

COVID – 19: training part III

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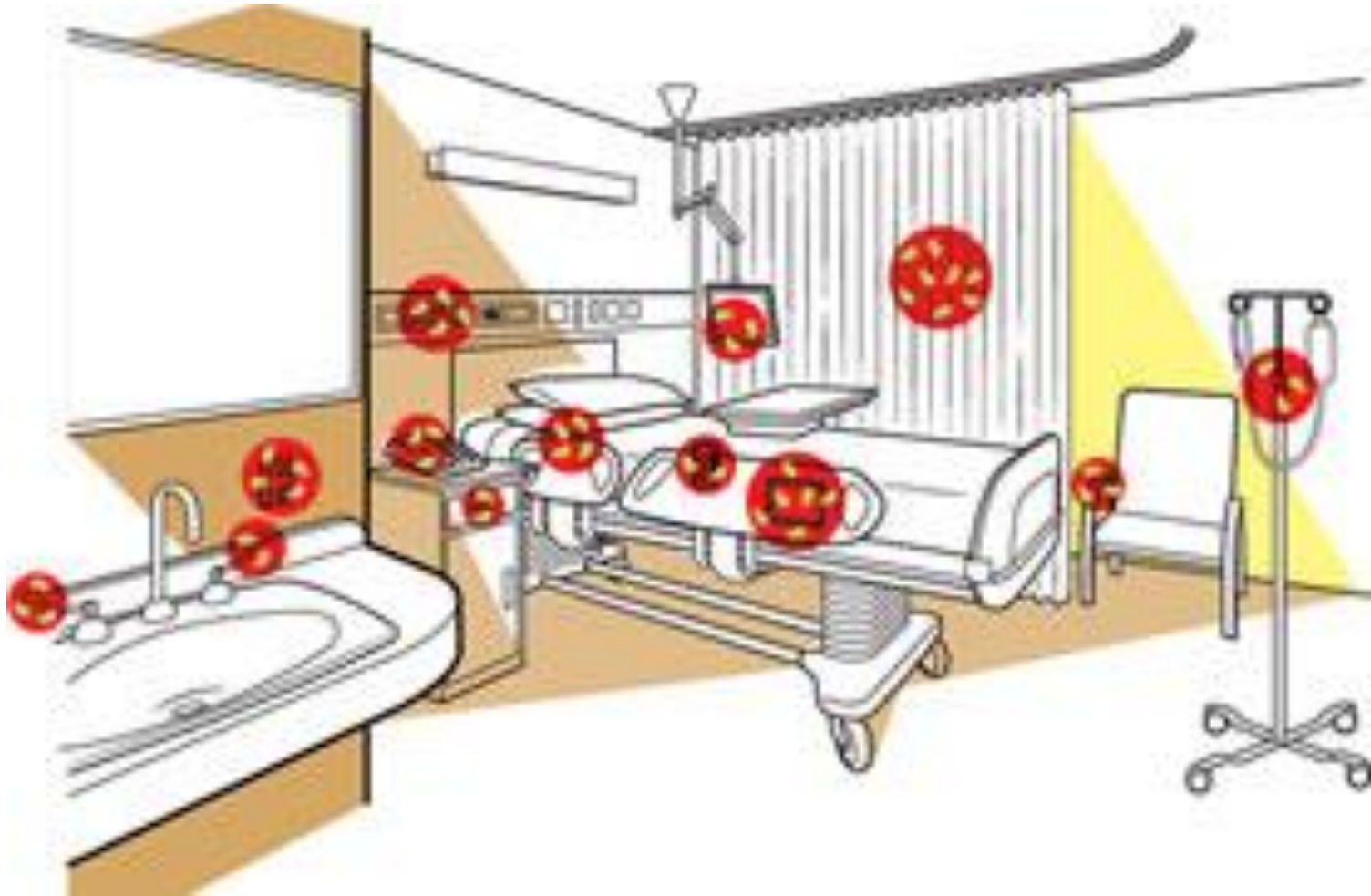
Questions

- Poate fi prone position utilizat si in cazul pacientului neventilat
- Corticosteroids use
- Traheostomie

