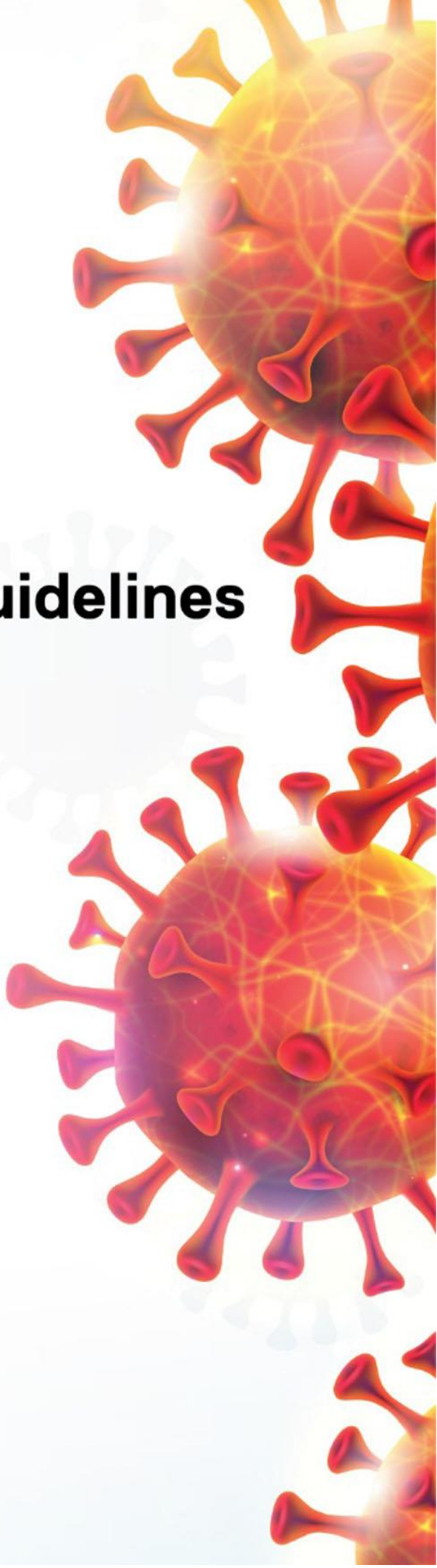
Health Protection Agency

COVID-19
Quick Reference Guidelines

Version 11

13th June 2021



Contents

What is new in this version of quick reference guidelines

1. **COVID-19 case definition** (Revised) page 10, Prior to this version of the guideline, the COVID-19 case definitions were last revised on 6th January 2021 and disseminated to all health facilities in a circular issued by Ministry of Health. This version of the guideline makes further revisions to the case definitions to include red eyes as an additional symptom in the clinical criteria for suspected case. A positive antigen test with preconditions is added as one of the criteria for a confirmed case of COVID-19.

2. **Selection of personal protective equipment (non-COVID and COVID pathway)** (page 15-25) **and ANNEX 5 PPE selection** (page 173)**:** (Revised). In the previous version of the SOP, PPE recommendations were given for health facilities in areas of community transmission and COVID-19 care facilities. Currently Greater Male area is going through a large surge in the epidemic and there are outbreaks in several inhabited islands. With travel between Greater Male' and atolls and between islands, all islands across the country are currently at high risk for COVID-19 outbreaks, hence, PPE recommendations in this guideline are provided to apply to all non- COVID care pathways in all health facilities in addition to COVID-19 care pathways.

3. **Options for temporary measures due to the shortage of personal protective equipment (PPE): extended use, reprocessing, or use of alternative PPEs** (New) page 38

4. **Environmental cleaning for areas with suspected cases in a non-healthcare setting** (Revised) page 46. Concentration of bleach solution is revised with the ratio of 1 ml bleach in 49 ml of water (0.1% sodium hypochlorite solution) instead of the recommendation to use of 1 ml bleach in 9 ml of water (0.5% sodium hypochlorite solution) in the previous version of this guideline.

5. **Environmental cleaning for public areas** (Revised) page 47. The recommendation for bleach concentration for disinfection has been revised from a ratio of 1 ml bleach in 49 ml water (0.1% sodium hypochlorite) to a ratio of 1 ml bleach in 99 ml of water (0.05% sodium hypochlorite)

