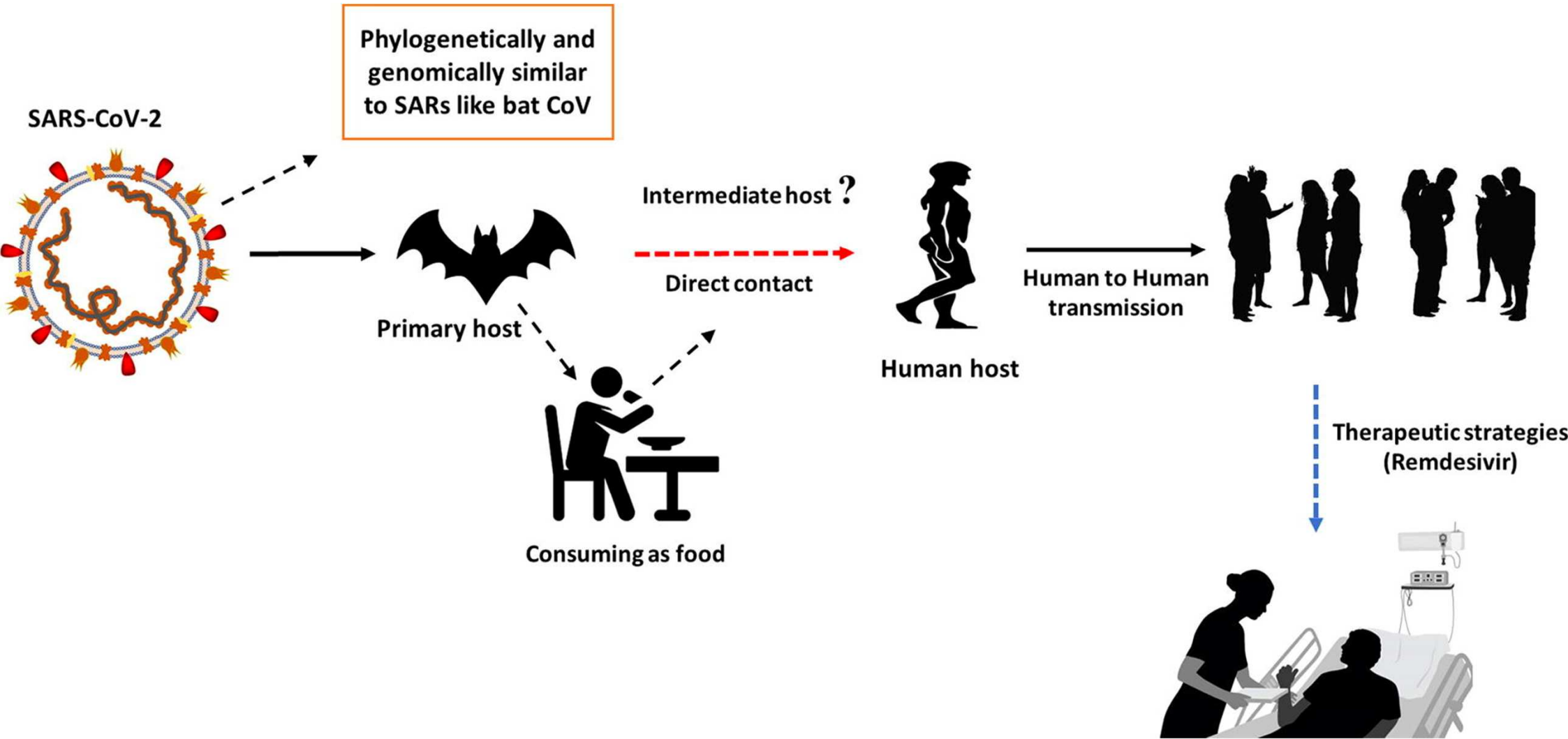




## WHAT COVID-19 IS TEACHING US

Prof Didier Pittet  
Chair Clean Hospitals,  
Director of the Infection Control Programme, University  
Hospitals of Geneva, Geneva, Switzerland



Muhammad Adnan et al. "COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses"  
Journal of Advanced Research. Volume 24, July 2020, Pages 91-98

