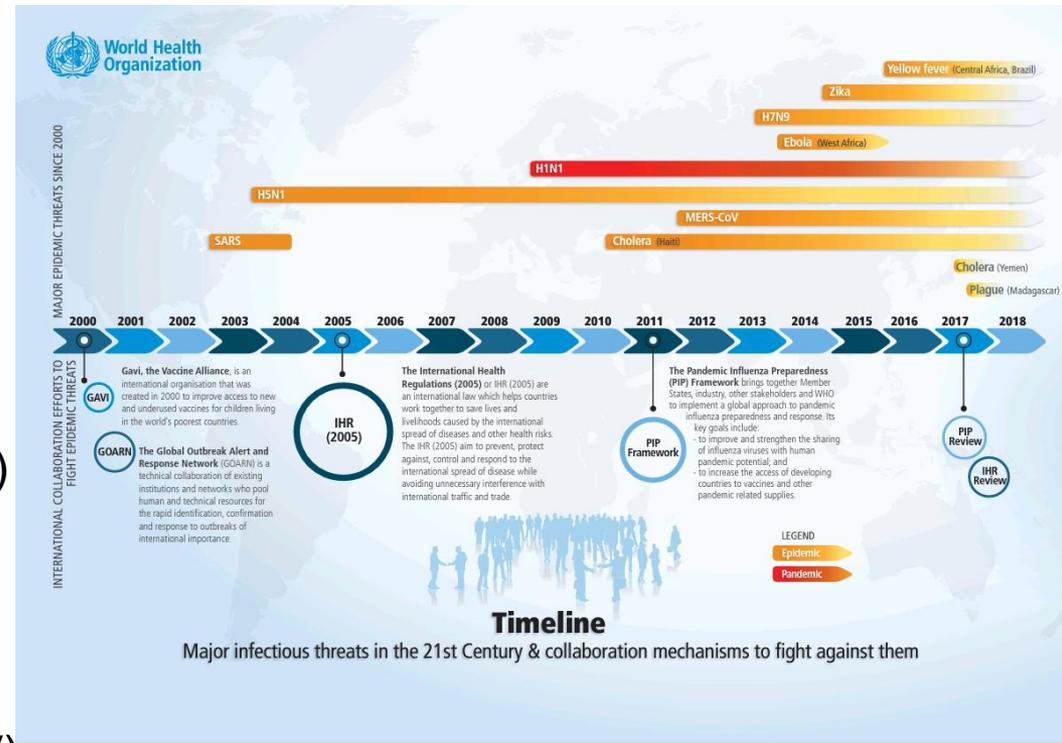


COVID-19 : Nurses experiences on PPE's



Timeline of Infectious Diseases

- Viruses continue to emerge and pose challenges to public health
- Some examples are :
 - ❖ 2002: Severe Acute Respiratory Syndrome coronavirus (SARS CoV)
 - ❖ 2009: H1N1 influenza
 - ❖ 2012: Middle East Respiratory Syndrome coronavirus (MERS-CoV)
 - ❖ 2019: Novel Coronavirus (COVID-19)
1st Cases reported from Huanan Seafood Wholesale Market in Wuhan, Hubei Province



The emergence of SARS-CoV-2

From SARS to COVID-19: A previously unknown SARS-related coronavirus (SARS-CoV-2) of pandemic potential infecting humans – Call for a One Health approach

Mohamed E. El Zowalaty^{1,2,3}, Josef D. Järhult⁴

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² Infectious Diseases and Antimicrobial Therapy Research Group, College of Pharmacy and Surgical Medical Research Institute, University of Suezak, Suez, Egypt

