



COVID-19 pandemic personal protective equipment (PPE): Guidance for intensive care.

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COVID-19 transmission routes

1. Exposure to **respiratory droplets**

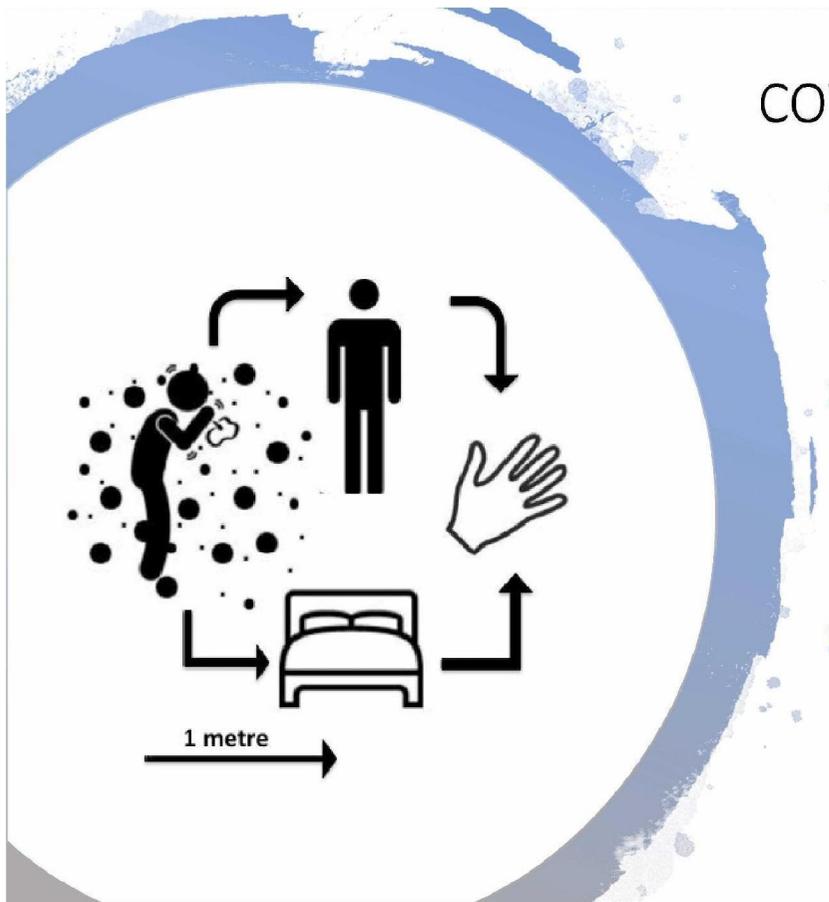
- Coughing/sneezing droplets onto mouth, nose, eyes
- Requires close contact (within 2 metres)

2. Contact with **respiratory secretions**

- Hands
- Contaminated surfaces, tissues
- Transferred by touching nose, mouth, eyes on hands

3. Exposure to **respiratory aerosols**

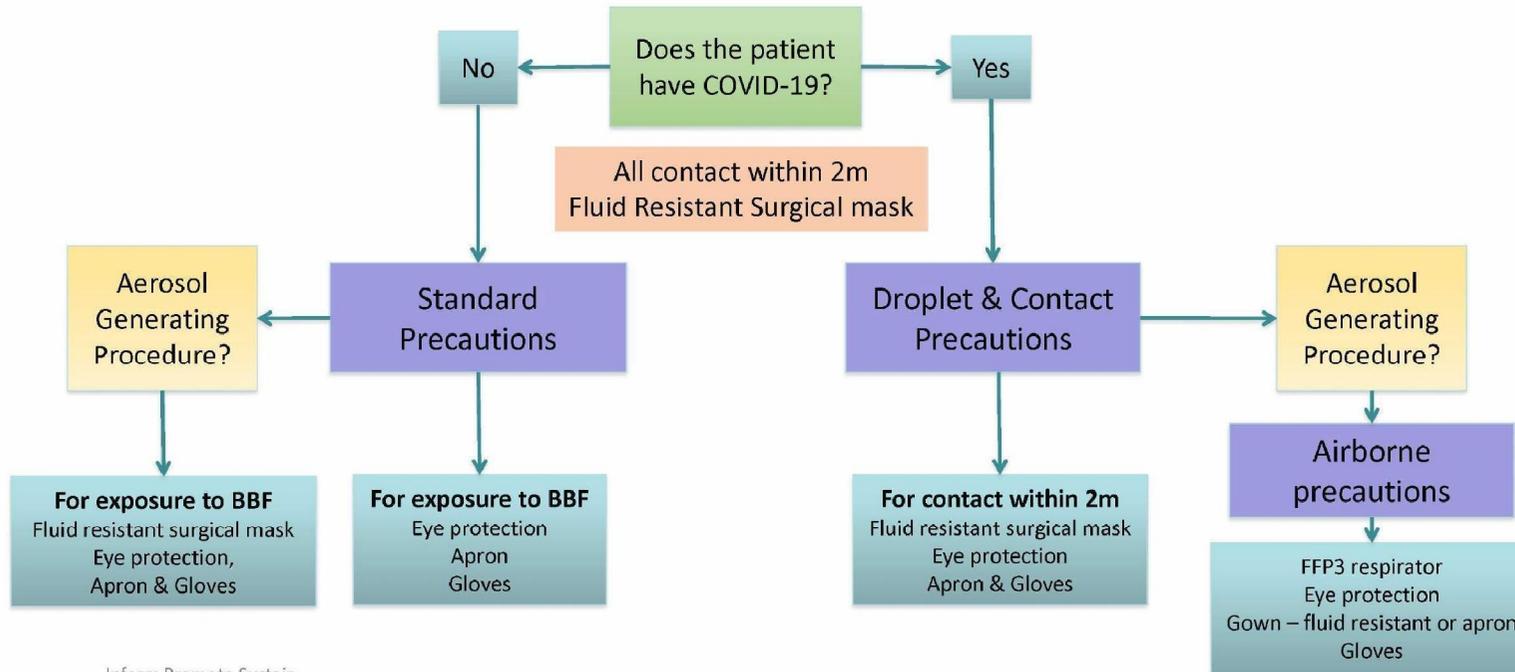
- Procedures/processes that create tiny respiratory particles that may be carried beyond 1m air