Total Confirmed

**4,178,346**

Confirmed Cases by  
Country/Region/Sovereignty

**1,347,936** US

**227,436** Spain

**224,332** United Kingdom

**221,344** Russia

**219,814** Italy

**177,547** France

**172,576** Germany

**169,594** Brazil

**139,771** Turkey

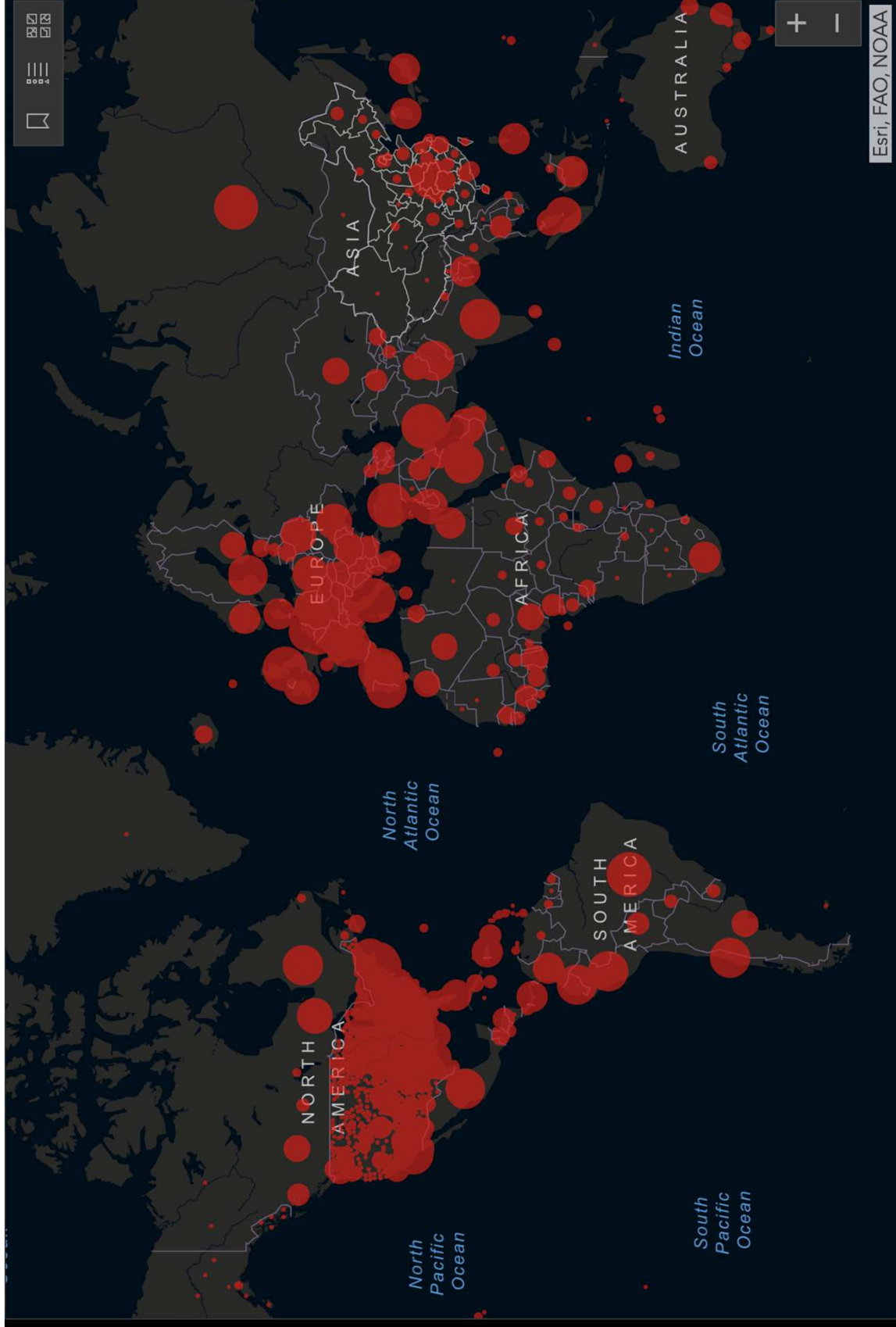
**109,286** Iran

**84,011** China

**71,264** Canada

**70,827** India

**68,822** Peru



# GLOBAL SITUATION

4,148,034 cases

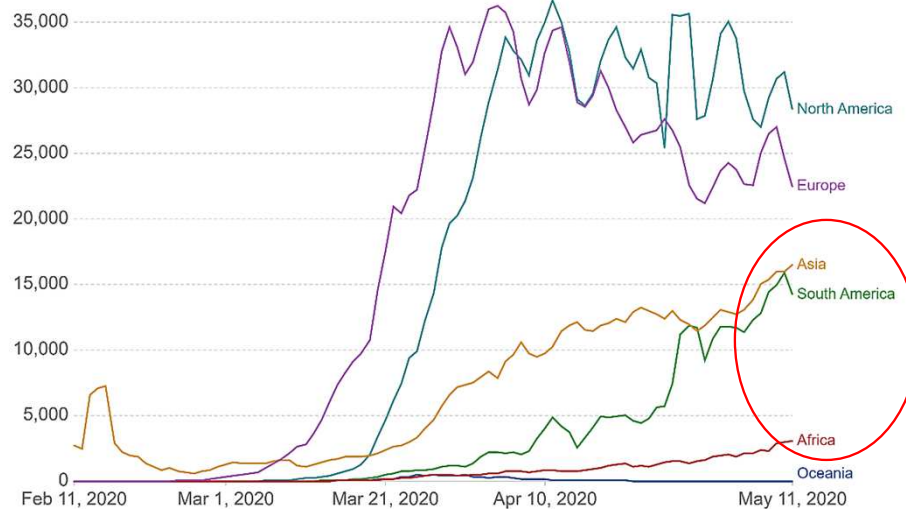
284,124 deaths

58% active cases

Daily confirmed COVID-19 cases, rolling 3-day average

The number of confirmed cases is lower than the number of total cases. The main reason for this is limited testing.

Our World  
in Data



Source: European CDC – Situation Update Worldwide – Last updated 11th May, 11:15 (London time) OurWorldInData.org/coronavirus • CC BY  
Note: The rolling average is the average across three days – the confirmed cases on the particular date, and the previous two days. For example, the value for 27th March is the average over the 25th, 26th and 27th March.

