How do I manage difficult cases of Pneumonia?

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What factors should be considered in children who fail to improve?

• If remain fever or unwell 48 hrs after treatment
• Re-evaluation is necessary, concerning:
  – Appropriate drug, adequate dose, co-pathogens
  – Complication of pneumonia: parapneumonic effusion, empyema, lung abscess
  – Complication in the host: immunosuppression, HIV, neurological problems with aspiration pneumonia

(Thorax 2011;66:ii1-23)
Management guideline in Non-response CAP

• If remain fever or unwell 48 hrs after treatment
• Non-responder ≈ 15% of CAP
• Management guideline:
  – Repeat CBC, inflammatory markers (Procalcitonin, CRP)
  – Repeat sputum C/S
  – Repeat CXR: PA, lateral
    - Pleural effusion: Lat decubitus or ultrasound
    - Chest mass, abscess: CT scan

(Chest 2007; 132:1348-55.)
Etiologic study of Non-response CAP

-Bacteria: Hemo C/S, pleural fluid C/S and Ag detection, PCR
  : FOB with BAL

-Virus: Sputum for PCR, Rapid test: Flu, RSV

-Atypical pathogens: Serology, Sputum for PCR

-Unusual pathogens: TB, fungus, parasite

-Hospital acquired pneumonia (admitted > 48hrs)

-Ventilator associated pneumonia (VAP)

-In very severe pneumonia with ARF: broad spectrum ATB to cover Bacteria, Virus, Atypical pathogens
### Empiric Therapy for Severe CAP in Pediatrics

<table>
<thead>
<tr>
<th>To cover bacterial CAP</th>
<th>To cover atypical CAP</th>
<th>To cover flu CAP</th>
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<tbody>
<tr>
<td>Ceftriaxone/cefotaxime plus vancomycin/clindamycin for suspected MRSA</td>
<td>Azithromycin</td>
<td>Oseltamivir Zanamivir</td>
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<tr>
<td>alternative for cephalosporins: Levofloxacin</td>
<td>alternative • Other macrolide • Levofloxacin</td>
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(Clin Infect Dis 2011;53:e25-76.)