



Antimicrobial Stewardship Programme: Innovation, Research, Education, and Safety
 Quality and Patient Safety, Vancouver Coastal Health, 855 West 12th Avenue, Vancouver, BC, V5Z1M9

Antimicrobial Stewardship Program
 Providence Health Care, 1081 Burrard Street, Vancouver, BC, V6Z1Y6, Canada

VCH-PHC SURGICAL PROPHYLAXIS RECOMMENDATIONS

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
CARDIAC		
Common Pathogens	<i>Staphylococcus aureus, S. epidermidis</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy) For patients with known MRSA colonization, recommend decolonization with Antimicrobial Photodynamic Therapy	<i>ceFAZolin</i> Add <i>vancomycin</i> (if MRSA colonization) OR <i>vancomycin</i> alone (for severe beta-lactam allergy) For patients with known MRSA colonization, recommend decolonization
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
GASTROINTESTINAL		
Esophageal, Gastroduodenal (high risk - morbid obesity, GI obstruction, decreased gastric acidity or motility, gastric bleeding, malignancy or perforation, or immunosuppression)		
Common Pathogens	Enteric gram-negative bacilli, gram-positive cocci	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>clindamycin</i> + <i>gentamicin</i> (for severe beta-lactam allergy) Prophylaxis not routine for gastroesophageal endoscopy	<i>ceFAZolin</i> (± metronidazole) OR <i>clindamycin</i> + <i>gentamicin</i> (for severe beta-lactam allergy) Prophylaxis not routine for gastroesophageal endoscopy
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Biliary Tract (open procedure or elective high-risk - Age greater than 70 yrs, acute cholecystitis, non-functioning gall bladder, obstructive jaundice, or common bile duct stones)		

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Common Pathogens	<i>Enteric gram-negative bacilli, enterococci, clostridia</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> (± metronidazole) OR <i>gentamicin + metronidazole</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Prophylaxis not routine for low-risk patients undergoing elective laparoscopic cholecystectomy Single pre-op dose	
Biliary Tract (laparoscopic elective low risk)		
Common Pathogens	N/A	
Timing	N/A	
Recommended Antimicrobials for Surgical Prophylaxis	None	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	N/A	
Small Intestine		
Common Pathogens	<i>Enteric gram-negative bacilli, enterococci</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	Non-obstructed: <i>ceFAZolin</i> OR <i>clindamycin + gentamicin</i> (for severe beta-lactam allergy) Obstructed: <i>ceFAZolin + metronidazole</i> <i>clindamycin + gentamicin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Colorectal		
Common Pathogens	<i>Enteric gram-negative bacilli, anaerobes, enterococci</i>	



