

GUIDELINES ON THE MANAGEMENT OF SUSPECTED AND CONFIRMED COVID-19 PATIENTS IN THE EMERGENCY MEDICINE AND TRAUMA SERVICES

Introduction

This guideline is produced based on the current available data and resources in the management of suspected COVID-19 patients.

The primary objective of this guideline is to facilitate the health care workers (HCW) in the Emergency and Trauma Department (ETD), in carrying out the management of suspected COVID-19 patients, hence, optimizing the screening, detection, isolation and institution of therapeutic intervention. Early risk detection is paramount in ensuring effective prevention and control of the disease.

Additionally, it also:

- 1) Serves to protect the HCW from being exposed to COVID-19.
- 2) Advocates the separation of walk-in patients **with respiratory symptoms** and **without respiratory symptoms** as early as primary triage contact. This will minimize the risk of disease transmission to the HCW and other patients in keeping with the WHO guidelines in IPC for infectious diseases.
- 3) Address the functions of Prehospital Care and Ambulance Services (PHCAS) in various aspects of COVID-19 operations.

General guidelines

- 1) All Emergency and Trauma Departments (ETD) should be prepared to receive the following case scenarios (Figure 1):
 - a) Walk-in or referred patients should be screened for **suspected cases of COVID-19** (Figure 2).
 - b) Walk in patients with RTK antigen results or **probable cases of COVID -19**.
 - c) Patients being referred for hospital admission. This will only apply if the ETD is part of the hospital regarded as Admitting Hospital based on MOH Guidelines (Annex 3).
- 2) All ETDs should use their internal pathway to isolate or screen walk-in patients from the triage to ensure appropriate infection prevention and control
- 3) The PHCAS should be prepared in providing the following functions
 - a) Screening for COVID-19 risk factors for all emergency calls received requesting ambulance response either through MERS999 or direct lines.
 - b) Provision of Emergency Ambulance Service for medical assessment, intervention, and transportation for probable, suspected or confirmed COVID-19.
 - c) Provision of Interfacility Transport service for patient transfer between health facilities, screening centres, admitting hospitals and quarantine stations.
 - d) Provision of specialised transport services for critically ill patients or those classified as Highly Infectious Disease (HID) patients.

- e) Supporting various agencies to mitigate the hazards posed by infectious disease in the aspects of provision of technical medical advice and response.

