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WHO, WHERE, HOW

OVERVIEW OF PERSONAL PROTECTIVE EQUIPMENT (PPE) RECOMMENDED FOR PERSONNEL, CREW AND PASSENGERS AT POINTS OF ENTRY AND ON BOARD CONVEYANCES IN THE CONTEXT OF COVID-19 PANDEMIC

Version 4

19 May 2020^(*)

^(*) The EU HEALTHY GATEWAYS Joint Action has received funding from the European Union, in the framework of the Third Health Programme (2014-2020). The content of this document represents the views of the author only and is his/her sole responsibility; it cannot be considered to reflect the views of the European Commission and/or the Consumers, Health, Agriculture and Food Executive Agency (CHAFAEA) or any other body of the European Union. The European Commission and the Agency do not accept any responsibility for use that may be made of the information it contains.

Contents

1. Introduction	3
2. Background	3
2.1 General considerations in all cases at points of entry and on board conveyances	5
2.2 Overview of personal protective equipment (PPE)	6
3. PPE at points of entry	7
3.1 Transport hubs	7
3.2 Administrative areas at the point of entry where staff interact with passengers	8
3.3 Medical facilities at the point of entry.....	12
3.4 Ambulances/transfer vehicles from the point of entry	14
3.5 Cargo and baggage handling areas	16
3.6 Cleaning and disinfection of affected conveyances and contaminated areas at point of entry	16
4. PPE on board aircrafts	17
4.1 PPE for cabin crew and aviation passengers	18
4.2 PPE for other personnel (maintenance, ground/technical crew).....	21
5. PPE on board ships	22
5.1 PPE for isolation space/medical facility on board ship	22
5.2 PPE for interaction between ship and shore-based personnel	24
5.3 PPE for interaction among crew members	26
5.4 PPE for maintenance crew	28
6. PPE on board land transport conveyances	29
6.1 PPE for crew and rail passengers	29
6.2 PPE for crew and bus/coach passengers.....	31

1. Introduction

This overview has been prepared under the framework of the EU HEALTHY GATEWAYS joint action (Grant Agreement 801493).

The document was produced considering interim advice developed by EU HEALTHY GATEWAYS for preparedness and response to cases of COVID-19 at points of entry in EU/EEA Member States (<https://www.healthygateways.eu/Novel-coronavirus#Interim>), the Communication issued by the European Commission “COVID-19: Guidelines on the progressive restoration of transport services and connectivity”¹, current evidence and guidelines (as of 18 May 2020) from technical documents of the European Centre for Disease Prevention and Control (ECDC) (<https://www.ecdc.europa.eu/en/coronavirus/guidance-and-technical-reports>) and the World Health Organization (WHO) (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>). Moreover, this document considers transport mode-specific guidance from several EU agencies and associations addressing air, maritime and land transport.

2. Background

The recommended PPE provided in this document is in addition to the PPE used for safety purposes under routine circumstances. For its effectiveness it is important that adequate supplies of PPE are available in different sizes, personnel are adequately trained in selection and use, and that PPE is used in combination with other personal protective measures (e.g. hand hygiene, respiratory etiquette, avoidance of touching mouth/nose/eyes and physical distancing). Moreover, PPE should be used in combination with other administrative and engineering controls.

This guidance has been prepared considering currently available evidence about SARS-CoV-2 transmission (human-to-human transmission via respiratory droplets or contact)². This document also follows a precautionary approach considering the lack of evidence to exclude other transmission modes, including airborne transmission (e.g. during aerosol generating procedures) or after touching contaminated environmental surfaces. SARS-CoV-2 persists on surfaces 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 titres³. These findings resulted from experiments in a controlled environment and should be interpreted with caution when extrapolating to real life.

Evidence regarding the transmission of SARS-CoV-2 suggests that while the virus is transmitted mainly by symptomatic laboratory confirmed cases, persons who are pre-symptomatic and in early stages of infection (e.g. experiencing mild or no symptoms) can contribute to transmission of the virus^{4,5}. In community settings during epidemic situations where the number of persons who are pre-symptomatic is expected to be high, the use of face masks in the community **may** be a means of source control and could be considered in certain situations⁵. Wearing cloth face coverings (non-medical “community” face masks) in public settings could be considered where other physical distancing measures are challenging to implement such as grocery stores or on public transport, especially in areas with community-based

transmission⁶. While WHO advises that there is not currently sufficient evidence for using or not using face masks in the community, they suggest countries follow a risk-based approach when considering the use of face masks in the community by healthy people^{4,7}. Possible benefits for community use of face masks, such as minimizing risk of exposure from persons who are pre-symptomatic should be considered against possible risks regarding face mask use, including improper use and disposal^{4,7}. People showing COVID-19 compatible symptoms should not travel on any public conveyance. Competent authorities could consider advising passengers and crew on board any type of public conveyance operating nationally or internationally, who are not showing symptoms compatible with COVID-19 to wear a face mask^{1,8,9}. Public conveyances include aircrafts, cruise ships, cargo ships, ferry boats, inland navigation vessels, buses, taxis or other non-private vehicles, metros and trains. Furthermore, it could be considered to advise for the use of face masks in transport hubs where it is challenging to maintain physical distancing measures¹.

Dependent on the specific circumstances and settings presented in the tables below, the suggested PPE listed are to prevent droplet, contact and airborne transmission of SARS-CoV-2.

