Public Health England

NHS

COVID-19: infection prevention and control guidance

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Public Health Scotland

HSC Public Health Agency

GIG CYMRU NHS WALES | Iechyd Cyhoeddus Cymru Public Health Wales

Health Protection Scotland

About this guidance

The guidance is issued jointly by the Department of Health and Social Care (DHSC), Public Health Wales (PHW), Public Health Agency (PHA) Northern Ireland, Health Protection Scotland (HPS), Public Health Scotland, Public Health England and NHS England as official guidance.

Whilst this guidance seeks to ensure a consistent and resilient UK wide approach, some differences in operational details and organisational responsibilities may apply in Northern Ireland, England, Wales and Scotland.

Please note that this guidance is of a general nature and that an employer should consider the specific conditions of each individual place of work and comply with all applicable legislation, including the Health and Safety at Work etc. Act 1974.

Updated 27 April 2020: to include the PHE statement regarding NERVTAG review and consensus on cardiopulmonary resuscitation as an aerosol generating procedure.
Version 3, 18 May 2020. Main updates to the following chapters:

1. Explanation of the updates to infection prevention and control guidance, section 2
2. Introduction and organisational preparedness, section 3 (including emphasis on social distancing)
3. Transmission characteristics and principles of infection prevention and control, section 3
4. Reducing the risk of transmission of COVID-19 in the hospital setting' (addition of clarifying text throughout based on recommendations from the Environmental Subgroup of SAGE, supported by the Healthcare Onset Covid-19 Infection (HOCI) Working Group, plus addition of section 4.2 on positive pressure rooms).
5. COVID-19 personal protective equipment (PPE), section 8.1

Version 3.1 21 May 2020: added text to Appendix, corrected link to evidence review
Version 3.2 18 June 2020: clarification of aerosol generating procedures (chapter 5)

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See separate Appendix 2 for the following graphics

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Visual guide to PPE

Best practice handwash, handrub and management of body fluid spills

Routine decontamination of reusable noninvasive equipment

Facial hair and FFP3 respirators

1. Explanation of the updates to infection prevention and control guidance

Process for updating the guidance (as published on 2 April 2020)

Public Health England (PHE) has worked with NHS England and NHS Improvement, and the Devolved Administrations to review the UK's infection prevention and control recommendations for COVID-19.

PHE also consulted with the Royal College of Nursing, other Royal Colleges and professional societies.

Having assessed the available evidence and feedback received from guidance users, we have updated sections to improve the guidance and ensure that we continue to make recommendations that will help prevent the spread of COVID-19 and keep people safe.

Main changes to the guidance are:

- to clearly explain the PPE required for different common clinical scenarios, 3 new tables have been added – one for hospitals, one for primary care, outpatient and community and social care, and one for ambulance, paramedics and pharmacy staff
- an additional, fourth table describes when to use PPE for all patient encounters (not just patients with suspected or confirmed COVID-19) at a time when there is sustained community transmission of COVID-19, as is currently occurring in the UK, and the likelihood of any patient having coronavirus infection is raised
- the guidance explains that in some circumstances PPE can be worn for an entire session (such as a ward round) and does not need to be changed between each patient
- patient contact is now defined as being within 2 metres (rather than within 1 metre) of a patient, which is more precautionary and is consistent with the distancing recommendations used elsewhere
- hand-washing advice has been updated to include washing of forearms, when forearms have been exposed or may have been exposed to respiratory droplets or other body fluids
- FFP2 and N95 respirators may be used for some aerosol-generating procedures if FFP3 respirators are not available. FFP3 respirators offer a slightly higher level of protection than FFP2 respirators
- advice on re-usable PPE components, including the need to refer to manufacturer's guidance on decontamination

- recommendations about the use of facemasks by patients
- general formatting improvements to make it easier to access different sections of the guidance
- recommendation on the use of disposable fluid repellent coveralls as an alternative to long sleeved fluid repellent gowns for aerosol generating procedures or when working in higher risk acute areas. Staff need to be trained in the safe removal of coveralls [10 April 2020]
- recommendations from Environmental sub-group of SAGE, supported by the Healthcare Onset Covid19 Infection (HOCI) Working Group [18 May 2020] on:
  - more frequent cleaning of environmental surfaces, personal and communal electronic devices;
  - improved social distancing by health care workers (HCWs) in the healthcare setting;
  - use of paper towels to dry hands in all clinical areas;
  - local consideration to any enhancements that could be made to improve ventilation in healthcare premises

2. Introduction and organisational preparedness

2.1 Introduction

This guidance outlines the infection prevention and control advice for health and social care workers involved in receiving, assessing and caring for patients who are a possible or confirmed case of COVID-19.

This infection prevention and control advice is considered good practice in response to the COVID-19 pandemic. It is based on the best evidence available from previous pandemic and inter-pandemic periods and focuses on the infection prevention and control aspects of this disease only, recognising that a preparedness plan will consider other counter measures.

N.B. The emerging evidence base on COVID-19 is rapidly evolving. Further updates may be made to this guidance as new detail or evidence emerges.

The transmission of COVID-19 is thought to occur mainly through respiratory droplets generated by coughing and sneezing, and through contact with contaminated surfaces. The predominant modes of transmission are assumed to be droplet and contact. This is consistent with a recent review of modes of transmission of COVID-19 by the World Health Organization (WHO).

Parts of the advice set out in this guidance may need operationalising locally, but the principles must be adhered to.

2.2 Infection, prevention and control precautions

Standard infection control precautions (SICPs) and transmission based precautions (TBPs) must be used when managing patients with suspected or confirmed COVID-19.

2.2.1 Standard infection control precautions (SICPs) definition

SICPs are the basic infection prevention and control measures necessary to reduce the risk of transmission of infectious agents from both recognised and unrecognised sources. Sources include blood and other body fluids, secretions and excretions (excluding sweat), non-intact skin or mucous membranes, and any equipment or items in the care environment.

SICPs should be used by all staff, in all care settings, at all times, for all patients.

2.2.2 Transmission Based Precautions (TBPs) definition

TBPs are applied when SICPs alone are insufficient to prevent cross transmission of an infectious agent. TBPs are additional infection control precautions required when caring for a patient with a known or suspected infectious agent. TBPs are categorised by the route of transmission of the infectious agent:

Contact precautions
Used to prevent and control infection transmission via direct contact or indirectly from the immediate care environment (including care equipment). This is the most common route of infection transmission.

Droplet precautions
Used to prevent and control infection transmission over short distances via droplets (>5μm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Droplets penetrate the respiratory system to above the alveolar level. The maximum distance for cross transmission from droplets has not been definitively determined, although a distance of approximately 2 metres (6 feet) around the infected individual has frequently been reported in the medical literature as the area of risk.

Airborne precautions
Used to prevent and control infection transmission without necessarily having close contact via aerosols (≤5μm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Aerosols penetrate the respiratory system to the alveolar level. Interrupting transmission of COVID-19 requires both droplet and contact precautions; if an aerosol generating procedure (AGP) is being undertaken then airborne precautions are required in addition to contact precautions.

Refer to Table 1 for recommended PPE for secondary care settings (see separate Appendix 2)
Refer to Table 2 for recommended PPE for primary, outpatient and community care settings (see separate Appendix 2)
Refer to Table 3 for recommended PPE for ambulance, paramedics, first responders and pharmacists (see separate Appendix 2)
Refer to Table 4 for additional considerations (see separate Appendix 2)

2.3 Organisational preparedness for preventing and controlling COVID-19

Limiting transmission of COVID-19 in the healthcare setting requires a range of infection prevention and control measures which can be considered as a hierarchy of controls.

Administrative controls are implemented at an organisational level (for example the design and use of appropriate work processes, systems and engineering controls, and provision and use of suitable work equipment and materials) to help prevent the introduction of infection and to control and limit the transmission of infection in healthcare. The control of exposure at source, including adequate ventilation systems and effective environmental decontamination will physically reduce exposure to infection.

Employers are under a legal obligation – under Control of Substances Hazardous to Health (COSHH) – to adequately control the risk of exposure to hazardous substances where exposure cannot be prevented. The provision and use of personal protective equipment (PPE), including respiratory protective equipment (RPE), will protect staff, patients and visitors. Employees have an obligation to make full and proper use of any control measures, including PPE, provided by their employer.

The principles below are listed as a hierarchy of infection prevention and control measures at a local hospital/ward level. (Note that this list is not exhaustive but includes key principles and illustrates a useful approach to preventing and controlling COVID-19).

The hierarchy of control measures is:

- early recognition or reporting of cases
- early assessment or triaging of cases
- implementing control measures, including:
  - maintaining separation in space and or time between suspected and confirmed COVID-19 patients
  - educating staff, patients and visitors about SICPs and TBPs
  - prompt implementation of TBPs to limit transmission
  - restricting access of visitors to all areas of the healthcare facility to essential visitors only, such as parents of paediatric patients and relatives of those receiving end of life care (note that signage to support these restrictions is critical)
  - instructing staff members with symptoms to stay at home and not come to work until symptoms resolve
  - planning and implementation of strategies for surge capacity

In preparedness for implementing these control measures all healthcare organisations should undertake planning, and test the preparedness response for the various phases of a pandemic. This includes:

- an assessment of their facilities' current capabilities. Healthcare services will not be able to operate under 'business as usual' during a COVID-19 pandemic – an

assessment of the practical ability to deliver care and implement control measures under the pressure of an exceptional number of patient admissions and reduced staff numbers due to illness must be assessed; ensuring their facilities' most current blueprints are readily available and accessible if needed to make necessary changes

- an assessment of the current workforce, including maintaining consistency in staff allocation, reducing movement of staff and the crossover of care pathways between Planned & Elective care pathways and Urgent and Emergency care pathways; reducing movement between different areas
- facilitating social distancing of 2 metres wherever this is possible. This includes all staff adhering to social distancing (2 metres) wherever possible, particularly if not wearing a facemask or visor and when in non-clinical areas. Review ward practice to minimise close contact between groups of staff over prolonged periods; for example, avoid congregation at the central nurses station, restrict number of staff on ward rounds, conduct handover sessions in a setting where there is space for social distancing, consider staggering staff breaks to limit the density of healthcare workers in specific areas
- working in a multidisciplinary team with healthcare and social care leaders or managers, engineering, and clinical staff to plan for segregation of patients and or services and creation of adequate isolation rooms; identifying potential areas that could be converted effectively with minimum modifications
- defining engineering, administrative, and personnel requirements that can be efficiently implemented during a pandemic COVID-19 event. For example, ensuring good ventilation, including in admission/waiting areas, is an appropriate precaution to minimise opportunistic airborne transmission risk
- key areas such as emergency departments, outpatients, triage, reception desks, specialist departments will need to have plans in place to manage/separate patients with suspected or confirmed COVID-19 and those who do not
- patients with long term conditions who develop symptoms of COVID-19 who need to attend the hospital for treatment or an outpatient appointment will need information on alternative arrangements

3. Transmission characteristics and principles of infection prevention and control

3.1 Routes of transmission

Infection control advice is based on the reasonable assumption that the transmission characteristics of COVID-19 are similar to those of the 2003 SARS-CoV outbreak. The initial phylogenetic and immunologic similarities between COVID-19 and SARS-CoV can be extrapolated to gain insight into some of the epidemiological characteristics.