**Africa: 63,413**

**Asia: 662,285**

**N.&S. America: 1,772,622**

**Europe: 1,556,150**

*Spain, United Kingdom, Italy, Russia and Germany*

**Oceania: 8,359**

May 11, 2020

11 mai 2020, worldometers, John Hopkins, ECDC, WHO, worldindata

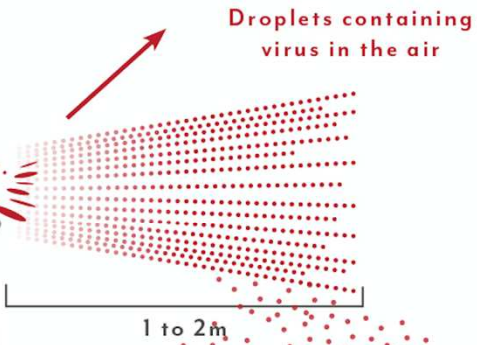


# Coronavirus COVID-19

Transmission and infection



Infected with coronavirus SARS-CoV-2



Droplets containing virus in the air

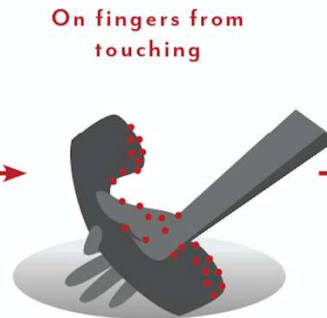
1 to 2m



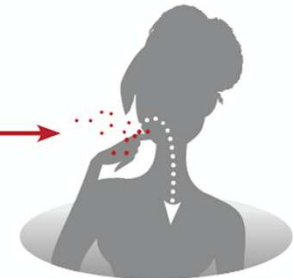
Droplets fall on surfaces/objects



Droplets land in nose, mouth, possibly lungs



On fingers from touching

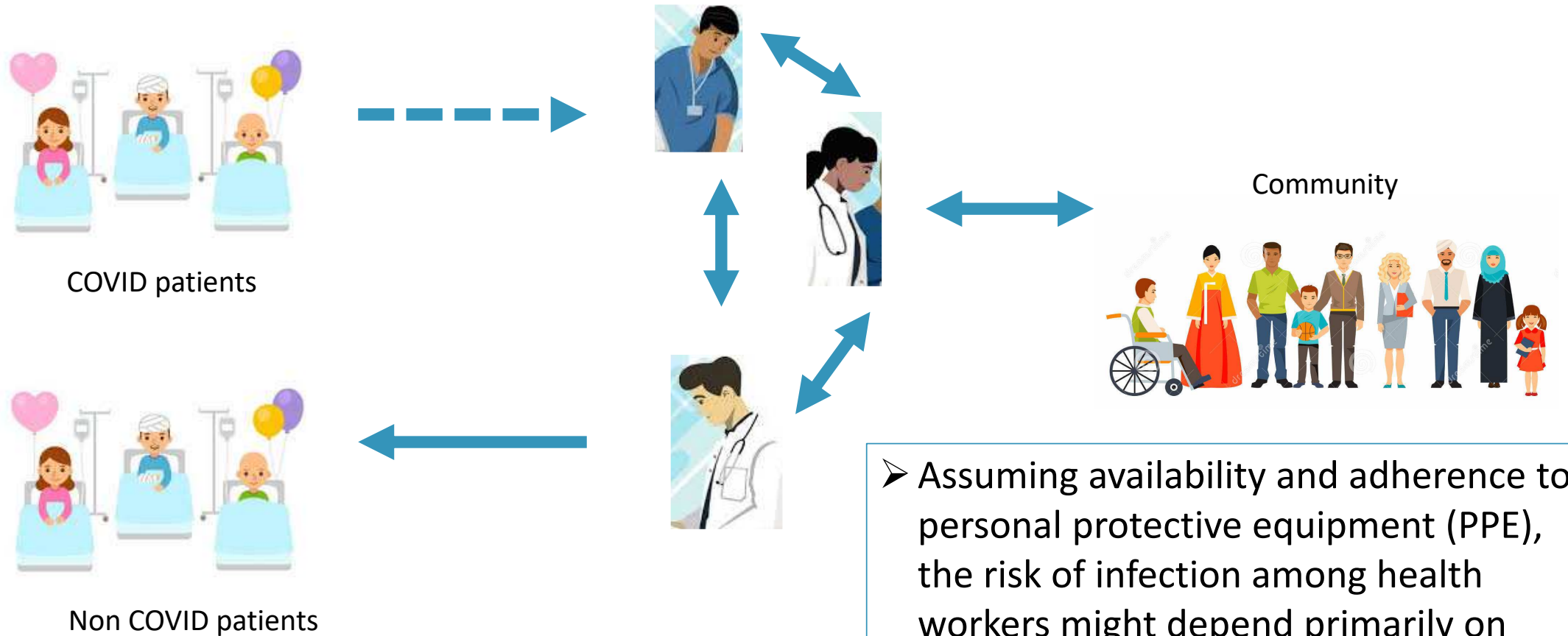


The droplets eventually get into nose and mouth

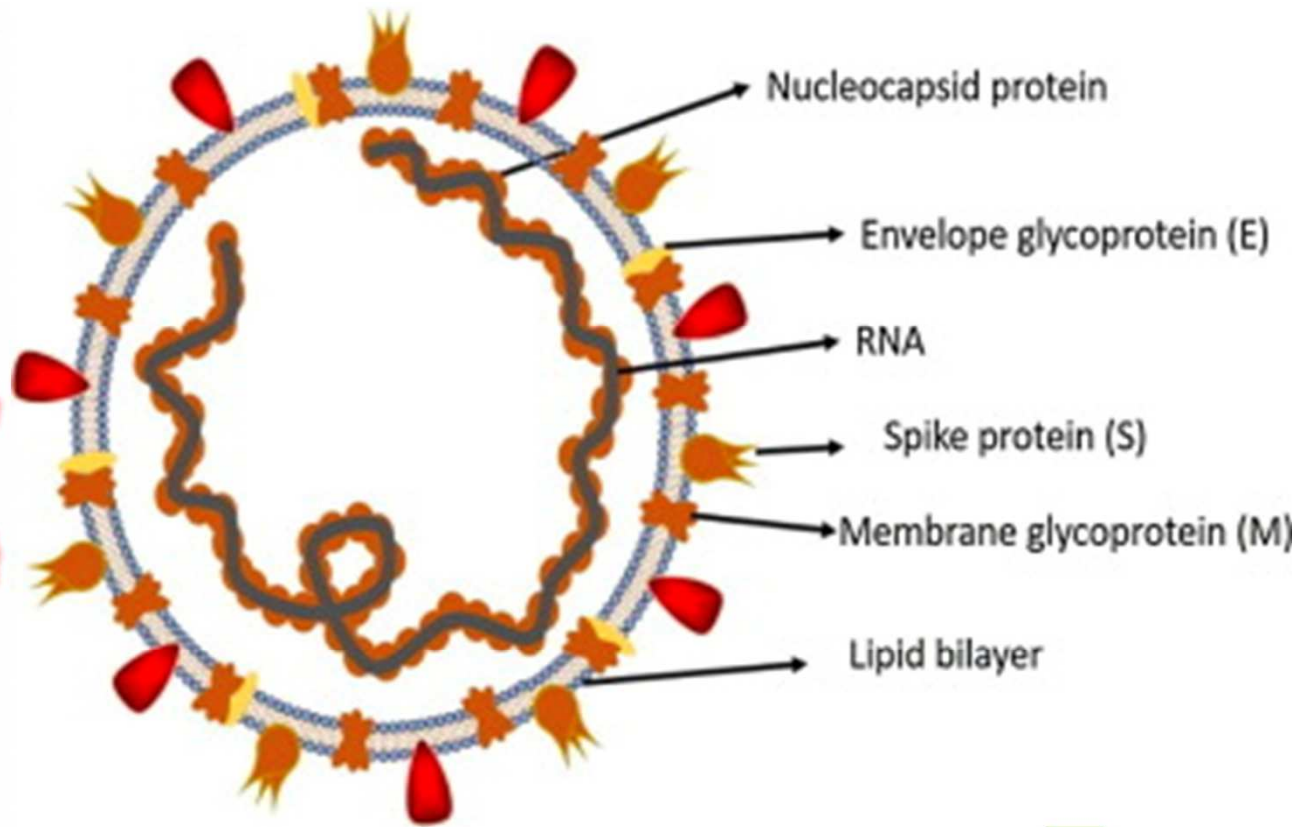
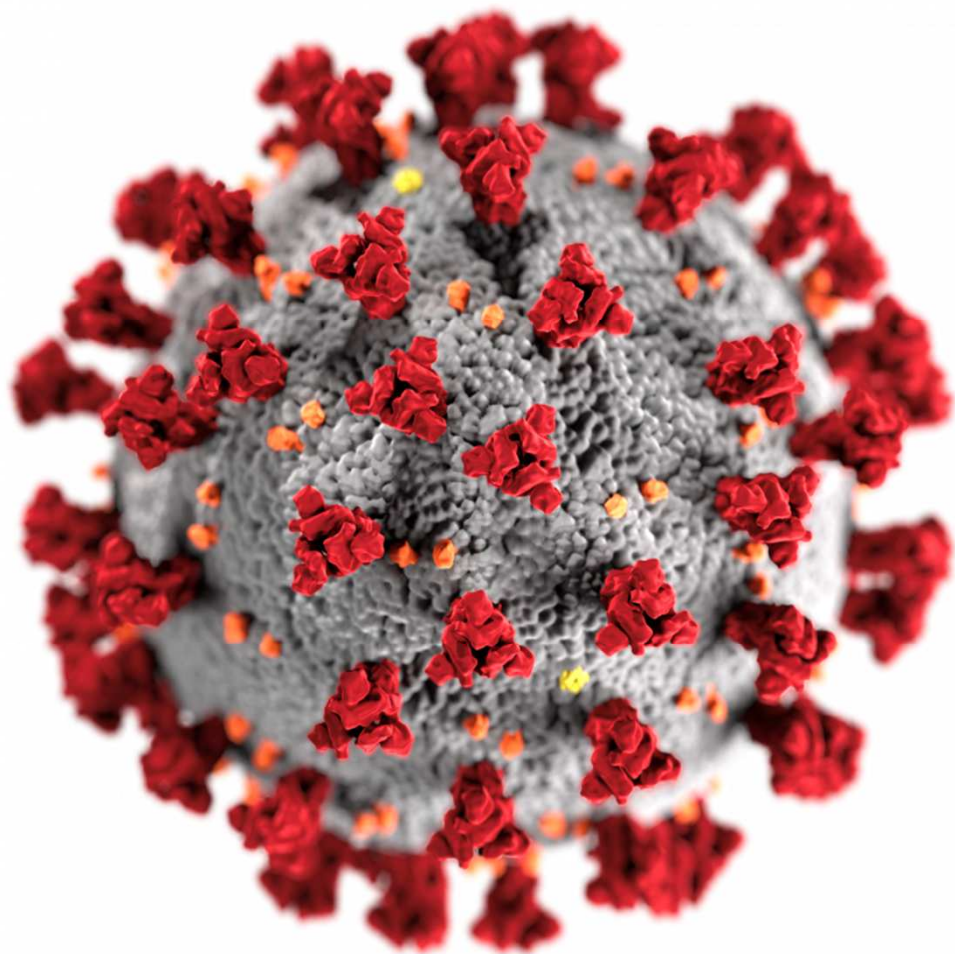


<https://www.world-heart-federation.org/resources/covid-19-transmission/>

# TRANSMISSION PATTERNS AMONG/FROM HEALTH WORKERS



➤ Assuming availability and adherence to personal protective equipment (PPE), the risk of infection among health workers might depend primarily on **community circulation of the virus**



<https://www.sciencedirect.com/science/article/pii/S2090123220300540#f0005>

## Mode of transmission – what is known to date



*Primary modes of transmission of COVID-19:*

- *Droplet: Respiratory droplets (particles >5-10  $\mu\text{m}$  in diameter) are generated when an infected person coughs or sneezes. Any person who is in close contact (within 1 m) with someone who has respiratory symptoms (coughing, sneezing) is at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets*
- *Contact: direct contact with infected people and indirect contact with surfaces in the immediate environment of or with objects used on the infected person (e.g., stethoscope or thermometer) (droplets may land on surfaces where the virus could remain viable).*

