Empyema Pathway

Disclaimer: this document is meant to highlight an algorithm for patient management but is not a substitute for clinical judgement

Inclusion criteria:
1. Children with diagnosis of pneumonia and suspected or confirmed parapneumonic effusion/empyema, AND
2. CXR effusion ≥ 10 mm or ≥ ¼ hemothorax

→

1. Call ICU/IMCU for admission
2. Obtain CBC, CRP, PT, aPTT, fibrinogen, blood culture
3. Maintain NPO
4. Place PIV
5. Give appropriate antibiotics

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After admission:
1. Obtain chest US
2. Evaluate for drainage
3. Consult pediatric ID and pulmonary
4. Continue IV antibiotics

→

Indications for drainage:
1.Effusion > ½ hemothorax
2.Moderate effusion (>1/4 but <1/2 hemithorax) & resp. distress
3. Clinical worsening
4. No improvement after 48 hr. antibiotics
5. No absolute indication; may elect antibiotics alone if consensus

↓

Drainage?

yes →

If amenable to primary chest tube placement by intensivist, then perform beside chest tube placement (with or without US guidance) and consider fibrinolytics with tPA every 12 hours up to 4 total doses (see notes that follow)

OR

If team determines not amenable then consult pediatric surgery for primary VATS procedure

Pleural fluid studies for cell count, gram stain, culture, hold for bacterial PCR

Continue IV antibiotics

Clinical worsening despite intervention →

1. Consider CT chest
2. Consider Repeat CBC, CRP, CXR
3. Huddle with team to determine course of action

no ↓

Drainage criteria met after reassess ←

1.Continue IV antibiotics
2.Continue to assess for drainage indications
3.Repeat chest US, CXR CRP, CBC with diff if not improving or worsening after 48-72hr

*Daily labs and CXR are not needed

Assess discharge readiness if improving ←

Clinical improvement →

Discontinue chest tube when output less than 2ml/kg/12hrs and no air leak

Assess discharge readiness →

Discharge criteria:
1. Clinically improved
2. Off oxygen for 12 hours
3. Full oral intake and oral antibiotics tolerated
4. Downtrending fever curve for 24 hours
5. Downtrending CRP (if obtained)

Discharge instructions:
1. Oral antibiotics as per ID recommendation
   a. 14 days from admission for mild/moderate disease, or
   b. 21 days from admission for severe disease, or
   c. 14 days from drainage procedure, if done
2. Follow up with PCP within 48-72 hours post discharge
3. Follow up with pulmonary, ID and/or pediatric surgery 1-2 months after discharge
4. Recommendation for follow up imaging / CXR

Special considerations

- Consider use smallest bore chest tube possible to allow for patient comfort and effective drainage of pleural space (8-12 Fr as a suggested range)
- Consider use of intrapleural TPA 1 mg in 10 ml for children with Grade I US imaging (pleural echogenicity <50%) every 12 hours for 2-3 days
- Consider use of intrapleural TPA 2mg in 10 ml for children with Grade II US imaging (pleural echogenicity >50%) every 12 hours for 3-4 days
- Alternatively, consider use intrapleural TPA 0.1 mg/kg (max 4mg/dose) every 12 hours or intrapleural TPA 2 mg or 4mg empiric dosing every 12 hours for up to 4 doses

References

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New Pediatric Clinical Guideline Setup Checklist

Guideline Name: Complicated Pneumonia

Goal of Clinical Guideline:

	Does the proposed guideline meet the below four criteria?
☐	The intervention is a structured **multidisciplinary** plan of care
☐	The intervention is used to translate guidelines or evidence into local structures
☐	The intervention details the steps in a course of treatment or care in a plan, pathway, algorithm, guideline, protocol or other 'inventory of actions' (i.e. the intervention had time-frames or criteria-based progression)
☐	The intervention aims to standardize care for a specific population
	(Lawal et al. What is a clinical pathway? Refinement of an operational definition to identify clinical pathway studies for a Cochrane systematic Review. BMC Medicine (2016) 14:35)

CHECKLIST	
☐	Physician (or an alternate author) submitting the clinical guideline must be able (directly or through virtual meeting) to attend Clinical Guidelines Meeting
☐	All participants in the clinical guideline development should be listed and primary author identified
☐	Participants who are submitting clinical guideline should sign off and include the division chief(s) from all involved specialties (for purposes of disseminating to entire division)
☐	All clinical guidelines should include a disclaimer …*"this clinical guideline is intended as an evidence-based guide for clinical care and not as a replacement for clinical decision making"*
☐	Clinical guideline authors should submit an estimated revision schedule, i.e. every 3 years.
☐	References must be included in the submission.
☐	Authors of the guideline must identify 1-2 quality metrics that can be measured to gauge impact on care: LOS & Readmission

Signature of Contributing Pathway Developers:

Dept. Name	MD Developer Name	Signature
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Date_____9/8/2020_____

Version 2.0 2.6.2020