

Trauma Antimicrobial Stewardship Practice Management Guideline

Purpose: To guide appropriate antimicrobial use and decrease microbial resistance on the trauma service

Background: Appropriate empiric therapy is critical for decreasing mortality associated with severe infections. Empiric regimens should be chosen based on local antibiograms, common bacteria associated with the suspected infection, and patient specific factors. Rotation of antimicrobials is not currently recommended by the IDSA as a strategy to reduce antibiotic resistance, as data do not support its use. Guidelines for empiric antimicrobial utilization and dosing and appropriate de-escalation strategies such as MRSA nasal PCR screening allow for hospitals to optimize treatments of infections.

Components:

- **Prophylactic Antibiotics** (*see respective PMGs*)
 - Duration: ≤ 24h
 - Narrow spectrum antibiotics
 - Perioperative abdominal trauma
 - Open orthopedic fractures
 - Craniofacial trauma
- **Evidence-based diagnosis of infections**
 - VAP: quantitative BAL ($\geq 10^4$ CFU/mL)
 - Targeted empiric therapy (when known source)
- **Empiric Antibiotic Protocols**
 - Directed by unit-specific antibiograms
 - Indication-specific empiric therapy
 - Pneumonia (CAP/HAP/VAP)
 - UTI (*see respective PMG*)
 - Intra-abdominal
 - Bacteremia, CNS, or unknown source
 - De-escalation strategies
 - MRSA Nasal PCR Screening, if collected prior to mupirocin administration
 - Evidence-based antibiotic duration

Indication-Specific Preferred Empiric Antibiotics:

	CAP [*]	VAP [^] or HAP [#]	Intra-abdominal Infection ^{**}	Bacteremia
Empiric Antibiotic	Ceftriaxone + Azithromycin	Vancomycin + Cefepime	Piperacillin/tazobactam ± Vancomycin ± Fluconazole	Vancomycin + Cefepime
PCN Allergy	Levofloxacin	Vancomycin + Levofloxacin	Levofloxacin + Metronidazole ± Vancomycin ± Fluconazole	Vancomycin + Levofloxacin

^{*}Community- acquired pneumonia (CAP): pneumonia acquired outside of the hospital setting

[^]Ventilator-acquired pneumonia (VAP): pneumonia occurring greater than 48 hours after endotracheal intubation

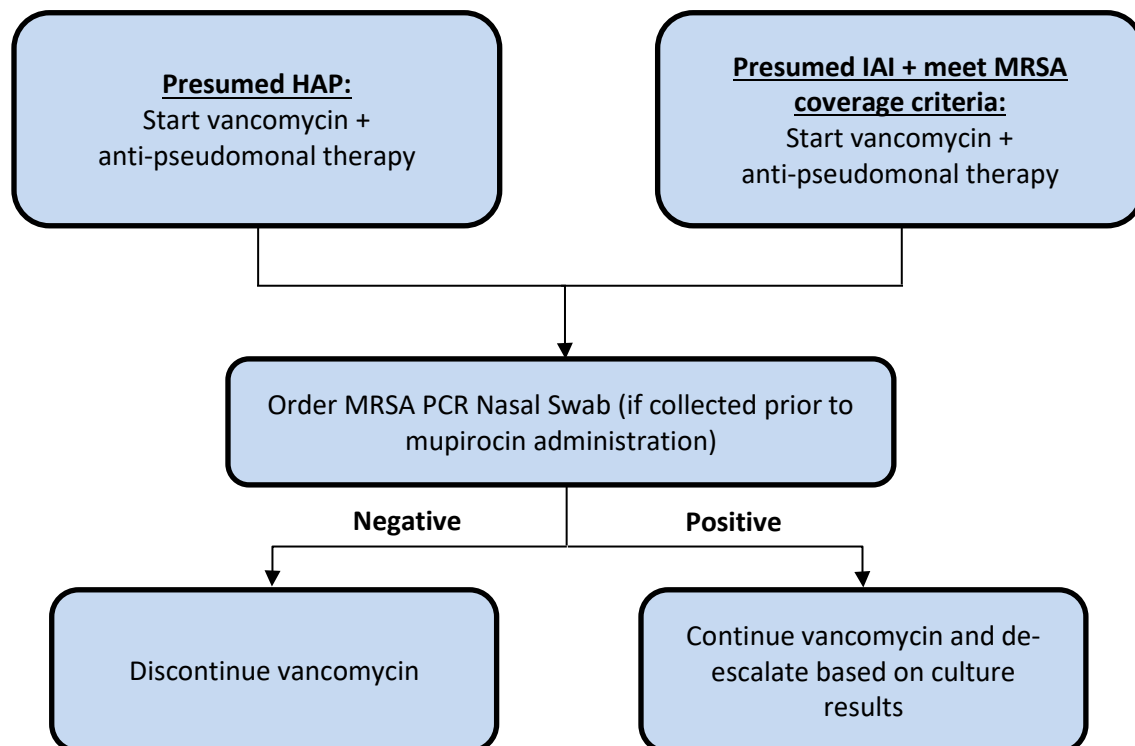
[#]Hospital-acquired pneumonia (HAP): pneumonia not incubating at the time of hospital admission and occurring ≥ 48h after admission and includes ventilator-associated pneumonia

