Antibiotic Stewardship in Pneumonia

shm EDUCATION
Rapid Clinical Updates

Avoid Overdiagnosis and define severity to guide workup and treatment

Context: 10–30% of patients treated for CAP do *not* meet diagnostic criteria based on clinical and radiographic findings

Current: Assure criteria are met and use up to date definitions to guide initial antibiotic choice.

Cutting Edge: Differentiating between severe and non-severe, complicated and uncomplicated PNA can guide antibiotic choice and workup. Data does NOT support treating people from nursing homes as HCAP

TABLE 1: Diagnosis of Community-acquired Pneumonia in Adults (≥ 18 years) Without Immunocompromising Conditions[1]*

Newly recognized pulmonary infiltrate(s) on chest imaging†
AND at least one respiratory symptom
AND at least one other symptom/sign or finding (see below)
Respiratory Symptoms (at least one)
New or increased cough
New or increased sputum production
Dyspnea
Pleuritic chest pain
Other Signs or Findings (at least one)
Abnormal lung sounds (rhonchi or rales)
Fever (≥100.4 °F)
Leukocytosis or unexplained bandemia (above normal limits for laboratory)
Hypoxia (< 90%)

*Immunocompromising conditions include inherited or acquired immune deficiency or drug-induced neutropenia, including patients actively receiving cancer chemotherapy, patients infected with HIV with suppressed CD4 counts, and solid organ or bone marrow transplant recipients.

†If clinical suspicion for community-acquired pneumonia is high despite negative chest radiograph, consider a CT scan of the chest.[2]

American Thoracic Society and Infectious Diseases Society of America Criteria to Define Severe CAP	
Major Criteria	Septic shock treated with vasopressors Respiratory failure necessitating mechanical ventilation
Minor Criteria	Respiratory rate ≥30 breaths/min Confusion or disorientation or both Hypothermia (core temperature <36°C or 96.8°F) Hypotension necessitating aggressive fluid resuscitation Leukopenia (white-cell count <4000 cells/μl) Thrombocytopenia (platelet count <100,000 per μl) Uremia (blood urea nitrogen level ≥20 mg/dl) Ratio of Pao_2 to FIO_2 ≤250 Multilobar (≥2) infiltrates
Severe CAP	One major criterion or ≥3 minor criteria

Lab Stewardship Strategies

Context: Lab stewardship is not commonly integrated into pneumonia care

Cutting Edge: Avoid over-testing in **uncomplicated non-severe CAP**:

1) Blood/respiratory cultures: Test only if another reason, like sepsis
2) Urinary antigens: Only send strep pneumo antigen for severe pneumonia, only send Legionella urine ag if local outbreak or recent travel.
3) Viral testing: Flu/COVID testing should be performed depending on presence of virus in the community

Antimicrobial stewardship strategies

Context: New data is helping to shorten antibiotic courses

Current: 2019 guidelines recommended antibiotics to be continued for no less than 5 days. Start with macrolide and b-lactam. Haemophilus influenza prevalence in CAP increasing. Additional guidelines are linked below.

Cutting Edge: Empiric anaerobic coverage not needed for aspiration coverage

Cutting Edge: Recent RCTs show a shorter duration of 3 days is non-inferior if clinically stable. Staph Aureus and Pseudomonas still require 7 days of therapy

Cutting Edge: Order sets that incorporate a default step down to oral antibiotics after the first dose for non-severe, uncomplicated CAP allows for shorter duration and less cost

Cutting Edge: Negative MRSA swabs have 99% negative predictive value can de-escalate coverage when additional culture data is not available

Day 3 Stability Criteria

Must meet all:

Afebrile

HR <100

RR <24

SpO2 >90%

SBP >90 mmHg

1. IDSA Guidelines: https://www.idsociety.org/globalassets/idsa/practice-guidelines/community-acquired-pneumonia-in-adults/cap-clinical-pathway-final-online.pdf
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3. Vaughn VM, Dickson RP, Horowitz JK, Flanders SA. Community-Acquired Pneumonia: A Review. Accessed September 23, 2025. https://jamanetwork.com/journals/jama/fullarticle/2823762
4. Jones BE, Ying J, Stevens V, et al. Empirical Anti-MRSA vs Standard Antibiotic Therapy and Risk of 30-Day Mortality in Patients Hospitalized for Pneumonia. *JAMA Intern Med*. 2020;180(4):552-560. doi:10.1001/jamainternmed.2019.7495
5. Gupta AB, Flanders SA, Petty LA, et al. Inappropriate Diagnosis of Pneumonia Among Hospitalized Adults. *JAMA Intern Med*. 2024;184(5):548-556. doi:10.1001/jamainternmed.2024.0077
6. Atamna A, Shiber S, Yassin M, Drescher MJ, Bishara J. The accuracy of a diagnosis of pneumonia in the emergency department. *International Journal of Infectious Diseases*. 2019;89:62-65. doi:10.1016/j.ijid.2019.08.027

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