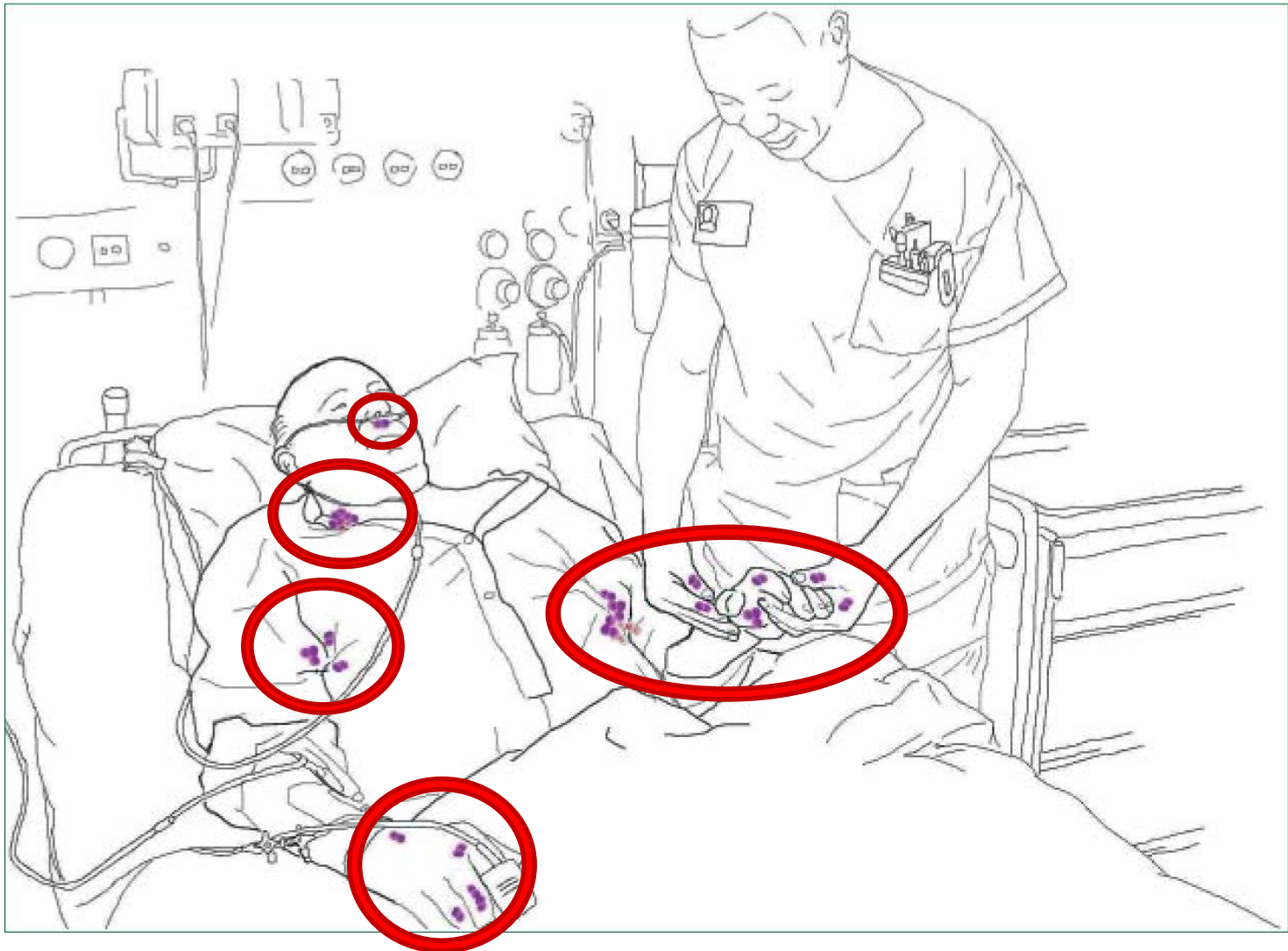
Despre ce vorbim astazi

- Totul incepe de la prelucrarea mainilor
- Echipamentul de protecție în funcție de complexitatea măsurilor de îngrijire
- Îmbrăcarea și înlăturarea echipamentului de protecție utilizat în serviciu TI: importanța respectării consecutivității

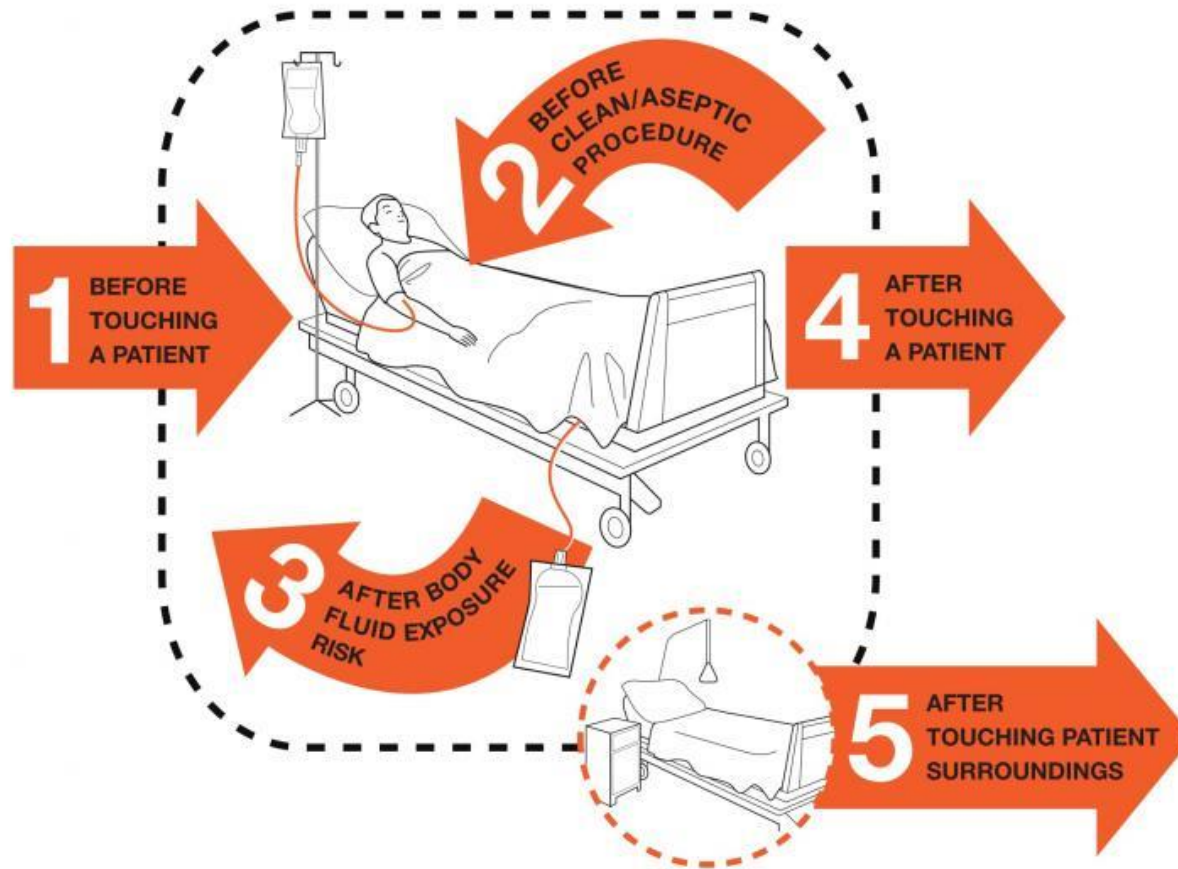
Contaminated surfaces



Hands transmission



Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN?	Clean your hands before touching a patient when approaching him/her.
		WHY?	To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ ASEPTIC PROCEDURE	WHEN?	Clean your hands immediately before performing a clean/aseptic procedure.
		WHY?	To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN?	Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN?	Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN?	Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.



**World Health
Organization**

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES
Clean Your Hands

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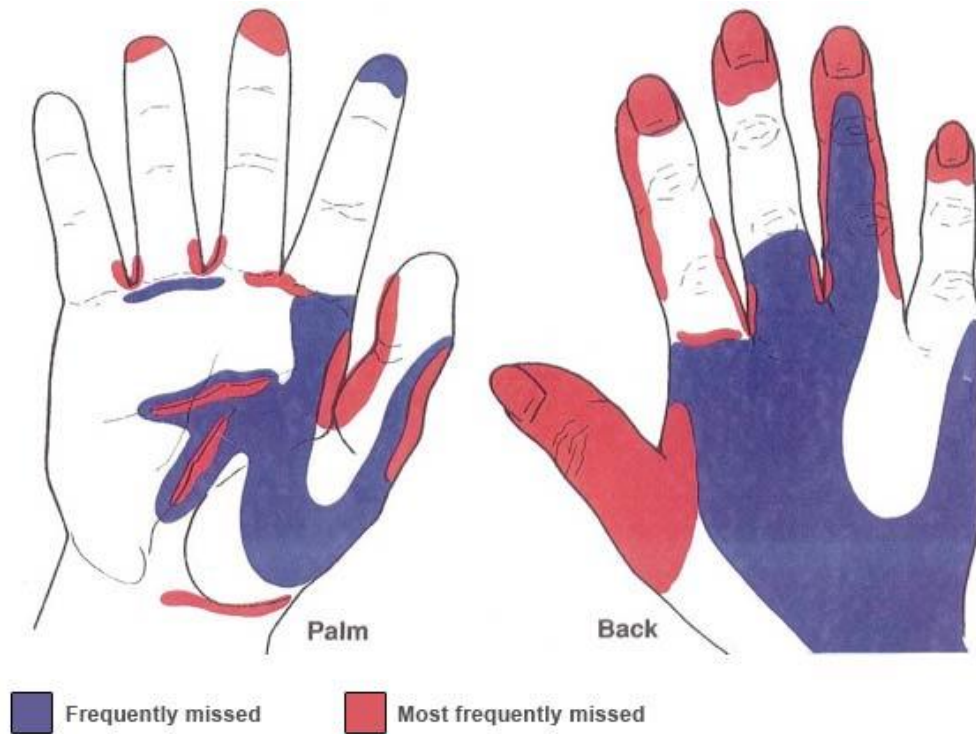
WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