The transmission of COVID-19 is thought to occur mainly through respiratory droplets generated by coughing and sneezing, and through contact with contaminated surfaces. The predominant modes of transmission are assumed to be droplet and contact.

During AGPs there is an increased risk of aerosol spread of infectious agents irrespective of the mode of transmission (contact, droplet, or airborne), and airborne precautions must be implemented when performing aerosol generating procedure (AGPs), including those carried out on suspected as well as confirmed cases of COVID-19.

Initial research has identified the presence of COVID-19 virus in the stools and conjunctival secretions of confirmed cases. All secretions (except sweat) and excretions, including diarrhoeal stools from patients with known or possible COVID-19, should be regarded as potentially infectious.

3.2 Incubation and infectious period

The incubation period is from 1 to 14 days (median 5 days). Assessment of the clinical and epidemiological characteristics of COVID-19 cases suggests that, similar to SARS, most patients will not be infectious until the onset of symptoms. In most cases, individuals are usually considered infectious while they have symptoms; how infectious individuals are, depends on the severity of their symptoms and stage of their illness.

The median time from symptom onset to clinical recovery for mild cases is approximately 2 weeks and is 3 to 6 weeks for severe or critical cases. There have been case reports that suggest possible infectivity prior to the onset of symptoms, with detection of SARS-CoV-2 RNA in some individuals before the onset of symptoms.

Further study is required to determine the frequency, importance and impact of asymptomatic and pre-symptomatic infection, in terms of transmission risks. From international data, the balance of evidence is that most people will have sufficiently reduced infectivity 7 days after the onset of symptoms.

Please see guidance for stepdown of infection control precautions within hospitals and discharging COVID-19 patients from hospital to home settings.

Similar guidance is also available from:

- Public Health Wales (PHW) https://gov.wales/hospital-discharge-service-requirements-covid-19
- Health Protection Scotland (HPS) https://www.hps.scot.nhs.uk/web-resources-container/covid-19-guidance-for-stepdown-of-infection-control-precautions-and-discharging-covid-19-patients-from-hospital-to-residential-settings/

3.3 Survival in the environment

In light of limited data for SARS-CoV-2, evidence was assessed from studies conducted with previous human coronaviruses including MERS-CoV and SARS-CoV. Human coronaviruses can survive on inanimate objects and can remain viable for up to 5 days at temperatures of 22 to 25°C and relative humidity of 40 to 50% (which is typical of air-conditioned indoor environments).

Survival on environmental surfaces is also dependent on the surface type. An experimental study using a SARS-CoV-2 strain reported viability on plastic for up to 72 hours, for 48 hours on stainless steel and up to 8 hours on copper. Viability was quantified by end-point titration on Vero E6 cells. Extensive environmental contamination may occur following an AGP.

The rate of clearance of aerosols in an enclosed space is dependent on the extent of any mechanical or natural ventilation and the size of the droplets created – the greater the number of air changes per hour (ventilation rate), the sooner any aerosol will be cleared.

The time required for clearance of aerosols, and thus the time after which the room can be entered without a filtering face piece (class 3) (FFP3) respirator, can be determined by the number of air changes per hour (ACH) as outlined in WHO guidance; in general wards and single rooms there should be a minimum of 6 air changes per hour, in negative-pressure isolation rooms there should be a minimum of 12 air changes per hour.

Where feasible, environmental decontamination should be performed when it is considered appropriate to enter the room or area following an AGP without

an FFP3 respirator. A single air change is estimated to remove 63% of airborne contaminants, after 5 air changes less than 1% of airborne contamination is thought to remain. Clearance of infectious particles after an AGP is dependent on the ventilation and air change within the room. In an isolation room with 10-12 air changes per hour (ACH), a minimum of 20 minutes is considered pragmatic. In a single room with 6 ACH this would be approximately one hour.

4. Reducing the risk of transmission of COVID-19 in the hospital setting

4.1 Transmission based precautions

Transmission based precautions (TBPs) are applied when standard infection control precautions (SICPs) alone are insufficient to prevent cross transmission of an infectious agent. TBPs are additional infection control precautions required when caring for a patient with a known or suspected infectious agent.

TBPs are categorised by the route of transmission of the infectious agent:

Contact precautions
Used to prevent and control infection transmission via direct contact or indirectly from the immediate care environment (including care equipment). This is the most common route of infection transmission.

Droplet precautions
Used to prevent and control infection transmission over short distances via droplets (>5μm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Droplets penetrate the respiratory system to above the alveolar level. The maximum distance for cross transmission from droplets has not been definitively determined, although a distance of approximately one metre (3 feet) around the infected individual has frequently been reported in the medical literature as the area of risk. However, a precautionary approach is recommended and 2 metres (approximately 6 feet) has been defined as the area of risk. Thus distancing of 2 metres should be facilitated wherever this is possible. This includes all staff adhering to social distancing (2 metres) wherever possible, particularly if not wearing a facemask or visor and when in non-clinical areas (such as, in communal areas and during work breaks). Consider staggering staff breaks to limit the density of healthcare workers in specific areas.

Airborne precautions
Used to prevent and control infection transmission without necessarily having close contact via aerosols (≤5μm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Aerosols penetrate the respiratory system to the alveolar level. Interrupting transmission of COVID-19 requires both droplet and contact precautions; if an aerosol generating procedure (AGP) is being undertaken then airborne precautions are required in addition to contact precautions.

In addition to SICPs, droplet precautions should be used for patients known to be or suspected to be infected with COVID-19. COVID-19 virus is expelled as droplets from the respiratory tract of an infected individual (for example during coughing and sneezing) directly onto a mucosal surface or conjunctiva of a susceptible individual(s) or environmental surface(s). Droplets travel only short distances through the air; a distance of at least 2 metres has been used for deploying droplet precautions; however, this distance should be considered as the minimum rather than an absolute.

4.2 Duration of precautions

For each individual patient, the duration that infection prevention and control precautions will need to be applied will depend on several factors for example, underlying health condition, immunosuppression, age, duration of symptoms including fever. Refer to guidance for stepdown of infection control precautions within hospitals and discharging COVID-19 patients from hospital to home settings.

4.3 Standard precautions

4.3.1 Hand hygiene

Hand hygiene is essential to reduce the transmission of infection in health and other care settings. All staff, patients and visitors should decontaminate their hands with alcohol-based hand rub (ABHR) when entering and leaving areas where patient care is being delivered.

Hand hygiene must be performed immediately before every episode of direct patient care and after any activity/task or contact that potentially results in hands becoming contaminated, including the removal of personal protective equipment (PPE), equipment decontamination and waste handling. Refer to 5 moments for hand hygiene.

Before performing hand hygiene:

- expose forearms (bare below the elbows)
- remove all hand and wrist jewellery (a single, plain metal finger ring is permitted but should be removed (or moved up) during hand hygiene)
- ensure finger nails are clean, short and that artificial nails or nail products are not worn
- cover all cuts or abrasions with a waterproof dressing

If wearing an apron rather than a gown (bare below the elbows), and it is known or possible that forearms have been exposed to respiratory secretions (for example cough droplets) or other body fluids, hand washing should be extended to include both forearms. Wash the forearms first and then wash the hands.

Hand dryers are not recommended for use in clinical areas. Hands should be dried with soft, absorbent, disposable paper towels from a dispenser which is located close to the sink but beyond the risk of splash contamination. Guidance on hand hygiene, including drying should be clearly displayed in all public toilet areas as well as staff areas.

4.3.2 Respiratory and cough hygiene – 'Catch it, bin it, kill it'

Patients, staff and visitors should be encouraged to minimise potential COVID-19 transmission through good respiratory hygiene measures which are:

- disposable, single-use tissues should be used to cover the nose and mouth when sneezing, coughing or wiping and blowing the nose – used tissues should be disposed of promptly in the nearest waste bin
- tissues, waste bins (lined and foot operated) and hand hygiene facilities, should be available for patients, visitors and staff
- hands should be cleaned (using soap and water if possible, otherwise using ABHR) after coughing, sneezing, using tissues or after any contact with respiratory secretions and contaminated objects
- encourage patients to keep hands away from the eyes, mouth and nose
- some patients (such as the elderly and children) may need assistance with containment of respiratory secretions; those who are immobile will need a container (for example a plastic bag) readily at hand for immediate disposal of tissues

4.3.3 Patient use of face masks

In clinical areas, common waiting areas or during transportation and where tolerable and appropriate, symptomatic patients may wear a surgical face mask. The aim of this is to minimise the dispersal of respiratory secretions and reduce environmental contamination. A surgical face mask should not be worn by patients if there is potential for their clinical care to be compromised (such as when receiving oxygen therapy).

Infectivity appears to be highest just before symptoms start/very early in symptomatic infection. Patients with suspected/possible COVID-19 need to be segregated, especially in admission/waiting and non-COVID areas. Mask usage should be emphasised for all suspected individuals. Ideally, segregation should be separate spaces, but there is also potential to use screens, for example to protect reception staff.

4.4 Patient placement – inpatient settings

4.4.1 Negative pressure isolation rooms

Special environmental controls, such as negative pressure isolation rooms, are not necessary to prevent the transmission of COVID-19. However, in the early stages where capacity allows, and in high risk settings, patients with possible or confirmed COVID-19 may be isolated in negative pressure rooms.

