Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

Antimicrobial Prophylaxis for Surgical and Non-surgical Procedures

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Antimicrobial Prophylaxis for Surgical and Medical Procedures

Introduction

The goal of antibiotic prophylaxis in surgical patients is to reduce the incidence of surgical site infection and to use antibiotics in a manner that is supported by evidence of effectiveness.

It is important to emphasise that surgical antibiotic prophylaxis is an adjunct to, not a substitute for good surgical technique. Antibiotic prophylaxis should be regarded as ONE component of an effective policy for the control of healthcare associated infection.

This policy also covers a variety of medical procedures, for which the same general principles apply.

Even single doses of antibiotics can result in *C. difficile* infection so prophylaxis should only be given when benefit has been demonstrated

Antibiotic prophylaxis should not be used routinely for clean, non-prosthetic uncomplicated surgery.
It should be given to patients before clean-contaminated and contaminated surgery and before clean surgery which involves the placement of a prosthesis or implant.

Administration of prophylactic antibiotics

- Intravenous prophylactic antibiotic should be given within 30 minutes before the skin is incised or the procedure undertaken
- A single standard therapeutic dose of antibiotic is usually sufficient for prophylaxis under most circumstances
- In the event of major intra-operative blood loss in adults (>1,500 ml) an additional dose of prophylactic antibiotic should be considered after fluid replacement
- In the event of major intra-operative blood loss in children (>25 ml/kg) an additional dose of prophylactic antibiotic should be considered after fluid replacement
- An additional intra-operative dose of antibiotic is recommended for operations longer than four hours

**MRSA-colonised patients:*

In **patients known or suspected to be colonised with MRSA** - **Teicoplanin 400mg stat** should be added or, in the case of asterisked items in chart above, substituted (discuss with Microbiologist if in doubt)

**Where co-trimoxazole is recommended:

Administer as an infusion over 60 minutes. Dilute each 480mg/5ml vial in 125ml sodium chloride 0.9%

CONTENTS

ABDOMINAL SURGERY		
Procedure	**Antibiotics**	**Comments**
Small/Large bowel resection	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
Cholecystectomy (open)	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
Cholecystectomy (laparoscopic)	Not routinely recommended *Consider for high risk patients*:- Gentamicin 2mg/kg IV + metronidazole 500mg IV	High risk • Bile spillage • Acute cholecystitis/pancreatitis • Insertion of prosthetic device • Conversion to laparotomy • Intraoperative cholangiogram
Gastric-oesophageal surgery	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
Gastric bypass	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
Appendicectomy	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes

Hernia Repair (inguinal/femoral/incisional/ with or without mesh)	Not recommended	See SIGN guidance
Clean general surgical procedures	Not recommended	Includes varicose vein repair and thyroidectomy
Splenectomy	Not recommended	For long term prophylaxis and vaccine refer to Trust guidance

UROLOGY SURGERY		
Procedure	**Antibiotics**	**Comments**
• Transurethral resection of prostate • Transurethral resection of bladder tumours • Transurethral prostate biopsy • Shock wave lithotripsy • Ureterostomy • Percutaneous removal of renal stones	Gentamicin 2mg/kg IV	Gentamicin is given by slow injection over 3-5 minutes
Transrectal prostatic biopsy	Gentamicin 2mg/kg IV + metronidazole 400mg po	Gentamicin is given by slow injection over 3-5 minutes. Take oral antibiotic 60 minutes before procedure.
Radical cystectomy	Gentamicin 2mg/kg IV + metronidazole 500mg IV	
Reconstructive Surgery (Urethral and Bladder)	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
Laparoscopic Surgery	Gentamicin 2mg/kg IV + metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
• Inguino-scrotal surgery (circumcision, dorsal slit, hydrocele repair, inguinal orchidectomy) • Cystoscopy • Nephrectomy	Not required	If evidence of UTI at time of nephrectomy or cystoscopy antibiotics may be required
Prosthesis insertion	Co-amoxiclav 1.2g IV	**Penicillin-allergy (rash)** - cefuroxime 1.5g IV+ metronidazole 500mg IV **Penicillin anaphylaxis** – Co-trimoxazole** 960mg IV + metronidazole 500mg IV

VASCULAR SURGERY		
Procedure	**Antibiotics**	**Comments**
Vascular surgery	*Co-amoxiclav 1.2g IV + Gentamicin* 2mg/kg IV	A further 2 doses post-op of co-amoxiclav may be given at the discretion of the vascular surgeon **Penicillin allergy**: teicoplanin 400mg IV (instead of co-amoxiclav)
Lower limb amputation	*Co-amoxiclav 1.2g IV tds for 24 hrs	If any suspicion of gas gangrene then post op treatment up to 5 days is recommended. **Penicillin-allergy (rash)**: Cefuroxime 1.5g IV + metronidazole 500mg IV **Penicillin anaphylaxis** – Co-trimoxazole** 960mg IV + metronidazole 500mg IV