The WHO indicates that considering global stockpiles of PPE are inadequate (especially for respirators and medical masks) and there is a surge in global demand, it should be ensured that PPE use is rationalized and appropriate to optimize the use of available PPE¹⁰.

This EU HEALTHY GATEWAYS guidance document should be considered in synergy with the following advice from:

- ECDC on rational use of PPE and hand hygiene materials for the care and management of COVID-19 *ECDC Technical Report – Infection prevention and control and preparedness for COVID-19 in healthcare settings - Third update (13 May 2020)*: <https://www.ecdc.europa.eu/en/publications-data/infection-prevention-and-control-and-preparedness-covid-19-healthcare-settings>
- WHO interim guidance on considerations for decision making processes during severe shortages of PPE, including potential temporary measures for PPE extended use, reprocessing followed by reuse, and possible alternative items that could be used compared with recommended standards: *Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages*: https://apps.who.int/iris/bitstream/handle/10665/331498/WHO-2019-nCoV-IPCPE_use-2020.2-eng.pdf?sequence=1&isAllowed=y

As the supply of appropriate PPE suggested in this EU HEALTHY GATEWAYS document may not be readily available and challenging to obtain in some EU Member States, the above mentioned ECDC technical report and WHO interim guidance should be considered in decision making for severe shortages of PPE.

2.1 General considerations in all cases at points of entry and on board conveyances

- Follow proper wearing (donning) and removing (doffing) procedures/best practices for PPE:
 - ECDC guidance for donning and doffing PPE in healthcare settings for the care of patients with suspect or confirmed COVID-19 cases can be found here: <https://www.ecdc.europa.eu/en/publications-data/guidance-wearing-and-removing-personal-protective-equipment-healthcare-settings>
 - ECDC micro-learning on non-pharmaceutical countermeasures linked to personal protection, including procedures for donning and doffing of PPE can be found here: <https://eva.ecdc.europa.eu/mod/scorm/view.php?id=10009>
 - WHO guidance on mask management can be found here: [https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-\(2019-ncov\)-outbreak](https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak)
 - WHO Q&A: Masks and COVID-19 can be found here: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-on-covid-19-and-masks>
- Perform frequent hand hygiene with soap and water or alcohol-based hand rub solution, especially before wearing and after removing PPE.
- Ensure disposable PPE and any other soiled single-use items are properly disposed of as infectious waste (e.g. in a biohazard bag or secured plastic bag labeled “biohazard”).
- Ensure non-single use PPE and items are decontaminated in accordance with manufacturers’ instructions.
- Maintain at least 1.5 metres physical distance from others at all times, as far as practicable.
- Any policies regarding the use of PPE should be based on and supported by training and risk communication strategies aimed at different target groups (e.g. health care and non-health care professionals). Guidance from WHO regarding risk communication in the context of COVID-19 can be found here:
 - *WHO Interim Guidance: Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response (16 March 2020)*: [https://www.who.int/publications-detail/risk-communication-and-community-engagement-\(rcce\)-action-plan-guidance](https://www.who.int/publications-detail/risk-communication-and-community-engagement-(rcce)-action-plan-guidance)
 - *WHO Interim Guidance: Risk communication and community engagement readiness and response to coronavirus disease (COVID-19). 19 March 2020* [https://www.who.int/publications-detail/risk-communication-and-community-engagement-readiness-and-initial-response-for-novel-coronaviruses-\(-ncov\)](https://www.who.int/publications-detail/risk-communication-and-community-engagement-readiness-and-initial-response-for-novel-coronaviruses-(-ncov))

2.2 Overview of personal protective equipment (PPE)

The following table lists the main PPE components referred to throughout this document, as well as a summary of the protection offered by each.

Table 1: Main PPE presented¹¹

Personal protective equipment (PPE)		Protection offered
Respirator e.g. class 2 or 3 filtering face-piece (FFP2/FFP3)	 ©ECDC	Respiratory protection: <ul style="list-style-type: none"> Protects wearer against inhalation of droplets and small airborne contaminants, including aerosols Requires fit-testing Primarily used by health care workers, particularly during aerosol-generating procedures
Medical face mask ^(†)	 ©ECDC	Respiratory protection: <ul style="list-style-type: none"> Protects against exhaled droplets when worn by ill patient Protects the user against potential large infective respiratory droplets in the environment Does not require fit-testing
Goggles (or face shield)	 ©ECDC	Eye protection: <ul style="list-style-type: none"> Prevents exposure of eye mucosa Must fit contours of user's face and be compatible with the respirator if this last is worn
Long-sleeved water-resistant gown	 ©ECDC	Body protection: <ul style="list-style-type: none"> Prevents against clothes and body contamination Can be non-sterile (unless used in a sterile environment, e.g. operating room) If not water-resistant, single-use plastic apron worn over the gown can be used
Disposable gloves	 ©ECDC	Hand protection: <ul style="list-style-type: none"> Gloves come in different textures, materials, colors, qualities and thickness
Other		Protection offered
Non-medical face mask ^(‡) ("community mask")		<ul style="list-style-type: none"> Cannot be considered protective measure against COVID-19. In case of severe PPE shortages and if medical masks are not available, cloth masks are suggested as a last-resort¹² Not to be used by healthcare workers

^(†) **Medical face mask (also known as surgical or procedure mask):** 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. Medical face mask 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 standardized and are not intended for use in healthcare settings or by healthcare professionals (European Centre for Disease Prevention and Control. Using face masks in the community. Stockholm: ECDC; 2020.) <https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf>

3. PPE at points of entry

This chapter presents suggested PPE for use at points of entry (PoE) including ports, airports, train and bus stations. Each table describes the recommended PPE for various settings at the point of entry.