4.4.2 Positive pressure rooms

Patients with suspected/confirmed COVID-19 should **not** be placed in positive pressure rooms. Room pressures of positive pressure rooms, and rooms that are capable of both providing both negative and positive pressure, should be checked as a minimum at the start and end of every shift to ensure isolation room integrity is maintained and infection control risks minimised.

4.4.3 Single rooms

Wherever possible, patients with possible or confirmed COVID-19 should be placed in single rooms. Where single/isolation rooms are in short supply, and cohorting is not yet considered possible (patient(s) awaiting laboratory confirmation), prioritise patients who have excessive cough and sputum production for single/isolation room placement.

Single rooms in COVID-19 segregated areas should, wherever possible, be reserved for performing aerosol generating procedures (AGPs).

Single rooms in non-COVID-19 areas should be reserved for patients requiring isolation for other (non-influenza-like illness) reasons.

The prioritising of patients for isolation other than suspected or confirmed COVID-19 patients should be decided locally, based on patient need and local resources.

For patients with new onset symptoms, it is important to achieve isolation and instigation of contact tracing as soon as possible.

4.4.4 Cohort areas

If a single/isolation room is not available, cohort possible or confirmed respiratory infected patients with other patients with possible or confirmed COVID-19. Use privacy curtains between the beds to minimise opportunities for close contact. Where possible, a designated self-contained area or wing of the healthcare facility should be used for the treatment and care of patients with COVID-19. This area should:

- include a reception area that is separate from the rest of the facility and should, if feasible, have a separate entrance/exit from the rest of the building

- not be used as a thoroughfare by other patients, visitors or staff, including patients being transferred, staff going for meal breaks, and staff and visitors entering and exiting the building
- be separated from non-segregated areas by closed doors
- have signage displayed warning of the segregated area to control entry

Hospitals should consider creating cohort areas which differentiate the level of care required. It may also be prudent to consider:

- the need for cohorting in single/mixed sex wards/bays
- underlying patient condition (immunocompromised)
- age groups when cohorting children
- routine childhood vaccination status when cohorting children

4.4.5 Staff cohorting

Assigning a dedicated team of staff to care for patients in isolation/cohort rooms/areas is an additional infection control measure. This should be implemented whenever there are sufficient levels of staff available (so as not to have a negative impact on non-affected patients' care).

Maintaining consistency in staff allocation where possible and reducing movement of staff and the cross over of care pathways where feasible between Planned & Elective care pathways and Urgent & Emergency care pathways; wherever possible, reducing staff movement between different areas.

Staff who have had confirmed COVID-19 and recovered. should continue to follow the infection control precautions, including personal protective equipment (PPE).

4.5 Managing visitors

Visitors to all areas of the healthcare facility should be restricted to essential visitors only, such as parents of paediatric patients. Local risk assessment and practical management should be considered, ensuring this is a pragmatic and proportionate response, including the consideration of whether there is a requirement for visitors to wear PPE.

Visiting may be suspended if considered appropriate. All visitors entering a segregated/cohort area must be instructed on hand hygiene. They must not visit any other care area. Decisions to suspend or restrict visitors will depend on local circumstances and risk assessment. Limiting entry points to a facility will help manage local restrictions.

Signage to support restrictions is critical. Visitors with COVID-19 symptoms must not enter the healthcare facility. Visitors who are symptomatic should be encouraged to leave and must not be permitted to enter areas where there are extremely vulnerable patients.

4.6 Moving and transferring patients

4.6.1 Moving patients within the same hospital

The movement and transport of patients from their single room/cohort area should be limited to essential purposes only. Staff at the receiving destination must be informed that the patient has possible or confirmed COVID-19.

If transport/movement is necessary, consider offering the patient a surgical face mask to be worn during transportation, to minimise the dispersal of respiratory droplets when this can be tolerated and providing this does not compromise clinical care.

Patients must be taken straight to and returned from clinical departments and must not wait in communal areas.

If possible, patients should be placed at the end of clinical lists.

4.6.2 Transfer from primary care/community settings

If transfer from a primary care facility or community setting to hospital is required, the ambulance service should be informed of the infectious status of the patient.

Staff of the receiving ward/department should be notified in advance of any transfer and must be informed that the patient has possible or confirmed COVID-19.

4.6.3 Moving patients between different hospitals

Patient transfer from one healthcare facility may be undertaken if medically necessary for specialist care arising out of complications or concurrent medical events (for example, cardiac angioplasty and renal dialysis). If transfer is essential, the ambulance service and receiving hospital must be advised in advance of the infectious status of the patient.

4.7 Critical care

All patient respiratory equipment must be protected with a high efficiency filter (such as BS EN 13328-1). This filter must be disposed of after use.

Disposable respiratory equipment should be used wherever possible. Re-usable equipment must, as a minimum, be decontaminated in accordance with the manufacturer's instructions.

A closed suctioning system must be used.

Ventilator circuits should not be broken unless necessary.

Ventilators must be placed on standby when carrying out bagging.

4.8 Operating theatres (where these continue to be used for surgery)

It is recommended that ventilation in both laminar flow and conventionally ventilated theatres should remain fully on during surgical procedures where patients may have COVID-19 infection. Air can bypass filtration if a respirator is not fitted perfectly or becomes displaced during use. Those closest to aerosol generation procedures are most at risk. The rapid dilution of these aerosols by operating theatre ventilation will protect operating room staff. Air passing from operating theatres to adjacent areas will be highly diluted and is not considered to be a risk.

Theatres must be informed in advance of a patient transfer of a confirmed or possible COVID-19 positive case.

The patient should be transported directly to the operating theatre and should wear a surgical mask if it can be tolerated.

The patient should be anaesthetised and recovered in the theatre with minimum staff present. Staff should wear protective clothing (see table 1) but only those within 2 metres of an aerosol generating procedure, such as performing intubation, need to wear FFP3 respirators, disposable fluid repellent coveralls or long sleeved gowns, gloves and eye protection. Considerations about the use of respiratory/anaesthetic equipment are addressed in the critical care section above.

Instruments and devices should be decontaminated in the normal manner in accordance with manufacturers' advice.

Both laryngoscope handle and blade should either be single use or reprocessed in the Sterile Supply Department. Video laryngoscope blades should be single use and scope/handle decontaminated as per manufacture instructions.

The theatre should be cleaned as per local policy for infected cases, paying particular attention to hand contact points on the anaesthetic machine.

Possible or confirmed cases of COVID-19 should be placed at the end of the list where feasible.

For patients with possible or confirmed COVID-19, AGPs should only be carried out when essential. Only those healthcare staff who are needed to undertake the procedure should be present. After the patient leaves the theatre, 5 minutes should pass before staff without respirators can enter and clean.

4.9 Environmental decontamination

There is evidence for other coronaviruses of the potential for widespread contamination of patient rooms or environments, so effective cleaning and decontamination is vital. The frequency of cleaning the care environment in designated COVID-19 care areas should be increased - for example, single rooms, cohort areas and clinical rooms must be decontaminated at least twice daily.

Rooms/areas where PPE is removed must be decontaminated, ideally timed to coincide with periods immediately after PPE removal by groups of staff (at least twice daily).

The increased frequency of decontamination/cleaning should be incorporated into the environmental decontamination schedules for all areas, including where there may be higher environmental contamination rates. Opportunities for cleaning of frequently touched surfaces multiple times (more than twice a day wherever possible) should be taken, including for example:

- surfaces such as medical equipment, door/toilet handles and locker tops, patient call bells, over bed tables and bed rails must be cleaned at least twice daily, and when known to be contaminated with secretions, excretions or body fluids;
- touch points in public areas such as lifts and corridor handrails; and
- electronic equipment, including mobile phones, desk phones and other communication devices, tablets, desktops, and keyboards (particularly where these are used by many people), should be decontaminated at least twice daily with 70% ethyl alcohol or product as specified by the manufacturer

NB. Gloves should be removed and hands decontaminated before touching equipment.

4.9.1 While the patient is in the room

Cleaning and decontamination should only be performed by staff trained in the use of the appropriate PPE; in some instances, this may need to be trained clinical staff rather than domestic staff, in which case, clinical staff may require additional training on standards and order of cleaning.

After cleaning with neutral detergent, a chlorine-based disinfectant should be used, in the form of a solution at a minimum strength of 1,000ppm available chlorine. If an

alternative disinfectant is used within the organisation, the local infection prevention and control team (IPCT) should be consulted on this to ensure that this is effective against enveloped viruses. Manufacturers' guidance and recommended product 'contact time' must be followed for all cleaning/disinfectant solutions/products.

The main patient isolation room should be cleaned at least twice daily. Body fluid spills should be decontaminated promptly.

To ensure appropriate use of PPE and that an adequate level of cleaning is undertaken which is consistent with the recommendations in this document, it is strongly recommended that cleaning of isolation areas is undertaken separately to the cleaning of other clinical areas.

Dedicated or disposable equipment (such as mop heads, cloths) must be used for environmental decontamination. Reusable equipment (such as mop handles, buckets) must be decontaminated after use with a chlorine-based disinfectant as described above. Communal cleaning trollies should not enter the room.

4.9.2 Cleaning the room once the patient has been discharged or left the room

Before entering the room, perform hand hygiene then put on a disposable plastic apron and gloves. If a risk assessment indicates that a higher level of contamination may be present or there is visible contamination with body fluids, the need for additional PPE should be considered.

Collect all cleaning equipment and healthcare waste bags before entering the room the person responsible for undertaking the cleaning with detergent and disinfectant should be trained in the process.

Remove all healthcare waste and any other disposable items, bedding and bed screens, treat as infectious linen. Do not shake linen and avoid all necessary agitation.

Patient care equipment should be cleaned according to manufacturer's instructions, and where possible with chlorine-based disinfectant, 70% alcohol or an alternative disinfectant used within the organisation that is effective against enveloped viruses. Where it is not readily amenable to cleaning, such as blood pressure cuffs, it should be disposed of to waste

Clean all surfaces, beds and bathrooms with a neutral detergent, followed by a chlorine-based disinfectant, in the form of a solution at a minimum strength of 1,000ppm available chlorine. If an alternative disinfectant is used within the organisation, the local IPCT should be consulted on this to ensure that this is effective against enveloped viruses.

