



European Centre for Disease Prevention and Control

# ECDC Recommendations for use of PPE in the context of the COVID-19 pandemic


5.1.2a

on behalf of the  
PHE COVID-19 Support group / IPC team

## **ECDC guidance on Personal Protective Equipment (PPE) for health professionals and the community**



- ECDC Guidance on PPE recommended for health professionals in hospitals and primary care
- ECDC Guidance on PPE for cleaning personnel
- ECDC Guidance on face masks for healthcare and non-healthcare settings
- ECDC Guidance on gloves for healthcare and non-healthcare settings



ECDC TECHNICAL REPORT

**Guidance for wearing and removing personal protective equipment in healthcare settings for the care of patients with suspected or confirmed COVID-19**

February 2020

**Scope of this document**

This document provides support to healthcare workers managing suspected or confirmed cases of novel coronavirus 2019 (COVID-19). The general objectives of the document are:

- to present the minimal set of personal protective equipment (PPE) required for managing suspected or confirmed COVID-19 cases;
- to make healthcare workers aware of the critical aspects of the donning and doffing of PPE; and
- to strengthen occupational safety in healthcare workers for patients suspected of, or confirmed with, COVID-19.

This document is based on current COVID-19 knowledge and PPE best practices. ECDC will update this document based on the evolving situation and if new relevant information arises.

**Target audience**

Healthcare workers and infection prevention and control personnel in EU/EEA countries and in the United Kingdom.

**Background**

**What is SARS-CoV-2 and COVID-19?**

The causative agent involved in the current outbreaks of COVID-19 is a virus belonging to the family of Coronaviridae (genus: Betacoronavirus), a large family of enveloped, positive-sense single-stranded RNA viruses. Coronaviruses are transmitted in most instances through large respiratory droplets and contact transmission, but other modes of transmission (i.e. airborne and faeco-oral) have also been proposed.

The average incubation period is estimated at 5 to 6 days, ranging from 0 to 14 days [1]. There is currently no specific treatment or vaccine against COVID-19.

More disease background information is available online from ECDC [2] and WHO [3], and in the last ECDC Rapid Risk Assessment [4].

**Suggested minimal PPE set**

The suggested minimal PPE set protects from contact, droplet and airborne transmission. The composition of the set is described in Table 1 and shown in Figure 1.

- **Scope**
  - support healthcare workers managing suspected or confirmed cases of COVID-19.
  - present the minimal set of personal protective equipment (PPE) required for managing suspected or confirmed COVID-19 cases;
  - to make healthcare workers aware of the critical aspects of the donning and doffing of PPE; and
  - to strengthen occupational safety in healthcare workers for patients suspected of, or confirmed with, COVID-19.
- **Target audience**
  - Public health authorities in EU/EEA Member States and the United Kingdom

**Link: [Guidance for wearing and removing personal protective equipment in healthcare settings for the care of patients with suspected or confirmed COVID-19](#)**



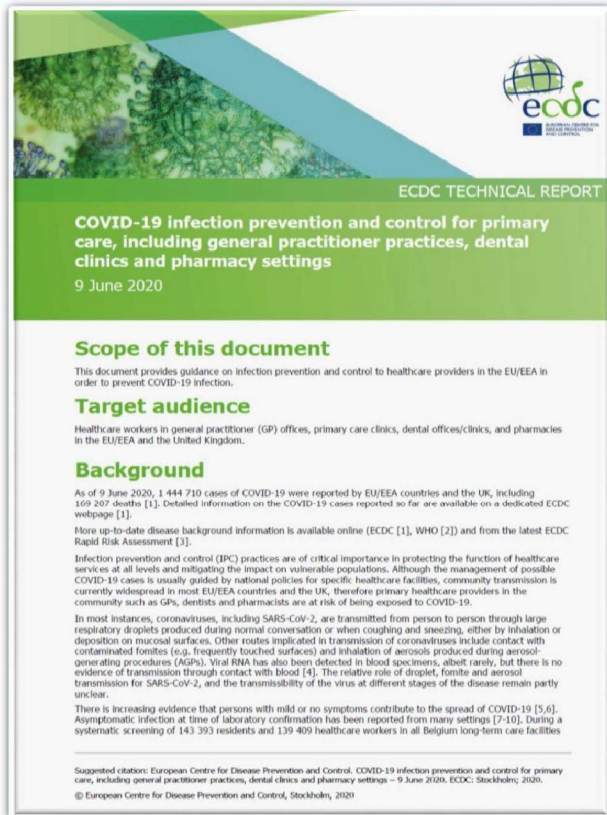
## PPE for the management of COVID-19 cases in hospitals



