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WHO, WHERE, HOW

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

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Introduction

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

The document is based on 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>), current evidence (as of 7 March 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>), guidance from the World Health Organization (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>), guidance from Public Health England (PHE) (<https://www.gov.uk/government/collections/wuhan-novel-coronavirus>) related to COVID-19 and guidelines from the International Air Transport Association (IATA) (<https://www.iata.org/en/programs/safety/health/diseases/#tab-2>).

General considerations to be applied by all staff in all cases at points of entry and on board conveyances:

- Follow proper wearing (donning) and removing (doffing) procedures/best practices for personal protective equipment (PPE)
- ECDC guidance on procedures for donning and doffing PPE in healthcare settings for the care of patients with suspect or confirmed COVID-19 cases can be found: <https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-guidance-wearing-and-removing-personal-protective-equipment-healthcare-settings-updated.pdf>
- Perform frequent hand hygiene, 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 biohazard bag or secured plastic bag labeled “biohazard”)
- Ensure non-single use PPE or items are decontaminated in accordance with manufacturers’ instructions
- Maintain at least 1 meter distance from travellers at all times

The advice for PPE provided in this document is in addition to the PPE used for safety purposes. For its effectiveness it is important that adequate supplies of PPE are available in different sizes, personnel are adequately trained in the selection and use of PPE, and that PPE is used in combination with other personal protective measures (e.g. hand hygiene).

The global stockpiles of PPE are inadequate and there is increased global demand for PPE. It should be ensured that PPE use is rationalized and appropriate¹.

Based on available evidence about SARS-CoV-2 (as of 7 March 2020), the current consensus is that the virus is primarily transmitted via contact and respiratory droplets.^{1,2} Although currently there is no evidence of airborne transmission, a precautionary approach is recommended due to uncertainties surrounding the potential for aerosol-mediated transmission of the virus. Transmission through inhalation of aerosols during aerosol-generating procedures, may have occurred in some cases.^{3,4} The possibility of fecal-oral transmission has also been proposed.²

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

Table 1. Summary of main PPE presented in this document and protection offered²

Personal Protective Equipment (PPE)		Type of protection
Respirator (e.g. class 2 or 3 filtering face-piece: FFP2/FFP3)	 <p>©ECDC</p>	Respiratory protection: <ul style="list-style-type: none"> • Protects against inhalation of droplets and small airborne particles, including aerosols • Requires fit-testing
Medical mask⁽²⁾	 <p>©ECDC</p>	Respiratory protection: <ul style="list-style-type: none"> • Protects the user against potential infective respiratory droplets in the environment • Protects against exhaled droplets when worn by ill patient • Does not require fit-testing
Goggles (or face shield)	 <p>©ECDC</p>	Eye protection: <ul style="list-style-type: none"> • Prevents exposure of eye mucosa to virus • Must fit contours of user's face and be compatible with respirator
Long-sleeved water-resistant gown	 <p>©ECDC</p>	Body protection: <ul style="list-style-type: none"> • Prevents against body contamination • Can be non-sterile (unless used in a sterile environment, e.g. operating room) • If not available, single-use plastic apron worn over non-water-resistant gown can be used
Disposable gloves	 <p>©ECDC</p>	Hand protection: <ul style="list-style-type: none"> • Gloves come in different textures, materials, colors, qualities and thickness

⁽²⁾ A medical mask is a face mask (surgical or procedural mask): <https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-guidance-wearing-and-removing-personal-protective-equipment-healthcare-settings-updated.pdf>

Table 2. Recommended PPE for cabin crew (on board aircraft)^{5,6}

SETTING: On board aircraft			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Cabin crew	When in contact with ill passenger, touching body fluids or potentially contaminated surfaces ⁽³⁾	Disposable gloves	 ©ECDC
		Medical Mask (when within 1 meter of ill passenger)	 ©ECDC
		Additional PPE to be considered:	
		Goggles	 ©ECDC
		Apron	 ©ECDC
Perform frequent hand hygiene			

⁽³⁾ According to the WHO Handbook for Management of Public Health Events in Air Transport, if a traveller develops symptoms of acute respiratory illness (ARI), efforts should be made to minimize contact between passengers and cabin crew with the ill person. If possible, the ill person should be separated from others (2 meters or 6 feet is ideal), and one crew member should be designated to serve the ill person. Use of a facemask is recommended, if available and can be tolerated by the ill person. If a face mask is not available or cannot be tolerated, the ill person should be asked to cover their mouth and nose with tissues when coughing or sneezing. A designated toilet should be provided for the use of the ill person only. (https://www.healthygateways.eu/Portals/0/plcdocs/EU_HEALTHY_GATEWAYS_2019-nCoV_AIRCRAFTS_4_2_2020_F.pdf?ver=2020-02-05-102326-010)

SETTING: On board aircraft		
PERSON	RECOMMENDED PPE	
Ill passenger	<p>Medical mask</p> <ul style="list-style-type: none"> Ill passenger to perform frequent hand hygiene using alcohol based solution (e.g. when coughing and sneezing) 	 <p>©ECDC</p>

