Masked Effects

Droplet vs Airborne transmission of SARS-CoV-2 (CoViD19 virus) and appropriate mask use

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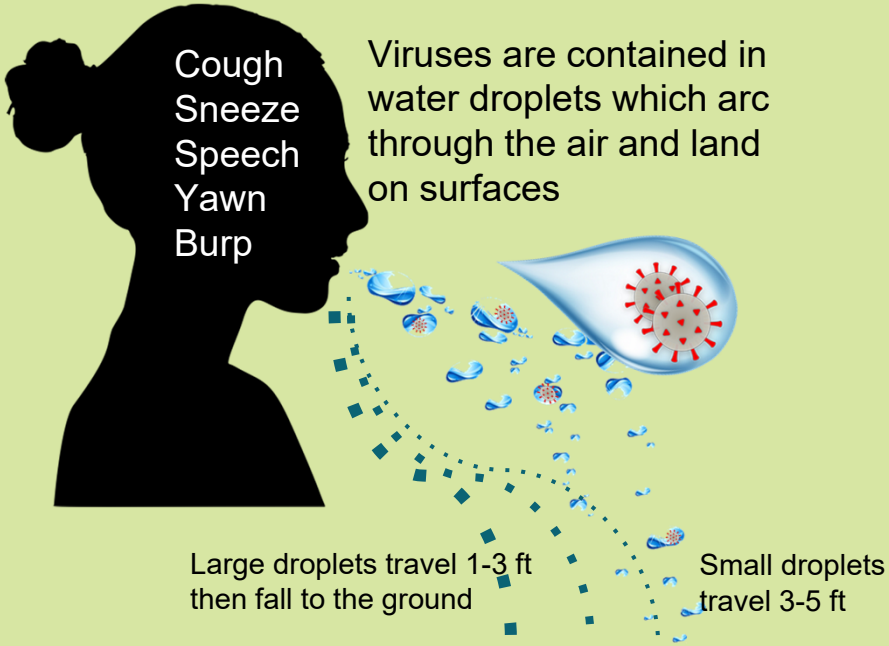
DROPLET SPREAD vs AIRBORNE SPREAD

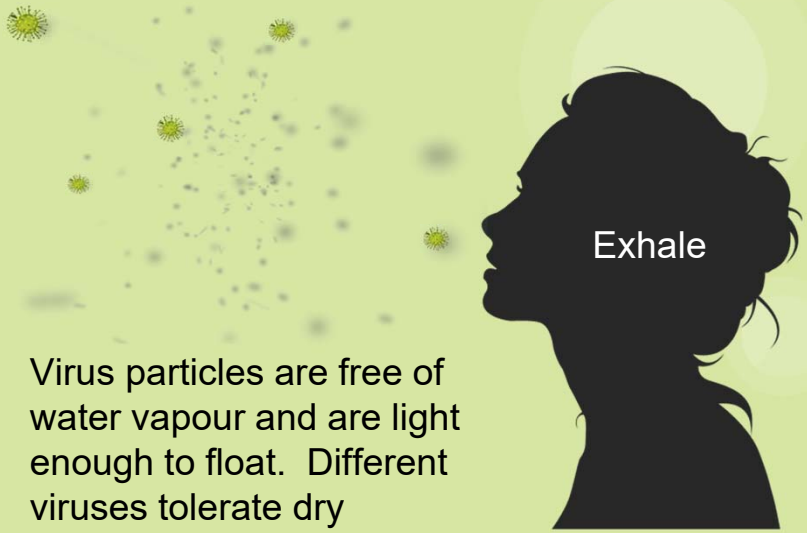
SARS-CoV-2 / Coronavirus



Viruses are contained in water droplets which arc through the air and land on surfaces

Surfaces in the “spray zone” AT THE TIME OF THE SPRAY get dusted in droplets containing virus. As they dry, the virus starts to decay, at a different rate on different surfaces. YOU are a surface.

Chickenpox / Varicella



Virus particles are free of water vapour and are light enough to float. Different viruses tolerate dry conditions longer than others.

Surfaces in the room within an HOUR of the spray get dusted with viral particles. They decay somewhat faster on surfaces without the protective water droplet but can float farther.

