ANMC Pediatric (1 month to 17 years) Parapneumonic Effusion/Empyema Management Guideline

Initial Evaluation

- Chest x-rays including PA and lateral views.
- Decubitus films may help further characterize effusion if accepting a child from a rural area.
- Formal chest ultrasound.
- CBC with differential, blood culture, CRP, CMP.
- TB evaluation if indicated based on history/exam/imaging.
- If starting empiric MRSA therapy in non-critically ill children, MRSA/SA nasal PCR should be used to narrow therapy

Criteria for Chest Tube or Pigtail Catheter Drainage

- Fluid volume is >1/3 of hemithorax (regardless of fluid complexity).
- Loculated or particulate effusion regardless of size (unless too small to safely drain).

For patients outside ANMC hospital and/or in the ANMC ESD, consult with pediatric medical hospitalist.

For patients admitted to ANMC, consult pediatric intensivist regarding options for effusion drainage.

Antibiotic Selection

Most common pathogens: *Streptococcus pneumoniae, Haemophilus influenzae.* Less common pathogen: *Staphylococcus aureus*

Non-critically ill child	• **Ampicillin-sulbactam 75mg/kg/dose** IV q6h, (delivers 50mg/kg of the ampicillin component) maximum 3000mg/dose
	• If history of MRSA within 1 year, **ADD Linezolid**
	  ○ <12 years old: **10mg/kg/dose** PO/IV q8h, maximum 600mg/dose
	  ○ ≥12 years old: **10mg/kg/dose** PO/IV q12h, maximum 600mg/dose

Critically ill child	• **Ampicillin-sulbactam 75mg/kg/dose** IV q6h, maximum 3000mg/dose (delivers 50mg/kg of the ampicillin component) **AND**
	• **Linezolid**
	  ○ <12 years old: **10mg/kg/dose** PO/IV q8h, maximum 600mg/dose
	  ○ ≥12 years old: **10mg/kg/dose** PO/IV q12h, maximum 600mg/dose

Chest Tube Management

Drainage not indicated	• Chest ultrasounds daily for assessments to ensure that effusion is not worsening. Continue until clinically improving. • Consider using the ANMC Pediatric (>3mo) Inpatient Community Acquired Pneumonia (CAP) Treatment Guideline. • Consider upright chest x-ray, CBC and CRP when nearing discharge.
Drainage indicated	• Options for chest tube placement and management* to be discussed with the pediatric intensivist. • Send pleural fluid for Gram stain, culture, and cell count with differential. • *Most children will benefit from three days of empiric fibrinolytics.

Discharge Preparation

- Change to oral antibiotics when taking good PO and improving clinically.
- Typical duration of antibiotics is 2 to 4 weeks, depending on course and clinical response.

Follow up care

- Follow up with PCP, other involved services as needed.
- If any intrathoracic air is present at discharge, considerations for air travel should be discussed.
- Consider repeat chest x-ray in 6-8 weeks for necrotizing pneumonia to evaluate new baseline.

Antimicrobial Stewardship Program Approved: 2019; Updated September 2026

ALASKA NATIVE MEDICAL CENTER
PEDIATRICS PARAPNEUMONIC EFFUSION/EMPYEMA MANAGEMENT

OBJECTIVE: The inpatient multidisciplinary hospital team provides consistent and evidence-based care to children with parapneumonic effusions.

***General information regarding fibrinolysis and alteplase:**

- Intrapleural alteplase instillation is indicated for fibrinolysis of empyema associated with pneumonia.
- Fibrinolytic therapy has been shown to be equivalent to video-assisted thoracoscopic surgery (VATS) in treating empyema.
- Bronchopleural fistula is a contraindication to using intrapleural fibrinolytics.
- Alteplase dosing:
    - Dose: For children ≥ 3 months, use 4 mg alteplase in 40 mL normal saline.
    - Frequency: Instill every 24 hours for three days, may need an extended course.

Dwell time is 1 hour. (Can increase to 4 hours as needed, per physician order).

References:

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