Community-acquired Pneumonia (CAP) or Nursing Home-acquired Pneumonia

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Cost/ Day
Mild CAP (Outpatient) CRB-65 SCORE: 0-1	*S. pneumoniae* *M. pneumoniae* *C. pneumoniae* Influenza A/B RSV	**1. Amoxicillin** 500-1000 mg PO TID **OR** **If severe penicillin/amoxicillin allergy** **2. Cefuroxime** 500 mg PO BID **OR** **If severe penicillin/amoxicillin/cefuroxime allergy** **3. Doxycycline** 100 mg PO BID	$ $ $
Moderate CAP (Inpatient/ non-ICU) CRB-65 SCORE: 2	*S. pneumoniae* *H. influenzae* *M. pneumoniae* *C. pneumoniae*	**1. Amoxicillin-clavulanate** 875-125 mg PO BID* **OR** **2. Cefuroxime** 500 mg PO BID **OR** **If unable to tolerate PO and IV therapy required** **3. Ceftriaxone** 1 g IV q24h* ***Add atypical coverage only if strongly suspected** **[Doxycycline** 100 mg PO BID **OR** **Azithromycin** 500 mg PO/IV q24h x 3 d**]** **If severe penicillin/cefuroxime/ceftriaxone allergy** **4. Moxifloxacin** 400 mg PO/IV daily	$ $ $ $ $ $-$$
Severe CAP (Inpatient/ICU) CRB-65 SCORE: 3-4	As above *S. aureus* Group A *Strep* *Enterobacterales* *L. pneumophila*	**1. Ceftriaxone** 2 g IV q24h **+ [Doxycycline** 100 mg PO BID or **Azithromycin** 500 mg PO/IV q24h x 3 d**] OR** **If severe ceftriaxone allergy** **2. Moxifloxacin** 400 mg PO/IV daily	$ $ $ $-$$
	If MRSA suspected/ documented	**Vancomycin** 15 mg/kg q8-24h (May consider vancomycin 20 mg/kg load in critically ill)	$$

Clinical Highlights
1. **Consider outpatient treatment, if CRB-65 score is 0-1.**
2. **Empiric regimen may be broadened based on the following risk factors:**
   Alcoholism, aspiration, COPD, chronic steroids, hospitalization (in past 1 month), HIV, IV drug use, neutropenia, and solid organ transplant.
3. **Prior use of antibiotics does not require rotation of antibiotics when treating CAP, based on local susceptibility patterns.**
4. **On Day 3 when culture and susceptibility results are available, pathogen-directed therapy should be used or diagnosis should be reassessed.**
5. **Consider conversion from IV to oral therapy, if GI tract is functioning, and patient is hemodynamically stable and improving clinically.**
6. **Treatment for 3 days is recommended in patients who meet Clinical Stability Criteria:**
   Clinical Stability Criteria for discontinuation of antibiotics after 3 days of CAP therapy include:
   Temperature ≤37.8°C on Day 3 of therapy *AND*
   No CAP-associated sign of clinical instability on Day 3 of therapy:
   a. Systolic blood pressure <90 mmHg
   b. Heart rate >100/min
   c. Respiratory rate >24/min
   d. SaO_2 <90% or on room air (or on baseline home oxygen).
7. **Treatment for 5 days is recommended in patients who are afebrile with no more than 1 CAP-associated sign of clinical instability by Day 5.**
8. **Patients who fail to meet clinical stability by Day 5 should be evaluated for potential complications of pneumonia as well as other etiologies.**
9. **Usual recommended duration of treatment of CAP is 3 to 5 days.**

References: VCH ASPIRES Community-acquired Pneumonia Management Guidelines for Adults, Metlay JP et al. Diagnosis and Treatment of Adults with Community-acquired Pneumonia. Am J Respir Crit Care Med 2019;200(7):e45–e67., Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2020.