3.1 Transport hubs

It is advised that passengers should use face masks (medical face mask or non-medical “community” face mask) in transport hubs, particularly when it is a challenge to maintain appropriate physical distancing measures (at least 1.5 metres) consistently¹. In addition to the use of face masks, travellers should observe proper and frequent hand hygiene.

Transport workers whose duties require them to come into contact and interact with others should be equipped with the appropriate PPE and as far as practicable, the use of a physical barrier for separation from travellers should be implemented. Examples of such transport workers at transport hubs include safety and security personnel, ticket controllers etc.¹

3.2 Administrative areas at the point of entry where staff interact with passengers

The following table lists suggested PPE for administrative areas at the PoE where interaction between PoE staff and transport passengers may occur during routine activities such as passport control, customs control, police checks etc.

For administrative areas where interaction is **only among staff members** (e.g. office areas not accessible to transport passengers), use of PPE is generally regulated by national country requirements or legislation and EU HEALTHY GATEWAYS does not currently include advice for PPE in workplaces.

The European Agency for Safety and Health at Work (EU-OSHA) provides guidance on workplaces in the context of COVID-19, including PPE considerations:

- *COVID-19: guidance for the workplace*
https://oshwiki.eu/wiki/COVID-19:_guidance_for_the_workplace#See
- *COVID-19: back to the workplace - Adapting workplaces and protecting workers*
<https://osha.europa.eu/en/publications/covid-19-back-workplace-adapting-workplaces-and-protecting-workers/view>

Table 2: Recommended PPE for administrative personnel⁸

SETTING: ADMINISTRATIVE AREAS WHERE STAFF CAN INTERACT WITH PASSENGERS			
WHO	WHEN	WHAT	
All staff <ul style="list-style-type: none"> • Passport control officers • Customs officers 	Performing any activity where interaction with passengers can occur (e.g. passport review) AND Not protected behind a physical barrier (e.g. glass or plastic window screen)	Medical face mask If medical face mask not available, a non-medical “community” face mask	 © ECDC
		Perform frequent hand hygiene	

Table 3: Recommended PPE for security personnel¹³

****Unlikely that border protection and security activities require additional PPE beyond the routine, but should be assessed on case-by-case basis**

SETTING: ADMINISTRATIVE AREAS WHERE STAFF CAN INTERACT WITH SYMPTOMATIC SUSPECT PASSENGERS			
WHO	WHEN	WHAT	
Security personnel <ul style="list-style-type: none"> • Border protection • Immigration enforcement • Security officers • Police officers 	For policing, border and immigration enforcement activities requiring close contact with symptomatic person suspect of COVID-19 additional PPE could be used when: <ul style="list-style-type: none"> • Not protected behind a physical barrier (e.g. glass or plastic window screen) • Interviewing within 1.5 metres distance of suspect case • Physical contact with person while searching, detaining or arresting 	Medical face mask If available FFP2 respirator, tested for fitting (FFP2 respirators should be prioritized for aerosol-generating procedures)	 ©ECDC OR  ©ECDC
		Disposable gloves	 ©ECDC
		Goggles (or face shield)	 ©ECDC
		Disposable plastic apron	 ©ECDC
		Perform frequent hand hygiene	

Table 4: Recommended PPE for screening personnel^{10,14}

SETTING: SCREENING AREA				
WHO	WHEN	WHAT		
Screening personnel	<p>During primary/first screening of travellers (e.g. temperature measurement) with <u>no</u> direct contact</p> <ul style="list-style-type: none"> • Use of no-touch thermometers/thermal imaging cameras • Limited questioning/observation 	<p>Use of physical barrier if possible (e.g. glass/plastic window screen)</p>	 <p>©ECDC</p>	
		<p>When physical distance is not feasible <u>AND</u> no contact:</p> <ul style="list-style-type: none"> • Medical face mask • Eye protection 	 <p>©ECDC</p>	
	Perform frequent hand hygiene			
	<p>During secondary screening of travellers (e.g. interviewing / examining travellers with clinical symptoms suggestive of COVID-19 disease)</p>		Medical face mask	 <p>©ECDC</p>
Disposable gloves			 <p>©ECDC</p>	
Eye protection			 <p>©ECDC</p>	
<ul style="list-style-type: none"> • Perform frequent hand hygiene • Maintain at least 1.5 metres distance when possible 				
Cleaning personnel	<p>Cleaning the area where passengers have been screened</p>	Medical face mask	 <p>©ECDC</p>	
		Gown	 <p>©ECDC</p>	

		<p>Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues for chemicals used</p>	 <p>©ECDC</p> <p>AND/OR</p>  <p>©ECDC</p>
		<p>Eye protection Based on risk assesment of splash from chemicals/ organic material</p>	 <p>©ECDC</p>
		<p>Boots if needed based on risk assesment or closed shoes</p>	 <p>©ECDC</p>
<p>Perform frequent hand hygiene</p>			

3.3 Medical facilities at the point of entry

The following tables provide suggested PPE for both staff and medical personnel to be used at the PoE medical facility/temporary isolation space where a suspect COVID-19 case is awaiting transport to a medical facility.