- WHO Joint Mission COVID-19 to China, <https://www.who.int/docs/default-source/coronavirus/who-china-joint-mission-on-covid-19-final-report.pdf>
- Ran L, et al. CID 2020
- Moriarty LF, et al. MMWR 2020
- Jefferson T, et al. Medrx 2020



## **Airborne transmission – what is known to date**



- ❑ *Mainly limited to circumstances and settings in which aerosol generating procedures (AGPs): tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy*
- ❑ *Detection of COVID-19 RNA in air samples*



J Hosp Infect. 2020 Apr 30  
doi: [10.1016/j.jhin.2020.04.040](https://doi.org/10.1016/j.jhin.2020.04.040) [Epub ahead of print]

PMCID: PMC7190524  
PMID: [32360356](https://pubmed.ncbi.nlm.nih.gov/32360356/)

## Putting some context to the aerosolization debate around SARS-CoV-2

[Alexandra Peters](#),<sup>1</sup> [Pierre Parneix](#),<sup>2</sup> [Jon Otter](#),<sup>3</sup> and [Didier Pittet](#)<sup>1,\*</sup>

▶ [Author information](#) ▶ [Article notes](#) ▶ [Copyright and License information](#) [Disclaimer](#)

Didier Pittet works with WHO in the context of the WHO initiative ‘Private Organizations for Patient Safety – Hand Hygiene’. The aim of this WHO initiative is to harness industry strengths to align and improve implementation of WHO recommendations for hand hygiene in health care indifferent parts of the world, including in least developed countries. In this instance, companies/industry with a focus on hand hygiene and infection control related advancement have the specific aim of improving access to affordable hand hygiene products as well as through education and research. All listed authors declare no financial support, grants, financial interests or consultancy that could lead to conflicts of interest.

