

ADULT ANTIBIOTIC PROPHYLAXIS IN INTERVENTIONAL RADIOLOGY

General Principles of Prescribing for Surgical Prophylaxis

- **Indication for prophylaxis** has been based on the [Scottish Antimicrobial Prescribing Group \(SAPG\) Good Practice Recommendations for Surgical Prophylaxis](#) (2022) and guided by national and local practice.
- **Choice of agent:**
 - Adhere to recommended agent in table below where possible.
 - Recommendations restrict the use of cephalosporins, clindamycin, quinolones and co-amoxiclav and use narrow spectrum agents where possible.
 - Take recent culture results/antibiotic therapy and additional patient risk factors into account eg. morbid obesity, multiple previous surgeries, prosthetic material, diabetes.
Discuss with Infection Specialist in a timely manner prior to surgery if multidrug resistance eg. Carbapenemase producing enterobacteriaceae (CPE) isolated.
 - Check allergy status of patient including nature of allergy prior to prescribing.
 - If fluoroquinolones are prescribed, see [MHRA guidance on Clinical Guidelines webpage](#).
- **Recording of antibiotic** as 'STAT' on HEPMA and on Anaesthetic Record Sheet.
- **Timing of antibiotic:**
 - Optimum timing of IV antibiotics is ≤ 60 minutes prior to skin incision, usually at induction of anaesthesia.
 - Antimicrobial cover may be sub-optimal if given > 1 hour prior to skin incision or post skin incision.
- **Frequency of administration** should be single dose only unless:
 - Operation Prolonged (see re-dosing guidance table).
 - > 1.5 litre intra-operative blood loss –Re-dose following fluid replacement (see re-dosing guidance table).
 - Specifically stated in following guideline.
Document in the medical notes the indication for antibiotic administration beyond 1st dose.
- **Decolonisation therapy** should be used prior to procedure if patient MRSA positive and antimicrobial prophylaxis should include cover for MRSA.
 - See NHSL Policy for management of patients colonised or infected with MRSA.

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Recommended Agents in Interventional Radiology Procedures

Procedure	1 st Choice	Alternative	Comments
Nephrostomy insertion, Ureteric stent insertion	Gentamicin 5mg/kg IV (see dosing table*) <i>Renal impairment CrCL < 20ml/min:</i> Gentamicin IV at reduced dose (give HALF of dose recommended in dosing table*; 2.5mg/kg)	Ciprofloxacin 750mg orally 60 minutes before procedure	Single dose advised. If inpatient and already on appropriate antibiotic therapy, then continue current antibiotics and do not give further additional antibiotic as prophylaxis.
Percutaneous biliary drain insertions	If not on antibiotic therapy, give Gentamicin 5mg/kg IV (see dosing table*) <i>Renal impairment CrCL < 20ml/min:</i> Gentamicin IV at reduced dose (give HALF of dose recommended in dosing table*; 2.5mg/kg)		If inpatient and already on appropriate antibiotic therapy, continue current antibiotics and do not give further additional antibiotic as prophylaxis.
Radiologically inserted gastrostomy (RIG)	Co-amoxiclav 1.2g IV	<i>In true/severe penicillin allergy:</i> Co-trimoxazole 960mg IV (480mg if CrCL <30mL/min)	
Solid organ embolisation (spleen, liver, kidney), Uterine artery embolisation	Gentamicin 5mg/kg IV (see dosing table*) PLUS Flucloxacillin 2g IV <i>Renal impairment CrCL <20ml/min:</i> Gentamicin IV at reduced dose (give HALF of dose recommended in dosing table*; 2.5mg/kg) PLUS Flucloxacillin 2g IV	<i>In true/severe penicillin allergy or known MRSA:</i> Gentamicin 5mg/kg IV (see dosing table*) PLUS Teicoplanin IV 400mg if <65kg or 800mg if ≥65kg <i>Renal impairment CrCL <20ml/min:</i> Gentamicin IV at reduced dose (give HALF of dose recommended in dosing table*; 2.5mg/kg) PLUS Teicoplanin IV 400mg if <65kg or 800mg if ≥65kg	Single doses advised
Vascular stent graft, EVAR	Flucloxacillin 2g IV +/- Gentamicin 5mg/kg IV (see dosing table*) <i>Renal impairment CrCL <20ml/min:</i> Flucloxacillin 2g IV +/- Gentamicin IV at reduced dose (give HALF of dose recommended in dosing table*; 2.5mg/kg)	<i>In true/severe penicillin allergy or known MRSA:</i> Teicoplanin IV 400mg if <65kg or 800mg if ≥65kg +/- Gentamicin 5mg/kg IV (see dosing table*) <i>In true/severe penicillin allergy or known MRSA & Renal impairment CrCL <20ml/min:</i> Teicoplanin IV 400mg if <65kg or 800mg if ≥65kg +/- Gentamicin IV at reduced dose (give HALF of dose recommended in dosing table*; 2.5mg/kg)	

If treatment course required after **teicoplanin** prophylaxis convert to vancomycin (dose according to NHSL treatment protocol with 1st dose 12 hours after teicoplanin). Clinicians should be aware of potential allergic reactions to teicoplanin.

