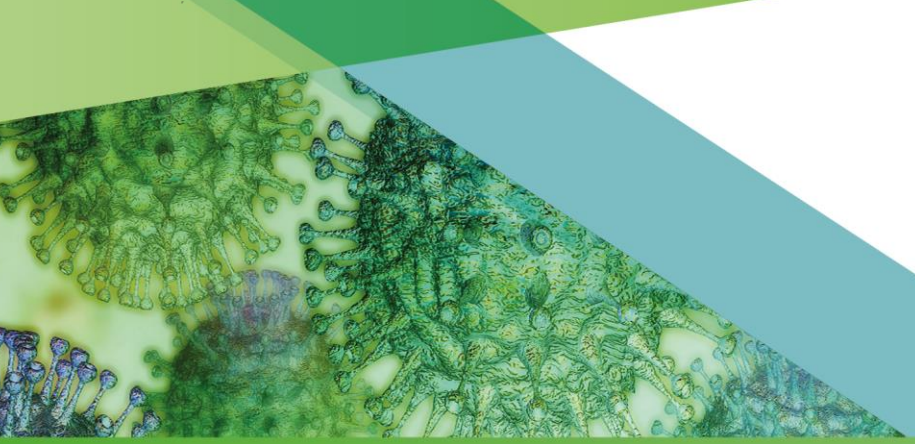

ECDC TECHNICAL REPORT

Infection prevention and control for COVID-19 in healthcare settings

March 2020

Scope of this document

This document aims to provide guidance to EU/EEA healthcare facilities and healthcare providers on infection prevention and control measures during the management of suspected and confirmed cases of COVID-19 infection in healthcare settings, including long-term care facilities (LTCF). It also offers guidance on the management of specimens in laboratories in the EU/EEA.

This is an update of the ECDC guidance from February 2020 'Infection prevention and control for the care of patients with 2019-nCoV in healthcare settings' [1]. This update addresses the possible limited supply of personal protective equipment (PPE), hand hygiene materials, and environmental hygiene materials for healthcare facilities in the EU/EEA countries and the United Kingdom.

Target audience

Hospital administrators, LTCF administrators and healthcare practitioners in EU/EEA countries and the United Kingdom.

Background

On 31 December 2019, a cluster of pneumonia cases of unknown aetiology was reported in Wuhan, Hubei Province, China. On 9 January 2020, China CDC reported a novel coronavirus in the SARS-CoV phylogenetic clade as the causative agent of this outbreak. The associated disease is now referred to as novel coronavirus disease 2019 (COVID-19). The clinical presentation of COVID-19 ranges from asymptomatic to severe pneumonia with acute respiratory distress syndrome, septic shock and multi-organ failure, which may result in death. Analyses of cases suggest that COVID-19 infection causes mild disease (i.e. non-pneumonia or mild pneumonia) in about 80% of cases. Most cases recover, 14 % have more severe disease, and 6% experience critical illness requiring specialist medical care, including mechanical ventilation [2]. The majority of the most severe illnesses and deaths have occurred among the elderly and those with other chronic underlying conditions. Additionally, older persons are at higher risk of adverse outcomes of COVID-19, including the requirement for specialised hospital care and a fatal outcome [3]. Residents in long-term care facilities (LTCF) are commonly more vulnerable to infections than the general population [10]. As COVID-19 is caused by a newly identified virus, there are no therapeutics or vaccines available, and there is presumed to be no pre-existing immunity in the population [3].

In most instances, coronaviruses are believed to be transmitted through large respiratory droplets from person to person, through inhalation or deposition on mucosal surfaces. Other routes implicated in transmission of coronaviruses include contact with contaminated fomites and inhalation of aerosols produced during aerosol-generating procedures. SARS-CoV-2 virus has been detected in respiratory, faecal and blood specimens [4]. The highest risk of healthcare-associated transmission occurs in the absence of standard precautions, when basic infection prevention and control measures for respiratory infections are not in place, and when handling patients

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whose COVID-19 infection is yet to be confirmed. Although airborne transmission is not considered the principal transmission route, we recommend a cautious approach because of possible transmission through aerosols [5,6].

