Full guidelines:
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Executive Summary:
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***Note**: Guidelines are organized in a 16 questions format*

Admission Criteria *(Question 6 and 7)*

- Pneumonia severity index or CURB-65 should be used in conjunction with clinical judgment to determine inpatient admission
- Clinical pearl: Some patients have medical and/or psychosocial contraindications to outpatient therapy, such as 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
    - If these two points don't apply, 2007 IDSA minor severity criteria and clinical judgment can be used to determine the need for ICU admission

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_{O2}/F_{IO2} ratio ⩽ 250
Multilobar infiltrates
Confusion/disorientation
Uremia (blood urea nitrogen level ⩾ 20 mg/dl)
Leukopenia* (white blood cell count < 4,000 cells/μl)
Thrombocytopenia (platelet count < 100,000/μl)
Hypothermia (core temperature < 36°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).

Diagnostic Criteria *(Question 1, 2, 3, 4, and 5)*

- For **inpatient** setting, **sputum stain + culture is recommended** for severe CAP or if there is concern about potential pseudomonas or MRSA infection.

    - For **non-severe inpatient CAP**, sputum stain + culture is **neutrally recommended due to poor yield of evaluation.**
- Blood stain + culture is recommended for severe CAP or if there is concern about pseudomonas or MRSA. It is **not routinely recommended** otherwise, due to the poor yield of blood culture in non-severe CAP.
- Only use urinary pneumococcal antigen testing in severe CAP
- Only use legionella urinary antigen testing in severe CAP, or if there has been a recent outbreak of legionella
- When influenza viruses are circulating in the community, rapid influenza molecular assay is recommended and is preferred over a rapid influenza diagnostic test (i.e., antigen test)
- Regardless of procalcitonin levels and before cultures return, empiric antibiotic therapy should be initiated

Initial Treatment *(Question 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 *Pseudomonas aeruginosa*	Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for *P. aeruginosa*
Nonsevere inpatient pneumonia*	β-Lactam + macrolide† or respiratory fluroquinolone‡	Add MRSA coverage§ and obtain cultures/nasal PCR to allow deescalation or confirmation of need for continued therapy	Add coverage for *P. aeruginosa*‖ 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 *P. aeruginosa* only if culture results are positive
Severe inpatient pneumonia*	β-Lactam + macrolide† or β-lactam + fluroquinolone‡	Add MRSA coverage§ and obtain cultures/nasal PCR to allow deescalation or confirmation of need for continued therapy	Add coverage for *P. aeruginosa*‖ 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 *P. aeruginosa*‖ and obtain cultures to allow deescalation or confirmation of need for continued therapy

- For inpatient adults with nonsevere CAP without risk factors for MRSA or P. aeruginosa (see Recommendation 11), we recommend the following empiric treatment regimens (in no order of preference) combination therapy with a b-lactam (ampicillin 1 sulbactam 1.5–3 g every 6 h, cefotaxime 1–2 g every 8 h, ceftriaxone 1–2 g daily, or ceftaroline 600 mg every 12 h) and a macrolide (azithromycin 500 mg daily or clarithromycin 500 mg twice daily) or monotherapy with a respiratory fluoroquinolone (levofloxacin 750 mg daily, moxifloxacin 400 mg daily)
- A third option for CAP who have contraindications to both above treatments: b-lactam + doxycycline

Further Treatment

- Do not add anaerobic coverage for aspiration pneumonia unless lung abscess/empyema are found. If you need anaerobic coverage, add b-lactam/b-lactamase inhibitor or clindamycin to existing treatment
- Only treat empirically for MRSA or pseudomonas if locally validated risk factors for the pathogens are present. While waiting for culture, empiric coverage should be continued
- Empiric treatment for MRSA includes vancomycin, linezolid
- Empiric treatment for pseudomonas includes piperacillin-tazobactam, cefepime (4th generation cephalosporin), aztreonam, ceftazidime, or penem drugs *(Question 10, 11)*
- Corticosteroids should not be used to treat CAP unless the patient has refractory septic shock. In that case, follow the Surviving Sepsis Campaign recommendations *(Question 12)*

- If the patient has tested positive for influenza, treatment should include immediate oseltamivir. Importantly, antibacterial treatment should be continued *(Question 13, 14)*
- The duration of antibiotic therapy should be guided by a validated measure of clinical stability (resolution of vital sign abnormalities [heart rate, respiratory rate, blood pressure, oxygen saturation, and temperature], ability to eat, and normal mentation), and antibiotic therapy should be continued until the patient achieves stability and for no less than a total of 5 days *(Question 15)*
- If the patient has no more symptoms following 5-7 days of treatment, follow-up chest x-ray is not recommended. *(Question 16)*