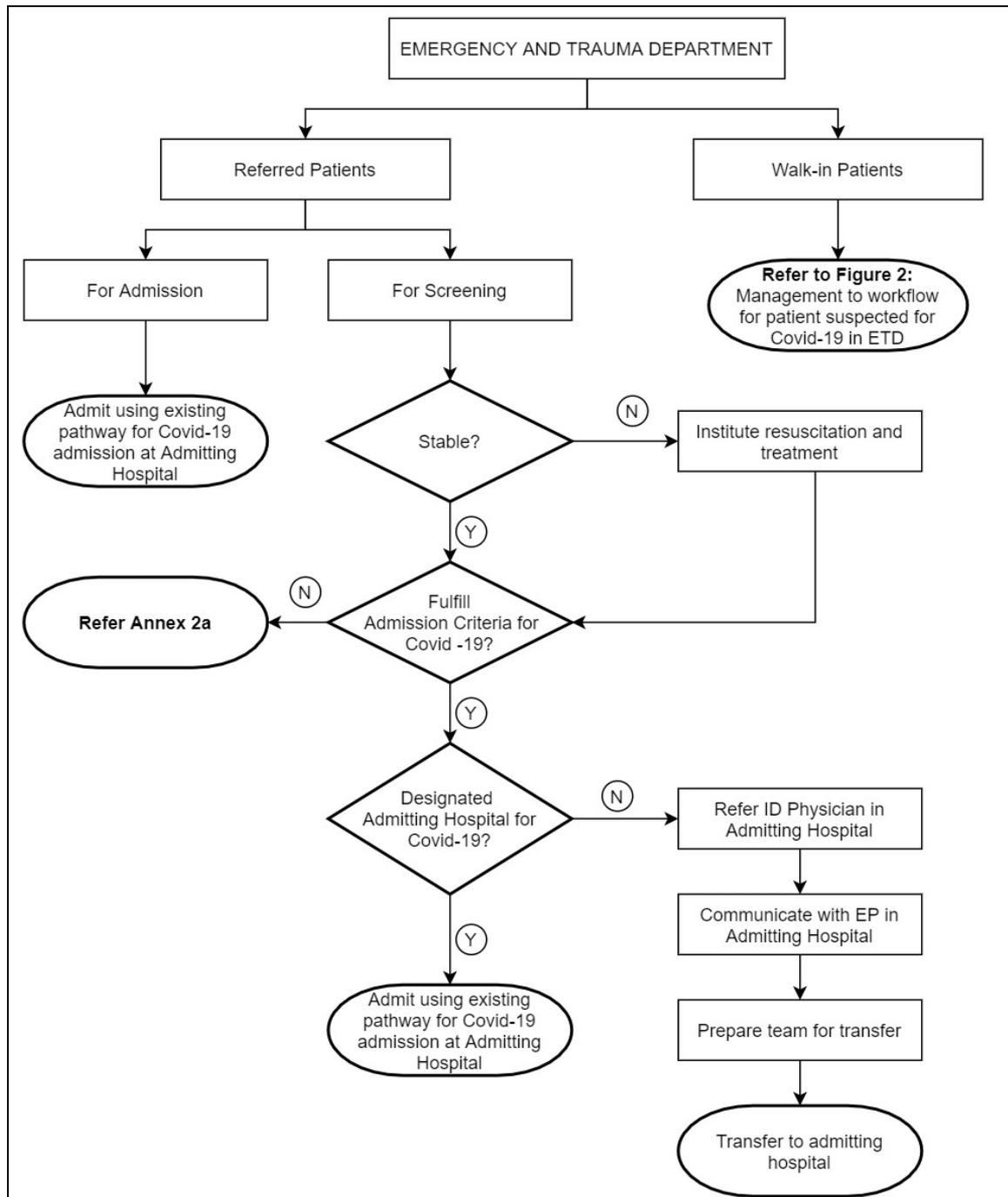


Figure 1: General workflow for probable, suspected or confirmed COVID-19 patients in ETD