6. **Spill decontamination** (Revised) page 50. For disinfection after surface contamination with blood or body fluids, revised recommendation is to use diluted bleach solution in a ratio of 1 ml bleach to 9 ml of water (0.5%) instead of the previous recommendation of 1 ml bleach in 4 ml water (1%).
7. **Rapid antigen diagnostic testing for COVID-19** (New) page 54
8. **Rapid molecular point of care testing for COVID-19** (New) page 57
9. **Deisolation criteria** (Revised) **page 62.** Duration of isolation is to be counted from date of collection of the positive sample instead of symptom onset date. As a large number of persons test positive on a daily basis during the current surge, it has become operationally challenging for contact tracing staff to call each positive case to ascertain symptom onset date, hence sample collection date is used to issue the isolation document. Additional issues with symptom onset date to determine the duration of isolation includes, inaccuracies in patient recalling the date, situations such as mild symptoms, intermittent symptoms, patients who have chronic similar symptoms from other diseases can cause uncertainty in ascertaining the symptom onset date accurately. At a time where the current surge is possibly driven by a variant of concern, due to the above-mentioned reasons, isolation duration based on sample date of the positive PCR test would be a safer strategy. Deisolation criteria for symptomatic patients in home isolation is revised to extend the isolation period to 21 days if patient is symptomatic at the end of 14 days with symptoms such as fever, shortness of breath or worsening cough. This is to ensure that symptomatic and potentially infectious patients are not released.
10. **Classification of disease severity** (Revised) page 67. The previous sPO2 criteria of <90% used to define severe disease is currently revised to < 94% to define severe disease. Initiation of O2 therapy is indicated for an sPO2 <94% with a maintenance spO2 target of 92-96% on oxygen (page 74)
11. **COVID-19 triage algorithm and management of a confirmed case of COVID-19** (Revised) page 72-78
12. **Therapeutics in COVID-19** (New) page 80
13. **Multisystem inflammatory syndrome in adults (MIS- A)** (New) page 84
14. **Follow up of COVID-19 patients after discharge from acute care** (New) page 86

15. **COVID-19 re-infection** (New) page 89

16. **Exemptions for persons who recently recovered from COVID-19 infection** (Revised) page 92

17. **Measures to be followed when asymptomatic quarantined hospital staff are allowed to continue work during quarantine due to staff shortage** (NEW) (page 109)

18. **Response to an outbreak in healthcare setting** (New) page 117

19. **Preventive measures in outpatient clinics and pharmacies during COVID-19** (New) page 118

20. **General measures to be implemented in the atolls** (Revised with the addition of island taskforce structure, page 134, and addition of a table of tasks to be completed by island taskforces and island health facilities for COVID-19 preparedness. ANNEX 1 page 163.

21. **COVID-19 vaccination** (New) page 149-161.

22. **Considerations regarding blood transfusion** (Revised) page 136 The time duration for recovered patients to refrain from blood donation is revised from 28 days after deisolation to 14 days after full resolution of symptoms in a symptomatic person and 14 days after the last positive PCR test in case of an aymptomatic person. These changes are as per the WHO guidance in February 2021 on the subject.

1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This novel corona virus was first identified in Wuhan City, Hubei Province, China.

It was initially reported to the WHO on 31st December 2019. The virus was isolated on 7th January 2020 by the Chinese authorities and on 30th January 2020 the WHO declared the COVID-19 outbreak a public health emergency of international concern. On 11th March 2020, the WHO declared COVID-19 a global pandemic.

As per WHO situation update, by 3rd June 2021, over 170 million confirmed cases have been reported globally with more than 3 million deaths, since the start of the pandemic.

Maldives reported first case of Covid-19 on 7th March 2020 and on 12th March 2020, public health emergency was declared in the country. Initial cases were mostly imported cases. First case of community transmission in Male' was reported on 15th April 2020. As of 3rd June 2021, 66,516 confirmed cases of COVID-19 have been reported in the country with 173 deaths.

As of June 2021, Greater Male area is experiencing a third surge in the epidemic with COVID-19 cases reported in multiple islands.

2. INFORMATION ABOUT FREQUENTLY ASKED QUESTIONS: COVID-19

Disease

- Coronavirus disease 2019 (COVID-19)

Organism

- SARS-coronavirus-2 (SARS-CoV-2)

Incubation period

- Most estimates show about 1-14 days

Period of infectivity

- 1-3 days prior to symptom onset and upto 10 days after symptom onset in mild or asymptomatic cases
- upto 21 days in severe illness

Modes of transmission

- Person to person spread via respiratory droplets produced when an infected person coughs or sneezes (usually within 6 feet distance)
- Spread from contact with infected surfaces or objects

Symptoms

- Fever (some people may not have fever)
- Cough
- Shortness of breath
- Sore throat
- Anosmia / ageusia
- Myalgias
- Headache
- Confusion
- Diarrhoea
- Nausea

Outcome

- Mild disease: 40%
- Moderate disease: 40%
- Severe disease: 15%
- Critical: 5%

Risk groups

- Elderly (>60 years)
- People with underlying conditions such as hypertension, COPD/ other chronic lung conditions, diabetes, cardiovascular and cerebrovascular conditions and immunocompromising conditions
- Smokers
- BMI≥ 30kg/m2
- Pregnancy

3. COVID-19 CASE DEFINITIONS

Suspected COVID-19 case is a person who fulfils criteria A or B or C below:

A- A person who meets the clinical **AND** epidemiological criteria

Clinical Criteria:

AT LEAST ONE of the following symptoms:

- cough
- fever
- shortness of breath
- sudden onset (new onset) of anosmia (loss of smell) or ageusia (loss of taste) in the absence of any other identified cause.

OR

ANY TWO OR MORE of the following symptoms: Myalgia, headache, sore throat, runny nose, red eyes, generalized weakness /fatigue, nausea/vomiting, diarrhoea, altered mental status. (Symptoms separated with slash (/) are to be counted as one symptom).

Epidemiological Criteria:

Any one of the following criteria:

- A history of travel to or residence or working in a location with risk of transmission* of COVID-19 during the 14 days prior to symptom onset.
  OR
- A person who is a close contact of a traveler coming from an area with risk of transmission of COVID-19
  OR
- In the past 14 days having visited or worked at a health care facility

B- A patient with severe acute respiratory illness (SARI: acute respiratory infection with history of fever or measured fever of ≥ 38 C°; AND cough; with onset within the last 10 days; AND requires hospitalization).

