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

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Dose	Cost/ Day
CAP **Inpatient: mild -moderate; non-ICU** CURB-65 SCORE: 2	*S. pneumoniae* *H. influenzae* *M. pneumoniae* *C. pneumoniae*	**1. Cefuroxime** **or** **2. Amoxicillin-clavulanate** ***Add atypical coverage only if atypicals are strongly suspected** **Second Line: Moxifloxacin**	500 mg PO TID x min 5 d or 750-1500 mg IV q8h x min 5 d 875/125 mg PO BID x min 5 d 400 mg PO/IV daily x min 5 d	$ $$ $ $-$$
CAP **Inpatient: severe/ ICU** CURB-65 SCORE: 3-5	As above *S. aureus* Group A *Strep* *Enterobacteriaceae*	**Ceftriaxone** **+ [Doxycycline or Clarithromycin XL or Azithromycin]** **Second Line: Moxifloxacin**	1-2 g IV q24h x min 5 d 100 mg PO BID x min 5 d 1000 mg PO daily x min 5 d 500 mg IV q24h x 3 d 400 mg PO/IV daily x min 5 d	$ $ $ $ $-$$
	If MRSA suspected/ documented	**Vancomycin**	25-30 mg/kg IV load, then 15 mg/kg q8-12h x min 7d	$$

Clinical Highlights
1. **Consider outpatient treatment, if CURB-65 score is <2.**
2. **Avoid using the same class of antibiotics if used within previous 3 months.**
3. **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, recent antibiotic use (within 3 months), and solid organ transplant.
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. **Consider discontinuing therapy after Day 5, if patient is afebrile and has no more than 1 sign of CAP-associated instability:**

Criteria for Clinical Instability	
Temperature ≥37.8°C	**Systolic blood pressure ≤90 mmHg**
Heart rate ≥100/min	**SaO_2 ≤90% or pO_2 ≤60 mmHg on room air**
Respiratory rate ≥24/min	**Abnormal mental status.**

References: VCH ASPIRES Community-acquired Pneumonia Management Guidelines for Adults, Mandell LA et al. Infectious diseases society of America/ American thoracic society consensus guidelines on the management of community-acquired pneumonia in adults. CID 2007;44:S27-72, Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2012.

CURB-65 Severity Score for Community-acquired Pneumonia

Clinical Factor	Points
C onfusion of new onset	**+1**
U rea >7mmol/L	**+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:	**CURB-65 SCORE**

CURB-65 Score	30-day Mortality	Disposition
0	**0.7%**	**Outpatient (low risk; consider home treatment)**
1	**2.1%**	
2	**9.2%**	**Inpatient short hospitalization (or closely supervised outpatient treatment)**
3	**14.5%**	**Inpatient or ICU (severe pneumonia; hospitalize and consider admitting to intensive care)**
4	**40.0%**	
5	**57.0%**	

References: Lim W et al. Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study. Thorax 2003;58(5):377-382, Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2012.

Understanding Positive Blood Cultures

Positive blood cultures are generally considered serious and can be a marker for high mortality. All positive blood cultures should be presumed as "real" until investigations prove otherwise.

1. Assess patient for clinical signs and symptoms of infection.
2. Review blood culture results to guide further treatment and investigations:
   a. Organisms considered high risk; should never be considered contaminants:
      - *S. aureus*
      - Gram negative rods
      - *Candida* sp.
      - β hemolytic *Streptococci*

   b. Organisms may be considered contaminants (if found in single bottles/sets without clinical signs of infection):
      - Coagulase negative *staphylococci*
      - *Corynebacterium*
      - *Propionibacterium*
      - *Micrococcus*
      - *Bacillus*

      Presence of any of these organisms in multiple bottles/sets, with signs of infection, or presence of prosthetic material (such as lines, pacemakers, prosthetic valves and joints, etc.) require further investigation and may represent real infection. Any potentially contaminated lines or prosthesis should be removed, wherever possible.
3. Investigate for potential source of bacteremia to remove a sequestered source, and to guide choice of antimicrobial therapy. Treatment should be directed at the likely syndrome causing the bacteremia, not just the organism identified in blood culture. Please refer to syndromic recommendations on this card.
4. Repeat blood cultures prior to initiation of antimicrobials to better characterize the bacteremia.
5. Treatment duration for bacteremia is based on the likely source and speed of clinical recovery. *S. aureus* and *Candida* sp. must be treated for a minimum of 14 days; longer therapy is required if cultures are persistently positive.

