Public Health England

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Considerations for Personal Protective Equipment in the Context of Acute Supply Shortages for Coronavirus Disease 2019 (COVID-19) Pandemic

This document is aligned with the current evidence base, CDC and WHO documents that outline strategies for optimising the supply of personal protective equipment and considerations for the use of PPE when in short supply.

The Health and Safety Executive have reviewed the options outlined in this paper and where it is safe to do so[1], approve the sessional and reuse of personal protective equipment (PPE) where there are acute shortages of PPE. Whilst some of the PPE in the NHS COVID-19 Ensemble is designated by the manufacturer's as being single use, HSE recognise that some compromise in process is needed to optimise the supply of PPE in times of extreme shortages and have 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 expect 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: e.g. 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 that healthcare workers are appropriately hydrated during prolonged use and are trained to recognise dehydration, fatigue and exhaustion while wearing PPE.

Further work on validating methods to safely reprocess masks and fluid repellent gowns is underway 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 personal protective equipment (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 key principles that should already be in place for all health and care delivery:

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

Key Principles

- **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

Specific Strategies

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 and 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 (e.g., heat, activity length, shift-length) and individual factors; in practice, this may vary from 2hrs up to 6hrs.
- 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, completing a shift), they are disposed of as clinical waste, unless they can be safely reused as outlined below.

Reuse
The key requirements are

- The facemask should be removed and discarded if soiled, damaged, or hard to breathe through.
- Facemasks 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 facemask
- Facemasks should be carefully folded so that 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 facemask
- Some models of RPE cannot be physically be 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 home made masks or cloth masks in health and care settings.

Gowns / Coveralls

Fluid repellent hospital gowns/ coveralls are indicated for use for the care patients in high risk areas, where aerosol generating procedures are being performed; for aerosol generating procedures.
There are three main options that can be considered as alternatives if gowns are not available:

- Reserve disposable, fluid repellent gown/ coveralls for AGPs and surgical procedures
- Disposable, non-fluid repellent gowns/ coveralls with a disposable plastic apron for high-risk settings and AGPs with forearm washing once gown/ coverall is removed
- Reusable (washable) surgical gowns/ coveralls or similar suitable clothing (e.g. long-sleeved laboratory coat, long-sleeved patient gown, industrial coverall) with a disposable plastic apron for AGPs and high-risk settings with forearm washing once gown/ 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/ coveralls for HCWs to use for higher risk clinical areas. This is currently recommended in the UK Infection Prevention and Control guidance.
If the gown/ 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).
Key factors that would safely reduce gown usage over a session though organisations should develop their own implementation and action plan suitable to their organisation;

- Labelling all higher risk area bays, single rooms, corridors, treatment rooms, nurse's stations as "clinical" areas within a specific hospital area. "Non-clinical" areas were limited to staff kitchen/rest areas and changing room.

- Once gown/ coverall is donned, the gown/ coverall remained 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/ coverall only when going from the clinical to non-clinical area of the ward, or if they were leaving the ward for a break.
- If leaving the higher risk area/ theatre ward with a patient to transfer them to another area they retained their gown/ coverall and other PPE.
- In particular, teams that assist with turning and moving patients ("proning teams"), allied health professionals and other teams to retain gowns/ coveralls on sessional basis, changing gloves/aprons between patients/ residents and performing hand hygiene.

Reuse
Consider shifting disposable gowns/ coveralls to reusable options, retaining disposable gowns only for high risk aerosol generating procedures.
If there are *NO available disposable gowns/ 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 with have to be considered if using these items.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/527542/Mgmt_and_provision.pdf

Eye Protection

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: 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 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 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.

References:

1. CDC strategies for US-healthcare settings on COVID-19: Strategies for Optimizing the Supply of PPE https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html
2. WHO's guidance on the Rational use of personal protective equipment for coronavirus disease 2019 https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages

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