Infection prevention and control during transfer and transport of patients with suspected or confirmed COVID-19

Revised and republished as of 1 April 2022
(Originally published on 27 March 2020)

World Health Organization
Western Pacific Region

1. Introduction

1.1 Background

Patients with suspected coronavirus disease 2019 (COVID-19) can infect others at any time, including during transfer and transport. Ensuring the proper implementation of standard and transmission-based infection prevention and control (IPC) precautions is essential in health setting, including patient transfer and transport, for the safety of patients and health-care workers (HCWs).

Current evidence shows the main route of transmission is through contact and droplets, with additional airborne precautions required during aerosol-generating procedures.

This guide aims to identify key steps in preparing the community and health system response to ensure IPC is maintained during transfer and transport. This includes from a person's house to, between and within health facilities.

This guide has been updated on 30 March 2022 with new evidence and best practices surrounding IPC during patient transfer and transportation, including: personal protective equipment (PPE) for personnel involved in transfer; cleaning and disinfection after transfer; health-care waste management; and securing occupational health.

1.2 Target audience

This guide is intended for personnel involved in coordinating and performing the transfer and transport of patients with suspected or confirmed COVID-19.

2. Operational guidance

2.1 Roles and responsibilities of key stakeholders

2.1.1. Coordinating body[1]

1. Conduct mapping and real-time oversight of available resources and capacity of frontline health facilities.[2] These should include:
   - a full range of services available in the geographic area, including ambulances and repurposed civil vehicles;
   - human resources, including identified surge workforce;
   - current contact information for all services;
   - location of each facility or organization;
   - hours of operations;
   - a list of essential supply, existing suppliers and backup contacts; and
   - both informal and formal health facilities in the mapping (e.g. community clinics that serve vulnerable groups).
2. Ensure that all staff of designated facilities and patient referral services are adequately trained in standard and transmission-based IPC precautions (specifically for COVID-19) and proper use of PPE and that they are familiar with this guidance document.
3. Ensure that medical staff accompanying transfers are trained to manage basic life support. Conduct regular monitoring and

[1] This can be within local health authorities, designated referral units or other functioning teams such as civil defence.The entities for receiving case reports and making referrals may be separate or combined as long as both functions exist, are established and work in sync.
[2] Such as clinical capability of performing triage, physical space allocation for holding areas, and number of isolation rooms or at least beds more than 1 metre apart.

evaluation, including compliance with IPC practices to ensure safe referral.

4. Develop or modify the existing standard operating procedure (SOP) and communication plan for safe referral and transfer in its jurisdiction, including which patients should seek care, and proper means of transport.
5. Coordinate safe referral and transfer between and within health facilities and ambulatory service providers.
6. Coordinate with community and primary health-care facilities for patients needing referral.
7. Keep a log of patient details for upstream reporting to higher authorities for contact tracing.

2.1.2. Service providers for transfer and transport

1. Respond to the coordinating body for arranging safe transfer of patients with suspected or confirmed COVID-19.
2. Allocate equipment and trained staff (e.g. drivers, HCWs) to be designated for the transport of COVID-19 patients.
3. Use a designated route as much as possible and feasible.
4. Monitor the patient's condition and provide necessary care.
5. Provide coordinated handover of the patient to the facility, noting physical distancing and segregation of patients with suspected or confirmed COVID-19, including a referral slip or log.
6. Maintain a transfer log and a copy of each patient's medical records or charts; perform daily reporting to local health authorities.
7. Clean and disinfect the vehicle and equipment after each transfer with appropriate detergent and disinfectant solution (e.g. alcohol 70% for small items, 0.1% sodium hypochlorite solution) *(1)*. Do not spray solutions as this may spread the virus. Instead, apply solution to cloths or disposable paper towels. If cleaning cloths are used, they must be laundered after each use and sufficient stocks of cleaning cloths should be available.
8. Consider all waste from or in contact with suspected or confirmed cases as infectious and segregate from general waste *(1)*. Dispose of waste at a designated point of collection. When not using a facility vehicle (e.g. ambulance), bags with infectious waste are discharged at the facility for proper final disposal.
9. Replenish supplies. For IPC measures, ensure having at least: alcohol-based hand rub, PPE (medical mask, eye protection, gown, gloves) for transfer and for cleaning, and equipment for cleaning, disinfecting and managing waste *(1,2)* (Annex).
10. Optimize ventilation in vehicles during transport. Natural ventilation (open windows) is preferred to reduce risk of transmission of infectious particles. Establish spatial separation between the patient and driver if possible.
11. Monitor and document the health of all staff involved in transfer and transport.
12. Monitor and record staff symptoms daily. Staff showing symptoms including fever and/or respiratory and/or other symptoms, should report to their superior (e.g. occupational health or IPC officer), stop working or do not present to work, and isolate as per their facility procedures *(3)*.

