Complicated Pneumonia Pathway

Community Acquired Pneumonia without improvement within 48 hours and/or clinical deterioration.

- Do you suspect effusion?
  - Obtain chest Ultrasound
  - (+) For Fluid >10 mm >1/2 thorax
  - (-) For Fluid <10 mm <1/2 thorax

  - IR Consult for Chest Tube placement for drainage
    - Fluid analysis: Cell count, culture, glucose, protein, pH, LDH and specific gravity

  - If stable
    - Consider alternative antibiotic coverage or workup per ID

  - If low output or loculation
    - Administer tPA 4 mg in 40 ml of normal saline (0.1mg/ml) up to three doses 24 hours apart

  - No clinical improvement
    - Repeat chest ultrasound

  - If Clinical deterioration
    - CBC, BCX, CRP, Repeat CXR
    - ID, Surgery and Pulmonary Consults
    - Transfer to Children’s Hospital

  - Consolidation without effusion

  - CT Chest with IV contrast

  - Is there empyema, pleural disease or abscess?
    - Yes
    - Consider VATS/Drainage

  - ICU Admit:
    - Respiratory failure → mechanical ventilation
      - BAL if vented
    - Hemodynamic instability
    - Altered mental status (hypercarbia hypoxia)

  - ID Considerations:
    - Antibiotics (minimum two weeks)
    - Influenza PCR and empiric tamiflu
    - PICC placement
    - Third-generation cephalosporin + clindamycin
    - If septic consider Vancomycin
    - Consider azithromycin if increased index of suspicion for mycoplasma/chlamydia
    - Review allergy history

  - Consider Immunology Consult:
    - Recurrent Pneumonias
    - Multilobar Pneumonias
    - Severe, prolonged course
    - Infections of other sites (ear, sinuses, skin, etc.)
    - Infections with low-virulence organism
    - Cytopenias

- Pulmonary Consideration:
  - Recurrent Pneumonia
  - Chronic lung disease
  - Neuromuscular disease
  - Aspiration
  - Congenital heart disease
  - Bronchiectasis
  - Immunodeficiency
  - Primary ciliary dyskinesia
  - Sickle cell disease
References


Clinical Characteristics of Children with Complicated Pneumonia caused by *Streptococcus Pneumoniae*. Tan, T. Mason, E. Wald, E. et al. Pediatrics 2002;110;1