

BACTERIAL DISEASES OF THE RESPIRATORY TRACT (As per Rajasthan Pharmacist syllabus)

Disease	Causative Pathogen	Signs and Symptoms	Transmission	Diagnostic Tests	Vaccine
Acute otitis media (AOM)	<i>Haemophilus influenzae</i> , <i>Streptococcus pneumoniae</i> , <i>Moraxella catarrhalis</i> , others	Earache, possible effusion; may cause fever, nausea, vomiting, diarrhea	Often a secondary infection; bacteria from respiratory tract become trapped in eustachian tube, cause infection	None	None
Diphtheria	<i>Corynebacterium diphtheria</i>	Pseudomembrane on throat, possibly leading to suffocation and death	Inhalation of respiratory droplets or aerosols from infected person	Identification of bacteria in throat swabs; PCR to detect diphtheria toxin in vitro	DtaP, Tdap, DT, Td, DTP
Legionnaires disease	<i>Legionella pneumophila</i>	Cough, fever, muscle aches, headaches, nausea, vomiting, confusion; sometimes fatal	Inhalation of aerosols from contaminated water reservoirs	Isolation, using Warthin-Starry procedure, of bacteria in sputum	None
Pertussis (whooping cough)	<i>Bordetella pertussis</i>	Severe coughing with “ whoop ” sound; chronic cough lasting several months; can be fatal in infants	Inhalation of respiratory droplets from infected person	Direct culture of throat swab, PCR, ELISA	DTaP, Tdap
Q fever	<i>Coxiella burnetii</i>	High fever, coughing, pneumonia,	Inhalation of aerosols of urine, feces,	PCR, ELISA	None

		malaise; in chronic cases, potentially fatal endocarditis	milk, or amniotic fluid of infected cattle, sheep, goats		
Streptococcal pharyngitis, scarlet fever	<i>Streptococcus pyogenes</i>	Fever, sore throat, inflammation of pharynx and tonsils, petechiae, swollen lymph nodes; skin rash (scarlet fever) , strawberry tongue	Direct contact, inhalation of respiratory droplets or aerosols from infected person	Direct culture of throat swab, rapid enzyme immunoassay	None
Tuberculosis	<i>Mycobacterium tuberculosis</i>	Formation of tubercles in lungs; rupture of tubercles, leading to chronic, bloody cough; healed tubercles (Ghon complexes) visible in radiographs; can be fatal	Inhalation of respiratory droplets or aerosols from infected person	Mantoux tuberculin skin test with chest radiograph to identify Ghon complexes	BCG

Notes

- **Acute otitis media** is an infection of the middle ear, caused by several bacteria, including *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis*. The infection can block the eustachian tubes, leading to otitis media with effusion.
- **Bacterial pneumonia** results from infections that cause inflammation and fluid accumulation in the alveoli, caused by *S. pneumoniae* or *H. influenzae*.
- **Mycoplasma pneumoniae** results from infection by *Mycoplasma pneumoniae*
- **Chlamydial pneumonia** can be caused by three pathogens that are obligate intracellular parasites. *Chlamydia pneumoniae* is typically transmitted from an infected person, whereas *C. psittaci* is typically transmitted from an infected bird. *Chlamydia trachomatis*, may cause pneumonia in infants.
- **Tuberculosis** infection leads to the production of protective tubercles in the **alveoli and calcified Ghon complexes** that can harbor the bacteria for a long time.
- **Q fever** is caused by *Coxiella burnetii* bacteria, whose primary hosts are domesticated mammals (**zoonotic disease**).

PNEUMONIA:- It is a term for infections of the lungs that lead to inflammation and accumulation of fluids and WBC in the alveoli. Pneumonia can be caused by bacteria, viruses, fungi, and other organisms, but most of the majority of pneumonias are bacterial in origin.

Disease	Pathogen	Signs and Symptoms	Transmission	Diagnostic Tests	Vaccine
Chlamydial pneumonia	<i>Chlamydophila pneumoniae</i> , <i>C. psittaci</i> , <i>Chlamydia trachomatis</i>	Bronchitis; mild to severe respiratory distress	Inhalation of respiratory droplets or aerosols from infected person (<i>C. pneumoniae</i>); exposure to infected bird (<i>C. psittaci</i>); exposure in the birth canal (<i>Chlamydia trachomatis</i>)	Tissue culture, PCR	None
Haemophilus pneumonia	<i>Haemophilus influenza</i>	Cough, fever or low body temperature, chills, chest pain, headache, fatigue	Inhalation of respiratory droplets or aerosols from infected person or asymptomatic carrier	Culture on chocolate agar, serotyping of blood or cerebrospinal fluid samples	Hib
Klebsiella pneumonia	<i>Klebsiella pneumoniae</i> , others	Lung necrosis, "currant jelly" sputum; often fatal	Health care associated; bacteria introduced via contaminated ventilators, intubation, or other medical equipment	Culture, PCR	None
Mycoplasma pneumonia (walking)	<i>Mycoplasma pneumoniae</i>	Low fever, persistent cough	Inhalation of respiratory droplets or	Culture with penicillin, thallium	None

pneumonia)			aerosols from infected person	acetate	
Pneumococcal pneumonia	<i>Streptococcus pneumoniae</i>	Productive cough, bloody sputum, fever, chills, chest pain, respiratory distress	Direct contact with respiratory secretions	Gram stain, blood agar culture with optichin and sodium deoxycholate, quellung reaction	Pneumococcal conjugate vaccine (PCV13), pneumococcal polysaccharide vaccine (PPSV23)
Pseudomonas pneumonia	<i>Pseudomonas aeruginosa</i>	Viscous fluid and chronic inflammation of lungs; often fatal	Health care associated; bacteria introduced via contaminated ventilators; also frequently affects patients with cystic fibrosis	Culture from sputum or other body fluid	None

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