More disease background information is available online (ECDC [7], WHO [8]) and in ECDC's Rapid Risk Assessment [3].

Healthcare settings

The following sections provide a high-level outline of technical measures and resources for reducing the risk of transmission of COVID-19 in healthcare settings (including LTCFs) and laboratories in the EU/EEA. It draws on interim advice produced by WHO and national agencies, and also expert opinion [9,11,12,15,29]

General infection prevention and control measures

People feeling ill with respiratory symptoms should be encouraged to contact healthcare services to seek medical advice by telephone or telemedicine/online.

Triage, initial contact and assessment (primary and emergency care)

- Emergency services and primary care staff, including physicians, nursing and administrative staff with patient contact, should be aware of: a) the current COVID-19 epidemiologic situation in their country and globally, b) known risk factors for infections; c) clinical symptoms and signs of COVID-19; d) recommended infection prevention and control measures, including those in this document; e) procedures for reporting and transfer of persons under investigation and of probable/confirmed cases
- Assess the onsite availability of appropriate personal protective equipment (PPE) for all personnel at the point-of-care to apply standard, contact and droplet precautions
- Triage by telephone or telemedicine/online, if possible, to reduce the number of people with symptoms of COVID-19 that have contact with healthcare
- Perform a point-of-care risk assessment to assess the likelihood of COVID-19 infection, including the clinical presentation of the patient and a review of clinical, epidemiological and travel history. This should aim to achieve a rapid evaluation of the risk of infectiousness, based on signs, symptoms and the procedures likely to result in infectious respiratory droplets and aerosols. The assessment should be based on the latest case definitions [13]
- Be aware of requirements for testing and the case definitions [13] for reporting of cases
- Consider, on a case-by-case risk assessment, the use of PPE for the different procedures to be performed. Based on the current knowledge on the transmission of COVID-19, in which respiratory droplets seem to play a major role (although airborne transmission cannot be ruled out at this stage), and taking into consideration the possible shortage of PPE in healthcare settings due to the increasing number of COVID-19 patients [14], the suggested set of PPE for droplet, contact and airborne transmission (gloves, goggles, gown and FFP2/FFP3 respirator) can be adapted for the clinical assessment of suspected COVID-19 cases as below:
    - Healthcare workers performing the first assessment without direct contact; the patient should wear a surgical mask and keep a distance of at least 1 metre. If possible, a physical barrier such as glass or a plastic teller window can be used to avoid direct contact and keep the distance; in such case no PPE is necessary [15]
    - If available, provide a surgical mask for patients with respiratory symptoms (e.g. cough)
    - Healthcare workers performing aerosol-generating procedures (AGP), such as swabbing [16], should wear the suggested PPE set for droplet, contact and airborne transmission (gloves, goggles, gown and FFP2/FFP3 respirator) [17]
    - If there is a shortage of FFP2/FFP3 respirators, healthcare workers performing procedures in direct contact with a suspected or confirmed case (but not at risk for generating aerosol) can consider wearing a mask with the highest available filter level, such as a surgical mask, in addition to gloves, goggles and gown.
- In order to maximize the use of PPE if there is an insufficient access to stocks of PPE materials, staff should be assigned to carry out procedures, or a procedure, in designated areas. For example, assign staff to swabbing procedures in a dedicated swabbing area. While swabbing patients, healthcare personnel can use the same respirator for several patients for a maximum of 4 hours without having to remove the respirator, as long as it is not damaged or soiled, unless the manufacturer explicitly advises against this [15].
- Be aware that suspected cases of COVID-19 should be isolated, or at least separated, from other patients. They should be instructed to wear a surgical mask and practice appropriate hand hygiene. If possible, dedicated toilet facilities should be made available. Non-essential contacts between suspected cases and other persons should be minimised

- Contact a designated 24/7 response service, such as local public health authorities to report the case, arrange diagnostic testing and, if the initial assessment indicates it is appropriate (e.g. symptoms and signs that increase risks of transmission), safe transfer to a designated acute care unit for diagnostic evaluation.