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IV Antibiotic Administration

Antibiotics should be given as a bolus injection where possible.

Antibiotic	Dose	Administration
Gentamicin	See dosing table*	IV Can be given undiluted, or diluted to a convenient volume with sodium chloride 0.9% or glucose 5% to aid slow administration. Give by slow IV injection over at least 3 minutes via large peripheral vein or central line.
Co-amoxiclav	1.2g	IV Re-constitute 1.2g vial with 20ml of water for injection and give by slow IV injection over 3-4 minutes.
Co-trimoxazole	960mg (480mg if CrCL <30mL/min)	IV Dilute each 480mg/5ml vial in 125ml sodium chloride 0.9% and give by IV infusion over 60 minutes.
Flucloxacillin	2g	IV Re-constitute 2g with 40mL of water for injection and give by slow IV injection over at least 8 minutes.
Teicoplanin	400mg if patient weight <65kg or 800mg ≥65kg	IV Re-constitute slowly with 3.14ml ampoule of water for injection provided and roll gently until dissolved. If foamy, stand for 15 minutes until foam subsides then give EACH vial by slow IV injection over 3-5 minutes.

*Dosing Table for Gentamicin Prophylaxis

Review medication charts and HEPMA prior to prescribing and administration of gentamicin.

Avoid if patient has received gentamicin within previous 24 hours.

In normal renal function:

Use the patient's **actual body weight and height** to calculate the gentamicin dose, using the table below.

The gentamicin dosing table is based on approximately 5mg/kg actual body weight/ adjusted body weight (maximum dose 400mg).

In renal impairment; Creatinine Clearance (CrCL) <20mL/min:

Give HALF of dose recommended in table below, rounded to nearest 20mg (approximately 2.5mg/kg, maximum dose 180mg).

Height	Weight	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-99.9	100-	110-	120-	> 130 kg
		kg	kg	kg	kg	kg	kg	kg	109.9 kg	119.9 kg	129.9 kg	
4'8-4'10	142-149 cm	180 mg	220 mg	240 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg
4'11-5'3	150-162 cm	180 mg	220 mg	260 mg	280 mg	300 mg	320 mg	340 mg	360 mg	380 mg	400 mg	400 mg
5'4-5'10	163-179 cm	180 mg	220 mg	280 mg	320 mg	340 mg	360 mg	380 mg	380 mg	400 mg	400 mg	400 mg
5'11-6'2	180-189 cm		220 mg	280 mg	320 mg	360 mg	380 mg	400 mg	400 mg	400 mg	400 mg	400 mg
6'3-6'8	190-203 cm			280 mg	320 mg	380 mg	400 mg	400 mg	400 mg	400 mg	400 mg	400 mg

If subsequent treatment using gentamicin is required post-operatively, measure gentamicin concentration 6-14 hours post theatre dose. Use the gentamicin treatment guidance to decide on course of action before administering a further dose. If sampling window missed, measure gentamicin concentration 20-24 hours post-theatre dose and ensure level <1mg/L before administering a further dose. For gentamicin treatment dosing, refer to NHS Lanarkshire's gentamicin treatment guidance and online calculators. Discuss with pharmacy if further advice is required.

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References

- British National Formulary (BNF). Accessed at: <https://bnf.nice.org.uk/drugs/>
- Adult and Pediatric Antibiotic Prophylaxis during Vascular and IR Procedures: A Society of Interventional Radiology Practice Parameter Update Endorsed by the Cardiovascular and Interventional Radiological Society of Europe (CIRSE) and the Canadian Association for Interventional Radiology, Journal of Vascular and Interventional Radiology, Volume 29, Issue 11, 2018, Pages 1483-1501.e2. Accessed at: <https://doi.org/10.1016/j.jvir.2018.06.007>
- Electronic Medicines Compendium (EMC). Accessed at: <https://www.medicines.org.uk/emc/>
- NHS Injectable Medicines Guide (MEDUSA). Accessed at: <https://www.medusaimg.nhs.uk/>
- Scottish Antimicrobial Prescribing Group (SAPG) Good Practice Recommendations for Surgical Prophylaxis (October 2022). Accessed at: <https://www.sapg.scot/guidance-qi-tools/good-practice-recommendations/surgical-prophylaxis/>