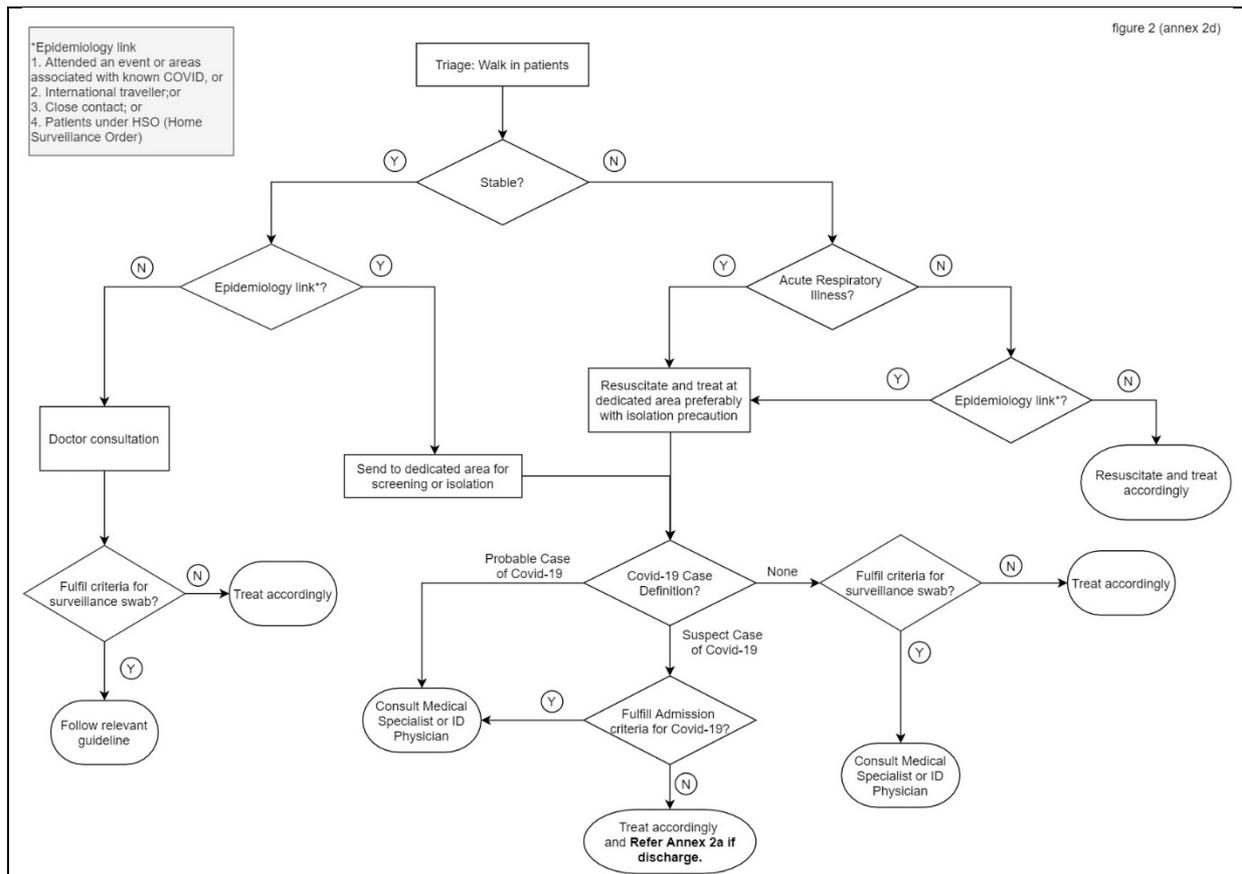


Figure 2: General method of COVID-19 screening for non-referral walk-in patients in ETD

PHCAS Emergency Call Screening for COVID-19 Risk Factors (Figure 3)

- 1) All calls requesting for ambulance service either through 999 or facility direct lines shall be screened for COVID-19 risk factors.
- 2) Screening uses a combination between geographical location of the incident and patients' own risk factors.
- 3) Once risk factor has been identified, the following must be performed:
 - a) Responding team is advised on Personal Protective Equipment use - **Protect the Team**.
 - b) Alert the responding team to the transport destination for the patient - Screening Centre, Admitting Hospital or Designated Hospital.
 - c) Maintain communications with the responding team on the clinical status of the patient.
- 4) MECC will direct the transport of patients to the right facility based on clinical acuity and MOH guidelines.
- 5) MECC will alert and coordinate with the receiving facility on reception of the patient to the right area or ward.