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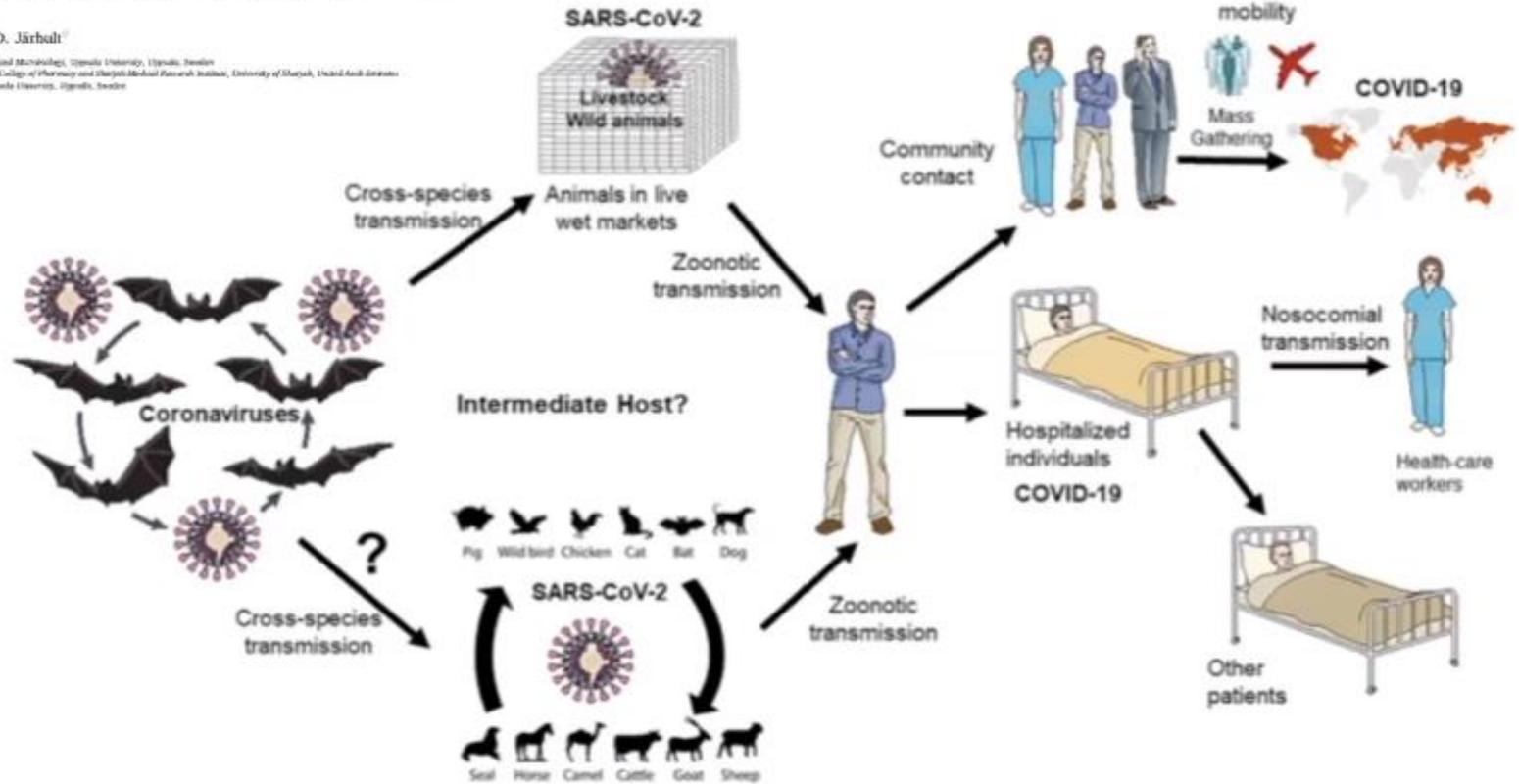


Fig. 3. The emergence of SARS-CoV-2 and the outbreak of COVID-19. The figure depicts a hypothesized origin of the virus and a generalised route of transmission the epidemic zoonotic coronavirus.

Current situation of the COVID-19

- 30 Jan 2020 – Public Health Emergency of International Concern
- Then 9,826 cases, 213 deaths, in 20 countries
- 9th September : 27,486,960 cases, 89,4983 deaths, in 216 countries
- Larger outbreak than SARS
- **The illness is now called COVID-19.** “COVI” for coronavirus, “D” for “disease,” and “19” for the year when it was identified.
- The virus itself is now called SARS-CoV-2.