Reference: Mermel LA et al. CID 2009;49:1-45.

Hospital-acquired (HAP), and Ventilator-associated Pneumonia (VAP) and Tracheitis (VAT)

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Dose	Cost/ Day
HAP >4 days hospitalization: **mild-moderate**; no risk factors for resistance	Enterobacteriaceae *H. influenza* *S. aureus* *Streptococcus sp.* *S. pneumoniae*	**Ceftriaxone** or **Second Line: Moxifloxacin**	1-2 g IV q24h x 7 d 400 mg PO/IV daily x 7 d	$ $-$$
HAP >4 days hospitalization: **severe**; OR isolation of resistant organisms OR risk factors for resistance including: prior antibiotics ≤3 months, structural lung disease, immunosuppression	As above *Acinetobacter sp.* *Pseudomonas sp.*	1. **Piperacillin-tazobactam** or 2. **Meropenem**	3.375 g IV q6h x 7 d 500 mg IV q6h x 7 d	$$ $$
	If MRSA suspected or documented	**Add Vancomycin**	25 mg/kg IV load, then 15 mg/ kg q8-12h x min 7 d	$$
HAP **Aspiration pneumonitis**	-	**No antimicrobials. Supportive treatment only**		
HAP **Aspiration pneumonia** Mild-moderate	Polymicrobial	1. **Amoxicillin-clavulanate** or 2. **Ceftriaxone** **Second Line: Moxifloxacin**	875/125 mg PO BID x 7 d 1-2 g IV q24h x 7 d 400 mg PO/IV daily x 7 d	$ $ $-$$
HAP **Aspiration pneumonia** Severe	Polymicrobial	1. **Piperacillin-tazobactam** or 2. **Meropenem**	3.375 g IV q6h x 7 d 500 mg IV q6h x 7 d	$$ $$
VAP Calculate CPIS score	Enterobacteriaceae *S. pneumoniae* *H. influenzae* *S. aureus/MRSA* *P. aeruginosa* *Stenotrophomonas maltophilia* *Acinetobacter sp.*	**CPIS 0-3: VAP unlikely; seek alternate diagnosis**	No therapy required	-
		CPIS 4-6: VAP or VAT possible **If high risk or clinical suspicion:** 1. **Ciprofloxacin** or 2. **Co-trimoxazole** or 3. **Ceftriaxone**	May withhold antibiotics if immunocompetent 750 mg PO BID or 400 mg IV q12h DS ii tab PO TID or 2.5 mg/kg IV q6h 2 g IV q24h	 $ $- $$$$ $
		CPIS >6: VAP likely **Piperacillin-tazobactam**	3.375 g IV q6h	$$
	If MRSA colonized/ suspected/ documented	**Add Vancomycin**	25 mg/kg IV load, then 15 mg/ kg q8-12h x min 7 d	$$
	If ESBL suspected/ known, or significant beta-lactam allergy	**Meropenem**	500 mg IV q6h	$$

Clinical Highlights
1. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**
2. **Consider discontinuing therapy on Day 3, if CPIS score is ≤6 on both Day 0 and Day 3.**
3. **Consider discontinuing therapy after Day 7-8, if patient has improved clinically.**
   (Longer durations of treatment may be required for *Pseudomonas*, *Acinetobacter sp.*, *Stenotrophomonas maltophilia*, and MRSA).

References: VCH ASPIRES Hospital-acquired Pneumonia Management Guidelines, VCH ASPIRES Ventilator-associated Pneumonia Management Protocol, Rotstein C et al. Clinical practice guidelines for hospital-acquired pneumonia and ventilator-associated pneumonia in adults. Can J Infect Dis Med Microbiol 2008;19(1):19-53., Guidelines for the management of adults with hospital-acquired, ventilator-associated, and healthcare-associated pneumonia. Am J Respir Crit Care Med 2005;171:388-416, Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2012.