Particular attention is needed to cleaning of toilets/bathrooms as COVID-19 has been frequently found to contaminate surfaces in these areas.

Dedicated or disposable equipment (such as mop heads, cloths) must be used for environmental decontamination and disposed of as infectious clinical waste.

Reusable equipment (such as mop handles, buckets) must be decontaminated after use.

Communal cleaning trollies should not enter the room.

4.10 Waste

Large volumes of waste may be generated by frequent use of PPE; advice from the local waste management team should be sought prospectively on how to manage this.

Dispose of all waste as infectious clinical waste.

Waste from a possible or a confirmed case must be disposed of as Category B waste. The transport of Category B waste is described in Health Technical Memorandum 07-01: Safe management of healthcare waste. Disposal of all waste related to possible or confirmed cases should be classified as infectious clinical waste suitable for alternative treatment, unless the waste has other properties that would require it to be incinerated.

4.11 Linen

No special procedures are required; linen is categorised as ‘used’ or ‘infectious’.

All linen used in the direct care of patients with possible and confirmed COVID-19 should be managed as ‘infectious’ linen. Linen must be handled, transported and processed in a manner that prevents exposure to the skin and mucous membranes of staff, contamination of their clothing and the environment, that is:

- disposable gloves and an apron should be worn when handling infectious linen
- all linen should be handled inside the patient room/cohort area. A laundry receptacle should be available as close as possible to the point of use for immediate linen deposit

When handling linen:

- do not rinse, shake or sort linen on removal from beds/trolleys
- do not place used/infectious linen on the floor or any other surfaces such as a locker/table top

- do not re-handle used/infectious linen once bagged
- do not overfill laundry receptacles
- do not place inappropriate items, such as used equipment/needles, in the laundry receptacle

When managing infectious linen:

- place directly into a water-soluble/alginate bag and secure
- place the water-soluble bag inside a clear polythene bag and secure
- place the polythene bag into in the appropriately coloured (as per local policy) linen bag (hamper)

All linen bags/receptacles must be tagged with ward/care area and date. Store all used/infectious linen in a designated, safe, lockable area whilst awaiting uplift.

4.12 Staff uniform

The appropriate use of personal protective equipment (PPE) will protect staff uniform from contamination in most circumstances. Healthcare facilities should provide changing rooms/areas where staff can change into uniforms on arrival at work.

Organisations may consider the use of theatre scrubs for staff who do not usually wear a uniform but who are likely to come into close contact with patients (for example, medical staff).

Healthcare laundry services should be used to lau staff uniforms if there is capacity to do so. If there is no laundry facility available, then uniforms should be transported home in a disposable plastic bag or reusable cloth bag that can be laundered. Hand hygiene should be performed after removal of uniform and placing into bag for transport. Plastic bags should be disposed of into the household waste stream, cloth bags should be laundered with the uniform.
Uniforms should be laundered:

- separately from other household linen
- in a load not more than half the machine capacity
- at the maximum temperature the fabric can tolerate, then ironed or tumbled-dried

Note: It is best practice to change into and out of uniforms at work and not wear them when travelling; this is based on public perception rather than evidence of an infection risk. This does not apply to community health workers who are required to travel between patients in the same uniform.

4.13 Management of equipment and the care environment

Decontamination of equipment and the care environment must be performed using either:

- a combined detergent/disinfectant solution at a dilution of 1,000 parts per million available chlorine (ppm available chlorine (av.cl.)); or
- a general purpose neutral detergent in a solution of warm water followed by a disinfectant solution of 1,000ppm av.cl

Only cleaning (detergent) and disinfectant products supplied by employers are to be used. Products must be prepared and used according to the manufacturers' instructions and recommended product 'contact times' must be followed. If alternative cleaning agents/disinfectants are to be used, they should only on the advice of the IPCT and conform to EN standard 14476 for virucidal activity.

4.13.1 Equipment

Patient care equipment should be single-use items if possible. Reusable (communal) non-invasive equipment should as far as possible be allocated to the individual patient or cohort of patients.

Reusable (communal) non-invasive equipment must be decontaminated:

- between each patient and after patient use
- after blood and body fluid contamination
- at regular intervals as part of equipment cleaning

An increased frequency of decontamination should be considered for reusable non-invasive care equipment when used in isolation/cohort areas.

Ventilators should be protected with a high efficiency filter, such as BS EN 13328-1.

Closed system suction should be used.
Avoid the use of fans that re-circulate the air.

There is no need to use disposable plates or cutlery. Crockery and cutlery can be washed by hand or in a dishwasher using household detergent and hand-hot water after use.

4.14 Environment

Patient isolation rooms, cohort areas and clinical rooms must be decontaminated at least daily. Clinical rooms should also be decontaminated after clinical sessions for patients with possible/known pandemic COVID-19.

In addition, patient isolation rooms must be terminally cleaned:

- following resolution of symptoms, discharge or transfer (this includes removal and laundering of all curtains and bed screens)
- once vacated by staff following an AGP

A single air change is estimated to remove 63% of airborne contaminants, after 5 air changes less than 1% of airborne contamination is thought to remain. Clearance of infectious particles after an AGP is dependent on the ventilation and air change within the room. In an isolation room with 10-12 air changes per hour (ACH), a minimum of 20 minutes is considered pragmatic. In a single room with 6 ACH this would be approximately one hour. Advice should be sought from the local IPCT.

Domestic/cleaning staff performing environmental decontamination should:

- ideally be allocated to specific area(s) and not be moved between COVID-19 and non-COVID-19 care areas
- be trained in which personal protective equipment (PPE) to use and the correct methods of wearing, removing and disposing of PPE

The care environment should be kept clean and clutter free. All non-essential items including toys, books and magazines should be removed from reception and waiting areas, consulting and treatment rooms, emergency departments, day rooms and lounges. When made available, these items should not be shared. All toys must be cleanable and should be cleaned regularly (preferably at the same time as the environment).

4.15 Handling the deceased

The principles of SICPs and TBPs continue to apply whilst deceased individuals remain in the care environment. This is due to the ongoing risk of infectious transmission via contact although the risk is usually lower than for living patients. Where the deceased was known or possibly infected with COVID-19, there is no requirement for a body bag, and viewing, hygienic preparations, post-mortem and embalming are all permitted.

Following a risk assessment of the potential post-mortem risk pathways, PHE has developed this advice in line with the principles set out in the HSE guidance for droplet transmission risk as set out in Managing infection risks when handling the deceased: Guidance for the mortuary, post-mortem room and funeral premises, and during exhumation.

5. COVID-19 personal protective equipment (PPE)

Note: we are currently experiencing sustained transmission across the UK.

5.1 Scope and purpose

This revised guidance concerns use of personal protective equipment (PPE) by health and social care workers, in the context of the current COVID-19 pandemic. It supersedes previous PPE guidance. This guidance relates solely to considerations of PPE, represents one section of infection prevention and control guidance for COVID-19 and should be used in conjunction with local policies.

Refer to further guidance and resources.

This guidance is issued jointly by the Department of Health and Social Care (DHSC), Public Health Wales (PHW), Public Health Agency (PHA) Northern Ireland, Health Protection Scotland (HPS), Public Health England and NHS England as official guidance. The Health and Safety Executive (HSE) has also reviewed the PPE guidance and have agreed the appropriate sessional use of PPE. Expert reviews and advice from the DHSC New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) inform this guidance.

5.2 Rationale for updated guidance

This guidance has been updated to reflect pandemic evolution and the changing level of risk of healthcare exposure to SARS-CoV-2 in the UK. It is recognised that in contexts where SARS-CoV-2 is circulating in the community at high rates, health and social care workers may be subject to repeated risk of contact and droplet transmission during their daily work. It is also understood that in routine work there may be challenges in establishing whether patients and individuals meet the case definition for COVID-19 prior to a face-to-face assessment or care episode.

Certain work environments and procedures convey higher risk of transmission and aerosol generating procedures (AGPs) present risk of aerosolised transmission. This guidance therefore seeks to set out clear and actionable recommendations on the use of PPE, as part of safe systems of working, for health and social care workers relative to their day-to-day work. Incidence of COVID-19 varies across the UK and risk is not uniform and so elements of the updated guidance are intended for interpretation and application dependant on local assessment of risk.

This guidance is also updated to reflect the need for enhanced protection of patients in vulnerable groups undergoing shielding.

5.3 Main changes to previous guidance

The main changes are:

- enhanced PPE recommendations for a wide range of health and social care contexts
- inclusion of individual and organisational risk assessment at local level to inform PPE use
- recommendation of single sessional (extended) use of some PPE items
- re-usable PPE can be used. Advice on suitable decontamination arrangements should be obtained from the manufacturer, supplier or local infection control
- guidance for when case status is unknown and SARS-CoV-2 is circulating at high levels
- recommendation on patient use of facemasks
- recommendation on the use of disposable fluid repellent coveralls as an alternative to long sleeved fluid repellent gowns for aerosol generating procedures or when working in higher risk acute areas. Staff need to be trained in the safe removal of coveralls [10 April 2020]

5.4 Safe ways for working for all health and care workers

Staff should be trained on donning and doffing PPE. Videos are available showing how to don and doff PPE for AGPs and how to don and doff PPE for non-AGPs.

Staff should know what PPE they should wear for each setting and context
staff should have access to the PPE that protects them for the appropriate setting and context.

Gloves and aprons are subject to single use as per SICPs with disposal after each patient or resident contact.

Fluid repellent surgical mask and eye protection can be used for a session of work rather than a single patient or resident contact.

Gowns or coveralls can be worn for a session of work in higher risk areas.

Hand hygiene should be practiced and extended to exposed forearms, after removing any element of PPE.

All staff should adhere to social distancing (2 metres) wherever possible, particularly if not wearing PPE and in non-clinical areas, such as during work breaks and when in communal areas.

Staff should take regular breaks and rest periods. Consider staggering staff breaks to limit the density of healthcare workers in specific areas.

5.5 Summary of PPE recommendations for health and social care workers

(Refer to Tables 1 to 4 individidually online or included in the Appendix 2 PDF) https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control

Table 1 summarises PPE recommendations for health and social care workers by context for both NHS and independent sectors in secondary care inpatient clinical settings.

Table 2 summarises recommended PPE for primary, outpatient, community and social care settings.