C- Death in a person who meets the clinical AND epidemiological criteria.[3]

Probable COVID-19 case is a person who fulfils any of the criteria below:

A. patient who meets clinical criteria **AND** is a contact of a probable or confirmed case, or linked to a COVID-19 cluster[1]

B. A suspected case with chest imaging showing findings suggestive of COVID-19 disease[2]

C. Death, not otherwise explained, in a person who meets the clinical criteria **AND** was a contact of a probable or confirmed case or linked to a COVID-19 cluster[1]

[1]A group of symptomatic individuals linked by time, geographic location and common exposures, containing at least **one PCR confirmed** case.

[2] Typical chest imaging findings suggestive of COVID-19 include the following:

- Chest radiography: hazy opacities, often rounded in morphology, with peripheral and lower lung distribution
- Chest CT: multiple bilateral ground glass opacities, often rounded in morphology, with peripheral and lower lung distribution
- Lung ultrasound: thickened pleural lines, B lines (multifocal, discrete, or confluent), consolidative patterns with or without air bronchograms.

Confirmed case of COVID-19: is a person who fulfils any of the criteria below:

A. A person with laboratory confirmation of COVID-19 by detection of SARS-CoV-2 RNA (positive PCR test) irrespective of clinical signs and symptoms. OR

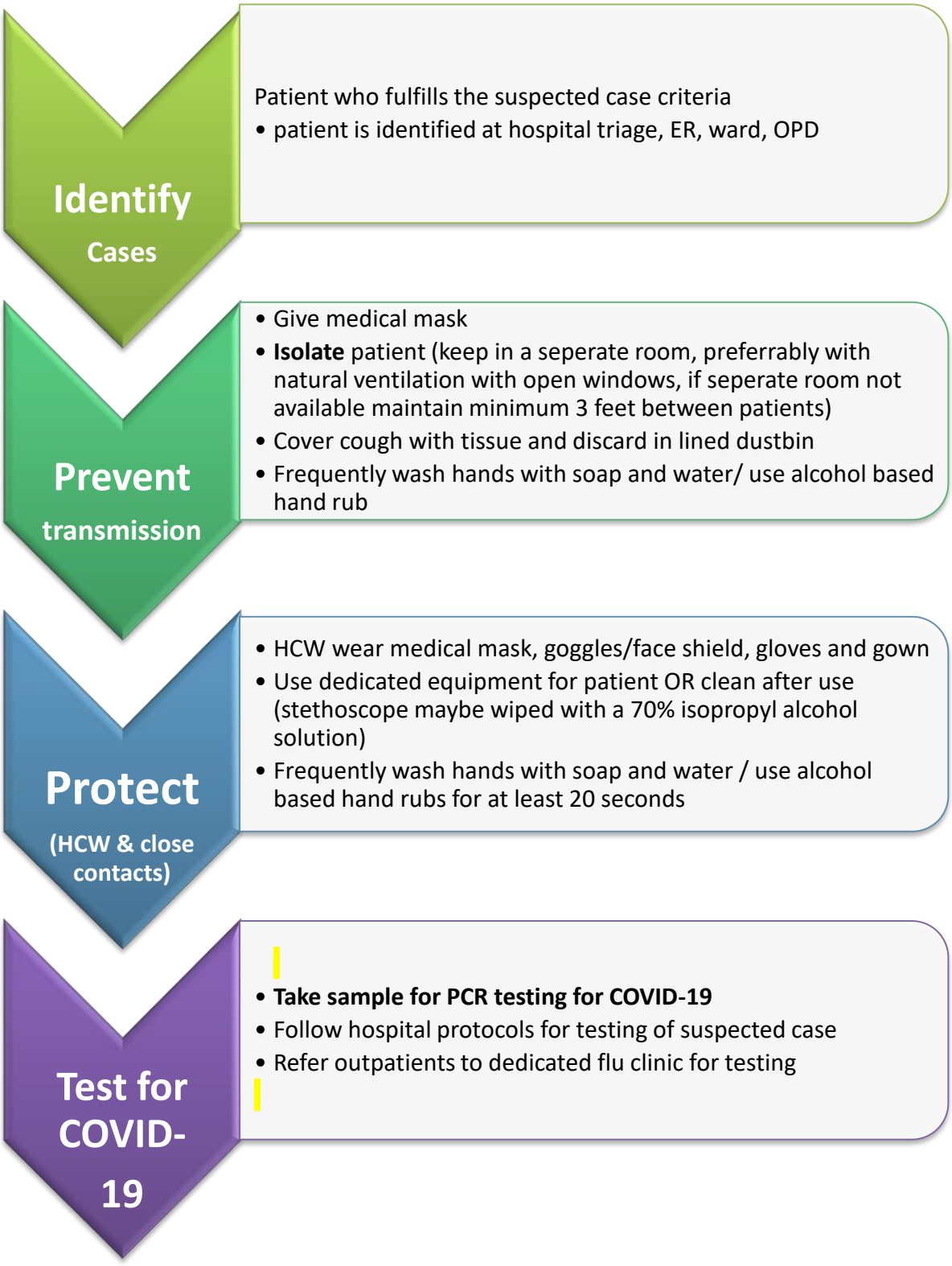
B. A person with a positive SARS-CoV-2 Antigen detection rapid diagnostic test (Ag-RDT) AND meeting the suspected or probable case criteria, where the test has been performed in situations approved by HPA for antigen test based on epidemiological situation and performed at an establishment which has been approved by Ministry of Health for performing Ag-RDT[4].