Modified Clinical Pulmonary Infection Score (CPIS)

Diagnostic Feature	CPIS Points		
	0	**+1**	**+2**
1. Temperature (°C)	**36.5 to 38.4**	**38.5 to 38.9**	**≥39 OR <36.5**
2. White blood cells (x 10^9/L)	**4 to 11**	**<4 OR >11**	**<4 OR >11 PLUS immature granulocytes (bands) ≥50%**
3. Oxygenation PaO_2/FiO_2 (mmHg)	**>240 OR ARDS**	**-**	**≤240 AND no ARDS**
4. Tracheal secretions	**None or scant**	**Non-purulent**	**Purulent**
5. Chest x-ray infiltrate	**No infiltrate**	**Diffuse (or patchy) infiltrate**	**Localized infiltrate**
6. Progression of pulmonary infiltrate	**No radiographic progression**	**-**	**Radiographic progression (after exclusion of CHF and ARDS)**
7. Microbiology	**Negative**	**Positive**	**Positive plus positive Gram stain**

1. **At Day 0, calculate modified CPIS from the first five diagnostic features (maximum score 10).**
2. **At Day 3 and 7, recalculate the modified CPIS using the seven variables (including the progression of pulmonary infiltrate and microbiology—maximum score 14).**

Interpretation

At Day 0 (baseline): **Score of ≤6: VAP is unlikely and decision to treat with antibiotics should be considered carefully.**
(In ventilated patients with a score between 4 and 6, treatment should be considered if no alternative diagnosis can be obtained).
Score of >6: Suggestive of VAP; initiate treatment.

At Day 3 and 7: **Score of ≤6: Consider discontinuing therapy if clinically well.**
Score of >6: Continue therapy.

Reference: Rotstein C et al. Clinical practice guidelines for hospital-acquired pneumonia and ventilator-associated pneumonia in adults. Can J Infect Dis Med Microbiol 2008;19(1):19-53.

Intraabdominal Infection (IAI)

Indication	Usual Pathogens	Empiric Treatment (in order of preference)	Dose	Cost /Day
IAI **Community-acquired: mild to moderate -** perforated or abscessed appendicitis, biliary tract, and other infections	"Core" pathogens: *Streptococcus sp.*, Enterobacteriaceae (*E. coli*, *Klebsiella sp.*, *Proteus sp.*, *Serratia marcescens*), Anaerobes (*Bacteroides sp*, *Clostridium sp*, *Fusobacterium sp*, *Lactobacillus sp*, *Peptostreptococcus sp.*)	**1. Cefazolin** **+ Metronidazole** or **2. Ciprofloxacin** **+ Metronidazole**	2 g IV q8h 500 mg PO/IV q12h 750 mg PO BID or 400 mg IV q12h 500 mg PO/IV q12h	$$ $ $ $ $
IAI **Community-acquired: severe** physiologic disturbance, advanced age, or immuno-compromised	"Core" pathogens (as above)	**1. Ceftriaxone** **+ Metronidazole** or **2. Piperacillin-tazobactam**	1-2 g IV q24h 500 mg PO/IV q12h 3.375 g IV q6h	$ $ $$
IAI **Healthcare-associated:** complicated or recurrent infection	"Core" pathogens (as above) *Acinetobacter* Multidrug resistant gr neg bacilli	**1. Piperacillin-tazobactam** **2. Meropenem**	3.375 g IV q6h 500 mg IV q6h	$$ $$
	If MRSA suspected/documented	**Vancomycin**	15 mg/kg IV q8-12h	$$
	If *Candida* isolated	**1. Fluconazole** or **2. Micafungin** **(if fluconazole-resistant)**	400 mg PO/IV daily 100 mg IV daily	$-$$ $$$$
	If *Enterococcus* isolated[#] (For *E. faecalis*)	**1. Piperacillin-tazobactam** or **2. Imipenem**	3.375 g IV q6h 500 mg IV q6h	$$ $$$$
	(For *E. faecium*)	**ADD Vancomycin**	15 mg/kg IV q8-12h	$$