Table 5: Recommended PPE for PoE staff and medical personnel at medical facility^{10,15}

SETTING: TEMPORARY ISOLATION SPACE/MEDICAL FACILITY			
WHO	WHEN	WHAT	
Point of entry staff	<ul style="list-style-type: none"> • Entering temporary isolation area where suspect case awaiting transport AND <ul style="list-style-type: none"> • No provision of direct assistance to suspect case AND <ul style="list-style-type: none"> • Maintain more than 1.5 metres distance from suspect case 	Medical face mask	 © ECDC
		Disposable gloves	 © ECDC
		Perform frequent hand hygiene	
Medical personnel	<ul style="list-style-type: none"> • Entering temporary isolation area where suspect case awaiting transport AND <ul style="list-style-type: none"> • Provision of direct assistance to suspect case 	Medical face mask If available FFP2 respirator, tested for fitting (FFP2 respirators should be prioritized for aerosol-generating procedures)	 © ECDC OR  © ECDC
		Disposable gloves	 © ECDC
		Goggles (or face shield)	 © ECDC
		Long sleeved water-resistant gown	 © ECDC
		Perform frequent hand hygiene	

Cleaning personnel	Cleaning temporary isolation area	Medical face mask	 © ECDC
		Gown	 © ECDC
		Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues for chemicals used	 © ECDC AND/OR © ECDC
		Eye protection Based on risk assesment of splash from chemicals/organic material	 © ECDC
		Boots if needed based on risk assessment or closed shoes	 © ECDC
		Perform frequent hand hygiene	

Table 6: Recommended PPE for ill passenger at medical facility

SETTING: TEMPORARY ISOLATION SPACE/MEDICAL FACILITY		
WHO	WHAT	
Ill passenger	Medical face mask <ul style="list-style-type: none"> • If not tolerated, ill passenger to perform respiratory etiquette • Ill passenger to perform frequent hand hygiene using alcohol based hand rubbing solution (e.g. after coughing and sneezing) 	 © ECDC

3.4 Ambulances/transfer vehicles from the point of entry

The following tables include suggested PPE for the disembarkation or transfer of suspect COVID-19 cases from the PoE to a medical facility.

Table 7: Recommended PPE for transport staff^{10,15}

SETTING: DISEMBARKATION/TRANSORT IN AMBULANCE/TRANSE R VEHICLE			
WHO	WHEN	WHAT	
Transport staff (including medical personnel)	During disembarkation of suspect case from conveyance and transport from point of entry to health facility	Medical face mask If available FFP2 respirator, tested for fitting (FFP2 respirators should be prioritized for aerosol-generating procedures)	 © ECDC OR  © ECDC
		Disposable gloves	 © ECDC
		Goggles (or face shield)	 © ECDC
		Long sleeved water-resistant gown	 © ECDC
		<ul style="list-style-type: none"> • Change PPE between loading each patient • Perform frequent hand hygiene 	
Transport driver	Assisting in loading/unloading suspect case	Same PPE as transport staff (medical personnel) above	
	When driving the suspect case (no direct contact) <ul style="list-style-type: none"> • <u>No barrier</u> between driver/suspect case 	Medical face mask	 © ECDC
	When driving suspect case (no direct contact) <ul style="list-style-type: none"> • <u>Existing barrier</u> 	No PPE required if driver maintains at least 1.5 metre distance from suspect case Perform frequent hand hygiene	

	between driver/suspect case		
Cleaning personnel	Cleaning between and/or after transporting suspect case	Medical face mask	 ©ECDC
		Gown	 ©ECDC
		Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues for chemicals used	 ©ECDC AND/OR  ©ECDC
		Eye protection Based on risk assesment of splash from chemicals/organic material	 ©ECDC
		Boots if needed based on risk assessment or closed shoes	 ©ECDC
		Perform frequent hand hygiene	

Table 8: Recommended PPE for ill passenger during transport

SETTING: DISEMBARKATION AND TRANSPORT IN AMBULANCE/TRANSFER VEHICLE		
WHO	WHAT	
Ill traveller	Medical face mask <ul style="list-style-type: none"> • If not tolerated, ill passenger to perform respiratory etiquette • Ill passenger to perform frequent hand hygiene using alcohol based hand rubbing solution (e.g. after coughing and sneezing) 	 ©ECDC

3.5 Cargo and baggage handling areas

Table 9: Recommended PPE for cargo/baggage handlers ^{10,16}

SETTING: CARGO/BAGGAGE AREA		
WHO	WHEN	WHAT
Cargo and baggage handlers	Handling cargo/baggage	<p>Perform hand hygiene</p> <ul style="list-style-type: none"> Gloves are not required unless used for protection against mechanical hazards

3.6 Cleaning and disinfection of affected conveyances and contaminated areas at point of entry

Table 10: Recommended PPE for cleaning and disinfection crew ^{10,15,17}

SETTING: AFFECTED CONVEYANCE AND CONTAMINATED AREAS AT POINT OF ENTRY			
WHO	WHEN	WHAT	
Cleaning and disinfection crew	Cleaning/ disinfection of conveyance with suspect or confirmed case on board or point of entry likely to be contaminated with SARS-CoV-2	Medical face mask	 ©ECDC
		Gown	 ©ECDC
		Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues for chemicals used	 ©ECDC AND/OR  ©ECDC
		Goggles (or face shield)	 ©ECDC

		Boots if needed based on risk assessment or closed shoes	 ©ECDC
		<ul style="list-style-type: none"> • Perform frequent hand hygiene • Maintain 1.5 metres distance from others 	

4. PPE on board aircrafts

The following chapter presents suggested PPE for use in various situations on board aircrafts.

