COMPLICATED BACTERIAL PNEUMONIA CLINICAL PATHWAY
EVIDENCE BASED OUTCOME CENTER

EXCLUSION CRITERIA

Children less than or equal to three months
Cystic Fibrosis
Chronic lung disease
Immunodeficiency
Children undergoing chemotherapy or chronic steroid use
Sickle Cell Disease
Trauma
Lung abscess or pneumatocele
Extensive co-morbidities

INCLUSION CRITERIA

Chest radiograph with suspected bacterial effusion of moderate to large size, or meeting criteria for inpatient admission in children 3 months to 18 years.

Laboratory Assessment:
Blood Culture, CBC w/ differential, BMP, CRP, ESR, & Nasal PCR

Toxic Appearance
- NO → **Ceftriaxone and Clindamycin**
- YES → **Ceftriaxone and Vancomycin**

Positive Nasal PCR
- NO → **Ceftriaxone** (Consider stoping coverage for MRSA)
- YES

! ALERT

Patient determined to have CLINICAL DETERIORATION should be managed off pathway based on **Clinical Judgment**
Increase in general fever pattern.
Increase need for supplemental oxygen.
Decline in cardiovascular status.

Early Surgical Consultation preferred in patients requiring a chest tube / drain, as well as patients not responding rapidly to medical management

Effusion Size
- **Small effusion:** < ¼ hemi-thorax → Continue IV antibiotics alone
- **Moderate effusion:** ¼ to ½ hemi-thorax Or **Large effusion:** > 1/2 hemi-thorax

Responding[1]
- No → Consider Laboratory Assessments (CRP) & Antibiotic Regimen (Worsening pleural disease may not be shown via ultrasound)

Consult surgery & obtain Chest Ultrasound (consider repeat daily as necessary to evaluate pleural quality)
- Option: Chest CT with contrast

Complex effusion

Primary Treatment: Chest tube with fibrinolytics

Secondary Treatment: VATS

Responding[1]
- NO
- YES → Develop plan of care for duration and mode of antibiotic therapy

Yes → Develop plan of care for duration and mode of antibiotic therapy

Recommendations:

1. Ultrasound preferred over Chest CT to evaluate quality of pleural fluid. (I.e. loculations)
2. Chest CT indicated for atypical clinical or radiological features. (I.e. parenchymal abscess)
4. Consider ID consult for diagnostic testing, antibiotic selection, as well as length of treatment.
5. Consider Pulmonology consult for those with necrotizing pneumonias which requires long-term follow-up.
6. Outpatient follow-up with a chest radiograph one month post completion of the antibiotic course is recommended.

Responding
Improvement in clinical signs including fever, respiratory rate, Fi02 within 48-72 hours. 1

Lateral decubitus films not generally indicated.

For questions concerning this pathway,
Click Here
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Antibiotic

Non-toxic appearance:
Negative Nasal PCR: **Ceftriaxone**
Positive Nasal PCR: **Ceftriaxone and Clindamycin**
- Allergy to Ceftriaxone: Levofloxacin and Clindamycin
- Allergy to Clindamycin: Ceftriaxone and Vancomycin

Toxic Appearance: Ceftriaxone and Vancomycin
- Allergy to Ceftriaxone: Levofloxacin and Vancomycin
- Allergy to Vancomycin: Ceftriaxone and Linezolid

Laboratory Test

1. Blood Culture
2. CBC with differential
3. BMP
4. CRP
5. ESR
6. Nasal PCR

If tracheal secretions obtained:
- Gram stain and Culture
  Save extra fluid in lab for future PCR if culture is negative
  - PCR for staph aureus
  - PCR for strep pneumonia
  - PCR for mycoplasma

If Pleural Fluid obtained:
- Gram stain and Culture
- Cell count and differential
  Save extra fluid in lab for future PCR if culture is negative
  - PCR for staph aureus
  - PCR for strep pneumonia
  - PCR for mycoplasma

If blood cultures are negative consider:
- nasal swab for staph aureus culture
- nasal swab for strep pneumonia culture

Alteplase (TPA)

COMPASS Order = alteplase
Route = intrathoracic
Frequency = qDay
Duration = 3
Duration unit = day(s)
Order Comments = Mix with xx ml of NS and instill via Chest Tube;
Dwell time = 60 minutes; chest tube remains clamped during dwell time

Less than or equal to 10 kg	1mg in 20 ml of NS
Greater than 10 kg to 20 kg	2mg in 40 ml of NS
Greater than 20 kg to 30 kg	3 mg in 40 ml of NS
Greater than 30 kg	4 mg in 40 ml of NS