[#] 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 discontinuing treatment at Day 4-7, if source control is adequate and clinical response is good; longer durations of therapy have not been associated with improved outcome.**
3. **Consider diagnostic investigations, if experiencing inadequate clinical response at Day 4-7.**
   Antibiotics should be discontinued within 24 hours for the following intraabdominal conditions:
   i) **Acute stomach and proximal jejunum perforations, in the 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
Mild or moderate Does not meet criteria for Severe or Fulminant	**Metronidazole** 500 mg PO/NG TID x 10-14 d If Day 4-6, diarrhea not improve or intolerant to PO metronidazole, change to **Vancomycin** 125 mg PO/ NG QID x 10-14 d	**$** **$$**
Severe WBC >15,000/mm^3, or acute kidney injury with ↑ SCr (≥ 1.5x baseline or ≥ 175 µmol/L) or pseudo-membranous colitis, or clinical judgement	**Vancomycin** 125 mg PO/NG QID x 10-14 d	**$$**
Fulminant Toxic megacolon, perforation, signs of peritonitis, ileus, severe sepsis/ septic shock, or severe acute renal failure	**Vancomycin** 125 mg PO/NG QID x 10-14 d If ileus or unable to take PO/NG vancomycin, consider cecal or rectal administration (500 mg via cecal tube or per rectum) **± Metronidazole** 500 mg IV q8h x 10-14 d	**$$** **$**
Recurrence First recurrence: mild-moderate First recurrence: severe	**Metronidazole** 500 mg PO/NG TID x 10-14 d If by Day 4-6, diarrhea not improve or intolerant to PO metronidazole, change to **Vancomycin** 125 mg PO/ NG QID x 10-14 d **See Severe - Empiric Treatment**	**$** **$$**
Recurrence Second or further recurrences (Consult Infectious Diseases)	**Vancomycin** 125 mg PO/NG QID x 10-14 d, then consider taper over 4 wk (e.g. 125 mg BID x7 d, 125 mg Daily x7 d, 125 mg q2-3 d x2 wk)	**$$**

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 *Clostridium difficile* Infection Guidelines, Zar FA, Bakkanagari SR, Moorthi KMLST, et al. A comparison of vancomycin and metronidazole for the treatment of Clostridium difficile-associated diarrhea, stratified by disease severity. CID 2007;45:302-7.
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)	Dose	Cost /Day
Cystitis	*E. coli* Enterobacteriaceae *Enterococcus* sp.	1. **Nitrofurantoin** or	50-100 mg PO QID or 100 mg PO BID [long acting (MacroBID®)] x 5 d (if CrCl ≥40 mL/min)	$ $
		2. **Co-trimoxazole** or	1 tab DS PO BID x 3 d	$
		3. **Amoxicillin-clavulanate** or	500/125 mg PO TID x 5 d	$
		4. **Tetracycline** or	250-500 mg PO QID x 5 d	$
		5. **Fosfomycin** (restricted to resistant organisms and/or intolerance to all other oral agents-contact medical microbiology) or	3 g PO x 1 dose	$$$
		If PO route not possible: 1. **Cefazolin** or	1 g IV q8h x 3-7 d (stepdown to an oral agent when stable)	$
		1. **Gentamicin**	4 mg/kg IV/IM q24h x 3-7 d (stepdown to an oral agent when stable)	$
Pyelonephritis / Urosepsis: Mild	As above	1. **Cefuroxime** or	500 mg PO TID x 10-14 d	$
		2. **Amoxicillin-clavulanate** or	500/125 mg PO TID x 10-14 d	$
		3. **Co-trimoxazole** or	1 DS tab PO BID x 10-14 d	$
		4. **Ciprofloxacin**	500 mg PO BID x 7 d	$
Pyelonephritis / Urosepsis: Moderate	As above	**Ceftriaxone**	1-2 g IV q24h x 10-14 d (stepdown to an oral agent if stable)	$
	If *Enterococcus* known/suspected	**ADD Ampicillin**	2 g IV q6h	$
	If beta-lactam allergy	**Gentamicin** **± Vancomycin (if known/ suspected** *Enterococcus* **)**	4-6 mg/kg IV q24h if CrCl ≥60 mL/min 20 mg/kg IV load, then 15 mg/kg IV q8-12h	$ $$
Pyelonephritis / Urosepsis: Severe or ESBL known/suspected	As above	1. **Piperacillin-tazobactam** or	3.375 g IV q6h x 10-14 d	$$
		2. **Meropenem**	500 mg IV q6h x 10-14 d	$$