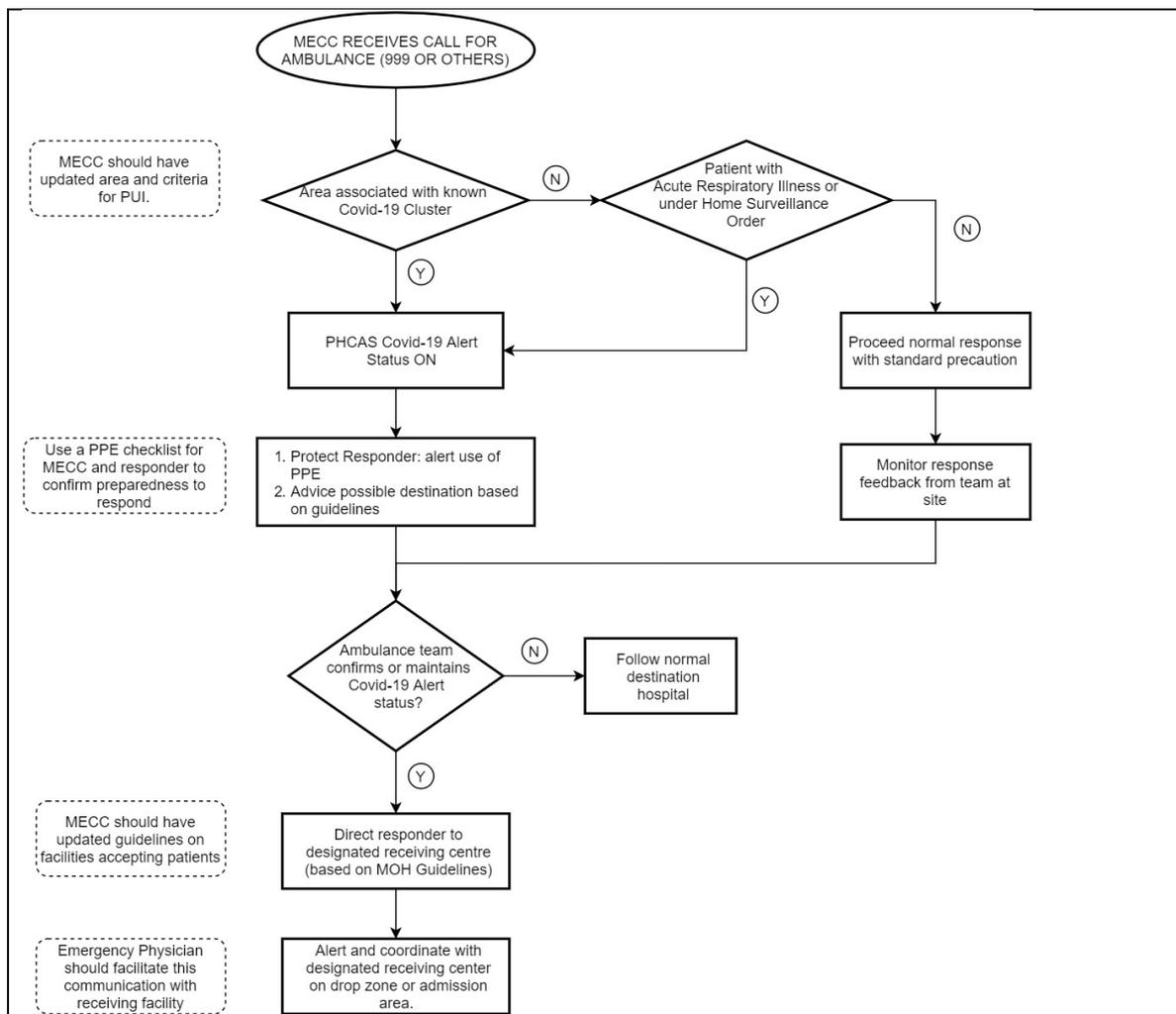
