Community-Acquired Pneumonia Pathway: Initial Management

Inclusion Criteria

- Age 90 days up to 18 years of age with signs, symptoms or findings suggesting a diagnosis of community-acquired PNA
- Development outside of the hospital setting or within 48 hours of hospital admission

Exclusion Criteria

- Immunocompromised
- Sickle cell disease
- Chronic lung disease, cystic fibrosis, tracheostomy or ventilator-dependence
- Suspected sepsis
- Hospitalized in the last 30 days

COMMUNITY-ACQUIRED PNEUMONIA

(A clinical diagnosis with the signs and symptoms of acute lower respiratory tract infection)

Heart disease/failure can also present with overlapping symptoms or exam findings: persistent cough, respiratory distress or hypoxemia, crackles on auscultation, poor perfusion, or fatigue

No → Off pathway, continue usual management

Yes

MILD

- Well-appearing
- No work of breathing: no retractions, grunting, nasal flaring, or apnea
- Pulse oximetry >92% on RA

EVALUATION & TESTING:

- No microbiological testing
- Chest XR may be considered but is not necessary in the diagnosis of mild CAP

FULLY VACCINATED and ≥ 6 MONTHS?

- **Yes** → **Amoxicillin PO**
- **No** → **Amoxicillin-Clavulate PO**

DISCHARGE HOME

** If not clinically improving with the above, consider adding **Azithromycin***

MODERATE

- Work of breathing on exam: retractions, grunting, nasal flaring, or apnea
- Pulse oximetry ≤ 92% on RA
- Inability to tolerate oral liquids/PO
- Supplemental oxygen and respiratory support not meeting severe criteria

EVALUATION & TESTING:

- Chest XR
- IV access, IV fluids as indicated
- Labs: Blood culture, CBC, CRP

(Procalcitonin and ESR are not recommended)

FULLY VACCINATED and ≥ 6 MONTHS?

- **Yes** → **Ampicillin IV**
- **No** → **Ampicillin-Sulbactam IV**

ADMIT TO INPATIENT UNIT

SEVERE

- Severe work of breathing present
- High-flow nasal cannula > 2L/kg
- BiPAP or mechanical ventilation
- Systemic signs of inadequate perfusion despite adequate fluid resuscitation

EVALUATION & TESTING:

- Chest XR
- IV access, IV fluid resuscitation and vasoactive medications as indicated
- Labs: Blood culture, CBC, CMP, CRP

(Procalcitonin and ESR are not recommended)

Ceftriaxone IV PLUS Vancomycin IV

ADMIT TO PEDIATRIC ICU

If concern for parapneumonic effusion or empyema, **refer to the Complicated Pneumonia Pathway**

**** Medication Dosing and Duration: See the following chart for details***

RESPIRATORY INFECTION PANEL

The respiratory infection panel (PCR) can be utilized to rule in/out viral pneumonia and atypical infection but should ONLY be utilized if it will support avoidance or de-escalation of antibiotic therapy. ***If PCR is performed and positive for: (1) Influenza, start Oseltamivir OR (2) Mycoplasma, start Azithromycin***

ILLNESS / SEVERITY	COMMON PATHOGENS	PREFERRED THERAPY *Dosing is in mg/kg/DOSE* (*Dosing if renal function is normal*)	ALTERNATIVE THERAPY	DURATION OF THERAPY & COMMENTS
Outpatient / Mild	S. pneumoniae, H. influenza, M. catarrhalis	Fully vaccinated: Amoxicillin PO 45 mg/kg q12h (Max dose 1,000 mg) Not fully vaccinated/unknown: Amox/Clavulanate PO 45 mg/kg q12h (Max dose 1,000 mg of Amoxicillin, *Use 14:1 formulation: Amoxicillin 600 mg/Clavulanate 42.9 mg	Cefuroxime PO 15 mg/kg q12h (Max dose 500 mg) Cefpodoxime PO (> 3 months) 5 mg/kg q12h (Max dose 200 mg) For beta-lactam allergies: Clindamycin PO 10 mg/kg q8h (Max dose 600 mg)	Duration: 5 days - Clindamycin: higher doses may cause diarrhea
Inpatient / Moderate	S. pneumoniae, H. influenza, M. catarrhalis	Fully vaccinated: Ampicillin IV 50 mg/kg q6h (Max dose 2,000 mg) Not fully vaccinated/Unknown: Ampicillin/Sulbactam IV 50 mg/kg of Ampicillin q6h (Max dose 2,000 mg of Ampicillin)	Ceftriaxone IV 75 mg/kg q24h (Max dose 2,000 mg) If concern for aspiration: Ampicillin/sulbactam IV 50 mg/kg of Ampicillin/kg q6h (Max dose 2,000 mg of Ampicillin) For beta-lactam allergies: Clindamycin PO/IV 10 mg/kg q8h (Max dose 600 mg)	Duration: 5 days total (inpatient + discharge) if improvement by day 3 of therapy * Longer duration of 7 days may be needed for patients who are immunocompromised, have chronic lung disease (asthma is not included), or if poor clinical response **S. pneumoniae:* q8h dosing regimen preferred upon switching to PO if compliance is not an issue
Inpatient / Severe	S. pneumoniae, S. pyogenes, MSSA/MRSA	Ceftriaxone IV 75 mg/kg q24h (Max dose 2,000 mg) **PLUS** Vancomycin*, dosing per pharmacy	Levofloxacin IV/PO - 6 mos to < 5 years: 10 mg/kg q12h - ≥ 5 years: 10 mg/kg q24h (Max dose 750 mg) **PLUS** Vancomycin*, dosing per pharmacy Vancomycin allergy: Linezolid IV/PO 10 mg/kg q8h (Max dose 600 mg)	Duration: 10 days minimum, can step down to PO therapy once amenable for discharge – some indications may require longer treatment course * When starting Vancomycin, Rapid MRSA screening via nasal PCR should be performed on **inpatient admission** to guide therapy
If not clinically improving **OR** **If confirmed M. pneumoniae or C. pneumoniae**	M. pneumoniae, C. pneumoniae	Azithromycin PO 10 mg/kg on day 1 (Max dose 500 mg), then 5 mg/kg q24h on days 2-5 (Max dose 250 mg)		Duration: 5 days - Azithromycin has poor activity against S. pneumoniae - If a respiratory infection panel (PCR) is ordered and M. pneumoniae, C. pneumoniae, or B. pertussis are **not** detected, **discontinue** Azithromycin therapy

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ILLNESS / SEVERITY	COMMON PATHOGENS	PREFERRED THERAPY *Dosing is in mg/kg/DOSE* (*Dosing if renal function is normal*)	ALTERNATIVE THERAPY	DURATION OF THERAPY & COMMENTS
Confirmed Bordetella pertussis	B. pertussis	Age 1 to 5 months: Azithromycin PO 10 mg/kg x 5 days > 6 months to Adolescents: Azithromycin PO 10 mg/kg on day 1 (Max dose 500 mg), then 5 mg/kg q24h on days 2-5 (Max dose 250 mg)		Duration: 5 days
Confirmed Influenza	Influenza	Oseltamivir PO: • < 9 months: 3 mg/kg q12h • ≥ 9 - 12 months: 3.5 mg/kg q12h 1-18 years (weight-based): • < 15 kg: 30 mg q12h • >15-23 kg: 45 mg q12h • >23 to 40 kg: 60 mg q12h • > 40 kg: 75 mg q12h		Duration: 5 days - Clinical benefit is greatest if initiated **within 48 hours** of symptoms

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References:

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