Distribution of COVID-19 cases worldwide, as of 14th September 2020

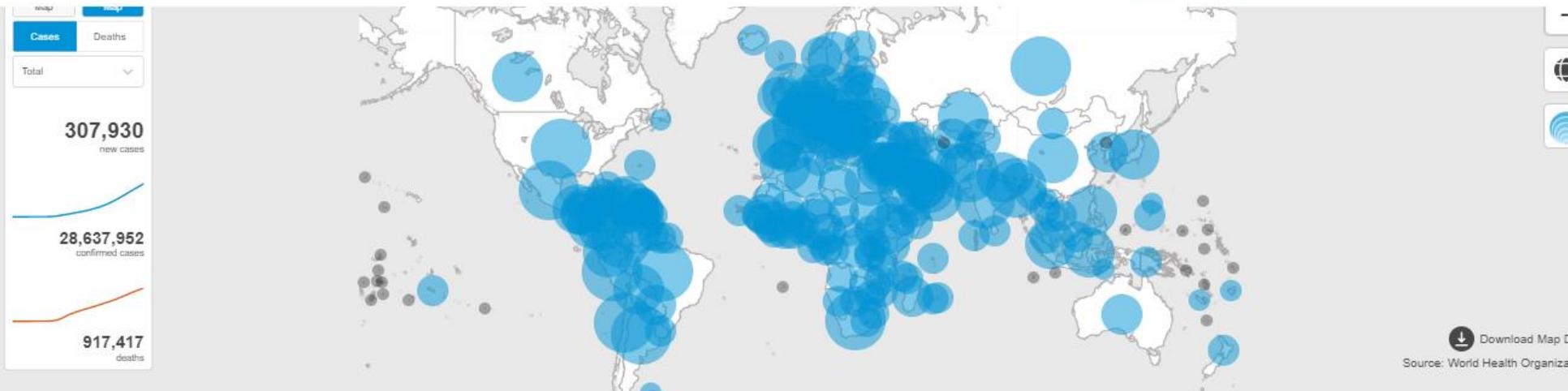
WHO Coronavirus Disease (COVID-19) Dashboard

Data last updated: 2020/9/13, 1:41pm CEST

[Overview](#)

[Data Table](#)

[Explore](#)



Globally, as of 1:41pm CEST, 13 September 2020, there have been 28,637,952 confirmed cases of COVID-19, including 917,417 deaths, reported to WHO.



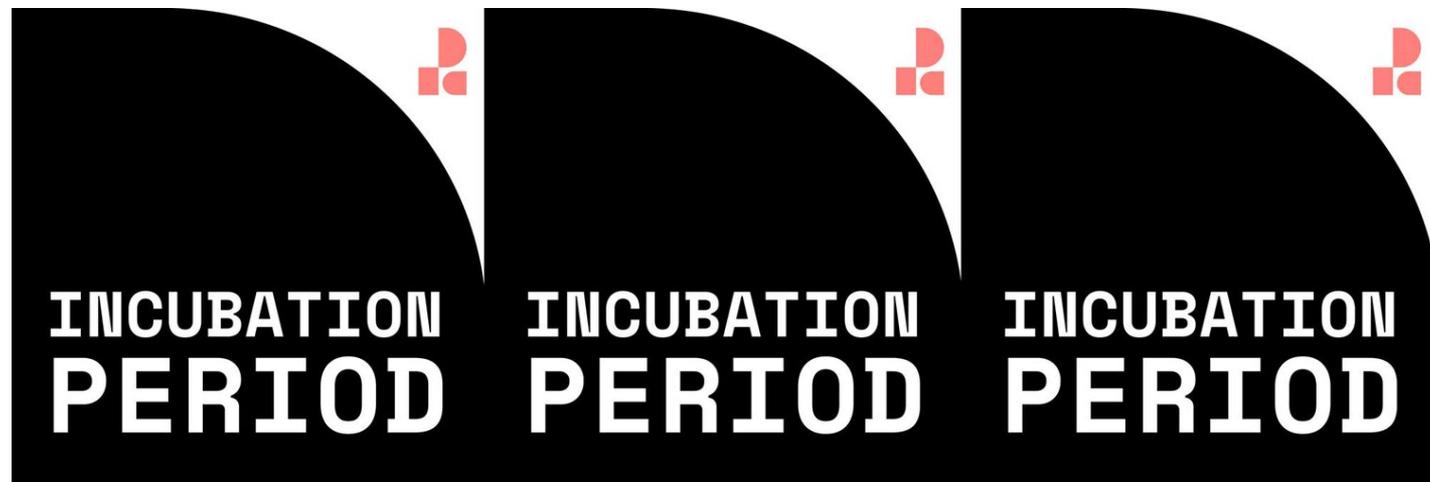
Current situation of the COVID-19 amongst nurses worldwide 3 June 2020

- International council of nurses analysis shows that on average 7% of all Covid-19 cases worldwide are among HCWs, which means that nurses and other staff are at great personal risk, and so are the patients they care for.
- Extrapolating ICN's 7% figure to cover all the world's countries means that around 450,000 of the world's over six million cases could be among HCWs.
- 230,000 HCWs have contracted the disease, and more than 600 nurses have now died from the virus.

