ANTIBIOTIC PROPHYLAXIS IN RADIOLOGICAL PROCEDURES

The aim of antibiotic prophylaxis is to reduce rates of surgical site and healthcare-associated infections and so reduce surgical morbidity and mortality. There is however growing evidence that aspects of prescribing practice may themselves be associated with health-care associated infections, notably *Clostridioides difficile* infection. The Scottish Antimicrobial Prescribing Group (SAPG), along with the Scottish Government, is monitoring surgical prophylaxis in order to reduce the rates of *C.difficile*. Specific clinical areas may be targeted to submit audit data nationally as part of the national work around CDI. SIGN guideline 104 published in July 2008, and updated in April 2014, has outlined which surgical procedures require prophylactic antibiotics based on a review of the available evidence. Principles of prophylaxis have also been outlined, including timing and duration of antibiotic administration. In conjunction with the surgical specialties within NHS Tayside, the Antimicrobial Management Group has undertaken to review local prophylaxis policy and to formulate a uniform policy.

Principles of Antibiotic Prophylaxis Policy

1. **Indication for prophylaxis** should comply with SIGN 104 guideline i.e. when 'highly recommended', 'recommended' or 'considered' within guideline.
2. **Timing of antibiotic(s)**:
    - Optimum timing is intravenous dose given or infusion completed ≤ 60 minutes prior to skin incision
    - Sub-optimal if >1 hour prior to skin incision or post-skin incision
    - The exceptions are co-trimoxazole (Septrin) and Ciprofloxacin which are both one hour infusions. The window for this is within 2 hours of knife to skin (or the application of a tourniquet where used)
3. **Recording of antibiotic** prescription in 'once only' section of medicine chart to avoid multiple dosing
4. **Frequency of administration** should be single dose only unless:
    - > 1.5 litres intra-procedural blood loss - re-dose following fluid replacement (see administration guidance table)
    - procedure prolonged (see administration guidance table)
    - specifically stated in following guidelines
5. **Documentation in medical notes** of reason for antibiotic administration beyond single dose or state intention for antibiotic treatment course
6. **Choice of agent** should:
    - Avoid cephalosporins, clindamycin, quinolones and co-amoxiclav wherever possible
    - Use narrow spectrum agents when possible
    - Provision of alternatives for beta-lactam allergy
7. **De-colonisation therapy** prior to surgery when MRSA positive when recommended in Infection Prevention and Control Policies
8. **Complex individual prophylaxis** issues should be discussed with Microbiology or Infectious Diseases pre-operatively and recorded in medical notes
9. **Compliance with local policy** is required and monitored by NHS Tayside. Any deviation from policy must be recorded in the appropriate medical records.

IV Antibiotic Administration Guidance:

Antibiotic	Dose	Administration
Gentamicin	4mg/kg Use ideal body weight (IBW) if >20% overweight IBW = (males: 50kg, females: 45.5kg) +0.9kg for every cm >150cm	Bolus over at least 5 mins or infusion
Co-trimoxazole	960mg if eGFR >30ml/min 480mg if eGFR 15-30ml/min	Infusion over 60 minutes Dilute each 480mg/5ml vial in 125ml NaCl 0.9%
Metronidazole	400mg	Orally as stat dose
Ciprofloxacin	400mg IV	Infusion over 60 minutes
Aztreonam	2g	Bolus over3-5 minutes
Flucloxacillin	1g	Bolus over 3-5 minutes

Radiological Procedure	SIGN 104 Recommendation	Antibiotic(s)	Comments
Abscess Drainage	'Not Recommended'		Patient may already be on antimicrobial treatment. Confirm if antibiotics to continue post-procedure.
Insertion of Percutaneous Nephrostomy/Antegrade Ureteric Stent	Local decision to commence antibiotics if clinically indicated or if patient showing signs of sepsis	If antibiotics are required: Gentamicin* IV	See Urology Prophylaxis guideline
Nephrostomy Change	Local decision to commence antibiotics if clinically indicated or if patient showing signs of sepsis	If antibiotics are required: Gentamicin* IV	See Urology Prophylaxis guideline
Gastrointestinal Procedures Biliary Drainage Percutaneous Gastrostomy	'Recommended' 'Not Recommended'	eGFR >30ml/min Gentamicin* IV + Metronidazole 400mg orally eGFR<30ml/min Aztreonam IV + Metronidazole 400mg orally	Metronidazole oral doses are given as a once off stat dose.
TIPSS	Local decision to commence antibiotics if clinically indicated or if patient showing signs of sepsis	If antibiotics are required: Gentamicin* IV	
CV Tunnelled Lines **CV Tunnelled Line Exchange**	'Not recommended' 'Recommended'	guided by confirmed/suspected line infection	Patient may already be on antimicrobial treatment prior to intervention. Confirm if antibiotics to continue
Arterial Stent graft procedures	'Recommended'	Flucloxacillin IV + Gentamicin* IV	If Pen allergy - Vancomycin IV + *Gentamicin IV If MRSA +ve – Vancomycin IV + Gentamicin IV

***OPTIONS FOR PATIENTS WITH REDUCED RENAL FUNCTION AND/OR PENICILLIN ALLERGY:**

For all procedures where gentamicin is indicated alternative options are given below:

- eGFR <30ml/min and no penicillin allergy – **Aztreonam**
- eGFR <30ml/min and penicillin allergy WITHOUT history of anaphylaxis or angiodema – **Aztreonam**
- eGFR 15-30ml/min and penicillin allergy WITH history of anaphylaxis or angiodema – **Co-trimoxazole**
- eGFR <15ml/min and penicillin allergy WITH history of anaphylaxis or angiodema **– Ciprofloxacin**

Approved by AMG: July 2018
Updated by R Bhat, H Kennedy
Review: July 2025

References:
1. SIGN 104 Antibiotic Prophylaxis in Surgery. July 2008
2. Novel approach to antibiotic prophylaxis in percutaneous endoscopic gastrostomy (PEG): randomised controlled trial. J.Blomberg. BMJ 2010; 340:c3115