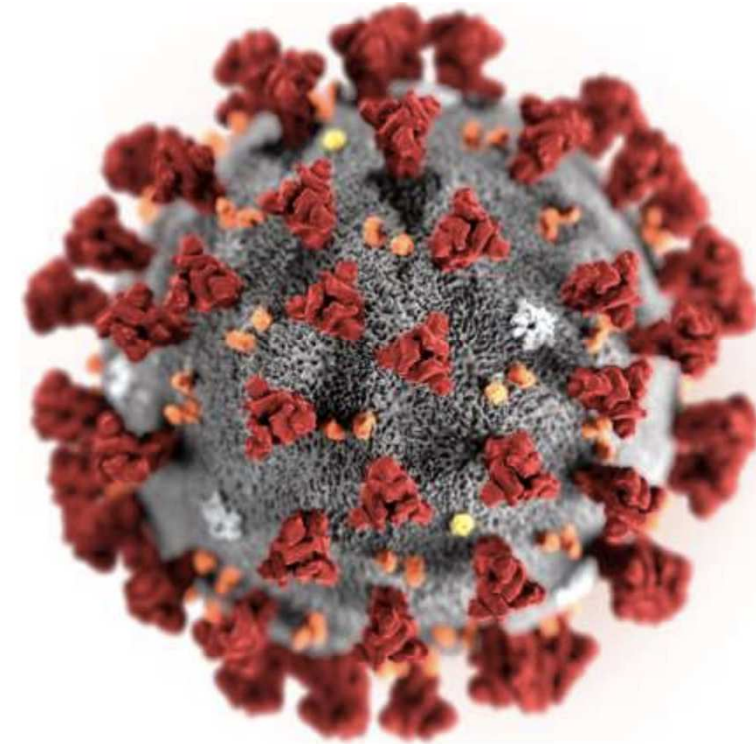
The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions or policies of the institutions with which they are affiliated. WHO takes no responsibility for the information provided or the views expressed in this paper.

A letter to the editor entitled “Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-

- Great science could get misinterpreted by the media
- COVID is not an airborne virus, but can be aerosolized during certain medical procedures
- This does not mean we need to worry about air conditioners spreading the virus ...

# Has the WHO changed it's guidance on mode of transmission?

- **No!**
- *We are still recommending droplet/contact precautions, alongside standard precautions*
- *Airborne precautions – for aerosol generating procedures (FFP2, but no “negative air pressure”)*



## How to use a medical mask

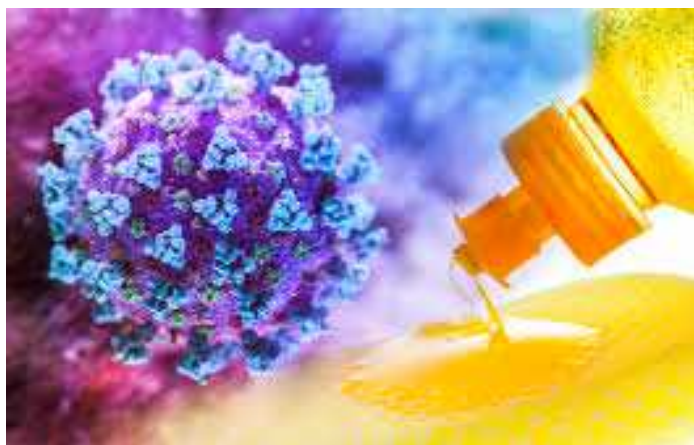
- Ensure **hand hygiene** is performed before putting on the mask
- Place the mask carefully, ensuring it **covers the mouth and nose**, and tie it securely to minimize any gaps between the face and the mask.
- **Avoid touching** the mask while wearing it. Replace masks as soon as they become damp with a new clean, dry mask.
- **Remove the mask** using the appropriate technique: do not touch the front of the mask but untie it from behind or from the straps
- After removal or whenever a used mask is inadvertently touched, **clean hands** using an alcohol-based hand rub or soap and water if hands are visibly dirty.
- **Do not re-use** single-use masks, unless indicated
- **Discard single-use masks** after each use and dispose of them immediately upon removal





# HEALTHCARE ENVIRONMENTAL HYGIENE IS CRUCIAL FOR FIGHTING COVID-19!





All types of products kill SARS CoV-2:



Heat  
Detergents  
Alcohol  
Other disinfectants  
Steam  
UV



## Enforcement Policy for Sterilizers, Disinfectant Devices, and Air Purifiers

List N: Products with Emerging Viral Pathogens AND Human Coronavirus claims for use against SARS-CoV-2

EPA Registration Number	Active Ingredient(s)	Product Name	Follow the disinfection directions and preparation for the following virus	Biocidal agent	Concentration	Virus	Strain / isolate	Exposure time	Reduction of viral infectivity (log <sub>10</sub> )	Reference
				Ethanol	95%	SARS-CoV	Isolate FFM-1	30 s	≥ 5.5	[29]
1043-129	Quaternary ammonium; Isopropanol	Vesta-Syde SQ64 Ready-to-Use Disinfectant	Feline calicivirus		85%	SARS-CoV	Isolate FFM-1	30 s	≥ 5.5	[29]
71654-5	Glycolic acid	Glyclean Hard Surface Cleaner	Rhinovirus		80%	SARS-CoV	Isolate FFM-1	30 s	≥ 4.3	[29]
70271-34	Quaternary ammonium	KIK Antibacterial Multipurpose Cleaner I	Rhinovirus		80%	MERS-CoV	Strain EMC	30 s	> 4.0	[14]
					78%	SARS-CoV	Isolate FFM-1	30 s	≥ 5.0	[28]
71355-2	Hydrogen peroxide; Peroxyacetic acid	Kickstart	Avian reovirus		70%	MHV	Strains MHV-2 and MHV-N	10 min	> 3.9	[30]
4822-530	Quaternary	Fantastik® All-Purpose	Rhinovirus		70%	CCV	Strain I-71	10 min	> 3.3	[30]
				2-Propanol	100%	SARS-CoV	Isolate FFM-1	30 s	≥ 3.3	[28]
					75%	SARS-	Isolate FFM-1	30 s	≥ 4.0	[14]

