Coronavirus COVID-19

This booklet contains information and guidance published in respect of COVID-19

Date: 25th Feb 2021

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Pre-Hospital Emergency Care Council

This booklet contains

- PHECC COVID-19 Advisory
- HPSC A selection of posters in relation to Wearing of Masks and Donning/Doffing PPE
- HPSC Current recommendation for the use of PPE (published 9 Feb. 2021)
- HPSC Infection Prevention and Control when performing Aerosol Generating Procedures

Further information can be found at:

https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/newupdatedguidance/

Information taken from the PHECC Website on 25th February 2021

https://www.phecit.ie/PHECC/Publications_and_Resources/Newsletters/Newsletter_Items/2020/PHECC_COVID_19_Advisory_v1.aspx?WebsiteKey=e406219d-01ae-4393-b7e5-dea9321c039d

PHECC COVID-19 Advisory v2

4th June 2020

To: All PHECC Responders, Registered Practitioners, Recognised Institutions, Approved Training Instructions and Licensed CPG Providers.

Dear Colleagues,

The global pandemic of SARS NCOV2 (COVID-19) has resulted in significant challenges and changes in how healthcare (including pre-hospital emergency care) is being delivered in Ireland.

This innovation and flexibility is likely to be required even more in the weeks and months ahead.

The PHECC Medical Advisory Committee wishes to provide guidance to practitioners and responders of all levels at this time. We are conscious that many individual licensed CPG providers and others are already taking steps to deliver their services in this context and also to support the state in how we all manage this unprecedented situation.

The overarching national guidelines on precautions and clinical management of COVID-19 are issued by the Health Protection Surveillance Centre (HPSC) and updated regularly with input from a national Expert Advisory Group (EAG). This should be your main source of accurate information along with the HSE and Department of Health; there is a lot of information in circulation regarding COVID-19, not all of it accurate.

There are some specific issues that are pertinent to pre-hospital emergency care, which PHECC would like to highlight in **patients with confirmed or suspected COVID-19 infection**. This advisory guidance is intended to complement existing HPSC guidelines and your own training.

Personal Protective Equipment (PPE) is a component of the WHO standard infection control precautions and remains unchanged in light of COVID-19.

The level of PPE required is based on the risk, which includes close personal contact.

The Medical Directors for licensed CPG providers may issue updated advice based on evolving national guidance - please be cognisant of any such advice.

COVID-19

The SARS NCOV2 virus which causes COVID-19, infects through droplets and contact with the mucous membranes. **It does not infect through the skin**.

The greatest element of risk for a healthcare worker (responders and practitioners) is transfer of the virus to the mucous membranes by contact of contaminated hands (including contaminated gloved hands) with the eyes, nose or mouth. The key interventions to manage this risk are to minimise hand contamination (keep your hands to yourself when possible), avoid touching your face and clean your hands frequently (with soap and water or alcohol hand-rub).
There is also a significant risk of direct transfer of the virus on to mucous membranes by droplet transmission, that is, by direct impact of larger infectious virus droplets generated from the patient's respiratory tract landing directly in your eyes, nose or mouth. This is more likely to happen, the closer you are to the patient; This risk is managed by use of appropriate PPE (surgical facemask,

gloves, long sleeved gown and eye protection) and by requesting the patient to wear a surgical facemask and cover their nose and mouth when coughing or sneezing (respiratory hygiene and cough etiquette). In the presence of a patient with COVID-19, small poorly ventilated areas will have a higher concentration of virus.

There is evidence that airborne transmission can occur when certain procedures, aerosol generating procedures (AGPs), are performed. The biggest risk is related to a healthcare worker performing endotracheal intubation, ventilation or suctioning.

Keeping safe means focusing on the major identifiable risk. In almost all healthcare settings the greatest risks of infection of healthcare workers are likely to be related to anxiety, fatigue, distraction and multi-tasking in critical situations resulting in unintended contact of contaminated hands with the eyes, nose or mouth.

Infection Prevention & Control (IP&C), Personal Protective Equipment (PPE)

The HPSC has provided detailed guidance on IP&C and PPE requirements for healthcare workers. This guidance from the HPSC should be followed and appropriate PPE used for all potential COVID-19 patients. If AGPs are being performed a surgical facemask is not sufficient therefore a properly fitted respirator mask (FFP2 or higher specification) is required.

Personal protective equipment while important is the last line of defence

PPE should match the route of transmission	When to use in a patient being treated as COVID +ve	Recommended PPE
Contact precautions	> 2m away from patient	Hand hygiene Gloves Apron
Droplet precautions	Within 2m of patient	Hand hygiene Gloves Apron Surgical facemask +/- Eye protection* (risk assess)
Airborne precautions**	Aerosol generating procedure	Hand hygiene Gloves Fluid repellent long sleeved gown Eye protection* FFP2 mask

*Eye protection may be goggles or a visor. Personal spectacles are insufficient.
** In situations where responders/practitioners are with a patient and there is a significant risk that a planned or an unplanned aerosol generating procedure may need to be performed urgently, for example oral suctioning, it may be appropriate to wear an FFP2 mask while with the patient.

Case Definition – The current HPSC screening case definition for COVID-19 should be used at all times. As of today, this includes:

Clinical criteria
A patient with acute respiratory infection (sudden onset of at least one of the following: cough, fever [≥ 38ºC], shortness of breath) **AND** with no other aetiology that fully explains the clinical presentation,
OR
A patient with any acute respiratory illness **AND** having been in close contact (< 2 metres for > 15 minutes) with a confirmed or probable COVID-19 case in the last 14 days prior to symptom onset,
OR
A patient with severe acute respiratory infection (fever and at least one sign/symptom of respiratory disease [e.g. cough, fever, shortness of breath]) **AND** requiring hospitalisation (SARI) **AND** with no other aetiology that fully explains the clinical presentation.
Please check HPSC for changes to case definition, as it is regularly updating.

Screening questions for COVID-19 infection
Do you have any new cough or new shortness of breath?
Do you have a high temperature/ fever?
Have you had contact with a confirmed COVID-19 patient within the past 14 days?

If **yes to any** question regard the patient as suspect COVID-19
If **no to all** questions regard the patient as low risk for COVID-19

Currently (as of June 2020) the prevalence of COVID-19 in the community is low. The highest risk of COVID-19 transmission to responders and practitioners appears to be from obviously ill patients (e.g. respiratory symptoms with fever etc). The clinical index of suspicion for COVID-19 infection should, however, be high as non-symptomatic persons are known to transmit infection.

Training & Education

Training at all levels remains important. The COVID-19 pandemic is likely to persist for some time, so we must give thought to how training continues in this new environment. Training and education (including assessment & examinations) should be conducted in such a way that infection risk is minimised. This may require delivery on-line or in smaller groups than normal to facilitate social distancing. HPSC advice for contacts and symptomatic cases should also be followed here.

PHECC recommends that mouth to mouth or mouth to mask ventilation should not be taught in the current situation. Such elements of training may be omitted and taught at a later date.

The HPSC has placed significant emphasis on hand washing as a preventative measure. Details on correct hand washing is available at HSE hand washing advice and demonstration;

Similarly, donning and doffing of PPE requires training to reduce accidental self-contamination, particularly when doffing the PPE. Details on correct donning and doffing is available at HPSC.

As a means of updating training on infection prevention and control principles PHECC strongly recommends that all responders and practitioners should review both of these resources.

To minimise the risk follow the steps:

Wash/alcohol rub hands – don gloves – do the clinical intervention – doff gloves – wash/alcohol rub hands. If a subsequent clinical intervention is required repeat the process.

If a Recognised Institution or Approved Training Institution is making a decision to return to training, they should:

- Consider reduced numbers
- Adhere to adequate social distancing measures
- Ensure effective PPE is used
- Explore the use of equipment ratios
- Consider temperature checks for participants

This is not an exhaustive list.

Returning to work/training is a decision for government and PHECC cannot give advice on when it is safe to do so.

Public Awareness

All PHECC responders and practitioners are in a position to take a lead in ensuring that important public health messages regarding hand washing, cough etiquette and social distancing are reinforced. This can be particularly effective when good behaviour is modelled to others.

Personal Well Being

This will be a difficult time for everyone in the health services including PHECC responders and practitioners. Many of you will work long hours and may become ill yourselves. As with all incidents, personal safety comes first. A sick responder or practitioner cannot help others. So please ensure you use your PPE and take time to look after your own physical and mental well-being. PHECC will support you in any way we can and I know you will all support each other too.