Patient transport

- Ensure the availability of a preparedness plan for ambulance transfers of suspected or confirmed COVID-19 cases, addressing the temporal and geographic coverage of adequately trained staff and equipment.
- For ambulance transfers of suspected or confirmed COVID-19 cases, ensure that healthcare staff wear PPE, the decontaminate the ambulance after the transfer of the patient, and practice safe waste management as per appropriate procedure.
  - For PPE use for healthcare workers travelling with the patient, please refer to the section above. It is the same as during the first contact with a patient (surgical mask in addition to gloves, goggles and gown) if there is a shortage of respirators and if there is a low risk of aerosol generation.
  - If available, provide a surgical mask for patients with respiratory symptoms (e.g. cough).
  - Persons sitting in the front of the ambulance, including the driver, will not be in contact with the patient (i.e. maintaining a distance of at least 1 meter). If there is no physical separation between the front and the back of the ambulance, a surgical mask should be considered [15].

Hospitals

Administrative measures

- Designate a staff member to be the lead for infection prevention and control and preparedness for COVID-19. This person will be responsible for staff training. Strongly consider initiating training sessions on infection prevention and control (IPC) for all staff, not only healthcare staff.
- If possible, also provide training to those who may called in at a later point in time to provide surge capacity, for example agency staff, student doctors/nurses, and retired health professionals.
- Ensure that all people, including patients and visitors, in the healthcare facility are aware of hand and respiratory hygiene, including cough etiquette.
- Constitute a hospital 'COVID-19 preparedness and response committee' (or use an existing emergency management committee) with representatives from all clinical and support departments as well as senior administrators. Participate in a local healthcare coalition; this should include neighbouring hospitals, local public health agencies, and emergency management. Members of multi-hospital health systems should integrate system-wide planning and local planning with other local hospitals [18].
- To ensure preparedness for a surge in critically ill patients, identify rooms to care for these patients. For example, identify which non-urgent outpatient visits can be re-scheduled or cancelled, and which elective urgent inpatient diagnostic and surgical procedures can be moved to the outpatient setting, re-scheduled or cancelled [19,20].
- Identify and designate additional separate units that can be used for diagnostic evaluation and treatment of COVID-19 patients.
- Plan for surge capacity, estimate the needs for patient beds, respiratory support, PPE, staff, diagnostics; also include laboratory capacity and therapeutics in your estimates.
- Ensure access to timely virological investigations in accordance with the algorithm for laboratory diagnosis of COVID-19 (Laboratory testing for coronavirus disease 2019 (COVID-19) in suspected human cases [21]).
- Be aware of the minimum requirements for designated units for the management of confirmed COVID-19 patients: the availability of isolation rooms with a dedicated bathroom, staff adequately trained in the safe diagnostic evaluation and management of COVID-19 patients, availability of appropriate PPE and hand hygiene products, adequate laboratory support, appropriate cleaning, and appropriate waste management procedures (see below under 'Environmental cleaning and waste management').
- Negative pressure isolation rooms are strongly recommended for aerosol-generating procedures (AGP) (see also under 'Patient management').

Patient management

- Confirmed cases requiring admission should be admitted to an isolation room with a dedicated bathroom. The placement in airborne-precaution single rooms with negative pressure and anteroom, if available, is encouraged, especially for patients requiring AGPs.
- Hospitals should consider cohorting confirmed COVID-19 patients, as if there is a large increase in the number of COVID-19 cases in a hospital, there may not be enough isolation rooms or airborne-precaution single rooms with negative pressures and ante-rooms. Additionally, this provides the opportunity to conserve the use of PPE.
- If there are high numbers of COVID-19 cases, designating entire sections of a facility solely to the treatment of the COVID-19 cases could reduce the potential transmission of COVID-19 to non-cases.