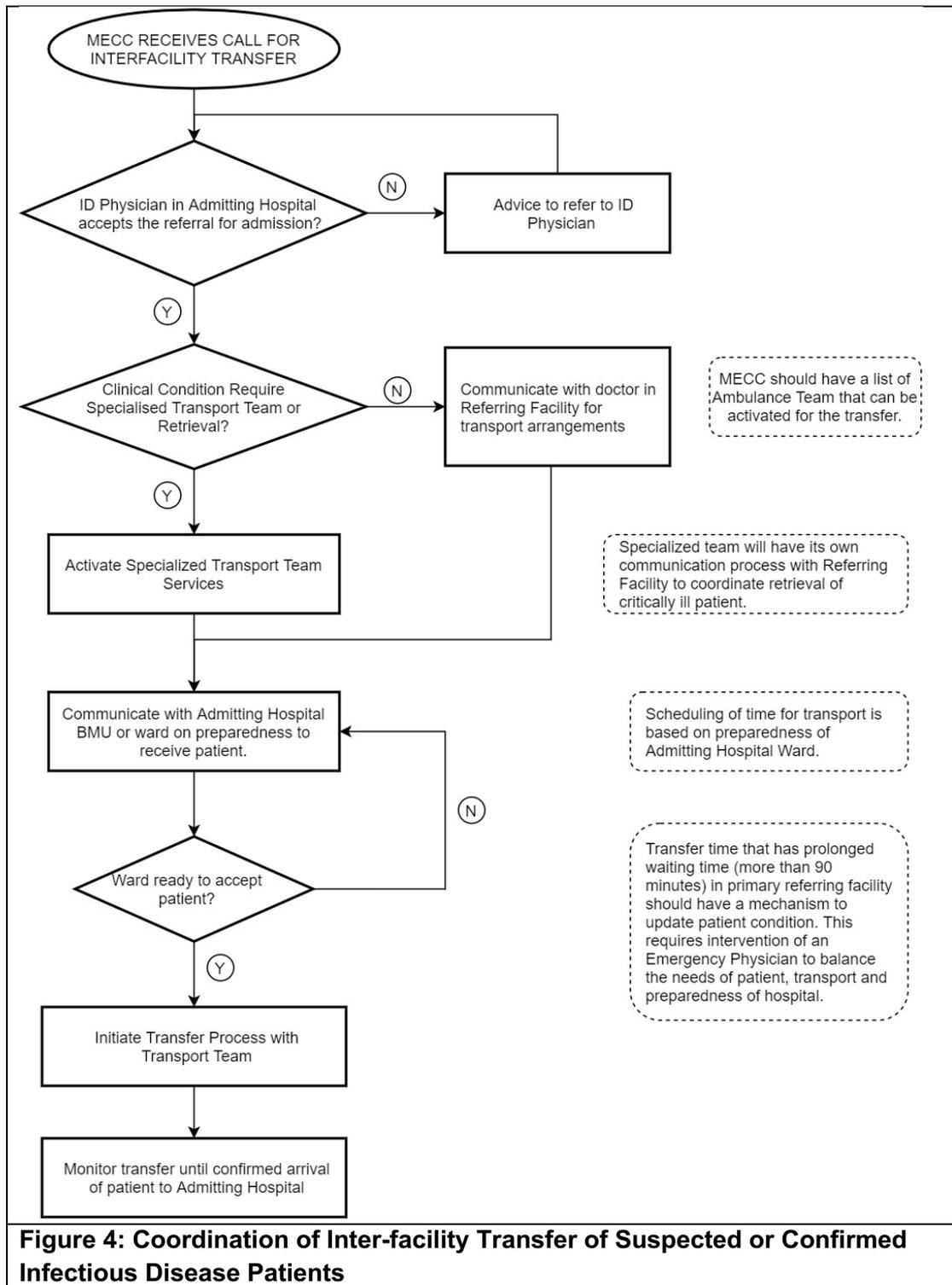


