

Transmission

Transmission of bacteria occurs most exclusively by airborne route via respiratory droplets containing small amounts of viable bacteria.

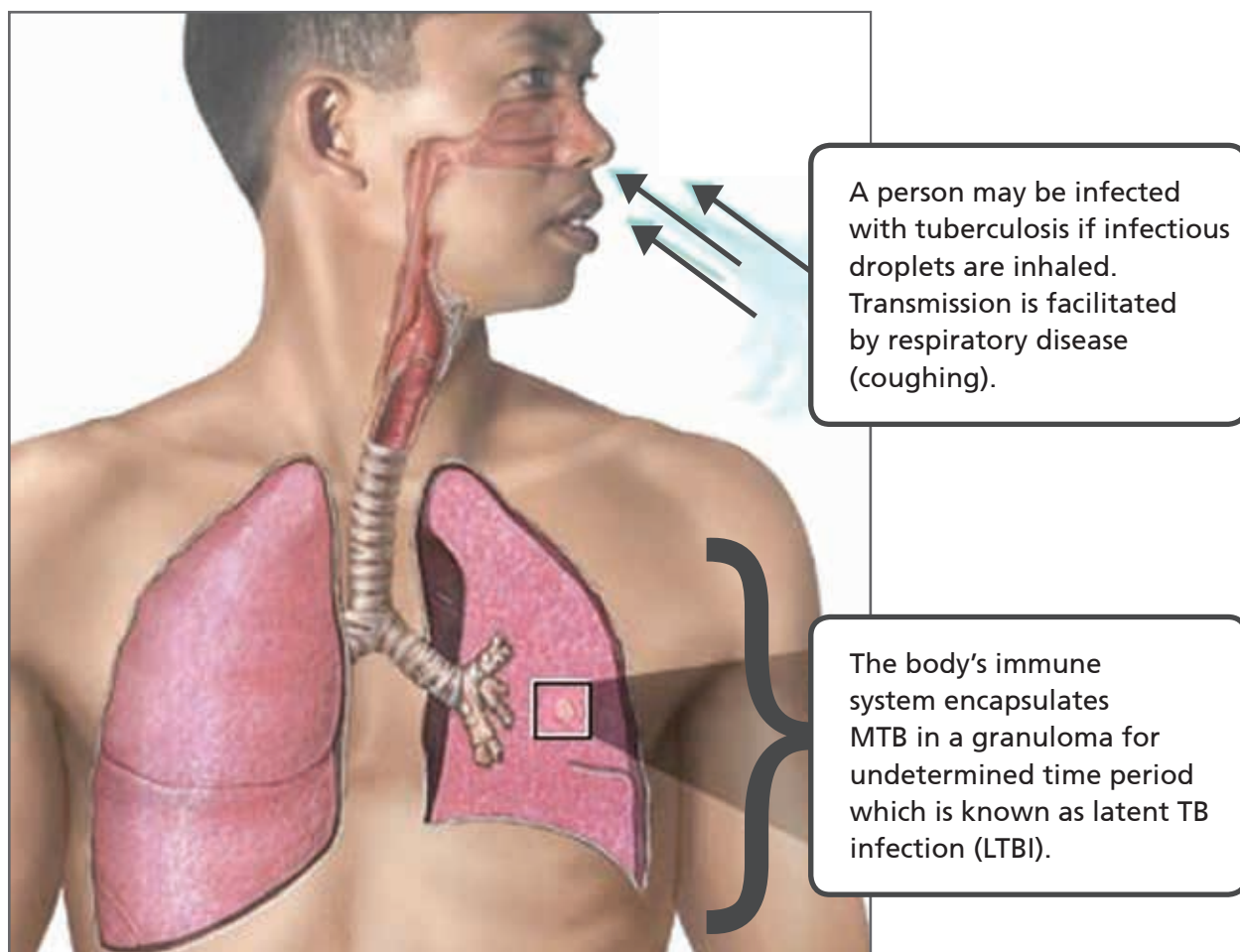
Figure 2.2: Expulsion of Respiratory Droplets



If the droplets containing the organism reach the trachea/bronchi, they can easily be inhaled. If the droplet nuclei are small enough (1-5 microns in size), they can be breathed into the lungs (i.e. alveoli) where infection is usually established in the host. Nearly all cases occur from exposure to human source, created via forceful expiratory efforts (i.e. coughing, sneezing). Certain procedures, for example, bronchoscopy, sputum induction, processing of specimens, autopsy and even irrigation or other manipulation of tuberculous abscesses, may also produce infectious aerosols. The droplets have an extremely slow settling rate (0.5mm per second or less), which permits their transport by air currents, duct systems or elevator shafts for significant distances from the source case. Large particles settle quickly and are either not inhaled by contacts or, if inhaled, are trapped in the mucus of the upper airway.

If the organism reaches the trachea and bronchi it is usually swept back to the larynx by ciliary action and cough, and then swallowed. For practical purposes, only the droplet nuclei in the size range 1-5 microns reach the terminal air spaces or alveoli; each is understood to contain only a few bacteria. In most instances, only one such droplet nucleus is believed to be responsible for establishing infection in the host. Bacteria that are lodged on fomites (linen, furniture, books, and floors) do not constitute a significant source of infection: most die quickly through the action of drying, heat, or sunlight.

Figure 2.3: TB Transmission



Adapted from: http://www.pennmedicine.org/encyclopedia/em_DisplayImage.aspx?gcid=19099&ptid=2&rgcid=000077&rptid=1