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	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin + metronidazole</i> OR <i>gentamicin + metronidazole</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Appendectomy, non-perforated (uncomplicated)		
Common Pathogens	<i>Enteric gram-negative bacilli, anaerobes, enterococci</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin + metronidazole</i> OR <i>gentamicin + metronidazole</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Hernia Repair (hernioplasty and herniorrhaphy)		
Common Pathogens	<i>S. aureus, S. epidermidis</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
GYNECOLOGIC AND OBSTETRIC		
Abdominal, Laparoscopic, or Vaginal Hysterectomy		
Common Pathogens	Enteric gram-negative bacilli, anaerobes, Gp B Strep, enterococci	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for	<i>ceFAZolin</i>	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Surgical Prophylaxis	Add <i>metronidazole</i> (for procedures involving vaginal canal when bacterial vaginosis is suspected) OR <i>Clindamycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (unless excessive blood loss greater than 1500 mL – see “Dosing Guidelines” below)	
Cesarean Section		
Common Pathogens	Enteric gram-negative bacilli, anaerobes, Gp B Strep, enterococci	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>Clindamycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Hysteroscopy		
Common Pathogens	No prophylaxis	
Timing		
Recommended Antimicrobials for Surgical Prophylaxis		
Total Duration Post-operatively (from initial surgical prophylaxis dose)		
Laparoscopy (uterus and/or vagina not entered)		
Common Pathogens	No prophylaxis	
Timing		
Recommended Antimicrobials for Surgical Prophylaxis		
Total Duration Post-operatively (from initial surgical prophylaxis dose)		
Pelvic Organ Prolapse and/or Stress Urinary Incontinence Surgery		
Common Pathogens	Enteric gram-negative bacilli, anaerobes, Gp B Strep, enterococci	
Timing	Administer 60 mins or less before incision	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>Clindamycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (unless excessive blood loss greater than 1500 mL – see “Dosing Guidelines” below)	
HEAD AND NECK (clean surgeries with placement of prosthetic material, or clean-contaminated surgeries with incisions through oral or pharyngeal mucosa)		
Clean surgeries with placement of prosthetic material (excludes tympanostomy tubes)		
Common Pathogens	Anaerobes, enteric gram-negative bacilli, <i>S. aureus</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>clindamycin</i> (for severe beta-lactam allergy) *	
	*Resistance is increasing; use based on local susceptibility patterns	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
Clean-contaminated surgeries (excludes tonsillectomy, nasal septoplasty, and functional endoscopic sinus procedures)		
Common Pathogens	Anaerobes, enteric gram-negative bacilli, <i>S. aureus</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> + <i>metronidazole</i> OR <i>clindamycin</i> *	
	*Resistance is increasing; use based on local susceptibility patterns	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
NEUROSURGERY		
Common Pathogens	<i>S. aureus</i> , <i>S. epidermidis</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
ORTHOPAEDIC SURGERY (excluding clean surgeries on hands/knees/feet without implantable materials)		
Common Pathogens	<i>S. aureus, S. epidermidis</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if tourniquet is used, entire dose of antibiotic should be infused prior to inflation)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy) OR <i>clindamycin</i> (for severe beta-lactam allergy if shorter infusion required)* *If tourniquet is used, entire dose of antibiotic must be infused prior to inflation	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy)* *If tourniquet is used, entire dose of antibiotic must be infused prior to inflation
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
PLASTIC SURGERY (clean with risk factors or clean-contaminated)		
Common Pathogens	<i>S. aureus, S. epidermidis, streptococci</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
THORACIC (Non-Cardiac including lobectomy, pneumonectomy, lung resection, and thoracotomy)		
Common Pathogens	<i>S. aureus, S. epidermidis, streptococci, enteric gram-negative bacilli</i>	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Timing	Administer 60 mins or less before incision, except for	
	<i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
TRANSPLANTATION		
Heart		
Common Pathogens	<i>S. aureus, S. epidermidis, streptococci</i>	
Timing	Administer 60 mins or less before incision, except for	
	<i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> Add <i>vancomycin</i> (if MRSA colonization) OR <i>vancomycin</i> alone (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Heart-lung and Lung		
Common Pathogens	<i>S. aureus, S. epidermidis, streptococci, gram-negatives</i>	
Timing	Administer 60 mins or less before incision, except for	
	<i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> * Add <i>vancomycin</i> (if MRSA colonization) OR <i>vancomycin</i> alone (for severe beta-lactam allergy)*	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
	*Prophylaxis regimen should be modified to cover pathogens in donor lung or recipient pretransplantation	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose	
Liver		
Common Pathogens	<i>S. aureus, S. epidermidis, streptococci, enteric gram-negatives, anaerobes</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>Cefotaxime</i> OR <i>Moxifloxacin</i> (for severe beta-lactam allergy) Add <i>vancomycin</i> (if high risk) Add <i>linezolid</i> (if VRE history)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
Pancreas, Pancreas-kidney, and Kidney		
Common Pathogens	<i>S. aureus, S. epidermidis, streptococci, enteric gram-negatives, Candida</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if necessary, infusion may continue during procedure)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> OR <i>vancomycin + gentamicin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
UROLOGIC		
Lower Tract		
Cystoscopy without manipulation (<u>high risk only</u> – positive urine culture*, anatomic anomalies, urinary obstruction, urinary stone, and indwelling or externalized catheters)		
*Bacteriuria or urinary tract infection should be treated prior to procedure based on susceptibilities		
Common Pathogens	Enteric gram-negative bacilli, enterococci	
Timing	Administer 60 mins or less before incision	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Recommended Antimicrobials for Surgical Prophylaxis		<i>ciprofloxacin</i> OR <i>co-trimoxazole</i> OR <i>ceFAZolin</i> OR <i>gentamicin</i>
Total Duration Post-operatively (from initial surgical prophylaxis dose)		Single pre-op dose (or may consider giving up to 24 hours post-op)
Transrectal prostatic biopsy		
Common Pathogens		Enteric gram-negative bacilli
Timing		Administer 60 mins or less before incision
Recommended Antimicrobials for Surgical Prophylaxis		<i>ciprofloxacin</i> OR <i>co-trimoxazole</i> OR <i>ceFAZolin</i> OR <i>gentamicin</i>
Total Duration Post-operatively (from initial surgical prophylaxis dose)		Single pre-op dose (or may consider giving up to 24 hours post-op)
Cystoscopy with Manipulation and/or Instrumentation (e.g. transurethral resection of bladder tumour and prostate, urethral dilatation or urethrotomy, or ureteral instrumentation including catheterization or stent placement/removal)*		
*Bacteriuria or urinary tract infection should be treated prior to procedure based on susceptibilities		
Common Pathogens		Enteric gram-negative bacilli, enterococci
Timing		Administer 60 mins or less before incision
Recommended Antimicrobials for Surgical Prophylaxis		<i>ciprofloxacin</i> OR <i>co-trimoxazole</i> OR <i>ceFAZolin</i> OR <i>gentamicin</i>
Total Duration Post-operatively (from initial surgical prophylaxis dose)		Single pre-op dose (or may consider giving up to 24 hours post-op)
Upper Tract Instrumentation		
Shock-wave Lithotripsy, Ureteroscopy*		
*Bacteriuria or urinary tract infection should be treated prior to procedure		
Common Pathogens		<i>Enteric gram-negative bacilli, enterococci</i>