## Coronavirus Disease 2019

### Health Emergency

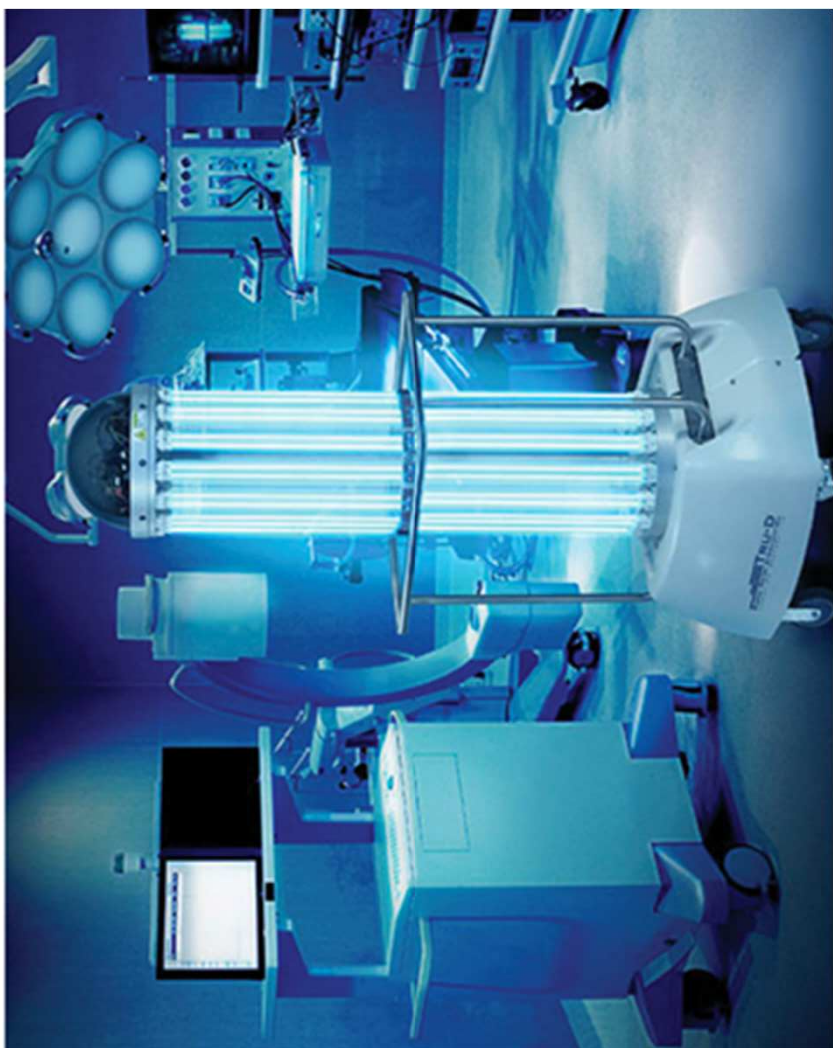
March 2020

U.S. Department of Health and Human Services  
Food and Drug Administration  
Center for Devices and Radiological Health

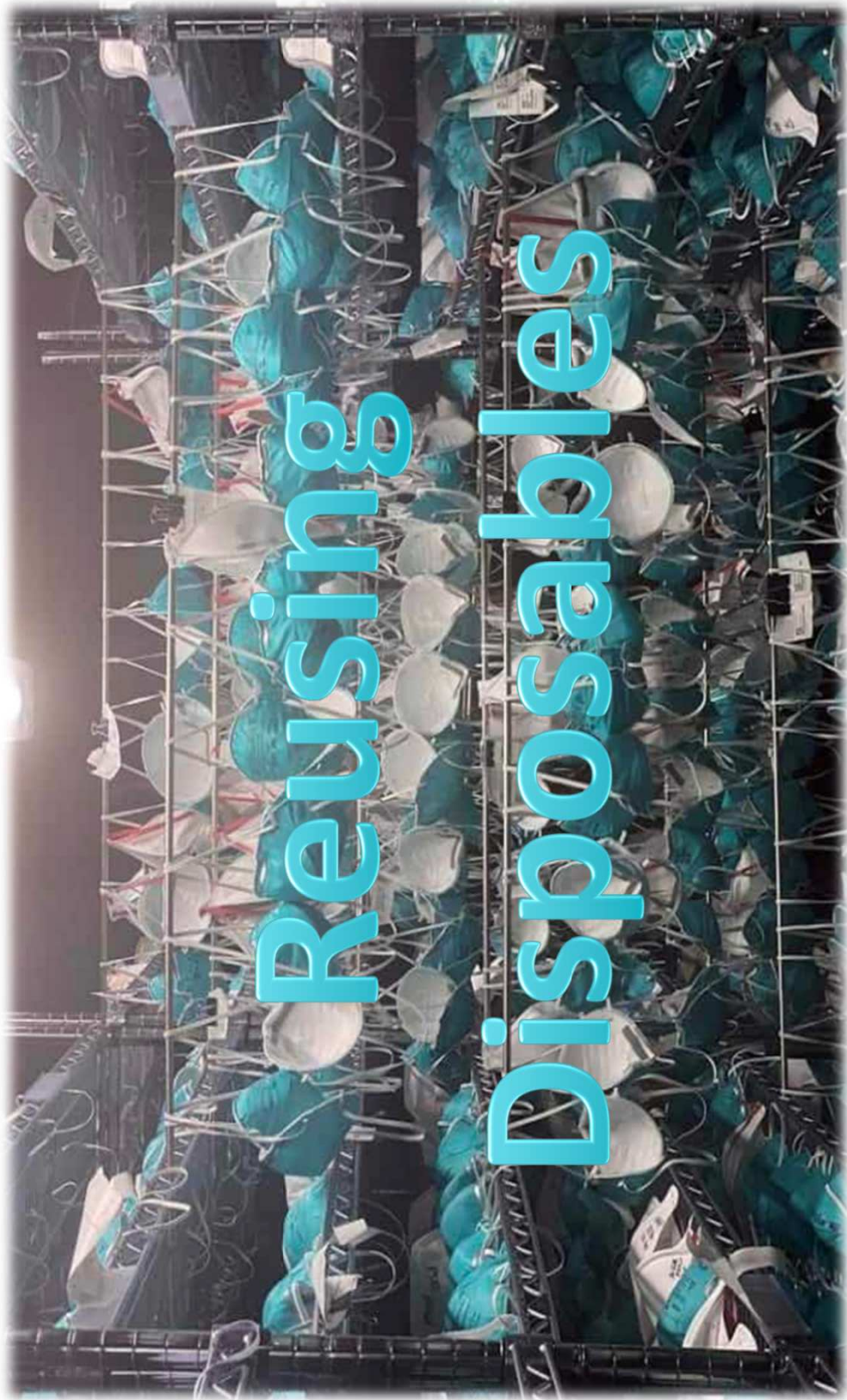
<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>