Table 3 summarises recommended PPE for ambulance staff, paramedics and pharmacists.

Table 4 summarises recommendations for all settings where COVID-19 transmission is sustained.

It is recognised that provision of healthcare is dynamic and in a single care episode more than one context may be encountered, PPE should be changed (upgraded) as appropriate.

5.6 Sessional use of PPE

Aprons and gloves are subject to single use as per Standard Infection Control Precautions (SICPs), with disposal and hand hygiene after each patient contact. Respirators, fluid-resistant (Type IIR) surgical masks (FRSM), eye protection and disposable fluid repellent coveralls or long-sleeved disposable fluid repellent gowns can be subject to single sessional use in circumstances outlined in Table 1 and section 5.7.

A single session refers to a period of time where a health and social care worker is undertaking duties in a specific clinical care setting or exposure environment. For example, a session might comprise a ward round, or taking observations of several patients in a cohort bay or ward. A session ends when the health and social care worker leaves the clinical care setting or exposure environment. Once the PPE has been

removed it should be disposed of safely. The duration of a single session will vary depending on the clinical activity being undertaken.

While generally considered good practice, there is no evidence to show that discarding disposable respirators, facemasks or eye protection in between each patient reduces the risk of infection transmission to the health and social care worker or the patient. Indeed, frequent handling of this equipment to discard and replace it could theoretically increase risk of exposure in high demand environments, for example, by leading to increasing face touching during removal. The rationale for recommending sessional use in certain circumstances is therefore to reduce risk of inadvertent indirect transmission, as well as to facilitate delivery of efficient clinical care.

PPE should not be subject to continued use if damaged, soiled, compromised, uncomfortable or in other circumstances outlined in section 5.10, and a session should be ended. While the duration of a session is not specified here, the duration of use of PPE items should not exceed manufacturer instructions. Appropriateness of single versus sessional use is dependent on the nature of the task or activity being undertaken and the local context.

5.7 Risk assessment

For common contexts where health and social care workers are providing care to patients and individuals who are known to be possible or confirmed COVID-19 cases, PPE recommendations are specified. Attempts should be made, where appropriate, to ascertain whether a patient or individual meets the case definition for a possible or confirmed case of COVID-19 before the care episode. Refer to the current COVID-19 case definition.

Initial risk assessment where possible should take place by phone, other remote triage, prior to entering the premises or clinical area or at 2 metres social distance on entering. Where the health or social care worker assesses that an individual is symptomatic and meets the case definition, appropriate PPE should be put on prior to providing care. Where the potential risk to health and social care workers cannot be established prior to face-to-face assessment or delivery of care (within 2 metres), the recommendation is for health and social care workers in any setting to have access to and where required wear aprons, FRSMs, eye protection and gloves.

Health and social care workers should consider the need for contact and droplet precautions based on the nature of care or task being undertaken. Risk assessment on the use of eye protection, for example, should consider the likelihood of encountering a case(s) and the risk of droplet transmission (risk of droplet transmission to eye mucosa such as with a coughing patient) during the care episode. Sessional use of FRSMs and

eye protection is indicated if there is perceived to be close or prolonged interaction with patients in a context of sustained community COVID-19 transmission.

Ultimately, where staff consider there is a risk to themselves or the individuals they are caring for they should wear a fluid repellent surgical mask with or without eye protection, as determined by the individual staff member for the episode of care or single session.

Risk assessment at organisational level requires that organisations consider healthcare-associated COVID-19 risk at local level and according to the local context. Organisational risk assessment and local guidance should not replace or reduce the ability of the health and social care worker to use appropriate PPE while providing care to patients or residents.

Local acute provider risk assessment may assist in determining higher risk areas and identify specific areas of a hospital where sessional use of PPE is required (for example, certain wards, clinical areas).

5.8 PPE guidance by healthcare context

5.8.1 Aerosol generating procedures

The highest risk of transmission of respiratory viruses is during AGPs of the respiratory tract, and use of enhanced respiratory protective equipment is indicated for health and social care workers performing or assisting in such procedures. The evidence review will continue to be updated in light of emerging evidence for this new pathogen.

A long-sleeved disposable fluid repellent gown (covering the arms and body) or disposable fluid repellent coveralls, a filtering face piece class 3 (FFP3) respirator, a full-face shield or visor and gloves are recommended during AGPs on possible and confirmed cases, regardless of the clinical setting. Subject to local risk assessment, the same precautions apply for all patients regardless of case status in contexts of sustained COVID-19 transmission. Where an AGP is a single procedure, PPE is subject to single use with disposal after each patient contact or procedure as appropriate.

NERVTAG reviewed the evidence summary provided by Health Protection Scotland* on 17 May 2020 and concluded that the list of procedures currently considered to be potentially infectious AGPs for COVID-19 are:

- respiratory tract suctioning
- bronchoscopy
- manual ventilation
- tracheal intubation and extubation

- tracheotomy or tracheostomy procedures (insertion or removal)
- upper ENT airway procedures that involve suctioning
- upper gastro-intestinal endoscopy where there is open suctioning of the upper respiratory tract
- high speed cutting in surgery/post mortem procedures if this involves the respiratory tract or paranasal sinuses
- dental procedures using high speed devices such as ultrasonic scalers and high speed drills
- non-invasive ventilation (NIV); Bi-level Positive Airway Pressure Ventilation (BiPAP) and Continuous Positive Airway Pressure Ventilation (CPAP)
- High Frequency Oscillatory Ventilation (HFOV)
- induction of sputum using nebulised saline
- high flow nasal oxygen (HFNO)

*Assessing the evidence base for medical procedures which create a higher risk of respiratory infection transmission from patient to healthcare worker (Version 1.0, 13 May 2020)

For patients with possible or confirmed COVID-19, any of these potentially infectious AGPs should only be carried out when essential. Where possible, these procedures should be carried out in a single room with the doors shut. Only those healthcare staff who are needed to undertake the procedure should be present.

Certain other procedures or equipment may generate an aerosol from material other than patient secretions but are not considered to represent a significant infectious risk. Procedures in this category include administration of humidified oxygen, entonox or medication via nebulisation.

NERVTAG advised that during nebulisation, the aerosol derives from a non-patient source (the fluid in the nebuliser chamber) and does not carry patient-derived viral particles. If a particle in the aerosol coalesces with a contaminated mucous membrane, it will cease to be airborne and therefore will not be part of an aerosol. Staff should use appropriate hand hygiene when helping patients to remove nebulisers and oxygen masks.

Chest compressions and defibrillation (as part of resuscitation) are not considered AGPs; first responders (any setting) can commence chest compressions and defibrillation without the need for AGP PPE while awaiting the arrival of other clinicians to undertake airway manoeuvres.

Based on the NERVTAG evidence review and consensus statement, chest compressions will not be added to the list of AGPs. Healthcare organisations may choose to advise their clinical staff to wear FFP3 respirators, gowns, eye protection and

gloves when performing chest compressions but it is strongly advised that there is no potential delay in delivering this life saving intervention. Table 4 in the revised PPE guidance recommends clinicians wear PPE during sessions in all settings when they assume there is widespread transmission in the community.

5.8.2 Higher risk acute inpatient care areas

Long-sleeved disposable fluid repellent gowns or disposable fluid repellent coveralls, FFP3 respirators, eye protection, and gloves must be worn in higher risk areas containing possible or confirmed cases, or as indicated by local risk assessment. If non-fluid-resistant gowns are used, a disposable plastic apron should be worn underneath. Gloves and aprons are subject to single use as per Standard Infection Control Precautions (SICPs) with disposal after each patient contact. Gowns or coveralls, respirators and eye protection may be subject to single session use (see Section 5.6).

A higher risk acute inpatient care area is defined as a clinical environment where AGPs are regularly performed.

Higher risk acute care areas include:

- intensive care and high dependency care units (ICU or HDU)
- emergency department resuscitation areas
- wards or clinical areas where AGPs are regularly performed (such as wards with NIV or CPAP)
- operating theatres, where AGPs are performed
- endoscopy units, where bronchoscopy, upper gastrointestinal or nasoendoscopy are performed

Ambulance staff conveying a patient into a high risk area are not required to change or upgrade their PPE for the purposes of patient handover.

5.8.3 Inpatient areas

A fluid resistant (Type IIR) surgical facemask (FRSM) should be worn whenever a health and social care worker enters or is present inpatient area (for example, ward) containing possible or confirmed COVID-19 cases, whether or not involved in direct patient care. For undertaking any direct patient care, disposable gloves, aprons and eye protection should be worn. Evidence reviews were performed by Health Protection Scotland and the Centre for Evidence Based Medicine, University of Oxford.

When working in inpatient areas with no identified possible or confirmed cases, use of PPE should be risk assessed (section 5.7). Aprons, gloves and FRSMs may be indicated in certain inpatient areas dependent on intensity of COVID-19 transmission in

the local context and the nature of clinical care undertaken. An evidence review on the use of aprons or gowns was conducted by Health Protection Scotland and Health Safety Executive.

5.8.4 Emergency department and acute admission areas

Use of aprons FRSMs, eye protection and gloves is recommended for health and social care workers working in emergency and acute admission areas containing possible or confirmed cases. These areas might include medical, surgical and paediatric admissions wards (not assigned as higher risk acute care areas), for example.

Use of PPE in emergency and acute admission areas may be indicated regardless of case status of patients, subject to a risk assessment (section 5.7).

Ambulance staff conveying a patient into a high risk area are not required to change or upgrade their PPE for the purposes of patient handover.

5.8.5 Transfer of cases and other duties requiring close contact

Aprons, FRSMs and gloves should be used by health and social care workers transferring possible or confirmed COVID-19 cases and for other duties that require direct contact or that within 1 metre of a case. Eye protection is recommended subject to risk assessment (section 5.7).

5.8.6 Operating theatres and operative procedures

Where AGPs are performed, PPE guidance set out for AGPs (section 5. 8.1) should be followed. For operations without AGPs, standard IPC practice should be adopted as normal for the procedure with additional use of FRSM and eye protection for any possible or confirmed cases. Use of long-sleeved disposable fluid repellent gowns is indicated for possible and confirmed cases when there is perceived risk of exposure to bodily fluids. Such PPE in operating theatres may be indicated regardless of case status of patients, subject to local risk assessment (section 5.7).