Figure 3: Management of 999 Calls by MECC during Infectious Disease Outbreak or Pandemic

PHCAS: Inter-facility Transfer Coordination for Suspected or Confirmed Infectious Patients (Figure 4).

- 1) This protocol is only activated once referral communication between Referring Facility and ID Physician of Admitting Hospital has been performed and the patient transfer is accepted.
- 2) This requires coordination between the MECC, Referring Facility ambulance team and Admitting Hospital Bed Management Unit (BMU) or ward. Objective of the communication is to minimize time waiting in the ambulance for the preparation process in the Receiving Facility.
- 3) Basic information needed for MECC to perform this task are:
 - a) Name and contact number of doctors from referring facility.
 - b) Patient demographic details (name, age, gender, IC)
 - c) Patient clinical condition - critical care, highly infectious or stable for admission.
 - d) Name of person and contact number of Receiving Facility Admission Unit.
- 4) Clinical condition of the patient will determine the ambulance and team appropriate to provide care for the transfer.

- 5) Communication with the referring facility doctor will assist in determining use of the right ambulance for the transfer. MECC will coordinate ambulance assistance for the Referring Facility that has no in-house ambulance service.
- 6) Communication with the Admitting Hospital BMU or ward will determine the schedule of transfer.
- 7) Any prolonged waiting time should be escalated to the Emergency Physician. The Emergency Physician would balance the needs of patient, transport, and preparedness of the ward.
- 8) Once logistics of team, vehicle and time has been established then the transport is initiated.
- 9) Communication and coordination are terminated once a patient has been confirmed to arrive safely in the designated Receiving Facility.



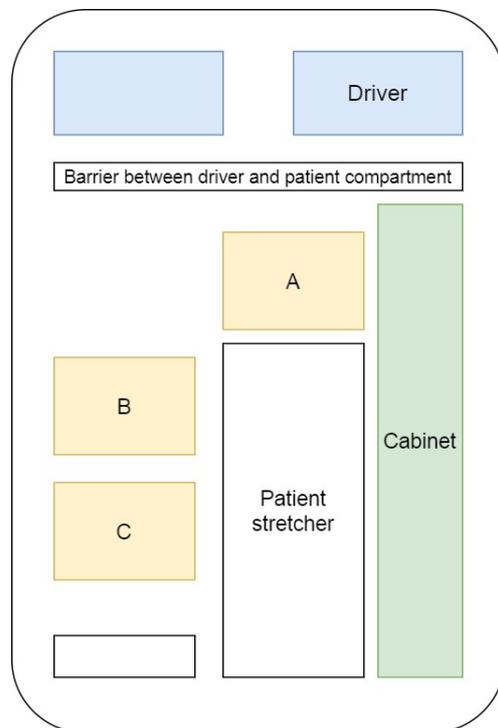
Preparation of an Ambulance for Transport of Suspected or Confirmed Infectious Disease Patient.

- 1) Finding the Right Ambulance for the Transport.
 - a) Ambulance should have separated the driver and patient compartment area.
 - b) Air flow in the ambulance should be separated between driver and patient compartment area.
 - c) Air flow in the patient compartment should be from paramedic seat to rear end (stretcher loading area).
 - d) Patient compartment ventilation should be facilitated by the Heating Ventilation Air Conditioning (HVAC) with air exhaust system.
 - e) Air flow in the ambulance compartment during movement or static should be maintained at more than 6 air exchange per hour
- 2) Preparing the Ambulance for Transport
 - a) All unnecessary equipment for the care of transported patients should be removed or stored into a bag that can be secured and cleaned after response.
 - b) Equipment that is anticipated to be used for the care of patients should be packaged into grouping such as Airway, Ventilation and Circulation. This will reduce difficulty in decontamination of exposed equipment.
 - c) Stress should always be on terminal cleansing of the ambulance rather than encapsulation of ambulance fittings. Doffing of encapsulation carries the same risk as doffing of PPE.
 - d) Always have a spillage kit available in the ambulance.
- 3) How many patients should be transported in an ambulance?
 - a) It is advisable to only transfer one patient per ambulance. The space constraint and ventilation in an ambulance makes it a risk for cross infectivity between patients if more than one is present.
 - b) Transport of more than one patient in the ambulance can be considered in a special population or situation. Medical Direction from an Emergency Physician is required for this purpose to safeguard safety of patients and staff in the ambulance.
 - c) Whenever there are more than 3 patients to be transferred in a single response; then the use of alternative transport than an ambulance should be considered such as vans or coasters or bus or even trucks.
- 4) Terminal Cleaning and decontamination of ambulance or patient transport vehicles.
 - a) Staff performing the cleansing process must adhere to PPE recommendation by IPC Team. The PPE should be similar to that worn by staff performing terminal cleansing in hospital facilities.
 - b) There are several methods of terminal cleaning of vehicles or ambulance:
 - i) Clean and wipe using the recommended solution.

