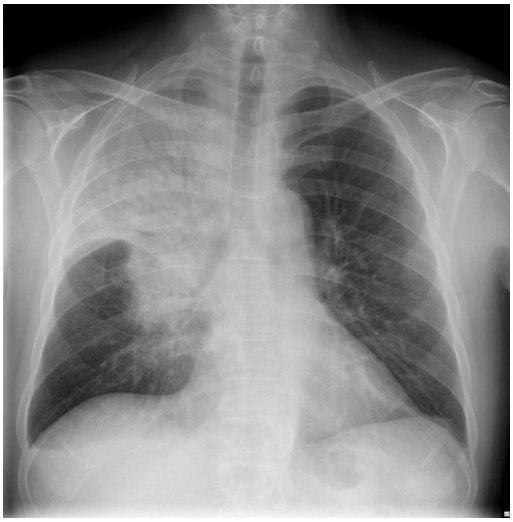
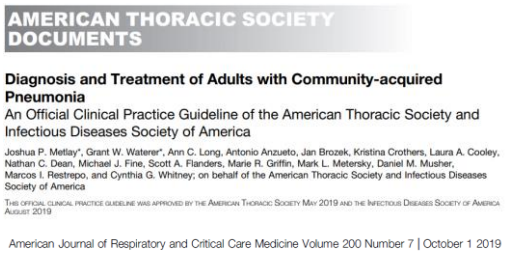
Clinical update no. 548
13 November 2019

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?





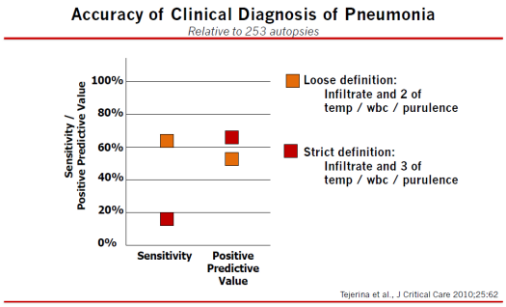
https://www.atsjournals.org/doi/full/10.1164/rccm.201908-1581ST#_i6

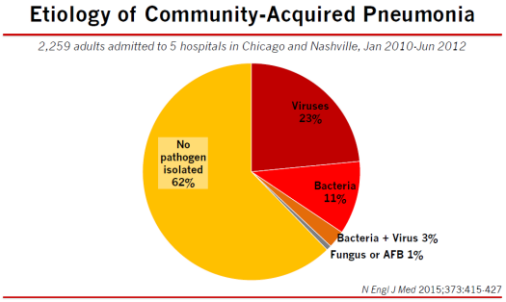
The document does not address diagnosis.

- 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.





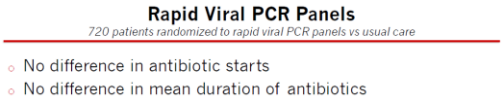
Delayed antibiotics impact mortality only in septic shock, not in sepsis/infection otherwise.

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



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.

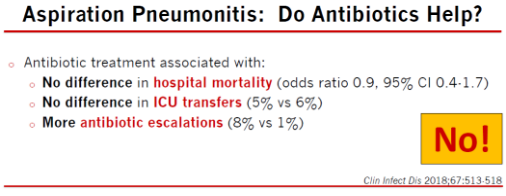
SMART-COP is an alternative validated rule.

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.

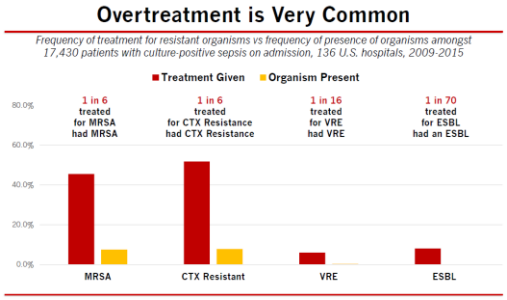
Q 9: Antibiotic choice for Inpatients: combination β-lactam and macrolide or respiratory fluoroquinolone. β-lactam monotherapy is not recommended for inpatient treatment.

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.



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.



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.

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.