May 2009

Hands washing

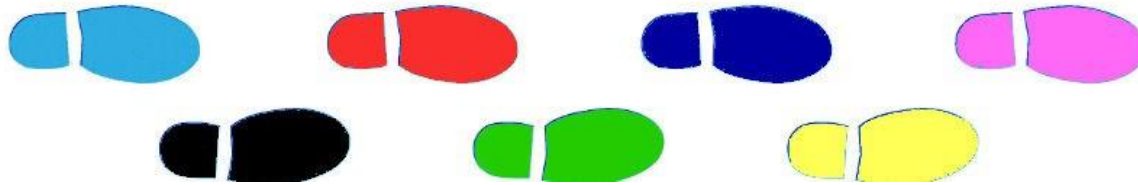


Missed zones



Properly hands washing

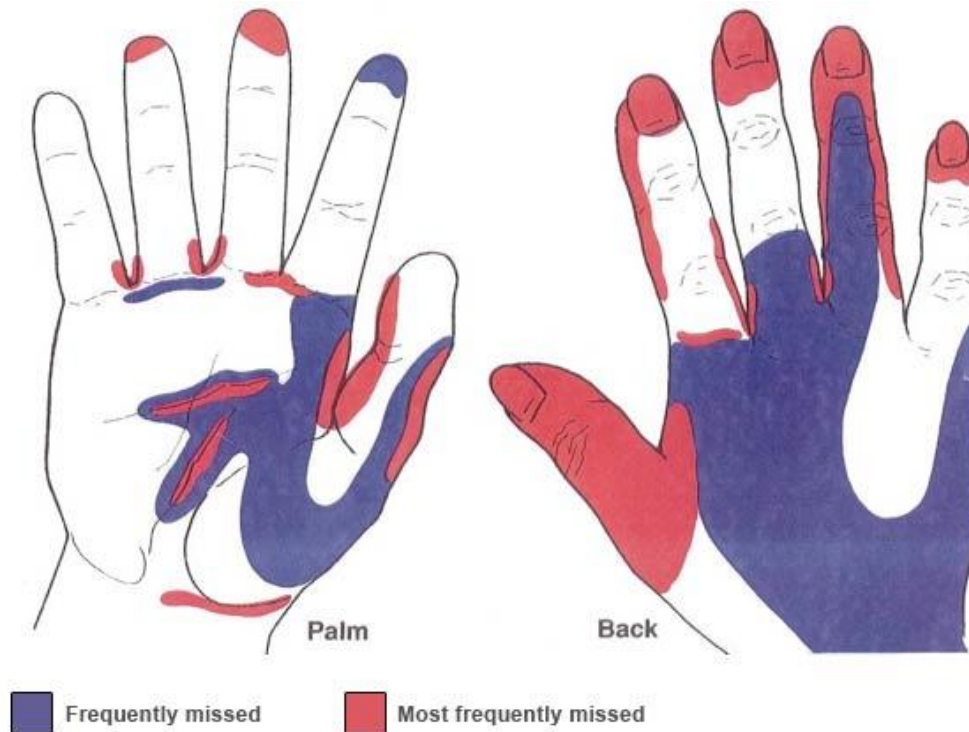
7 STEPS



Properly hands washing



Missed zones



Hands hygiene



Free hands

Cool ideas



NOT for ICU



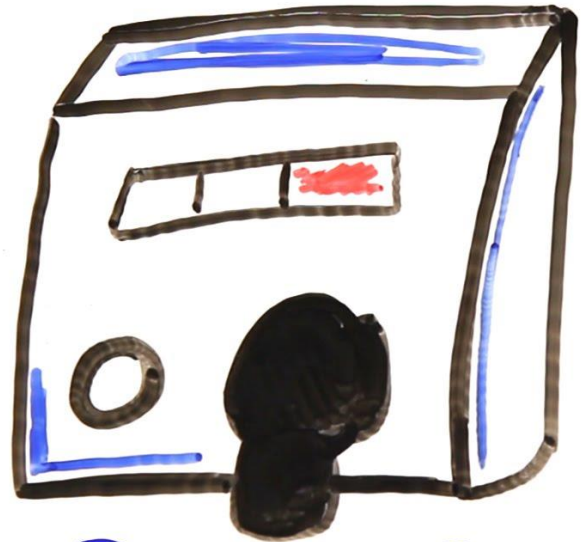
ICU design



PAPER
TOWEL

VS.

HAND



DRYER

Paper towel vs dryer



Drying efficiency	90% dryness after 10 sec	90% dryness after 40 sec
Removal of bacteria	Reduced Nr of all types of bacteria	Increased Nr of all types of bacteria
Effect on cross contamination	NO dispersal of bacteria	Bacterial dispersal radius of up to 3 Ft from hot dryer

Hand drying: an important part of hand hygiene.

What do you expect from a drying system ?