CRB-65 Pneumonia Severity of Illness Score

Clinical Factor	Points
C onfusion of new onset	**+1**
R espiratory rate >30/minute	**+1**
B lood pressure <90 mmHg systolic or diastolic blood pressure <60 mmHg	**+1**
Age ≥ 65 years	**+1**
Total:	**CRB-65 SCORE**

CRB-65 Score	30-day Mortality	Disposition
0	1-2%	Outpatient (low risk; consider home treatment)
1		
2	8.2%	Inpatient short hospitalization (or closely supervised outpatient treatment)
3	31.3%	Inpatient or ICU (severe pneumonia; hospitalize and consider admitting to intensive care)
4		

References: Santana AR et al. Comparison of CURB-65 and CRB-65 as predictors of death in community-acquired pneumonia in adults admitted to an ICU. Critical Care 2013, 17(Suppl 3):39, Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2020.

Hospital-acquired (HAP) and Ventilator-associated Pneumonia (VAP)

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Cost /Day
HAP **< 4 days hospitalization**	See CAP	**See Community-acquired pneumonia—Inpatient**	
HAP **>4 days hospitalization:** **Mild-moderate**; no risk factors for resistance	Enterobacterales *H. influenza* *S. aureus* *Streptococcus sp.* *S. pneumoniae*	**1. Amoxicillin-clavulanate 875 mg PO BID OR** **2. Cefuroxime** 500 mg PO BID x 7 d **OR** **3. Ceftriaxone** 1 g IV q24h x 7 d (if unable to tolerate PO) **OR** **If severe ceftriaxone allergy** **4. Moxifloxacin** 400 mg PO/IV daily x 7 d	$ $ $ $-$$
HAP **>4 days hospitalization:** **Severe OR isolation of resistant organisms OR risk factors for resistance** (prior antibiotics ≤3 months, lung disease, immuno-suppression)	As above *Acinetobacter sp.* *Pseudomonas sp.*	**1. Piperacillin-tazobactam** 3.375 g IV q6h x 7 d **OR** **If severe penicillin allergy or concern for ESBL organisms** **2. Meropenem** 500 mg IV q6h x 7 d **IV-to-PO Stepdown (based on susceptibility results if available or for empiric treatment)** **3. Amoxicillin-clavulanate** 875/125mg PO BID **OR** **4. Cefuroxime** 500 mg PO BID (if severe penicillin allergy) to complete 7 d of total therapy	$$ $$$ $ $
	If MRSA suspected or documented	**Add Vancomycin** 15 mg/kg q8-24h (May consider vancomycin 20 mg/kg load in critically ill)	$$
HAP **Aspiration pneumonitis**	-	**No antimicrobials. Supportive treatment only**	
HAP **Aspiration pneumonia:** **Mild-moderate**	Polymicrobial	**1. Amoxicillin-clavulanate** 875-125 mg PO BID x 5 d **OR** **2. Ceftriaxone** 1 g IV q24h x 5 d **If severe penicillin/ceftriaxone allergy** **3. Moxifloxacin** 400 mg PO/IV daily x 5 d	$ $ $-$$
HAP **Aspiration pneumonia:** **Severe**	Polymicrobial	**1. Ceftriaxone** 1 g IV q24h x 5d **+/- Metronidazole** 500 mg PO/IV q12h (if anaerobes likely) **OR** **If severe ceftriaxone allergy** **2. Piperacillin-tazobactam** 3.375 g IV q6h x 5 d	$$ $ $$
VAP **<5 days hospitalization AND no prior broad-spectrum antibiotics <3 months**	Enterobacterales *S. pneumoniae* *H. influenzae* *S. aureus/MRSA*	**1. Ceftriaxone** 2 g IV q24h x 5 d **OR** **If severe ceftriaxone allergy** **2. Moxifloxacin** 400 mg PO/IV daily x 7 d	$ $-$$
VAP **>5 days hospitalization AND/OR prior broad-spectrum antibiotics <3 months**	Enterobacterales *P. aeruginosa* *S. aureus/MRSA* *Stenotrophomonas maltophilia* *Acinetobacter sp.*	**1. Piperacillin-tazobactam** 3.375 g IV q6h x 7 d **OR** **If severe penicillin allergy** **2. Meropenem** 500 mg IV q6h x 7 d	$$ $$
	If MRSA colonized/ suspected/ documented	**Add Vancomycin** 15 mg/kg q8-24h x min 7 d for confirmed MRSA (May consider vancomycin 20 mg/kg load if critically ill)	$$
	If ESBL suspected/ known, or significant penicillin allergy	**Meropenem** 500 mg IV q6h	$$