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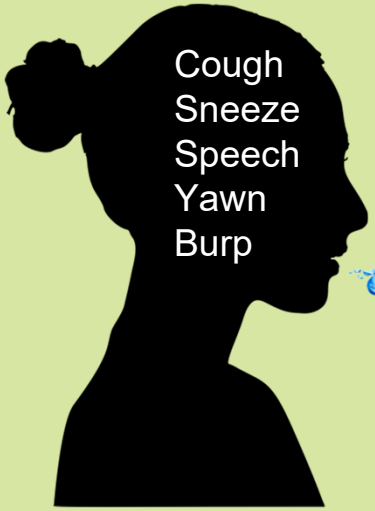
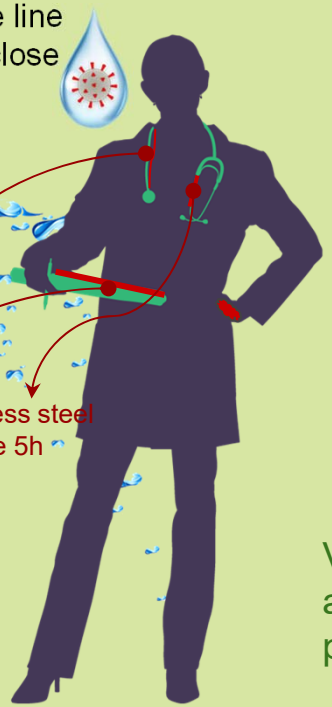


It is possible to inhale droplets only if "in the line of fire" and close proximity.



Plastic half life 7h

Cardboard half life 1h

Stainless steel half life 5h

Droplet residue on surfaces starts to dry. Some surfaces are more hospitable than others. One "half life" is the time it takes for 50% of the virus to dry up & die.

Varicella decays at a rate of 50% per hour

Airborne particles are inhaled passively regardless of distance in an enclosed space.

Particles also settle on surfaces but the air is their main vehicle.

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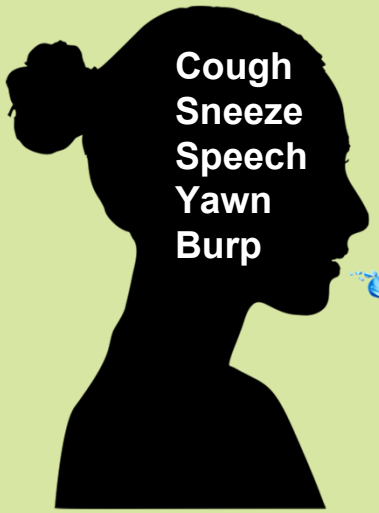


It is possible to inhale droplets only if "in the line of fire" and close proximity.

Contaminated hands touch the face & introduce the virus to airways

The average person touches their face 15x /hr

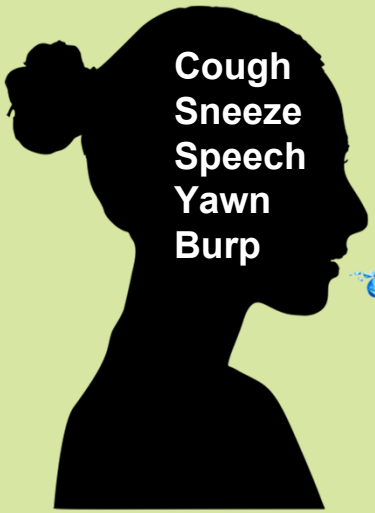
Touching any contaminated surface that hosts VIABLE virus contaminates your hands. RNA fragments, which can last for days or weeks are like the "bones" left by viral "carcases." They are harmless.

Airborne particles are inhaled passively regardless of distance in an enclosed space.