Clinical Matter- General advice

Standard infection control precautions must be applied when treating all patients. Patients should be treated according to CPGs, however, when responding to an emergency medical incident;

- Complete a preliminary assessment, if possible, while maintaining social distancing (> 2 metres).
- If the patient requires close contact assessment and/or treatment don appropriate PPE.
- If the patient demonstrates respiratory symptoms, fever or other cause for concern re COVID-19 apply a surgical facemask to the patient.
- If the patient is unresponsive, check for breathing without using the look, listen and feel (ear to the patient's mouth) process.
- Minimise the number of unnecessary bystanders, responders and/or practitioners within the vicinity of the patient, especially in a small room/area or ambulance.
- When patient information is being recorded i.e. PCR/ACR, request another person, who has maintained physical distancing from the patient, to record the details to avoid cross contamination.
- When the patient encounter is complete, doff and dispose of the PPE appropriately and finally wash your hands.

There are three scenarios where pre-hospital emergency care is provided in Ireland

1 First Aid Response (FAR) in the workplace

FAR responders are an important component of the provision of first aid within the workplace. Responders have been taught the importance of standard infection control precautions as part of their training. To date this has primarily involved the wearing of gloves and handwashing. With the increased threat of droplet transmission, because of COVID-19, additional personal protection may be used (consisting of gloves, surgical facemask, eye protection and clinical apron). If such PPE is provided or used, it is important that the FAR has received training in the use of same, including how to don and doff safely, preventing contamination to themselves. A surgical facemask is recommended where social distancing cannot be maintained.

On the basis that FARs are often already sharing the workplace with their colleagues, the risk of COVID-19 does not apply solely in the context of first aid provision. It is not feasible to expect a FAR to screen employees in need of first aid for signs and symptoms of COVID-19, so employers should take the lead in ensuring that employees are not working with symptoms of COVID-19 in the first place.

FARs should be supported by their employer, recognising that some FARs may have underlying medical conditions or other reasons which preclude their ability to remain in the FAR role during the COVID-19 pandemic.

Patients in cardiac arrest should have compression only CPR applied. An AED should be used as normal.

A more detailed outline of care provision by FARs is available here.

2 Emergency First Response (EFR) who are tasked to respond to incidents

EFR responders may encounter patients with suspected COVID-19 when tasked to normal everyday emergency incidents (Firefighters etc.). Some industries, due to the risk profile, may utilise responders who are trained to a higher clinical level than FAR and/or may be privileged for specific clinical interventions i.e. oxygen therapy. Patients presenting to a responder, with symptoms of COVID-19, should be treated as per CPGs and when close patient contact is required responders to wear PPE consisting of gloves, surgical facemask, eye protection and full sleeved clinical gown.

Patients in cardiac arrest should have compression only CPR applied. An AED should be used as normal.

A more detailed outline of care provision by EFRs is available here.

3 PHECC registered practitioners

By ensuring PHECC practitioner protection, because of the risk of COVID-19 infecting, other healthcare practitioners, including not only doctors, nurses or practitioner colleagues, but also other support personnel necessary to maintain the continuity of care for patients will be protected.

Patients presenting with symptoms of COVID-19 should be treated as per CPGs and when close patient contact is required practitioners to wear PPE consisting of gloves, surgical facemask, eye protection and full sleeved clinical gown. For cardiac arrest, PHECC practitioners should commence resuscitation with the application of defibrillator pads and attempt defibrillation if indicated while PPE is being donned by a colleague. In the case of a single practitioner, it is reasonable to apply the AED and deliver a single shock prior to applying PPE but this may not be practical in every situation. Follow CPGs for ongoing resuscitation.

A more detailed outline of care provision by PHECC practitioners is available here.

Dispatch

PHECC notes that CFR groups are currently stood down by NAS and supports this decision pending a solution to minimise infection risk from COVID-19. Attention is drawn to the HSE advice on community CPR and defibrillation.

Ambulance Vehicle

The patient compartment should be cleared of any unnecessary exposed equipment prior to transporting a patient with COVID-19.

Ambulance windows should be kept closed in transit to avoid turbulent airflow and potential distribution of droplets. The partition between the patient compartment and the driver compartment should be closed if present. If there is no partition, the driver must wear appropriate PPE, including surgical facemask, for the full journey.

Decontamination of the ambulance and equipment should be performed according to HPSC guidelines. After removal of a COVID-19 patient from the ambulance, it should be left with doors open for at least 20 minutes before cleaning to allow droplets to settle

It is likely that there will be further updates to this advisory as the COVID-19 situation develops. PHECC is committed to working with all stakeholders to maximise the health service response to this unprecedented situation and to ensuring the safety of the patient, the public and responders/ practitioners.

References

HPSC Guidance and direct communications, HSE Advice on Community CPR, ICSI Advisory on COVID-19, NAS Decontamination Policy, NASCCRS MICAS COVID-19 Advisory, IHF Guidance on CPR Training, Department of Health.

COVID-19

HAND HYGIENE BEFORE AND AFTER USING A MASK

Coronavirus COVID-19 Public Health Advice

Safe use of Masks

THE MASK YOU NEED

DO: REMEMBER TO WEAR THE CORRECT MASK FOR THE TASK:

Wear **Surgical or FFP2 mask:**
for droplet precautions,
or
when providing care within 2 metres of any patient,
or
when working within 2 metres of another healthcare worker for more than 15 minutes.

Always wear a **fit tested** FFP2/ FFP3 respirator mask for AGPs. **Fit check** your respirator mask every single time.

WEARING THE MASK

DO: Wear your mask so it comes all the way up, close to the bridge of your nose, and all the way down under your chin.

DO: Press the metal band so that it conforms to the bridge of your nose.

DO: Tighten the loops or ties so it's snug around your face, without gaps. If there are strings, tie them high on top of the head to get a good fit.

DO NOT: Wear the mask below your nose.

DO NOT: Leave your chin exposed.

DO NOT: Wear your mask loosely with gaps on the sides.

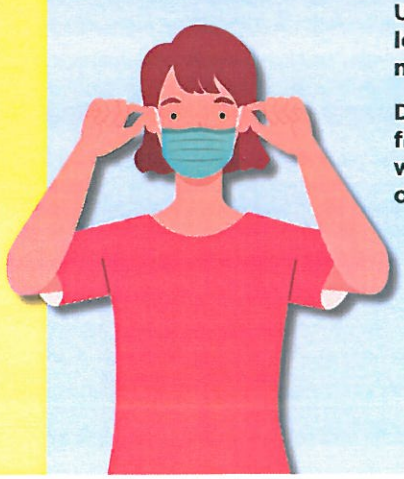
DO NOT: Wear your mask so it covers just the tip of your nose.

DO NOT: Push your mask under your chin to rest on your neck.

ONCE YOU HAVE ADJUSTED YOUR MASK TO THE CORRECT POSITION, FOLLOW THESE TIPS TO STAY SAFE:

- ALWAYS change your mask when you answer the telephone or you take a drink/break.
- ALWAYS wash your hands before and after handling a mask.
- ALWAYS change mask when leaving a cohort area or exiting a single patient isolation room
- ALWAYS change mask if it is dirty, wet or damaged
- NEVER fidget with your mask when it's on.
- NEVER store your mask in your pocket.

REMOVING THE MASK



Use the ties or ear loops to take the mask off.

Do not touch the front of the mask when you take it off.

DISPOSING OF THE MASK

Dispose of mask properly in a bin as ordinary household waste unless you were caring for a person with COVID-19. If you are disposing a mask after contact with a person who has a COVID-19 infection or suspected COVID-19, please follow these disposal instructions. Place the mask in a **healthcare risk waste bin.**

IF HEALTHCARE RISK WASTE SERVICE IS NOT AVAILABLE:

The mask, along with any other PPE used when treating a person with COVID-19 or suspected COVID-19, needs to be double-bagged and stored for 72hrs in a secure location, then put in the domestic waste.

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Safe use of FFP2 respirator mask

Separate the edges of the respirator mask to fully open it.

Slightly bend the nose wire to form a gentle curve.

Hold the respirator mask upside down to expose the two headbands.

Using your index fingers and thumbs, separate the two headbands.

While holding the headbands with your index fingers and thumbs, cup the respirator mask under your chin.

Pull the headbands up over your head.

Release the lower headband from your thumbs and position it at the base of your neck.

Position the remaining headband on the crown of your head.

Conform the nosepiece across the bridge of your nose by firmly pressing down with your fingers.

Continue to adjust the respirator mask and secure the edges until you feel you have achieved a good facial fit. Now, perform a fit check.

Check the fit of the respirator mask every time you wear it.

The wearer should be clean shaven to achieve a good fit.

Forcefully inhale and exhale several times.