Clinical Highlights
1. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**
2. **Consider discontinuing therapy after Day 7, if patient has improved clinically.**
3. **In the absence of positive microbiology when afebrile and clinically stable for 48 hours, recommend stepdown to PO therapy.**
4. **If MRSA screen and/or sputum/BAL culture is negative, vancomycin should be discontinued.**

References: Kalil AC et al. Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society. CID 2016;63(5):e61-111., Blondel-Hill E, Fryters S, eds. Bugs & Drugs, 2020.

Acute Exacerbation of Chronic Bronchitis (AECB)

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Cost/ Day
Simple AECB (<4 exacerbations/ year):	*Haemophilus influenzae, Haemophilus species, Streptococcus pneumonia, Moraxella catarrhalis, Chlamydophila pneumoniae* Viruses	1. **Amoxicillin** 500-1000 mg PO TID x 5 d **OR** 2. **Doxycycline** 100 mg PO BID x 5 d **OR** 3. **Co-trimoxazole DS** 1 tab PO BID x 5 d **OR** 4. **Clarithromycin** 500 mg PO BID or XL 1 g PO daily x 5 d **OR** **If severe beta-lactam allergy** 5. **Moxifloxacin** 400 mg PO daily x 5 d	$ $ $ $ $
Complicated AECB (≥4 exacerbations/ year):	As in simple plus: Increased probability of beta-lactam resistance (beta-lactamase producing penicillin-resistant *Haemophilus influenzae*) Enterobacterales *Pseudomonas* species	1. **Amoxicillin-clavulanate** 875-125 mg PO BID x min 5 d* **OR** 2. **Cefuroxime** 500 mg PO BID x min 5 d* **OR** **If severe beta-lactam allergy** 3. **Moxifloxacin** 400 mg PO/IV daily x min 5 d*	$ $-$$ $-$$
	If *Pseudomonas aeruginosa* is suspected	1. **Ciprofloxacin** 500-750 mg PO BID/400 mg IV q12h x min 5 d* **OR** 2. **Ceftazidime** 1-2 g IV q8h x min 5 d* **OR** 3. **Piperacillin-tazobactam** 3.375 g IV q6h x min 5 d*	$ $$-$$$ $$

Clinical Highlights
1. **Approximately 50% of AECB are caused by viruses.**
2. **Antibiotics are only recommended for AECB if 2 or more of the following are present: ↑ dyspnea, ↑ sputum volume, or ↑ purulence.**
3. **Please refer to previous culture results for sensitivities of Pseudomonas species (if available) in order to guide empiric antibiotic choice.**

Reference: Blondel-Hill E, Fryters S, eds. Bugs & Drugs, 2020.

Intraabdominal Infection (IAI)

