Antimicrobial Stewardship Matters

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Hospitalized CAP and HAP:

Assessment of MRSA and *P. aeruginosa* Risk, Empiric Therapy, and Duration of Therapy

At a Glance:

The bottom line for hospitalized patients

1. Unless risk factors are present (see Table 1), MRSA and P. aeruginosa coverage is not routinely required for CAP or HAP.
2. Anti-MRSA therapy can be safely discontinued if MRSA screening is negative within 24 hours of starting anti-MRSA therapy (negative predictive value 98%)1. MRSA screening is only reliable if performed within 24 hours of initiating anti-MRSA therapy.
3. CAP therapy is typically 3 to 5 days[2]. HAP therapy is usually 7 days[3].

Pneumonia diagnosis

- Clinically compatible syndrome[2] + infiltrate on chest imaging
- CAP: acquired outside of the hospital or within 48 hours of admission
- HAP: acquired ≥48 hours after admission

Consider transition to oral therapy when[4,5]

✓ Hemodynamically stable
✓ Patient is clinically improving
✓ Can tolerate oral intake
✓ Improvement in fever, respiratory status, WBC

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Table 1: MRSA and *P. aeruginosa* Risk Factors

MRSA	1. Prior isolation of MRSA[23] 2. Broad spectrum antibiotics within the last 90 days[2,3] 3. MRSA consistent clinical presentation (necrotizing or cavitary pneumonia) 4. High risk of mortality (need for ventilatory support or septic shock) [3] 5. Hospitalization on unit with >20% of *S. aureus* isolates methicillin-resistant [3]
P. aeruginosa	1. Prior isolation of P. aeruginosa, especially if from respiratory tract[2,3] 2. Broad spectrum antibiotics within the last 90 days[2,3] 3. Structural lung disease (bronchiectasis, CF) [3]

Duration

Duration: Duration needs to be determined based on clinical response to therapy[2]

CAP: 3-5 days[2,6,7] **HAP:** 7 days[3]

1. Three days for CAP adequate in select patients[6,7] (PO intake, afebrile, HR<100 bpm, RR<24 breaths/min, O_2 Sat≥90% on room air (or at baseline), SBP≥90 mm Hg[8])
2. Longer durations indicated in severe cases[2] and for complicated infections (empyema, lung

Table 2: Empiric Antibiotics for Hospitalized CAP

	Drug A	Drug B (Atypicals)	Drug C (MRSA)
CAP	Ceftriaxone	Azithromycin	
CAP + *P. aeruginosa*	Piperacillin-tazobactam*		
CAP + MRSA	Ceftriaxone		Vancomycin**

*Anti-pseudomonal dosing: piperacillin-tazobactam 4.5g IV q6h, adjusted for renal function

**If MRSA screening is negative, anti-MRSA therapy can be safely discontinued

Table 3: Empiric Antibiotics for HAP

	Drug A	Drug B (MRSA)
HAP ≤ 4 days hospitalization	Refer to Table 2	
HAP ≥ 4 days hospitalization	Piperacillin-tazobactam* (Ceftriaxone an option if non-ICU and no *P. aeruginosa* risk factors)	
HAP + MRSA	See above	Vancomycin**

*Anti-pseudomonal dosing: piperacillin-tazobactam 4.5g IV q6h, adjusted for renal function

**If MRSA screening is negative, anti-MRSA therapy can be safely discontinued

Abbreviations: MRSA = methicillin-resistant *S. aureus*; CAP = community acquired pneumonia; HAP = hospital acquired pneumonia; WBC = white blood cells; CF = cystic fibrosis; PO = oral; HR = heart rate; RR = respiratory rate; O_2 Sat = oxygen saturation; SBP = systolic blood pressure; IV = intravenous

References

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