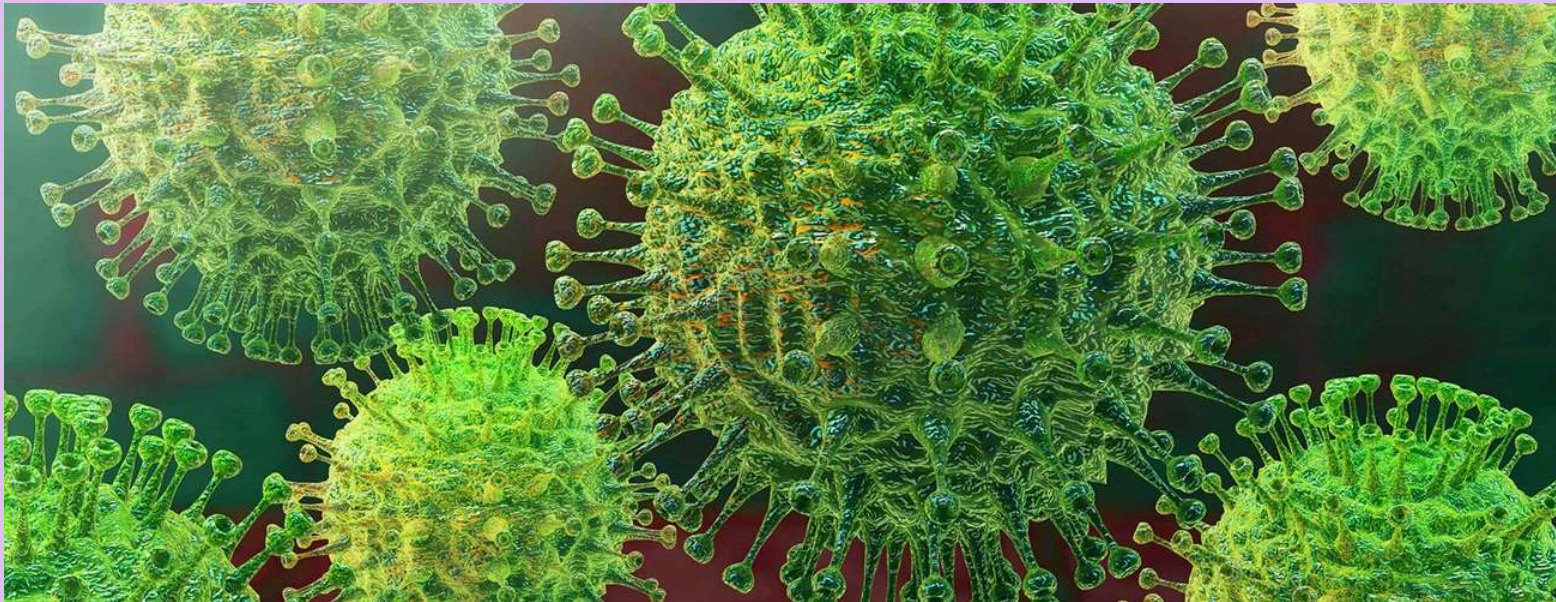


Coronavirus (COVID-19) Infection Prevention and Control



What is Coronavirus and COVID-19

- Coronaviruses are a large family of viruses - they cause infections ranging from the common cold to Severe Acute Respiratory Syndrome (SARS)
- Coronaviruses circulate between animals and humans; sometimes new variants of the coronavirus emerge - such as COVID-19
- COVID-19 has the potential to spread widely as lack of immunity means everyone in the population is susceptible