MICROBIOLOGICAL COUNTS ON HANDS

DISPERSAL OF MICROBES

finger pads
palms

warm air dryer



jet air dryer



paper towel



STAPHYLOCOCCI x 800



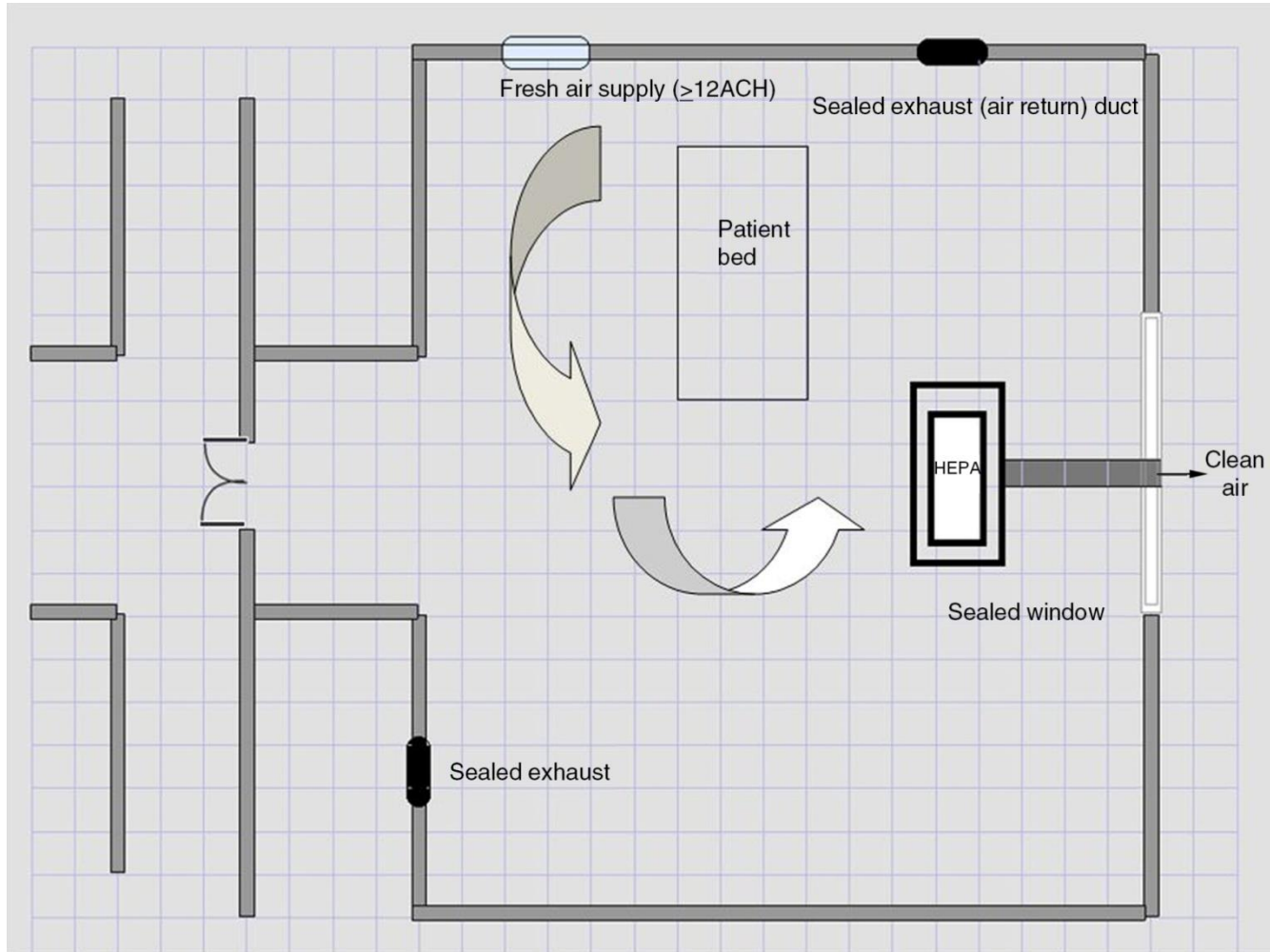
TOTAL BACTERIA x 1000



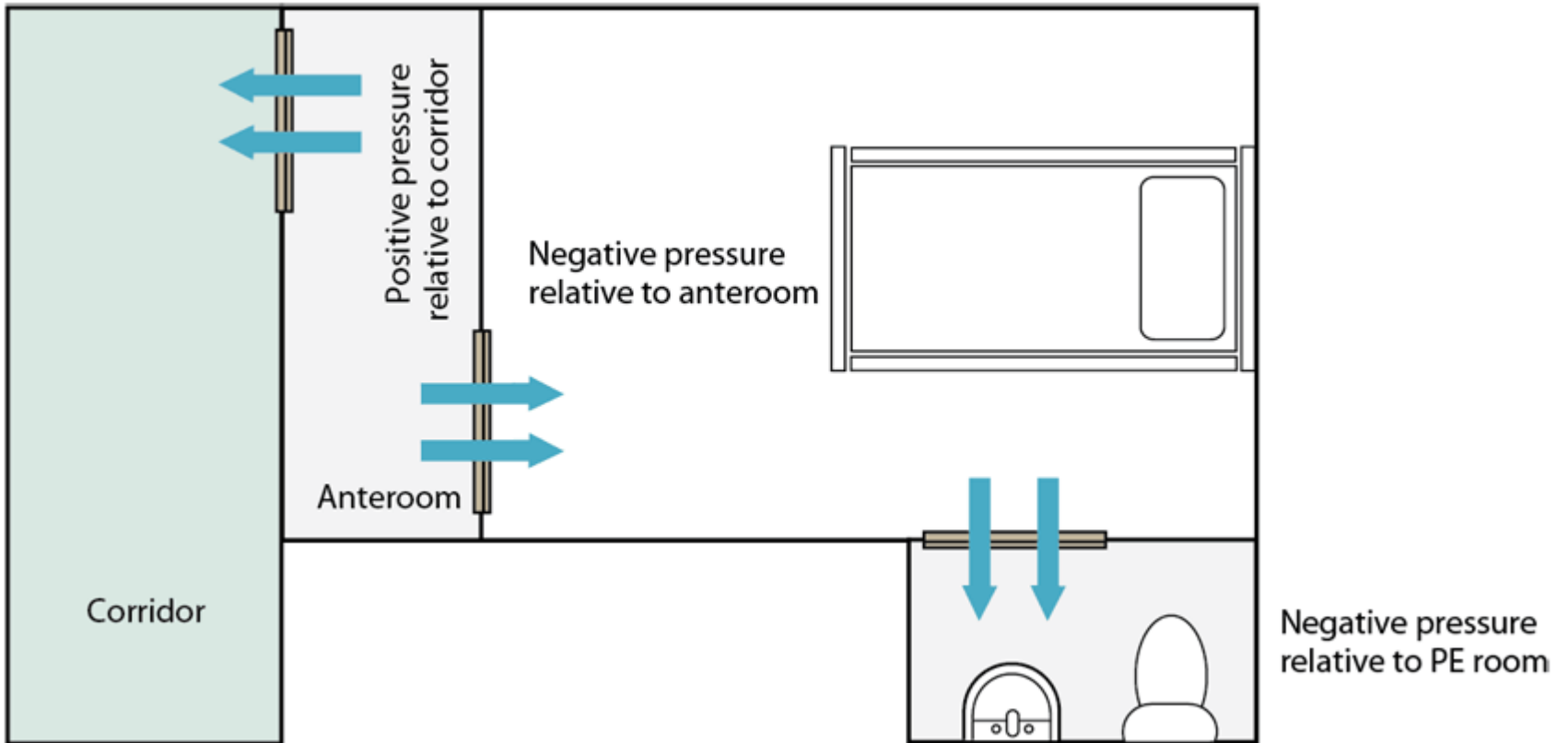
More than half of the jet air driers were contaminated by **coliforms**, whereas none were found on the paper hand towel dispensers.