Universal Precaution Kit ⁽⁴⁾

Aircrafts should carry universal precaution kits, including as per the International Civil Aviation Organization (ICAO):

- *Gloves (disposable)*
- *Face/eye mask (separate or combined). Medical masks should be carried on board to be provided to ill passengers/travellers*
- *Protective apron*
- *Skin wipes*
- *Dry powder (convert liquid spill to sterile granulated gel)*
- *Germicidal disinfectant for surface cleaning*

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

⁴ <https://www.icao.int/MID/Documents/2013/capsca-mid3/ICAOHealthRelatedSARPsandguidelines.pdf>

Table 3. Recommended PPE for public areas (at points of entry)¹

SETTING: Public areas at point of entry (e.g. train stations, bus stations, airports, ports)		
PERSON	WHEN	RECOMMENDED PPE
Individuals without respiratory symptoms	Performing any activity	No PPE required Perform frequent hand hygiene

Table 4. Recommended PPE for administrative areas (at points of entry)¹

SETTING: Administrative areas at point of entry		
PERSON	WHEN	RECOMMENDED PPE
All staff	Performing any activity	No PPE required Perform frequent hand hygiene

Table 5. Recommended PPE for screening personnel^{1,7}

SETTING: At point of entry screening area			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Screening personnel	During primary/first screening of travellers (e.g. temperature measurement) with no direct contact <ul style="list-style-type: none"> • Use of no-touch thermometers/thermal imaging cameras • Limited questioning/observation 	<p>No PPE required</p> <p>Maintain at least 1 meter distance</p> <p>Perform frequent hand hygiene</p>	
	During secondary screening of travellers (e.g. interviewing travellers with fever for clinical symptoms suggestive of COVID-19 disease and travel history)	Disposable gloves	 <p>©ECDC</p>
		Medical mask	 <p>©ECDC</p>
		Perform frequent hand hygiene	

SETTING: At point of entry screening area		
PERSON	RECOMMENDED PPE	
Ill traveller	Medical mask <ul style="list-style-type: none"> • Ill traveller to perform frequent hand hygiene using alcohol based solution (e.g. when coughing and sneezing) 	 <p>©ECDC</p>

Table 6. Recommended PPE for point of entry staff/medical personnel^{1,2,8}

SETTING: At point of entry temporary isolation space			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Point of entry staff	<ul style="list-style-type: none"> • Entering temporary isolation area where suspect case awaiting transport AND • No provision of direct assistance to suspect case AND • Maintain more than 1 meter distance from suspect case 	Disposable gloves	 ©ECDC
		Medical mask	 ©ECDC
		Perform frequent hand hygiene	
Medical personnel	<ul style="list-style-type: none"> • Entering temporary isolation area where suspect case awaiting transport AND • Provision of direct assistance to suspect case 	Disposable gloves	 ©ECDC
		FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, a medical mask can be used (limitations and risks of mask use assessed on case by case basis)</i>	 ©ECDC
		Goggles (or face shield)	 ©ECDC
		Long sleeved water-resistant gown	 ©ECDC
		Perform frequent hand hygiene	

SETTING: At point of entry temporary isolation space		
PERSON	RECOMMENDED PPE	
Ill traveller	Medical mask <ul style="list-style-type: none"> • Ill traveller to perform frequent hand hygiene using alcohol based solution (e.g. when coughing and sneezing) 	 ©ECDC

Table 7. Recommended PPE for transport staff^{1,9}

SETTING: Disembarkation and transport of suspect case in ambulance/transfer vehicle			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Transport staff (including medical personnel)	During disembarkation of suspect case from conveyance and transport from point of entry to health facility	Disposable gloves	 © ECDC
		FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case by case basis)</i>	 © ECDC
		Goggles (or face shield)	 © ECDC
		Long sleeved water-resistant gown	 © ECDC
		Change PPE between loading each patient	

Transport driver	When assisting in loading/unloading suspect case	Same PPE as transport staff (medical personnel) listed above	
	When driving the suspect case (no direct contact) <ul style="list-style-type: none"> • <i>No separation/barrier between driver/suspect case in vehicle</i> 	Medical mask	 ©ECDC
	When driving suspect case (no direct contact) <ul style="list-style-type: none"> • <i>Existing separation/barrier between driver/suspect case in vehicle</i> 	No PPE required if driver maintains at least 1 meter distance from suspect case	
	Perform frequent hand hygiene		

SETTING: Disembarkation and transport of suspect case		
PERSON	RECOMMENDED PPE	
Ill traveller	Medical mask <ul style="list-style-type: none"> • <i>Ill traveller to perform frequent hand hygiene using alcohol based solution (e.g. when coughing and sneezing)</i> 	 ©ECDC

Table 8. Recommended PPE for security personnel^{10,11}

***Unlikely that policing, border force and immigration enforcement activities require any additional PPE, but appropriate PPE should be assessed on case-by-case basis*