**Table 1.** Minimal composition of a set of PPE for the management of suspected or confirmed cases of COVID-19

Protection	Suggested PPE
<b>Respiratory protection</b>	FFP2 or FFP3 respirator (valved or non-valved version)*
<b>Eye protection</b>	Goggles (or face shield)
<b>Body protection</b>	Long-sleeved water-resistant gown
<b>Hand protection</b>	Gloves

\* In case of shortage of respirators, the use of face masks (surgical or procedural masks) is recommended. When this type of PPE is used, the limitations and risks connected to its use should be assessed on a case-by-case basis.



- Scope
  - provide guidance on infection prevention and control to healthcare providers in the EU/EEA in order to prevent COVID-19 infection
  
- Target audience
  - Healthcare workers in general practitioner (GP) offices, primary care clinics, dental offices/clinics, and pharmacies in the EU/EEA and the United Kingdom.

Link: [COVID-19 infection prevention and control for primary care, including general practitioner practices, dental clinics and pharmacy settings](#)

## PPE for the management of COVID-19 cases in primary care



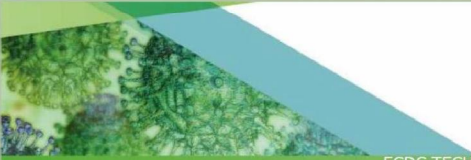
- Healthcare professionals should wear PPE:
  - when performing triage,
  - examining or providing care to patients with COVID-19-compatible symptoms, or
  - performing high-risk procedures (e.g. physical examination of the oropharynx or nasopharyngeal swabbing) in patients with or without symptoms.
- The suggested set of PPE includes:
  - FFP2/3 respirator (or medical face mask if there is a shortage of respirators),
  - goggles or face shield, and
  - gloves.
  - Consider the use of a long-sleeved gown, especially if there is a risk of exposure to body fluids;
- When seeing patients without COVID-19-compatible symptoms:
  - wear at least a medical face mask.
  - gloves must be changed between patients, and meticulous hand hygiene must be performed before and after examining the patient and removing the PPE. In the event of shortage of gloves, the examination can be performed without gloves; hand hygiene should follow.
  - The recommendations for the use of PPE indicated above also apply to home consultations.




## PPE for cleaning personnel -I (healthcare and community)

- Scope
  - provide guidance to EU/EEA Member States on environmental cleaning in healthcare and non-healthcare settings during the COVID-19 pandemic
  
- Target audience
  - Public health authorities in EU/EEA Member States and the United Kingdom

Link: [Disinfection of environments in healthcare and non-healthcare settings potentially contaminated with SARS-CoV-2](#)





ECDC TECHNICAL REPORT

### Disinfection of environments in healthcare and non-healthcare settings potentially contaminated with SARS-CoV-2

March 2020

**Scope of this document**

This document provides guidance to EU/EEA Member States on environmental cleaning in healthcare and non-healthcare settings during the COVID-19 pandemic.

**Target audience**

Public health authorities in EU/EEA Member States and the United Kingdom.

**Background**

SARS-CoV-2 virus has been detected in respiratory secretions (upper and lower respiratory tract) and faeces. The main route of transmission is considered to be through inhalation of large respiratory droplets or deposition on mucosae. Viral RNA has been detected in blood but there is no evidence that SARS-CoV-2 can be transmitted through contact with blood [1,2].

