

Waterford: Antimicrobial Guidelines - Antimicrobial Guideline: Dosage and Administration by Type of Surgical Procedures

Dosage and Administration by Type of Surgical Procedures

Drug :	Adult prophylaxis dose* (IV):	2 nd intra-operative doses for procedures lasting > 4 hours	2 nd intra-operative doses if >1.5L major blood loss (after fluid replacement)
Amoxicillin	1g	Repeat original dose	Repeat original dose
Cefuroxime	1.5g	Repeat original dose	Repeat original dose
Clindamycin	900mg	Repeat original dose	Repeat original dose
Co-amoxiclav	1.2g	Repeat original dose	Repeat original dose
Gentamicin	3-5mg/kg (Maximum dose 480mg - see gentamicin dosing guideline for adjustments for renal impairment and obesity where necessary)	Not required	Give half original dose
Metronidazole	500mg	Re-dose after 8 hours of prolonged surgery.	Repeat original dose
Vancomycin	15mg/kg (Maximum dose 2g - see vancomycin dosing guideline for adjustments for renal impairment and obesity where necessary) Administer at a maximum rate of 10mg/min	No	Give half original dose if 1,500 mL or more blood loss within first hour of operation

*Please refer to local guidelines on Intravenous (IV) Medication Administration Information for Adults. Dose adjustment may be required in renal/hepatic impairment and according to weight.

Adapted from SAPG Good practice recommendations for redosing antibiotics for surgical prophylaxis in adults.⁷

Breast

Breast

BREAST SURGERY					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ^{2,8}
Excision of benign lump without axillary procedure	Not recommended				
Breast cancer surgery	Should be considered	Co-amoxiclav	Cefuroxime	Clindamycin	≤24 hours
Breast reshaping procedures	Should be considered				
Breast surgery with implant (reconstructive or aesthetic)	Recommended				

• Consider addition of Vancomycin if **MRSA** high risk/known colonisation

Ear, Nose and Throat

Ear, Nose and Throat

EAR, NOSE & THROAT SURGERY					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Ear Surgery	Not recommended				
Routine nose, sinus and endoscopic sinus surgery	Not recommended				
Tonsillectomy	Not recommended				
Adenoidectomy					
Stromet insertion	A single dose of topical antibiotic is recommended				
Complex septo-rhinoplasty including graft	recommended	Co-amoxiclav	Cefuroxime	Clindamycin	≤24 hours

² Consider addition of Vancomycin if **MRSA** high risk/known colonisation

Gastrointestinal Tract

GASTROINTESTINAL TRACT (GIT)					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Diagnostic endoscopic procedures	Not recommended				
PEG Insertion Endoscopic retrograde cholangio-pancreatography (ERCP)	Should be considered in high risk ** patients	Co-amoxiclav	Cefuroxime + Metronidazole	Gentamicin + Metronidazole	Single dose
Hernia repair	Not recommended unless mesh insertion.	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin	Single dose
Splenectomy*	Not recommended Should be considered in high risk (immunosuppressed) patients	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin + Gentamicin	Single dose
Gall bladder surgery (laparoscopic)	Not recommended Should be considered in high risk*** patients	Co-amoxiclav	Cefuroxime + Metronidazole	Gentamicin + Metronidazole	Single dose
Gall bladder surgery (open)	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Gentamicin + Metronidazole	Single dose
Upper GIT: Oesophageal, gastro-duodenal, gastric bypass, small bowel surgery	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Gentamicin + Metronidazole	Single dose
Lower GIT [^] : Appendectomy, Colorectal surgery	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Gentamicin + Metronidazole	Single dose
<ul style="list-style-type: none"> • Consider addition of Vancomycin if MRSA high risk/known colonisation • *Please refer to Appendix 2 for post-splenectomy prophylaxis and vaccination recommendations. • **High risk: pancreatic pseudocyst, immunosuppression, incomplete biliary drainage (e.g. primary sclerosing cholangitis or cholangiocarcinoma) • ***High risk: intraoperative cholangiogram, bile spillage, conversion to laparotomy, acute cholecystitis/pancreatitis, jaundice, pregnancy, immunosuppression, insertion of prosthetic devices, extremes of age, diabetes, obesity, poor nutritional state, known co-existing bacterial colonization / infections at other sites. • [^]If appendix is perforated or associated with peritonitis, treatment course may be required. 					

Head and Neck

Head and Neck

HEAD AND NECK SURGERY					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Clean, benign; with no mucosal breach (e.g. Parotid or thyroid surgery)	Not recommended				
Clean, malignant; neck dissection	Should be considered	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin	48-72 hours
Clean-contaminated/Contaminated	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin	48-72 hours
<ul style="list-style-type: none"> • Consider addition of Vancomycin if MRSA high risk/known colonisation • ² National position statement recommends a maximum duration of prophylaxis of 48 hours for Head & Neck surgeries. 					