Aircrafts should carry one or more Universal Precautions Kits (UPK) for the use of cabin crew in the event a suspect COVID-19 case is identified or for the management of illnesses where contact with bodily fluids occurs¹⁸⁻²⁰.

Universal Precaution Kit (UPK) ^(§)

- *Dry powder (convert liquid spill to sterile granulated gel)*
- *Germicidal disinfectant for surface cleaning*
- *Skin wipes*
- *Gloves (disposable)*
- *Face/eye mask (separate or combined – goggles and medical mask or combined-face shield). Medical masks should be carried on board to be provided to ill passengers/travellers*
- *Protective apron*
- *Full-length impermeable long sleeved gown (if available)*
- *Biohazard disposable waste bag (if available)*
- *Large absorbent towel*
- *Pick-up scoop with scraper*

** Calibrated (non-contact infrared) thermometers can also be carried on board for detection of fever

^(§) <https://www.icao.int/MID/Documents/2013/capsca-mid3/ICAOHealthRelatedSARPsandguidelines.pdf>

4.1 PPE for cabin crew and aviation passengers

Table 11 lists the suggested PPE for cabin crew and passengers on board an aircraft who are not considered ill or showing symptoms suggestive of COVID-19. Competent authorities may require the provision and use of PPE on board an aircraft. In this case a risk assessment should be conducted to assess any effect of PPE (e.g. face masks, aprons, gowns etc.) on safety procedures by cabin crew²⁰.

Table 11: Recommended PPE for all cabin crew/passengers¹⁹⁻²¹

SETTING: ON BOARD AIRCRAFT			
WHO	WHEN	WHAT	
All passengers /crew** who are not ill or showing symptoms	<p>While on board at all times</p> <p>The following is advice to be considered. Further information can be found here:</p> <ul style="list-style-type: none"> EU HEALTHY GATEWAYS: https://www.healthgateway.eu/Portals/0/plcdocs/EUHG_PPE_Travellers_17_04_2020_F.pdf?ver=2020-04-23-140238-597 ECDC Technical Report: https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf 	<p>Medical face mask</p> <p>At all times and replaced regularly at intervals not exceeding 4 hours. For flights exceeding 4 hours, proper disposal of disposable face masks must be applied in accordance with ECDC. More information on how to properly manage (don, doff and dispose of) face masks can be found here: https://www.ecdc.europa.eu/sites/default/files/documents/Home-care-of-COVID-19-patients-2020-03-31.pdf</p>	 <p>©ECDC</p>
		<p>If medical face mask unavailable, non-medical “community” face mask can be used and replaced when the mask becomes wet.</p>	
		<p>Perform frequent hand hygiene</p>	

** For flight safety purposes, flight crew may remove their face mask when they are in the cockpit and the cockpit door is closed. <http://www.capsca.org/Documentation/CoronaVirus/eb030e.pdf>

Table 12 provides the suggested PPE for cabin crew when attending to an ill passenger on board the aircraft displaying symptoms suggestive of COVID-19.

Table 12: Recommended PPE for cabin crew when managing suspect COVID-19 case¹⁸

SETTING: ON BOARD AIRCRAFT			
WHO	WHEN	WHAT	
Cabin crew	When attending to an ill traveller showing COVID-19 compatible symptoms (e.g. fever, persistent cough or difficulty breathing)^(††)	Medical face mask	 © ECDC
		Disposable gloves	 © ECDC
		Goggles	 © ECDC
		Long sleeved impermeable gown (if available)	 © ECDC
		Perform frequent hand hygiene	

^(††) According to EU HEALTHY GATEWAYS and EASA Guidance on Management of Crew Members in relation to the SARS-CoV-2 pandemic, the ill passenger should be isolated on board. Depending on the configuration of the aircraft, occupancy and passenger distribution, the symptomatic case should be positioned; if possible, leaving 2 rows of seats cleared in each direction around the passenger (consider if feasible the last three rows on the right hand side as an isolation area). Where possible, the suspect passenger should be seated in the last right window seat. The lavatory closest to the passenger should be specifically designated to the use of the ill passenger. Specific crew members should be designated to provide in-flight service for isolation area – the cabin crew member should be the one that already had contact with the ill passenger. The designated crew member should minimize close contact (e.g. maintain at least 1.5 metres physical distance, as far as practicable) with other crew members. Where possible, the individual air supply nozzle for the symptomatic passenger should be turned off. (<https://www.easa.europa.eu/document-library/general-publications/guidance-management-crew-members>)

Table 13 includes suggested PPE for use by an ill passenger on board the aircraft displaying symptoms suggestive of COVID-19.

Table 13: Recommended PPE for symptomatic crew or passenger ^{18,19}

SETTING: ON BOARD AIRCRAFT		
WHO	WHAT	
Ill passenger or crew member	<p>Medical face mask</p> <ul style="list-style-type: none"> • If not tolerated, ill passenger/crew member to perform respiratory etiquette • Ill passenger/crew member to perform frequent hand hygiene using alcohol based hand rubbing solution (e.g. after coughing and sneezing) 	 <p>©ECDC</p>

4.2 PPE for other personnel (maintenance, ground/technical crew)

The following table presents suggested PPE for use by other authorized personnel, such as ground/technical personnel and maintenance crew on board the aircraft considering different activities.

