

Droplets and Aerosols

Droplet: very small drop of liquid

Aerosol: suspension of fine solid or liquid droplets in a gas

Droplet sizes are categorized as follows:

<5 μm 'airborne' particles

>5 μm referred to as a droplet within Infection Control

Droplets $\leq 40 \mu\text{m}$ are not visible and would go unnoticed.

Droplets $\leq 100 \mu\text{m}$ are inhalable.

Respiratory aerosols will include a range of droplet size including microdroplets.

Viral particles may contaminate particles of all sizes but the viral load would be greater on a larger droplet.

The behaviour of the aerosol in terms of suspension and spread in a room will depend on particle size and the environment.

Human Aerosols

- Aerosol produced by human depends on droplet size and exit velocity
- Small droplets remain airborne and evaporate quickly, within 2 seconds for droplets $<50\mu\text{m}$.
- Larger airborne droplets ($>125\mu\text{m}$) may travel 2 meters before landing on surfaces .
- Breathing – lowest airflow velocity – small droplets $< 8\mu\text{m}$
- Sneezing – highest airflow velocity - smaller and larger droplets, may travel 6m
- Coughing lies between breathing and Sneezing.
- Talking – may produce more aerosol than coughing!
- The larger the droplet, the higher the viral load and theoretically the higher the risk of infection. Hence the 2m social distancing and hand and surface cleaning

Surgical Aerosols

- COVID 19 exists in high concentrations in the lining of the Upper respiratory tract
- Not Known if COVID exists in the Middle ear and Mastoid, however other coronaviruses have been found there
- Cochlear Implant surgery uses high speed drill that forms a large amount of aerosol of irrigation fluid, blood , bone and mastoid respiratory mucosa
- Risk of COVID transmission for this aerosol not known