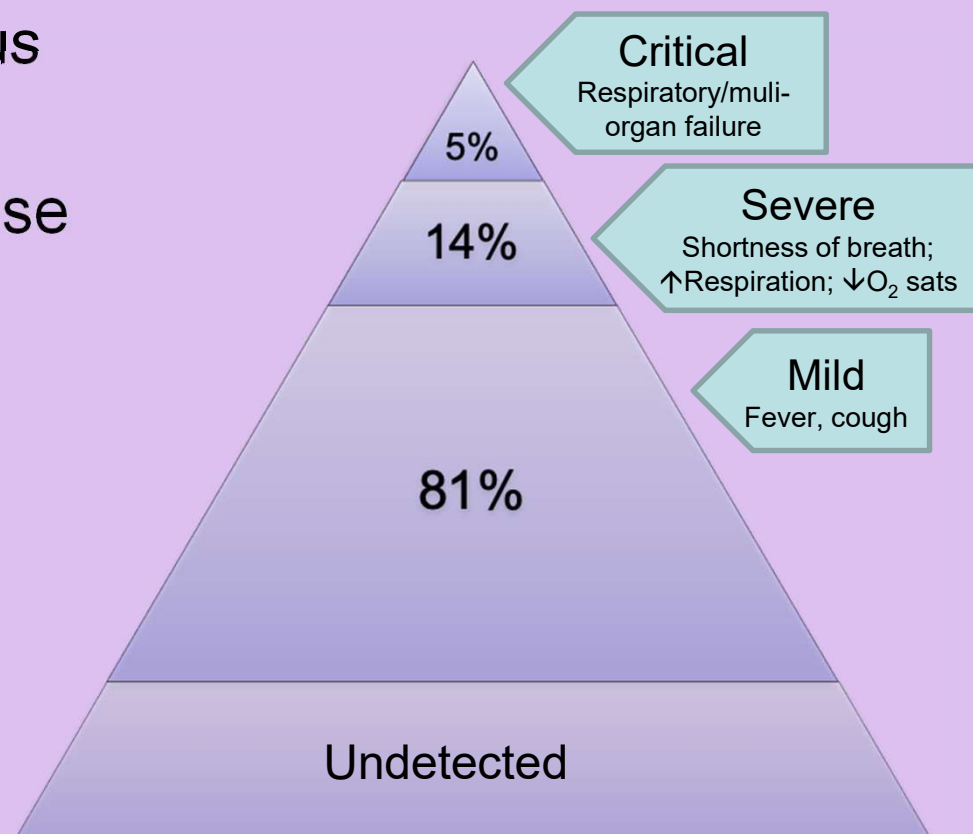
What are the symptoms of COVID-19?

- Symptoms start 5 -11 days after exposure
- Similar to seasonal flu
- Majority have fever and dry cough (rapid onset)
- Symptoms last 5 - 6 days
- Severe illness starts day 7
 - ↑ Shortness of breath
 - Lung inflammation
 - Pneumonia

Symptom	Proportion of cases
Fever >37°5	88%
Dry cough	68%
Fatigue	38%
Sputum	33%
Shortness of breath	19%
Muscle/joint pain	15%
Sore throat	14%
Headache	14%

Severity of COVID-19 illness

- Most people have no obvious symptoms (30-40%)
- Most children get mild disease
- More severe disease in:
 - Older people
 - Diabetics
 - Heart disease
 - Chronic respiratory disease
 - Immune compromised
- Less than 2% of cases fatal
 - Highest in high risk groups



How is COVID-19 transmitted?

- Exposure to **large respiratory droplets** & vomit
 - Coughing/sneezing onto mucous membranes (mouth/eyes)
 - Need close contact for this to occur (within 1 metre)
- Contact with respiratory secretions
 - Transferred by touching mucous membranes
 - Tissues/surfaces contaminated with respiratory secretions

It is **NOT** transmitted in air except if patient undergoing a procedure that generates aerosols e.g. airway suction

Infection Prevention & Control Strategies

1. Cough etiquette
2. Standard precautions
3. Isolation precautions

Personal hygiene to prevent spread

- Cough etiquette
 - Cover mouth and nose with a tissue or your sleeve (not your hands)
- Dispose of tissues directly into bin
- Hand hygiene
 - after contact coughing/sneezing

Ensure patients have hand wipes or alcohol gel available



Standard Precautions

- Essential to minimize risk of transmission between staff and patients
- Will reduce the risk of transferring the virus from patients not recognized to have COVID-19