Non-Operative Interventions

Non-Operative Interventions

NON-OPERATIVE INTERVENTIONS				
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins
Intravascular catheter insertion (Non-tunnelled & Tunnelled CVC)	Not recommended			
Insertion of Pacemaker or ICD	Recommended	Cefuroxime	Cefuroxime	Vancomycin

Obstetric and Gynaecological

Obstetric and Gynaecological

OBSTETRIC AND GYNAECOLOGICAL SURGERY					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Abdominal/ Vaginal hysterectomy	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Gentamicin + Metronidazole	Single dose
Caesarean section*	Highly recommended	Cefuroxime	Cefuroxime	Clindamycin	Single dose
Perineal tear**	Recommended for 3 rd /4 th degree perineal tears involving the anal sphincter/rectal mucosa	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin + Gentamicin	Single dose
Manual removal of the placenta	Should be considered Recommended in proven chlamydia or gonorrhoea infection	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin + Gentamicin	Single dose
Assisted delivery	Recommended (RCOG Green-top Guideline No. 26 2020)	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin + Gentamicin	Single dose
Evacuation of incomplete miscarriage	Not recommended				
Intrauterine contraceptive device (IUCD) insertion					

* Consider addition of Vancomycin if **MRSA** high risk/known colonisation
 * *NICE 2021: Offer women prophylactic antibiotics before skin incision for caesarean birth. Do not use co-amoxiclav when giving prophylactic antibiotics before skin incision for caesarean birth ¹¹

Orthopaedics

Orthopaedics

Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Orthopaedic surgery without implant	Not recommended				
Knee replacement	Recommended	Cefuroxime	Cefuroxime	Vancomycin	24 hours
Open surgery for closed fracture	Recommended	Cefuroxime	Cefuroxime	Vancomycin	24 hours
Hip fracture	Recommended	Cefuroxime	Cefuroxime	Vancomycin + Gentamicin	24 hours
*Open fracture (See also Appendix 1: South East Orthopaedic Guideline - Antibiotic Prophylaxis for Open Fractures in the ED and Orthopaedic Departments)	Recommended	Phase 1: Cefuroxime + metronidazole + Gentamicin Phase 2: Vancomycin + Gentamicin	Phase 1: Cefuroxime + Metronidazole + Gentamicin Phase 2: Vancomycin + Gentamicin	Phase 1: Clindamycin + Gentamicin Phase 2: Vancomycin + Gentamicin	Phase 1: 24 hours Phase 2: Single Dose

**Phase 1: Within 1 hour of injury and continue until wound excision for 24 hours
 **Phase 2: At the time of definitive skeletal stabilisation and definitive soft tissue coverage the patient should receive a single intravenous dose at induction of vancomycin plus gentamicin
 * Consider addition of Vancomycin if **MRSA** high risk/known colonisation.

Skin

Skin

SKIN					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Skin grafting	Should be considered	Co-amoxiclav	Cefuroxime	Clindamycin	Single dose
<ul style="list-style-type: none"> Consider addition of Vancomycin if MRSA high risk/known colonisation 					

Urogenital

Urogenital

UROGENITAL SURGERY					
Type of surgery	Is surgical prophylaxis required? ^{4,10}	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ^{2,10}
Transurethral resection of prostate (TURP)	Recommended	Gentamicin + Amoxicillin	Gentamicin	Gentamicin	Single dose
Transrectal ultrasound (TRUS)-guided prostate biopsy (Please see Appendix 4 for note regarding Multi-drug Resistant Organisms (MDRO))	Recommended	Ciprofloxacin ± Gentamicin	Ciprofloxacin ± Gentamicin	Ciprofloxacin ± Gentamicin	24 hours
Transperineal prostate biopsy	*May be considered in high risk patients	Co-amoxiclav	Cefuroxime	Gentamicin	Single dose
Cystourethroscopy with manipulation (includes transurethral resection of bladder tumour-TURBT, any biopsy, resection, fulguration, foreign body removal, urethral dilatation, stent placement/removal, stone removal)	Recommended	Gentamicin	Gentamicin	Gentamicin	Single dose
Radical cystectomy (cystectomy and urinary diversion), Nephrectomy or nephroureterectomy Radical prostatectomy	Recommended	Co-amoxiclav± Gentamicin	Cefuroxime± Metronidazole (if bowel involvement)	Gentamicin + Vancomycin ± Metronidazole (if bowel involvement)	Single dose
Percutaneous nephrolithotomy (PCNL)	Recommended	Gentamicin	Gentamicin	Gentamicin	Single dose
Robotic surgery	Recommended	Co-amoxiclav	Cefuroxime	Gentamicin	Single dose
Cystoscopy	*May be considered in high-risk patients	Gentamicin	Gentamicin	Gentamicin	Single dose
Urethral catheterisation					
Circumcision, hydrocele, urodynamics, Extracorporeal shock wave lithotripsy (ESWL)	Not recommended				
<p>*Patients at increased risk of infection include those with pre-existing UTI, immunodeficiency, advanced age, anatomical abnormality of the renal tract and on immunosuppressive therapy.</p> <ul style="list-style-type: none"> Consider addition of Vancomycin if MRSA high risk/known colonisation Tailor prophylaxis based on susceptibility report of pre-operative urine culture. 					

Vascular and Limb

VASCULAR & LIMB SURGERY					
Type of surgery	Is surgical prophylaxis required? ⁴	Prophylactic Antibiotic of choice	Penicillin allergy (NOT severe hypersensitivity reaction/anaphylaxis)	Severe hypersensitivity reaction/anaphylaxis to penicillins	Max duration of prophylaxis ²
Lower limb amputation	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin + Gentamicin	≤24 hours
Vascular surgery (abdominal and lower limb arterial reconstruction) AAA repair, EVAR, carotid endarterectomy, lower limb revascularisation	Recommended	Co-amoxiclav	Cefuroxime + Metronidazole	Vancomycin + Gentamicin + Metronidazole	≤24 hours
Varicose veins	Not recommended A single dose could be considered in patients undergoing groin surgery*	Co-amoxiclav	Cefuroxime + Metronidazole	Vancomycin + Gentamicin + Metronidazole	Single dose
Soft tissue surgery of the hand	Should be considered	Co-amoxiclav	Cefuroxime + Metronidazole	Clindamycin	Single dose
<ul style="list-style-type: none"> * Single dose prophylaxis may be beneficial in patients undergoing groin surgery for varicose veins especially if patients are obese or current smokers ⁶ Consider addition of Vancomycin if MRSA high risk/known colonisation 					