- Healthcare workers in contact with a confirmed case, or a suspected case of COVID-19, should wear PPE for contact, droplet and airborne transmission of pathogens: FFP2 or FFP3 respirator tested for fitting, eye protection (i.e. goggles or face shield), long-sleeved water-resistant gown and gloves [17].
- In order to maximize the use of PPE in the event of shortages, it is acceptable for staff to wear the same respirator while caring for multiple patients with the same diagnosis without removing the respirator if the respirator is not damaged, soiled or contaminated. This reduces consumption of PPE. The use of the same respirator while treating multiple patients should be considered; the maximum time a respirator can be worn is 4 hours, as long as it is not removed between patients or contraindicated by the manufacturer [15].
- Face masks (surgical masks) mainly protect from exhaled droplets. Their use is recommended if there is a shortage of respirators and on a case-by-case assessment. Surgical masks do not require fit testing [17].
- Aerosol-generating procedures (AGP) include, for example, tracheal intubation, bronchial suctioning, bronchoscopy, and sputum induction. These procedures have been linked to an increased risk of transmission of coronaviruses and require protection measures [10]. If there is a shortage of respirators, it is recommended that they are primarily used for AGP. AGP should be performed in a negative pressure isolation room. The number of persons in the room should be limited to a minimum during such procedures; all persons present should wear: a well-fitted FFP3 respirator, eye protection, long-sleeved impermeable protective gowns, and gloves [22]. Swabbing can be considered to be an AGP [16].
- Healthcare workers should strictly follow the procedures for the wearing (donning) and the safe removal (doffing) of PPE in correct sequence [17]. Active assistance during donning and doffing is a valid option for minimising the risk of accidental contamination.
- Hand hygiene should be performed immediately after removing PPE.
- It is essential to ensure that staff assigned to treat COVID-19 patients are trained in the proper use of PPE. Quality assurance should be promoted through appropriate systems before assigning staff to COVID-19 patient care; for example, hospitals could require documented participation in a training course to ensure a staff member's competency in the correct use of PPE.
- Staff providing care to COVID-19 cases need to be actively followed-up for development of symptoms and provided with occupational health support. Hospitals should maintain a record of all staff providing care for confirmed COVID-19 cases. These staff, and staff who have been exposed to cases before the implementation of infection control measures, should be vigilant for fever and any respiratory symptoms in the 14 days following the last exposure to a confirmed case, and should seek testing and thereafter self-isolate if they become unwell.
- The use of dedicated or, if possible, disposable medical equipment (e.g. blood pressure cuffs, stethoscopes and thermometers) is strongly recommended.
- Visits to COVID-19 patients should be limited to the absolute minimum. Visitors should receive support in their wearing of the same set of PPE that healthcare workers wear when in contact with the patient: surgical mask in addition to gloves, goggles and gown. If visitors keep at least 1 meter away from a patient for the duration of the visit, and PPE availability is limited, only a surgical mask may be worn [15].
- Physical contacts between visitors and patients should be strongly discouraged.
- A register of visitors should be maintained, if feasible, for the purposes of contact tracing. Visitors of a confirmed COVID-19 case should self-monitor for symptoms of COVID-19 for 14 days after the visit if periodic active monitoring (e.g. by telephone every few days) is not possible.
- The duration of infectivity for COVID-19 patients is currently not known definitely. COVID-19 virus can be initially detected in upper respiratory samples 1 to 2 days before the onset of symptoms and persist for 7 to 12 days in moderate cases, and up to two weeks in severe cases. In faeces, viral RNA has been detected in up to 30% of patients from day 5 after onset and up to 4 to 5 weeks [4]. Confirmed COVID-19 cases should remain in isolation until recovery from clinical symptoms of COVID-19. If there are sufficient resources, there is a benefit in testing asymptomatic patients before they are released from isolation. If resources are limited, testing of symptomatic people should have priority over the testing of asymptomatic patients before release from isolation [23].

Environmental cleaning and waste management

- Staff engaged in environmental cleaning and waste management should wear appropriate PPE. If there is an insufficient stock of respirators, then a surgical mask may be worn, as well as gloves, goggles and gown. In addition, the use of heavy-duty gloves and boots should be considered [15].
- Regular cleaning followed by disinfection is recommended, using hospital disinfectants active against viruses; cleaning in patient rooms is particularly important for frequently touched surfaces. If there is a shortage of hospital disinfectants, decontamination may be performed with 0.1% sodium hypochlorite (dilution 1:50 if household bleach at an initial concentration of 5% is used) after cleaning with a neutral detergent, although no data are available for the effectiveness of this approach against SARS-CoV-2 [24]. Surfaces that may become damaged by sodium hypochlorite may be cleaned with a neutral detergent, followed by a 70% concentration of ethanol.
- Waste should be treated as infectious clinical waste Category B (UN3291) [25] and handled in accordance with healthcare facility policies and local regulations.