Clinical Highlights
1. Malodorous/cloudy urine alone is NOT a sign/symptom of UTI.
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: An Antimicrobial/ Infectious Diseases Reference, 2012.

Catheter-associated Urinary Tract Infection (CA-UTI)

Definition
Catheter-associated urinary tract infection (CA-UTI) is defined as:
PRESENCE OF SYMPTOMS *with* **>10³ 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.**
5. **May consider a 3 day treatment in women aged ≤65 years without upper UTI symptoms after removal of the catheter.**

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)	Dose	Cost/ Day
Non-purulent Cellulitis No purulent drainage or exudate, and no associated abscess	Grp A *Strep* Grp B, C, G *Strep*	1. **Cephalexin** or 2. **Cefazolin** or 3. **Clindamycin**	500-1000 mg PO QID x 7-10 d 1-2 g IV q8h x 7-10 d 300-600 mg PO/IV q8h x 7-10 d	$ $-$$ $-$$
Purulent Cellulitis or Abscess Purulent drainage or exudate in absence of drainable abscess	*S. aureus*	**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** or 2. **Co-trimoxazole** or 3. **Clindamycin** or 4. **Vancomycin**	100 mg PO BID x 7-10 d 2 DS tabs PO BID x 7-10 d 600 mg POIV q8h x 7-10 d 15 mg/kg IV q8-12h x 7-10 d	$ $ $-$$ $$
Diabetic Foot Infection Ulcer; no symptoms or 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** or 2. **Cefazolin** or 3. **Clindamycin** or 4. **Amoxicillin-clavulanate**	500-1000 mg PO QID x 1-2 wk 1-2 g IV q8h x 1-2 wk 300-600 mg PO/IV q8h x 1-2 wk 500 mg PO TID x 1-2 wk	$ $-$$ $-$$ $
Diabetic Foot Infection Moderate - local infection with erythema >2 cm or deeper infection, AND no systemic symptoms	*S. aureus*, *Strep* sp., Enterobacteriaceae, anaerobes	1. **Amoxicillin-clavulanate** or 2. **Clindamycin + Ciprofloxacin** or 3. **Ceftiaxone + Metronidazole or** 4. **Moxifloxacin** or 5. **Piperacillin-tazobactam**	500 mg PO TID x 1-3 wk 600 mg PO/IV q8h x 1-3 wk 750 mg PO BID x 1-3 wk or 400 mg IV q12h 1-2 g IV q24h 500 mg PO/IV q12h 400 mg PO/IV Daily x 1-3 wk 3.375 g IV q6h x 1-3 wk	$ $-$$ $ $ $ $-$$ $$
Diabetic Foot Infection Severe - local infection as above AND signs of SIRS	As above	1. **Piperacillin-tazobactam** or 2. **Meropenem**	3.375 g IV q6h x 2-4 wk 500 mg IV q6h x 2-4 wk	$$ $$
Diabetic Foot Infection Mild, moderate, and severe	If CA-MRSA suspected or documented	**ADD to above regimens:** 1. **Doxycycline** or 2. **Co-trimoxazole** or 3. **Vancomycin**	100 mg PO BID x 1-2 wk 2 DS tabs PO BID x 1-2 wk 15 mg/kg IV q8-12h x 1-2 wk	$ $ $$

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 2005;41:1373-406, Lipsky BA et al, CID 2012;54:132-73., Blondel-Hill E, Fryters S, eds. Bugs & Drugs: An Antimicrobial/Infectious Diseases Reference, 2012.