The respirator mask should collapse slightly when you inhale and expand when you exhale. You should not feel any air leaking between your face and the respirator mask.

If the respirator mask does not collapse and expand, or if air is leaking out between your face and the respirator mask, then you have NOT achieved a good facial fit.

Adjust the respirator mask until the leakage is corrected and you are able to successfully Fit Check your respirator mask.

For coloured masks the coloured side MUST be worn facing outward and upward in order to provide fluid resistant protection.

HELPFUL TIPS:

The wearer should remove the respirator mask if:

- The respirator mask becomes uncomfortable
- Breathing becomes difficult
- The respirator mask is damaged or distorted
- The respirator mask becomes obviously contaminated by respiratory secretions, blood or bodily fluids.

Stay safe. Protect each other.

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Coronavirus **COVID-19** Public Health Advice

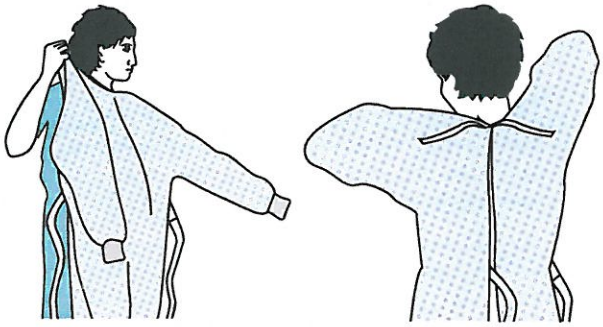
Putting on (donning) personal protective equipment (PPE)

Pre-donning instructions: This is undertaken outside the patient's room.

- Be well hydrated and have taken a toilet break
- Have removed all jewellery including earrings
- Be bare below the elbows
- Have secured your hair back off your face
- Do not bring mobile phones/bleeps into an isolation area

PERFORM HAND HYGIENE BEFORE PUTTING ON PPE

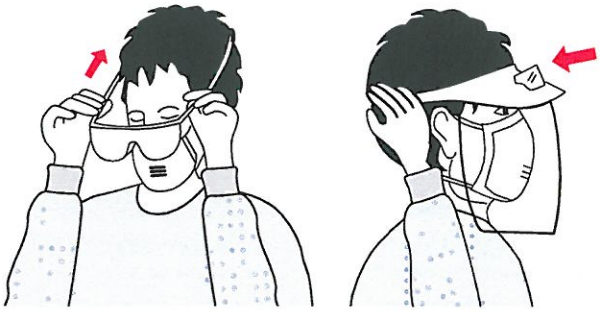
1 Put on the long-sleeved fluid repellent disposable gown



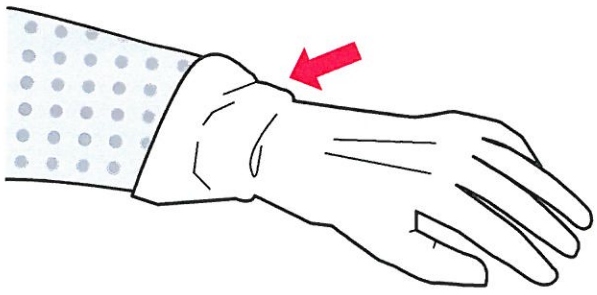
2 A. Respirator (FFP2) Mask- for Aerosol Generating procedures only. Remember to Fit Check

B. Surgical Facemask- for all other care

3 Eye protection - always required for AGP. In all other situations risk assess the requirement.



4 Gloves should cover the cuff of the gown.



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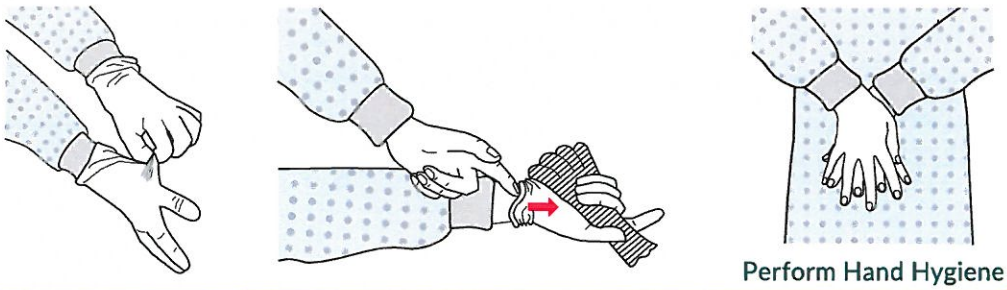
Removal of (doffing) personal protective equipment (PPE)

PPE should be removed in an order that minimises the potential for cross contamination. The Surgical facemask/FFP2 respirator must always be removed outside the patient's room or cohort area.

THE ORDER OF REMOVAL OF PPE IS AS FOLLOWS:

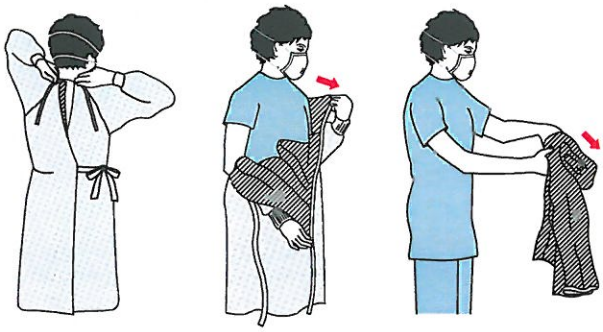
1 Gloves – the outsides of the gloves are contaminated.



Perform Hand Hygiene

2 Eye protection - the outside will be contaminated

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

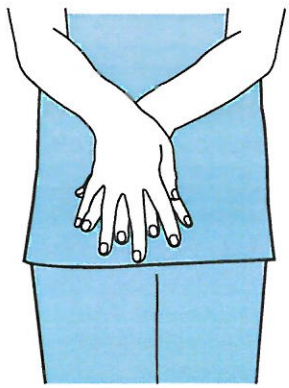


4 Do not remove facemask or respirator until after you have left the patient room or cohort area.

Lean forward slightly, grasp the ties/straps from the top of the head and gently pull off the facemask/respirator. Do not touch the front of the mask.

If the mask has ear loops- lean forward and grasp the loop from each earlobe and take off and discard. DO NOT reuse once removed.

5 Perform Hand Hygiene



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Donning Coveralls in the context of COVID 19

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PERFORM IN A DESIGNATED AREA OUTSIDE THE PATIENT ROOM

BEFORE YOU BEGIN

- Check you have a chair to sit on if needed
- Check that items of PPE in your size are available and near you, as well as alcohol based hand rub (ABHR)
- The sequence of donning PPE for a coverall with a hood is slightly different, depending on whether you are going to wear goggles or a visor, so follow the recommended sequence for coverall with either goggles or visor below

BEFORE YOU PUT ON PPE

- Be well hydrated and have taken a toilet break
- Have removed all jewellery including earrings
- Be bare below the elbows
- Have secured your hair back off your face
- Do not bring mobile phones/bleeps into an isolation area

1 Perform hand hygiene.

2 Put on coverall, but do not put up the hood. Depending on the style of coverall, it may or may not have integrated feet. Your normal work shoes may be worn with the coverall.

Sit down to put feet in.

Pull coverall towards arms and shoulders.

Zip halfway up

Push your thumb through the fabric approximately one inch up from the wrist cuff on the medial side of each coverall sleeve to create an artificial thumb loop.

3 A. Put on Respirator (FFP2) Mask- for Aerosol Generating procedures only. Remember to Fit Check

B. Put on facemask - Mask with ties - tie the upper straps on top of head and bring the lower straps up in front of the ears and tie on top of head. Mask with loops - loop straps over the ears.

4 If using goggles put on now. *Eye Protection is always required for AGP. In all other situations risk assess the requirement.

5 Now put up the hood of the coverall and close the zip.

6 If wearing a visor, apply after hood in position*

7 Put on gloves and pull the gloves up so they cover the cuff and lower sleeve of the coverall.

Check PPE is secure and comfortable – extend arms, bend at waist, turn and walk up and down – use the mirror to self-check and if available, ask your buddy to confirm

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Doffing Coveralls in the context of COVID 19

DOFFING: if the isolation room has an ante room, the HCW can exit the isolation room and remove all PPE in the ante room. If the HCW is in a patient room or cohort area which does not have an anteroom, remove PPE prior to exit EXCEPT for the surgical face mask/respirator mask which should be removed after exit from the patient room or cohort area.

