



CLINICAL GUIDELINE

Neurosurgery: Antibiotic Prophylaxis in Adults

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The Intranet version of this document is the only version that is maintained. Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.



NHS Greater Glasgow and Clyde recommendations for antibiotic prophylaxis in Neurosurgery in Adults

Single dose, IV prophylaxis ≤ 60 minutes prior to skin incision / intervention.

Gentamicin♦

- See appendix 1 for prophylactic dosing
- Doses of up to 400mg gentamicin can be given by slow IV injection over 3 – 5 minutes.
- If subsequent treatment using gentamicin is required, see Principles of Surgical Prophylaxis guidelines [Principles of Surgical Prophylaxis \(1039\) | Right Decisions](#)
- Teicoplanin and gentamicin are incompatible when mixed directly and must not be mixed before injection.

If >1.5L blood loss replace fluid and repeat antibiotic dose as per: Principles of Surgical Prophylaxis guidelines [Principles of Surgical Prophylaxis \(1039\) | Right Decisions](#))

If surgery >4hours or >8 hours see Principles of Surgical Prophylaxis guidelines [Principles of Surgical Prophylaxis \(1039\) | Right Decisions](#)

If MRSA: decolonise prior to procedure as per NHS GGC infection control guidelines, see below or discuss with microbiology regarding antibiotic choice.

CPE carriers: If identified as Carbapenemase producing Enterobacteriaceae carriers discuss with microbiology.

Teicoplanin* if ≤ 40Kg, then teicoplanin 400mg. Give teicoplanin by slow IV injection over 3-5 minutes. Teicoplanin and gentamicin are incompatible when mixed directly, therefore always flush between administrations.

Weight based dosing

Consider increasing the dose of the following antibiotics as below:

	Weight > 100 Kg
Co-amoxiclav	Add 1 g IV amoxicillin to 1.2 g Co-amoxiclav

Procedure	Antibiotic (Single dose IV unless stated otherwise)
Craniotomy	Cefuroxime IV 1.5 g Or <i>If severe penicillin/ beta-lactam allergy or MRSA suspected/known</i> Teicoplanin* IV 800mg AND Gentamicin • NB Teicoplanin and gentamicin are incompatible when mixed directly, therefore always flush between administrations.
Clean contaminated (Procedures that breach air sinuses, mastoid air cells or nasal or oral cavity – guidelines as per ENT antibiotic prophylaxis)	Co-amoxiclav IV 1.2 g Or <i>If severe penicillin/ beta-lactam allergy or MRSA suspected/known</i> Teicoplanin* IV 800mg AND Metronidazole IV 500 mg
CSF shunt	Flucloxacillin IV 2 g Or <i>If severe penicillin/ beta-lactam allergy or MRSA suspected/known</i> Teicoplanin* IV 800mg
Spinal surgery	Flucloxacillin IV 2 g Or Cefuroxime IV 1.5 g Or <i>If severe penicillin/ beta-lactam allergy/ MRSA suspected/proven</i> Teicoplanin* IV 800mg
Deep Brain Stimulation (DBS) Electrode implantation After first CT brain, prior to Craniotomy	Gentamicin • IV AND Teicoplanin* IV 800mg NB Teicoplanin and gentamicin are incompatible when mixed directly, therefore always flush between administrations.
Change of Implanted Pulse Generator (IPG)/ battery replacement	Gentamicin • IV AND Teicoplanin* IV 800mg NB Teicoplanin and gentamicin are incompatible when mixed directly, therefore always flush between administrations.

Appendix 1 Gentamicin• Surgical Prophylaxis Dosing Guidelines in Adult Male and Female Patients

- Avoid gentamicin if CrCl < 20 ml/min: seek advice on alternative from microbiology.
- In renal transplant or dialysis patients avoid gentamicin and seek advice from microbiology or renal team.
- Use GGC CrCl calculator to assess renal function. Do **not** use eGFR in patients at extremes of body weight.
- Use the patient’s actual body weight and height to calculate the gentamicin dose, using table below. This prophylactic gentamicin dosing table is based on approximately 5 mg/kg actual body weight/ adjusted body weight.
- Doses of up to 600 mg gentamicin can be given undiluted by slow IV injection over 3 – 5 minutes, or diluted to 20 ml with 0.9 % saline and given slowly over 3-5 minutes, administer via large peripheral vein or central line.
- Monitor for signs of extravasation or infiltration e.g. swelling, redness, coolness or blanching at the cannula insertion site.

HEIGHT \ WEIGHT	30 – 39.9 kg	40 – 49.9 kg	50 – 59.9 kg	60 – 69.9 kg	70 – 79.9 kg	80 – 89.9 kg	90 – 99.9 kg	100 – 109.9 kg	110 - 119.9 kg	120 - 129.9 kg	130 - 139.9 kg	140 - 149.9 kg	150 - 159.9 kg	160 - 169.9 kg	170 - 179.9 kg	180 - 189.9 kg	≥190 kg
142 - 146 cm 4'8" - 4'9"	180 mg	200 mg	220 mg	240 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg							
147 - 154 cm 4'10" - 5'0"	180 mg	200 mg	240 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg						
155 - 164 cm 5'1" - 5'4"	180 mg	200 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg	420 mg	440 mg	480 mg				
165 - 174 cm 5'5" - 5'8"		200 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg	420 mg	460 mg	480 mg	480 mg	520 mg	540 mg		
175 - 184 cm 5'9" - 6'0"		200 mg	280 mg	320 mg	360 mg	380 mg	400 mg	420 mg	440 mg	460 mg	480 mg	500 mg	520 mg	540 mg	560 mg	580 mg	600 mg
185 - 194 cm 6'1" - 6'4"			280 mg	320 mg	360 mg	400 mg	420 mg	440 mg	460 mg	480 mg	500 mg	540 mg	560 mg	580 mg	600 mg	600 mg	600 mg
≥195 cm ≥6'5"				320 mg	360 mg	420 mg	460 mg	480 mg	500 mg	520 mg	540 mg	560 mg	580 mg	600 mg	600 mg	600 mg	600 mg