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Cost /Day
IAI **Community-acquired:** **Mild-moderate** (perforated or abscessed appendicitis, biliary tract, and other infections)	"Core" pathogens: *Streptococcus sp.*, Enterobacterales (*E. coli, Klebsiella sp., Proteus sp., Serratia marcescens*), Anaerobes (*Bacteroides sp, Clostridium sp, Fusobacterium sp, Lactobacillus sp, Peptostreptococcus sp.*)	**Uncomplicated (single organ; source control within 12 h of injury)** **1. Cefazolin** 2 g IV q8h **+ Metronidazole** 500 mg PO/IV q12h x 24h post-op **Complicated (extension of infection with source control)** **2. Ceftriaxone** 1-2 g IV q24h **+ Metronidazole** 500 mg PO/IV q12h x 3-5 d **If severe cefazolin/ceftriaxone allergy** **3. Ciprofloxacin** 500 mg PO BID or 400 mg IV q12h **+ Metronidazole** 500 mg PO/IV q12h **IV-to-PO Stepdown** **Amoxicillin-clavulanate** 875/125mg PO BID to complete 3-5 d of total therapy	$-$$ $ $$ $ $ $ $
IAI **Community-acquired:** **Severe OR Healthcare-associated:** **Mild to moderate** (systemic symptoms, advanced age, or immunocompromised)	"Core" pathogens (as above)	**1. Ceftriaxone** 1-2 g IV q24h **+ Metronidazole** 500 mg PO/IV q12h x 7 d **OR** **2. Piperacillin-tazobactam** 3.375 g IV q6h x 7 d (septic shock/ICU) **If severe ceftriaxone/penicillin allergy** **3. Ciprofloxacin** 500 mg PO BID or 400 mg IV q12h **+ Metronidazole** 500 mg PO/IV q12h **IV-to-PO Stepdown** **Amoxicillin-clavulanate** 875/125mg PO BID to complete up to 7 d of total therapy	$ $ $ $ $ $
IAI **Healthcare-associated:** **Severe** (complicated or recurrent infection)	"Core" pathogens (as above) *Acinetobacter* Multidrug resistant GNR	**1. Piperacillin-tazobactam** 3.375 g IV q6h x 7 d **OR** **2. Meropenem** 500 mg IV q6h x 7 d	$$ $$$
	If MRSA or *E. faecium* suspected/documented	**Vancomycin** 15 mg/kg IV q8-24h	$$
	If *Candida* isolated	**1. Fluconazole** 400 mg PO/IV daily **OR** **2. Micafungin** 100 mg IV daily (if fluconazole-resistant)	$-$$ $$$$

[a] **Cephalosporins, fluoroquinolones, and clindamycin do not cover *Enterococcus*.**

Clinical Highlights
1. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**
2. **Consider oral stepdown and discontinue treatment at Day 3-7, if adequate source control and good clinical response.**
3. **Consider diagnostic investigations, if experiencing inadequate clinical response at Day 3-7.**
   Antibiotics should be discontinued within 24 hours for the following intraabdominal conditions:
   i) Acute stomach and proximal jejunum perforations, in absence of acid-reducing therapy or malignancy and if source control is achieved;
   ii) Bowel injuries due to penetrating, blunt, or iatrogenic trauma repaired within 12 hours and any intraoperative contamination of the operative field by enteric contents;
   iii) Acute appendicitis without perforation, abscess, or local peritonitis.

References: Solomkin JS et al. CID 2010;50:133-64, Chow AW et al. Can J Infect Dis Med Microbiol 2010;21:11-37.

Clostridium difficile Infection (CDI)

CDI Severity	Empiric Treatment	Cost /Day
Initial, Mild-moderate • WBC <15,000/mm^3 **AND** • SCr ≤1.5 x baseline	**1. Vancomycin** 125 mg PO/NG QID x 10-14 d Second line: **2. Metronidazole** 500 mg PO/NG TID x 10-14 d in patients with mild diarrhea where costs of vancomycin is prohibitive to its use or on a case-by-case basis	$$ $
Initial, Severe • WBC >15,000/mm^3 **OR** • SCr >1.5 x baseline or SCr >135µmol/L (if baseline unavailable) **OR** • Pseudomembranous colitis	**Vancomycin** 125 mg PO/NG QID x 10-14 d	$$
Fulminant • Hypotension **OR** • Ileus **OR** • Megacolon **OR** • Shock	**Vancomycin** 125 mg PO/NG QID x 10-14 d If complete ileus or critically ill, ADD: **Metronidazole** 500 mg IV q8h If unable to take PO/NG, consider adding: **Vancomycin** 500 mg in 100 mL NS rectally q6h	$$ $ $$
First Recurrence **Mild-moderate:** **Severe:**	See Initial, Mild-moderate See Initial, Severe	-
Second or Further Recurrences	**Vancomycin** 125 mg PO/NG QID x 10-14 d, then consider taper over ≥6 wks (e.g. 125 mg BID x 7 d, 125 mg Daily x 7 d, 125 mg q2-3 d x 2-8 wks) Consider fecal microbiota transplantation (FMT) in multiple relapses, especially after failed vancomycin taper. Consult ID or GI.	$$