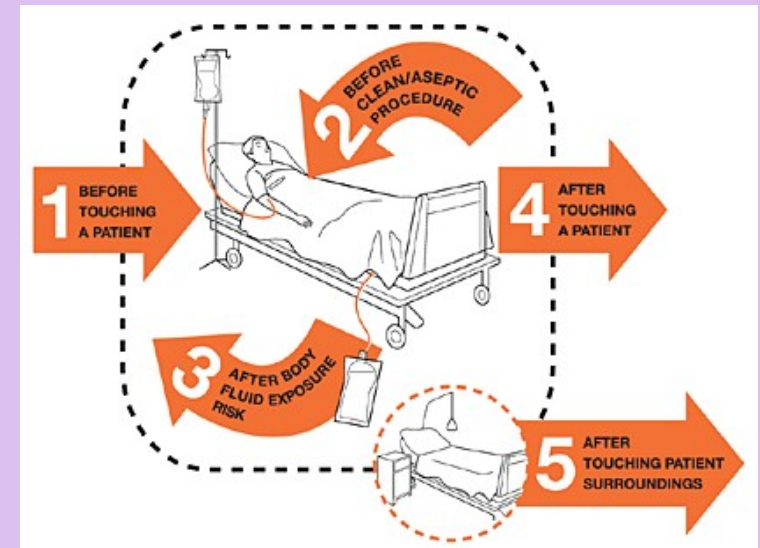
- **Hand hygiene**
- **Protective clothing for contact with body fluid**
- **Safe disposal of waste**
- **Clean equipment & environment**



Hand Hygiene



- Immediately before touching a patient
- Before a clean/aseptic procedure
- Immediately after touching patient or their surroundings
- After removing gloves



Alcohol gel is effective against COVID-19
Soap and water should be used if hand are soiled

Patient hand hygiene

- Encourage patients to clean their hands
 - After coughing/sneezing
 - Before eating
 - After toilet
- Make hand wipes or alcohol gel available at bedside for patients to use



Standard precautions: Gloves

- For procedures involving DIRECT contact with blood or body fluid
- Risk assess procedure
 - if gloves are indicated put on **immediately before** commencing procedure
- Remove and decontaminate hands immediately after the procedure

Take gloves off promptly!

Virus (and other pathogens) are transferred between patients, surfaces and your own mucous membranes on your gloved hands

Standard Precautions: Aprons

- For procedures where there is a risk that the clothing may become soiled
- Risk assess procedure
 - if indicated put on **immediately before** commencing procedure
- Remove if contaminated or on leaving the patient and decontaminate hands

Droplet Isolation Precautions for patients with COVID-19

- Infection is transmitted by respiratory droplets and contact with respiratory secretions therefore:
 - Single room or cohort in bay with other infected patients
 - Protective clothing for close contact (1 metre)
 - Protective clothing for direct contact with body fluid
 - Clean surfaces daily
 - Clean frequently touched surfaces more often
 - Use detergent followed by disinfectant
 - Dedicated patient equipment

Remember to avoid touching your mouth, nose and eyes

Airborne isolation precautions in ICU/HDU where patients have COVID-19

- High incidence of patients undergoing aerosol generating procedures
- All staff to wear :
 - FFP3 masks +/- eye protection
 - Waterproof long-sleeved gowns
 - Gloves
 - **must be changed + hands decontaminated between procedures**
 - Surgical mask - if patient in negative pressure room

Remember to avoid touching your mouth, nose and eyes

Isolation precautions in residential care For residents with known/suspected COVID-19

- Infection is transmitted by respiratory droplets and contact with respiratory secretions therefore:
 - Resident to remain in their room (including for meals)
 - Must have en-suite facilities
 - Protective clothing for close contact (1 metre)
 - Protective clothing for direct contact with body fluid
 - Clean surfaces daily
 - Clean frequently touched surfaces more often
 - Use detergent followed by disinfectant
 - Dedicated patient equipment

Remember to avoid touching your mouth, nose and eyes



Protective clothing

Known or suspected COVID-19

- **Surgical mask** - when in close contact (1 metre)
- **Eye protection** - if risk of splashing
- **Gloves** - for close contact, respiratory secretions, body fluids
 - **MUST be changed between procedures to protect patient from infection**
- **Apron** - for close contact
 - change if soiled
 - fluid-resistant disposable gown **only** for aerosol generating procedures

Remember to avoid touching your mouth, nose and eyes

Removal of protective clothing

- Discard mask when moist or damaged
- Remove PPE in this order:
 1. Gloves
 2. Apron (avoid touching contaminated front surface)
 3. Mask/eye protection (if worn)
- Decontaminate hands after PPE has been removed

Removal of (doffing) personal protective equipment (PPE)

PPE should be removed in an order that minimises the potential for cross contamination.

