

Management of Pneumonia in Adults and Children

Pneumonia is an acute infection of the **pulmonary parenchyma**, leading to inflammation and consolidation of the alveoli. The most common causative agent is ***Streptococcus pneumoniae***, though other bacteria, viruses, and atypical organisms are also significant contributors.

Etiology: Common Pathogens

Type	Organisms
Typical	<i>Streptococcus pneumoniae</i> , <i>Haemophilus influenzae</i> , <i>Staphylococcus aureus</i>
Atypical	<i>Mycoplasma pneumoniae</i> , <i>Chlamydophila pneumoniae</i> , <i>Legionella pneumophila</i>
Viral	Influenza virus, RSV, adenovirus, SARS-CoV-2

Clinical Presentation

- **Fever, chills**
- **Productive cough** (purulent or rust-colored sputum)
- **Pleuritic chest pain**
- **Dyspnea, tachypnea**
- **Crackles or rales** on auscultation
- **Dullness to percussion** and **increased tactile fremitus** in consolidation

? **High-Yield Pearl**: In elderly patients, confusion and functional decline may be the only signs of pneumonia.

Diagnosis

Clinical Diagnosis

- Based on history and physical examination
- Respiratory symptoms with systemic features (fever, malaise)

Chest X-Ray (CXR)

- **Not routinely indicated** in uncomplicated outpatient cases.
- Indicated when:
 - Diagnosis is uncertain
 - Poor response to treatment
 - Signs suggest **pleural effusion**, **lung collapse**, or **mass lesion** (e.g., smoker >50 years)

Laboratory Tests

- CBC (? WBC)
- CRP/ESR (nonspecific inflammation markers)
- Sputum Gram stain and culture
- Blood cultures if hospitalized

?? **Note** : Always rule out tuberculosis in patients with persistent symptoms or at-risk groups.

Hospital Admission Criteria (Adults)

Consider hospital admission if **one or more** of the following are present (CURB-65/PSI Score considerations):

- Age > 65 years
- Confusion (new onset)
- Respiratory rate > 30/min
- Systolic BP < 90 mmHg
- Diastolic BP < 60 mmHg
- Oxygen saturation < 92%
- Comorbidities (COPD, CHF, diabetes)

? **High-Yield Tip** : These features correlate with **increased mortality risk** .

Treatment

Adult Pneumonia Management

First-Line Antibiotic :

- **Amoxicillin** : 500 mg to 1 g **TID** (three times daily) for **5–7 days**

If **atypical pathogens suspected** (e.g., *M. pneumoniae* , *C. pneumoniae* , *L. pneumophila*) or poor response after 48 hours:

- Add:
 - **Doxycycline** : 200 mg once, then 100 mg **BID** (twice daily) for 7 days
 - OR**
 - **Roxithromycin** : 300 mg once daily for 7 days

Penicillin Allergy :

- Monotherapy with **doxycycline** or **roxithromycin**

Avoid :

- **Ciprofloxacin** — poor activity against *S. pneumoniae*

? **Antibiotic Stewardship Note** : Tailor treatment based on local resistance patterns and culture results when available.

Pediatric Pneumonia Management

Hospital Referral Criteria

Refer if **any** of the following are present:

- Age < 6 months
- Drinking < 50% of usual intake
- SpO₂ < 92%
- Severe tachypnea (e.g., RR > 60/min for infants)
- Decreased respiratory effort or apneic episodes
- Temp < 35°C or > 40°C
- Altered mental status (difficult to rouse)
- No clinical improvement after 24–48 hours of treatment

Pediatric Antibiotic Therapy

Age Group	First-Line	Dose
All ages	Amoxicillin	25–30 mg/kg/dose TID for 5–7 days
Age 3 months–5 years	Max dose: 500 mg/dose	
Age > 5 years	Max dose: 1000 mg/dose	

Alternatives :

- **Erythromycin** : 10–12.5 mg/kg/dose QID for 7 days
- **Roxithromycin** : 4 mg/kg/dose **BID** for 7–10 days

Only if the child can swallow tablets (may be crushed if necessary)

? **High-Yield Tip** : In school-aged children, suspect **atypical pneumonia** —macrolides (e.g., erythromycin) are preferred.

Complications

- Parapneumonic effusion / Empyema
- Lung abscess
- Sepsis and septic shock
- ARDS

- Respiratory failure

Prevention

- **Pneumococcal vaccination** (PCV13, PPSV23)
- **Influenza vaccination**
- Smoking cessation
- Hand hygiene and infection control

Summary Table: High-Yield Facts

Feature	High-Yield Point
Most common cause	<i>Streptococcus pneumoniae</i>
Key CXR finding	Lobar consolidation
Admission criteria	CURB-65 score or red flag vitals
Drug of choice (adults)	Amoxicillin
Drug of choice (children)	Amoxicillin (dosed by weight)
Suspect atypicals	Add doxycycline or macrolide
Prevention	Pneumococcal + flu vaccines