Clinical Highlights
1. **Review all antibiotics and discontinue unless indicated.**
2. **Discontinue all proton pump inhibitors, anti-peristaltics, and pro-motility agents if not required.**
3. **Consider consulting ID, GI, and/or General Surgery in severe or fulminant cases.**

References: VCH-PHC *Clostridium difficile* Infection Guidelines,
Loo VG et al. J Assoc Med Microbiol Infect Dis Can 2018;3(2):71-92.
VGH *Clostridium difficile* Treatment Pre-printed Order #765.

Urinary Tract Infections (UTI) in Non-pregnant Adults

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Cost /Day
Asymptomatic Bacteriuria	Enterobacterales colonization	**No antibiotic therapy**	-
Cystitis Uncomplicated	*E. coli* Enterobacterales *Enterococcus* sp. *S. saprophyticus*	1. **Nitrofurantoin** (MacroBID®) 100 mg PO BID x 5 d (CrCl ≥30mL/min **OR** 2. **Co-trimoxazole DS** 1 tab PO BID x 3 d **OR** 3. **Cephalexin** 500 mg PO QID x 5 d **OR** 4. **Fosfomycin** 3 g PO x 1 dose (for mild cystitis) (Restricted to resistant organisms and/or intolerance to all other oral agents - Consult Medical Microbiology)	$ $ $ $$
Cystitis Complicated/male or urinary tract abnormality	*E. coli* Enterobacterales *Enterococcus* sp. *S. agalactiae* *Aerococcus urinae*	1. **Nitrofurantoin (**MacroBID®) 100 mg PO BID x 5-7 d (CrCl ≥30mL/min **OR** 2. **Co-trimoxazole DS** 1 tab PO BID x 5-7 d **OR** 3. **Amoxicillin-clavulanate** 875/125 mg PO BID x 5-7 d **OR** 4. **Cefixime** 400 mg PO daily x 5-7 d	$ $ $ $
Pyelonephritis Mild-moderate (hospitalized) *PO therapy*	*E. coli* Enterobacterales *S. saprophyticus*	1. **Amoxicillin-clavulanate** 875/125 mg PO BID x 7 d **OR** 2. **Co-trimoxazole DS** 1 tab PO BID x 7 d **OR** 3. **Cefixime** 400mg PO daily x 7 d **If severe beta-lactam and TMP/SMX allergy** 4. **Ciprofloxacin** 500 mg PO BID x 7 d	$ $ $ $
Pyelonephritis/ Urosepsis Moderate (hospitalized) *IV therapy*	As above	**Ceftriaxone** 1 g IV daily x 7-10 d (stepdown to oral agent when stable)	$
	If *Enterococcus* known/suspected	**ADD Ampicillin** 1-2 g IV q6h x 7-10 d (stepdown to oral agent when stable)	$
	If ceftriaxone/ penicillin allergy	**Tobramycin** 4-6 mg/kg IV q24h i(f CrCl ≥60 mL/min) **± Vancomycin** 15 mg/kg IV q8-24h **(if known/ suspected *Enterococcus*)**	$ $$
Pyelonephritis/ Urosepsis Severe or ESBL known/suspected	As above or known/ suspected ESBL	1. **Piperacillin-tazobactam** 3.375 g IV q6h x 7-10 d **If severe penicillin allergy** 2. **Meropenem** 500 mg IV q6h x 7-10 d	$$ $$$

Clinical Highlights
1. Malodorous/cloudy urine alone is NOT a sign/symptom of UTI and is NOT an indication for urine culture.
2. Changes in cognitive function and activities of daily living REQUIRE clinical assessment; never assume these are due to UTI.
3. Urine should ALWAYS be collected midstream, by in/out catheterization, or through a new catheter (unless contraindicated).
4. Positive urine cultures in asymptomatic patients should NOT be treated except in pregnancy or prior to urologic/gynecologic surgery
5. On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.
6. Stepdown to PO when resolution of systemic symptoms.

