



HEALTH HOLDING

HAFER ALBATIN HEALTH
CLUSTER
MATERNITY AND
CHILDREN HOSPITAL

Department:	Infection Prevention and Control Department		
Document:	Multidisciplinary Policy and Procedure (MPP)		
Title:	Antimicrobial Surgical Prophylaxis		
Applies To:	All MCH Department		
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1. PURPOSE:

- 1.1 Antimicrobial prophylaxis is used to reduce the incidence of postoperative wound infection.

2. DEFINITONS:

- 2.1 Antimicrobial prophylaxis is used to reduce the incidence of postoperative wound infection and is generally indicated for the following types of operations:
 - 2.1.1 Clean-contaminated: operative wound in which the respiratory, alimentary, genital, or urinary tract is entered under controlled conditions without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided that no evidence of infection or major break in technique is encountered.
 - 2.1.2 Clean: non infected operative wounds in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tract is entered. Example, an intravascular prosthesis or prosthetic joint is inserted, cardiac operations, including pacemaker placement and vascular surgery, and most neurosurgical operations.
 - 2.1.3 Antimicrobial prophylaxis is not indicated for an operation classified as dirty or contaminated

3. POLICY:

- 3.1 The following points should be considered when using antimicrobial prophylaxis:
 - 3.1.1 Neonatal doses are not included in this policy. Prophylactic antibiotics should be administered within one (1) hour prior to surgical incision and all antibiotic administration must be complete at the time of surgical incision.
 - 3.1.2 Cephalosporins can be administered over 3-5 minutes IV push just before the procedure and will achieve appropriate skin levels in minutes. Clindamycin should be infused over 10-20 minutes. If vancomycin or ciprofloxacin is used, the infusion should begin 60-120 minutes before the incision
 - 3.1.3 31.3 Antibiotics must be discontinued as per provided recommendations. Patients who have documented infections at the time of surgery or within 48 hours postoperatively should receive empiric therapy.
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 - 3.1.5 Administration should be repeated intraoperatively if the surgical procedure is prolonged (i.e., lasting more than 4 hours) or in the case of a major blood loss.
 - 3.1.6 Re-administration is not warranted in patients for whom the half-life of the antibiotic is prolonged (e.g., patients with renal failure). 3.17 Cefazolin is an appropriate first-line agent for most surgical procedures
 - 3.1.7 Cefazolin is an appropriate first-line agent for most surgical procedures
 - 3.1.8 Routine use of vancomycin is discouraged.
 - 3.1.9 MRSA colonized patients should be offered decolonization before any elective surgical procedures especially cardiothoracic surgeries. Antibiotics should cover the predominant flora

of the operative site: Staphylococcus and streptococci for most cases. Anaerobes and Enterobacteriaceae for gastrointestinal cases

- 3.1.10 In patients with penicillin and cephalosporin allergies, clindamycin or vancomycin may be used. Gentamicin or ciprofloxacin can be added if gram-negative coverage is required.
- 3.1.11 Patients receiving pre-operative antibiotics generally do not need additional antibiotics for endocarditis prophylaxis
- 3.1.12 Antibiotic prophylaxis to prevent endocarditis solely is not recommended for genitourinary or gastrointestinal tract procedures.
- 3.1.13 Antibiotic prophylaxis is recommended for the following dental procedures ONLY manipulation of gingival tissues or periapical region of teeth and perforation of oral mucosa.

4. PROCEDURE:

- 4.1 See appendices 1.Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis
- 4.2 See appendices 2.Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis

5. MATERIALS AND EQUIPMENT:

- 5.1 **Forms and Records:**
 - 5.1.1 N/A
- 5.2 **Materials and Equipment**
 - 5.2.1 N/A

6. RESPONSIBILITIES:

- 6.1 It is the responsibility of the Infection prevention and Control Staff to implement this policy.

7. APPENDICES:

- 7.1 Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis
- 7.2 Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis

8. REFERENCES:

- 8.1 American Society of Health-system Pharmacist (ASHP) therapeutic guidelines (2013).
- 8.2 The Johns Hopkins Hospital Antimicrobial Stewardship Program. Antibiotic Guidelines 20152016: Treatment recommendations for adult inpatients. Also available online at https://www.hopkinsmedicine.org/amp/guidelines/antibiotic_guidelines.
- 8.3 The Sanford Guide to Antimicrobial Therapy. (43rd ed.). 2013.
- 8.4 GCC 3rd edition 2018. <http://gdipc.org/wp-content/uploads/2018/07/The-GCC-Infection-Prevention-andControl-Manual-3rd-Edition.pdf>