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** 25 mg/kg IV load, then 15 mg/kg IV q8-12h	$$
Severe septic shock Unresponsive to aggressive fluid therapy and requiring vasopressors	-	**Vancomycin** 30 mg/kg IV load, then 20 mg/kg IV q8-12h **+ Meropenem** 500 mg IV q6h	$$ $$

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 neutro-penia	Fever >38.3ºC with absolute neutrophil count <500/mm³ or expected decrease to <500/mm³ within 48 h	**Piperacillin-tazobactam** 4.5 g IV q6h	$$
	If beta-lactam allergy (NOT anaphylaxis) suspected or documented	**Ceftazidime** 2 g IV q8h **+ Vancomycin** 20 mg/kg IV load, then 15 mg/kg IV q8-12h	$$$ $$
	If beta-lactam anaphylaxis suspected or documented **OR** If ESBL suspected or documented	**Meropenem** 500 mg IV q6h	$$
	ADD Vancomycin if: Hemodynamically unstable/signs of sepsis; radiographically-documented pneumonia; blood culture positive for Gram-positive bacteria; serious catheter-related infection suspected; serious skin or soft tissue infection; MRSA known/ suspected ; severe mucositis on fluoroquinolone prophylaxis	**Vancomycin** 20 mg/kg IV load, then 15 mg/kg IV q8-12h	$$

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
Promoting wellness. Ensuring care.

ASPIRES smart prescribing

ANTIMICROBIAL STEWARDSHIP PROGRAMME TREATMENT GUIDELINES FOR COMMON INFECTIONS

Vancouver General Hospital
University of British Columbia Hospital
G F Strong Rehabilitation Centre

March 2016
Originally published 2011
3rd Edition

"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.

For more information, please contact:

ASPIRES: 604-871-1670
Pharmaceutical Sciences: 604-875-4111 ext. 62481
Website: www.vhpharmsci.com

ASPIRES
Quality and Patient Safety, Vancouver Coastal Health
Vancouver General Hospital
855 W. 12th Ave., Vancouver, BC, V5Z1M9, Canada

Community-acquired Bacterial Meningitis

Indication	Usual Pathogens	Empiric Treatment	Dose	Cost/ Day
Meningitis Adults: 18-50 years	*S. pneumoniae* *N. meningitidis* *H. influenzae*	**Ceftriaxone** **± Vancomycin** (if penicillin-resistant *S. pneumoniae* suspected) **If beta-lactam allergy:** **Meropenem** or **[Vancomycin** **+** **Co-trimoxazole]**	2 g IV q12h 30 mg/kg IV load, then 20 mg/kg q8-12h 2 g IV q8h 30 mg/kg IV load, then 20 mg/kg q8-12h 5 mg/kg TMP IV q8-6h	$ $$ $$$ $$ $$$$
Meningitis Adults: >50 years, pregnant, immunocompromised, DM, ESRD, alcoholism	*S. pneumoniae* *N. meningitides* *H.influenzae* *L. monocytogenes*	**Ceftriaxone** **+ Ampicillin** **± Vancomycin** (if penicillin-resistant *S. pneumoniae* suspected)	2 g IV q12h 2 g IV q4h 30 mg/kg IV load, then 20 mg/kg IV q8-12h	$ $ $$

Clinical Highlights
1. **At VCH,** *S. pneumoniae* **resistance to Ceftriaxone is 0%.**
2. **On Day 3 or when culture and susceptibility results are available, pathogen-directed therapy should be used.**
3. **May stepdown Ceftriaxone to 2 g IV q24h once patient improving clinically .**
4. **Recommended duration of therapy:** *S. pneumoniae* **10-14 days,** *N. meningitidis* **5-7 days,** *H. influenzae* **7 days,** *L. monocytogenes* **≥21 days, and Enterobacteriaceae 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, 2012.