

# AAP Section on Emergency Medicine Committee on Quality Transformation

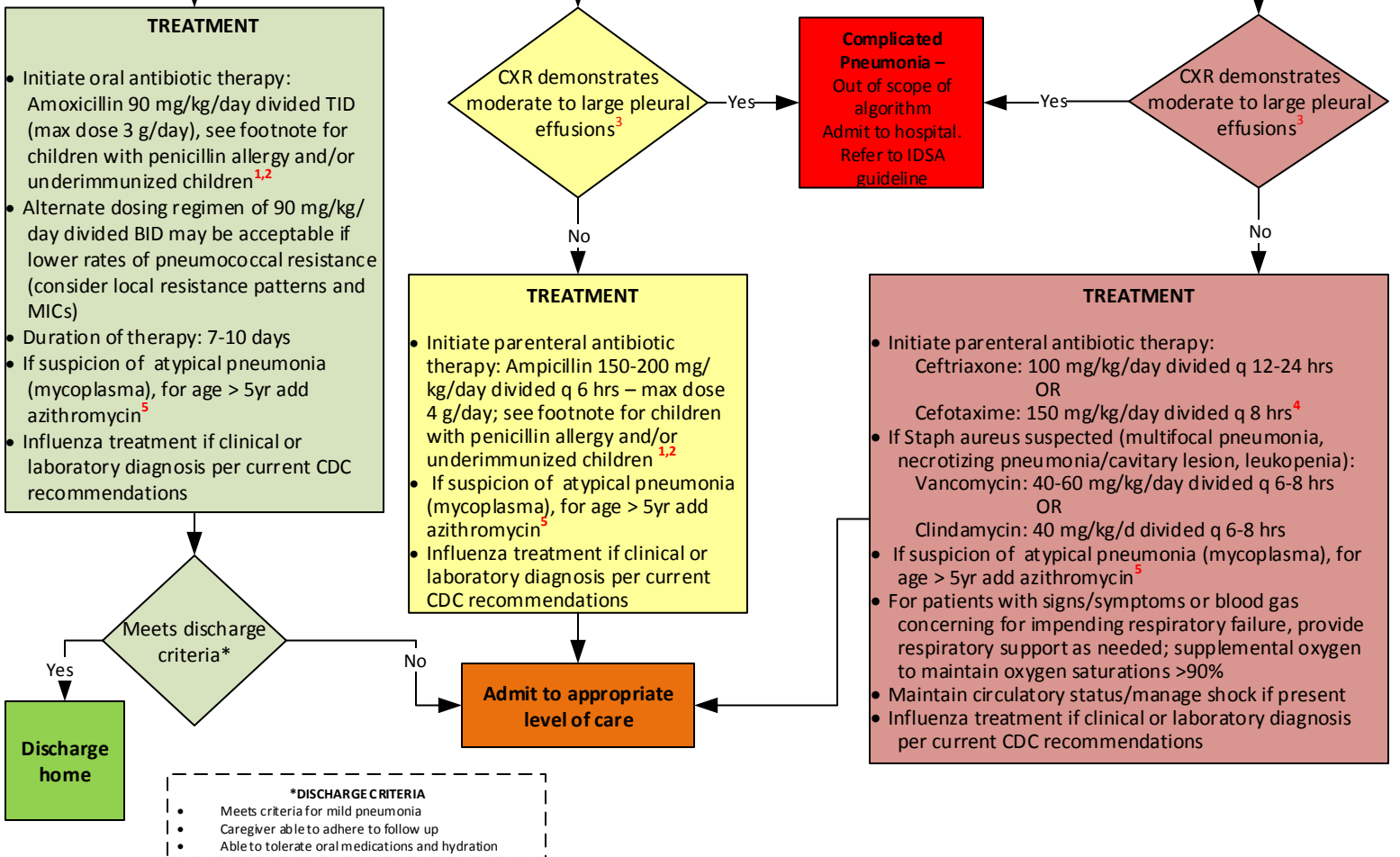
## Clinical Algorithm for Emergency Department Evaluation and Management of Pediatric Community Acquired Pneumonia

**Overview**  
 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  
**Includes** Patients 3-months to 18-years of age with community acquired pneumonia (include patients with asthma or reactive airways disease)  
**Excludes** Immunocompromised, tracheostomy/ventilator dependent, or children with chronic conditions such as cystic fibrosis  
 Suspected hospital-acquired pneumonia or aspiration pneumonia

Assessment			
	MILD (meets ALL criteria below)	MODERATE (meets ANY criteria below)	SEVERE (meets ANY criteria below)
<b>Oxygenation</b>	Oxygen saturation $\geq 90\%$ on room air	Oxygen saturation persistently $< 90\%$ on room air	Oxygen saturation $\leq 92\%$ despite supplemental oxygen on 50% FiO <sub>2</sub> ; apnea, bradypnea or hypercarbia
<b>Work of Breathing</b>	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
<b>Hydration</b>	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
<b>Appearance</b>	Not significantly ill or toxic appearing	Ill-appearing	Toxic or septic appearing and/or altered mental status

Diagnostics			
	MILD	MODERATE	SEVERE
<b>Labs</b>	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
<b>Cultures</b>	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)
<b>Imaging</b>	Not routinely indicated; consider CXR in those with diagnostic uncertainty or concern for complications.	Obtain AP and lateral chest x-ray; consider bedside ultrasound as adjunct diagnostic tool if ultrasound credentialed provider is present.	Obtain AP and lateral chest x-ray; consider bedside ultrasound as adjunct diagnostic tool if ultrasound credentialed provider is present.
<b>Viral testing</b>	Influenza treatment if clinical or laboratory diagnosis per current CDC recommendations- <a href="http://www.cdc.gov/flu/professionals/">www.cdc.gov/flu/professionals/</a>		



Footnotes:  
 1 – If penicillin allergy, administer 3<sup>rd</sup> generation IV cephalosporin (ceftriaxone, cefotaxime). If severe penicillin allergy, IV clindamycin or IV levofloxacin.  
 2 – If underimmunized children, 3<sup>rd</sup> generation cephalosporin (ceftriaxone, cefotaxime) or amoxicillin-clavulanate  
 3 – Effusion  $> 10$  mm rim 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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