AAP Section on Emergency Medicine Committee on Quality Transformation Clinical Algorithm for Emergency Department Evaluation and **Management of Pediatric Community Acquired Pneumonia**

Ove rview

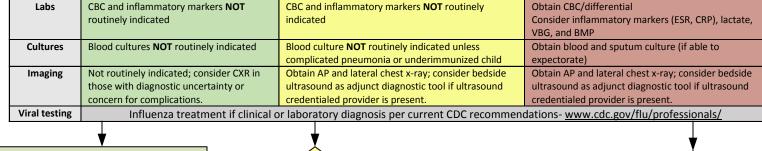
Definition of community acquired pneumonia (CAP) is complicated by lack of gold standard as clinical and radiographic findings may be discordant. This algorithm applies to children whom the clinician has diagnosed uncomplicated CAP by clinical or imaging findings. Base antibiotic choice and dosing on local resistance patterns and MICs of prevalent bacterial organisms causing pneumonia (S. pneumoniae, Group A Streptococcus, S. aureus, H. influenzae, M. pneumoniae, C. pneumoniae). This algorithm was developed through the efforts of the American Academy of Pediatrics Section on Emergency Medicine in the interest of advancing pediatric healthcare. Ultimately, the patient's physician must determine the most appropriate care.

Scope Emergency Department (ED) Setting

Patients 3-months to 18-years of age with community acquired pneumonia (include patients with asthma or reactive airways disease) Includes

Immunocompromised, tracheostomy/ventilator dependent, or children with chronic conditions such as cystic fibrosis **Excludes**

	Suspected hospital-acquired pneumor	aia or aspiration pneumonia	
Assessment			
	MILD	MODERATE	SEVERE
	(meets ALL criteria below)	(meets ANY criteria below)	(meets ANY criteria below)
Oxygenation	Oxygen saturation ≥90% on room air	Oxygen saturation persistently <90% on room air	Oxygen saturation ≤ 92% despite supplemental oxygen on 50% Fi02; apnea, bradypnea or hypercarbia
Work of Breathing	None or minimal (i.e., no grunting, flaring, retractions, apnea)	Increased /moderate respiratory distress (i.e., grunting, retractions, nasal flaring)	Need for mechanical ventilation or non-invasive positive pressure ventilation; severe respiratory distress or concern for impending respiratory failure
Hydration	Able to tolerate fluids and medication	Signs of dehydration; persistent vomiting; inability to take oral medications	Systemic signs of inadequate perfusion, including fluid refractory shock, hypotension, sustained tachycardia, need for pharmacologic support of blood pressure or perfusion
Appearance	Not significantly ill or toxic appearing	III-appearing	Toxic or septic appearing and/or altered mental status
+ + +			
Diagnostics			
	MILD	MODERATE	SEVERE
Labs	CBC and inflammatory markers NOT routinely indicated	CBC and inflammatory markers NOT routinely indicated	Obtain CBC/differential Consider inflammatory markers (ESR, CRP), lactate, VBG, and BMP
Cultures	Blood cultures NOT routinely indicated	Blood culture NOT routinely indicated unless complicated pneumonia or underimmunized child	Obtain blood and sputum culture (if able to expectorate)



Complicated Pneumonia -

Out of scope of

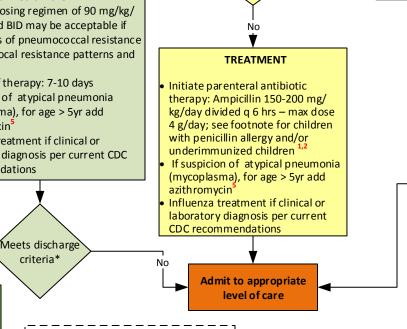
algorithm

Admit to hospital.

Refer to IDSA

TREATMENT

- Initiate oral antibiotic therapy: Amoxicillin 90 mg/kg/day divided TID (max dose 3 g/day), see footnote for children with penicillin allergy and/or un derimmunized children^{1,}
- Alternate dosing regimen of 90 mg/kg/ day divided BID may be acceptable if lower rates of pneumococcal resistance (consider local resistance patterns and MICs)
- Duration of therapy: 7-10 days
- If suspicion of atypical pneumonia (mycoplasma), for age > 5yr add azithromycin
- Influenza treatment if clinical or laboratory diagnosis per current CDC recommendations



CXR demonstrates

moderate to large pleura

effusions³

TREATMENT

CXR demonstrates

moderate to large pleura

effusions

No

- Initiate parenteral antibiotic therapy: Ceftriaxone: 100 mg/kg/day divided q 12-24 hrs OR
- Cefotaxime: 150 mg/kg/day divided q 8 hrs⁴ If Staph aureus suspected (multifocal pneumonia,
- necrotizing pneumonia/cavitary lesion, leukopenia): Vancomycin: 40-60 mg/kg/day divided q 6-8 hrs OR
- Clindamycin: 40 mg/kg/d divided q 6-8 hrs
- If suspicion of atypical pneumonia (mycoplasma), for age > 5yr add azithromycin For patients with signs/symptoms or blood gas
- concerning for impending respiratory failure, provide respiratory support as needed; supplemental oxygen to maintain oxygen saturations >90%
- Maintain circulatory status/manage shock if present
- Influenza treatment if clinical or laboratory diagnosis per current CDC recommendations

Discharge home

*DISCHARGE CRITERIA Meets criteria for mild pneumonia Caregiver able to adhere to follow up Able to tolerate oral medications and hydration

- 1 If penicillin allergy, administer 3rd generation IV cephalosporin (ceftriaxone, cefotaxime). If severe penicillin allergy, IV clindamycin or IV levofloxacin.
 2 If underimmunized children, 3rd generation cephalosporin (ceftriaxone, cefotaxime) or amoxicillin-clavulanate
 3 Effusion > 10 mmrim or >1/4 hemi-thorax opacified
 4 Alternatives (if severe penicillin allergy): Levofloxacin 16-20 mg/kg/day divided q 12 hr (age 6 mos. 5 yrs.) or 8-10 mg/kg/day (age 5-16 yrs.) divided max dose 750 mg OR Clindamycin: 40 mg/kg/day divided q 8 hr- max dose 600 mg
- 5- Azithromycin: IV-10 mg/kg (max dose 500 mg) day 1 and 2, then transition to oral; Oral-10 mg/kg (max dose 500 mg) once on day 1, then 5 mg/kg (max dose 250 mg) once daily on days 2-5

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This work supported by the Evidence Based Outcomes Center at Texas Children's Hospital and the EMSC Innovation Improvement Center with guidelined evelopments upport by Sheesha Porter RN, MSN & Christine Procido, MPH.