Contact with contaminated fomites due to persistence of the virus on surfaces [3] is another route implicated in the transmission of SARS-CoV-2 virus. Faecal-oral and airborne modes have also been considered, but their role in the transmission of SARS-CoV-2 is currently unknown. In order to reduce the risk of infection through fomites, it is essential to establish procedures for the correct disinfection of environments that could have been contaminated with SARS-CoV-2.

**Evidence of environmental persistence**

Recent publications have evaluated the survival of SARS-CoV-2 on different surfaces. According to van Doremalen et al., the environmental stability of SARS-CoV-2 is up to three hours in the air post-aerosolisation, up to four hours on copper, up to 24 hours on cardboard and up to two to three days on plastic and stainless steel, albeit with significantly decreased titres [3]. These findings are comparable with results obtained for environmental stability of SARS-CoV-1. These findings resulted from experiments in a controlled environment and should be interpreted with caution in the real-life environment.

Moreover, different levels of environmental contamination have been detected in rooms of COVID-19 patients, ranging from 1 out of 13 to 13 out of 15 samples testing positive for SARS-CoV-2 before cleaning. No air samples were positive in these studies, but one sample from an air exhaust outlet was positive indicating that virus particles may be displaced by air and deposited on surfaces [4,5].

In a study of environmental contamination in a Chinese hospital during the COVID-19 outbreak, SARS-CoV-2 was detected in environmental samples from the COVID-19 dedicated intensive care units (ICU), the COVID-19 dedicated obstetric isolation ward and the COVID-19 dedicated isolation ward. SARS-CoV-2 was also detected on objects such as the self-service printers used by patients to self-print the results of their exams, desktop keyboards

Suggested citation: European Centre for Disease Prevention and Control. Disinfection of environments in healthcare and non-healthcare settings potentially contaminated with SARS-CoV-2. ECDC: Stockholm; 2020.  
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## PPE for cleaning personnel in healthcare settings -II



### For **healthcare settings**:

- surgical mask
- disposable long-sleeved water-resistant gown
- gloves
- The use of a filtering facial piece (FFP) class 2 or 3 should be considered when cleaning facilities where AGP have been performed. The use of heavy-duty gloves should be also considered.
- Hand hygiene should be performed every time PPE, such as gloves, are removed
- Staff engaged in waste management should wear PPE

## PPE for cleaning personnel in non-healthcare settings-III



### For **Non- healthcare settings**:

#### A. After a COVID-19 case has been detected

- surgical mask
- uniform and single-use plastic apron
- gloves

#### B. All types of frequently visited premises


- usual set of PPE (e.g. uniform and gloves)



## Using face masks in the community

- Face mask use in public settings is a measure to be considered especially in **indoor settings when physical distancing cannot be guaranteed**
- It is not clear what is the effect on top of other non-pharmaceutical interventions
- It is unclear if face mask use in public settings is sufficient to significantly reduce transmission without the implementation of other measures
- **Addressing barriers**, such as availability and adherence, and facilitators, such as educational campaigns, is key for a successful face mask use policy
- **Monitoring the implementation** of the strategy is a means to identify gaps and guide further actions

Link: [Using face masks in the community - Reducing COVID-19 transmission from potentially asymptomatic or pre-symptomatic people through the use of face masks](#)



TECHNICAL REPORT

## Using face masks in the community

**Reducing COVID-19 transmission from potentially asymptomatic or pre-symptomatic people through the use of face masks**

8 April 2020

### Scope of this document

This document provides the ECDC opinion on the suitability of face masks and other face covers in the community by individuals who are not ill in order to reduce potential pre-symptomatic or asymptomatic transmission of COVID-19 from the mask wearer to others.

### Target audience

Public health authorities in the EU/EEA countries and the United Kingdom.