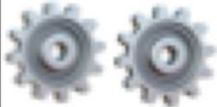








<https://www.fda.gov/media/136533/download>

<https://www.sciencedirect.com/science/article/pii/S0195670120300463>







Efficacy	Cost	Time	Complexity	Risk	Reusability
					
					
					

Reprocessing using steam, dry heat, H2O2 vapor, UV, alcohol, and other chemicals... many work.  
 Need to look at a variety of variables, to find the right solution for individual facilities.  
**THERE IS NO SINGLE SOLUTION, NO ONE SIZE FITS ALL** when it comes to HEH

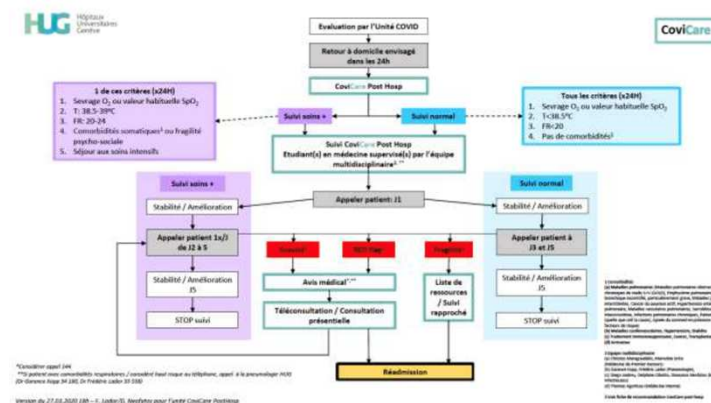
# AT THE UNIVERSITY HOSPITALS OF GENEVA (HUG)

## What has changed at HUG since 27.2.2020



Dep of Medicine and Primary/Ambulatory care

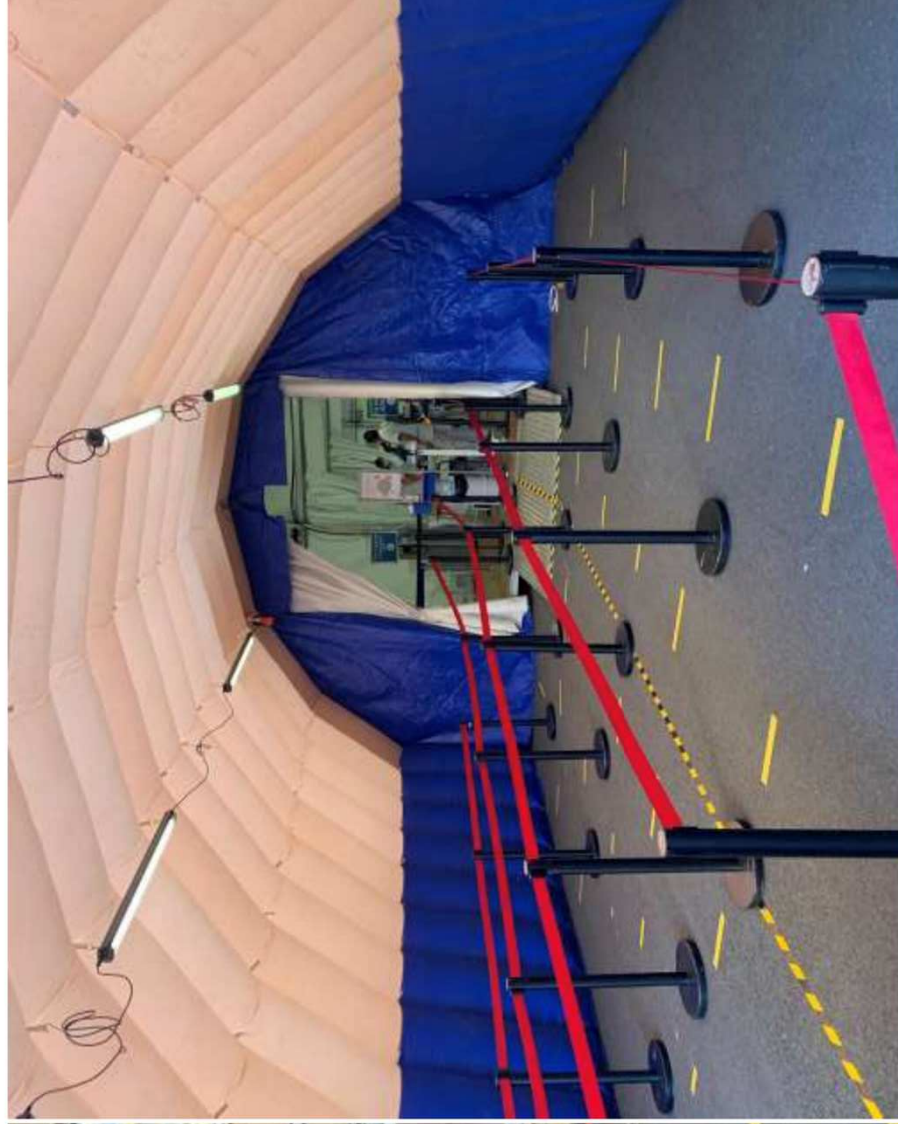
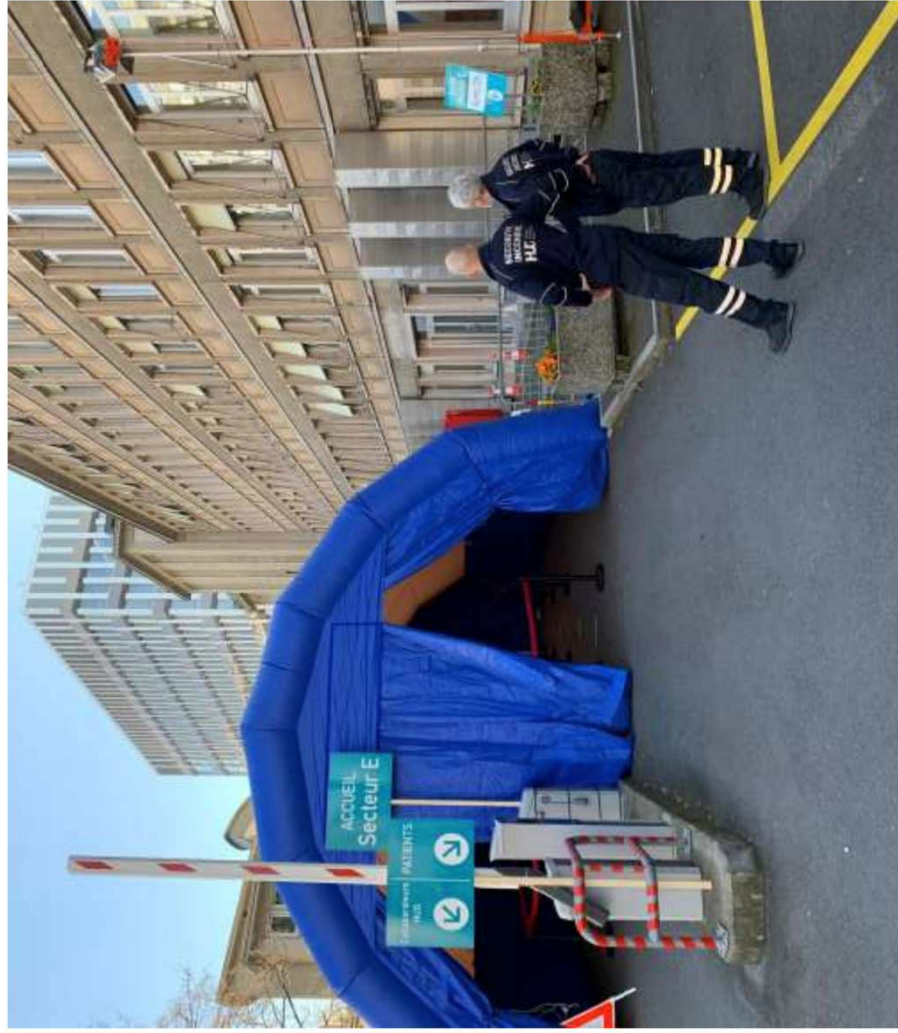
- *Setting up the tent and a new dedicated sector (E)  
(COVID test sector and quick sorting / consultation)*
- *Development of telemedicine  
consults*
- *Covicare*
- *Patient Monitoring Program*