- ii) Vapour distribution method using manufacturer or IPC recommended solution and device.
 - iii) Ultraviolet Germicidal Irradiation.
- c) If a solution is used then it must adhere to recommendation by the IPC Team. However, care must be used to get a solution that is least corrosive to the materials and upholstery in the ambulance.
- d) Prior to beginning the terminal cleaning process, look around the ambulance patient compartment and identify any gross contamination such as blood, vomitus or any other bodily fluid.
- e) Gross contamination must be cleansed first, before proceeding with terminal cleaning.
- 5) Cleaning and disinfection of medical equipment.
- a) Reusable medical equipment must be cleansed based on manufacturer or IPC recommendation.
 - b) Monitor cables must be wiped using IPC recommended disinfectant wipes after use for every patient.
- 6) Personal Protection Equipment for Personnel Involved in Transport of Suspected or Confirmed Infectious Disease Patient.
- a) The type of PPE used in an ambulance is determined by the acuity and infectivity of a patient.
 - b) Ambulance is an enclosed environment with limited ability for distancing. Thus, use of PPE should be emphasized at all times especially when transporting a patient without the use of a Patient Transport Isolation System.

TARGET PERSONNEL	ACTIVITY	TYPE OF PPE
Driver	<ul style="list-style-type: none"> ● Involved in driving the patient with suspected, probable or confirmed COVID-19 BUT NO direct contact with the patient. ● Also involved in loading and unloading of patients ● Always maintain at foot end of stretcher ● Windows should be kept open throughout the drive (about 3cm only) ● Use HVAC with fresh air intake 	<ul style="list-style-type: none"> ● Surgical mask ● Isolation Gown (fluid-repellent long-sleeved gown) OR long-sleeved plastic apron ● Gloves ● Eye Protection (face shield/goggles)
Healthcare worker (HCW)	<ul style="list-style-type: none"> ● Transporting suspected, probable or confirmed COVID-19 patient to the referral health care facility 	<ul style="list-style-type: none"> ● N95 mask ● Isolation Gown (fluid-repellent long-sleeved gown) ● Gloves ● Eye Protection (face shield/goggles) ● Head cover

- 7) The seating arrangement in an ambulance is a dynamic process based on acuity, infectivity and seats available in the ambulance.



Paramedic Seating	Patient Condition	Type of Intervention
A	<ul style="list-style-type: none"> Normal patient with low monitoring requirement 	None
	<ul style="list-style-type: none"> Intubated patient with patient transport isolation system 	Airway
B	<ul style="list-style-type: none"> Critically ill patient 	Circulation/ Medication
C	<ul style="list-style-type: none"> Normal patient with low monitoring requirement Can also be used to sit second patient of same risk 	None

- 8) Patient preparation prior to boarding of the ambulance:
- Patients that can tolerate use of face masks should be provided with a face mask.
 - Nasal prong oxygen can be used inside a face mask.
 - Rebreathable oxygen masks can be used inside a face mask. Caution when using face mask over a non-rebreathable oxygen mask.
 - Awake patients should be asked to sanitize their hands prior to boarding into an ambulance.

- e) Patients can be seated at the side chair or propped up into seating position on the stretcher.
 - f) Use of safety belts must be ensured.
 - g) Patients with high oxygen requirements should be informed to an Emergency Physician.
 - h) Directive on need to intubate the patient with subsequent retrieval must be considered to prevent performing aerosol generating procedures during transfer.
- 9) Special Considerations on Transport of Highly Infectious Disease Patients (HIDP).
- a) Patient Transport Isolation System (PTIS) are available to be used in transporting HIDP.
 - b) The use of PTIS require a specialised team that are:
 - i) Care and use of the system.
 - ii) Adaptation of medical procedures with the system.
 - c) Each type of PTIS has its advantages and limitation on:
 - i) Vehicle space requirements for its use.
 - ii) Clinical acuity of patients suitable for its use. Some PTIS require patients to lie supine only.
 - iii) Environment suitable for the PTIS operations.