### Background

- **A medical face mask** (also known as surgical or procedure mask) is a medical device covering the mouth, nose and chin ensuring a barrier that limits the transition of an infective agent between the hospital staff and the patient. They are used by healthcare workers to prevent large respiratory droplets and splashes from reaching the mouth and the nose of the wearer and help reduce and/or control at the source the spread of large respiratory droplets from the person wearing the face mask [1]. Medical masks comply with requirements defined in European Standard EN 14683:2014.
- **Non-medical face masks** (or 'community' masks) include various forms of self-made or commercial masks or face covers made of cloth, other textiles or other materials such as paper. They are not standardised and are not intended for use in healthcare settings or by healthcare professionals.
- **A respirator** or filtering face piece (FFP), is designed to protect the wearer from exposure to airborne contaminants (e.g. from inhaling infectious agents associated with inhaling small and large particle droplets) and is classified as personal protective equipment (PPE) [1]. Respirators are mainly used by healthcare workers to protect themselves, especially during aerosol-generating procedures. Valved respirators are not appropriate for use as a means of source control since they do not prevent the release of exhaled respiratory particles from the wearer into the environment [2]. Respirators comply with requirements defined in European Standard EN 149:2001+A1:2009.

Suggested citation: European Centre for Disease Prevention and Control. Using face masks in the community. Stockholm: ECDC; 2020.

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## Face masks for healthcare and community settings




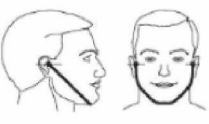


	Medical mask (or 'surgical')	Respirator (FFP, N95 etc)	Non-medical or 'community' mask
<b>User</b>	HCW and public	Mostly HCW, ? Public	Public
<b>Filtering</b>	Average to high	Highest (>95%)	Low to high
<b>Indication</b>	Source control when used by HCWs and sick persons and protection against droplets and splashes	Protection against droplets and aerosols	Mostly source control ? Self protection
<b>Evidence for HCWs</b>	Strong for self-protective effect	Strong for self-protective effect	Weak and conflicting for protective effect
<b>Evidence for the public</b>	Weak and mostly indirect for protective effect and source control	Not available	Weak indirect for protective effect and source control

# Standards for community face masks



CEN	SN-CWA 17553:2020
<b>WORKSHOP</b>	<b>CWA 17553</b>
<b>AGREEMENT</b>	June 2020
ICS 13.340.20	
English version	
Community face coverings - Guide to minimum requirements, methods of testing and use	

			
<b>Bigonial breadth</b> 132,5 - 144,5 mm	<b>Chin-Sellium length</b> 123 - 135 mm	<b>Interpupillary distance</b> 65 - 71 mm	<b>Bitragion chin arc</b> 295 - 315 mm

## Construction

### Filtration efficacy

- 70% or 90% for 3µm particles

### Material

### Packaging

## What is the evidence of using face masks to prevent COVID-19 transmission in healthcare and non-healthcare settings?



<p><b>High transmission settings (households, colleges, healthcare)</b></p>	<p>Small number of studies out of healthcare Small protective or no effect <b>Caveats:</b> often underpowered, methodological problems (adherence, inappropriate controls), most evidence from influenza</p>
<p><b>Basic science experimental studies</b></p>	<p>Medical and some non-medical face masks: Filter a large proportion of respiratory droplets Decrease the amount of expelled droplets <b>Caveats:</b> indirect evidence</p>
<p><b>Natural experiments</b></p>	<p>Introduction of face mask use in populations linked to decreased COVID-19 incidence (city of Jena in Germany, various states in the US) <b>Caveats:</b> effect of other concurrent measures</p>

MacIntyre CR, *BMJ* 2015; Chu DK, *Lancet* 2020; Jefferson T, *MedRxiv* 2020; Greenhalgh T, *CEBM* 2020; Howard J, *PrePrints* 2020; Norwegian Institute of Public Health, 2020;

## When to consider the use of face masks in the community



- When physical distancing cannot be guaranteed
- Indoor settings (e.g. supermarkets, shops, public transport, workplace)
- In overcrowded outdoor situations
- By persons in vulnerable groups
- In areas with community transmission of COVID-19