Isolation room



Isolation room



Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations

Scientific brief
29 March 2020

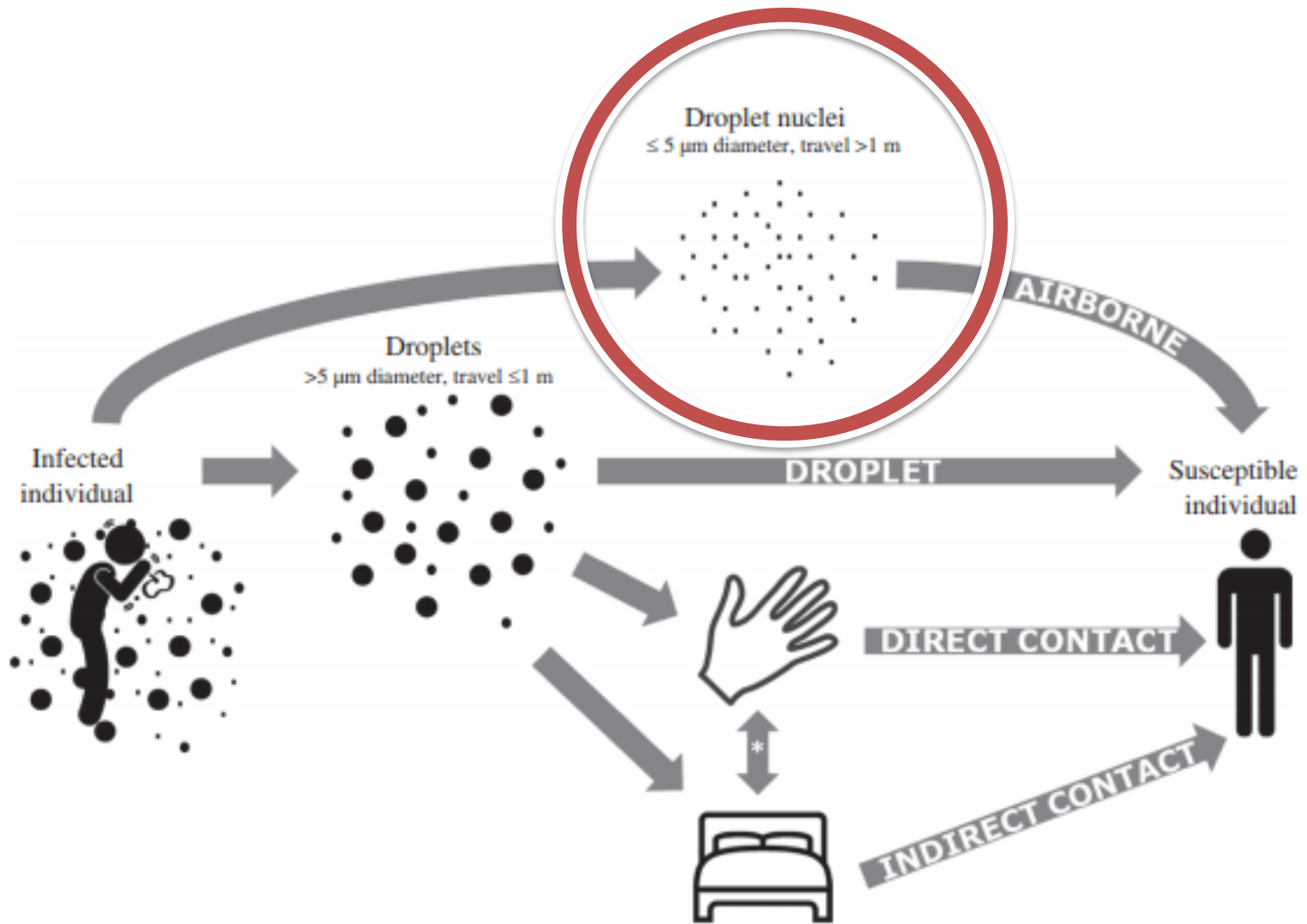


This version updates the 27 March publication by providing definitions of droplets by particle size and adding three relevant

According to current evidence, COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes. In an analysis of 75,465 COVID-19 cases in China, airborne transmission was not reported.

Droplet transmission occurs when a person is in in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets. Transmission may also occur through fomites in the immediate environment around the infected person.⁸ Therefore, transmission of the COVID-19 virus can occur by direct contact with infected people and indirect

Therefore, transmission of the COVID-19 virus can occur by direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person (e.g., stethoscope or thermometer).



* Transmission routes involving a combination of hand & surface = indirect contact.

Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations

Scientific brief
29 March 2020



In the context of COVID-19, **airborne transmission may be possible** in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed; i.e., endotracheal intubation, bronchoscopy, open suctioning, administration of nebulized treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheostomy, and cardiopulmonary resuscitation.

There is some evidence that COVID-19 infection may lead to intestinal infection and be **present in faeces**. However, to date only one study has cultured the COVID-19 virus from a single stool specimen.⁹ There have been no reports of faecal–oral transmission of the COVID-19 virus to date.

Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations

Scientific brief
29 March 2020



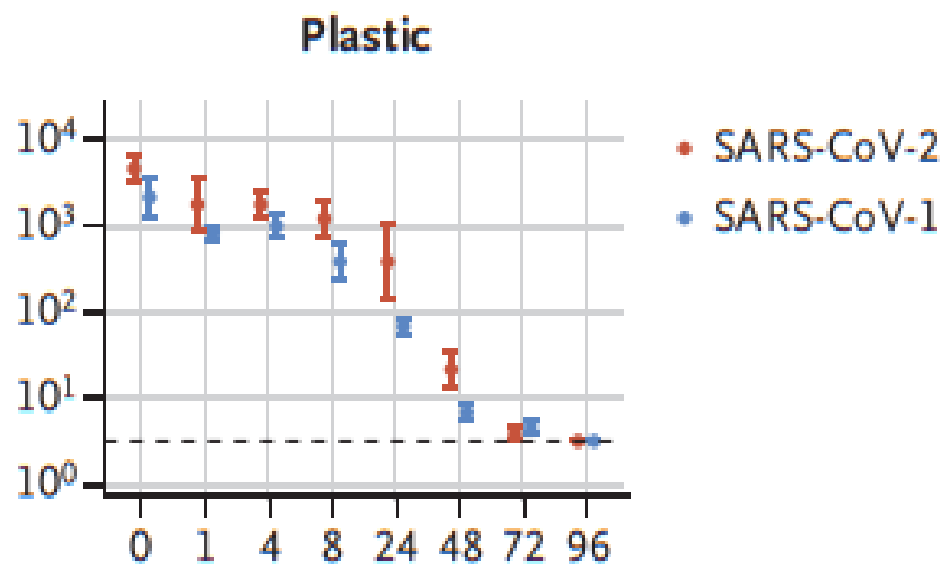
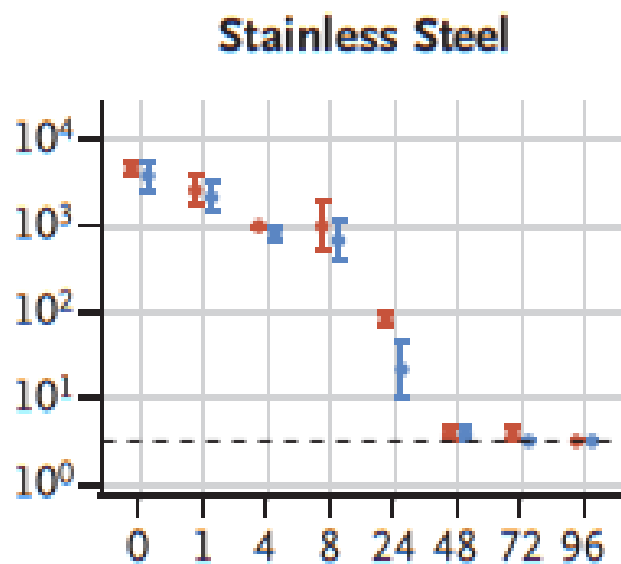
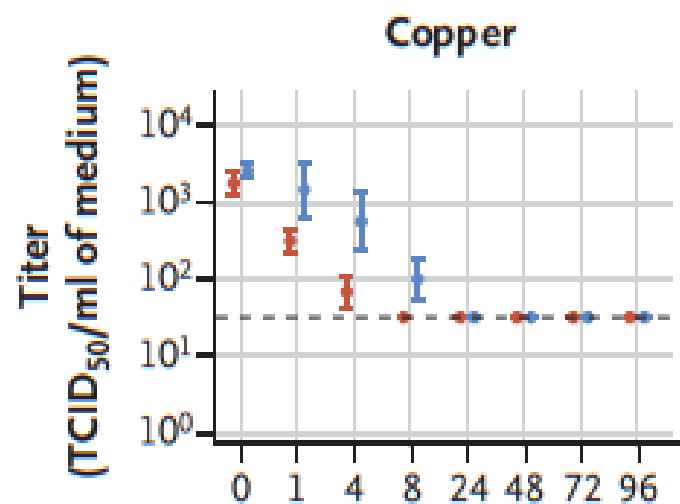
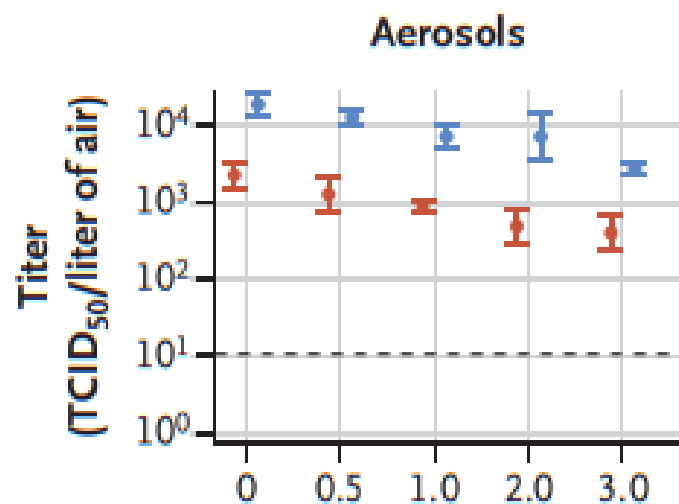
There are reports from settings where symptomatic COVID-19 patients have been admitted and in which no COVID-19 RNA was detected in air samples.

CORRESPONDENCE

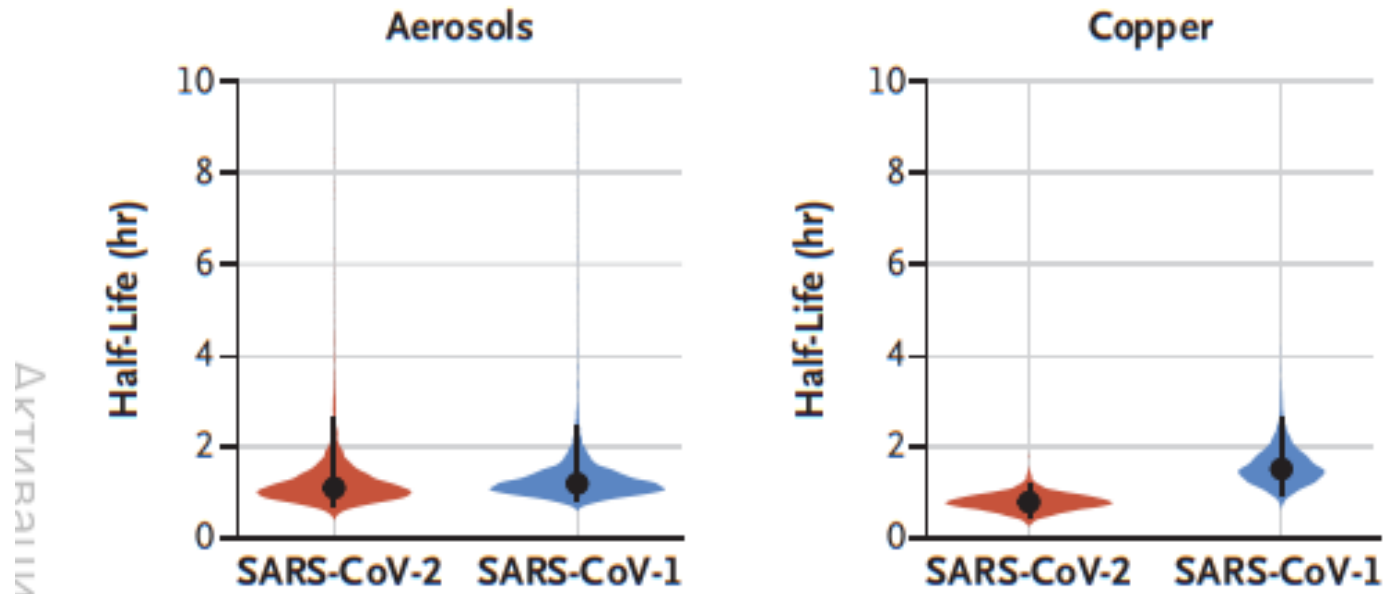
**Aerosol and Surface Stability of SARS-CoV-2
as Compared with SARS-CoV-1**

SARS-CoV-2 remained viable in aerosols throughout the duration of our experiment (3 hours), with a reduction in infectious titer from $10^{3.5}$ to $10^{2.7}$ TCID₅₀ per liter of air.