Table 14: Recommended PPE for other personnel boarding aircraft ^{22,23}

SETTING: ON BOARD AFFECTED OR NON-AFFECTED AIRCRAFT			
WHO	WHEN	WHAT	
Other personnel: <ul style="list-style-type: none"> • Maintenance crew • Ground/technical personnel 	Boarding aircraft To minimize risk of exposure to cabin crew, the boarding of other personnel (e.g. ground/technical crew) should be authorized only if it is possible to maintain physical distance. If it is not possible to maintain physical distancing, face masks should be used.	Medical face mask If medical face mask not available, a non-medical “community” face mask	 © ECDC
		FFP2 (tested for fitting) If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)	 © ECDC
	Replacing HEPA filters on board aircraft	Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues for chemicals used	 © ECDC AND/OR © ECDC
	Performing other activities in the aircraft cabin before cleaning and disinfection of aircraft	Perform frequent hand hygiene The recommended PPE for maintenance crew is the same as for the cleaning and disinfection crew (see Table 10).	

5. PPE on board ships

Seafarers often have limited immediate access to medical care while serving on board. As a result, precautions should be taken by all shore-based personnel who temporarily board ships during port calls, including inspectors, harbour pilots, ship agents, medical personnel, port workers, shipyard workers etc. to minimize exposure risks to both ship and shore-based personnel.

If it is considered necessary for shore-based personnel to board a ship, only the minimum number of personnel required should be allowed to board²⁴. PPE can also be used with a two-fold purpose, to protect both shore-based personnel who temporarily board the ship as well as to protect the health of seafarers serving on board.

Requirements for protective measures when shore-based personnel board a ship, including which PPE should be used and when, can vary between countries with different national legal frameworks and can also vary between shipping companies²⁴. However, since ships sail between different ports and countries continuously, harmonization is needed regarding which PPE should be used and when it must be used.

5.1 PPE for isolation space/medical facility on board ship

The following table lists suggested PPE to be used in the isolation space/medical facility on board the ship for providing care to potentially infectious seafarers. Recommendations can also be applied to other areas/places on board potentially infected.

Table 15: Recommended PPE for isolation space/medical facility²⁵

SETTING: ISOLATION SPACE/MEDICAL FACILITY			
WHO	WHEN	WHAT	
Crew members	<ul style="list-style-type: none"> • Entering area/facility where suspect case present AND • No provision of direct assistance to suspect case AND • Maintain more than 1.5 metres distance from suspect case 	Medical face mask	 ©ECDC
		Disposable gloves	 ©ECDC
		Perform frequent hand hygiene	
Medical personnel	<ul style="list-style-type: none"> • Entering area/facility where suspect case present AND 	Medical face mask If available FFP2 respirator, tested for fitting (FFP2 respirators should be prioritized for aerosol-generating procedures)	 ©ECDC OR

	<ul style="list-style-type: none"> • Provision of direct assistance to suspect case 		 <p>© ECDC</p>
		Disposable gloves	 <p>© ECDC</p>
		Goggles (or face shield)	 <p>© ECDC</p>
		Long sleeved water-resistant gown	 <p>© ECDC</p>
		Perform frequent hand hygiene	

5.2 PPE for interaction between ship and shore-based personnel

The following tables provide a list of suggested PPE for areas on board ships or during specific procedures where crew members interact with visitors (e.g. shore-based personnel).

Table 16: Recommended PPE for shore based personnel²⁶

SETTING: ON BOARD SHIP			
WHO	WHEN	WHERE	WHAT
Shore-based personnel boarding conveyance before assessment by authorities^(**): <ul style="list-style-type: none"> • Harbor pilots • Ship agents • Port workers (including shipyard workers) • Medical personnel 	Interaction between crew members and shore-based personnel AND There is information of a suspect case on board	In isolation area	<ul style="list-style-type: none"> • Medical face mask If available, FFP2 respirator (tested for fitting) • Goggles (or face shield) • Disposable gloves • Long sleeved water-resistant gown • Perform frequent hand hygiene
	Interaction between crew members and shore-based personnel AND There is <u>no</u> information of a suspect case on board or if no information is available	Outside isolation area	<ul style="list-style-type: none"> • Medical face mask • Disposable gloves • Perform frequent hand hygiene • Maintain 1.5 metres distance
	Interaction between crew members and shore-based personnel AND There is <u>no</u> information of a suspect case on board or if no information is available	In all areas	<ul style="list-style-type: none"> • Medical face mask If not available, non-medical “community” mask • Perform frequent hand hygiene • Maintain 1.5 metres distance

^(**) Contact between crew and port workers, including pilots, should be reduced to an absolute minimum to protect all persons from risk of transmission of COVID-19 (examples include establishing dedicated teams for portside operations such as pilots, mooring, control terminals, disinfection after each shift, favoring exchanges of documents through electronic devices, disinfection after each shift, etc.). For any necessary contact, PPE should be worn and social distancing measures put in place. As long as all crew members are healthy, risk on board the ship is lower than on land (European Commission, Communication from the Commission: Guidelines on protection of health, repatriation and travel arrangements for seafarers, passengers and other persons on board ships. Brussels, 08.04.2020)
<https://ec.europa.eu/transport/sites/transport/files/legislation/c20203100.pdf>