*locations with risk of transmission include: countries, cities or islands with local or community spread of COVID-19; Islands and tourist establishments which receive international tourists such as tourist resorts, tourist guest house islands and safaris; islands which receive travellers from Greater Male' Area or receive travellers from other islands; islands under construction; people staying or working in closed residential settings such as drug rehabilitation centres, prisons, shelter homes for children, adults and disabled persons.

NOTE- PCR testing MUST be done in all suspected or probable cases of COVID-19.

- **Clinical and public health judgement should be used to determine the need for further investigation in patients who do not strictly meet the clinical or epidemiological criteria.**
- [3]**Any death** in a person under quarantine, **Any unexplained death** in any city or island or in any tourist establishment or in any island under development must be informed to HPA and must be tested for COVID-19.
- [4]**Antigen testing should only be done in specific situations approved by HPA/MOH based on disease epidemiology and in an establishment registered under MOH and approved for conducting Ag-RDTs. This approval may be for a specific geographical area and for a specific period depending on disease spread in these regions. Results of Ag-RDTs must be reported to HPA.**

4. INITIAL RESPONSE TO A SUSPECTED CASE IDENTIFIED AT A HEALTH FACILITY



5. PERSONAL PROTECTIVE EQUIPMENT (PPE)

5.1 AEROSOL GENERATING PROCEDURES

It is recognised that HCW may be subject to repeated risk of exposure to SARS-CoV2 during their daily work.

The highest risk of transmission is during aerosol generating procedures (AGPs), and use of enhanced respiratory protective equipment is indicated for HCWs during such procedures. These procedures should ideally be performed in a negative pressure isolation room or in a room with good ventilation. The door of the room should be kept closed and the number of people in the room should be limited to a minimum during such procedures.

The following procedures are considered to be potentially infectious AGPs for COVID-19:

- Endotracheal intubation and extubating
- Manual ventilation
- Respiratory tract suctioning
- Non-invasive ventilation (NIV); Bi-level Positive Airway Pressure Ventilation (BiPAP) and Continuous Positive Airway Pressure Ventilation (CPAP)
- Tracheotomy or tracheostomy procedures (insertion or open suctioning or removal)
- Bronchoscopy and upper ENT airway procedures that involve suctioning
- Sputum induction induced by using nebulized hypertonic saline
- Upper gastro-intestinal endoscopy where there is open suctioning of the upper respiratory tract
- High-speed cutting in surgery/post mortem procedures if this involves the respiratory tract or paranasal sinuses
- Dental procedures using high speed devices such as ultrasonic scalers and high-speed drills
- High Frequency Oscillatory Ventilation (HFOV)
- High flow nasal oxygen (HFNO)

Note: Nebuliser treatment is not considered an AGP as per WHO, NERVTAG and Public Health England. However, some authorities consider nebuliser treatment as AGP. It is advisable to defer nebulisation in favour of MDI and spacer use, if possible.

5.2 CONTACT AND DROPLET PRECAUTIONS

STOP

Contact and Droplet precaution:

Note: For aerosol generating procedure use contact and airborne precaution

STOP

Clean hands, including before entering and when leaving the room

- **With soap and water if visibly soiled or**
- **Alcohol based hand rub**

GOWNS

- Put on gown **before room entry**.Discard gown **before room exit**
- Do not wear the same gown and gloves for the care of more than one person.

MASK and goggles / face shield

- Make sure their eyes, nose and mouth are fully covered before room entry

- Remove face protection **before** room exit.

GLOVES

- Put on gloves **before** room entry.
- Discard gloves **before** room exit

DEDICATED EQUIPMENTS

- Use dedicated or disposable equipment.
- Clean and disinfect reusable equipment before use on another person

5.3 AIR BORNE AND CONTACT PRECAUTIONS

STOP

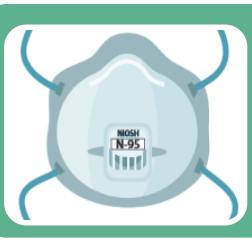
AIRBORNE and CONTACT precaution:

Aerosol generating procedures:
Airway suctioning, intubation, sputum induction, NIV, tracheostomy, etc. (refer to list of AGPs)

STOP

Clean hands, including before entering and when leaving the room
- Use soap and water if visibly soiled or
- Alcohol based hand rub

GOWNS
- Put on gown before room entry.Discard gown before room exit
- Do not wear the same gown and gloves for the care of more than one person.



USE N-95 MASK

Make sure their eyes, nose and mouth are fully covered before room entry
- Remove mask **AFTER** room exit

EYE PROTECTION with GOGGLES
- Make sure their eyes are fully covered before room entry
- Remove eye /face protection outside the room or in anteroom if available.