BREAST SURGERY		
Procedure	**Antibiotics**	**Comments**
Excision biopsy	Not recommended	**Penicillin allergy**: teicoplanin 400mg IV Gentamicin is given by slow injection over 3-5 minutes
Total duct excision	*Flucloxacillin 1g IV	
Breast cancer surgery without implant	*Flucloxacillin 1g IV	
Breast cancer surgery with implant	*Flucloxacillin 1g IV + gentamicin 2mg/kg IV	

OBSTETRICS AND GYNAECOLOGICAL SURGERY		
Procedure	**Antibiotics**	**Comments**
• Hysterectomy (vaginal, abdominal, laparoscopic) • Vaginal pelvic floor repairs • Urogynaecological operations • Other major gynaecological surgery	Gentamicin 2mg/kg IV **+** metronidazole 500mg IV	Gentamicin is given by slow injection over 3-5 minutes
• 3rd/4th perineal tear repairs • Manual removal of placenta	Co-amoxiclav 1.2g IV	**Penicillin allergy (rash)** – cefuroxime 1.5g +metronidazole 500mg IV **Penicillin anaphylaxis** – Co-trimoxazole** 960mg IV + metronidazole 500mg IV
• Diagnostic or other operative laparoscopy • Hysteroscopy • Insertion of Intrauterine Contraceptive Device (IUCD) • Endometrial Ablation or Biopsy • Hysterosalpingography and Laparoscopy and Dye Test • Evacuation of Incomplete Miscarriage • Exploratory Laparotomy	Antibiotic prophylaxis **NOT** routinely recommended	
Surgical termination of pregnancy	Metronidazole 1g PR or 400mg PO **AND**	If allergic or intolerant to either of these, please discuss with microbiologist

	azithromycin 1g PO (at the time of abortion)	
Caesarean section	Cefuroxime 1.5g IV + metronidazole 500mg IV 15-20 minutes before skin incision.	**Penicillin anaphylaxis:** Clindamycin 600mg IV + gentamicin 2mg/kg IV
Assisted vaginal delivery	Cefuroxime 1.5g IV + metronidazole 500mg IV stat dose prior to commencement of procedure	**Penicillin anaphylaxis –** Clindamycin 600mg IV stat

MISCELLANEOUS/MEDICAL PROCEDURES		
Procedure	**Antibiotics**	**Comments**
Cardiac Pacemaker Insertion	Flucloxacillin* 1g + Gentamicin 2mg/kg IV	Gentamicin is given by slow injection over 3-5 minutes **Penicillin allergy** –replace flucloxacillin with teicoplanin 400mg IV
PEG Insertion	Co-amoxiclav* 1.2g IV	**Penicillin-allergy (rash)** - cefuroxime 1.5g IV **Penicillin anaphylaxis** – Co-trimoxazole 960mg IV
Endoscopic Retrograde Cholangiopancreatography (ERCP)	Gentamicin 2mg/kg IV stat	Gentamicin is given by slow injection over 3 – 5 minutes Note: simple diagnostic ERCP does not require prophylaxis
Intravenous Catheter Insertion	None required	
Thoracoscopy	None required	
Urinary catheter insertion or removal	None required routinely	Consider for patients with history of symptomatic UTI after catheter change or who experience trauma during catheterisation (gentamicin 2mg/kg by slow injection over 3-5 mins)
Nasal pack insertion (epistaxis)	Flucloxacillin* 500mg qds **may** be given until pack removal (max 3-5 days)	There is no clear evidence for this practice

Upper GI bleed (varices)	IV Co-amoxiclav 1.2g tds 7 days (or PO 625mg tds if appropriate)	**Penicillin allergy:** Co-trimoxazole 960mg bd IV/PO 7 days
Orthopaedic Surgery	*Refer to "Guideline for antimicrobial use in the Orthopaedic and Trauma Department"*	

References

Scottish Intercollegiate Guidelines Network (SIGN): ***Antibiotic Prophylaxis in Surgery***, July 2008, Updated April 2014

NICE guideline NG125: ***Surgical site infections: prevention and treatment***. April 2019. Updated August 2020

NICE clinical guideline CG141: ***Acute upper GI bleeding in over 16s***. June 2012. Updated August 2016

NICE clinical guideline: ***Urinary tract infection (catheter-associated): antimicrobial prescribing***. 23rd November 2018. Updated Sept 2019

Royal College of Obstetricians & Gynaecologists guideline: ***Assisted Vaginal Birth (Green-top guideline No. 26)***. Published April 2020.