

# GUIDELINE FOR ANTIMICROBIAL USE IN THE ORTHOPAEDIC AND TRAUMA DEPARTMENT

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*This document is part of antibiotic formulary guidance  
Formulary guidance holds the same status as Trust policy*

**AMENDMENT FORM**

Version	Date	Brief Summary of Changes	Author
5	July 2022	Complete update of guidelines	Dr B Subramanian Dr K Agwuh Mr Thiagarajah
4	November 2015	Complete review of prophylaxis table and therapeutic section in table format	Dr Ken Agwuh Mr Roger Helm, & Mr T Kumar
3	April 2014	Complete update of guidelines	Dr Ken Agwuh Mr Roger Helm, & Mr T Kumar
2	March 2012	Antibiotic prophylaxis added for fractured neck of femur	Dr Ken Agwuh, Mr Z Abiddin, & Mr T Kumar
1	May 2011	New policy	Dr Ken Agwuh & Mr Z Abiddin

**BACKGROUND:**

The aim of this guideline is to provide basic information on prophylactic and therapeutic antimicrobial use in orthopaedic and trauma patients. Prophylactic use of antimicrobials aims at inhibition of growth of contaminating bacteria, mainly skin flora organisms, and their adherence to prosthetic devices or implants, thereby reducing the risk of infection, also to reduce the incidence of surgical site infection. Therapeutic antimicrobial treatment on the other hand, is used to clear infection by an organism.

The goals of prophylactic or therapeutic administration of antibiotics to surgical patients should also include antibiotic use in a manner that is supported by evidence of effectiveness, minimise the effect of antibiotics on the patient's normal bacterial flora, minimise adverse effects and cause minimal change to the patient's host defences.



## ORTHOPAEDIC SURGICAL PROPHYLAXIS:

SURGICAL PROCEDURE	ROUTINE ANTIBIOTIC	PENICILLIN ALLERGY	RECENT +VE MRSA SCREEN	SPECIAL INSTRUCTION
<b>Primary Arthroplasty</b>	Teicoplanin IV 600mg single dose + Gentamicin IV 160mg single dose at induction  Discuss with Microbiologist if allergy to either of these agents. (If prolonged surgery > 12 hours, give an additional dose of Teicoplanin)		Teicoplanin IV 600mg single dose + ♦Gentamicin 160 mg single dose  Discuss with Microbiologist if allergy to either of these agents.	Prophylactic antibiotic should be given within 30 minutes before the procedure <b>or</b> > 10 minutes before application of tourniquet.  *In patients with suspected Periprosthetic Joint Infection (PJI) - antibiotic prophylaxis should be withheld until after cultures from the joint have been obtained.
<b>Revision Arthroplasty†</b>				Prophylactic antibiotic should be given up to 30 minutes before the procedure.
<b>Open spinal surgery +/- instrumentation</b>				Prophylactic antibiotic should be given up to 30 minutes before the procedure or 10 minutes before application of tourniquet.
<b>Other orthopaedic implant surgery (any route)</b>	Flucloxacillin IV 2g single dose only + ♦Gentamicin 160mg single dose	Teicoplanin IV 600mg + ♦Gentamicin 160mg single dose		Start prophylaxis within 3 hours of injury and continue until soft tissue closure or for a maximum of 72 hours, whichever is sooner
<b>Open surgery for closed fracture</b>	Co-amoxiclav IV 1.2g 8 hourly	Cefuroxime IV 1.5g 8 hourly + oral Metronidazole 400mg 8 hourly		Prophylactic antibiotic should be given up to 30 minutes before the procedure or 10 minutes before application of tourniquet.
<b>Open or compound fractures</b>				
<b>All Hip Fractures</b>	Teicoplanin IV 600mg + ♦Gentamicin 160mg single dose at induction. Consider Copal G+C cement in high risk patients (or alternative following discussion with microbiologist)			

### † SPECIAL NOTE ON REVISION ARTHROPLASTY

- **At surgeons discretion** if operative findings suggestive of infection or if initial Gram stain is positive, antibiotic can be continued until direct culture results on deep samples reported as negative.
- **Antibiotic-loaded cement is recommended in addition to intravenous antibiotic for cemented joint replacements (SIGN guidelines, April 2014).**

### ♦ GENTAMICIN DOSING & ADMINISTRATION

- Dosing advice is based on individuals with normal body weight and renal function
- **If eGFR < 20ml/min, then do NOT use gentamicin** (treat with Teicoplanin alone).
- If patient weighs < 45kg, treat with Gentamicin 80mg single dose.

