

Pneumonia In Children.

Inflammation of lung parenchyma, caused by infectious agent.

MCC of CAP → viruses

leading infectious cause of death < 5y.

3-5 years of age → Hib conjugate vaccine.
pneumococcal

pathogenesis :-

! Yoon sterile ← (LRT) → inflammation
↓
↓ dysbiosis

Dysbiosis imbalance.

* URTI → LRTI → leukocytes → edema → alveoli → ↓ compliance.
↓ airway resistance → atelectasis → V/Q abnormal → necrosis.

* Invasion :- Contagious spread / microaspiration / hematogen
virus atypical. bacterial S. aureus

Significant in:-

- GERD
- swallowing dysfunction
- cong. malformation

Table 25.1 Most Common Agents Causing Community-Acquired Pneumonia According to Age Group

AGE				
Newborns	1-6 Months	6-12 Months	1-5 Years	Older Than 5 Years
Group B Streptococcus Enteric Gram-negative RSV	Viruses Streptococcus pneumoniae Haemophilus influenzae Staphylococcus aureus Moraxella catarrhalis Chlamydia trachomatis Ureaplasma urealyticum Bordetella pertussis	Viruses Streptococcus pneumoniae Haemophilus influenzae S. aureus Moraxella catarrhalis	Viruses M. pneumoniae S. pneumoniae C. pneumoniae	Viruses M. pneumoniae S. pneumoniae C. pneumoniae

atypical > 5y

Clinical picture :-

III Symp. of URTI → rhinitis cough.

فقدان الشهية

* Cough
MC → dry → productive
* Fever
most sensitive
high → back.
pleural effusion.
* tachypnea.

* retraction & grunting

* irritability

* ↓ Feeding

* Vomiting

* Chest pain

* Lethargy

* Abd. pain / tenderness

Could be the only symptom

* headache

malaise

low fever / no

non-productive cough

↓
atypical M. pneumoniae.

physical Findings

- Tachypnea
- Nasal Flaring
- Retraction
- hypoxemia
- percussion → dullness
- ↓ → crackles, bronchial breathing
- wheezing → viral atypical.

Table 3 Criteria for Respiratory Distress in Children With Pneumonia

Signs of Respiratory Distress
1. Tachypnea, respiratory rate, breathless*
Age 0-2 months: >60
Age 2-12 months: >60
Age 1-5 years: >40
Age >5 years: >20
2. Dyspnea
3. Retractions (suprasternal, intercostal, or subcostal)
4. Grunting
5. Nasal flaring
6. Apnea
7. Altered mental status
8. Pulse oximetry measurement <90% on room air

Chest x-ray

* early in bacterial-pneumonia



Bilateral pneumonia



Lobar.

Indications of admission:-

- 1-Age < 3-6 mo
- 2-Immunocompromised state
- 3-Toxic appearance
- 4-Moderate to severe respiratory distress
- 5-Hypoxemia (oxygen saturation <90% breathing room air)
- 6-Complicated pneumonia (effusion, abscess)
- 7-Sickle cell anemia with acute chest syndrome
- 8-Vomiting or inability to tolerate oral fluids or medications
- 9-Severe dehydration
- 10-No response to appropriate oral antibiotic therapy
- 11-Social factors (e.g., inability of caregivers to administer medications at home or follow-up appropriately)

• U/S

• Labs :- WBC (bact vs viral)

• ESR, procalcitonin / CRP

• PCR

• blood culture :- No improvement

- deterioration
- complication.

Management → Outpatients

Hospitalized

Oral
antipyretic
IV fluid
Fluid intake!

♥ SIADH
So Take care.

10-14 days
Improvement within 48-72 hrs

Table 7. Empiric Therapy for Pediatric Community-Acquired Pneumonia (CAP)