<https://www.icn.ch/news/more-600-nurses-die-covid-19-worldwide>

Incubation Period

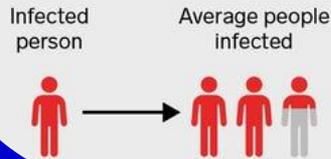
- The time between exposure to the virus and onset of symptoms
- Ranges from 2- 14 Days (ECDC)
- The WHO estimates 1-12.5 days with a median estimates of 5-6 days



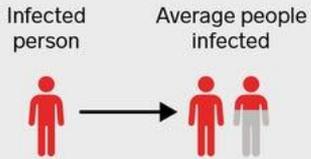
R0 is an indication of how much an infectious virus will spread in a population.

The average number of people that one person with a virus infects, based on the R0 scale

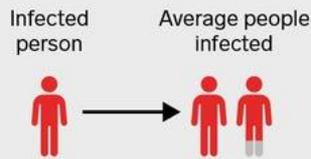
COVID-19: 2–2.5*



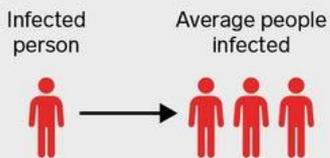
H1N1: 1.2–1.6



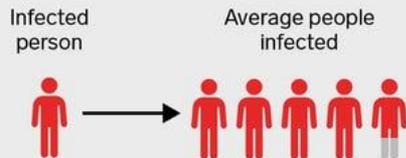
Ebola: 1.6–2



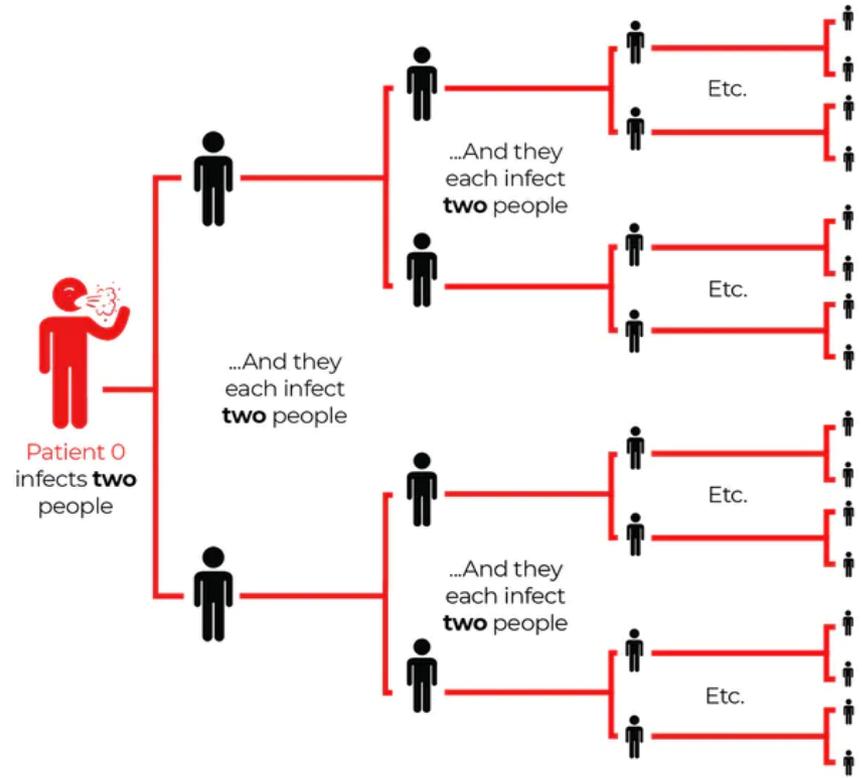
SARS: 2–4



MERS: 2.5–7.2**



How a virus with a basic reproduction number (R0) of 2 spreads in a non-immune population



*As of February 28, 2020 **R0 calculated solely during the 2015 outbreak in South Korea



Covid-19 Symptoms

Common

Fever
Coughing
Fatigue

Possible

Shortness of breath
Sore throat
Loss of appetite
Diarrhoea
Loss of sense of smell
Lack of taste

Complications

Sepsis
Septic shock
Sever pneumonia
Acute respiratory
distress syndrome
Pulmonary oedema



How is it transmitted?

