

Neonatal and Paediatric Guidance on Interpreting Antimicrobial Susceptibility Testing:

Reporting of antibiotic susceptibility from microbiology laboratories has changed in line with the European Committee on Antimicrobial Susceptibility Testing (EUCAST) recommendations¹.

These changes refer to targeted therapy where an organism has been identified and the microbiology laboratory have reported antibiotic sensitivities.

This does not affect empirical antibiotic therapy, and the current NHSL guidance should still be followed for those situations where a causative organism has not yet been identified: [Antimicrobial Guidelines \(scot.nhs.uk\)](https://www.scot.nhs.uk/antimicrobial-guidelines/)

Note that growth of an organism does not necessarily indicate presence of infection – please correlate with clinical findings, and consider whether antibiotic treatment is required when organisms are reported from samples from a non-sterile site.

Many reports will be unchanged, and you will continue to see reports of “S” and “R”.

Some antibiotics will now be reported as “I – increased dose required”. These are appropriate treatment options, if required, when used at the correct dose.

The new definitions are shown below where “S” is susceptible, “I” is increased exposure required, and “R” is resistant:

S	Susceptible at standard dose
I	Susceptible, increased exposure (increased dose)
R	Resistant even with increased exposure/dose

Pseudomonas aeruginosa, for many antibiotics will never be reported ‘S – susceptible’, only ‘I – Increased dose required’, but it is still possible to treat providing the dosing and mode of administration is considered. Note *Pseudomonas aeruginosa* can often be seen as a coloniser, so may not be a pathogen requiring antibiotic treatment if cultured from a non-sterile site.

The other most common organisms where you will see “I” reported, or a comment indicating high dose should be used are:

Organism	Agents affected
<i>Haemophilus influenzae</i>	Oral (not IV) Amoxicillin
	Oral (not IV) Co-amoxiclav

Refer to the <https://bnfc.nice.org.uk/> and www.medicines.org.uk for advice on dosing in patients with renal or hepatic impairment but take into account the higher dose required to treat these organisms effectively.

Note that there may be occasions where an Infection Specialist recommends an increased dose, even when an antibiotic is reported as “S – Susceptible at Standard Dose” (for example, infective endocarditis)

ANTIBIOTIC	INTRAVENOUS "I" – susceptible, increased exposure dose		
	AGE		
	Neonates <7days	Neonate 7-20 days	Neonate 21-28 days
Amikacin	< 32 weeks corrected gestational age = 15mg/kg 36 hourly ≥ 32 weeks corrected gestational age = 15mg/kg 24 hourly		
Amoxicillin	50mg/kg every 12 hours	50mg/kg every 8 hours	50mg/kg every 8 hours
Aztreonam	30mg/kg every 12 hours	30mg/kg every 6 hours	30mg/kg every 6 hours
Cefotaxime	50mg/kg every 12 hours	50mg/kg every 8 hours	50mg/kg every 6 hours
Ceftriaxone	Not recommended for use in neonates < 1-month post term corrected gestational age		
Ceftazidime	50mg/kg every 24 hours	50mg/kg every 12 hours	50mg/kg every 8 hours
Cefuroxime	50mg/kg every 12 hours	50mg/kg every 8 hours	50mg/kg every 6 hours
Ciprofloxacin	10mg/kg every 12 hours	10mg/kg every 12 hours	10mg/kg every 12 hours
Co-amoxiclav	30mg/kg every 12 hours	30mg/kg every 12 hours	30mg/kg every 12 hours
Co-trimoxazole	Not recommended in < 6 weeks and until at least 4 weeks post term		
Gentamicin	≤ 34 weeks corrected gestational age = 5mg/kg 48 hourly > 34 weeks corrected gestational age = 5mg/kg 24 hourly		
Meropenem	40mg/kg every 12 hours as extended 3 hour infusion ³	40mg/kg every 8 hours as extended 3 hour infusion ³	40mg/kg every 8 hours as extended 3 hour infusion ³
Piperacillin-tazobactam	90mg/kg every 8 hours as extended 3 hour infusion ⁴	90mg/kg every 8 hours as extended 3 hour infusion ⁴	90mg/kg every 8 hours as extended 3 hour infusion ⁴

