

Clinical update no. 548

13 November 2019

Case vignette: 57yr-M, previously well, on no regular medication; smokes 15 cig/day. Acutely unwell with 1 day fever and chills, right sided pleuritic chest pain and productive cough with dark brownish sputum. Temp 38.6, HR 115 bpm, RR 24, BP 105/70, O2 sats 92% on air. CXR shown. How to manage?



AMERICAN THORACIC SOCIETY DOCUMENTS

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

Joshua P. Metlay*, Grant W. Waterer*, Ann C. Long, Antonio Anzueto, Jan Brozek, Kristina Crothers, Laura A. Cooley, Nathan C. Dean, Michael J. Fine, Scott A. Flanders, Marie R. Griffin, Mark L. Metersky, Daniel M. Musher, Marcos I. Restrepo, and Cynthia G. Whitney; on behalf of the American Thoracic Society and Infectious Diseases Society of America

THIS OFFICIAL CLINICAL PRACTICE GUIDELINE WAS APPROVED BY THE AMERICAN THORACIC SOCIETY MAY 2019 AND THE INFECTIOUS DISEASES SOCIETY OF AMERICA AUGUST 2019.

American Journal of Respiratory and Critical Care Medicine Volume 200 Number 7 | October 1 2019

https://www.atsjournals.org/doi/full/10.1164/rccm.201908-1581ST#_i6

The document does not address diagnosis.

Pneumonia in Hospitalized Patients

Update in Hospital Medicine

October 30, 2019

Michael Klompas MD, MPH, FIDSA, FSHEA

Hospital Epidemiologist, Brigham and Women's Hospital
Professor, Harvard Medical School & Harvard Pilgrim Health Care Institute

- How accurate are clinical signs for pneumonia?

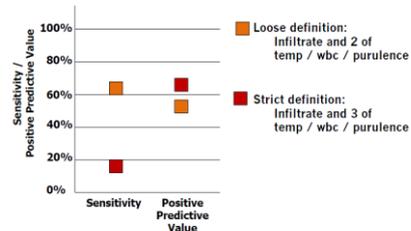
Many conditions have overlapping features, with CXR changes, fever, hypoxia, productive cough and leucocytosis. Diagnostic criteria have poor sensitivity and PPV for pneumonia.

Bacterial pathogens include *Strep pn*, *H infl*, *Mycoplasma pn*, *Staph aureus*, *Legionella*, *Chlamydia pn*, and *Moraxella catarrhalis*,

though aetiology is changing with pneumococcal and influenza vaccination. Although viruses are common, there is no reliable way to rule out bacterial infection. MRSA and *Pseudomonas* are important in select groups.

Accuracy of Clinical Diagnosis of Pneumonia

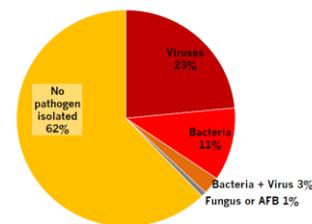
Relative to 253 autopsies



Tejerna et al., J Critical Care 2010;25:62

Etiology of Community-Acquired Pneumonia

2,259 adults admitted to 5 hospitals in Chicago and Nashville, Jan 2010-Jun 2012



N Engl J Med 2015;373:415-427

Delayed antibiotics impact mortality only in septic shock, not in sepsis/infection otherwise.

Q 1, 2: Sending MC&S of sputum; blood cultures. Not routinely; restrict to severe pneumonia or when MRSA or *Pseudomonas* likely (prior infection is the strongest risk factor), or if given antibiotics in prior 90 days.

Yield is low and there is a lack of evidence that routine testing improves outcomes.

Q 3: *Legionella* and *Pneumococcal Urinary Antigen Testing*: not routinely; restrict to severe disease or risk (travel, known outbreak). There is no outcome benefit.

Q 4: *Influenza testing*: test if current outbreak

Rapid Viral PCR Panels

720 patients randomized to rapid viral PCR panels vs usual care

- No difference in antibiotic starts
- No difference in mean duration of antibiotics

However +ve viral testing could allow early cessation of antibiotics if clinically stable.

Q 5: *Procalcitonin*: No clear benefit from use.

