

ANMC Pediatric (>3mo) Inpatient Community Acquired Pneumonia (CAP) Treatment Guideline

Criteria for Respiratory Distress	Criteria for Inpatient Management	Initial Testing/Imaging for Inpatient Management
- Tachypnea, in breaths/min: - Age 2-12mo: >50 - Age 1-5yo: >40 - Age >5yo: >20 - Dyspnea, Apnea - Grunting, Nasal flaring, Retractions - Altered mental status - Pulse oximetry <90% on room air	- Respiratory distress/failure - Concern for sepsis - Unable to tolerate orals - Suspected or documented CAP caused by pathogen with increased virulence (ex MRSA) - Concerns about observation at home, inability to be compliant with therapy, inability to be followed up	- Vital Signs: VS including BP and Pulse Oximetry - Labs: - Bloodwork: Blood culture, CBC with differential, CRP - Viral Testing: Influenza/COVID/RSV PCR during respiratory season - If atypical pathogen suspected: PCR Respiratory Panel - Sputum gram stain and culture: if intubating collect at time of initial ET tube placement; consider testing in older children who can produce sputum sample - Radiography: PA and lateral chest x-ray
Moderate	Severe	Complicated
- Increased work of breathing - Pulse ox <90% while awake on room air - NC/HFNC <1.5L/kg/min (max 30L) or ≤50% FiO2 - Symptoms are not fully explained by fluid overload - Inability to tolerate enteral meds - Dose not meet any severe criteria	- Respiratory failure attributable to bacterial pneumonia requiring any of the following: - HFNC ≥1.5L/kg/min or >30L 50% FiO2 on HFNC, CPAP/BiPAP - Invasive mechanical ventilation - Symptoms not fully explained by fluid overload - Includes all patients with shock	- Empyema - Necrotizing disease - Pulmonary abscess - Pneumatocele If parapneumonic effusion, refer to ANMC Pediatric Parapneumonic Effusion, Empyema Management Guideline
MRSA Risk Factors		
- Previous culture w/ MRSA within past 1 year - Known MRSA colonization - Concomitant/preceding influenza *MRSA Nasal PCR can be used in non-severely ill patients when planning to initiate MRSA therapy to narrow therapy based on negative results		

Treatment Selection

Suspected Bacterial Pneumonia (Most Common Pathogens: *Streptococcus pneumoniae*, *Haemophilus influenzae*)

Demographics	Parenteral Treatment	Oral Step-Down
Previously Healthy, ≥6 months of age, AND Appropriately immunized for age with PCV + Hib	<u>Preferred:</u> Ampicillin 50mg/kg/dose IV q6hr (max 2g/dose) <u>Alternatives:</u> Non-Severe β-Lactam Allergy: Ceftriaxone 50mg/kg/dose IV q24hr (max 2g/day) Severe β-Lactam Allergy: Levofloxacin <5 years: 10mg/kg/dose IV q12hr (max 750mg/day) >5 years: 10mg/kg/dose IV q24hr (max 750mg/day)	<u>Antibiotic choice:</u> - If culture positive: based on cultures and susceptibilities. - If culture negative: Amoxicillin 45mg/kg/dose PO BID (max 4000mg/day) to complete antibiotic duration. See Ambulatory guideline for beta-lactam allergic options.
<6 months of age, not up to date with PCV + Hib, suspicion for <i>H. influenzae</i> OR Severe disease and/or Complicated Pneumonia	<u>Preferred:</u> Ampicillin/sulbactam 75mg/kg/dose IV q6hr (delivers 50mg/kg/dose of ampicillin component) (max 3g/dose) <u>Alternatives:</u> Non-Severe β-Lactam Allergy: Ceftriaxone 50mg/kg/dose IV q24hr (max 2g/day) Severe β-Lactam Allergy: Levofloxacin <5 years: 10mg/kg/dose IV/PO q12hr (max 750mg/day) >5 years: 10mg/kg/dose IV/PO q24hr (max 750mg/day)	<u>Antibiotic Duration:</u> - Uncomplicated pneumonia: 5 days total (inpatient + discharge antibiotics) for previously healthy children if improvement by day 3 of therapy. Longer treatment durations (i.e. 7-10 days) for patients who are immunocompromised, have chronic lung disease (NOT including asthma), <i>Staphylococcus aureus</i>, or if poor clinical response to initial therapy. - Complicated pneumonia: dependent on clinical response, in general 2-4 week course
Suspicion for <i>S. aureus</i> *	<u>In addition</u> to one of the above antibiotics, ADD Linezolid <12 years old: 10mg/kg/dose PO/IV q8h (max 600mg/dose) ≥12 years old: 10mg/kg/dose PO/IV q12h (max 600mg/dose)	

Suspected Atypical Pneumonia (Most Common Pathogens: *Mycoplasma pneumoniae*, *Chlamydophila pneumoniae*)

In ≥5yo empirically add macrolide if atypical CAP cannot be ruled out	Azithromycin 10mg/kg IV q24hr x 1-2 days then transition to oral step down if possible (max 500mg/dose)	Azithromycin 10mg/kg PO daily to complete a 3 day course (max 500mg/dose)
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CONSIDERATIONS

- Children should show clinical signs of improvement within 48-72 hours allowing de-escalation of therapy based on available culture results and consideration of transition to oral step-down therapy
- If no improvement or worsening, pursue further diagnostic work up as indicated including repeat CXR, consider broadening antibiotics and formal infectious disease consultation
- Discharge criteria: clinical improvement with saturations >90% for 12-24 hours, tolerating oral therapy, no barriers to outpatient care and recommended follow-up
- Suspected Viral Pneumonia (Influenza A/B, COVID-19, Adenovirus, RSV, Parainfluenza) no antimicrobial therapy is necessary, see respiratory virus guideline for treatment algorithms

Antimicrobial Stewardship Program Approved 2018; Updated September 2026

REFERENCES: Bradley IDSA CAP Infants & Children 2011; AAP endorsed; Ficin B, et al. Azithromycin: 3-Day Versus 5-Day Course in the Treatment of Respiratory Tract Infections in Children. J Chemother. 1997;9(1):38-43. Bielicki JA, Stöhr W, Barratt S, et al. Effect of Amoxicillin Dose and Treatment Duration on the Need for Antibiotic Re-treatment in Children with Community-Acquired Pneumonia: The CAP-IT Randomized Clinical Trial JAMA. 2021 Nov 2;326(17):1713-1724. Erratum in: JAMA. 2021 Dec 7;326(21):2208. Jeffrey M. Pernica, MD, et al. Short-Course Antimicrobial Therapy for Pediatric Community-Acquired Pneumonia: The SAFER Randomized Clinical Trial JAMA Pediatr. 2021;175(5):475-482. Diaz MH, Hersh AL, Olson J, Shah SS, Hall M, Edens C. Mycoplasma pneumoniae Infections in Hospitalized Children - United States, 2018-2024. MMWR Morb Mortal Wkly Rep. 2025;74(23):394-400. Published 2025 Jun 26. doi:10.15585/mmwr.mm7423a1