1. Remove gloves and dispose.

2. Perform hand hygiene. The coverall thumb loop will still be in position, so proper hand hygiene will not be feasible.

3. Put on a new pair of gloves to complete the doffing process.

4. If wearing face shield remove now.

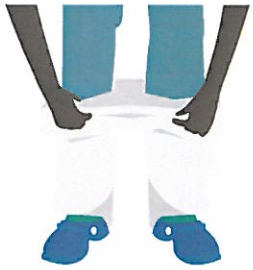
5. Grasp the outer edges of the hood and lift it up and off the head.

6. Remove the coverall- Unzip the coveralls by tilting your head back, slide your fingers up to reach the top of the zipper, holding the zip taut, unzip completely without touching any skin or clothing.

A. Free your shoulders

B. Remove your arms from the coveralls by keeping them behind your back and pulling each arm out of the sleeves, remove the gloves from each hand at the same time.

C. Place hands inside coverall and roll the coverall, from the waist down to the footwear. Sit down and step out of the coverall.



Remember – only touch the inside of the coverall

D. Roll the used coverall into a ball, taking care not to touch the outside of the coverall. Discard the coverall into the healthcare risk waste bin.

7. Remove Goggles if wearing.

If in the patient room or cohort area, you will need to exit to the corridor to remove your mask.

8. Remove Respirator or Surgical Facemask. Lean forward slightly, grasp the ties /straps from the top of the head and gently pull off the facemask. Do not touch the front of the mask. If the mask has ear loops- lean forward and grasp the loop from each earlobe and take off and discard.

9. Perform hand hygiene.

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COVID-19 Safe PPE

HAND HYGIENE FIRST IN **ALL** CASES

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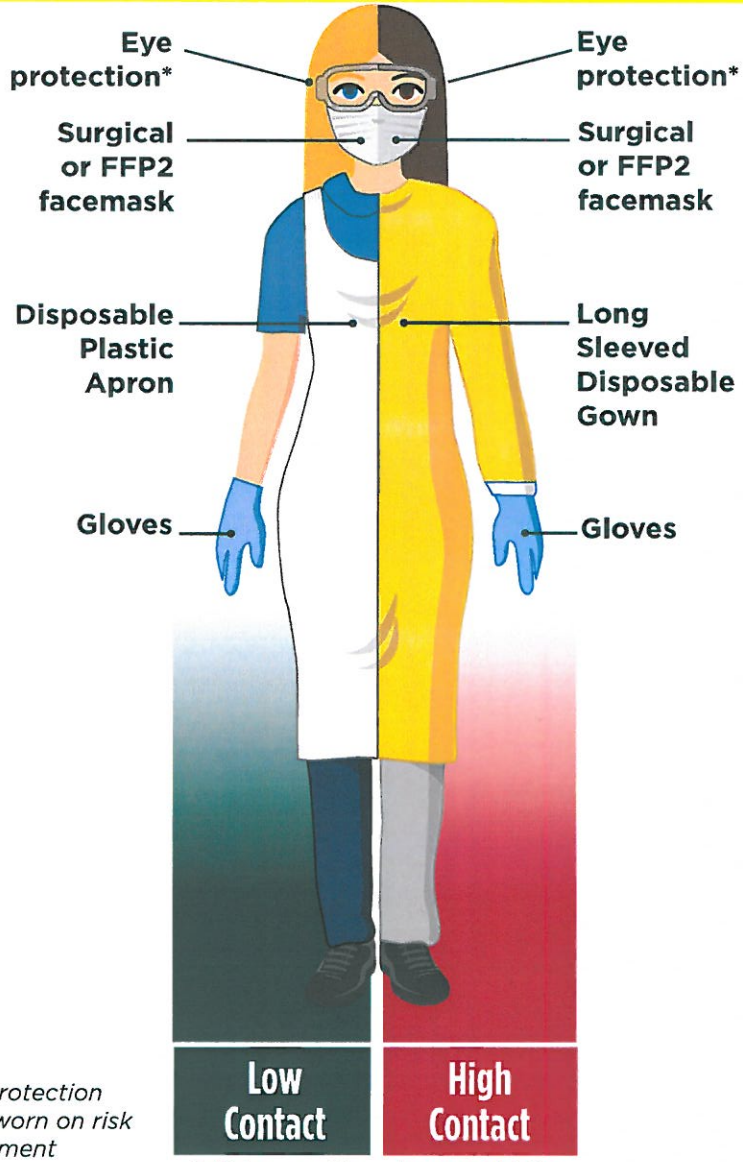
Care of patients with respiratory symptoms/ suspected/confirmed COVID-19

Always wear a fit tested FFP2/FFP3 respirator mask for AGPs.

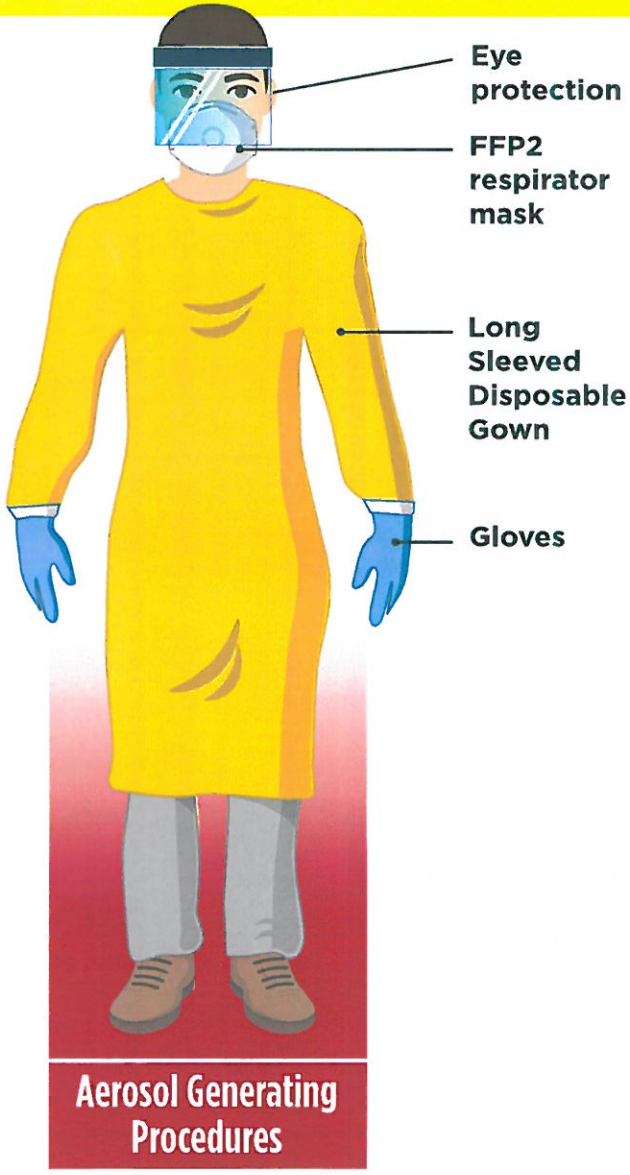
Fit check your respirator mask every single time.



**Eye protection to be worn on risk assessment*

Unlikely to provide opportunities for the transfer of virus/other pathogens to the hands and clothing.

Increased risk for transfer of virus and other pathogens to the hands and clothing.



Also if there is a risk of an unplanned aerosol generating procedure.

With thanks to Samantha Weston and James Fox, Creative & Midlands Partnership, NHS Foundation Trust.

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Current recommendations for the use of Personal Protective Equipment (PPE) for Possible or Confirmed COVID-19 in a pandemic setting

v2.3 09.02.2021

Version	Date	Changes from previous version	Drafted by
2.3	09.02.2021	Updated with statement that vaccination does not change the requirement for precautions - done Changes to the section on transmission to reflect recent experience and emergence of new variants Updated to align with recommendation regarding FFP2 mask availability for HCW caring for suspected or confirmed COVID19 patients Updated with recommendations for PPE use when vaccinating	AMRIC
2.2	22.09.2020	Updated to reflect HSE decision of change in guidance on mask use to include use in public areas	AMRIC
2.1	26.05.2020	Updated to reflect Decision by NPHET dated 22nd April 2020 in relation to use of surgical masks in healthcare settings; Surgical masks should be worn by healthcare workers when they are providing care to people and are within 2m of a person, regardless of the COVID-19 status of the person Surgical masks should be worn by all healthcare workers for all encounters , of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained	HPSC

Infection Prevention and Control practice supported by appropriate use of PPE is important to minimise risk to patients of healthcare associated COVID-19. These measures are equally important in controlling exposure to occupational infections for healthcare workers (HCWs). Traditionally, a hierarchy of controls has been used. The hierarchy ranks controls according to their reliability and effectiveness and includes engineering controls, administrative controls, and ends with personal protective equipment (PPE). In the context of risk of respiratory infection PPE adds an extra layer or protection in the context of scrupulous attention to hand hygiene, respiratory hygiene and cough etiquette and environmental hygiene.