5.8.7 Labour ward

Where AGPs are performed and for operative procedures, PPE guidance set out for AGPs (section 5.8.1) for operative procedures (section 5.8.6) respectively should be followed. Otherwise, for care of possible or confirmed cases during the second and third stage of labour (vaginal delivery) disposable fluid repellent coveralls or long-sleeved disposable fluid repellent gowns, plastic aprons, FRSMs, eye protection and gloves

should be used. Such PPE in labour wards may be indicated regardless of case status of patients, subject to local risk assessment (section 5.7).

5.8.8 Ambulance staff and paramedics

Where AGPs such as intubation are performed, PPE guidance set out for AGPs (section 5.8.1) should be followed (disposable fluid repellent coveralls may be used in place of long-sleeved disposable gowns). For any direct patient care of patient known to meet the case definition for a possible case, plastic apron, FRSMs, eye protection and gloves should be used (section 5.7). Where it is impractical to ascertain case status of individual patients prior to care, use of PPE including aprons, gloves, FRSM and eye protection should be subject to risk assessment according to local context (section 5.7).

PPE is not required for ambulance drivers of a vehicle with a bulkhead and those otherwise able to maintain social distancing of 2 metres. If the vehicle does not have a bulkhead then use of a FRSM is indicated for the driver (additional PPE would be as for other staff if providing direct care).

Ambulance staff conveying a patient into a high risk area are not required to change or upgrade their PPE for the purposes of patient handover.

5.8.9 Primary care, ambulatory care and other non-emergency outpatient clinical settings

For primary care, ambulatory care and other non-emergency outpatient settings (including hospital outpatient clinics) plastic aprons, FRSMs, eye protection and gloves should be used for any direct care of possible and confirmed cases. Such PPE may be indicated for work in such settings regardless of case status, subject to local risk assessment (section 5.7).

For health and social care workers working in reception and communal areas but not involved in direct patient care, every effort should be made to maintain social distancing of 2 metres. Where this is not practical use of FRSM is recommended.

The principles described in this guidance apply to all health and social settings. PPE guidance is provided for primary, community and social care in Table 2.

Guidance and standard operating procedures for COVID-19 are also provided by NHS England.

Further information on primary care for Scotland and social care settings in Scotland.

Further information for Northern Ireland.

5.8.10 Individual's home or usual place of residence

For provision of direct care to any member of a household where one or more is a possible or confirmed case, plastic aprons, FRSMs, eye protection and gloves are recommended.

For delivery of care to any individual meeting criteria for shielding (vulnerable groups) or where anyone in the household meets criteria for shielding, as a minimum, single use disposable plastic aprons, surgical mask and gloves must be worn for the protection of the patient. If the individual is encountered in any context described or if they meet the case definition then additional PPE should be applied as above.

5.8.11 Community and social care settings, including care homes, mental health and other overnight resident facilities

For direct care of possible or confirmed cases in facilities such as care homes, mental health inpatient units, learning disability and autism residential units, hospices, prisons and other overnight care units, plastic aprons, FRSMs and gloves should be used. Need for eye protection is subject to risk assessment (section 5.7) meaning dependent on whether the nature of care and whether the individual symptoms present risk of droplet transmission. For further information, refer to guidance on residential care provision.

5.8.12 Pharmacy

If social distancing of 2 metres is maintained there is no indication for PPE in a pharmacy setting. If social distancing is not maintained, though direct care is not provided, sessional use of FRSM is recommended for contact with members of the public with possible or confirmed COVID-19. For pharmacists working in other contexts (such as inpatient areas), recommendations described above apply.

5.8.13 Collection of nasopharyngeal swab(s)

For collection of nasopharyngeal swabs (for example, for COVID-19 diagnostic purposes), plastic aprons, FRSMs, eye protection and gloves should be used.

5.8.14 Care to vulnerable groups undergoing shielding

For delivery of care to any individual meeting criteria for shielding (vulnerable groups) in any setting, as a minimum, single use disposable plastic aprons, gloves and surgical mask must be worn for the protection of the patient. If the individual is encountered in any context described or if meets case definition then additional PPE should be applied as per recommendations stated by context and or risk assessment (section 5.7).

5.9 Patient use of PPE

In clinical areas, communal waiting areas and during transportation, it is recommended that possible or confirmed COVID-19 cases wear a surgical face mask if this can be tolerated. The aim of this is to minimise the dispersal of respiratory secretions, reduce both direct transmission risk and environmental contamination.

A face mask should **not** be worn by patients if there is potential for their clinical care to be compromised (for example, when receiving oxygen therapy via a mask). A face mask can be worn until damp or uncomfortable.

5.10 Recommended PPE types and rationale for use

5.10.1 Filtering face piece class 3 (FFP3) respirators

Respirators are used to prevent inhalation of small airborne particles arising from AGPs.

All respirators should:

- be well fitted, covering both nose and mouth
- not be allowed to dangle around the neck of the wearer after or between each use
- not be touched once put on
- be removed outside the patient room or cohort area or COVID-19 ward

Respirators can be single use or single session use (disposable) and fluid-resistant. Note that valved respirators are not fully fluid-resistant unless they are also ‘shrouded’. Valved, non-shrouded FFP3 respirators are not considered to be fluid resistant and therefore should be worn with a full face shield if blood or body fluid splashing is anticipated.

FFP3 respirators filter at least 99% of airborne particles. The HSE states that all staff who are required to wear an FFP3 respirator must be fit tested for the relevant model to ensure an adequate seal or fit (according to the manufacturers’ guidance). Fit checking (according to the manufacturers’ guidance) is necessary when a respirator is donned to ensure an adequate seal has been achieved.

Further information regarding fitting and fit checking of respirators can be found on the Health and Safety Executive website.

It is also important to ensure that facial hair does not cross the respirator sealing surface and if the respirator has an exhalation valve, hair within the sealed mask area should not impinge upon or contact the valve.
See the Facial hair and FFP3 respirators guide.

Respirators should be compatible with other facial protection used (protective eyewear) so that this does not interfere with the seal of the respiratory protection.

Respirators are for single use or single session use (section 5.6) and then are to be discarded as healthcare (clinical) waste (hand hygiene must always be performed after disposal) or if re-usable cleaned accorded manufacturer's instructions. It is important that the respirator maintains its fit, function and remains tolerable for the user.

The respirator should be discarded and replaced and NOT be subject to continued use if:

- it is damaged
- it is soiled (for example, with secretions, body fluids)
- it is damp
- the facial seal is compromised
- it is uncomfortable
- it is difficult to breathe through

The manufacturers' guidance should be followed in regard to the maximum duration of use.

The HSE has stated that FFP2 and N95 respirators (filtering at least 94% and 95% of airborne particles respectively) offer protection against COVID-19 and may be used if FFP3 respirators are not available.

Other respirators can be utilised by individuals if they comply with HSE recommendations. Reusable respirators should be cleaned according to the manufacturer's instructions.

5.10.2 Fluid resistant surgical masks

Fluid-resistant (Type IIR) surgical masks (FRSM) provide barrier protection against respiratory droplets reaching the mucosa of the mouth and nose. FRSMs should be well fitted and subject to the same level of care in use as respirators (section 5.10.1).

FRSMs are for single use or single session use (section 5.6) and then must be discarded. The FRSM should be discarded and replaced and NOT be subject to continued use in any of the circumstances outlined for respirators (section 5.10.1).

The protective effect of masks against severe acute respiratory syndrome (SARS) and other respiratory viral infections has been well established. There is no evidence that respirators add value over FRSMs for droplet protection when both are used with recommended wider PPE measures in clinical care, except in the context of AGPs. Surgical masks should:

- cover both nose and mouth
- not be allowed to dangle around the neck after or between each use
- not be touched once put on
- be changed when they become moist or damaged
- be worn once and then discarded – hand hygiene must be performed after disposal

5.10.3 Eye and face protection

Eye and face protection provides protection against contamination to the eyes from respiratory droplets, aerosols arising from AGPs and from splashing of secretions (including respiratory secretions), blood, body fluids or excretions.

Eye and face protection can be achieved by the use of any one of:

- a surgical mask with integrated visor
- a full face shield or visor
- polycarbonate safety spectacles or equivalent

Regular corrective spectacles are not considered adequate eye protection.

While performing AGPs, a full-face shield or visor is recommended.

The same as for respirators and FRSMs, eye protection should: be well fitted; not be allowed to dangle after or between each use; not be touched once put on; be removed outside the patient room, cohort area or 2 metres away from possible or confirmed COVID-19 cases.

Disposable, single-use, eye and face protection is recommended for single or single session use (section 5.6) and then is to be discarded as healthcare (clinical) waste. However, re-usable eye and face protection is acceptable if decontaminated between single or single sessional use, according to the manufacturer's instructions or local infection control policy.

It is important that the eye protection maintains its fit, function and remains tolerable for the user. Eye and face protection should be discarded and replaced and not be subject to continued use if damaged, soiled (for example, with secretions, body fluids) or uncomfortable.

5.10.4 Disposable aprons and gowns

Disposable plastic aprons must be worn to protect staff uniform or clothes from contamination when providing direct patient care and during environmental and equipment decontamination.

Disposable fluid repellent coveralls or long-sleeved gowns must be worn when a disposable plastic apron provides inadequate cover of staff uniform or clothes for the procedure or task being performed, and when there is a risk of splashing of body fluids such as during AGPs in higher risk areas or in operative procedures. If non-fluid-resistant gowns are used, a disposable plastic apron should be worn. If extensive splashing is anticipated then use of additional fluid repellent items may be appropriate.

Disposable aprons are subject to single use and must be disposed of immediately after completion of a procedure or task and after each patient contact as per SICPs. Hand hygiene should be practiced as per SICPs and extended to exposed forearms.

Disposable fluid repellent coveralls or long-sleeved gowns are for single use or for single session use in certain circumstances (section 5.6) but should be discarded at the end of a session or earlier if damaged or soiled.

5.10.5 Disposable gloves

Disposable gloves must be worn when providing direct patient care and when exposure to blood and or other body fluids is anticipated or likely, including during equipment and environmental decontamination. Disposable gloves are subject to single use and must be disposed of immediately after completion of a procedure or task and after each patient contact, as per SICPs, followed by hand hygiene. Double gloving is not necessary.