9. APPROVALS:

	Name	Title	Signature	Date
Prepared by:	Ms. Marilou C. Magallano	IPCD Practitioner		November 24, 2024
Prepared by:	Ms. Wadha Mohd Al Shammari	IPC Coordinator		November 24, 2024
Reviewed by:	Dr. Mutlaq Al Dhafeery	Head of Pharmacy Department		November 26, 2024
Reviewed by:	Ms. Awatif Hamoud Al Harbi	IPCD Director		November 27, 2024
Reviewed by:	Mr. Sabah Turayhib Al - Harbi	Director of Nursing		December 02, 2024
Reviewed by:	Mr. Abdullellah Ayed Al Mutairi	QM & PS Director		December 03, 2024
Reviewed by:	Dr. Tamer Mohamed Naguib	Medical Director		December 04, 2024
Approved by:	Mr. Fahad Hazam Al - Shammary	Hospital Director & IPC Committee Chairman		December 08, 2024

1. Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis

Table 1-VII-03: Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis

Antimicrobial	Recommended dose in adults with normal renal functions	Recommended dose in Pediatrics with normal renal functions	Redosing frequency intraoperatively
Cefazolin	< 120 kg : 2g ≥120 kg: 3g	30 mg/kg	Q4H/Q2H for Cardiac surgery
Cefuroxime	1.5 g	50 mg/kg	Q4H
Ciprofloxacin	400 mg	10 mg/kg	NA
Clindamycin	900 mg	10 mg/kg	Q6H
Gentamicin	5 mg/kg	2.5 mg/kg	NA
Metronidazole	500 mg	15 mg/kg	Q8H
Vancomycin	< 70 kg: 1 g 71-99 kg: 1.25 g > 100 kg: 1.5	15 mg/kg (maximum 1 gm)	Q12H

2. Recommended Doses and Redosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis

Cardiac Procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Median sternotomy Prosthetic valve placement Coronary artery bypass Congenital repairs 	<ul style="list-style-type: none"> Coagulase-negative Staphylococcus Staphylococcus aureus Enterobacteriaceae 	Cefazolin	Vancomycin
<ul style="list-style-type: none"> Pacemaker/AICD placement Ventricular Assist Device Arterial patch Ventriculoatrial shunts 		Cefazolin	Vancomycin
<ul style="list-style-type: none"> Median sternotomy, heart transplant with previous VAD or MRSA colonization/infection Pacemaker/AICD placement with MRSA colonization/infection VAD insertion with MRSA colonization/infection 		Cefazolin PLUS Vancomycin	Vancomycin
<ul style="list-style-type: none"> VAD insertion with open chest 		Cefazolin PLUS Vancomycin until closure	Vancomycin PLUS Ciprofloxacin until closure
<ul style="list-style-type: none"> Lung transplant 		Cefepime	Consult transplant ID

Thoracic Non-Cardiac	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Pulmonary resection, lobectomy, pneumonectomy, thorcotomy, VATS 	<ul style="list-style-type: none"> Coag- negative Staph Staphylococcus aureus Enterobacteriaceae 	Cefazolin	Clindamycin
<ul style="list-style-type: none"> Closed chest tube insertion for chest trauma with hemo- or pneumothorax 		Cefazolin	Clindamycin + Gentamicin
<ul style="list-style-type: none"> Esophageal cases 		Cefazolin PLUS Metronidazole	Clindamycin

Vascular Procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Arterial surgery involving the abdominal aorta, a prosthesis or a groin incision Carotid endarterectomy 	<ul style="list-style-type: none"> S. aureus Coagulase-negative Staph Enterobacteriaceae 	Cefazolin	Vancomycin + Gentamicin
<ul style="list-style-type: none"> Brachial artery repair with placement of prosthetic material Lower extremity amputation 		Cefazolin	Vancomycin + Gentamicin
Carotid and brachiocephalic procedures without prosthetic graft		Prophylaxis not recommended	Prophylaxis not recommended

	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Craniotomy Skull fracture CSF leak Penetrating trauma CSF shunt Ventriculostomy placement 	<ul style="list-style-type: none"> Staphylococcus aureus Coagulase-negative Staph 	Cefazolin	Vancomycin

Neurosurgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> • Craniotomy • Skull fracture • CSF leak • Penetrating trauma • CSF shunt • Ventriculostomy placement 	<ul style="list-style-type: none"> • Staphylococcus aureus • Coagulase-negative Staph 	Cefazolin	Vancomycin

Spinal Surgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> • Laminectomy 	<ul style="list-style-type: none"> • Staphylococcus aureus • Coagulase-negative Staph 	Cefazolin	Vancomycin
<ul style="list-style-type: none"> • Spinal fusion (insertion of foreign material) 		Cefazolin	Vancomycin Or Clindamycin
<ul style="list-style-type: none"> • Spinal fusion with MRSA colonization/ infection 		Cefazolin PLUS Vancomycin	Vancomycin
<ul style="list-style-type: none"> • Transsphenoidal procedures 		Ceftriaxone	Moxifloxacin 400 mg over 60 minutes