The order of removal of PPE is as follows:

1

Gloves –
the outsides of the gloves are contaminated



Clean hands with alcohol gel

2

Gown –
the front of the gown and sleeves will be contaminated



3

Eye protection –
the outside will be contaminated



4

Respirator

Clean hands with alcohol hand rub. Do not touch the front of the respirator as it will be contaminated



5

Wash hands with soap and water



Remember!

Don't touch your mouth, nose or eyes.

Decontaminate your hands thoroughly on leaving the area/room.

FFP3 Masks



- Filters out very small particles
- Protects from inhalation of fine airborne particles
- Filtration effective only if sealed to contour of face (fit testing required)
- Required for procedures which generate aerosols of respiratory secretions (AGP)
 - with long-sleeved gowns & gloves
- Not necessary for other close contact

Aerosol Generating Procedures

Intubation & extubation

Tracheostomy

Airway suction

Manual ventilation

Non-invasive ventilation (BiPAP,

CPAP) & high-frequency

oscillating ventilation (HFOV)

High flow nasal oxygen

Chest physiotherapy

Sputum induction

Bronchoscopy

Surgery - high speed devices

Why change in infection control precautions?

- New virus therefore at beginning of outbreak little was known about route of transmission
- Now established that spread by respiratory droplets **not** airborne
- Precautions the same as for influenza
 - Surgical masks protect mucous membrane from contamination by large respiratory droplet
 - FFP3 still recommended for AGP and need to protect the supply for this purpose

Summary of precautions for patients with COVID-19

Personal Protective Equipment	Close patient contact (within 2m)	Enter room but no contact with patient or environment	Cleaning room/area (Domestic staff)	AGP
Apron	✓	✗	✓	✗
Surgical mask	✓	✓	✓	✗
Long sleeved disposable gown	✗	✗	✗	✓
FFP3 respirator	✗	✗	✗	✓
Eye protection	<i>Risk assess</i>	✗	✗	✓
Gloves	✓	✗	✓	✓

AGP = aerosol generating procedures

Cohorting

Placing patients with COVID-19 in bay/area

Key Principles

- Patients must have tested positive and not have other infections
 - Patients with suspected but not confirmed COVID-9 should be in a separate area
- Use privacy curtains to minimise droplet exposure
- Staff should be assigned to work in COVID designated areas and not care for other patients
- **Must change gloves/aprons between patients**
- **Must decontaminate hands between patients**

Remember to avoid touching your mouth, nose and eyes

Environmental contamination

- Surfaces may become contaminated with respiratory secretions
 - Directly from coughing/sneezing
 - Indirectly by touching with contaminated hands
 - Contamination greatest where AGP performed
- COVID-19 unlikely to survive in significant numbers on surfaces for longer than 3 days
 - Can recover virus particles but not evidence on whether they are viable and able to cause infection
- Easily removed by cleaning
 - Detergent & water followed by disinfectant
 - Chlorine at 1000ppm effective

Disposal of waste & laundry

- Waste - discard as clinical waste
- Laundry - as infected laundry
- Body fluid spoils - as usual local policy
- Uniforms
 - change before leaving work
 - If washing at home wash separately and do not overfill machine

Staff with COVID-19

- If you develop symptoms of a flu-like illness then DO NOT come into work:
 - Acute onset fever $>37.5^{\circ}\text{C}$ and new persistent cough
- Inform your manager
- Self-isolate at home for 7 days from onset of symptoms
 - If your symptoms worsen contact NHS 111
- Staff at high risk of complications from COVID-19
 - risk-assessment to manage their deployment

Useful resources

Public Health England Campaign Resources

<https://campaignresources.phe.gov.uk/resources/campaigns/101-coronavirus->

Public Health England Coronavirus (COVID-19) guidance

<https://www.gov.uk/government/collections/coronavirus-covid-19-list-of-guidance>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872745/Infection prevention and control guidance for pandemic coronavirus.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872745/Infection_prevention_and_control_guidance_for_pandemic_coronavirus.pdf)

NHS England

<https://www.england.nhs.uk/ourwork/epr/coronavirus/>

NHS website

<https://www.nhs.uk/conditions/coronavirus-covid-19/>

Healthcare Infection Society

<https://his.org.uk/resources-guidelines/novel-coronavirus-resources/>

World Health Organization

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>