GLOVES
- Put on gloves before room entry.
- Discard gloves before room exit

DOOR TO ROOM MUST REMAIN CLOSED

In clinical areas, HCWs are recommended to wear scrubs, closed shoes or boots

5.4 SELECTION OF PERSONAL PROTECTIVE EQUIPMENT (Non-COVID pathway)

Table 1: The following are PPE recommendations for non-COVID pathways of all health facilities

SETTING	TARGET PATIENTS/ PERSONNEL	ACTIVITY	TYPE OF PPE OR PROCEDURE
Ambulance & transfer vehicle (COVID or non-COVID pathway)	Staff, healthcare workers, who is needed to attend patient during transfer	Transporting patient from home to healthcare facility or transfer between health care facilities Assisting with loading or unloading patient	✓ Designated work clothes or scrub (wear a reusable gown over work clothes if in an area of local or community transmission) ✓ Surgical mask (wear N95 in areas of local or community transmission AND patient is sick with likelihood of needing to perform AGP such as CPR) ✓ Gloves ✓ Eye protection (goggle / face shield) ✓ Closed shoes/boots
	Driver (All ambulances should have a partition between the driver and patient area)	If the driver assists the patient then the PPE should be removed and hand hygiene done prior to entering into driver's compartment. If he/she is needed to attend to the patient, he/she will need to wear a new PPE	**If assisting with loading or unloading of the patient**: ✓ PPE as above (Remember to remove PPE before entering driver's compartment) **If no direct contact with the patient within 6 feet distance:** ✓ Work clothes ✓ Surgical mask
Vehicle cleaning staff (COVID or non-COVID pathway)	Cleaning staff	Cleaning transport vehicles (land and sea) after and between transport of patients including suspected or confirmed COVID-19 cases	✓ Washable jump suit/Washable water proof, long sleeved top and pants or water proof apron over work uniform ✓ Surgical mask ✓ Face shield ✓ Heavy duty gloves ✓ Gum boots
Triage	Healthcare workers	Providing direct care to patients	✓ Scrubs (wear a reusable gown over scrubs if in an area of local or community transmission) ✓ Surgical mask. (N95 in areas of local or community transmission AND likelihood of needing to perform AGP such as CPR) ✓ Face shield or goggles ✓ Closed shoes Perform hand sanitization in between each patient.
	Other staff	No direct contact with patient (presence of a	✓ Surgical mask ✓ Closed shoes

		barrier or no exposure to patients within 6 feet)	✓ If there would be exposure to a patient within 6 feet distance to use face shields or use physical partition at the counter
Temperature check at entry to health facility (thermal camera or manual)	staff	No direct physical contact	✓ Work clothes ✓ Surgical mask ✓ Face shield if no barrier ✓ Closed shoes
Registration/ memo counters	Staff at registration and memo counters		✓ Surgical mask ✓ Use physical partitions at the counters. If no physical partition, use face shield Perform hand hygiene in between serving patients
COVID-19 sample collection	Health care workers	Providing direct care to patient including sample collection	✓ Scrubs/work uniform ✓ Gown ✓ N 95 mask (if N95 not available, wear surgical mask and take NP swab only without OP swab and make the patient wear a surgical mask to cover the mouth during NP sampling) ✓ Gloves ✓ Face shield or goggles ✓ Closed shoes
Emergency room (HCWs in resus/red zone/ other areas of ER where patients are admitted for observation or treatment)	Health care workers posted or visiting these areas of the ER to provide care to the patients.	Providing direct care to patients in these areas of ER	✓ Scrubs ✓ Eye protection (goggles/face shield) ✓ Gloves (standard precaution and risk assessment) ✓ Surgical mask ✓ Closed shoes **In an area of local or community transmission:** ✓ Wear N95 mask **in areas of community transmission** ✓ Gown (wear a reusable gown over scrubs) ✓ If performing an AGP: use N95 mask, goggles AND face shield, wear an additional pair of gloves ✓ Water proof apron over gown if risk of exposure to fluids
Wards	Doctors and healthcare workers	Doctors, nurses and other health care workers	✓ Scrubs

		involved in direct care of the patients in the ward	✓ Eye protection (goggles / face shield) ✓ Gloves (standard precaution and risk assessment) ✓ Surgical mask ✓ Closed shoes **In an area of local or community transmission:** ✓ Wear N95 mask in high-risk wards where respiratory cases and other sick cases are managed ✓ Gown (wear a reusable gown over scrubs) ✓ If performing an AGP: use N95 mask, goggles AND face shield, wear an additional pair of gloves ✓ Water proof apron over gown if risk of exposure to fluids
General OPD	Doctors, clinical assistants and other health care workers	Performing consultation of patients in outpatient department	✓ Scrub ✓ Face shield ✓ Surgical mask ✓ Gloves (standard precaution and risk assessment) ✓ Closed shoes/boots **In an area of local or community transmission:** ✓ Gown (if performing a procedure) ✓ N95 mask, goggles AND face shield and additional pair of gloves if performing any AGP. ✓ Water proof apron over gown if risk of exposure to fluids
General ICU/NICU/CCU/ HDU	Health care workers	Doctors and allied health professionals	✓ Scrubs ✓ Eye protection (goggles/face shield) ✓ Gloves (standard precaution and risk assessment) ✓ Surgical mask ✓ Gown (wear a reusable gown over scrubs) ✓ Closed shoes/boots **In an area of local or community transmission:** ✓ Wear N95 mask ✓ If performing an AGP: use N95 mask, goggles AND face shield, wear an additional pair of gloves ✓ Water proof apron over gowns if risk of exposure to fluids