Vaccination for COVID-19 began in Ireland in late December 2020. A significant number of frontline healthcare workers in the acute hospital sector have now been vaccinated. While it is expected that vaccination is likely to offer a high degree of protection to healthcare workers after completion of vaccination and it may help reduce risk of transmission from healthcare worker to patient, the degree of protection afforded to healthcare workers in the context of intense exposure and the extent of protection afforded to patients as a result of healthcare worker vaccination is not yet fully established. At this time partially or fully vaccinated healthcare workers are advised to adhere to all IPC measure in this guideline in the same way as they did prior to vaccination. This advice will be reviewed regularly on the basis of emerging evidence and experience.

Minimising exposure risk

Actions for Healthcare workers

- Implement Standard Precautions for infection prevention and control with all patients at all times
- Maintain a physical distance of at least 2m from individuals with respiratory symptoms (where possible)
- Clean your hands regularly as per WHO 5 moments
- Avoid touching your face
- Promote respiratory hygiene and cough etiquette which involves covering mouth and nose with a tissue when coughing and sneezing or coughing into the crook of an elbow, discarding used tissue into a waste bin and cleaning hands

Actions for the healthcare facility

- Post visual alerts including signs, posters at the entrance to the facility and in strategic places (e.g., waiting areas, elevators, cafeterias) to provide patients and HCWs with instructions (in appropriate languages) about hand hygiene, respiratory hygiene, and cough etiquette.
- Instructions should include how to use tissues to cover nose and mouth when coughing or sneezing, to dispose of tissues and contaminated items in waste bins, and how and when to perform hand hygiene.
- Provide supplies for respiratory hygiene and cough etiquette, including alcohol-based hand rub (ABHR), tissues, and hands-free waste bins for disposal, at healthcare facility entrances, waiting rooms, and patient check-ins.
- Use physical barriers (e.g., glass or plastic windows) at reception areas, registration desks, pharmacy windows to limit close contact between staff and potentially infectious patients.

Personal protective equipment while important is the last line of defense

- This guidance applies to all healthcare settings including primary, secondary, tertiary care, ambulance service and vaccination centres.
- The requirement for PPE is based on the tasks that a HCW is likely to perform
- Unnecessary and inappropriate use of PPE will deplete stocks and increases the risk that essential PPE will not be available to HCW when needed most
- On April 21 2020, the National Public Health Emergency Team (NPHET) made a decision to extend the use of surgical masks in healthcare settings to the following;
    - Surgical masks should be worn by healthcare workers when they are providing care to people and are within 2m of a person, regardless of the COVID-19 status of the person
    - Surgical masks should be worn by all healthcare workers for all encounters, of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained
- For the purpose of this guidance healthcare workers should don a mask if they anticipate being within 2 m of one or more other healthcare workers for a continuous period of 15 minutes or longer. It is not intended that healthcare workers should attempt to estimate in the morning the total duration of a sequence of very brief encounters that may occur during the day.
- As of September 2020, HCW are also required to wear a surgical mask when in busy public areas of healthcare facilities, even if they do not expect to be within a distance of 2m of another person for 15 minutes or more.

- Wearing of masks when providing care for certain categories of patient, for example patients who may need to lip-read, can present practical difficulties for patient care. In such circumstances, it is appropriate to perform an institutional risk assessment and to consider alternatives to mask use, such as use of a perspex screen/barrier or visor that manages the risk of transmission of COVID-19.
- PPE must be worn by ALL staff entering a room or cohort area where a patient with suspected or confirmed COVID-19 is being cared for.
- PPE should be readily available outside the patient's room or cohort area.
- Have a colleague observe donning and doffing of PPE where practical.
- Healthcare workers should have access to a well-fitted respirator mask (FFP2) and eye protection when in contact with possible or confirmed COVID-19 cases and COVID-19 contacts. In the context of a ward/unit based outbreak it is appropriate to consider all patients in that setting as suspected or confirmed COVID-19 cases while active transmission is ongoing. Decisions regarding when all patients should be considered as suspected or confirmed COVID-19 cases requiring general use of FFP2 masks should be made by the IPC team and outbreak control team.
- A surgical mask and visor also offer a high degree of protection. These may be more comfortable for and preferred by some staff. A surgical mask remains appropriate for non-patient facing activity (for example interacting with colleagues or students) and when caring for patients where there is no suspicion of COVID-19 and there is no evidence of transmission in the service.

Table 1: Recommendations for the use of PPE during COVID-19 pandemic

1.0	**Non clinical areas such as administrative areas, medical records, staff restaurant and any other area where tasks do not involve contact with COVID -19 patients**	
1.1	All Activities	Surgical masks should be worn by all healthcare workers for all encounters, of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained As of September 2020, healthcare workers are also required to wear a surgical mask when in busy public areas of healthcare facilities even if they do not expect to be within a distance of 2m of another person for 15 minutes or more.
2.0	**Reception Areas**	

2.1	Administrative activities in reception areas where staff are separated by at least two metres from patients and work colleagues.	Surgical face mask if unable to maintain a 2 metre distance from patients and work colleagues. (This does not apply if a physical barrier e.g. Perspex screen is in place)
3.0	**Patient transit areas for example corridors, elevators, stairwells, escalators, waiting areas**	
3.1	Transfer of patients through public areas	The patient should be asked to wear a surgical face mask if they can tolerate it Those transferring the patient should wear appropriate PPE as per level of contact (section 5.0)
3.2	All other activities e.g. providing security, moving equipment etc.	Surgical masks should be worn by all healthcare workers for all encounters, of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained
4.0	**Pathology/Laboratory Areas**	
4.1	All activities	Surgical masks should be worn by all healthcare workers for all encounters, of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained Additional PPE as per laboratory biosafety guidance
5.0	**Clinical Areas**	
5.1	Providing Care	

5.1.1	Patients with respiratory symptoms/suspected/confirmed COVID-19 who require an **aerosol generating procedure*** **Note:** • In situations where staff are in the room with a patient and there is a significant risk that an unplanned aerosol generating procedure may need to be performed urgently for example accidental extubation it may be appropriate to wear an FFP2 mask while in the room	• Hand Hygiene • Disposable Single Use Nitrile Gloves • Long sleeved disposable gown • FFP2 respirator mask • Eye Protection
5.1.2	Patients with respiratory symptoms/suspected/confirmed COVID-19 who do not require an aerosol generating procedure but **do require high contact patient care activities that provide increased risk for transfer of virus and other pathogens to the hands and clothing** of healthcare workers including (but not limited to) • Close contact for physical examination /physiotherapy • Changing incontinence wear • Assisting with toileting • Device Care or Use • Wound Care • Providing personal hygiene • Bathing/showering • Transferring a patient e.g. from bed to chair • Care activities where splashes/sprays are anticipated	• Hand Hygiene • Disposable Single Use Nitrile Gloves • Long sleeved disposable gown • FFP2 respirator or surgical facemask • Eye Protection* *Eye protection is recommended as part of standard infection control precautions when there is a risk of blood, body fluids, excretions or secretions splashing into the eyes. Individual risk assessment must be carried out before providing care. This assessment will need to include • Whether patients with possible COVID-19 are coughing. • Does the task you need to perform expose you to a risk that the patient will cough or sneeze in your face or present other risk of blood or body fluid splash?