Management of patient referred for screening in ETD

- 1) The **Primary Team Physician** (ID Physician, Physician or Paediatrician) is responsible to inform the dedicated Screening Hospitals ETD (based on the MOH list of screening hospitals) on the patient's arrival.
- 2) The ETDs will screen the patient using the method similar for walk-in patient, which includes the assessment of patient's stability. The expected outcomes are:
 - a) Patient fulfils suspect or probable case criteria and requires hospital admission
 - b) Patient fulfils suspect case criteria but does not require hospital admission; patient will be discharged under home surveillance (Annex 2a).
 - c) Patient fulfils suspect case criteria but does not require hospital admission however unsuitable for home surveillance. Patient should be considered to be admitted in quarantine station.
 - d) Patient who does **NOT** fulfil suspect or probable case criteria but fulfils criteria for surveillance swab will be managed according to SARI or relevant guideline.
 - e) Patient who does **NOT** fulfil suspect or probable case criteria, or criteria for surveillance swab will be treated accordingly.
- 3) Patients who are admitted to the hospital will follow the existing hospital's admission process for COVID-19 patients (Annex 2b).
- 4) Patients who are being transferred to another facility for admission will be transported based on the current local protocol agreement for interfacility transfer. Communication between the referring and the referred Emergency Physicians (EP) should occur prior to transport.

Management of patient referred for admission

- 1) The **Primary Team Physician** is responsible to inform the Admitting Hospital ETD on the patient's arrival, his/ her clinical status and also the designated ward.
- 2) Patients who are admitted to the hospital will follow the existing hospital's admission process for COVID-19 patients (Annex 2b).

Specific guidelines for HCW in the ETD

- 1) Patient **with respiratory symptoms/ acute respiratory infection (ARI)** must be reminded to wear surgical mask (if tolerable). If not tolerable, patient should be advised to cover the nose and mouth during coughing or sneezing with tissue or flexed elbow.
- 2) HCW are advocated to wear appropriate PPE based on the treatment zones and type of procedures.
- 3) HCW attending ARI patient should wear appropriate PPE as per guidelines
 - a) Surgical mask
 - b) Long sleeved plastic apron
 - c) Gloves
 - d) Eye protection (face shield/goggles)
- 4) HCW performing aerosol generated procedures (AGP) in ARI area such as intubation, nebulization, high flow mask more than 6L/min, open suction, oropharyngeal or nasopharyngeal swab and etc should wear appropriate PPE as per guidelines
 - a) N95 mask
 - b) Isolation gown (fluid-repellent long-sleeved gown)
 - c) Long sleeved plastic apron
 - d) Gloves
 - e) Eye protection (face shield/goggles)
 - f) Head cover
 - g) Boot cover/shoe cover (ONLY when anticipate spillage and vomiting)
- 5) Patient **without respiratory symptoms/ non acute respiratory infection (non-ARI)** can still be infected with COVID-19 particularly in the presence of epidemiology link. They can present with non-respiratory symptoms such as fever, lethargy and rarely diarrhoea.
 - a) It is pertinent for HCW to identify and manage them in a designated area with appropriate PPE (e.g. isolation room, decontamination room).
 - b) If patient fulfils suspect or probable criteria, COVID-19 test should therefore be performed. This is to ensure effective infection prevention and control.
- 6) Administration of oxygen driven nebulization is not recommended for asthmatic and COPD patients with mild to moderate exacerbation. Utilization of MDI via spacer is advocated instead to prevent the HCW from AGP exposure.
- 7) Provision of nebulized bronchodilators is only reserved for patients with severe exacerbation.

- 8) For management of SARI patients, please refer to Ministry of Health Guidelines on Infection Control and Clinical Management of Severe Acute Respiratory Infections/ Pneumonia TRO COVID-19.