Operation Theatres	Health care workers	Health care workers posted in the area; providing direct care to patient	✓ Scrubs ✓ Gowns ✓ Surgical head cover ✓ Surgical mask ✓ Eye protection (goggles) ✓ Gloves ✓ Closed shoes/ gum boots **In an area of local or community transmission:** ✓ If performing an AGP: use N95 mask, goggles AND face shield, wear an additional pair of gloves ✓ Water proof apron over gown (if risk of exposure to fluids)
Dialysis unit	Health care workers	Health care workers posted in the area; providing direct care to patient	✓ Scrubs ✓ Eye protection (goggles/face shield) ✓ Gloves (standard precaution and risk assessment) ✓ Surgical mask ✓ Gown (wear a reusable gown over scrubs) ✓ Closed shoes/boots **In an area of community transmission:** ✓ N95 mask if performing any AGP. ✓ Water proof apron if performing procedure with risk of fluid exposure
Dispensary	Pharmacist	While handling prescriptions and dispensing medications	✓ Work uniform ✓ Face shield (if no barrier at the counter) ✓ Surgical mask ✓ Closed shoes Perform hand hygiene in between serving patients
Laboratory/ blood bank	Lab staff and support services	While handling and performing laboratory tests	✓ Scrub or working uniform ✓ Face shield / goggles (if direct contact with patient without barrier or risk of splash) ✓ Surgical mask ✓ Gloves (standard precautions and risk assessment) ✓ Gown or apron (standard precaution and risk assessment) ✓ Closed shoes **Note:** all manipulations of potentially infectious materials that may cause splashes,

			droplets or aerosols of infectious materials like loading and unloading of sealed centrifuge cups, grinding, blending, vigorous shaking or mixing, sonic disruptions, opening of containers of infectious materials whose internal pressure may be different from the ambient pressure, should be performed in appropriately maintained and validated BSCs or primary containment devices.
Radiology department	Staff in direct contact with patients	Any radiological procedure with direct contact with patients	✓ Scrubs ✓ Face shield ✓ Surgical mask ✓ Gloves (standard precaution and risk assessment) ✓ Closed shoes **In an area of community transmission:** ✓ N95 mask if performing any AGP ✓ Water proof apron if performing procedure with risk of fluid splash
Laundry	Laundry staff	Do not enter patient care areas	✓ Heavy duty gloves ✓ Reusable, waterproof, long sleeved top and pants/ water proof aprons over working uniform ✓ Surgical mask ✓ Boots/closed work shoes ✓ When sorting and loading of laundry items: wear a face shield (minimize sorting as much as possible)
Cleaners in Non-COVID areas	Cleaners in non-COVID areas	General OPD and general ward: cleaning hospital premises, cleaning after and between transfer of patients, after and in-between consultation with patients, before and after waste disposal	**OPD area cleaners:** ✓ Work clothes ✓ Water proof apron over work clothes (if risk of splash) ✓ Surgical mask ✓ When performing splash generating procedures: wear a face shield ✓ Gloves ✓ Boots/closed work shoes **Ward area cleaners:** ✓ Work clothes ✓ Water proof apron over work clothes ✓ Surgical mask ✓ When performing splash generating procedures: wear a face shield ✓ Heavy duty gloves ✓ Boots/closed work shoes

Waste management	Waste management staff	Do not enter patient care areas. Waste should be collected in double bags	✓ Heavy duty gloves ✓ Reusable, waterproof, long sleeved top and pants/ water proof aprons long sleeved over working uniform ✓ Surgical mask ✓ Boots/closed work shoes ✓ Face shield depending on risk assessment
Waste management (no direct contact with waste)	Waste transporting staff	No direct contact with waste	✓ Work clothes ✓ Heavy duty gloves ✓ Surgical mask ✓ Water proof apron ✓ Boots/closed work shoes
Handling of dead bodies	Health workers and other staff	Perform handling, moving and transporting of dead bodies in health facilities	✓ Scrubs/work clothes ✓ Long sleeve impermeable gown ✓ Water proof apron (if using cloth gown) ✓ Surgical mask ✓ Face shield ✓ Gloves ✓ Closed shoes
Handling of dead bodies	Cemetery staff	Prepare the dead for burial and placing the body in the grave	✓ Work clothes ✓ Long sleeve impermeable reusable gown over work clothes ✓ Water proof apron (if using cloth gown) ✓ Surgical mask ✓ Face shield ✓ Gloves ✓ Gum boots

- Ensure frequent hand hygiene with soap and water / alcohol-based hand rub before and after wearing PPE
- Wear the PPE before entering into patient room/ward area
- Remove PPE inside the ward area 6 feet distance away from the patient (if using N95 mask; all PPE except N95 mask should be removed inside the patient's room) and remove the N95 once outside the room.
- Hand hygiene should be performed before and after room exit and after removing N95 mask
- PPE should be removed by handling the uncontaminated areas of the PPE as much as possible and if the hands get contaminated during PPE removal, use alcohol-based hand rub.
- The shoes/ boots should be wiped clean with 70% alcohol solution or boots maybe washed and disinfected by wiping with bleach solution 1ml bleach to 49ml water
- Please refer to ANNEX 6 for steps of PPE donning and doffing.
  Useful link: https://youtu.be/bG6zISnenPg