- Coronaviruses are **ONLY** spread through **respiratory secretions**
 - They are **NOT** spread by blood, faeces, sweat or other fluids
- Person to person spread takes place through:
 - **Droplets** from a coughing / sneezing patient falling onto the face and being inhaled or transferred to eyes or mouth
 - **Contact** of bare hands with contaminated respiratory droplets
 - close personal contact, such as touching or caring for the patient
 - touching an object or surface on which the person sneezed or coughed,
then touching own mouth, nose, or eyes without hand hygiene
 - **Airborne** particles carrying the virus produced during aerosol generating procedures:
 - Manual ventilation
 - Non-invasive ventilation (e.g., BiPAP, BPAP)
 - Intubation
 - Tracheostomy insertion

How can HCWs get infected

- Experience with other infectious diseases shows that the greatest risk of a HCW getting the infection is when removing PPE (doffing)
- The more complex is the PPE, the greater is the risk of self contamination during doffing
 - This is especially when PPE is used by unexperienced staff outside of infectious diseases units who have not received the regular training and participate in drills that IDU staff undertake
- Therefore the choice of PPE should be guided by ensuring simplicity of its removal while providing sufficient protection during use

PPE required

- Protect face:
 - FFP2/3 type mask
 - Surgical Mask
 - Visor/Goggles
- Protect parts of clothing in contact with patient
 - Gown
- Protect hands
 - Gloves



Sequence of PPE removal

- Doffing should be done in sequence of most contaminated to least
 1. Gloves are removed first
 2. Followed by gown
 - Since these are the two most contaminated PPE, hand hygiene is done after they are removed and before moving to remove PPE around the head
 3. Visor
 4. Mask
 5. Hand hygiene as the final step
 - Hand hygiene is as important as any PPE used

DONNING & DOFFING OF PPE

SURGICAL MASK, APRON & GLOVES (SMAG)

DONNING

(outside patient's room/area)

- Perform Hand Hygiene
- Wear Apron
- Wear Surgical Mask
- Wear Gloves

DOFFING

(inside patient's room/area)

- Remove Gloves
- Perform Hand Hygiene
- Remove Apron
- Perform Hand Hygiene
(and exit room/patient area)
- Remove Surgical Mask
- Perform Hand Hygiene



DONNING & DOFFING OF PPE

SURGICAL MASK, GOWN, GLOVES & VISOR (SMGGV)

DONNING

(outside patient's room/area)

- Perform Hand Hygiene
- Wear Gown
- Wear Surgical Mask
- Wear Visor
- Wear Gloves

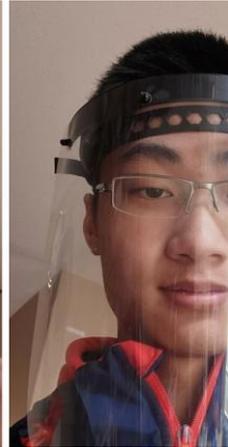
DOFFING

(inside patient's room/area)

- Remove Gloves
- Remove Gown
- Perform Hand Hygiene
- Remove Visor
- Perform Hand Hygiene
(and exit room/patient area)
- Remove Surgical Mask
- Perform Hand Hygiene



Global Shortage of Personal Protective Equipment



ECDC 3rd July 2020 update On PPE's re-use in view of global shortage

- The same respirator may be used while caring for multiple patients with COVID-19
- Several different procedures have been tested
- Example – Ultraviolet disinfection
- CDC recommends limiting the number of donning's for a respirator to no more than five per device when using the UV
- This procedure is now approved by CDC/NIOSH

In-house made UV boxes for FFP2/3



N95 Filtering Facepiece Respirator Ultraviolet Germicidal Irradiation (UVGI) Process for Decontamination and Reuse

John J Lowe, Katie D Paladino, Jerald D Farke, Kathleen Boulter, Kelly Cawcutt, Mark Emodi, Shawn Gibbs, Richard Hankins, Lauren Hinkle, Terry Micheels, Shelly Schwedhelm, Angela Vasa, Michael Wadman, Suzanne Watson, and Mark E Rupp





Summary Strategies to Optimize the Supply of PPE during Shortages (CDC)

PPE Type	Conventional	Contingency	Crisis
<p>All PPE</p> 	<ul style="list-style-type: none"> • Use physical barriers and other engineering controls • Limit number of patients going to hospital or outpatient settings • Use telemedicine whenever possible • Exclude all HCP not directly involved in patient care • Limit face-to-face HCP encounters with patients • Exclude visitors to patients with known or suspected COVID-19 • Cohort patients and/or HCP 	<ul style="list-style-type: none"> • Selectively cancel elective and non-urgent procedures and appointments for which PPE is typically used by HCP • Decrease length of hospital stay for medically stable patients with COVID-19 	<ul style="list-style-type: none"> • Cancel all elective and non-urgent procedures and appointments for which PPE is typically used by HCP



Free Guide Book For Nurses

<https://www.esno.org/microbialissues.html>

COVID-19: A minute silence to honour nurses and other healthcare staff who have died

