Community-Acquired Pneumonia Clinical Pathway

Memorial Health

In 2019, the American Thoracic Society (ATS) and the Infectious Diseases Society of America (IDSA) published an official clinical guideline on the diagnosis and treatment of adults with community-acquired pneumonia. There are several changes from the previous guidelines regarding diagnosis and treatment of this common condition.

Key Differences between 2007 and 2019 Community-Acquired Pneumonia (CAP) Guidelines

Recommendation	2007 ATS/IDSA Guidelines	2019 ATS/IDSA Guidelines
Sputum cultures	Obtain in patients with severe disease	Obtain in patients with severe disease; also for ALL inpatients treated empirically for MRSA or *Pseudomonas aeruginosa*
Blood cultures	Obtain in patients with severe disease	Obtain in patients with severe disease; also for ALL inpatients treated empirically for MRSA or *Pseudomonas aeruginosa*
Macrolide monotherapy	Strong recommendation for outpatient use	Use only if macrolide resistance in community is low. (i.e., <25–30%. SMH resistance ~53%)
Use of procalcitonin	Not discussed	Do not use to determine initial need for antibiotic therapy (can be used to de-escalate empiric therapy).
Use of corticosteroids	Not discussed	Do not use EXCEPT consider in patient with refractory septic shock (not responding to pressors and fluid resuscitation).
Use of HCAP as a category	Designated category	Recommend abandoning category. Emphasis on local epidemiology and validated risk factors to determine need for MRSA or *Pseudomonas* spp. Increased emphasis on de-escalation of therapy if cultures negative.
Standard empiric therapy for SEVERE CAP	Either beta-lactam/macrolide OR beta-lactam/FQ combination	Both combinations acceptable, but stronger evidence for beta-lactam/macrolide combination.
Routine use of follow-up chest imaging	Not addressed	Recommended not to obtain.

CAP = community-acquired pneumonia HCAP= healthcare-associated pneumonia

Key takeaways:

Anaerobic coverage no longer recommended for aspiration pneumonia except in the case of empyema or lung abscess.

For OP with no comorbidities or risk factors for MRSA or *Pseudomonas aeruginosa*, amoxicillin or doxycycline may be used.

Duration of antibiotics:

For both outpatients and inpatients treated for CAP, duration will depend on response to treatment. If quick response and patient clinically improving rapidly, treat for 5–7 days.

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Community-Acquired Pneumonia Treatment (adjusted for local resistance trends)

Outpatient CAP	No comorbidities or risk factors for MRSA or *Pseudomonas aeruginosa*	Amoxicillin 1gm po TID or Doxycycline 100mg po BID
	With comorbidities Cormorbidities include chronic lung, heart, liver or renal disease; diabetes mellitus; EtOH abuse; malignancy; asplenia.	Combination therapy with: Amoxicillin-clavulanate 500mg po TID or 875 po BID OR Cefepodoxime* 200mg po BID OR Cefuroxime* 500mg po BID **Plus** one of the following: Doxycycline 100mg po BID OR Azithromycin 500mg po one-time then 250mg po daily OR Monotherapy with: Moxifloxacin 400mg po daily OR Levofloxacin 750mg po daily (not preferred due to local resistance patterns and higher risk of ARDS) *For patients with a non-anaphylactic allergy, consider using a cephalosporin.

	Standard regimen	Prior resp culture positive for MRSA	Prior resp culture positive for *Pseudomonas*	Recent hospitalization and parenteral abx; risk of MRSA	Recent hospitalization and parenteral abx and locally validated risk factors of *Pseudomonas*
Non-severe **inpatient** pneumonia	Beta-lactam + macrolide **OR** Respiratory FQ	Add MRSA coverage and obtain MRSA PCR/cultures to allow de-escalation or confirm need for MRSA coverage	Add coverage for *P. aeruginosa* and obtain cultures to allow de-escalation or confirmation of need for continued therapy	Obtain cultures but WITHHOLD MRSA coverage unless MRSA PCR is positive or cultures positive	Obtain cultures but initiate cultures for *P. aeruginosa* only if culture results are positive
Severe **inpatient** pneumonia	Beta-lactam + macrolide **OR** Beta-lactam + Respiratory FQ			Add MRSA coverage and obtain MRSA PCR/ cultures to allow de-escalation or confirm need for MRSA coverage	Add coverage for *P. aeruginosa* and obtain cultures to allow de-escalation or confirmation of need for continued therapy

Beta-lactams for standard regimen: Ampicillin/sulbactam, ceftriaxone
Macrolide: Azithromycin: May consider Doxycycline, if Cl to azithromycin.
Respiratory FQ = levofloxacin or moxifloxacin (note moxifloxacin does NOT cover *P. aeruginosa*)
Anti-Pseudomonal Beta-lactams: Piperacillin/tazobactam, cefepime or meropenem IV
MRSA agents: Vancomycin IV or Linezolid IV/PO

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Severe infections are defined as 3 minor or 1 major criteria.		Microbes to cover		
Major: ○ Vasopressors ○ Mechanical ventilation	Minor: ○ Respiratory rate > 30 rpm ○ PaO2/FIO2 < 250 ○ Multi-lobar infiltrates ○ Confusion/disorientation ○ BUN > 20 mg/dl ○ WBC <4,000 cells/mcgL ○ Platelets <100,000 cells/mcgL ○ Core Temperature <36 C ○ Hypotension requiring fluids	GPCs: ○ *S. aureus* ○ *S. pneumonia* ○ *S. pyogenes*	GNBs ○ *H. influenza* ○ *M. catarrhalis* ○ *K. pneumoniae* ○ *E. coli*	Atypicals ○ *Legionella* ○ *Mycoplasma* ○ *Chlamydia* ○ *Coxiella*

CAP De-escalation Recommendations

○ Reassess infection status after 48 hours of empiric therapy, and determine if patient is eligible for de-escalating antibiotics to oral options.

- Improvement of infection

Procalcitonin	<0.25 mcg/L or 80% reduction
WBC count	Downtrending
Temperature	Afebrile
Patient symptoms	Improving

- If eligible for de-escalation

Oral de-escalation options Continue for total of 5 to 7 days of antibiotic therapy	
No comorbidities	Amoxicillin or Doxycycline
With comorbidities	Amoxicillin/Clavulanate or Cefpodoxime or Cefuroxime **PLUS** Doxycycline or Azithromycin **OR** Levofloxacin

- If not eligible for de-escalation
  - Re-evaluate patient after five days of therapy and consider stopping antibiotics entirely if infection has resolved.

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