References: VCH ASPIRES Management of Urinary Tract Infections in Non-pregnant Adults, Blondel-Hill E, Fryters S, eds. Bugs & Drugs, 2020.

Catheter-associated Urinary Tract Infection (CA-UTI)

Definition
Catheter-associated urinary tract infection (CA-UTI) is defined as:
PRESENCE OF SYMPTOMS *with* >10^3 COLONY FORMING UNITS (CFU)/L of 1-2 BACTERIAL SPECIES in a single catheter urine specimen or in a midstream voided urine after catheter removal for 48 hours, *with* a POSITIVE URINE ANALYSIS.

CA-UTI Symptoms
New onset or worsening fever, rigors, altered mental status, malaise, flank pain, costovertebral angle tenderness, acute hematuria, pelvic discomfort; and in those with catheter removed, dysuria, urgent or frequent urination, or suprapubic pain or tenderness.

Catheter Replacement
1. **Assess need for urinary catheter and remove if possible.**
2. **If urinary catheter is indicated, replace urinary catheter prior to culture and sampling.**

Urine Culture and Sampling
1. **Obtain urine culture AND urine analysis from new catheter prior to antimicrobial therapy.**
2. **If catheter is not required, culture voided midstream urine prior to antimicrobial initiation.**

Usual Pathogens
Short-term catheterization: *E. coli, Klebsiella, Serratia, Citrobacter, Enterobacter,* coagulase (-) *Staph., Enterococcus.*
Long-term catheterization: As above (may be polymicrobial), *Pseudomonas aeruginosa, Proteus, Morganella, Providencia.*

Clinical Highlights
1. **Do not treat a positive urine culture in the absence of clinical symptoms.**
2. **Discontinue catheter as soon as appropriate.**
3. **On Day 2 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**
4. **Seven days is the recommended duration of treatment if clinically improving and 10-14 days for delayed response or structural abnormalities, regardless of catheterization or not.**

Reference: Hooton TM et al. CID 2010;50:625-663.

Legend

Cost ($/day)			
$ 0.00-10.00	$$ 10.01-25.00	$$$ 25.01-50.00	$$$$ 50.01- >100.00

Skin and Soft Tissue Infection

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Cost/ Day
Non-purulent Cellulitis, Lymphangitis, or suspected Grp A *Streptococcus* No purulent drainage or exudate, and no associated abscess	Grp A *Strep* Grp B, C, G *Strep*	1. **Cephalexin** 500-1000 mg PO QID x 5 d **OR** 2. **Cefazolin** 1-2 g IV q8h x 5-10 d* **OR** 3. **Cefazolin** 2 g IV q24h + **Probenecid** 1 g PO daily x 5-10 d* **OR** **If severe allergy to cephalexin and cefazolin** 4. **Clindamycin** 450-600 mg PO/IV q8h x 5 d **Step-down to oral when appropriate; duration based on response*	$ $-$$ $ $-$$
Purulent Cellulitis or Abscess Purulent drainage or exudate in absence of drainable abscess	*S. aureus (not MRSA)*	**I&D if abscess present, treatment as above (if cellulitis present):** As above	As above
	If CA-MRSA suspected or documented	**Treatment as above, ADD** 1. **Doxycycline** 100 mg PO BID x 5 d **OR** 2. **Co-trimoxazole DS** 1-2 tabs PO BID x 5 d **OR** 3. **Clindamycin** 450-600 mg PO/IV q8h x 5 d (if susceptible) **OR** 4. **Vancomycin** 15 mg/kg IV q8-24h x 5 d	$ $ $-$$ $$
Diabetic Foot Infection Ulcer; no signs of infection	-	**Wound care only; no antibiotics required**	-
Diabetic Foot Infection Mild - local infection with erythema >0.5 and ≤2 cm around ulcer	*S. aureus, Strep* sp.	1. **Cephalexin** 500-1000 mg PO QID x 7 d **OR** 2. **Cefazolin** 1-2 g IV q8h x 7 d **OR** 3. **Clindamycin** 450-600 mg PO/IV q8h x 7 d **OR** 4. **Amoxicillin-clavulanate** 875/125 mg PO BID x 7 d	$ $-$$ $-$$ $
Diabetic Foot Infection Moderate - local infection with erythema >2 cm or deeper infection, AND no systemic symptoms	*S. aureus, Strep* sp., Enterobacterales, anaerobes	1. **Amoxicillin-clavulanate** 875/125 mg PO BID x 7-14 d‡ **OR** 2. **Ceftriaxone** 1-2 g IV q24h **+ Metronidazole** 500 mg PO/IV q12h x 7-14 d‡ **OR** 3. **Clindamycin** 600 mg PO/IV q8h **+ Ciprofloxacin** 750 mg PO BID or 400 mg IV q12h x 7-14 d‡	$ $-$$ $ $ $
Diabetic Foot Infection Severe - local infection as above AND signs of SIRS	As above	1. **Ceftriaxone** 1-2 g IV q24h **+ Metronidazole** 500 mg PO/IV q12h x 7-14 d‡ **OR 2. Amoxicillin-clavulanate** 2 g IV q12h x 7-14 d‡ **OR** 3. **Piperacillin-tazobactam** 3.375 g IV q6h x 7-14 d‡ **OR** 4. **Meropenem** 500 mg IV q6h x 7-14 d‡	$-$$ $ $$ $$$
Diabetic Foot Infection Mild, moderate, and severe	If CA-MRSA suspected or documented	**ADD to above regimens:** 1. **Doxycycline** 100 mg PO BID x 7-14 d‡ **OR** 2. **Co-trimoxazole DS** 1-2 tabs PO BID x 7-14 d‡ **OR** 3. **Vancomycin** 15 mg/kg IV q8-24h x 7-14 d‡	$ $ $$