ANTIBIOTIC	INTRAVENOUS "I" – susceptible, increased exposure dose	
	AGE	
	1 month – <12 years	12 -17years
Amikacin	>1 month corrected gestational age = 20mg/kg every 24 hours*	15mg/kg every 24 hours
Amoxicillin	50mg/kg (max 2g) every 4 hours	50mg/kg (max 2g) every 4 hours
Aztreonam	50mg/kg (max 2g) every 6 hours*	2g every 6 hours
Cefotaxime	50mg/kg (max 3g) every 6 hours	50mg/kg (max 3g) every 6 hours
Ceftriaxone	>1month corrected gestational age = 100mg/kg (max 4g) every 24 hours	100mg/kg (max 4g) every 24 hours
Ceftazidime	50mg/kg (max 2g) every 8 hours	50mg/kg (max 2g) every 8 hours
Cefuroxime	60mg/kg (max 1.5g) every 6 hours	60mg/kg (max 1.5g) every 6 hours
Ciprofloxacin	10mg/kg (max 400mg) every 8 hours	10mg/kg (max 400mg) every 8 hours
Co-amoxiclav	30mg/kg (max 1.2g) every 8 hours*	30mg/kg (max 1.2g) every 8 hours
Co-trimoxazole	> 6 weeks of age only = 27mg/kg every 12 hours increasing to 45mg/kg every 12 hours in complex infection or critical illness*	27mg/kg every 12 hours increasing to 45mg/kg every 12 hours in complex infection or critical illness*
Gentamicin	>1month corrected gestational age = 7mg/kg every 24 hours	7mg/kg every 24 hours
Meropenem	40mg/kg (max 2g) every 8 hours as extended 3 hour infusion³	40mg/kg (max 2g) every 8 hours as extended 3 hour infusion³

ANTIBIOTIC	INTRAVENOUS "1" – susceptible, increased exposure dose	
	AGE	
	1 month – <12 years	12 -17years
Piperacillin-tazobactam	90mg/kg (max 4.5g) every 6 hours as extended 3 hour infusion ⁴	90mg/kg (max 4.5g) every 6 hours as extended 3 hour infusion ⁴

ANTIBIOTIC	ORAL "I" – susceptible, increased exposure dose						
	AGE						
	Neonate	1 - 2 months	2 - 23 months	2 - 4 years	5 - <6 years	6 - <12 years	12 - 17 years
Amoxicillin	<p>< 7 days' old 30mg/kg (max 125mg) 12 hourly</p> <p>7-28 days 30mg/kg (max 125mg) 8 hourly</p>	30mg/kg every 8 hours	30mg/kg every 8 hours (max 500mg)	30mg/kg every 8 hours (max 500mg)	30mg/kg every 8 hours (max 1 gram)	30mg/kg every 8 hours (max 1 gram)	1 gram every 8 hours
Cefalexin		25 mg/kg every 6 hours (max per dose 1 g every 6 hours)	25 mg/kg every 6 hours (max per dose 1 g every 6 hours)	25 mg/kg every 6 hours (max per dose 1 g every 6 hours)	25 mg/kg every 6 hours (max per dose 1 g every 6 hours)	25 mg/kg every 6 hours (max per dose 1 g every 6 hours)	1–1.5 g every 6 hours
Ciprofloxacin	15mg/kg every 12 hours	20mg/kg every 12 hours	20mg/kg every 12 hours (max 750mg)	20mg/kg every 12 hours (max 750mg)	20mg/kg every 12 hours (max 750mg)	20mg/kg every 12 hours (max 750mg)	20mg/kg every 12 hours (max 750mg)
Co-amoxiclav	0.25ml/kg of 125/31 suspension every 8 hours	0.5ml/kg of 125/31 suspension every 8 hours	0.3ml/kg of 400/57 suspension every 12 hours	5ml of 400/57 suspension every 12 hours	(13-21kg) 5ml of 400/57 suspension every 12 hours	(22-40kg) 10ml of 400/57 suspension every 12 hours or one 500/125 tablet every 8 hours	(≥41kg) 10ml of 400/57 suspension every 8 hours or one 500/125 tablet PLUS one 250mg amoxicillin every 8 hours
Co-trimoxazole	Not recommended in less than 6 weeks of age		<p>UTI (from 6 weeks of age): 24mg/kg (max 960mg) every 12 hours.</p> <p>All other sites of infection (from 6 weeks of age): 24mg/kg (max 1440mg) every 12 hours*</p>				

*Dose as per GGC guideline

References:

1. The European Committee on Antimicrobial Susceptibility Testing. Breakpoint tables for interpretations of MICs and zone diameters. Version 13.1, 2023. [EUCAST Breakpoint Tables](#)
2. Scottish Antimicrobial Prescribing Group. Changes to antibiotic susceptibility reporting from microbiology laboratories. January 2022. https://www.sapg.scot/media/6598/20220120-changes-to-antibiotic-susceptibility-reporting-from-microbiology-laboratories_fk-sg.pdf
3. Medicines complete – Critical illness - Meropenem monograph. November 2023. <https://www.medicinescomplete.com/#/content/critical/89?hspl=meropenem>
4. Medicines complete – Critical illness – Piperacillin and tazobactam (Tazocin) monograph. September 2023. <https://www.medicinescomplete.com/#/content/critical/69>