5.1.3	Patients with respiratory symptoms/suspected/confirmed COVID-19 where the tasks being performed are unlikely to provide opportunities for the transfer of virus/other pathogens to the hands and clothing. Low contact activities for example • Initial Clinical Assessments • Taking a respiratory swab • Recording temperature • Checking Urinary Drainage Bag • Inserting a peripheral IV cannula • Administering IV fluids • Helping to feed a patient	• Hand Hygiene • Disposable Single Use Nitrile Gloves • Disposable Plastic Apron • FFP2 respirator or surgical facemask • Eye Protection* *Eye protection is required to be worn as part of standard infection control precautions when there is a risk of blood, body fluids, excretions or secretions splashing into the eyes. Individual risk assessment must be carried out before providing care. This assessment will need to include • Whether patients with possible COVID-19 are coughing. • Does the task you need to perform expose you to a risk that the patient will cough or sneeze in your face or present other risk of blood or body fluid splash
5.2	**Cleaning**	
5.2.1	Cleaning where patient is present and has suspected or confirmed COVID-19 or is a COVID-19 contact	• Hand Hygiene • Disposable Plastic Apron • FFP2 respirator or surgical facemask • Household or Disposable Single use Nitrile Gloves
5.2.2	Cleaning where patient is present and but does not have suspected or confirmed COVID-19 and is not a COVID-19 contact	• Hand Hygiene • Disposable Plastic Apron • Surgical facemask

		• Gloves Household or Disposable Single use Nitrile Gloves
5.2.3	Cleaning when patient is not present for example after the patient has been discharged, or the procedure is complete. Ensure adequate time has been left before cleaning as per guidelines.	• Hand Hygiene • Disposable Plastic Apron Gloves Household or Disposable Single use Nitrile Gloves
6.0	**Internal transfer of patients with suspected or confirmed COVID-19 infection**	
6.1	Accompanying a patient where COVID-19 is not confirmed or suspected between areas within the same facility (e.g. when moving a patient from a ward to radiology / theatre, GP waiting area to assessment room)	• Hand hygiene • Surgical facemask
6.2	Accompanying a patient where COVID-19 is confirmed or suspected or COVID-19 contact between areas within the same facility (e.g. when moving a patient from a ward to radiology / theatre, GP waiting area to assessment room)	• Hand hygiene • FFP2 respirator or surgical facemask
7.0	**External transfer for example between home and dialysis unit, inter hospital transfer, hospital to LTCF**	
7.1	Accompanying a patient but no direct contact is anticipated	• Hand hygiene • Surgical mask (required unless physical distance can be maintained) • If direct contact is unlikely, **NO ADDITIONAL PPE REQUIRED** for staff accompanying the patient
7.2	Accompanying a patient and likely to have direct contact with a patient who has suspected or confirmed COVID-19 or is a COVID-19 contact	• Hand hygiene • FFP2 respirator or surgical mask

7.3	Accompanying a patient and likely to have direct contact with patient where COVID-19 is not suspected or confirmed and not a contact	• Hand hygiene • Surgical facemask Additional PPE if required as per section 5.0
8.0	**Involved only in driving a patient not loading or unloading from transport vehicle**	
8.1	No direct contact with patient and no separation between driver and the patient compartments	Surgical masks should be worn by healthcare workers when they are providing care to people and are within 2m of a person, regardless of the COVID-19 status of the person Surgical masks should be worn by all healthcare workers for all encounters, of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained
8.2	No direct contact with patient and the drivers compartment is separated from the patient	Hand Hygiene Maintain a physical distance of at least 2m **NO PPE REQUIRED**
9.0	**Individuals who may be accompanying the patient (e.g., close family members)**	
9.1	• Visiting should be restricted • If visitors are permitted they should be instructed how to correctly perform hand hygiene and supervised in donning/doffing PPE • Note that sensitivity to patient and visitor needs is required in the application of this recommendation for example with children and in end of life situations. Visitors should be informed of the risks but it must be accepted that in some situations people may not	• Hand Hygiene • Disposable Plastic Apron • Disposable Single Use Nitrile Gloves • Surgical Face Mask

	prioritise their own protection over their assessment of the needs of a loved one.	
9.2	For patients where COVID-19 is not suspected or confirmed	• PPE is required as per Standard Precautions (for example for contact with blood or body fluids) or as appropriate to other known or suspected colonization or infection.
10.0	**Administering COVID-19 vaccines**	
10.1	COVID-19 vaccine administration	• Hand hygiene • Surgical mask Disposable Single Use Nitrile Gloves to be available in case of blood or body fluid contact **In case of need for CPR, staff need access to:** • FFP2 mask • Eye protection • Long sleeved gowns

Types of PPE

- **Disposable plastic aprons:** are recommended to protect staff uniform and clothes from contamination when providing direct patient care and when carrying out environmental and equipment decontamination.
- **Fluid resistant gowns:** are recommended when there is a risk of extensive splashing of blood and or other body fluids and a disposable plastic apron does not provide adequate cover to protect HCWs uniform or clothing.
- If non- fluid resistant gowns are used and there is a risk of splashing with blood or other body fluids a disposable plastic apron should be worn underneath or over the gown.
- **Eye protection/Face visor:** should be worn when there is a risk of contamination to the eyes from splashing of blood, body fluids, excretions or secretions (including respiratory secretions)
    - Surgical mask with integrated visor
    - Full face shield or visor
    - Goggles / safety spectacles

- **Surgical Face Masks:** The WHO recommends two types of surgical facemask for use for HCWs in caring for patients with COVID-19 (Type IIR or Type II). Both masks have the same bacterial filtration rate of 98%. Type IIR masks are more appropriate in situations where there is a high risk of splashing by bodily fluids for example in the operating theatre, critical care unit and emergency department setting where a patient's condition may be unstable or acutely deteriorating.
    - **Tips for surgical face masks:**
        - The mask must be donned appropriately, to allow for easy removal without touching the front of the mask
        - Must cover the nose and mouth of the wearer
        - Must not be allowed to dangle around the HCW's neck
        - Must not be touched once in place
        - Must be changed when wet or torn or if removed to eat, drink or use a phone
        - Perform hand hygiene after the surgical face mask is removed
- **Respirator masks:** are routinely recommended for the care of patients with known airborne infectious diseases, including; varicella (chickenpox) and measles viruses and pulmonary tuberculosis (TB).
- COVID-19 is primarily transmitted by contact and droplet routes. The extent to which airborne transmission contributes to spread remains uncertain. The emergence of new variants that are more readily transmissible has generated additional uncertainty regarding the contribution of airborne spread.
- Airborne spread is an accepted risk when AGPs associated with an increased risk of infection are performed. In that context respirator masks (FFP2 masks or other appropriate respiratory protection), in addition to eye protection are required in all cases.
- Check to determine if respirator masks are fluid repellent. If respirator masks are not fluid repellent, additional protection, such as a visor, is required in situations where there is a splash risk.
- There is no reason to consider that cone shaped masks or FFP3 masks afford a higher degree of protection in practice than duckbill-style FFP2 masks. Properly-fitted cone shaped masks also provide appropriate protection. Valved respirator masks are not fully fluid resistant, unless they are shrouded. If a valved non-shrouded respirator mask is used, facial protection such as a visor must always be worn.

Fit testing:

- The Health and Safety Authority indicate that where a risk assessment indicates that HCW need to use a close-fitting respirator mask for their protection that every effort should be made to comply with the requirement for fit testing of the worker, as far as is reasonably practicable. When fit testing of all staff is not immediately possible, then fit testing should be prioritised for those at greatest risk. Priority groups for fit testing include the following:

- HCW most likely to be involved in performing AGPs, in particular endotracheal intubation.
- HCWs most likely to have the most prolonged exposure to COVID-19 in settings where AGPs are performed.

Tips for respirator facemasks:

- The wearer must undertake a fit check each time a respirator is worn, to ensure there are no gaps between the mask and face for unfiltered air to enter.
- Respirator masks can remain effective when worn continuously for extended periods of time, but must be changed if wet or damaged.
    - Fit testing of respirator masks is required, to ensure that the mask fits properly to the wearer's face shape. Fit-testing is appropriate for all respirator masks. However, it may be less critical for duckbill style masks (FFP2) and ensuring a good fit for a wider range of staff may be easier. When fit testing of all staff is not immediately possible, fit testing should prioritise those at greatest risk including;
        - HCW most likely to be involved in performing AGPs, in particular endotracheal intubation
        - HCW most likely to have the most prolonged exposure in that context
    - **Tips for respirator facemasks**:
        - The wearer must undertake a fit check each time a respirator is worn, to ensure there are no gaps between the mask and face for unfiltered air to enter
        - Respirator masks can remain effective when worn continuously for prolonged periods of time, but must be changed if wet or damaged
- **Theatre caps/hoods and shoe covers:** There is no evidence that contamination of hair is a significant route of transmission for COVID-19 infection. Head covers are not required and are not recommended. HCWs with long hair should keep their hair tied up and off their face when working in clinical settings. Theatre shoe covers are not recommended.

Extended use of PPE

In a pandemic situation, it is recognised that circumstances such as, limited access to supplies or overwhelming patient numbers may arise and hospitals may need to make pragmatic decisions about their use of certain items of PPE. Where measures vary from usual practice, it is necessary to ensure the lowest possible risk to patients and healthcare workers. In certain circumstances extended use of certain PPE items is acceptable. Extended use means that certain items of PPE (gown, face mask, eye protection) may be used while attending to a series of patients with COVID-19 in succession in a single period of clinical activity in one ward or unit.