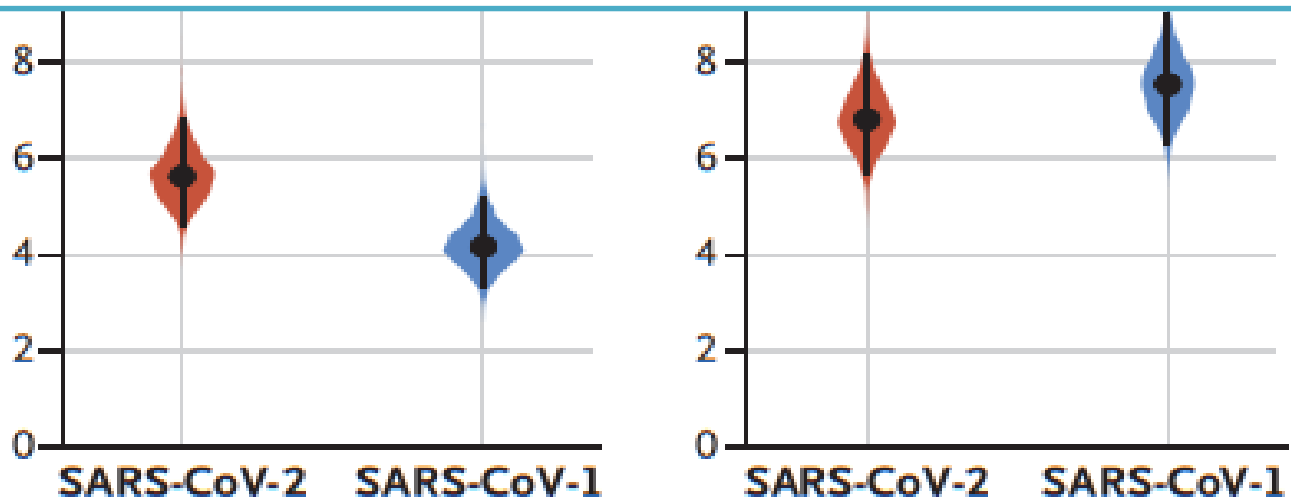
A Titers of Viable Virus



C Half-Life of Viable Virus



it is sensitive to ultraviolet rays and heat





Review

Persistence of coronaviruses on inanimate surfaces and

...but can be efficiently inactivated by surface disinfection procedures with 62-71% ethanol, 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within 1 minute. Other biocidal agents such as 0.05-0.2% benzalkonium chloride or 0.02% **chlorhexidine digluconate are less effective**

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Available online 6 February 2020

Coronavirus, the emergence of a novel human coronavirus, SARS-CoV-2, has become a global health concern causing severe respiratory tract infections in humans. Human-to-human transmissions have been described with incubation times between 2-10 days, facilitating its spread via droplets, contaminated hands or surfaces. We therefore reviewed the literature on all available information about the persistence of human and veterinary

As no specific therapies are available for SARS-CoV-2, early containment and prevention of further spread will be crucial to stop the ongoing outbreak and to control this novel infectious thread



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ECDC TECHNICAL REPORT

Infection prevention and control and preparedness for COVID-19 in healthcare

Up to 10% of the reported cases in China [5] and up to 9% of all cases in Italy have been among healthcare workers [6]

With the exception of AGPs, it is unclear whether facial filtering piece (FFP) respirators (class 2 or 3) provide better protection than surgical masks against other coronaviruses and respiratory viruses such as influenza

transmission, a growing demand for care of COVID-19 patients and ensuing staff issues in the event of shortages of personal protective equipment (PPE) for healthcare facilities in EU/EEA countries and the United Kingdom.

Therefore, in the event of widespread community transmission leading to shortages of PPE, a rational approach would necessitate prioritising use of FFP2/3 respirators for care activities involving a higher perceived risk of transmission, such as during AGPs or in intensive care.

preparedness for COVID-19 in healthcare

The use of surgical masks by healthcare workers for personal protection and source control can be considered as a measure for reducing transmission within healthcare settings

This document aims to provide guidance to EU/EEA healthcare facilities and healthcare providers on infection prevention and control (IPC) measures for the management of suspected and confirmed cases of COVID-19 infection in healthcare settings, including long-term care facilities. It also offers guidance on the management of

Some healthcare facilities require that all healthcare providers wear a surgical mask while at work.

of personal protective equipment (PPE) for healthcare facilities in EU/EEA countries and the United Kingdom.

Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19)

Interim guidance
19 March 2020



World Health
Organization

Disruptions in the global supply chain of PPE

The current global stockpile of PPE **is insufficient**, particularly for **medical masks and respirators**; **the supply of gowns and goggles is soon expected to be insufficient also**. Surging global demand – driven not only by the number of COVID-19 cases but also by misinformation, panic buying, and stockpiling – will result in further shortages of PPE globally. The capacity to expand PPE production is limited, and the current demand for respirators and masks cannot be met, especially if widespread inappropriate use of PPE continues.

Every month, frontline health responders around the world need these supplies (and more) to protect themselves and others from #COVID19

- 89 million masks
- 30 million gowns
- 1.59 million goggles
- 76 million gloves
- 2.9 million liters hand sanitizer