‡ Duration of therapy is based on clinical status, presence or absence of osteomyelitis, and source control

Clinical Highlights
1. **Cellulitis usually progresses 24-48 hours after initiation of treatment before it improves.**
2. **As non-purulent cellulitis is caused by *Streptococcus*, broadening with Gram-negative coverage is generally not required.**
3. **Stepdown to PO when resolution of systemic symptoms or no further progression.**

References: Stevens DL et al, CID 2014;59:310-52, Lipsky BA et al, CID 2012;54:132-73., Blondel-Hill E, Fryters S, eds. Bugs & Drugs Reference, 2020.

Sepsis

Indication	Patient Factors	Empiric Treatment	Cost /Day
Sepsis Unknown source	-	**Piperacillin-tazobactam** 3.375 IV q6h	$$
	If beta-lactam allergy (including anaphylaxis) or ESBL suspected or documented	**Meropenem** 500 mg IV q6h	$$$
	If MRSA known or suspected	**ADD Vancomycin** 20 mg/kg IV load, then 15 mg/kg IV q8-24h	$$
Severe septic shock Unresponsive to aggressive fluid therapy and requiring vasopressors	-	**Vancomycin** 20 mg/kg IV load, then 15 mg/kg IV q8-24h **+ Meropenem** 500 mg IV q6h	$$ $$$

Clinical Highlights
1. **IV anti-invectives should be initiated within first hour of clinical signs of severe sepsis or septic shock.**
2. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**

Reference: VGH Initial Sepsis Management in the ED Pre-printed Order #555.