5.11 Best practice in use of PPE and hand hygiene

COVID19 is no longer categorised as a high consequence infectious disease and therefore enhanced PPE is not recommended. PPE should be worn as described in this guidance.

Refer to the correct order of donning and doffing PPE for AGPs and non-AGPs. PPE should always be used in accordance with SICPs and requirements for hand hygiene. Hand hygiene should extend to include washing of exposed forearms.

Associated legislation

Please note that this guidance is of a general nature and that an employer should consider the specific conditions of each individual place of work and comply with all applicable legislation, including the Health and Safety at Work etc. Act 1974.

PHE statement regarding NERVTAG review and consensus on cardiopulmonary resuscitation as an aerosol generating procedure (AGP)

This explains PHE's application of the review and consensus published by the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) on 24 April 2020, regarding whether cardiopulmonary resuscitation (CPR) by chest compressions and defibrillation is associated with an increased risk of transmission of acute respiratory infections and should be considered to be aerosol generating procedures (AGPs).

NERVTAG advises the government on the threat posed by new and emerging respiratory viruses. On 24 April 2020, NERVTAG published its evidence review and consensus regarding CPR as an AGP

PHE's application of the NERVTAG consensus statement on CPR as an AGP

NERVTAG was asked to undertake an evidence review to consider whether chest compressions and defibrillation are associated with an increased risk of transmission of acute respiratory infections. NERVTAG was also asked to give an opinion on whether chest compressions and defibrillation should be considered to be aerosol generating procedures.

Having reviewed all the available evidence, NERVTAG stated: "It is biologically plausible that chest compressions could generate an aerosol, but only in the same way that an exhalation breath would do. No other mechanism exists to generate an aerosol other than compressing the chest and an expiration breath, much like a cough, is not currently recognised as a high-risk event or an AGP." NERVTAG also stated that it "does not consider that the evidence supports chest compressions or defibrillation being procedures that are associated with a significantly increased risk of transmission of acute respiratory infections."

Based on this evidence review, the UK IPC guidance therefore will not be adding chest compressions to the list of AGPs. Healthcare organisations may choose to advise their clinical staff to wear FFP3 respirators, gowns, eye protection and gloves when performing chest compressions but we strongly advise that there is no potential delay in delivering this life saving intervention. Table 4 in the revised PPE guidance recommends clinicians wear PPE during sessions in all settings when they assume there is widespread transmission in the community.

6. Occupational health and staff deployment

Prompt recognition of cases of COVID-19 among healthcare staff is essential to limit the spread.

Health and social care staff with symptoms of COVID-19 should not come to work.

As a general principle, healthcare staff who provide care in areas for suspected or confirmed patients should not care for other patients. However, this has to be a local decision based on local epidemiology and the configuration of the organisation.

A risk assessment is required for health and social care staff at high risk of complications from COVID-19, including pregnant staff. Employers should:

- discuss with employees who are at risk or are pregnant the need to be deployed away from areas used for the care of those who have, or are clinically suspected of having, COVID-19; or, in the primary care setting, from clinics set up to manage people with COVID-19 symptoms – refer to the guidance published by the Royal College of Obstetricians & Gynaecology
- ensure that advice is available to all health and social care staff, including specific advice to those at risk from complications

Bank, agency and locum staff should follow the same deployment advice as permanent staff.

As part of their employer's duty of care, providers have a role to play in ensuring that staff understand and are adequately trained in safe systems of working, including donning and doffing of personal protective equipment. A fit testing programme should be in place for those who may need to wear respiratory protection.

In the event of a breach in infection control procedures, staff should be reviewed by occupational health.

Occupational health departments should lead on the implementation of systems to monitor staff illness and absence.

7. Glossary of terms

Aerosol-generating procedures (AGPs)
Certain medical and patient care activities that can result in the release of airborne particles (aerosols). AGPs can create a risk of airborne transmission of infections that are usually only spread by droplet transmission.

Airborne transmission
The spread of infection from one person to another by airborne particles (aerosols) containing infectious agents.

Airborne particles
Very small particles that may contain infectious agents. They can remain in the air for long periods of time and can be carried over long distances by air currents. Airborne particles can be released when a person coughs or sneezes, and during aerosol generating procedures (AGPs). ‘Droplet nuclei’ are aerosols formed from the evaporation of larger droplet particles (see droplet transmission). Aerosols formed from droplet particles in this way behave as other aerosols.

Airborne precautions
Measures used to prevent and control infection spread without necessarily having close patient contact via aerosols (less than or equal to 5µm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Aerosols can penetrate the respiratory system to the alveolar level.

BS/EN standards
Mandatory technical specifications created by either the British Standards Institute (BS) or European Standardisation Organisations (EN) in collaboration with government bodies, industry experts and trade associations. They aim to ensure the quality and safety of products, services and systems.

Cohort area
An area (room, bay, ward) in which 2 or more patients (a cohort) with the same confirmed infection are placed. A cohort area should be physically separate from other patients.

Contact precautions
Measures used to prevent and control infections that spread via direct contact with the patient or indirectly from the patient’s immediate care environment (including care equipment). This is the most common route of infection transmission.

Contact transmission
Contact transmission is the most common route of transmission, and consists of 2 distinct types: direct contact and indirect contact. Direct transmission occurs when microorganisms are transmitted directly from an infectious individual to another individual without the involvement of another contaminated person or object (fomite). Indirect transmission occurs when microorganisms are transmitted from an infectious individual to another individual through a contaminated object or person (fomite) or person.

COVID-19
COVID-19 is a highly infectious respiratory disease caused by a novel coronavirus. The disease was discovered in China in December 2019 and has since spread around the world.

Droplet precautions
Measures used to prevent and control infections spread over short distances (at least 1 metre or 3 feet) via droplets (greater than 5µm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Droplets penetrate the respiratory system to above the alveolar level.

Droplet transmission
The spread of infection from one person to another by droplets containing infectious agents.

Eye or face protection
Worn when there is a risk from splashing of secretion (including respiratory secretions). Eye or face protection can be achieved by the use of any one of:

- a surgical mask with integrated visor
- a full face visor or shield
- polycarbonate safety spectacles or equivalent

Fluid-resistant (Type IIR) surgical face mask (FRSM)
A disposable fluid-resistant mask worn over the nose and mouth to protect the mucous membranes of the wearer's nose and mouth from splashes and infectious droplets. FRSMs can also be used to protect patients. When recommended for infection control purposes a 'surgical face mask' typically denotes a fluid-resistant (Type IIR) surgical mask.

Fluid-resistant
A term applied to fabrics that resist liquid penetration, often used interchangeably with 'fluid-repellent' when describing the properties of protective clothing or equipment.

Frequently touched surfaces
Surfaces of the environment which are commonly touched or come into contact with human hands.

Healthcare or clinical waste
Waste produced as a result of healthcare activities for example soiled dressings, sharps.

High-flow nasal cannula (HFNC) therapy
HFNC is an oxygen supply system capable of delivering up to 100% humidified and heated oxygen at a flow rate of up to 60 litres per minute.

Higher risk acute care area risk units
Intensive care units, intensive therapy units, high dependency units, emergency department resuscitation areas, wards with non-invasive ventilation; operating theatres; endoscopy units for upper Respiratory, ENT or upper GI endoscopy; and other clinical areas where AGPs are regularly performed.

Incubation period
The period between the infection of an individual by a pathogen and the manifestation of the illness or disease it causes.

Induction of sputum
Induction of sputum typically involves the administration of nebulised saline to moisten and loosen respiratory secretions (this may be accompanied by chest physiotherapy (percussion and vibration)) to induce forceful coughing.

Infectious linen
Linen that has been used by a patient who is known or suspected to be infectious and or linen that is contaminated with blood and or other body fluids, for example faeces.

Long term health condition
This covers:

- chronic obstructive pulmonary disease, bronchitis, emphysema or asthma
- heart disease
- kidney disease
- liver disease
- stroke or a transient ischaemic attack (TIA)
- diabetes
- lowered immunity as a result of disease or medical treatment, such as steroid medication or cancer treatment

- a neurological condition, such as Parkinson's disease, motor neurone disease, multiple sclerosis (MS), cerebral palsy, or a learning disability
- any problem with the spleen, including sickle cell disease, or had spleen removed
- a BMI of 40 or above (obese)

Personal Protective Equipment (PPE)
Equipment a person wears to protect themselves from risks to their health or safety, including exposure to infection agents. The level of PPE required depends on the:

- suspected or known infectious agent
- severity of the illness caused
- transmission route of the infectious agent
- procedure or task being undertaken

Respiratory droplets
A small droplet, such as a particle of moisture released from the mouth during coughing, sneezing, or speaking.

Respiratory protective equipment
Respiratory protection that is worn over the nose and mouth designed to protect the wearer from inhaling hazardous substances, including airborne particles (aerosols). There are 2 types of respiratory protection that can be used, tight-fitting disposable FFP respirators and loose-fitting powered hoods (TH2).

FFP stands for filtering face piece. There are 3 categories of FFP respirator: FFP1, FFP2 and FFP3. FFP3 and loose fitting powered hoods provide the highest level of protection and are recommended when caring for patients in areas where high risk aerosol generating procedures (AGPs) are being performed. Where the risk assessment shows an FFP2 respirator is suitable, they are recommended as a safe alternative. N95 respirators are tested against different standards but are broadly equivalent to a FFP2.

Respiratory symptoms
Respiratory symptoms include:

- rhinorrhoea (runny nose)
- sore throat
- cough
- difficulty breathing or shortness of breath

Segregation
Physically separating or isolating from other people.

SARS-CoV
Severe acute respiratory syndrome coronavirus, the virus responsible for the 2003 outbreak of human coronavirus disease.

SARS-CoV-2
Severe acute respiratory syndrome coronavirus 2, the virus responsible for the 2019 outbreak of COVID-19 disease.

Standard infection control precautions (SICPs)
SICPs are the basic infection prevention and control measures necessary to reduce the risk of transmission of an infectious agent from both recognised and unrecognised sources of infection.

Single room
A room with space for one patient and usually contains (as a minimum) a bed, a locker or wardrobe and a clinical wash-hand basin.

Staff cohorting
When staff care for one specific group of patients and do not move between different patient cohorts. Patient cohorts may include for example ‘symptomatic’, ‘asymptomatic and exposed’, or ‘asymptomatic and unexposed’ patient groups.