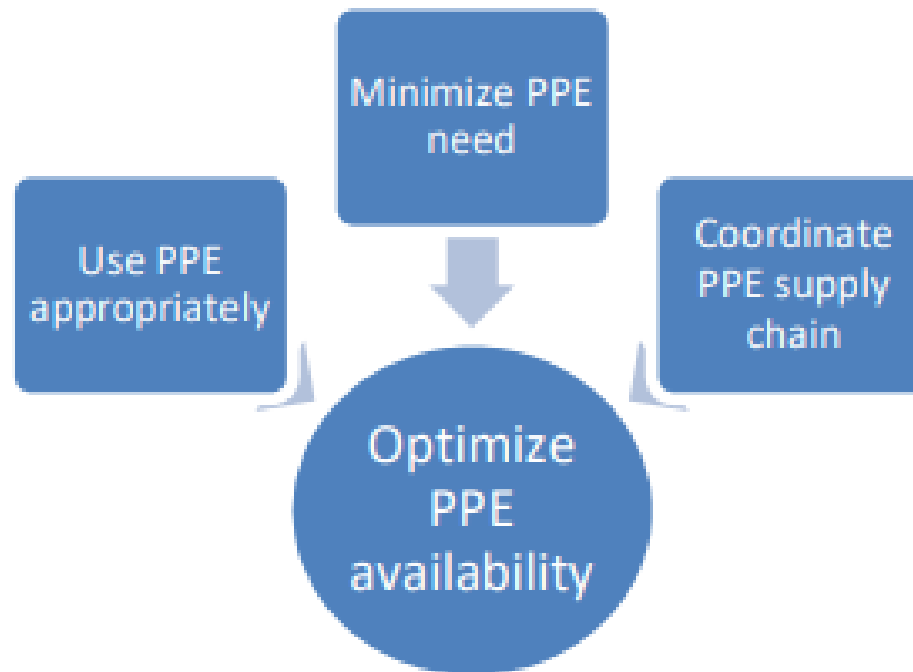
#COVID19

#coronavirus



World Health
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Recommendations for optimizing the availability of PPE



1. Minimize the need for PPE

Comparison

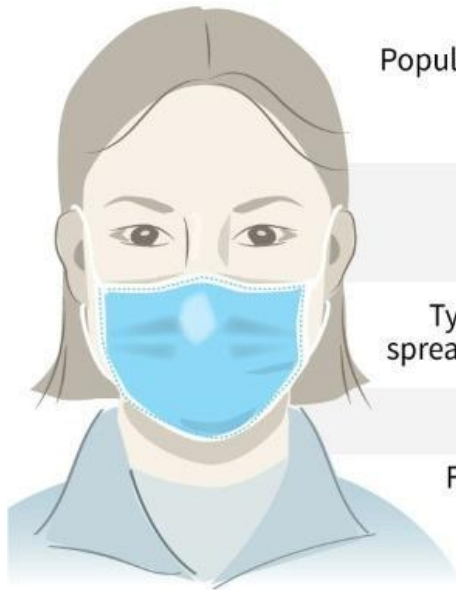


Aspect	Surgical Masks	N95 mask	Anti Pollution Mask
Kills microbes	No	No	Yes
Reusable/Reusable	No	No	Yes
Life	4 hours	8 hours	1 Year
Good fit	No	Yes	Yes
Usage	Doctors	Workers	Everyone
Cost	Cheap	Expensive	Reasonable
Technology	Simple shield	Straight line filtration	Cross linked Synthetic trap & kills
Anti Pollution	No	Yes	Yes



Face masks

Popular types of face masks used as China coronavirus spreads



Surgical mask

One-way protection:
captures particles or
droplets from wearer

Typically used to prevent
spread of common colds, flu

Loose-fitting

For general population



N95 or similar type

Two-way protection:
filters air entering/exiting
the wearer

Filters at least 95%
of airborne particles

Sits tightly on the face

Mostly used by health
workers

*Experts warn that masks are not foolproof because
a virus can still enter through the sides
or enter body through the eyes*

Source: CDC/WHO/OHS Canada

© AFP



Can Facial Masks be disinfected for re-use ?

Professor Yi Cui, Department of Materials Science and Engineering,
Stanford University
Email: yicui@stanford.edu

Stanford | ENGINEERING
Materials Science & Engineering



Samples	Meltblown fiber filtration media		Static-charged cotton		E. Coli. Disinfection Efficiency
	Filtration efficiency (%)	Pressure drop (Pa)	Filtration efficiency (%)	Pressure drop (Pa)	
70°C hot air in oven, 30min	96.60	8.00	70.16	4.67	>99%
UV light, 30min	95.50	7.00	77.72	6.00	>99%
75% alcohol, soaking and drying	56.33	7.67	29.24	5.33	>99%
Chlorine-based disinfection, 5min	73.11	9.00	57.33	7.00	>99%
Hot water vapor from boiling water, 10min	94.74	8.00	77.65	7.00	>99%
Initial samples before treatment	96.76	8.33	78.01	5.33	

Conclusion:

Do not use alcohol-based or Chlorine-related chemicals for mask disinfection since they will reduce the static charge in meltblown micron fibers and cottons, and thus reduce the filtration efficiency.

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Recommended N95 mask disinfection method:

Steps:

- 1) Turn on oven (oven for kitchen use will do), set at 70°C or 160F
- 2) Preheat to the set temperature
- 3) Put in facial masks, wait for 30 min, hot air in oven will disinfect viruses and bacteria without damaging the facial masks.
- 4) Take it out and cool down. It is ready to use.

Notes

- 1) The disinfection and reuse protocols are recommended for the situation when there is a shortage of N95 masks. When there is an adequate mask reserve, people should use the new masks.
- 2) The test is based on E. Coli, not based on COVID-19. But based on the previous experience on corona virus disinfection, those disinfection methods in previous slides are expected to effectively kill COVID-19.
- 3) When the disinfection is frequently used, the oven can be kept at 70°C (160F) continuously.
- 4) How many times can the facial masks be reused?

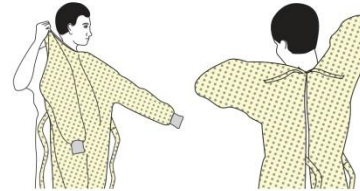
We are still testing the number of times that a facial mask can be reused. Based on the past results, we expect to be fine if the N95 masks are to be reused for 5 times without much loss of filtration efficiency. We are doing testing for more reuse cycles (10-20 times). And stay tuned.

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



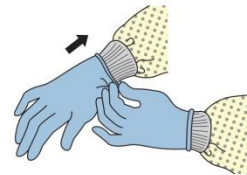
3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene





Standard PPE

Low prevalence area



Standard endoscopy room

Full PPE

High prevalence area



Enhanced PPE

Confirmed case COVID-19



Negative pressure room

EGPs

- endotracheal intubation
- bronchoscopy
- open suctioning
- administration of nebulised treatment
- manual ventilation before intubation
- physical prone positioning of the patient
- disconnecting the patient from the ventilator
- non-invasive positive pressure ventilation
- tracheostomy
- cardiopulmonary resuscitation

CDC Guidelines...

Monday: N95 masks at all time when caring for possible COVID-19 patient

Tuesday: N95 masks only necessary when performing an aerosol generating procedure, surgical masks will be fine otherwise

Wednesday: If not enough N95 masks, just go with the surgical mask, oh and wear it the whole shift...just in case

Thursday: Cloth/homemade masks are fine and work in place of the above. Disregard any sketchy research that may indicate they increase the risk of infection.

Friday: Scarf or bandana will work just fine. Better than nothing, and the customizations will be amazing!

Saturday: Ok, just hold your breath as long as you can, it will probably be just as good.