Laboratory testing

- All specimens collected for laboratory investigation should be regarded as potentially infectious, and healthcare workers who collect or transport clinical specimens should adhere rigorously to standard precautions to minimise the possibility of exposure to pathogens. The WHO aide-memoire on standard precautions in health care is available online [26].
- Laboratories should adhere to the guidance provided by The European Committee for Standardisation: CWA15793 laboratory biorisk management [27] and the WHO (Laboratory testing for coronavirus disease 2019 (COVID-19) in suspected human cases) [21].

Management of the deceased

- Hospitals should be prepared to manage an increased number of dead bodies.
- Due to the possible persistence of the virus on surfaces (including bodies) for several days [28], the contact with a deceased body without using PPE should be avoided.
- If an autopsy needs to be performed, aerosol test procedures should be limited. Appropriate PPE should be used if there is risk to generate aerosols.

Long-term care facilities

LTCF (long-term care facility) administrators and healthcare administrators should implement the following baseline options for preparedness for COVID-19 and consider additional options for infection prevention and control in LTCFs with suspected or confirmed cases of COVID-19.

Baseline options for infection prevention and control

Administrative measures

- Provide signs at all entrances that lists the symptoms compatible with COVID-19 (fever, cough, shortness of breath) [29], informing visitors with any of these symptoms not to enter the LTCF.
- Ensure that all people within the LTCF and all who enter the LTCF practice appropriate hand hygiene measures, i.e. they should use soap and water, or alcohol-based hand rub.
- Assess new/returning residents when arriving at the LTCF for symptoms compatible with COVID-19; implement IPC practices for symptomatic residents (see below under 'Management of residents').
- Ensure that staff who have symptoms compatible with COVID-19 do not attend work and contact a pre-designated telephone number or contact point at the LTCF to inform them of their symptoms.
- Recommend that LTCF residents consider, if applicable, reducing their use of methods of transportation that have the potential for high number close contacts and consider minimising attendance at non-essential public events.
- Remind LTCF residents that postponing travelling to areas with cases of COVID-19 will reduce the number of potentially infectious contacts.
- Consider restricting access to the LTCF to non-essential visits.
- Designate a person (e.g. head doctor/nurse) in each facility to be the lead for COVID-19 preparedness and response at that facility. This person should:
  - be familiar with national/regional advice on preparedness and requirements for reporting of residents with symptoms compatible with COVID-19;
  - be aware of the preferred minimum requirements for the management of residents with symptoms compatible with COVID-19: a single room with dedicated bathroom, staff adequately trained in hand hygiene and the use of PPE, availability of appropriate PPE/hand hygiene products, and appropriate cleaning and waste management procedures;
  - be responsible for ensuring that all staff are trained in IPC, including hand hygiene;
  - ensure that the facility has a sufficient number of hand washing facilities;
  - update business continuity plans, if staff members become ill or have to self-isolate;
  - monitor local and national public health sources to understand COVID-19 activity in their community
- Designate a contact point (e.g. a liaison nurse for IPC) responsible for IPC training (including hand hygiene and standard precautions) of all those who work in the LTCF, including staff.
- If feasible, LTCFs should consider designating dedicated staff to care for residents with suspected/confirmed COVID-19 in order to reduce the likelihood of transmission to non-cases.
- Establish contact with external public health teams and infection control practitioners (such as local authorities and/or hospitals) that can provide additional advice on IPC. The LTCF should seek their advice to calculate its need for PPE and related products.
- Provide IPC training to all staff. All LTCF staff should follow rigorous hand hygiene practices as outlined in the WHO guidance for hand hygiene in outpatient and home-based care and long-term care facilities [30].
- Ensure that all people in the LTCF are aware of hand and respiratory hygiene, including cough etiquette [29].
- If possible, make alcohol-based hand rub available in every resident room, both inside and outside the room, and in all public areas [29]. If there is a shortage of alcohol-based hand rub, prioritise availability at the point-of-care.