2.1.3. Designated health facilities

1. Receive referred patients, coordinating closely with **service providers for transfer and transport** and the **coordinating body**. Patients intending to use self-transportation from home are recommended to first call frontline health facilities or a designated hotline for counselling to determine if urgent transfer is necessary.
2. Apply properly IPC measures throughout the clinical pathway *(1)*, such as safe transport between departments inside a hospital, including to the triage area, wards, diagnostic departments and other amenities within the hospital premises.
3. Where possible, patient movement within the facility should be kept to an absolute minimum, for example by using mobile medical imaging rather than transporting the patient to imaging facilities. In principle, high-risk patients should be always accompanied by

a HCW or auxiliary staff capable of overseeing IPC measures during in-hospital transfer. Patient should wear a medical mask during transfer, when possible. Staff in facility should comply with universal masking and wear at least a medical mask. Make essential resources (e.g. alcohol-based hand rub or soap, water and single-use or disposable paper towel) available for hand hygiene.

2.2 Safe transfer

When frontline health facilities detect patients with (suspected or confirmed) COVID-19, they should report to local health authorities and initiate emergency transfer and referral according to local guidance and SOP. All stakeholders involved in referral and transfer should have the same SOP manual with clearly defined roles and responsibilities and a communication plan.

In the facility, designate a well-ventilated waiting area with at least 1 metre between patients, for patients to wait for transfer to other facilities.

2.2.1. Preparation for transport/transfer

Select an appropriate ambulance or repurposed vehicle, with the following requirements:

a. Sealed separation between the driver's cabin and the patient compartment in the back.
b. When possible, make sure all windows are open for appropriate ventilation.
c. Furnished with a stretcher, PPE, essential equipment, cleaning agent and disinfectant, alcohol-based hand rub and specialized area for contaminated goods, including a bin with a secure lid. An ambulance should have only essential equipment and materials required for immediate use to avoid contamination.
d. Communication equipment, such as mobile phone, satellite phone or two-way radio.
e. The patient compartment part of a vehicle must be cleaned and disinfected thoroughly after each ride.

2.2.2. Guidance for transport / transfer

1. Contact the facility by telephone and notify the time of departure.
2. If no ambulance is available, transport the patient in a private vehicle with all windows open and give the patient a medical mask prior to leaving the home.
3. Drivers and HCWs perform hand hygiene and wear PPE (see Annex), wear at least a medical mask, or follow national guidelines. Note that appropriate PPE should be worn regardless of vaccination status.
4. Comply with local referral and transfer protocol for infectious diseases.
5. HCWs and drivers need to practise frequent hand hygiene before and after patient contact and after removal of their gloves.
6. If there are any suspicions of IPC breaches, HCWs and drivers need to inform their superior (e.g. occupational health/IPC officer), and follow the protocol in place *(3)*. Reporting should be encouraged and protected in a non-punitive culture.
7. Reusable PPE, such as eye protection, must be cleaned and disinfected before being reused *(1,2)*.
8. All used disposable items (e.g. disposable paper towels) must be considered as infectious waste and disposed of during cleaning/disinfection and before the next transfer *(1)*.
9. When opening window(s) is impossible and when using air conditioning or mechanical ventilation, ensure adequate maintenance such as regular change of a high efficiency particulate air (HEPA) filter. For those without a HEPA filter, avoid using the air conditioning so that air is not recycled within the vehicle *(4)*.