Table 17: Recommended PPE for ship inspectors/staff²⁷

SETTING: ON BOARD AFFECTED SHIP DURING INSPECTION OF CONTAMINATED AREAS			
WHO	WHEN	WHAT	
Ship inspectors / staff	Performing inspections/outbreak investigations after COVID-19 event on board ship in contaminated or potentially contaminated areas (e.g. working or accommodation areas where COVID-19 cases are currently present)	<p>Medical mask If available FFP2 respirator, tested for fitting (FFP2 respirators should be prioritized for aerosol-generating procedures)</p>	 © ECDC OR  © ECDC
		<p>Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues</p>	 © ECDC AND/OR  © ECDC
		<p>Boots If needed based on risk assessment</p>	 © ECDC
		<p>Coveralls If needed based on risk assessment</p>	 © ECDC
		Perform frequent hand hygiene	

5.3 PPE for interaction among crew members

The following tables provide the recommended PPE in areas or situations where only ship crew interact amongst themselves.

Table 18: Recommended PPE for crew members not ill or showing symptoms⁸

SETTING: ON BOARD SHIP			
WHO	WHEN	WHAT	
Crew members who are not ill or showing symptoms	<p>Interaction only among crew members</p> <p>The following is advice to be considered. Further information can be found here:</p> <ul style="list-style-type: none"> • EU HEALTHY GATEWAYS: https://www.healthygateways.eu/Portals/0/plcdocs/EUHG_PPE_Travellers_17_04_2020_F.pdf?ver=2020-04-23-140238-597 • ECDC Technical Report: https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf 	<p>Medical face mask</p> <p>At all times when physical distancing of 1.5-2 meters is not possible to maintain. Mask should be replaced regularly at intervals not exceeding 4 hours.</p> <p>Proper disposal of disposable face masks must be applied in accordance with ECDC.</p> <p>More information on how to properly manage (don, doff and dispose of) face masks can be found here: https://www.ecdc.europa.eu/sites/default/files/documents/Home-care-of-COVID-19-patients-2020-03-31.pdf</p>	 <p>©ECDC</p>
		<p>If medical face mask unavailable, non-medical “community” face mask can be used and replaced when the mask becomes wet.</p>	
		<p>Perform frequent hand hygiene</p>	

Table 19: Recommended PPE for food workers^{28,29}

SETTING: ON BOARD SHIP		
WHO	WHEN	WHAT
Food workers	Touching open food, food contact surfaces or other surface in rooms where open food handled	<p>Disposable gloves Must be changed frequently (please see item number “3.2.17 Glove wearing”) in the <i>European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships</i>: http://www.shipsan.eu/Portals/0/docs/EU_Manual_Second_Edition.pdf</p>  <p>©ECDC</p>
		<p>Medical face mask If it is not possible to maintain at least 1.5 metres distance between food handlers</p>  <p>©ECDC</p>
		<ul style="list-style-type: none"> • Hair nets • Clean coveralls • Slip reduction work shoes • Other PPE for safety issues depending on risk assessment
		<ul style="list-style-type: none"> • Perform frequent hand hygiene • Maintain at least 1.5 metres distance

5.4 PPE for maintenance crew

Table 20: Recommended PPE for maintenance crew²⁵

SETTING: ON BOARD AFFECTED SHIP			
WHO	WHEN	WHAT	
Maintenance crew	Replacing air filters in handling units after outbreak of COVID-19 on board ship	Disposable gloves	 ©ECDC
		FFP2 (tested for fitting) If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)	 ©ECDC
		Goggles or face shield	 ©ECDC
		Long sleeved water-resistant gown	 ©ECDC
		Heavy duty gloves and/or disposable gloves If needed based on risk assessment and on safety issues for chemicals used	 ©ECDC AND/OR  ©ECDC
		Boots If needed based on risk assessment	 ©ECDC
Perform frequent hand hygiene			

6. PPE on board land transport conveyances

The following chapter presents suggested PPE for use in various situations on board rail (train) and road (bus/coach) transport.

6.1 PPE for crew and rail passengers

Protection kits with adequate supplies of PPE could be carried on board in the event a suspect case of COVID-19 is identified^{30,31}.

The protection kits can include:

- Medical mask
- Respirator (FFP2) if available (should be prioritized for aerosol-generating procedures)
- Gloves (disposable)
- Hand hygiene supplies (soap and alcohol-based solution for hand rub)
- Tissues
- Biohazard bag or securable plastic bags for safe disposal of infectious waste
- Disinfectant spray
- Touch-free (non-contact infrared) thermometers

Table 21 lists the suggested PPE for crew and rail passengers on board trains who are not considered ill or showing symptoms suggestive of COVID-19.

Table 21: Recommended PPE for rail passengers/crew not showing symptoms^{1 8}

SETTING: ON BOARD TRAIN			
WHO	WHEN	WHAT	
All passengers /crew who are not ill or showing symptoms	<p>While on board at all times</p> <p>The following is advice to be considered. Further information can be found here:</p> <ul style="list-style-type: none"> • EU HEALTHY GATEWAYS: https://www.healthygateways.eu/Portals/0/plcdocs/EUHG_PPE_Travellers_17_04_2020_F.pdf?ver=2020-04-23-140238-597 • ECDC Technical Report: https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf 	<p>Medical face mask</p> <p>At all times and replaced regularly at intervals not exceeding 4 hours. For long-distance/international rail service exceeding 4 hours, proper disposal of disposable face masks must be applied in accordance with ECDC. More information on how to properly manage (don, doff and dispose of) face masks can be found here: https://www.ecdc.europa.eu/sites/default/files/documents/Home-care-of-COVID-19-patients-2020-03-31.pdf</p>	 <p>©ECDC</p>
		<p>If medical face mask unavailable, non-medical “community” face mask can be used and replaced when the mask becomes wet.</p>	
		<p>Perform frequent hand hygiene</p>	

Table 22 provides the suggested PPE for crew when attending to an ill passenger on board the train displaying symptoms suggestive of COVID-19.