Orthopedic Procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> • Diagnostic or operative arthroscopy, clean operations involving hand, knee, or foot 		Cefazolin	Vancomycin
<ul style="list-style-type: none"> • Open reduction of fracture 	<ul style="list-style-type: none"> • Staphylococcus aureus • Coagulase-negative Staph 	Cefazolin	Vancomycin Or Clindamycin
<ul style="list-style-type: none"> • Fracture with internal fixation (nails, screws, plates) 		Cefazolin	Vancomycin
<ul style="list-style-type: none"> • Total joint replacement 		Cefazolin	Vancomycin
<ul style="list-style-type: none"> • Open fractures (considered contaminated) 		Institute treatment rather than prophylaxis	
<ul style="list-style-type: none"> • Total joint replacement with MRSA colonization / infection 		Cefazolin PLUS Vancomycin	Vancomycin
<ul style="list-style-type: none"> • Lower limb amputation 		Cefazolin PLUS Metronidazole	Clindamycin PLUS Gentamicin

Head and Neck	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> • Incision through oral, sinus, or pharyngeal mucosa • Tonsillectomy • Parotid surgery 	<ul style="list-style-type: none"> • Staphylococcus aureus • Streptococcus spp. • Oral anaerobes 	Cefazolin Plus Metronidazole	Clindamycin or Vancomycin + Metronidazole
<ul style="list-style-type: none"> • Major neck dissection (look above) 		Cefazolin	Clindamycin
<ul style="list-style-type: none"> • Reconstructive procedure with prosthesis placement 		Cefazolin PLUS Metronidazole	Clindamycin
<ul style="list-style-type: none"> • Adenoidectomy, rhinoplasty, tumor-debulking, or mandibular fracture repair 		Cefazolin PLUS Metronidazole or Clindamycin	Clindamycin

Gastrointestinal	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Gastroduodenal procedures Gastric resection Gastroplasty Esophageal (high risk only, obstruction, decreased gastric acidity or motility, morbid obesity, gastric ulcer or malignant hemorrhage) Percutaneous endoscopic gastrostomy (PEG) 	<ul style="list-style-type: none"> Gram-positive cocci Enterobacteriaceae 	Cefazolin	Clindamycin + Gentamicin
<ul style="list-style-type: none"> Biliary tract (In high-risk patients > 70 years of age) <ul style="list-style-type: none"> common duct stone obstructive jaundice acute cholecystitis non-functioning gallbladder ERC 	<ul style="list-style-type: none"> Enterobacteriaceae Enterococcus spp. Clostridia 	Cefazolin	Clindamycin + Gentamicin
<ul style="list-style-type: none"> Procedures involving entry into lumen of upper GI tract, gastric bypass procedures, pancreaticoduodenectomy, highly selective vagotomy, Nissen fundoplication Hepatectomy 		Cefazolin + Metronidazole	Clindamycin +/- Gentamicin
<ul style="list-style-type: none"> Colorectal Appendectomy (non-perforated) – (if complicated or perforated, treat as secondary peritonitis) 	<ul style="list-style-type: none"> Enterobacteriaceae Enterococci 	Adult: Cefazolin PLUS Metronidazole Pediatric: Cefazolin PLUS Metronidazole	Adult: Clindamycin + Gentamicin Pediatric: Clindamycin + Gentamicin
<ul style="list-style-type: none"> Perforated viscus 		Institute treatment rather than prophylaxis	
<ul style="list-style-type: none"> Whipple procedure or pancreatectomy 		Cefazolin PLUS Metronidazole	Clindamycin + Ciprofloxacin
<ul style="list-style-type: none"> Small bowel procedures 		Cefazolin PLUS Metronidazole	Clindamycin + Gentamicin

Gynecologic Surgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Vaginal, abdominal, laparoscopic hysterectomy Oncology Procedure 	<ul style="list-style-type: none"> Enterobacteriaceae Group B streptococci Enterococcus spp. Anaerobes 	Cefazolin Cefazolin PLUS Metronidazole	Clindamycin + Gentamicin Clindamycin + Gentamicin
<ul style="list-style-type: none"> Cesarean section 		Cefazolin	Clindamycin + Gentamicin
<ul style="list-style-type: none"> Abortion 		Doxycycline 100 mg PO 1 hr pre-abortion and 200 mg PO ½ hr post-abortion	

