McLaren Antimicrobial Stewardship Committee

Guidance for Empiric Antibiotic Choice and Duration in Selected Infectious Indications

Guideline Statement: These recommendations are intended as a resource to prescribers for suggested empiric antimicrobial therapy in adult patients with selected infections at McLaren. These recommendations should not supersede clinical judgment, as individual patient characteristics may warrant alternative treatment.

Infectious Source	Empiric Antimicrobial Recommendations
Respiratory Tract Infections	

Acute Exacerbation of COPD	• **Preferred Regimen:**
	  ○ Doxycycline PO 100 mg BID x 5 days or
	  ○ Azithromycin PO 500 mg daily x 3 days
	• **Alternative Regimens:**
	  ○ Amoxicillin/clavulanate 875-125 mg BID x 5 days
	• **IV option for patients unable to tolerate PO:**
	  ○ Ceftriaxone 2 GM daily x 5 days

Acute Exacerbation of COPD with Pseudomonal risk: • IV antibiotics in last 90 days • Pseudomonas cultured in last 12 months • Bronchiectasis	• Piperacillin/tazobactam 4.5 gm q8hr x 5 days or Cefepime 2 GM q 8 hours x 5 days
Influenza Hospitalized patients should initiate treatment as soon as possible, even if >48 hours have elapsed since illness onset	• **Preferred Empiric Regimen:** ○ Oseltamivir x 5 days

Aspiration Pneumonia
Witnessed event does not require antibiotics. Should monitor for 48 hours prior to considering antibiotic initiation.
	• **Preferred Empiric Regimen:**
	  ○ Ceftriaxone 2 GM daily x 5 days + Azithromycin 500 mg daily x 3 days
	• **Alternative Regimen:**
	  ○ Ampicillin-Sulbactam 3 GM q6hr x 5 days
	• **Penicillin AND Cephalosporin Allergy Alternative:**
	  ○ Levofloxacin 750 mg daily IVPB x 5 days
	• **For Concomitant Lung Abscess or Empyema:**
	  ○ Add Metronidazole 500 mg q8hr x 5 days to the above regimens (except Ampicillin-sulbactam)

Community-acquired Pneumonia (CAP) (Severe and Non-Severe)
Definition: no major criterion or less than 3 minor criteria (see Severe CAP below for criteria)
Regardless of risk factors, IDSA guidelines recommended standard CAP coverage for Non-Severe CAP patients
	• **Preferred Empiric Regimen:**
	  ○ Ceftriaxone 2 GM daily x 5 days + (Azithromycin 500 mg daily x 3 days or Doxycycline 100 mg BID x 5 days)
	• **Cephalosporin Allergy Alternative:**
	  ○ Levofloxacin 750 mg daily x 5 days

Severe CAP <u>WITH</u> prior hospitalization AND IV antibiotics in the last 90 days
Definition: one major criterion or three or more minor criteria
Minor criteria
• Respiratory rate ≥ 30 breaths/min
• PaO2/FIO2 ratio ≤ 250
• Multilobar infiltrates
• Confusion/disorientation
• Uremia (blood urea nitrogen level> 20 mg/dl)
• Leukopenia (white blood cell count < 4,000 cells/ml) due to infection alone (i.e., not chemotherapy induced)
• Thrombocytopenia (platelet count < 100,000/ml)
• Hypothermia (core temperature < 36°C)
• Hypotension requiring aggressive fluid resuscitation
Major criteria
• Septic shock with need for vasopressors
• Respiratory failure requiring mechanical ventilation
	• **Only IF in the last 90 days, patient had a prior hospitalization (>48hours) AND received IV antibiotics:**
	  ○ Vancomycin PTD + Cefepime 2 gm q8hr x 5 days + Azithromycin 500 mg daily x 3 days
	  ○ Vancomycin PTD + Piperacillin/tazobactam 4.5 gm q8hr x 5 days + Azithromycin 500 mg daily x 3 days
	• **Penicillin AND Cephalosporin Allergy Alternative:**
	  ○ Vancomycin + Aztreonam +/- Tobramycin