- Gowns should normally be changed between patients and after completion of a procedure or task. However, if necessary to cope with workload or to manage PPE supplies;

- Extended use of gowns in confirmed COVID-19 cohort areas may be considered for healthcare workers engaged in low contact activities (Table 1)
- Where HCW are engaged in high contact activities (Table 1), then gowns should be changed between patients, to minimise risk of cross-transmission of other pathogens commonly encountered in healthcare settings (e.g., antimicrobial resistant organisms, such as CPE, MRSA, VRE or *C. difficile*)

- If PPE is wet, soiled or torn it must be doffed and disposed of.
- It is not appropriate to wear PPE that was used in the care of patients with COVID-19 when moving between wards or units or when working in designated office space or in break areas on the ward or unit
- Extended use of gloves is not appropriate. Gloves must be changed and hand hygiene performed between patients and between different care activities on the same patient.
- Double gloving is not appropriate in the context of caring for patients with COVID-19
- Cleaning gloves with ABHR is not appropriate. If there is a concern that gloves are contaminated they must be removed safely, hand hygiene performed and a fresh pair of gloves donned if required to continue that task.

Decontamination of eye/face protection for example goggles where there is a shortage of equipment

- Reuse of eye/face protection intended for single use is not good practice and should be avoided if at all possible
- In situations where the supply of new disposable eye protection cannot be secured AND the activity being undertaken involves a high risk of splash or spray to the eyes, reuse of goggles/safety spectacles is safer than going without protection
- Where reuse of eye protection is being considered:
  - Ensure there is no obvious signs of damage – Discard if signs of damage
  - Ensure there are no cloth elements - items with cloth elements cannot be effectively decontaminated
  - Check they are visibly clean before attempting to decontaminate – Discard if visibly soiled with blood/body fluids including respiratory secretions as heavily soiled items cannot be effectively decontaminated.
  - The item should then be carefully decontaminated, either through a centralised decontamination process or by using a disinfectant wipe for reuse by the same healthcare worker
  - The risk of reuse of eye protection (goggles, visor, mask) should be balanced against the risk to the user of a risk of splash or spray to the eyes
  - Where practical to do so, decontamination of goggles for reuse by different users should be centralised in a facility which normally reprocesses items, may add an additional margin of safety

Additional information on donning and doffing PPE is available here:
https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/

Video resources for the donning and doffing of PPE are available here:
https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/videoresourcesforipc/

ENDS

Guidance on COVID-19

v2.1. 26.05.2020

Use of PPE to support Infection Prevention and Control Practice when performing aerosol generating procedures on CONFIRMED or CLINICALLY SUSPECTED COVID-19 CASES in a PANDEMIC SITUATION

Version	Date	Changes from previous version	Drafted by
2.1	26.05.20	Updated to reflect Decision by NPHET dated 22nd April 2020 in relation to use of surgical masks in healthcare settings; o Surgical masks should be worn by healthcare workers when they are providing care to people and are within 2m of a person, regardless of the COVID-19 status of the person o Surgical masks should be worn by all healthcare workers for all encounters , of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained Addition of a FAQ section	HPSC

Transmission

Airborne transmission occurs when infectious particles travel over long distances on air currents. Only particles of less than 5µm are small/light enough to travel in this way. It is accepted that this is a major route of transmission for the viruses that cause chickenpox and measles and the bacteria that causes tuberculosis (*Mycobacterium tuberculosis*).

In addition to Standard Precautions, Airborne Precautions are recommended when caring for patients with these infectious diseases. Airborne Precautions, amongst other things, requires that healthcare workers in the room with the patient use a respirator mask such as an FFP2 to provide protection against airborne transmission.

Other viruses such as Influenza and SARS CoV-2 (COVID-19) are spread by larger respiratory particles of liquid referred to as droplets. These larger droplet particles tend to fall to adjacent surfaces relatively quickly (floor, table top) and do not travel long distances. Travel over long distances on air currents is generally not a significant factor in spread of these infections.

Spread of infection by droplet borne viruses requires either that the person is within 1 m of the patient so that the droplets impact directly on exposed mucosa or that virus is introduced into the respiratory tract following contamination of the hands with virus from droplets that has impacted on surfaces.

The most critical element in preventing transmission of respiratory viruses such as that associated with COVID-19 is consistent adherence to Standard Precautions in particular careful attention to hand hygiene, respiratory hygiene/cough etiquette and environmental hygiene. In addition to Standard Precautions, Contact and Droplet Precautions are appropriate when caring for patients with COVID-19. Contact and Droplet Precautions requires use of Personal Protective Equipment including use of a fluid resistant surgical facemask when within 1 m of patients.

Aerosol Generating Procedures

When performing certain medical procedures on patients infected with respiratory viruses, including SARS-CoV-2, smaller droplets can be formed which are light enough to travel on air. The extent to which these smaller droplets contribute to the spread of infection in the healthcare setting is unclear. Some procedures have been associated in studies with increased risk transmission of respiratory virus although it is not clear if this is because of airborne transmission or because there are aspects associated with the procedure that expose the operator to a high risk of infection by contact or droplets.

Some of the procedures which have been shown (in previous studies of Influenza and SARS CoV) to generate aerosols associated with an increased risk of transmission of pathogens, particularly for those in close proximity are outlined in the Table 1 below. The key paper is that of Tran *et al.* 2012. Aerosol Generating Procedures and Risk of Transmission of Acute Respiratory Infections to Healthcare Workers: A Systematic Review. PLoS One 2012

The following is a quote from the paper.

"*We identified 5 case-control and 5 retrospective cohort studies which evaluated transmission of SARS to HCWs. Procedures reported to present an increased risk of transmission included [n; pooled OR(95%CI)]* ***tracheal intubation*** *[n=4 cohort; 6.6 (2.3, 18.9), and n=4 case-control; 6.6 (4.1, 10.6)],* ***non-invasive ventilation*** *[n=2 cohort; OR 3.1(1.4, 6.8)],* ***tracheotomy*** *[n=1 case-control; 4.2 (1.5, 11.5)] and* ***manual ventilation before intubation*** *[n=1 cohort; OR 2.8 (1.3, 6.4)]. Other intubation associated procedures, endotracheal aspiration, suction of body fluids, bronchoscopy, nebulizer treatment, administration of O2, high flow O2, manipulation of O2 mask or BiPAP mask, defibrillation, chest compressions, insertion of nasogastric tube, and collection of sputum were not significant. Our findings suggest that some procedures potentially capable of generating aerosols have been associated with increased risk of SARS transmission to HCWs or were a risk factor for transmission, with the most consistent association across multiple studies identified with tracheal intubation.*"

A number of authoritative national bodies have produced lists of Aerosol Generating Procedures/Aerosol Generating Medical Procedures.

There some variations between the lists but the following generally feature consistently

- Endotracheal intubation and extubation
- Cardio-pulmonary resuscitation
- Open airway suctioning
- Bronchoscopy (Diagnostic or Therapeutic)
- Autopsy
- Sputum induction (Diagnostic or Therapeutic)

Some procedures are cited by some agencies but are not cited by other agencies for example

- Non-invasive positive pressure ventilation for acute respiratory failure (CPAP, BiPAP3-5)
- High flow oxygen therapy

One agency, the European Centre for Disease Control, has taken the view that swabbing the oropharynx and nasopharynx is an AGP but this view is not supported by evidence or a clear rationale and is inconsistent with guidance from the WHO (March 2020) and many other national agencies.

A number of other procedures have been identified which can generate small droplet particles mainly though the induction of coughing. A number of healthcare workers and professional bodies have drawn attention to concerns regarding these procedures and have advocated the use of respirator masks for healthcare workers performing such procedures on a precautionary principle. However, there is no evidence that these procedures are associated with an increased risk of transmission of respiratory virus. Of some relevance to this issue is a recent paper by Radanovich and colleagues (JAMA, 2019) which concluded that "Among outpatient health care personnel, N95 respirators* vs medical masks as worn by participants in this trial resulted in no significant difference in the incidence of laboratory-confirmed influenza." Therefore, in the general medical setting when caring for patients with a high incidence of respiratory tract infection there is evidence that a respirator mask provides no additional protection to that afforded by a surgical mask.

The setting in which this research was conducted was unlikely to include situations in which the healthcare worker is in close proximity to the oropharynx during instrumentation for extended periods. For a number of such procedures as outlined in Table 2 there is little or no evidence on which to assess their potential to generate aerosols that are associated with an increased risk of transmission of respiratory pathogens. For these procedures given the proximity to the patient, and the duration of the procedure it may be appropriate to adopt a precautionary approach even though they are likely be of LOW risk.

**equivalent to an FFP2 respirator mask*

For guidance on donning and doffing PPE see www.hpsc.ie

Patient Placement

For infections known to be transmitted by the airborne route including Measles/Chickenpox and TB, airborne isolation in a negative pressure isolation room is recommended.

