

Masked Effects

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

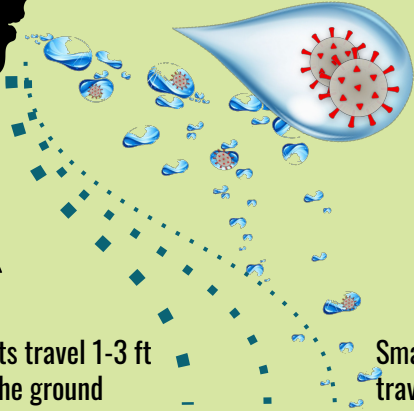


DROPLET SPREAD

SARS-CoV-2 / Coronavirus

**Cough
Sneeze
Speech
Yawn
Burp**

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



Large droplets travel 1-3 ft
then fall to the ground

Small droplets
travel 3-5 ft

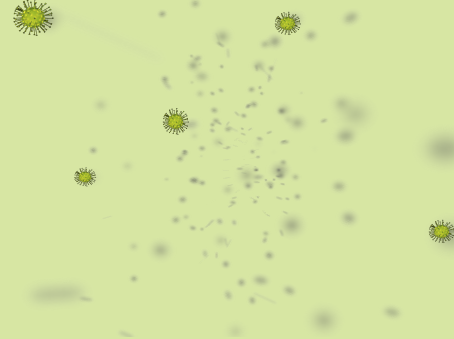
Surfaces in the “spray zone” AT THE TIME OF THE SPRAY get dusted in droplets containing virus. As they dry, the virus starts to decay, at a different rate on different surfaces. YOU are a surface.

VS

AIRBORNE SPREAD

Chickenpox / Varicella

Exhale



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

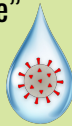
Surfaces in the room within an HOUR of the spray get dusted with viral particles. They decay somewhat faster on surfaces without the protective water droplet but can float farther.

DROPLET SPREAD

SARS-CoV-2 / Coronavirus

**Cough
Sneeze
Speech
Yawn
Burp**

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


Droplets leave a residue on surfaces that starts to dry. Some surfaces are more hospitable than others. One "half life" is the time it takes for 50% of the viruses to dry up and die.

VS

AIRBORNE SPREAD

Chickenpox / Varicella

Exhale

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

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

Varicella decays at a rate of 50% per hour



DROPLET SPREAD is mostly

SARS-CoV-2 / Coronavirus

**Cough
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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 “carcasses.” They are harmless.