- Ensure that soap dispensers and paper towels are available for hand washing [29]. If no paper towels are available, use clean cloth towels and replace them when they become wet [31].

Management of residents with symptoms of COVID-19

- If a resident in an LTCF shows clinical signs or symptoms of COVID-19 that require hospitalisation, contact the hospital before arranging transfer, if feasible. If no immediate hospitalisation is required, contact health authorities/health and services, as this is preferable to transferring the resident for testing at a GP practice or hospital.
- Patients that have signs or symptoms of COVID-19 should be transferred to single rooms with a separate bathroom. If no rooms with adjacent toilet are available, arrange for a mobile toilet.
- Residents with respiratory symptoms should not be moved within the facility; they should be kept away from communal indoor areas and not get closer than 1 metre to other residents. All patient transfers within the LTCF should follow a pre-designated route, thus minimising the possibility of onward transmission. During all internal transfer, the resident should be wearing a face mask, if tolerated.
- Ensure that all LTCF staff are aware of the residents who have symptoms compatible with COVID-19 or are confirmed ill with the disease.
- If appropriate, consider posting information on IPC precautions on all doors of affected residents, especially in those areas that have suspected or confirmed COVID-19 cases.
- If possible, use dedicated medical equipment for residents (e.g. dedicated blood pressure cuffs and thermometers), or disposable medical equipment.
- Healthcare workers in contact with residents with respiratory infections should wear PPE: eye protection (i.e. goggles or face shield), long-sleeved water-resistant gown, and gloves [17]. Face masks (surgical masks) are recommended when treating a patient with respiratory symptoms.
- Healthcare workers should strictly follow the procedures for the wearing (donning) and the safe removal (doffing) of PPE in correct sequence [17]. Active assistance during donning and doffing is a valid option for minimising the risk of accidental contamination.
- Hand hygiene should be performed immediately after removing PPE.
- If available, FFP2/3 respirators should be worn during aerosol-generating procedures, for example procedures inducing coughing or sputum [32].

Environmental cleaning and waste management

- Regular cleaning followed by disinfection is recommended; cleaning personnel should use hospital disinfectants active against viruses for all common LTCF areas and residents' rooms (furniture and frequently touched surfaces). If there is a shortage of hospital disinfectants, decontamination may be performed with 0.1% sodium hypochlorite (dilution 1:50 if household bleach at an initial concentration of 5% is used) after cleaning with a neutral detergent, although no data are available on the effectiveness of this approach against SARS-CoV-2 [24]. Surfaces that may become damaged by sodium hypochlorite may be cleaned with a neutral detergent, followed by a 70% concentration of ethanol.
- Waste should be treated as infectious clinical waste Category B (UN3291) [25] and handled in accordance with healthcare facility policies and local regulations.

Additional options for infection prevention and control in LTCFs with suspected or confirmed cases of COVID-19

LTCF administrators and healthcare workers should consider implementing the following options for response and mitigation of COVID-19 – in addition to the options above – to prevent and control the COVID-19 outbreak [22]:

Administrative measures

- Consult with local health authorities regarding specific local measures.
- Implement the preparedness actions listed above under the baseline scenario.
- Reinforce the message that people with respiratory symptoms should not enter the LTCF.
- Check regularly that all people in the LTCF are aware of hand and respiratory hygiene, including cough etiquette [29]. Physical contacts between the visitors and residents should be discouraged.
- Ensure the readiness of individual rooms/cohorted areas and staff for the management of suspected/confirmed cases. If advised by national/local authorities, LTCFs may consider designating a separate unit/building for the cohorting of cases with COVID-19-compatible symptoms.
- Consider informing all residents when there is a confirmed case and what measures are planned; providing regular updates.
- Institute daily monitoring of all residents for symptoms, e.g. measure body temperature.
- Restrict access to the LTCF; only admit essential services and new residents.
- Consider teleworking for relevant staff.
- Reinforce recommendations to residents regarding external travel. Symptomatic residents with mild symptoms should be strongly advised to stay inside the facility if possible; they should also avoid all common areas .
- Strongly consider postponing or cancelling communal activities and external travel for residents.
- Residents should only be relocated to other facilities if clinically necessary, for example if the LTCF cannot provide an appropriate level of care [22].