For infections that are spread by droplet and contact transmission negative pressure isolation rooms are not required for most patient care. Where high-risk procedures likely to generate aerosols associated with an increased risk of transmission of respiratory virus such as COVID-19, negative pressure isolation rooms are preferred if available. Where a negative pressure isolation room is not available, these procedures should be carried out in a single room with the door closed.
In a pandemic situation, if COVID-19 patients are cohorted together in one area, including those patients that require AGPs, the requirement for negative pressure isolation is less significant.

All staff working in an area where AGPs are being performed must wear appropriate PPE. The minimum number of personnel necessary should be present. Avoiding risk is always preferable to reliance on PPE.

Risk Assessment

As part of standard precautions it is the responsibility of every healthcare worker (HCW) to undertake a risk assessment **PRIOR** to performing a clinical care task as this will inform the level of infection prevention and control precautions needed including the choice of appropriate PPE for those who need to be present. If more than one task is anticipated with differing risks, the higher level of precautions should be taken for all of the tasks e.g. a HCW taking a temperature then proceeding to tracheostomy suctioning should take precautions appropriate for an Aerosol Generating Procedure.

Personal Protective Equipment

- On April 21 2020, the National Public Health Emergency Team (NPHET) made a decision to extend the use of surgical masks in healthcare settings to the following;

- Surgical masks should be worn by healthcare workers when they are providing care to people and are within 2m of a person, regardless of the COVID-19 status of the person.
- Surgical masks should be worn by all healthcare workers for all encounters, of 15 minutes or more, with other healthcare workers in the workplace where a distance of 2m cannot be maintained.

- For the purpose of this guidance healthcare workers should don a mask if they anticipate being within 2 m or more with other healthcare workers for a continuous period of 15 minutes or longer. It is not intended that healthcare workers should attempt to estimate in the morning the total duration of a sequence of very brief encounters that may occur during the day.

Table 1: Aerosol generating procedures, which have been associated with, increased risk of transmission of respiratory infection

Procedures	AGP Related Increased Risk of Pathogen Transmission	PPE for those with CONFIRMED OR SUSPECTED COVID-19 infection
Intubation	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Front of neck airway procedures – Insertion of tracheostomy, cricothyroidotomy	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Tracheal Extubation	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection

Procedures	AGP Related Increased Risk of Pathogen Transmission	PPE for those with CONFIRMED OR SUSPECTED COVID-19 infection
		Gloves Long Sleeved Gown
Bronchoscopy	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Positive pressure ventilation with inadequate seal*	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
CPR (pre intubation due to manual ventilation)	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
High Frequency Oscillatory Ventilation (HFOV)	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Manual Ventilation	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown

Procedures	AGP Related Increased Risk of Pathogen Transmission	PPE for those with CONFIRMED OR SUSPECTED COVID-19 infection
Open Suctioning- procedure where a single-use catheter inserted into the ETT either by disconnecting the ventilator tubing or via a swivel connector	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Induction of Sputum	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
High Flow Nasal Oxygen (HFNO) including AIRVO	Accepted by many	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Non-invasive ventilation – CPAP/BiPAP	Accepted by many	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown

Table 2: Potential Aerosol Generating Procedures due to use of High Speed Devices

Procedure	AGP Related Increased Risk of Pathogen Transmission	PPE for CONFIRMED OR SUSPECTED COVID-19 infection
Instruments used in Autopsy Procedures	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Instruments used in Dental Procedures e.g. the use of a high-speed hand piece or ultrasonic instruments aerosolise patient's respiratory secretions, saliva	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown
Instruments used in surgical procedures e.g. Neurosurgery & major maxillary facial ENT procedures	Consistently recognised	Hand Hygiene FFP2 RESPIRATOR MASK Full Face Visor Gloves Long Sleeved Gown Hood

Table 3: Procedures, which may be associated with increased risk due to levels of droplet dispersion, proximity to airway, duration of procedure +/- where installation of fluid or suctioning may be part of the procedure

Procedures	AGP Related Increased Risk of Pathogen Transmission Infection Risk	PPE COVID-19 CONFIRMED OR SUSPECTED
Laryngoscopy	Plausible hypothesis- no evidence	FFP2 RESPIRATOR MASK Eye Protection Gloves Long Sleeved Gown Eye Protection
Upper GI endoscopy	Plausible hypothesis- no evidence	FFP2 RESPIRATOR MASK Gloves Eye Protection Gown/Plastic Apron
Transoesophageal Echo	Plausible hypothesis- no evidence	FFP2 RESPIRATOR MASK Gloves Eye Protection Gown/Plastic Apron
Fibreoptic endoscopic evaluation of swallowing (FEES).	Plausible hypothesis- no evidence	FFP2 RESPIRATOR MASK Gloves Eye Protection Gown/Plastic Apron

Table 4: Procedures which are unlikely to be of increased risk, as there are low levels of droplet dispersion, the health care worker is not very close to the airway, duration of procedure is short and where installation of fluid or suctioning is not part of the procedure. Note also paper of Radanovich (2019) conducted in a setting where many of these procedures are commonly performed.

Procedures	AGP Related Increased Risk of Pathogen Transmission Infection Risk	PPE for those with CONFIRMED OR SUSPECTED COVID-19 infection
Collecting a nasopharyngeal swab	Not supported by evidence or plausible hypothesis and not recognised by most national bodies.	Hand Hygiene Surgical Face Mask Gloves Gown OR Plastic Apron* Risk Assessment Re: Eye Protection
Delivery of nebulised medications via simple face mask	Not supported by evidence or plausible hypothesis and not recognised by most national bodies.	Hand Hygiene Surgical Face Mask Gloves Gown OR Plastic Apron* Risk Assessment Re: Eye Protection
Closed suction systems (CSS) enable patients to be suctioned by a suction catheter enclosed within a plastic sleeve, without the need for ventilator disconnection	Not supported by evidence or plausible hypothesis and not recognised by most national bodies.	Hand Hygiene Surgical Face Mask Gloves Gown OR Plastic Apron* Risk Assessment Re: Eye Protection
Chest Physiotherapy in absence of other AGP's	Not supported by evidence or plausible hypothesis and not recognised by most national agencies.	Hand Hygiene Surgical Face Mask Gloves Gown OR Plastic Apron*

Procedures	AGP Related Increased Risk of Pathogen Transmission Infection Risk	PPE for those with CONFIRMED OR SUSPECTED COVID-19 infection
		Risk Assessment Re: Eye Protection
Clinical dysphagia examinations- this examination includes orofacial assessment and administration of food and/or fluids to evaluate swallowing ability	Not supported by evidence or plausible hypothesis and not recognised by most national agencies.	Hand Hygiene Surgical Face Mask Gloves Gown OR Plastic Apron* Risk Assessment Re: Eye Protection
Insertion of a nasogastric tube	Not supported by evidence or plausible hypothesis and not recognised by most national agencies.	Hand Hygiene Surgical Face Mask Gloves Gown OR Plastic Apron* Risk Assessment Re: Eye Protection

*Refer to National Guidelines on PPE

Table 5: Lower GI Procedures

Procedure	AGP Related Increased Risk of Pathogen Transmission Infection Risk	PPE for those with CONFIRMED OR SUSPECTED COVID-19 infection
Lower GI endoscopy	Not supported by evidence or plausible hypothesis and not recognised by most national agencies	Gloves Apron Risk Assessment • Eye Protection

	Note. RNA detected in Faeces but no cases of COVID-19 transmission by this route have been reported	• Surgical Face Mask

Questions and Answers

Q. Is ear syringing an AGP?

A. Ear syringing involves irrigation of the external auditory meatus which is lined with squamous epithelium. It involves the use of low pressure irrigation so there is no reason to expect it to generate aerosols, furthermore SARS-CoV-2 virus does not replicate in squamous epithelium. Ear syringing is not an aerosol generating procedure associated with an increased risk of infection. Some patients may cough, however coughing is not considered to generate infectious aerosols (but does generate droplets)

Q. Is examination of the pharynx with or without the use of a tongue depressor an AGP?

A. Examination of the pharynx with or without the use of a tongue depressor is not an aerosol generating procedure associated with an increased risk of infection. It is now essentially universally accepted that even swabbing the nasopharynx for diagnostic purposes is not an aerosol generating procedure associated with an increased risk of infection.

Videos can be viewed on the following links:

Hand Washing: https://youtu.be/IsgLivAD2FE

Donning and Doffing PPE plus Swabbing techniques

https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/videoresources/acutehealthsettingcovid-19videoresources/