# Turning one of the hospital building (600 beds) into a COVID hospital



# Our COVID screening tent – Entrance



# COVID screening tent – Triage (Circuits for ambulatory / patients / HCWs)



## Rapid development of care guidelines and protocols



# Recommandations institutionnelles HUG COVID-19

Le groupe guidelines COVID est mandaté par la Direction Médicale et Cellule Institutionnelle COVID

## Objectif

Emettre et coordonner des recommandations internes HUG pour la prise en charge des patients dans le cadre de l'épidémie COVID-19

## Groupe guidelines COVID

[Thomas Agoritsas](#), [Filippo Boroli](#), [Alexandra Calmy](#), [Birgit Gartner](#), [Angèle Gayet-Ageron](#), [Paola Gasche](#), [Ibris Guessous](#), [Philippe Huber](#), [Benedikt Huttner](#), [Anne Iten](#), [Frédérique Jacqueroiz Bausch](#), [Laurent Kaiser](#), [Christophe Marti](#), [Steve Primmaz](#), [Caroline Samer](#), [Manuel Schibler](#), [Hervé Spechbach](#), [Pauline Vetter](#), [Diem-Lan Vu Cantero](#), [Marie-Céline Zanella Terrier](#)

## Contact

[Thomas Agoritsas](#), [Angèle Gayet-Ageron](#), [Marie-Céline Zanella Terrier](#), [Franck Schneider](#)

1. [Vue d'ensemble et identification des cas COVID-19](#)
2. [Stratégie d'orientation des patients](#)
3. [Prise en charge et Département de Médecine Aiguë \(Services des Urgences, d'Anesthésiologie et des Soins Intensifs Adultes\)](#)
4. [Prise en charge intra-hospitalière](#)
5. [Considérations liées aux médicaments](#)
6. [Prise en charge ambulatoire des patients suspects ou confirmés COVID-19](#)
7. [Documents relatifs au décès des patients COVID-19](#)
8. [Applications](#)

## 1. Vue d'ensemble et identification des cas COVID-19

Accueil du groupe

Situation aux HUG

Prise en charge de tout cas suspect

Recommandations institutionnelles COVID-19

Infos générales

Infos personnel

Vidéos

Formation

Actualités

Nouvelle stratégie de dépistage dès le 28 mars



- Good education
- Clear protocols
- Direct communication
- Quality control
- Constructive feedback
- A humanistic approach

*Important to remember that this is a stressful time for everyone, especially essential HCWs  
Be sensitive to the concerns of stressed populations  
Team cohesion and empowerment is more important than ever*



Join a comprehensive network of relevant stakeholders  
Improving **Healthcare Environmental Hygiene**  
& **protecting** patients, employees and the environment.



[www.cleanhospitals.com](http://www.cleanhospitals.com)

Contact : [info@cleanhospitals.com](mailto:info@cleanhospitals.com)



# THANK YOU



[www.cleanhospitals.com](http://www.cleanhospitals.com)

Contact : [info@cleanhospitals.com](mailto:info@cleanhospitals.com)