Table 22: Recommended PPE for crew when managing suspect COVID-19 case³⁰

SETTING: ON BOARD TRAIN			
WHO	WHEN	WHAT	
Rail crew	When attending to an ill traveller showing COVID-19 compatible symptoms (e.g. fever, persistent cough or difficulty breathing) ⁵⁵	Medical face mask	 ©ECDC
		Disposable gloves	 ©ECDC
		Goggles	 ©ECDC
		Long sleeved impermeable gown (if available)	 ©ECDC
		Perform frequent hand hygiene	

Table 23 includes suggested PPE for use by an ill passenger on board the train displaying symptoms suggestive of COVID-19.

Table 23: Recommended PPE for ill travellers

SETTING: ON BOARD TRAIN		
WHO	WHAT	
Ill passenger	<p>Medical face mask</p> <ul style="list-style-type: none"> • If not tolerated, ill passenger to perform respiratory etiquette • Ill passenger to perform frequent hand hygiene using alcohol based hand rubbing solution (e.g. after coughing and sneezing) 	 ©ECDC

⁵⁵ According to EU HEALTHY GATEWAYS “Preliminary advice for preparedness and response to cases of COVID-19 at ground crossings (trains and rail stations) in EU/EEA MS (VERSION 1 – 4/3/2020)” and based on current evidence about COVID-19 and advice for the management of a suspect case on other means of transport (e.g. aircraft), it is advised if a traveller develops symptoms, efforts should be made to minimize contact between passengers and personnel with the ill traveller. If possible, the ill traveller should be separated from others (at least 1.5 metres). <https://www.healthygateways.eu/Novel-coronavirus#Interim>

6.2 PPE for crew and bus/coach passengers

Table 24 lists the suggested PPE for crew and passengers on board bus/coach who are not considered ill or showing symptoms suggestive of COVID-19.

Table 24: Recommended PPE for bus passengers/crew not showing symptoms^{1,8}

SETTING: ON BOARD BUS/COACH			
WHO	WHEN	WHAT	
All passengers /crew who are not ill or showing symptoms	<p>While on board at all times</p> <p>The following is advice to be considered. Further information can be found here:</p> <ul style="list-style-type: none"> • EU HEALTHY GATEWAYS: https://www.healthygateways.eu/Portals/0/plcdocs/EUHG_PPE_Travellers_17_04_2020_F.pdf?ver=2020-04-23-140238-597 • ECDC Technical Report: https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf 	<p>Medical face mask</p> <p>At all times and replaced regularly at intervals not exceeding 4 hours. For long-distance or international bus/coach service exceeding 4 hours, proper disposal of disposable face masks must be applied in accordance with ECDC. More information on how to properly manage (don, doff and dispose of) face masks can be found here: https://www.ecdc.europa.eu/sites/default/files/documents/Home-care-of-COVID-19-patients-2020-03-31.pdf</p>	 <p>©ECDC</p>
		<p>If medical face mask unavailable, non-medical “community” face mask can be used and replaced when the mask becomes wet.</p>	
		<p>Perform frequent hand hygiene</p>	

Table 25 provides the suggested PPE for crew when attending to an ill passenger on board the train displaying symptoms suggestive of COVID-19.

Table 25: Recommended PPE for crew when managing suspect COVID-19 case³²

SETTING: ON BOARD BUS/COACH			
WHO	WHEN	WHAT	
Bus/coach crew	When attending to an ill traveller showing COVID-19 compatible symptoms (e.g. fever, persistent cough or difficulty breathing)***	Medical face mask	 ©ECDC
		Disposable gloves	 ©ECDC
		Goggles	 ©ECDC
		Long sleeved impermeable gown (if available)	 ©ECDC
		Perform frequent hand hygiene	

Table 26 includes suggested PPE for use by an ill passenger on board the train displaying symptoms suggestive of COVID-19.

Table 26: Recommended PPE for ill travellers

SETTING: ON BOARD BUS/COACH		
WHO	WHAT	
Ill passenger	Medical face mask <ul style="list-style-type: none"> • If not tolerated, ill passenger to perform respiratory etiquette • Ill passenger to perform frequent hand hygiene using alcohol based hand rubbing solution (e.g. after coughing and sneezing) 	 ©ECDC

*** According to EU HEALTHY GATEWAYS “Preliminary advice for preparedness and response to cases of COVID-19 at ground crossings (buses and bus stations) in the EU/EEA MS (VERSION 1 – 4/3/2020)” and based on current evidence about COVID-19 and advice for the management of a suspect case on other means of transport (e.g. aircraft), it is advised if a traveller develops symptoms, efforts should be made to minimize contact between passengers and personnel with the ill traveller. If possible, the ill traveller should be separated from others (at least 1.5 metres). <https://www.healthygateways.eu/Novel-coronavirus#Interim>

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