Genitourinary	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Cystoscopy alone (high risk) <ul style="list-style-type: none"> Urine culture positive or unavailable Pre-operative catheter insertion Placement of prosthetic material Cystoscopy with manipulated material Cystoscopy with manipulation of upper tract Prostatectomy (TURP or peritoneal) 	<ul style="list-style-type: none"> Enterobacteriaceae Enterococci 	Adult: Ciprofloxacin 500 mg PO 2 hr pre-op or Ciprofloxacin 400 mg IV 1-2 hr pre-op Pediatric: Trimethoprim-Sulfamethoxazole (TMP-SMX) 6 mg/kg PO 2 h pre-op or Cefazolin 30 mg/kg (max 1 gm) IV pre-op	Gentamicin Clindamycin (for Prostatectomy)
<ul style="list-style-type: none"> Lithotripsy Nephrectomy Adrenalectomy Open or laparoscopic surgery 		Cefazolin	Gentamycin (Clindamycin for Nephrectomy)
<ul style="list-style-type: none"> Ileal conduit 	<ul style="list-style-type: none"> Enterobacteriaceae Anaerobes 	Cefazolin plus Metronidazole	Clindamycin plus Gentamicin
Transrectal prostate biopsy (look above)		Cefazolin PLUS Metronidazole	Ciprofloxacin OR (Gentamicin + Metronidazole)
<ul style="list-style-type: none"> Penile or other prosthesis 		Cefazolin OR (Vancomycin +- Gentamicin)	(Clindamycin OR Vancomycin)+- Gentamicin

Plastic Surgery	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Reconstructive surgery, clean with risk factors or clean contaminated Tissue expander insertion/implants/all flaps 	<ul style="list-style-type: none"> Staphylococcus aureus Streptococcus spp. 	Cefazolin	Clindamycin
<ul style="list-style-type: none"> Rhinoplasty 		Cefazolin	Clindamycin

Inguinal Hernia	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Complicated, recurrent mesh placement 	<ul style="list-style-type: none"> Staphylococcus aureus Coagulase-negative Staph Streptococcus spp. 	Cefazolin	Clindamycin
<ul style="list-style-type: none"> Complicated, emergent or repeat inguinal hernia repair 		Cefazolin PLUS Metronidazole	Clindamycin +- Gentamicin

Breast	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Mastectomy involving placement of prosthetic material, saline implant, and/or tissue expander Mastectomy with lymph node dissection 	<ul style="list-style-type: none"> Staphylococcus aureus Coagulase-negative Staph 	Cefazolin	Clindamycin + Gentamicin

Interventional Radiology	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Biliary/GI procedure, including radio ablation or splenic embolization 	<ul style="list-style-type: none"> S.aureus Coagulase-negative Staph Gram-negative rods 	Cefazolin plus Metronidazole	Clindamycin + Gentamicin
<ul style="list-style-type: none"> Urological procedure (not ablation) 		Cefazolin	Gentamicin
<ul style="list-style-type: none"> Implantable venous access port (e.g., mediport) 		Cefazolin	Clindamycin
<ul style="list-style-type: none"> Lymphangiogram, vascular malformation ablation, fibroid treatment 		Cefazolin	Clindamycin
<ul style="list-style-type: none"> Chemo embolization; fibroid/urinary embolization; percutaneous liver/renal/lung ablation; vascular malformation embolization 		No prophylaxis	

Ophthalmic	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
Ophthalmic procedures	<ul style="list-style-type: none"> Staphylococcus aureus Coagulase-negative Staph Streptococci Enterobacteriaceae Pseudomonas spp. 	Ophthalmic drops: <ul style="list-style-type: none"> Gentamicin Tobramycin Polymyxin B gramicidin Ciprofloxacin (multiple drops topically over 2-24 hours) 	Multiple drops topically over 2 to 24 hours

Transplantation procedures	COMMON PATHOGEN	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
<ul style="list-style-type: none"> Renal Transplantation 	<ul style="list-style-type: none"> Staphylococcus aureus Coagulase-negative Staph Enterobacteriaceae 	Cefazolin	Adult: Clindamycin plus Ciprofloxacin 400 mg IV pre-op Pediatrics: Clindamycin plus Gentamicin
<ul style="list-style-type: none"> Liver Transplantation 	<ul style="list-style-type: none"> Enterobacteriaceae Enterococcus spp. Staphylococci 	Adult: Piperacillin Tazobactam (Tazocin) 3.375 gm IV pre-op plus Q 6 h x 48 hr post-op Pediatric: Tazocin 60 mg/kg IV pre-op plus Q 6 h x 48 hr post-op	Adult: Vancomycin 1 gm IV pre-op plus Q 12 h post-op x 48 hr plus Ciprofloxacin 400 mg IV pre-op plus Q 12 h x 48 hr post-op Pediatric: Vancomycin 20 mg/kg (max 1 gm) IV pre-op plus Q 12 h x 48 hr post-op
<ul style="list-style-type: none"> Pancreas or pancreas/kidney transplant 		Cefazolin PLUS Metronidazole	Clindamycin + Ciprofloxacin