Strategy for management of COVID-19 in acute care

1. Screen patients on admission - segregate & repeat screen
2. Standard infection control precautions for all patients
3. Known/suspected COVID-19 – droplet & contact precautions
4. Airborne precautions for Aerosol Generating Procedures

Infection control precautions for COVID-19 patients



Sessional use of PPE (AGP)

- PPE guidance adopted from Ebola
 - Extensive exposure to BBF a major risk in VHF
- COVID-19 risk is from respiratory particles
 - i.e. inhale or transfer to mucous membranes on hands
 - FFP3 main PPE need - not gloves or gown
- Sessional use was recommended in high risk areas
 - This encouraged gown and gloves to be donned on entry to area (and then not removed until leave)
- By May 2020 – many ICUs experienced outbreaks of multi-drug resistant pathogens



Public Health England

Putting on (donning) personal protective equipment (PPE) for aerosol generating procedures (AGPs) – Gown version

Use only work practices to protect yourself and limit the spread of infection:

- keep hands away from face and PPE being worn
- change gloves when torn or heavily contaminated
- fresh gloves each while the patient is intubated
- use only problem hand hygiene
- always clean hands after removing gloves

Pre-cleaning instructions

- wash hands with soap and water
- use hand sanitizer
- check A&A in correct sites is available

Putting on personal protective equipment (PPE). To a order for putting on a gown, mask, eye protection and gloves. Use a procedure outside the patient room.

Perform hand hygiene before putting on PPE

- 1 Put on the long-sleeved fluid repellent disposable gown. Fasten neck ties and waist ties.
- 2 Respirator. Make sure you use the respirator that you have been trained to use. When checking or cleaning, ensure you are wearing the respirator. When using the respirator, ensure you are wearing the respirator. During the fit test, ensure you are wearing the respirator.
- 3 Eye protection. Place over nose and eyes and adjust the headband to fit.
- 4 Gloves - select gloves to be used. Ensure cuffs of gown, covered or covered by the cuff of the glove.

COVID-19 Safe ways of working

A visual guide to safe PPE



Poor use of PPE increases transmission of HCAI

- Staff would don 2 or 3 pairs of gloves to enter ICU
- Gloves/gowns not changed between dirty/clean task
- Gloves/gowns not changed between patients
- Alcohol to clean gloves (rather than remove & wash hands)
- Touch many patient surfaces with contaminated gloves
- Touch shared equipment e.g. Keyboards, phones,
- Close contact with many patients in same gown

Gloves seen as protection but if not removed will transfer pathogens in same way as hands

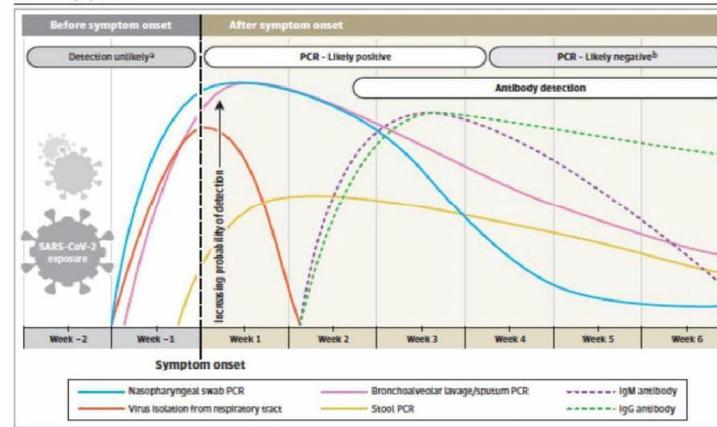
Avoiding sessional use of PPE

- Decontaminate hands between tasks/patients
- Gloves to be put on at bedside – when indicated
- Gloves to be changed between tasks and patients
- Always remove gloves before contacting computers, phones etc
- Decontaminate hands after removing gloves
- Protect uniform with apron – remove between patients
- Gowns
 - Avoid use where possible
 - Short sleeved – decontaminate hands & arms between tasks/patients
 - Protect with plastic apron

Stopping isolation precautions

- PCR can be +ve for weeks (genome)
- Patients no longer excreting virus after 2 - 4 weeks
- Essential to stop precautions when no longer infectious
- Manage infectious patients in single rooms
- Reduce demand for sessional PPE

Figure. Estimated Variation Over Time in Diagnostic Tests for Detection of SARS-CoV-2 Infection Relative to Symptom Onset



Setheuran JAMA 2020

Future developments....

- Rapid testing to segregate positive patients
 - De—isolation of previous positives
 - Reliability at low prevalence – need repeat testing
- Improve design of respirators
 - Reusable
 - Improved fit
- Improved gown design
 - Short sleeves to facilitate hand hygiene
 - Re-usable (launder)

