

# Pediatric Empyema Treatment Algorithm

## GENERAL MANAGEMENT INFORMATION

Daily CXR: per discretion of primary team. Routine CXR is not recommended after pigtail placement if patient remains stable.

Pleural fluid: Send for gram stain, culture (aerobic/anaerobic) and WBC at initial intervention.

Endotracheal aspirate: Send culture (aerobic/anaerobic) if intubated.

Inflammatory markers: WBC, CRP, procalcitonin.

Clinician resources for pigtail questions or troubleshooting pediatric empyema patients: Ped Surg, PICU APPs/Physicians.

## ANTIBIOTIC MANAGEMENT FOR EMPYEMA

### Empiric IV antibiotics for empyema:

- Ceftriaxone + Clindamycin
- Ceftriaxone + Vancomycin if hemodynamically unstable or Clindamycin allergy
- PCN anaphylaxis: Levofloxacin + Clindamycin

**Clindamycin:** discontinue if cultures are negative for S.aureus after 48hrs

### IV antibiotic dosing:

- Ceftriaxone: 75mg/kg/dose daily (max 2g/d)
- Clindamycin: 10mg/kg/dose q6-8hrs (max 600mg/dose & 2.7g/d)
- Levofloxacin: 5yrs 10mg/kg/dose daily (max 750mg/d)
- Vancomycin: 15mg/kg/dose q6-8hrs, >14yrs q8hrs (max 2g/dose) Trough 30min prior to 4th dose, goal 10-15

### Oral antibiotics:



Tailored to pleural fluid cultures.

- Staphylococcus aureus: Clindamycin (if susceptible)
- Group A streptococcus: Amoxicillin (high dose)
- Streptococcus pneumoniae: Amoxicillin (high dose)
- No growth: Amoxicillin (high dose)
- Any other organism except above: contact Peds ID