5.5 SELECTION OF PERSONAL PROTECTIVE EQUIPMENT (COVID pathway)

Table 2: The following are PPE recommendations for designated COVID-19 isolation facilities or COVID pathways of health facilities which deal with suspected or confirmed cases of COVID-19

SETTING	TARGET PATIENTS/PERSONNEL	ACTIVITY	TYPE OF PPE OR PROCEDURE
Emergency room	• Healthcare workers posted in resus/red zone of the COVID area of ER Providing direct care to patient	Providing direct care to suspected or confirmed cases of COVID-19 being managed in these areas	✓ Scrubs ✓ Gown/Hazmat Coverall ✓ Gloves ✓ N95 mask ✓ Eye protection (goggles) ✓ Surgical head cover ✓ Closed shoes ✓ Boot cover **In addition, if performing any procedure or splash is expected,** ✓ Gloves (2nd pair) ✓ Goggles **AND** face shield ✓ Water proof apron over gowns
	• Healthcare workers posted in areas other than Resus/Red zone of the COVID area of ER.	Providing direct care to suspected or confirmed cases of COVID-19 being managed in these areas.	✓ Scrubs ✓ Gown ✓ Gloves ✓ N95 mask ✓ Eye protection (goggles) ✓ Surgical head cover ✓ Closed shoes **In addition, if performing any procedure or splash is expected** ✓ Gloves (2nd pair) ✓ Goggles **AND** face shield ✓ Water proof apron over gowns ✓ Boot cover
	• Health care workers visiting ER to see a patient or to perform a procedure	Visiting doctors and allied health professionals	✓ Scrubs ✓ Gown ✓ Gloves ✓ N95 mask ✓ Eye protection (goggle) ✓ Surgical head cover ✓ Closed shoes **In addition, if performing any procedure or splash is expected** ✓ Gloves (2nd pair) ✓ Goggles AND face shield ✓ Water proof apron over gowns ✓ Boot cover

ICU	• Healthcare workers posted in the area	Providing direct care to patients	✓ Scrubs ✓ Gown/Hazmat Coverall ✓ Gloves x 2 ✓ N95 mask ✓ Eye protection (goggles) ✓ Surgical head cover ✓ Closed shoes with Boot cover ✓ Head Bonnet **In addition, if performing any procedure or splash is expected** ✓ Goggles AND face shield ✓ Water proof apron over gowns
	• Healthcare workers	Visiting HCWs (e.g. taking rounds with no plans to perform any procedure)	✓ Scrubs ✓ Gown (long sleeved) ✓ Gloves ✓ N95 mask ✓ Eye protection (goggles) ✓ Surgical head cover ✓ Closed shoes with boot covers
	• Attendants	Entering the room of ICU patients and care areas for cleaning purpose in ICU where critical care is given	✓ N95 mask ✓ Gown (long sleeved) ✓ Heavy duty gloves ✓ Eye protection (if risk of splash from organic material or chemicals) ✓ Gum boots or closed work shoes
Operation theatre	Healthcare workers posted in the area	Providing direct care to patients	✓ Scrubs ✓ Gown/Hazmat Coverall ✓ Gloves x 2 ✓ N95 mask ✓ Eye protection (goggles) ✓ Surgical head cover ✓ Closed shoes with Boot cover ✓ Head Bonnet **In addition, if performing any procedure or splash is expected** ✓ Goggles AND face shield ✓ Water proof apron over gowns

COVID-19 ISOLATION FACILITY			
SETTING	**TARGET PATIENTS/PERSONNEL**	**ACTIVITY**	**TYPE OF PPE OR PROCEDURE**
Wards including main nursing counter	• All staff, including healthcare workers	Providing direct care to patients	✓ Gloves ✓ Gown (long sleeved) ✓ N95 mask (if N95 not available, may wear surgical mask unless performing AGP) ✓ goggles ✓ Boots or closed work shoes **If performing any procedure OR fluid exposure** ✓ 2nd gloves ✓ Goggles AND face shield ✓ Water proof apron over gowns ✓ Boot cover
	• Attendants	Entering the room of patients and care areas	✓ Surgical Mask/N95 if aerosol generating procedure is on going ✓ Gown (long sleeved) ✓ Heavy duty gloves ✓ Eye protection (if risk of splash from organic material or chemicals) ✓ Boots or closed work shoes
	• Cleaners in patient areas	Entering patient care areas for cleaning	✓ Utility or heavy-duty gloves ✓ Reusable, waterproof, long sleeved top and pants/ water proof aprons over working uniform ✓ Surgical mask / N95 if aerosol generating procedure is on going ✓ Boots/closed work shoes ✓ When performing splash generating procedures: wear a face shield
Corridors other office areas	Cleaners	DO NOT enter patient care areas	✓ Surgical mask ✓ Heavy duty gloves ✓ If fluid exposure, apron over work clothes ✓ Boots or closed work shoes