SETTING: At point of entry – security/check-in area		
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE
Security personnel <ul style="list-style-type: none"> • Border force • Immigration enforcement • Police officers 	For policing, border and immigration enforcement activities with close contact with symptomatic person suspect of COVID-19 additional PPE could be used when: <ul style="list-style-type: none"> • Interviewing within 1 meter distance of suspect case • Arresting or restraining person • Not protected behind a screen (e.g. glass or plastic window) 	Disposable gloves  ©ECDC
		FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)</i>  ©ECDC
		Goggles (or face shield)  ©ECDC
		Disposable plastic apron  ©ECDC
Perform frequent hand hygiene		

SETTING: At point of entry – security/check-in area		
PERSON	RECOMMENDED PPE	
Ill traveler	Medical mask <ul style="list-style-type: none"> • Ill traveller to perform frequent hand hygiene using alcohol based solution (e.g. when coughing and sneezing) 	 ©ECDC

Table 9. Recommended PPE for other staff (e.g. harbor pilot, ship agent, other visitor)

SETTING: At conveyance			
PERSONNEL CATEGORY	WHEN	WHERE	RECOMMENDED PPE
<p>Other staff entering conveyance before assessment by authorities:</p> <ul style="list-style-type: none"> • Harbor pilots • Ship agents • Other visitors 	If there is information of a suspect case on board a conveyance	In isolation area	<ul style="list-style-type: none"> • FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)</i> • Goggles (or face shield) • Disposable gloves • Long-sleeved water-resistant gown
		Outside isolation area	<ul style="list-style-type: none"> • Medical mask • Disposable gloves
	If conveyance is from an affected area ⁽⁵⁾ without a suspect case on board	In all areas	<ul style="list-style-type: none"> • Use of PPE depends on case-by-case risk assessment while on board • Perform frequent hand hygiene
	If no information is available	In all areas	<ul style="list-style-type: none"> • Use of PPE depends on case-by-case risk assessment • Perform frequent hand hygiene
	If conveyance is not from affected area and there is no suspect case on board	In all areas	<ul style="list-style-type: none"> • Perform frequent hand hygiene

SETTING: At conveyance		
PERSON	RECOMMENDED PPE	
Ill traveller	<p>Medical mask</p> <ul style="list-style-type: none"> • Ill traveller to perform frequent hand hygiene using alcohol based solution (e.g. when coughing and sneezing) 	 <p>© ECDC</p>

⁽⁵⁾ Affected areas are defined by WHO in the latest statement of the International Health Regulations (2005) Emergency Committee regarding the outbreak of COVID-19 published in: <https://www.who.int/>

Table 10. Recommended PPE for cargo/baggage handlers^{1,5,12}

SETTING: At cargo/baggage area		
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE
Cargo and baggage handlers	When handling cargo/baggage from affected country	Perform hand hygiene • <i>Gloves are not required unless used for protection against mechanical hazards</i>

Based on currently available information regarding transmission of SARS-CoV-2 there is no evidence to suggest a person could be infected from handling baggage or goods.

Table 11. Recommended PPE for cleaning and disinfection crew^{13,14}

SETTING: Affected conveyances and contaminated areas at point of entry			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
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	Disposable gloves	 ©ECDC
		FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)</i>	 ©ECDC
		Goggles (or face shield)	 ©ECDC
		Long -sleeved water-resistant gown	 ©ECDC
		Heavy duty gloves (over disposable gloves)	 ©ECDC
		Boots	 ©ECDC

Table 12. Recommended PPE for maintenance crew (aircraft)¹⁵

SETTING: On board affected or non-affected aircraft			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Maintenance crew	Replacing HEPA filters on board aircraft	Disposable gloves	 <p>© ECDC</p>
		FFP2/FFP3 respirator (tested for fitting, valved or non-valved) (if cannot avoid hitting/dropping/shaking filter) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)</i>	 <p>© ECDC</p>
	Perform frequent hand hygiene		
	Performing other activities in the aircraft cabin before cleaning and disinfection of aircraft	The recommended PPE for the maintenance crew is the same as for the cleaning and disinfection crew (see Table 11).	

Table 13. Recommended PPE for maintenance crew (ship)⁵

SETTING: On board affected ship			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Maintenance crew	Replacing air filters in handling units after outbreak of COVID-19 on board ship	Disposable gloves	 ©ECDC
		FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)</i>	 ©ECDC
		Goggles (or face shield)	 ©ECDC
		Long-sleeved water-resistant gown	 ©ECDC
		Heavy duty gloves (over disposable gloves) if needed based on risk assessment	 ©ECDC
		Boots	 ©ECDC

Table 14. Recommended PPE for ship inspectors / staff¹⁶

SETTING: On board affected ship during inspection of contaminated areas			
PERSONNEL CATEGORY	WHEN	RECOMMENDED PPE	
Ship inspectors / staff	Performing inspections after outbreak of COVID-19 on board ship in contaminated areas	FFP2/FFP3 respirator (tested for fitting, valved or non-valved) <i>*If respirator not available, medical mask can be used (limitations and risks of mask use assessed on case-by-case basis)</i>	 ©ECDC
		Disposable gloves	 ©ECDC
		Heavy duty gloves (over disposable gloves) if needed based on risk assessment	 ©ECDC
		Boots	 ©ECDC
		Coveralls, if needed based on risk assessment	 ©ECDC
		Perform frequent hand hygiene	

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