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ciprofloxacin</i> OR <i>co-trimoxazole</i> OR <i>ceFAZolin</i> OR <i>gentamicin</i> Add <i>gentamicin</i> if implantable material <u>and</u> not already receiving	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
Percutaneous Renal Surgery		
Common Pathogens	<i>Enteric gram-negative bacilli, staphylococci, streptococci, enterococci</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> (+ <i>gentamicin</i> if implantable material) OR <i>gentamicin</i> +/- <i>clindamycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
Open or Laparoscopic Surgery		
Clean Surgery (non- bowel and non-vaginal surgeries)		
Common Pathogens	<i>Enteric gram-negative bacilli, staphylococci, streptococci, enterococci</i>	
Timing	Administer 60 mins or less before incision	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin</i> (+ <i>gentamicin</i> if implantable material) OR <i>gentamicin</i> +/- <i>clindamycin</i> (for severe beta-lactam allergy)	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
Clean-contaminated Surgery (bowel manipulation or vaginal surgery, e.g. urethral sling procedures)		
Common Pathogens	<i>Enteric gram-negative bacilli, anaerobes, staphylococci, streptococci, enterococci</i>	
Timing	Administer 60 mins or less before incision	

	VCH RECOMMENDATIONS	PHC RECOMMENDATIONS
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin + metronidazole (+ gentamicin if implantable material) OR gentamicin + [metronidazole or clindamycin] (for severe beta-lactam allergy)</i>	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
VASCULAR		
Arterial surgery involving prosthesis, the abdominal aorta, or groin incision		
Common Pathogens	<i>S. aureus, S. epidermidis, enteric gram-negative bacilli</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if tourniquet is used, entire dose of antibiotic should be infused prior to inflation)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin OR vancomycin (for severe beta-lactam allergy)</i>	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	
Lower extremity amputation for ischemia		
Common Pathogens	<i>S. aureus, S. epidermidis, enteric gram-negative bacilli, clostridia</i>	
Timing	Administer 60 mins or less before incision, except for <i>vancomycin</i> (complete infusion before incision where possible; if tourniquet is used, entire dose of antibiotic should be infused prior to inflation)	
Recommended Antimicrobials for Surgical Prophylaxis	<i>ceFAZolin OR vancomycin (for severe beta-lactam allergy)</i>	
Total Duration Post-operatively (from initial surgical prophylaxis dose)	Single pre-op dose (or may consider giving up to 24 hours post-op)	

Dosing Recommendations

Antibiotic	Dose			Intra-op Redosing Interval (From Initiation of Pre-op Dose)
	(Weight less than 80 kg)	Weight 80 kg to 120 kg	Weight greater than 120 kg	
ceFAZolin	1 g IV	2 g IV	3 g IV	OR Redose antibiotic if excessive blood loss 1500 mL
ciprofloxacin	500 mg PO or 400 mg IV			
clindamycin	600-900 mg IV			
co-trimoxazole	1 DS tablet PO			
gentamicin	5 mg/kg per dosing weight IV (suggested maximum dose of 500 mg; round to nearest 20 mg)			
metronidazole	500 mg IV			
vancomycin*	1000 mg IV	1500 mg IV		

*If tourniquet is used, entire dose of antibiotic must be infused prior to inflation

Intra-op Redosing Recommendations

ceFAZolin 1 g IV (may use up to 2 g IV in select cases)
clindamycin 600 mg IV

Post-op Dosing Recommendations (there is no evidence to support the use of post-op doses)

ceFAZolin 1 g IV (up to q8h x 3 doses); may consider giving up to 2 g/dose
clindamycin 600 mg IV (up to q8h x 3 doses)
vancomycin 1 g IV (up to q12h x 2 doses)

NOTE: These recommendations are intended to provide guidance for the use of surgical prophylaxis based on published clinical practice guidelines. Local practices and susceptibility patterns need to also be taken into consideration when selecting appropriate regimens for prophylaxis.