Febrile Neutropenia

Indication	Criteria	Empiric Treatment	Cost /Day
Febrile neutropenia **High risk** (in-patient)	Fever >38.3°C with absolute neutrophil count <500/ mm^3 or expected decrease to <500/mm^3 within 48 h	**Piperacillin-tazobactam** 4.5 g IV q6h	$$
	If penicillin allergy (NOT anaphylaxis) suspected or documented	**Ceftazidime** 2 g IV q8h **+ Metronidazole** 500 mg PO/IV q12h (if intraabdominal source suspected)	$$$ $$
	If penicillin/ceftazidime anaphylaxis suspected or documented **OR** if ESBL suspected or documented	**Meropenem** 500 mg IV q6h	$$
	ADD Vancomycin if hemodynamically unstable/septic; pneumonia; blood culture positive for Gram-positive bacteria; serious catheter-related infection; serious skin or soft tissue infection; MRSA known/suspected; severe mucositis on fluoroquinolone prophylaxis: **Vancomycin** 15 mg/kg IV q8-24h (May consider vancomycin 20 mg/kg load if critically)		$$
Low risk - (out patient)	Hemodynamic stability; absence of heart failure, angina, lung disease, renal/hepatic insufficiency, hepatitis, HIV, uncontrolled DM, severe mucositis, active autoimmune disease; absence of complex infection: **Amoxicillin-clavulanate** 875/125 mg PO BID **+/- Ciprofloxacin** 750 mg PO BID		$
	If penicillin allergy: **Cefuroxime** 500 mg PO BID **+ Metronidazole** 500 mg PO BID **+/- Ciprofloxacin** 750 mg PO BID		$

Clinical Highlights
1. **Review past microbiology results and recent antibiotic usage to optimize antibiotic selection.**
2. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**

References: VGH Febrile Neutropenia Pre-printed Order #302, Freifeld AG et al, CID 2011;52:56-93.

Vancouver Coastal Health
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ANTIMICROBIAL STEWARDSHIP PROGRAMME TREATMENT GUIDELINES FOR COMMON INFECTIONS

Vancouver General Hospital
University of British Columbia Hospital
G F Strong Rehabilitation Centre
Coastal Community of Care
Richmond Hospital

September 2024
(Originally published 2011)

"Antimicrobial stewardship is defined as the limitation of inappropriate antimicrobial use while optimizing antimicrobial selection, dosing, route, and duration of therapy to maximize clinical cure or prevention of infection; while limiting unintended consequences, such as the emergence of resistance, adverse drug events, the selection of pathogenic organisms, and cost…"

The Antimicrobial Stewardship Programme "Treatment Guidelines for Common Infections Card" is produced by ASPIRES (*Antimicrobial Stewardship Programme: Innovation, Research, Education, and Safety*), Pharmaceutical Sciences, and the Antibiotic Utilization Subcommittee of the Vancouver General Hospital with representation from Pharmacy, Infectious Diseases, Medical Microbiology, BMT/Leukemia, Critical Care, Family Medicine, Surgery, Internal Medicine, and Respirology.

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Community-acquired Bacterial Meningitis

Indication	Usual Pathogens	Empiric Treatment	Cost/ Day
Meningitis Adults: 18-50 years	*S. pneumoniae* *N. meningitidis* *H. influenzae*	**Ceftriaxone** 2 g IV q12h **± Vancomycin#** 20 mg/kg IV load, then 15 mg/kg q8-24h (add only if penicillin-resistant *S. pneumoniae* suspected) **If beta-lactam allergy:** **Meropenem** 2 g IV q8h **OR** **[Vancomycin** 20 mg/kg IV load, then 15 mg/kg q8-24h **+ Co-trimoxazole** 5 mg/kg TMP IV q6-8h]	$ $$ $$$ $$ $$$$
Meningitis Adults: >50 years, pregnant, immunocompromised, DM, ESRD, alcoholism	*S. pneumoniae* *N. meningitides* *H.influenzae* *L. monocytogenes*	**Ceftriaxone** 2 g IV q12h **+ Ampicillin** 2 g IV q4h **± Vancomycin#** 20 mg/kg IV load, then 15 mg/kg IV q8-24h (add only if penicillin-resistant *S. pneumoniae* suspected)	$ $ $$

Clinical Highlights
**At VCH, *S. pneumoniae* resistance to Ceftriaxone is 0%. Only add vancomycin for non-local patients or travel-associated meningits.**
1. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**
2. **May stepdown Ceftriaxone to 2 g IV q24h once patient improving clinically.**
3. **Recommended duration of therapy: *S. pneumoniae* 10-14 days, *N. meningitidis* 5-7 days, *H. influenzae* 10 days, *L. monocytogenes* >21 days, and Enterobacterales 21 days.**

Reference: Tunkel AR, et al. CID 2004;39:1267-84., Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2020.