

Respiratory Infections**1/2**

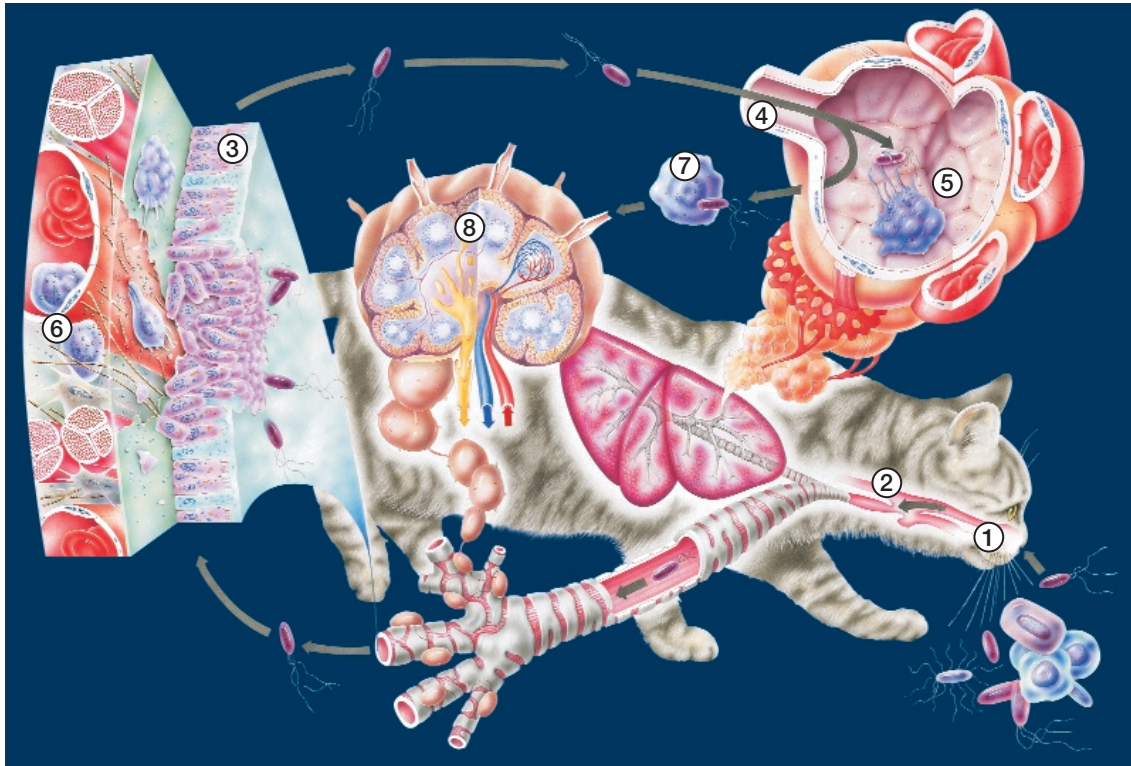
Respiratory infections are predominantly caused by viruses, but also by a limited number of typical bacteria species.

In almost every case, an invasion of secondary pathogens follows. Secondary pathogens take advantage of the epithelial lesions caused by primary pathogens.

In the case of massive infectious pressure, or if the host defense system is compromised by underlying pathologic conditions, clinical infection develops of often chronic or relapsing nature. In these cases especially, systemic antiinfective therapy is always indicated.

**Respiratory Infections /
Host Defense Mechanisms of the Respiratory Tract (RT)**

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- (1) In the nasal cavity the air is warmed and humidified. A turbulent airflow along the turbinates clears particles above 10 μm in diameter and pathogens from the inhaled air.
- (2) Additionally, pharyngeal and laryngeal reflexes prevent aspiration of food or saliva. Cough, the most effective respiratory reflex clears large bronchiae or trachea from aspirated foreign bodies, fluid, or mucus.
- (3) Small particles and bacteria are trapped in the mucus layer produced by the tracheo-bronchial epithelium. The mucus then is cleared by coordinated beats of the ciliae in rostral direction - the "mucociliary escalator".
- (4) Small particles below 2 μm of size, however, may reach the alveolar system, where no ciliated epithelium is located.
- (5) Here alveolar macrophages (AM), assisted by the pulmonary lymphatic system, form the second line of defense. They phagocytise foreign material, bacteria and they are able to start the inflammatory cascade.
- (6) Invasion of pathogens is followed by an extended inflammatory reaction with increased capillary permeability, edema, enhanced mucus production and influx of inflammatory cells (granulocytes).
- (7) Once alveolar macrophages have phagocytised bacteria or foreign material they are removed via the "mucociliary escalator", or by the interstitial lymphatic system.
- (8) Lymphnodes containing large numbers of activated white blood cells contribute to host defense. These cells produce immunoglobulins and other substances to help fight the infection.