DROPLET AIRWAY PROTECTION vs AIRBORNE PROTECTION

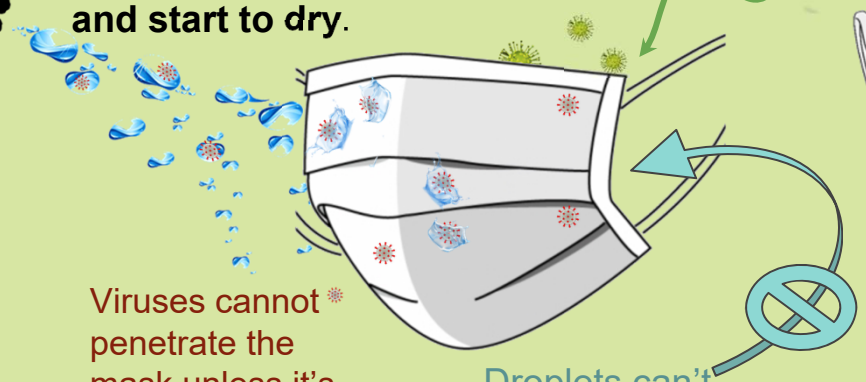
SARS-CoV-2 / Coronavirus

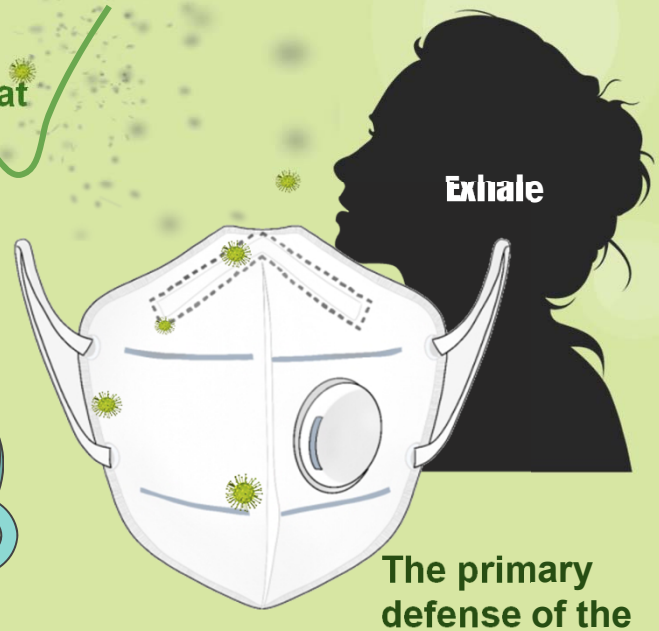
Chickenpox / Varicella



Droplets are propelled a short distance and then fall. If in quite close proximity, these droplets land on a surgical mask and start to dry.

In contrast particles float in ALL directions





Surgical masks offer very good droplet protection - we rely on them to keep surgery safe for staff & patients every day.

Viruses cannot penetrate the mask unless it's wet through.

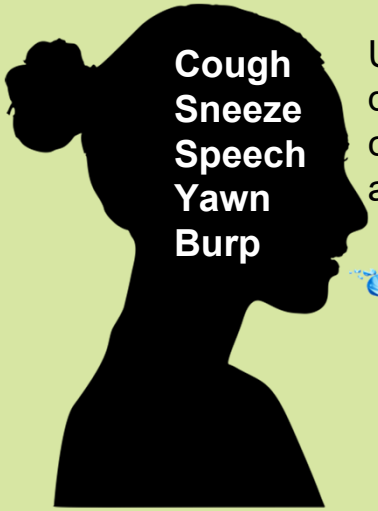
Droplets can't turn corners

Because of the looser fit of routine surgical masks, airborne pathogens can float through gaps. N95 respirators are needed.

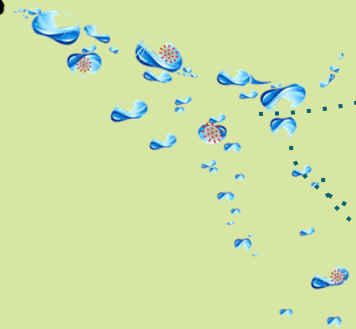
The primary defense of the N95 mask is the close fit, which prevents particulate drift into airways.

