25 g relebactam) x 4 iv over 30 minutes	None		
Meropenem	1 g x 3 iv over 30 minutes	2 g x 3 iv over 3 hours		**Meningitis:** 2 g x 3 iv over 30 minutes (or 3 hours)
Meropenem-vaborbactam	(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
Aztreonam	1 g x 3 iv	2 g x 4 iv		**Severe *P. aeruginosa* infections:** 2 g x 4 with extended 3-hour infusion
Aztreonam-avibactam	(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
Ciprofloxacin	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		**Meningitis:** 0.4 g x 3 iv
Delafloxacin	0.45 g x 2 oral or 0.3 g x 2 iv	None		
Levofloxacin	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		
Moxifloxacin	0.4 g x 1 oral or 0.4 g x 1 iv	None		**Meningitis:** 0.4 g x 1 iv
Norfloxacin	None	None	0.4 g x 2 oral	
Ofloxacin	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
Amikacin	25-30 mg/kg x 1 iv	None		
Gentamicin	6-7 mg/kg x 1 iv	None		
Netilmicin	6-7 mg/kg x 1 iv	None		
Tobramycin	6-7 mg/kg x 1 iv	None		

Dosages used to define breakpoints

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		

Dosages used to define breakpoints

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

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 *S. aureus* bacteraemia)**	4 mg/kg x 1 iv	None	.	.
Daptomycin (cSSTI with concurrent *S. aureus* bacteraemia; right-sided infective endocarditis due to *S. aureus*)**	6 mg/kg x 1 iv	None		**Enterococcal bloodstream infection and endocarditis,** see https://www.eucast.org/eucastguidancedocuments.
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.