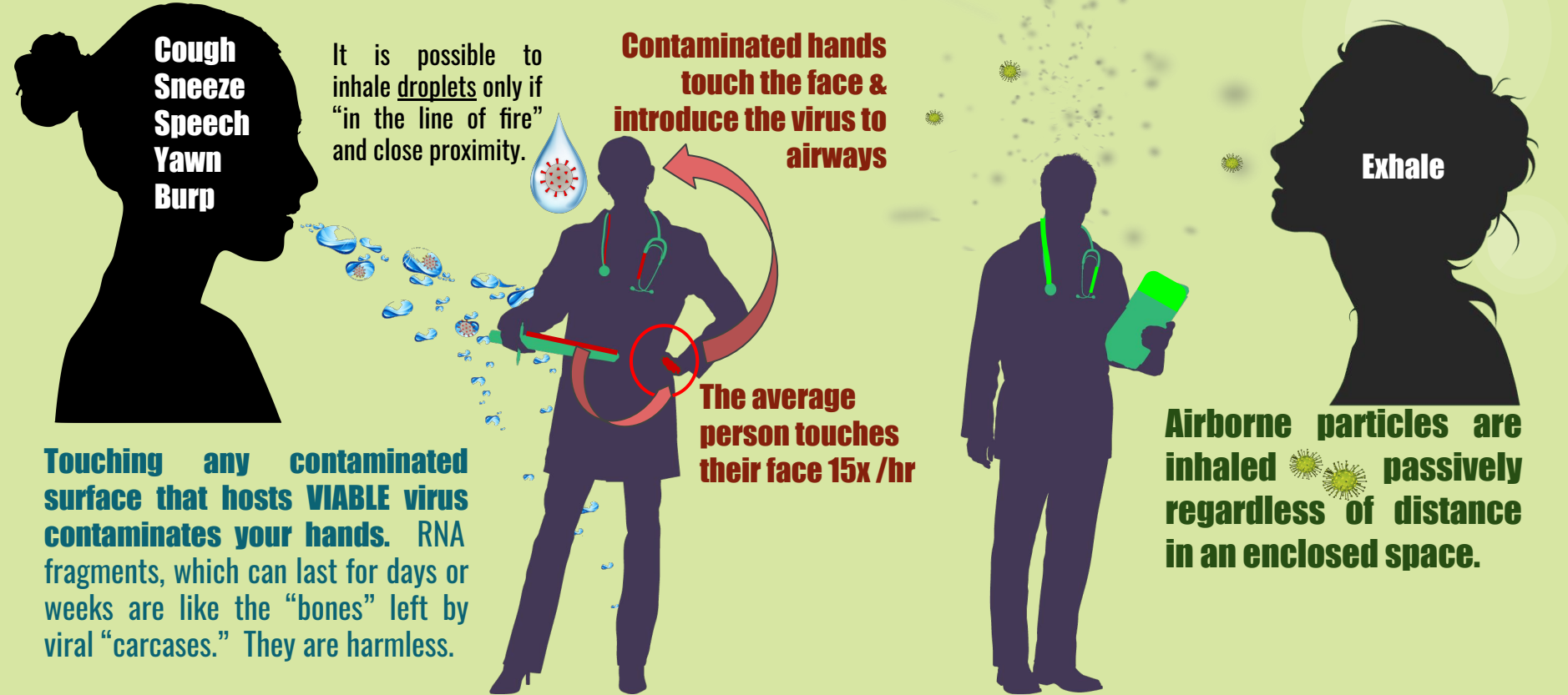
vs

AIRBORNE SPREAD

Chickenpox / Varicella

Exhale

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

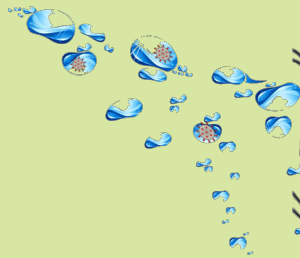


DROPLET AIRWAY PROTECTION

SARS-CoV-2 / Coronavirus

**Cough
Sneeze
Speech
Yawn
Burp**

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.



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

VS

AIRBORNE PROTECTION

Chickenpox / Varicella

Particles float in ALL directions



Exhale



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

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Sneeze
Speech
Yawn
Burp**

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

**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.**

**ADD ADD GAS
VELOCITY**



Droplets cannot
aerosolize by
lungs alone

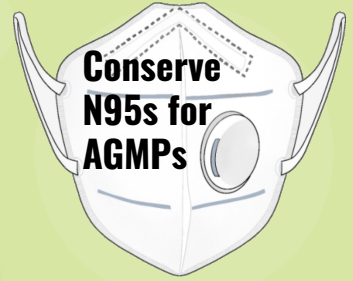
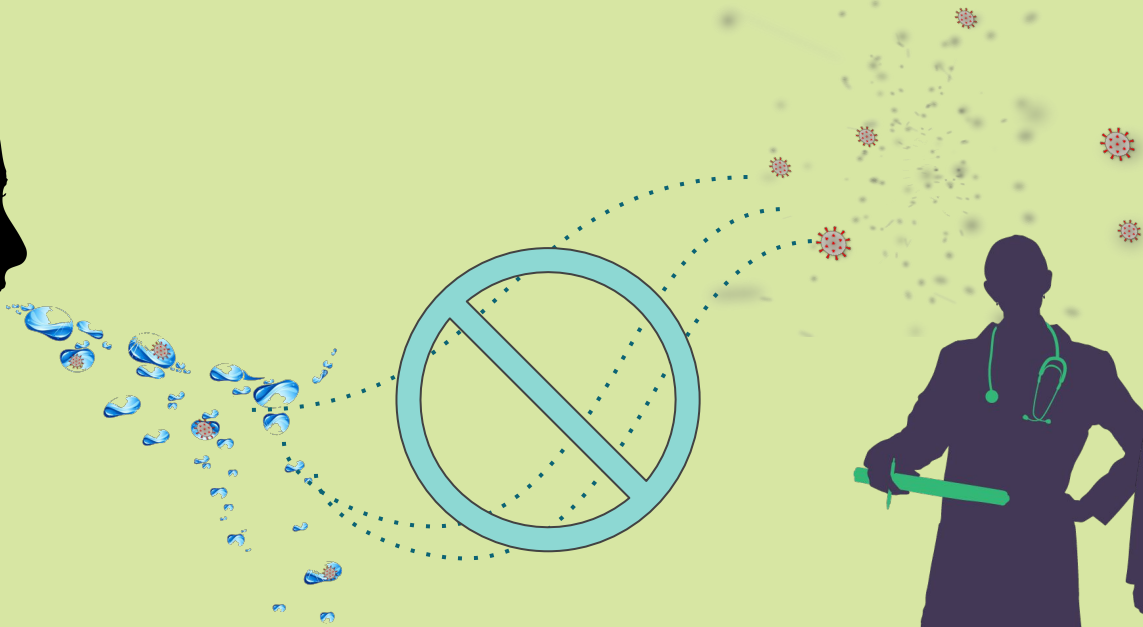
**Aerosol Generating Medical Procedure
(AGMP)**



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

SARS-CoV-2 / Coronavirus

Cough
Sneeze
Speech
Yawn
Burp



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



REFERENCES

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