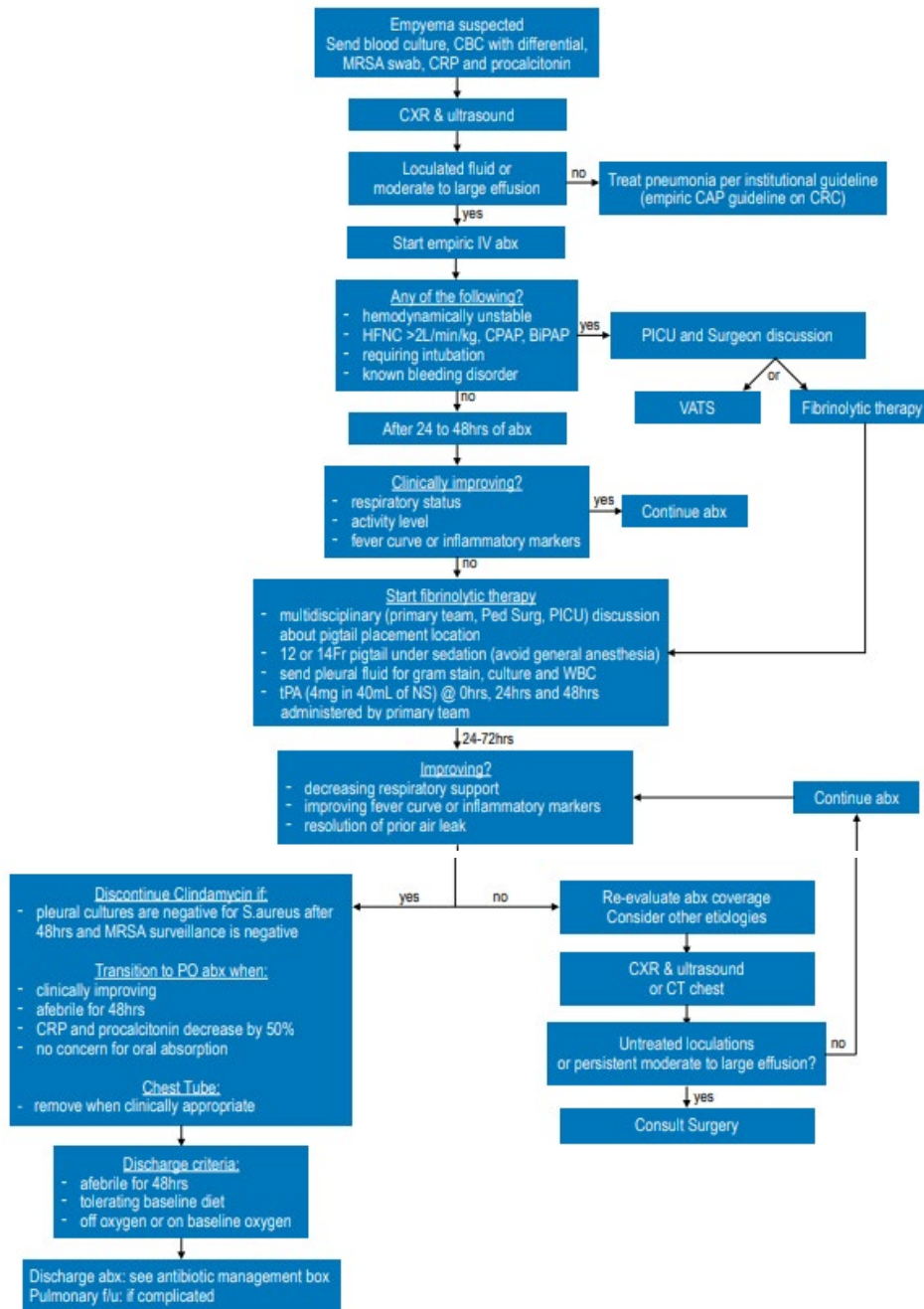
**Duration of antibiotics:**

Total duration depends on adequacy of drainage and hospital course with a minimum of 7 days from last fever

**PO antibiotic dosing:**

- Clindamycin: 10mg/kg/dose PO TID (max 1800mg/day)
- Amoxicillin (high dose): 30mg/kg/dose PO TID (max 500mg/dose)

**Other Resources:**



## Page 2 – if needed

1. Bradley JS, Byington CL, Shah SS, et al. The management of community-acquired pneumonia in infants and children older than 3 months of age: clinical practice guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. Oct 2011;53(7):e25-76.
2. Carter E, Waldhausen J, Zhang W, Hoffman L, Redding G. Management of children with empyema: Pleural drainage is not always necessary. *Pediatric pulmonology*. May 2010;45(5):475-480.
3. Gasior AC, Knott EM, Sharp SW, Ostlie DJ, Holcomb GW, 3rd, St Peter SD. Experience with an evidence-based protocol using fibrinolysis as first line treatment for empyema in children. *J Pediatr Surg*. Jun 2013;48(6):1312-1315.
4. Kurian J, Levin TL, Han BK, Taragin BH, Weinstein S. Comparison of ultrasound and CT in the evaluation of pneumonia complicated by parapneumonic effusion in children. *AJR. American journal of roentgenology*. Dec 2009;193(6):1648-1654.
5. Pillai D, Song X, Pastor W, et al. Implementation and impact of a consensus diagnostic and management algorithm for complicated pneumonia in children. *Journal of investigative medicine : the official publication of the American Federation for Clinical Research*. Dec 2011;59(8):1221-1227.
6. Sonnappa S, Cohen G, Owens CM, et al. Comparison of urokinase and video-assisted thoracoscopic surgery for treatment of childhood empyema. *American journal of respiratory and critical care medicine*. Jul 15 2006;174(2):221-227.
7. St Peter SD, Tsao K, Spilde TL, et al. Thoracoscopic decortication vs tube thoracostomy with fibrinolysis for empyema in children: a prospective, randomized trial. *J Pediatr Surg*. Jan 2009;44(1):106-111.

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