DROPLET SPREAD → AEROSOLIZED → AIRBORNE SPREAD

SARS-CoV-2 / Coronavirus

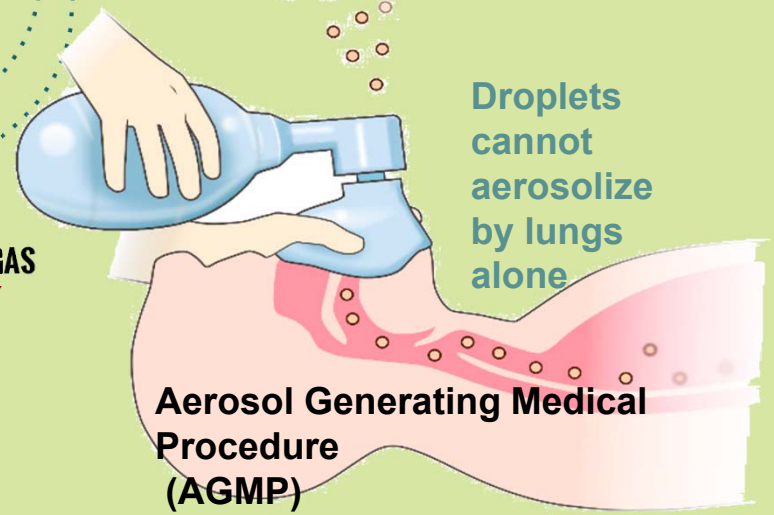


Under artificial influences, droplet transmitted viruses can be propelled into airborne forms



ADD VELOCITY

ADD GAS



Droplets cannot aerosolize by lungs alone

Aerosol Generating Medical Procedure (AGMP)

When propellant is added to the system, water droplets are expelled as both vapour and particles. Smaller droplets have arc even farther than 5 ft and free particulate can float.

HOW CAN I TRUST THAT MY PATIENT WON'T SPONTANEOUSLY AEROSOLIZE?

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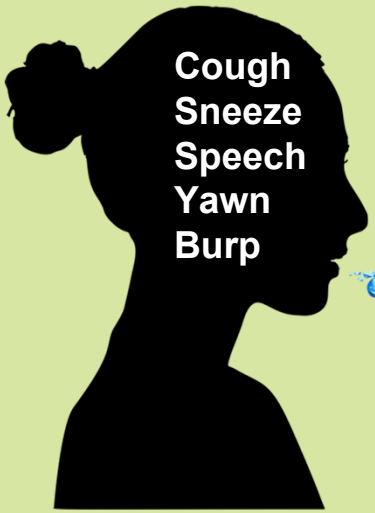

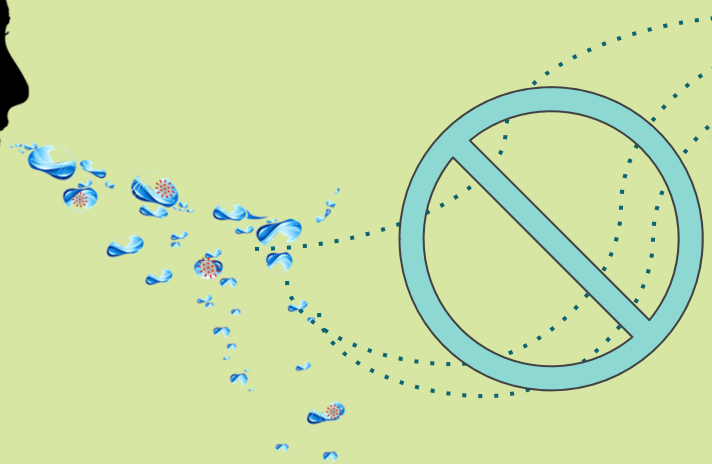

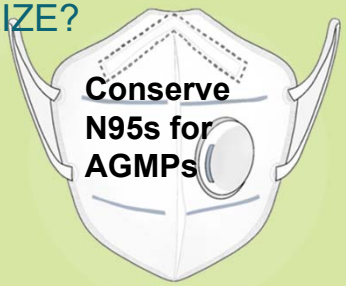

While there is much to learn about SARS-CoV-2 we have studied its cousin SARS-CoV-1 extensively and already evaluated Coronavirus' ability to aerosolize. Not even the most forceful cough changes the nature of transmission. Surgical masks are effective droplet barriers for non-AGMP encounters.

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