

COMMUNITY ACQUIRED PNEUMONIA

SUMMARY

The purpose of this summary is to provide a consolidated description of the 2019 American Journal of Respiratory and Critical Care Medicine Practice Guidelines for the Management of Community-Acquired Pneumonia. This is not a complete summary. For the full guidelines or executive summary, please read the full article below:

Metlay JP, Waterer GW, Long AC, et al. Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Official Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America. Am J Respir Crit Care Med. 2019;200(7):e45-e67. doi:10.1164/rccm.201908-1581ST

Admission

Question 6 & 7

- Use pneumonia severity index (right) or CURB-65 (below) to supplement clinical judgment when determining admission criteria
 - If 2 or more of the CURB-65 criteria are met, consider inpatient treatment:
 - Confusion
 - BUN >20
 - Respiratory rate >30
 - Blood pressure < 90/60 mmHg
 - > 65 y/o
- Other contraindications to outpatient therapy include inability to maintain oral intake, history of substance abuse, cognitive impairment, severe comorbid illnesses, and impaired functional status.
- ICU admission is considered if patients are hypotensive being treated with vasopressors or are in respiratory failure requiring mechanical ventilation

Table 1. 2007 Infectious Diseases Society of America/American Thoracic Society Criteria for Defining Severe Community-acquired Pneumonia

Validated definition includes either one major criterion or three or more minor criteria

Minor criteria

Respiratory rate ≥ 30 breaths/min
 $Pa_{O_2}/F_{I_{O_2}}$ ratio ≤ 250
Multilobar infiltrates
Confusion/disorientation
Uremia (blood urea nitrogen level ≥ 20 mg/dl)
Leukopenia* (white blood cell count $< 4,000$ cells/ μ l)
Thrombocytopenia (platelet count $< 100,000/\mu$ l)
Hypothermia (core temperature $< 36^\circ\text{C}$)
Hypotension requiring aggressive fluid resuscitation

Major criteria

Septic shock with need for vasopressors
Respiratory failure requiring mechanical ventilation

*Due to infection alone (i.e., not chemotherapy induced).

Diagnosis

Questions 1 - 5

<u>Test to Order</u>	<u>2019 ATS Guideline Recommendation</u>
Sputum gram stain and culture	Inpatient: Recommended especially for severe CAP or suspicion of pseudomonas or MRSA Outpatient: Neutral recommendation due to poor test yield
Blood gram stain and culture	Inpatient: Recommended especially for severe CAP or suspicion of pseudomonas or MRSA Outpatient: Not recommended due to poor test yield
Urinary pneumococcal antigen	Not recommended for routine use. Conditional recommendation in patients with severe CAP
Urinary Legionella antigen	Not recommended for routine use. Conditional recommendation for cases of suspected or known Legionella outbreak
Rapid influenza molecular assay	Recommended when influenza infection rates are high (<i>Note: rapid influenza molecular assay is preferred over a rapid influenza antigen test</i>)
Procalcitonin	Should not be used to determine the need for empiric antibiotic treatment. Clinical utility is still undetermined

Note: These guidelines were published before the scientific community developed a better understanding of the COVID-19 outbreak. Please refer to the guidelines from your local health authority and/or the CDC for the screening and treatment of CAP patients suspected to have COVID-19.

Empiric Treatment

Questions 8, 9, & table 4

Table 4. Initial Treatment Strategies for Inpatients with Community-acquired Pneumonia by Level of Severity and Risk for Drug Resistance

	Standard Regimen	Prior Respiratory Isolation of MRSA	Prior Respiratory Isolation of <i>Pseudomonas aeruginosa</i>	Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for <i>P. aeruginosa</i>
Nonsevere inpatient pneumonia*	β -Lactam + macrolide [†] or respiratory fluoroquinolone [‡]	Add MRSA coverage [§] and obtain cultures/nasal PCR to allow deescalation or confirmation of need for continued therapy	Add coverage for <i>P. aeruginosa</i> and obtain cultures to allow deescalation or confirmation of need for continued therapy	Obtain cultures but withhold MRSA coverage unless culture results are positive. If rapid nasal PCR is available, withhold additional empiric therapy against MRSA if rapid testing is negative or add coverage if PCR is positive and obtain cultures	Obtain cultures but initiate coverage for <i>P. aeruginosa</i> only if culture results are positive
Severe inpatient pneumonia*	β -Lactam + macrolide [†] or β -lactam + fluoroquinolone [‡]	Add MRSA coverage [§] and obtain cultures/nasal PCR to allow deescalation or confirmation of need for continued therapy	Add coverage for <i>P. aeruginosa</i> and obtain cultures to allow deescalation or confirmation of need for continued therapy	Add MRSA coverage [§] and obtain nasal PCR and cultures to allow deescalation or confirmation of need for continued therapy	Add coverage for <i>P. aeruginosa</i> and obtain cultures to allow deescalation or confirmation of need for continued therapy

- Standard empiric treatment regimen: β -lactam + macrolide OR respiratory fluoroquinolone
 - **β -lactam:** ampicillin-sulbactam, cefotaxime, ceftriaxone, or ceftaroline
 - **Macrolide:** azithromycin or clarithromycin
 - **Respiratory fluoroquinolone:** levofloxacin or moxifloxacin
- If there are contraindications to macrolides or fluoroquinolones, then give β -lactam + doxycycline

Additional Treatment

Questions 10 - 16

Additional Coverage	2019 ATS Guideline Recommendation
Anaerobic coverage <ul style="list-style-type: none"> - β-lactam/β-lactamase inhibitor, or clindamycin 	Only give for lung abscess/empyema with aspiration pneumonia
MRSA coverage <ul style="list-style-type: none"> - Vancomycin, linezolid 	Only treat empirically if locally validated risk factors are present, but continue empiric antibiotics
<i>Pseudomonas</i> coverage <ul style="list-style-type: none"> - Piperacillin-tazobactam, cefepime, aztreonam, ceftazidime, or penems 	Only treat empirically if locally validated risk factors are present, but continue empiric antibiotics
Corticosteroids	Only consider for patients with refractory septic shock
Influenza coverage	If positive for influenza, give immediate oseltamivir and continue antibacterials

- The duration of antibiotic therapy should be continued until the patient demonstrates clinical signs of stability including normalization of heart rate, respiratory rate, blood

pressure, oxygen saturation, and temperature. Return of appetite and normal mentation are also signs of improvement.

- *Note: Antibiotics should be continued for at least 5 days.*
- Follow-up chest x-ray is not recommended if the patient is asymptomatic after 5-7 days of treatment