Q 6: *Clinical Prediction Rule to Determine Inpatient Treatment*. Use of rules such as Pneumonia Severity Index (PSI) or CURB-65

recommended. PSI identifies larger proportions as low risk and safe for discharge, although social and other comorbidities may warrant admission. PSI may underestimate severity in younger patients without comorbidities, and dichotomous cut offs to score points regardless of premorbid conditions, such as BP, is problematic. Clinical judgment must be used in conjunction. CURB-65 is less useful than PSI to guide disposition.

Q 7: Clinical Prediction Rule to guide HDU/ICU care: PSI and CURB-65 do not guide need for higher level of inpatient care. ATS criteria for severe disease are useful.

RR ≥30, PaO₂/FIO₂ ratio ≤ 250 (e.g. PaO₂ <100 on 40% O₂), multilobar infiltrates, confusion/ disorientation, urea >20, WCC <4,000, plat <100,000, temp <36 C, hypotension; need for vasopressors and respiratory support.

SMART-COP is an alternative validated rule.

Q 8: Empiric Treatment as outpatient.

Amoxicillin 1 g tds OR doxycycline 100 mg bd OR macrolide (azithromycin/clarithromycin).

If chronic comorbidities or recent antibiotic use: broaden cover to amoxicillin/clavulanate or cefuroxime AND macrolide or doxycycline; or single agent with fluoroquinolone (e.g. moxifloxacin). Macrolide as monotherapy is not recommended due to *Strep pn.* resistance.

Q 9: Antibiotic choice for Inpatients: combination β-lactam and macrolide or respiratory fluoroquinolone. β-lactam monotherapy is not recommended for inpatient treatment.

Q 10: Anaerobic cover for suspected aspiration pneumonia: no routine anaerobic cover, consider if abscess or empyema suspected. Anaerobic bacteria do not play a major role. Aspiration is common, and there is no reliable way to distinguish aspiration pneumonia from other CAP.

Aspiration Pneumonitis: Do Antibiotics Help?

- Antibiotic treatment associated with:
 - **No difference in hospital mortality** (odds ratio 0.9, 95% CI 0.4-1.7)
 - **No difference in ICU transfers** (5% vs 6%)
 - **More antibiotic escalations** (8% vs 1%)

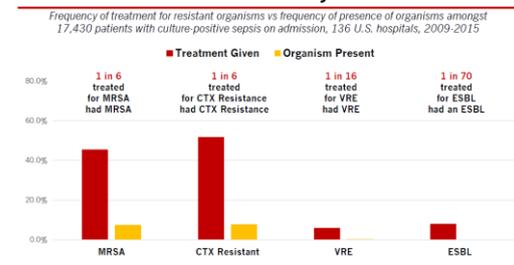
No!

Clin Infect Dis 2018;67:513-518

Q 11: Extended cover for possible MRSA or Pseudomonas. Recommend abandoning concept of healthcare associated pneumonia to guide extended cover, i.e. vancomycin, piperacillin-tazobactam, meropenem, other. The most consistently strong risk factors are prior isolation of these organisms and recent hospitalisation/antibiotics use. No validated scoring systems exist to determine risk.

Prior isolation of these organisms warrant extended cover. Recent hospitalisation or recent antibiotics use together with severe disease, but not if mild disease, also warrants extended cover. Deescalate if cultures –ve.

Overtreatment is Very Common



Q 12: use of Corticosteroids: no routine use, including for severe disease. Studies suggesting benefit require validation.

Q 13: Antiviral Therapy: Recommend oseltamivir/other for inpatients with CAP +ve for influenza, independent of duration of illness before diagnosis (low quality evidence).

Q 14: Antibiotics if +ve influenza testing: Use if features of CAP due to coexistence of bacterial infection, notably with *Staph*. Clinical improvement can guide early cessation.

Q 15: Duration of Antibiotic Treatment: Guided by clinical improvement; 5 days equivalent to 10 days if stable.

5 vs 10 Days for Community Acquired Pneumonia

Randomized controlled trial, 312 patients, 4 hospitals in Spain

Q 16: Follow-up Chest Imaging: not routine if clinically resolved in 5-7 days (yield <5%) but guided clinically and by risk of malignancy.

Of note is the limited evidence base to answer most clinically relevant Qs.

These updates are a review of current literature at the time of writing. They do not replace local treatment protocols and policy. Treating doctors are individually responsible for following standard of care.