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 0-2mo: >60
  • Age 2-12mo: >50
  • Age 1-5yo: >40
  • Age >5yo: >20
• Dyspnea
• Retractions
• Grunting
• Nasal flaring
• Apnea
• Altered mental status
• Pulse oximetry <90% on room air
	• Respiratory distress/failure
	• Concern for sepsis
	• Unable to tolerate PO
	• Suspected or documented CAP caused by pathogen with increased virulence (ex. CA-MRSA)
	• Concerns about observation at home, inability to be comply with therapy, inability to be followed up
		• Vital Signs: VS including BP and Pulse Oximetry
		• Labs:
		  • Bloodwork: CBC with differential, CRP
		  • Blood culture if moderate/severe disease or complicated pneumonia
		  • Viral Testing: Influenza PCR during influenza 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
		  • Urinary antigen detection testing is not recommended; false-positives are common.
		• Radiography: AP and lateral CXR
		If parapneumonic effusion, refer to ANMC Pediatric Parapneumonic Effusion/Empyema Management Guideline

Treatment Selection

Suspected Bacterial Pneumonia

Most Common Pathogens: *Streptococcus pneumoniae, Haemophilus influenzae*

Demographics	Parenteral Treatment	Oral Step-Down
Previously Health AND Fully immunized	Preferred: **Ampicillin** 50mg/kg IV q6hr (max 12g/day) Alternatives: *Non-Anaphylactic β-Lactam Allergy*: **Ceftriaxone** 50mg/kg IV q24hr (max 2g/day) *Anaphylactic β-Lactam Allergy*: **Levofloxacin** <5 years: 10mg/kg IV q12hr (max dose 750mg/day) >5 years: 10mg/kg IV q24hr (max dose 750mg/day)	Antibiotic choice: • If culture positive: based on cultures and susceptibilities. • If culture negative: refer to Ambulatory CAP Treatment Guidelines Antibiotic Duration: • Uncomplicated pneumonia: complete a 10 day course • Complicated pneumonia: dependent on clinical response, in general 2-4 week course
Not appropriately immunized with PCV13 + Hib OR Suspicion for *H. influenzae* OR Severe disease and/or Complicated Pneumonia	Preferred: **Ceftriaxone** 50mg/kg IV q24hr (max 2g/day) Alternatives: *Anaphylactic β-Lactam Allergy*: **Levofloxacin** <5 years: 10mg/kg IV/PO q12hr (max dose 750mg/day) >5 years: 10mg/kg IV/PO q24hr (max dose 750mg/day)	
Suspicion for *S. aureus*	***In addition*** to one of the above antibiotics, **add**: **Clindamycin** 10mg/kg IV q6hr (max 900mg/dose) For PICU or Severe Infection: **Vancomycin** 15mg/kg IV q6hr (max 4g/day)	Antibiotic choice: Based on cultures and susceptibilities Antibiotic duration: May require longer treatment

Suspected Atypical Pneumonia

Most Common Pathogens: *Mycoplasma pneumoniae, Chlamydophila pneumoniae*

Demographics	Preferred Treatment	Oral Step-Down
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)

Suspected Viral Pneumonia

Most Common Pathogens: Influenza A & B, Adenovirus, Respiratory Syncytial Virus, Parainfluenza

Most common in <5yo	No antimicrobial therapy is necessary. If influenza positive, see influenza guidelines for treatment algorithm.

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

Antimicrobial Stewardship Program Approved 2018; Updated August 2020

REFERENCES: Bradley IDSA CAP Infants & Children 2011;AAP endorsed; Ficnar 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. Kogan R, et al. Comparative Randomized Trial of Azithromycin versus Erythromycin and Amoxicillin for Treatment of Community-acquired Pneumonia in Children. Pediatr Pulmonol. 2003; 35(2):91-8.