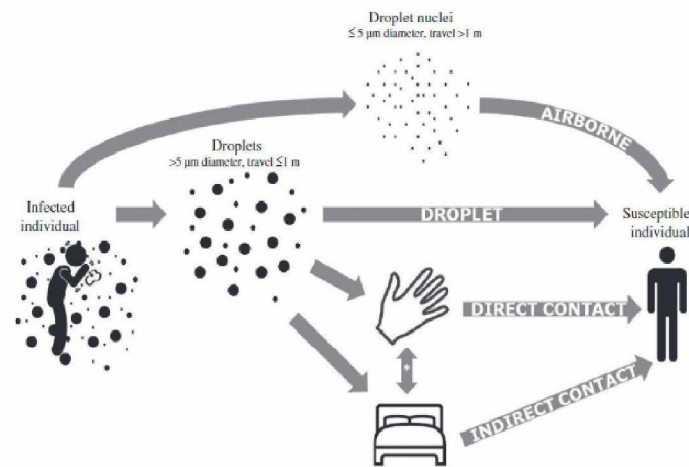
- **Scope**
  - Scientific evidence and guidance for health care and the public in the community on using gloves as a preventive measure during the COVID-19 pandemic
  - Wearing gloves not performed in the context of COVID-19 but for personal protection and mandated by relevant regulations in occupational settings such as in industrial applications or in the food or pharmaceutical industry to avoid contamination of products is not in the scope of this document.
- **Target audience**
  - Public health authorities in EU/EEA Member States and the United Kingdom

Link: [\*\*Use of gloves in healthcare and non-healthcare settings in the context of the COVID 19 pandemic\*\*](#)

## Suggested low SARS-CoV-2 transmission through direct contact



- Primary route of transmission is through respiratory droplets
- Transmission through touching contaminated surfaces and objects and subsequently touching the mucous membranes of the mouth, nose and eye is believed to play a role but has not been confirmed by evidence so far
- The virus is not transmitted through neither intact nor non-intact skin
- Infectious SARS-CoV-2 can survive on plastic for up to 72 hours



Otter JA. *J Hosp Inf* 2016



## Types of gloves

- Many different types of gloves to:
  - protect hands from occupational hazards (including biohazards) and
  - provide a sterile skin cover for specific tasks.
- Can be multiuse or disposable.
- In healthcare settings medical gloves are used during procedures to prevent contamination between patients and healthcare providers.
- Medical gloves are either **examination gloves** that may or may not be sterile, and **surgical gloves** that are mostly used during various medical procedures and surgical operations and are sterile and stronger.
- In the EU/EEA: gloves are addressed in the Council Directive 93/42/EEC on medical devices and European Standard EN 455 on medical gloves for single use.
- Most common materials for medical use: latex and nitrile rubber



## Use of gloves in healthcare settings



Gloves are used in healthcare settings:

- risk of contact with blood and other body fluids
- during surgical operations
- risk of transmission of infectious organisms through direct contact – “contact precautions”
- in microbiology laboratories

In the context of COVID-19 there is **insufficient evidence that gloves confer additional protection** to proper hand hygiene

Gloves are recommended **as part of ‘contact precautions’** in healthcare settings

**Meticulous hand hygiene is indispensable** before wearing and immediately after removing the gloves

## Use of gloves in the community in the context of COVID-19



**No evidence for a protective effect** of gloves against respiratory viruses outside healthcare settings

Recommended in the community **only for persons caring for COVID-19 cases** in the household and a limited number of occupations, e.g. cleaners

Use of gloves may lead to **neglecting hand hygiene** with consequent contamination of surfaces and self-contamination when removing the gloves

Use of gloves can lead to **skin side-effects**

The **generation of waste** from unnecessary glove use can be damaging to the environment



## Conclusions



- Use of gloves in the community for the prevention of COVID-19 is generally discouraged
- Decontamination and extended use of gloves are discouraged



**Thank you**



**Acknowledgements:**

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