2.2.3. Safe transfer workflow for staff (HCWs, driver)

1. Staff practise hand hygiene and wear PPE, on top of the clean work uniform (see Annex) including:
   a. gown,
   b. medical mask (respirator for aerosol-generating procedures, e.g. N95, FFP2, KN95),
   c. eye protection, and
   d. gloves.
2. Dispatch the ambulance or repurposed vehicle to pick up the patient from their current location.
3. Upon meeting the patient, ask the patient to perform hand hygiene and wear a medical mask; explain the reason of the transfer and

secure informed consent from the patient or a family member. If working with vulnerable communities (refugees, migrant workers, etc.), ensure that translators and/or community leaders are present to facilitate informed consent and to answer any questions the patient and their family may have.

4. To minimize risk, the ambulance should not take additional family members alongside the patient. Family members are advised to perform home quarantine and monitoring of symptoms and seek primary or first-level health-care counselling if they exhibit COVID-19-related symptoms.
5. Guide the patient with clear instructions to avoid touching the ambulance unnecessarily. Assist the patient to enter the ambulance while minimizing their contact with the vehicle (e.g. staff should open and close the doors for the patient); secure the patient with a safety belt (if seated) or straps (if put on a stretcher). As a rule, assist the patient to avoid any contact unless necessary. For example, fill out patient forms for them to avoid contamination of the stationery used. Be vigilant for disinfection later where the patient comes into contact unintentionally with the ambulance.
6. Transport and hand over the patient to the destination health facility. Abide by the referral protocol including notifying the receiving facility of estimated time of arrival, patient conditions (vital signs; communicate with the receiving care team in advance of arrival on high-risk cases in terms severity of illness, measures taken and changes in their condition) and potential infectious risks.

2.2.4. After transfer/referral

- After transfer, staff must remove their PPE and perform hand hygiene (following facility and national PPE procedures).
- Dispose of used PPE in a bag for infectious waste for disposable items (e.g. gloves, masks) and in a dedicated bag for reusable items (e.g. gowns, goggles) to be reprocessed later.
- If linen was provided to the patient such as blankets or towels, they should be placed in a dedicated bag for laundering at a designated facility.
- Staff assigned for cleaning and disinfection of the ambulance or vehicle must wear appropriate PPE (Annex).
- Clean and disinfect inside the vehicle, thoroughly where the patient had contact with the vehicle (e.g. seat, door handles).
- Clean and disinfect all equipment that was in contact with the patient. For example, stretcher, wheelchair, stethoscope, blood pressure apparatus, oxygen mask, pen used for taking notes and anything that HCWs touch after assisting the patient.
- Ensure hand hygiene after cleaning and disinfection.

2.2.5. Securing occupational health for all staff

- Drivers and staff providing support for transfer/transport should monitor their temperature and symptoms, and follow the national and facility occupational health and safety guidance for health staff.
- All staff should be connected to contact tracing systems to monitor and report any symptoms, and to seek health care if feeling unwell.
- All staff, particularly those working in smaller or informal health facilities, should have access to adequate PPE and sanitizing resources to follow IPC guidelines.
- Key points to protect health workers from occupational risks amplified by the COVID-19 pandemic are described in the WHO interim guidance on occupational health and safety for health workers *(3)*.
- To perform a risk assessment and manage HCW with exposure to suspected or confirmed COVID-19 cases during their work *(5)*:
  - Step 1: Assess the type of activity in which the HCW is engaged.
  - Step 2: Determine the level of risk based on exposure and advise accordingly.
- Refer to Figure 1 in the interim guidance on "Risk assessment and management of health-care workers in the context of COVID-19" *(5)* for the process for determining exposure risk and management of HCWs in the context of health-care settings.

3. Guidance development

3.1 Acknowledgements

This document was developed and reviewed by a guideline development group composed of staff and consultants from the WHO Regional Office for the Western Pacific (WHO Health Emergencies Programme and Division of Health Systems and Services) and WHO headquarters, with expertise in safe referral and transportation, infection prevention and control, emergency medicine, public health and preventive medicine.

3.2 Guidance development methods

This document was developed based on a review of WHO and national guidelines and was validated by expert opinions based on global, regional, country and field experiences. The guideline development group reached consensus on the recommendations through group discussion.

3.3 Declaration of interests

Interests have been declared in line with WHO policy, and no conflicts of interest were identified from any of the contributors.