Hospital-acquired Pneumonia (HAP) Risk factors requiring dual coverage of pseudomonas (if any are present, add Tobramycin): • Prior intravenous antibiotic use within 90 days • Structural lung disease	• **Preferred Empiric Regimen:** ○ Vancomycin PTD x 7 days + Cefepime 2 GM q8 hr x 7 days +/- Tobramycin PTD x 7 days • **Cephalosporin Allergy Alternative Regimen:** ○ Vancomycin PTD x 7 days + Piperacillin/tazobactam 4.5 q 8 hr x 7 days +/- Tobramycin • **Penicillin AND Cephalosporin Allergy Alternative:** ○ Vancomycin PTD x 7 days +Aztreonam 2 GM q8hr x 7 days +/- Tobramycin PTD x 7 days
Ventilator-associated Pneumonia (VAP) Risk factors requiring dual coverage of pseudomonas (if any are present, add Tobramycin): • Prior intravenous antibiotic use within 90 days • Septic shock at time of VAP or ARDS preceding VAP • Five or more days of hospitalization prior to the onset of VAP • Acute renal replacement therapy prior to VAP onset	• **Preferred Empiric Regimen:** ○ Vancomycin PTD x 7 days + Cefepime 2 GM q8 hr x 7 days +/- Tobramycin PTD x 7 days • **Cephalosporin Allergy Alternative Regimen:** ○ Vancomycin PTD x 7 days + Piperacillin/tazobactam 4.5 q 8 hr x 7 days +/- Tobramycin • **Penicillin AND Cephalosporin Allergy Alternative:** ○ Vancomycin PTD x 7 days +Aztreonam 2 GM q8hr x 7 days +/- Tobramycin PTD x 7 days
Intra-abdominal Infections	
Community-acquired Intra-abdominal Infection, No Severe Sepsis/Shock *recommended duration of 5 days if adequate source control	• **Preferred Empiric Regimen:** ○ Ceftriaxone 2 GM daily + Metronidazole 500 mg q8hr • **Cephalosporin Allergy Alternative:** ○ Aztreonam 2 GM q 8hr + Vancomycin PTD + Metronidazole 500 mg q8hr
Acute Necrotizing Pancreatitis with suspected* or proven infection *Infected necrosis should be suspected when cross sectional imaging demonstrates gas in a pancreatic or peripancreatic collection. Other factors that may be indicative of infected necrosis include the presence of fevers, bacteremia, worsening leukocytosis, persistent unwellness, or clinical deterioration	• **Preferred Empiric Regimen:** ○ Meropenem 2 GM q8hr (duration based on pt. response) • **Severe Beta-Lactam allergy (anaphylaxis):** ○ Aztreonam 2 GM q8hr + Vancomycin PTD (duration based on pt. response)
Acute Bacterial Skin and Skin Structure Infections	
Non-purulent Cellulitis **Mild infection:** typical cellulitis/erysipelas with no focus of purulence **Moderate infection:** patient with signs of systemic infection **Severe infection:** patients who have failed oral antibiotic therapy, with signs of systemic infection, with immunocompromise, or with signs of deeper infection	• **Mild Cellulitis:** ○ Cephalexin PO x 5 days or Cefdinir PO (penicillin allergy) x 5 days • **Moderate Cellulitis:** ○ Cefazolin 1 GM q8hr x 5 days or Ceftriaxone 1 GM daily x 5 days • **Severe Cellulitis:** • Vancomycin PTD x 5 days + Piperacillin/tazobactam 4.5 GM q8hr x 5 days
Cellulitis with abscess or purulence **Mild infection:** patient is without signs of systemic infection **Moderate-severe infection:** patient with signs of systemic infection, who have failed I&D and oral antibiotics, or immunocompromised patients	• **Preferred Empiric Regimen:** ○ Vancomycin PTD x 7 days • **Oral Options for Mild Infection or Stepdown Therapy:** ○ Sulfamethoxazole/trimethoprim PO x 7 days or Doxycycline PO x 7 days
Necrotizing Fasciitis	• **Preferred Empiric Regimen:** ○ Vancomycin PTD + Piperacillin/tazobactam 4.5 GM q8hr x 7 days + Clindamycin 600 mg IV q8hr x 7 days

Urinary Tract Infections	
Uncomplicated Cystitis Signs and Symptoms Attributable to UTIs: • Fever >38° C or rigors • Urgency, frequency, dysuria • Suprapubic or Costovertebral pain / tenderness • New onset mental status changes **with** leukocytosis, hypotension, or ≥ 2 SIRS criteria • Acute hematuria • Spasticity or autonomic dysreflexia in patients with spinal cord injury	• **Patients without signs and symptoms attributable to UTIs:** o Antibiotics are **NOT** indicated • **Preferred Empiric Regimen:** *Fluoroquinolones are NOT recommended o Nitrofurantoin (if CrCl > 30mL/min, regardless of age) 100 mg BID x 5 days • **Alternative Regimens:** o Cephalexin 500 mg BID x 7 days o Amoxicillin-Clavulanate 500-125 mg BID x 5 days • **IV option for patients unable to tolerate PO:** o Ceftriaxone 1 GM daily x 3 days
Complicated Lower Urinary Tract Infection (UTI) Risk factors for resistant bacteria: • Prior highly-resistant bacteria in urine • Recent inpatient stay • Recent fluoroquinolone or beta-lactam exposure	• **Preferred Empiric Regimen:** o Nitrofurantoin (for a CrCl > 30mL/min, regardless of age) 100 mg BID x 7 days o Ceftriaxone 1 GM daily x 7 days • **High-Risk for resistant bacteria:** o Cefepime 2 GM q 8hr x 7 days o Piperacillin-tazobactam 4.5 GM q8hr x 7 days
Pyelonephritis Risk factors for resistant bacteria: • Prior highly-resistant bacteria in urine • Recent inpatient stay • Recent fluoroquinolone or beta-lactam exposure Follow Sepsis guidelines for patients meeting criteria	• **Preferred Empiric Regimen:** o Ceftriaxone 1 GM daily x 7 days • **High-Risk for resistant bacteria:** o Cefepime 2 GM q8hrs x 7 days o Meropenem (+ urine cx hx of ESBL in previous 12m) 2 GM q8hr x 7 days o Severe Beta-Lactam Allergy: Aztreonam 2 GM q8hr x 7 days