Patient management

- Also consult the options listed above for COVID-19 cases in hospitals, as some of these measures are applicable to some LTCF types.

Environmental cleaning and waste management

- In addition to the above recommendations, cleaning and waste management staff should wear appropriate PPE: surgical mask (if there is a shortage of respirators), to gloves, goggles and gown. In addition, the use of heavy-duty gloves and boots should be considered [15].

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Rational use of PPE and hand hygiene materials for the care and management of COVID-19 patients

As of March 2020, countries worldwide affected by COVID-19 are experiencing reduced access to personal protective equipment (PPE) and hand hygiene materials [14]. An immediate priority has been set at EU level to ensure adequate production and supply of PPE for healthcare workers and patients, and a joint procurement process has been launched by the European Commission for interested EU Member States. Coordinated supply chains for PPE should ensure distribution of such materials to healthcare systems in order to reduce the potential for healthcare-associated transmission to vulnerable groups and healthcare workers [15]. Cross-border shipments of supplies and donations to highly affected areas should continue in order to decrease overall infection pressures in EU/EEA countries.

This document highlights best practices for PPE usage and options for hospitals and LTCFs that have limited access to PPE materials. The main priorities in this document for rational use are in concordance with detailed guidance published by WHO in February 2020 [15]. A nasopharyngeal swab is also considered an aerosol-generating procedure (AGP), because, for example, it can induce coughing [16].

In order to maximize the use of available PPE in the event of insufficient stocks, staff should be allocated to perform a procedure, or set of procedures, in designated areas. For example, swabbing procedures should be carried out in a dedicated swabbing area by one staff member who could then use the same PPE for several hours. Cohorting of COVID-19 cases to designated areas of a hospital, or indeed to dedicated hospitals, should be considered, to minimise PPE stock requirements [22].

Priorities for use of respirators (FFP2/3)

- The highest priority is for healthcare workers, most particularly those performing AGP, including tracheal intubation, bronchial suctioning, bronchoscopy, and sputum induction. ECDC emphasises that taking a nasopharyngeal swab as part of a test for COVID-19 is an AGP.
- Respirators can be used for up to 4 hours for multiple patients without removing them [15], unless the respirator is damaged, soiled or contaminated, for example a symptomatic suspected case coughing on them.
- In the absence of FFP2/3 respirators, healthcare workers should use masks with the highest available filter level.
- If there is an insufficient stock of respirators, then staff engaged in environmental cleaning and waste management should wear a surgical mask, in addition to gloves, goggles and gown [15].

Priorities for use of surgical masks

- The highest priority are for symptomatic confirmed cases of COVID-19, followed by suspected cases.
- The next highest priority is for those caring for COVID-19 patients, if no respirators are available.

Priorities for use of alcohol-based hand rub

- Prioritise rigorous hand-washing practices using water and soap, ensuring access to hand-washing facilities.
- If alcohol-based hand rub is not available, the highest priority is at the point-of-care, prioritising confirmed cases. If sufficient stocks are available, place in common areas with high footfall outside of designated COVID-19 areas

Priorities for use of other PPE and hand hygiene products

- If insufficient quantities of gowns are available, use aprons.
- If insufficient quantities of goggles and/or visors are available for the recommended uses described below, use products that can be decontaminated, if available. Otherwise, consider decontamination and reuse, consulting the guidelines of the manufacturer.
- Regular cleaning followed by disinfection is recommended, using hospital disinfectants active against viruses, for rooms accessed by patients/residents, furniture and frequently touched surfaces. In the event of shortages of hospital disinfectants, decontamination may be performed using 0.1% sodium hypochlorite (dilution 1:50 if household bleach at an initial concentration of 5% is used) after cleaning with a neutral detergent, although no data are available for the effectiveness of this approach against COVID-19 [24]. Surfaces that may become damaged by sodium hypochlorite may be cleaned with a neutral detergent followed by a 70% concentration of ethanol.
- In LTCFs with insufficient quantities of paper towels, use clean cloth towels and replace them regularly, washing them with a detergent such as household washing powder [31].

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