# ADULT THERAPEUTIC ANTIMICROBIAL USE:

INFECTION	ORGANISM	ANTIMICROBIALS	PENICILLIN ALLERGY	DURATION	COMMENTS	
<u>Bursitis</u>	<i>Staphylococcus aureus</i>	Flucloxacillin IV 1-2g qds  <u>Oral switch:</u> Flucloxacillin 500mg -1g qds	Clindamycin IV 600mg -1.2g qds  <u>Oral switch:</u> Clindamycin 300mg-450mg qds	2-3 week course	<ul style="list-style-type: none"><li>80% caused by S. aureus and other Gram positive organisms.</li><li>Aspirates should be sent for cultures (preferably before first dose of antibiotic) as Gram stain positive in about 2/3<sup>rd</sup> of cases.</li><li>Review culture results/sensitivities when available and switch antibiotic if appropriate.</li><li>Complete drainage is essential.</li></ul>	
	Known MRSA	Teicoplanin IV - Follow Trust guideline for dosing				
<u>Septic arthritis</u> Native joints in non-high risk patients	<i>Staphylococcus aureus</i> and Beta haemolytic Streptococci	Flucloxacillin IV 1-2g qds  <u>Oral switch:</u> Flucloxacillin 500mg -1g qds	Cefuroxime IV 750mg-1.5g tds <b>Anaphylaxis to Penicillin:</b> Clindamycin IV 600mg -1.2g qds <u>Oral switch:</u> Clindamycin 300mg-450mg qds	4 weeks	<ul style="list-style-type: none"><li>Treat for 4 weeks</li><li>Most commonly caused by Staphylococci and Streptococci organisms.</li><li>Send blood cultures and joint aspirate for urgent Gram stain/culture &amp; sensitivities before initiation of antibiotic.</li><li>Review culture results/sensitivities when available and switch antibiotic if appropriate.</li></ul>	
	Known/high risk MRSA	MRSA	Teicoplanin IV – Follow Trust guideline for dosing			
	Native joint due to penetrating injury	Usually polymicrobial	Co-amoxiclav IV 1.2g tds			Discuss with microbiologist
<u>Osteomyelitis</u> Acute	<i>Staphylococcus aureus</i> Others (anaerobes)	Flucloxacillin IV 1-2g qds  <u>Oral switch:</u> Flucloxacillin 500mg -1g qds	Clindamycin IV 600mg -1.2g qds  <u>Oral switch:</u> Clindamycin 300mg-450mg qds	4 – 6 weeks	<ul style="list-style-type: none"><li><b>Addition of a 2<sup>nd</sup> agent may be advised by microbiologist, depending on cultures/sensitivities.</b></li><li>Can also be contiguous soft tissue infection (usually poly-microbial) or haematogenous infection (usually mono-bacterial)</li><li>Blood cultures, orthopaedic tissue/pus samples +/- deep wound swabs should be taken before initiation of antibiotic.</li><li><b>For High risk patients, Gram Negative organisms may be associated with osteomyelitis. Please seek microbiologist advice.</b></li></ul>	

Chronic	As above	Please discuss with microbiologist. Duration of treatment longer than in acute osteomyelitis.			Surgical debridement is the mainstay of management
	In diabetic patients Refer to Trust guideline for skin and soft tissue infection				
Post-operative wound infection	Staphylococcus aureus Others like beta haemolytic Streptococcus	Flucloxacillin IV 1-2g qds  <u>Oral switch:</u> Flucloxacillin 500mg -1g qds	Clarithromycin IV/PO 500mg bd	For 5-7 days review	<ul style="list-style-type: none"><li>Send swab from wound site for cultures</li></ul>
Removal of urinary catheter post joint replacement	Organisms likely to colonise urinary catheter	No antibiotic indicated.			There is no benefit in giving antibiotic for removal of urinary catheter post revision surgery (IDSA 2010)
Discitis	<ul style="list-style-type: none"><li>If confirmed pathogen associated with discitis, then treat with appropriate antibiotic based on sensitivities &amp; in accordance with microbiology guidance</li><li>If MRI shows discitis and the pathogen is not known, hold off antibiotics provided the patient is stable and refer to Spinal MDT</li></ul>			Up to 12 weeks	Principles of investigation: <ul style="list-style-type: none"><li>Send blood cultures (minimum 2 sets) prior to antibiotics</li><li>Consider CT-guided disc biopsy if feasible</li><li>Prolonged antibiotics often required – refer to Spinal MDT for follow up</li></ul>
Cellulitis	Refer to Trust guideline for skin and soft tissue infection				
Animal Bites					
Post-operative chest infection	Refer to Trust guidelines for treatment of lower respiratory tract infection				

#### PAEDIATRIC ANTIBIOTIC PRESCRIBING:

**NOTE:** Information on paediatric bone/joint infections can be found in the paediatric antibiotic policy.



## **References:**

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NICE: Surgical site infection: Prevention and treatment of surgical site infection. NICE Guidelines [NG125], published April 2019, updated Aug 2020

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SIGN: Antibiotic Prophylaxis in surgery, Scottish Intercollegiate Guideline Network Publication Number 104, Edinburgh, April 2014.