COPD exacerbation reference: [COPD Exacerbation](#)

****Intra-abdominal Infection Considerations:**

- **Consider adding fluconazole:**
 - Upper gastrointestinal perforations **AND** critically ill (e.g., septic shock)
 - Recurrent bowel perforations
 - Surgically treated pancreatitis
 - Candida growth on cultures
 - Known colonization with candida
 - Immunocompromised patients
- **Consider addition of vancomycin:**
 - Prior MRSA infection
 - Recent hospitalization and/or nursing facility exposure
 - Intravenous antibiotic use within the past 90 days

De-escalation Strategies:



- **Considerations:**
 - Not for patients with VAP
 - Repeat MRSA PCR nasal swab if 7 days have elapsed since prior swab and starting antibiotics for a new infection (HAP and IAI only).
 - Can consider re-initiating vancomycin in patients with a negative MRSA PCR nasal swab if patient is decompensating.

Duration of Therapy:

- CAP: 5-7 days
 - Can discontinue antibiotics as early as day 5 of therapy if clinically stable
- HAP/VAP: 7 days
- Intra-abdominal infection
 - Source-control: 4 days after source control
 - No source-control: 7 days then trial stopping antibiotics if clinically stable.

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- Bacteremia
 - Gram negative
 - Uncomplicated: 7 days
 - Complicated (hemodynamic instability, persistently febrile, uncontrolled focus of infection, endocarditis, recurrent bacteremia, polymicrobial growth, or immunosuppression): 14 days
 - Gram positive
 - ID consult required for *S. aureus* or *Enterococcus* bacteremia
 - Duration: 2-6 weeks depending on presence/absence of endocarditis, repeat cultures (obtained 2-4 days after initial set), defervescence within 72h of antimicrobial therapy, and evidence of metastatic sites of infection
- Empyema
 - 2-6 weeks
 - Recommend ID consult due to prolonged antibiotics requiring outpatient follow-up

Dosing:

Renal Dose Adjustment Table			
CrCl > 50mL/min	CrCl 30-49mL/min	CrCl 10-29mL/min	CrCl < 10mL/min; RRT: if HD (give after HD)
Azithromycin			
No dosage adjustment in renal dysfunction: 500mg q24h			
Cefepime			
2000mg q8h	2000mg q12h	1000mg q12h	1000mg q24h
Ceftriaxone			
No dosage adjustment in renal dysfunction: 2gm q24h unless UTI: 1gm q24h			
Fluconazole (PO/IV)			
400-800mg q24h	Load with full dose, then reduce further doses by 50%	Load with full dose then reduce further doses by 50%	Load with full dose then reduce further doses by 50%
Levofloxacin (PO/IV)			
750mg q24h	750mg q48h	750mg X1, then 500mg q48h	750mg X1 then 500mg q48h
Metronidazole (PO/IV)			
500mg q12h, unless <i>Clostridium difficile</i> or CNS infection (use 500mg q8h)			
Vancomycin			
Use Epic Vancomycin Dosing Protocol			
Piperacillin/Tazobactam (Zosyn)			
CrCl ≥ 20mL/min		CrCl < 20mL/min or RRT	
3.375gm q8h		3.375gm q12h	

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