Site of care	Empiric therapy		
	Presumed bacterial pneumonia	Presumed atypical pneumonia	Presumed influenza pneumonia ^a
Outpatient			
<5 years old (preschool)	Amoxicillin, oral (90 mg/kg/day in 2 doses ^b); alternative: oral amoxicillin-clavulanate (amoxicillin component, 90 mg/kg/day in 2 doses ^b)	Azithromycin oral (10 mg/kg on day 1, followed by 5 mg/kg/day once daily on days 2-5; alternatives: oral clarithromycin (15 mg/kg/day in 2 doses for 7-14 days) or oral erythromycin (80 mg/kg/day in 4 doses)	Oseltamivir
≥5 years old	Oral amoxicillin (90 mg/kg/day in 2 doses ^b to a maximum of 4 g/day ^c); for children with presumed bacterial CAP who do not have clinical, laboratory, or radiographic evidence that distinguishes bacterial CAP from atypical CAP, a macrolide can be added to a β-lactam antibiotic for empiric therapy; alternative: oral amoxicillin-clavulanate (amoxicillin component, 90 mg/kg/day in 2 doses ^b to a maximum dose of 4000 mg/day; eg, one 2000-mg tablet twice daily ^d)	Oral azithromycin (10 mg/kg on day 1, followed by 5 mg/kg/day once daily on days 2-5, to a maximum of 500 mg on day 1, followed by 250 mg on days 2-5); alternatives: oral clarithromycin (15 mg/kg/day in 2 doses to a maximum of 1 g/day); erythromycin, doxycycline for children >7 years old	Oseltamivir or zanamivir (for children 7 years and older); alternatives: peramivir, oseltamivir and zanamivir (all intravenous) are under clinical investigation in children; intravenous zanamivir available for compassionate use

Site of care	Empiric therapy		
	Presumed bacterial pneumonia	Presumed atypical pneumonia	Presumed influenza pneumonia ^a
Inpatient (all ages) ^d			
Fully immunized with conjugate vaccines for <i>Haemophilus influenzae</i> type b and <i>Streptococcus pneumoniae</i> ; local penicillin resistance in invasive strains of pneumococcus is minimal	Ampicillin or penicillin G; alternatives: ceftriaxone or cefotaxime; addition of vancomycin or clindamycin for suspected CA-MRSA	Azithromycin (in addition to β-lactam, if diagnosis of atypical pneumonia is in doubt); alternatives: clarithromycin or erythromycin; doxycycline for children >7 years old; levofloxacin for children who have reached growth maturity, or who cannot tolerate macrolides	Oseltamivir or zanamivir (for children ≥7 years old; alternatives: peramivir, oseltamivir and zanamivir (all intravenous) are under clinical investigation in children; intravenous zanamivir available for compassionate use
Not fully immunized for <i>H. influenzae</i> type b and <i>S. pneumoniae</i> ; local penicillin resistance in invasive strains of pneumococcus is significant	Ceftriaxone or cefotaxime; addition of vancomycin or clindamycin for suspected CA-MRSA; alternative: levofloxacin; addition of vancomycin or clindamycin for suspected CA-MRSA	Azithromycin (in addition to β-lactam, if diagnosis is in doubt); alternatives: clarithromycin or erythromycin; doxycycline for children >7 years old; levofloxacin for children who have reached growth maturity or who cannot tolerate macrolides	As above

Complications

Necrotizing pneumonia

pleural effusion & Empyema

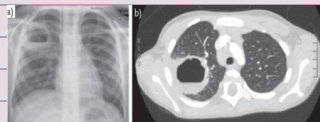
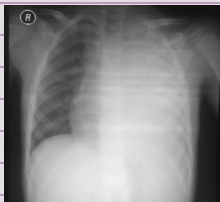
Lung abscess.

pneumatocele

Air leak syndrome.



multilobulated radiolucent foci.



- thick walled
- well defined
- air fluid level.

✓ parental antibiotic 4-6 ws.
not respond? → Surgery.

Recurrent pneumonia.

≥2 episodes in a year
≥3 episodes even
with radiologic clearance between occurrence.

Table 110-2	Differential Diagnosis of Recurrent Pneumonia
HEREDITARY DISORDERS	
Cystic fibrosis	
Sickle cell disease	
DISORDERS OF IMMUNITY	
AIDS	
Bruton agammaglobulinemia	
Selective IgG subclass deficiencies	
Common variable immunodeficiency syndrome	
Severe combined immunodeficiency syndrome	
DISORDERS OF LEUKOCYTES	
Chronic granulomatous disease	
Hyperimmunoglobulin E syndrome (Job syndrome)	
Leukocyte adhesion defect	
DISORDERS OF CLILIA	
Immotile cilia syndrome	
Kartagener syndrome	
ANATOMIC DISORDERS	
Sequestration	
Lobar emphysema	
Esophageal reflux	
Foreign body	
Tracheoesophageal fistula (H type)	
Cystic adenomatous malformation	
Gastroesophageal reflux	
Bronchiectasis	
Tracheomalacia (propharyngeal incoordination)	