Transmission based precautions
Additional precautions to be used in addition to SICPs when caring for patients with a known or suspected infection or colonisation.

Appendix: Considerations for acute personal protective equipment (PPE) shortages

Update 3 May 2020

- HSE has examined the use of FFP2 respirators as an alternative to Type IIR surgical face masks in non-surgical settings
- if risk assessment identifies a need for FFP2 respirators the user must be face fit tested to ensure they are providing the intended level of protection
- in circumstances where a lower level of user protection is required, such as that provided by a surgical mask, an FFP2 worn without a face fit test will offer protection similar to the levels from a surgical face mask
- this is a pragmatic approach for times of severe shortage of respiratory protective equipment (RPE), FFP2 respirators being used in this way will not be carrying out the function they were designed to perform
- all healthcare settings are reminded that where their risk assessment has identified the requirement for a tight-fitting respirator users must pass a face fit test for that respirator model before it can be used
- employers and users of respirators need to be assured protective equipment is protecting the wearer

Note: Surgical masks may sometimes be used for source control, if feasible and if the mask can be tolerated by the individual; for example, a surgical mask worn by a patient with COVID-19 during transfer within a hospital. When an FFP2 respirator needs to be used in place of a surgical mask for this specific purpose, it should an unvalved FFP2 respirator (that is, no exhale valve).

Background to 17 April 2020 advice

This document aligns with current evidence and Centers for Disease Control (CDC) [1] and World Health Organization (WHO) [2] guidance on optimising the supply of personal protective equipment (PPE) and the use of PPE when in short supply. The Health and Safety Executive (HSE) has reviewed the options outlined in this document. Where there are acute shortages of PPE, and where it is safe to do so, it approves the sessional and reuse of PPE.

Some of the PPE in the NHS COVID-19 Ensemble is designated by the manufacturers as being single use. However, the HSE recognises that some compromise is needed to

optimise the supply of PPE in times of extreme shortages. It has agreed that the use as outlined in this document is appropriate within health and safety legislation and provides appropriate protection for health and care workers.

These are exceptional circumstances and do not reflect HSE's standard approach. HSE expects Trusts to have an agreed action plan to support implementation which includes a consideration of all measures to manage usage effectively.

In addition, documentation of how any re-use will be managed (recognising that some PPE is personal, for example FFP3/FFP2 respirators) and should include a record of systems of work to manage how integrity checks and decontamination processes are being carried out. It should also recognise that certain equipment (for example gloves and aprons) cannot be reused.

Organisations should ensure healthcare workers are appropriately hydrated during prolonged use and trained to recognise dehydration, fatigue and exhaustion while wearing PPE.

Further work on validating methods to safely reprocess masks and fluid repellent gowns is under way and future updates will be circulated when available.

Purpose and scope of this document

This document aims to highlight the sessional use and reuse of PPE when there are severe shortages of supply.

The considerations are to ensure that health and care workers are appropriately protected from COVID-19, where items of PPE are unavailable, and should be considered as temporary measures until the global supply chain is adequate to meet the UK's needs.

The reuse of PPE should be implemented until confirmation of adequate re-supply is in place.

These take into account the following important principles that should already be in place for all health and care delivery:

- only urgent or emergency face-to-face contacts in the health and social care setting.
- where an individual has a multi-drug resistant or other key pathogen, transmission-based infection prevention control precautions should apply to prevent cross transmission to other individuals.

Sessional use: by one health or care worker during one shift while working. Clinical areas should include all ward areas. In hospitals, leaving a ward area to continue to care or transfer a patient, the same PPE can be worn. Face masks/respirators, gowns/ coveralls and eye protection should only be changed when taking a break or when visibly contaminated or damaged.

Reuse: using the same item again, with appropriate precautions, by the same healthcare worker.

Alternatives to standard PPE: recommended where there is a crisis or short supply.

Medical masks

Fluid repellent surgical face masks (FRSM) and disposable respirators (FFP3/ FFP2/ N95)

This excludes re-usable respirators, that can be re-used according to manufacturer's instructions.

FFP3/FFP2/N95 respirators have a large capacity for the filtration and retention of airborne contaminants. Sessional use or re-use over the course of a day in health or social care, would not approach anywhere near that capacity.

Sessional use
The use of masks for one HCW to use in one work area. This is currently recommended in the UK Infection Prevention and Control guidance.

- it should be disposed of if it becomes moist, damaged, visibly soiled
- the duration (number of hours) of sessional use is dependent on local (for example, heat, activity length, shift-length) and individual factors. In practice, this may vary from 2 to 6 hours
- if masks are touched or adjusted, hand hygiene should be performed immediately
- if the mask is removed for any reason (for example, upon exiting the ward area, taking a break or completing a shift), they are disposed of as clinical waste, unless they can be safely reused as outlined below

Reuse

Important requirements are:

- the mask should be removed and discarded if soiled, damaged, or hard to breathe through

- masks with elastic ear hooks should be re-used (tie-on face masks are less suitable because they are more difficult to remove)
- hand hygiene should be performed before removing the face mask
- face masks should be carefully folded so the outer surface is held inward and against itself to reduce likely contact with the outer surface during storage
- the folded mask should be stored between uses in a clean sealable bag/ box which is marked with the person's name and is then properly stored in a well-defined place
- hand hygiene should be performed after removing the face mask
- some models of PPE cannot be physically reused as they deform once being donned and do not go back to original condition (meaning it would be difficult to re-don and achieve a fit check) – fit checks should be performed each time a respirator is donned if it is reused

Alternatives to standard PPE

There is insufficient evidence to consider homemade masks or cloth masks in health and care settings.

Gowns and coveralls

Fluid repellent hospital gowns or coveralls are indicated for use for the care of patients in high risk areas, where aerosol generating procedures (AGPs) are being performed.

There are 3 main options that can be considered as alternatives if gowns are not available:

- reserve disposable, fluid repellent gown or coveralls for AGPs and surgical procedures.
- disposable, non-fluid repellent gowns or coveralls with a disposable plastic apron for high-risk settings and AGPs with forearm washing once gown or coverall is removed.
- reusable (washable) surgical gowns or coveralls or similar suitable clothing (for example, long-sleeved laboratory coat, long-sleeved patient gown or industrial coverall) with a disposable plastic apron for AGPs and high-risk settings with forearm washing once gown or coverall is removed. These would need to be washed in a hospital laundry and capacity for hospital laundries may need to be increased.

Sessional use

This is the use of gowns or coveralls for healthcare workers (HCWs) to use for higher risk clinical areas. This is currently recommended in the UK Infection Prevention and Control guidance.

If the gown or coverall becomes visibly soiled, it must be disposed as infectious waste (followed by hand hygiene, donning of a new gown, and appropriate donning of new gloves).

The following important factors would safely reduce gown usage over a session but organisations should develop an implementation and action plan suitable to their organisation:

- label all higher risk area bays, single rooms, corridors, treatment rooms and nurses' stations as 'clinical' areas within a specific hospital area. Limit 'non-clinical' areas to staff kitchen/rest areas and changing room.
- once gown or coverall is donned, the gown/coverall should remain on the staff member until their next break. Plastic aprons and gloves should be changed between patients (with the notes from aprons highlighted below).
- staff should doff the gown or coverall only when going from the clinical to non-clinical area of the ward, or if they are leaving the ward for a break.
- if leaving a higher risk area/theatre ward with a patient to transfer them to another area staff should retain their gown or coverall and other PPE.
- teams that assist with turning and moving patients ("proning teams"), allied health professionals and other teams should retain gowns or coveralls on sessional basis, changing gloves/aprons between patients/residents and performing hand hygiene.

Reuse

Consider shifting disposable gowns or coveralls to reusable options, retaining disposable gowns only for high risk AGPs.

If there are no available disposable gowns or coveralls, consider the use of gown alternatives including:

- reusable gowns
- reusable (washable) laboratory coats
- reusable (washable) long sleeved patient gowns
- reusable coveralls

Capacity for hospital laundering service should be considered if using these items.

Eye Protection

Goggles

Goggles provide barrier protection for the eyes. They should fit snuggly over and around the eyes or personal prescription lenses, be indirectly-vented (to prevent penetration of splashes or sprays) and have an anti-fog coating to help maintain clarity of vision. The lens is made of plastic, commonly polycarbonate and there is an adjustable elastic strap to allow snug fit around the eyes. Goggles used for healthcare applications are typically reusable.

Visors

Visors provide barrier protection to the facial area and related mucous membranes (eyes, nose, lips) and are considered an alternative to goggles. Visors should be used if AGP aerosol-generating procedure is performed. They should cover the forehead, extend below the chin, and wrap around the side of the face. Visors are available in both disposable and reusable options.

Sessional use

This is currently recommended in the UK Infection Prevention and Control guidance.

The goggles or face shield should be removed upon exiting the ward area per standard practice.

Reuse

This is currently recommended in the UK Infection Prevention and Control guidance, where the eye protection is not relabelled as single use only.
If in extremely short supply, single use only items could be re-used in a similar way as re-usable items.
The standard method of cleaning is to use a detergent product either combined/ sequentially with a decontamination product as agreed by the local infection prevention and control (IPC) specialists.

They should be rinsed thoroughly to remove any residual detergent or cleaning product and left to dry.

Products will degrade over time with repeated cleaning, particular the anti-fog component and will need to be resupplied regularly.

Gloves

This guidance relates to examination gloves used for clinical care of COVID-19 patients. These gloves are available in a variety of materials, are single use and must be disposed of after each use. Non-powdered, nitrile gloves are the most commonly recommended for healthcare.

Additional considerations

Do not use double gloves for care of suspected or confirmed COVID-19 patients.

Sessional use or of reuse examination gloves for clinical care should be avoided.

Aprons

These are indicated for use when there is risk of splashes or sprays to protect clothes, where gowns are used on a sessional basis or where the gowns are not fluid resistant.

Re-use of aprons is not recommended.

1. CDC strategies for US-healthcare settings on COVID-19: Strategies for Optimizing the Supply of PPE
2. WHO's guidance on the Rational use of personal protective equipment for coronavirus disease 2019

The Department of Health NI current advice to HSC Trusts remains that single use PPE should not be reprocessed and that reusable PPE should be reprocessed in accordance with the manufacturer's instructions.