Administrative area	All staff, including healthcare workers	Administrative tasks that do not involve contact with patients or going into patient care area	✓ Surgical Mask
Conference room	All staff, including healthcare workers	Administrative tasks that do not involve contact with patients or going into patient care area	✓ Surgical Mask

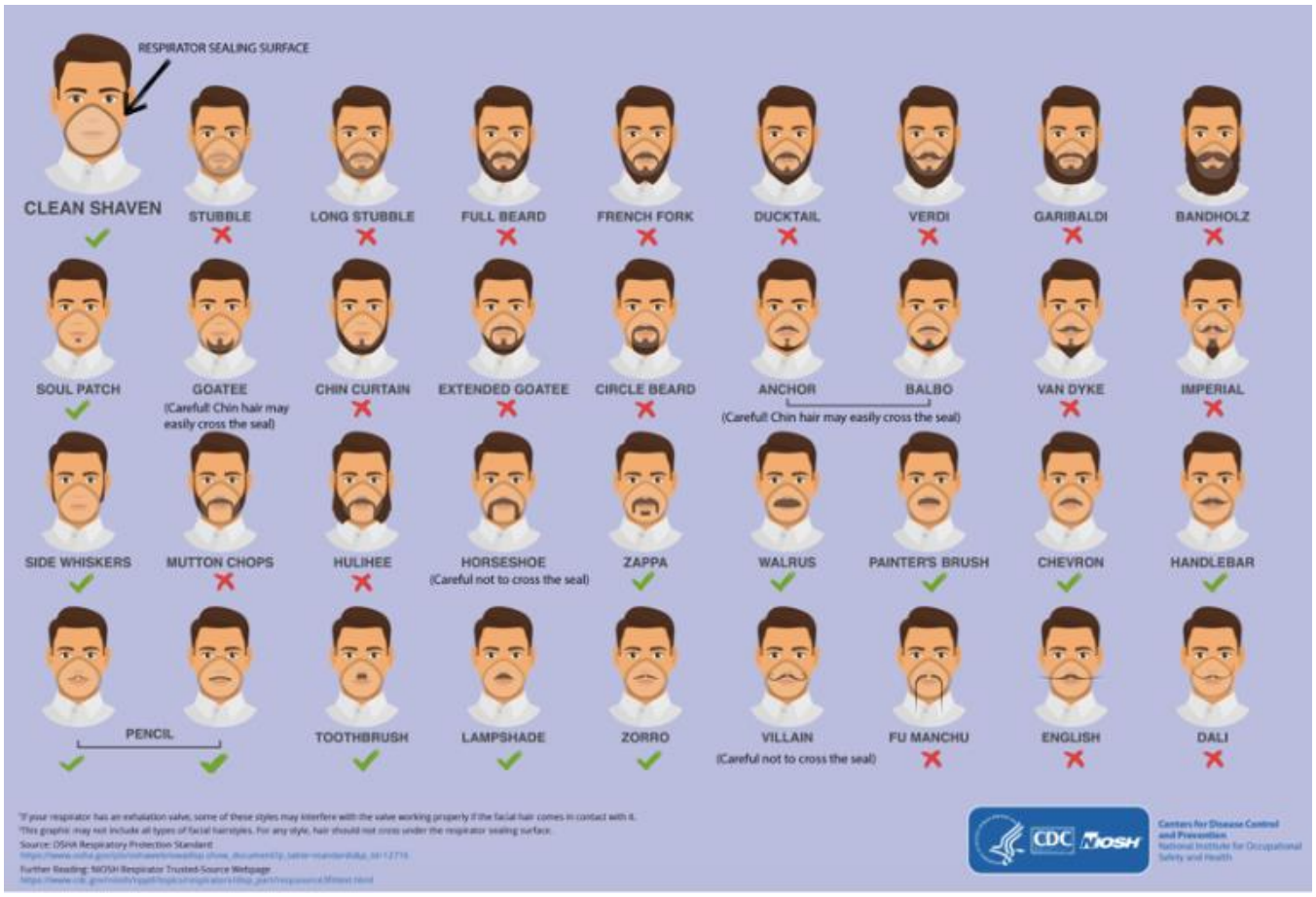
- Ensure frequent hand hygiene with soap and water / alcohol-based hand rub before and after wearing PPE
- Wear the PPE before entering into patient room/ward area
- Remove PPE inside the ward area 6 feet distance away from the patient (if using N95 mask; all PPE except N95 mask should be removed inside the patient's room) and remove the N95 once outside the room.
- Hand hygiene should be performed before and after room exit and after removing N95 mask
- PPE should be removed by handling the uncontaminated areas of the PPE as much as possible and if the hands get contaminated during PPE removal, use alcohol-based hand rub.
- The shoes/ boots should be wiped clean with 70% alcohol solution or boots maybe washed and disinfected by wiping with bleach solution 1ml bleach to 49ml water
- Please refer to ANNEX 6 for steps of PPE donning and doffing. Additional posters are available specific for different areas (Isolation ward and the ICU setting). Please contact HPA to get a copy.
  Useful link: https://youtu.be/bG6zISnenPg

5.6 SELECTION OF PERSONAL PROTECTIVE EQUIPMENT (FRONTLINE ESSENTIAL WORKERS)

Table 3: (Frontline essential workers in all islands and Greater Male' area)

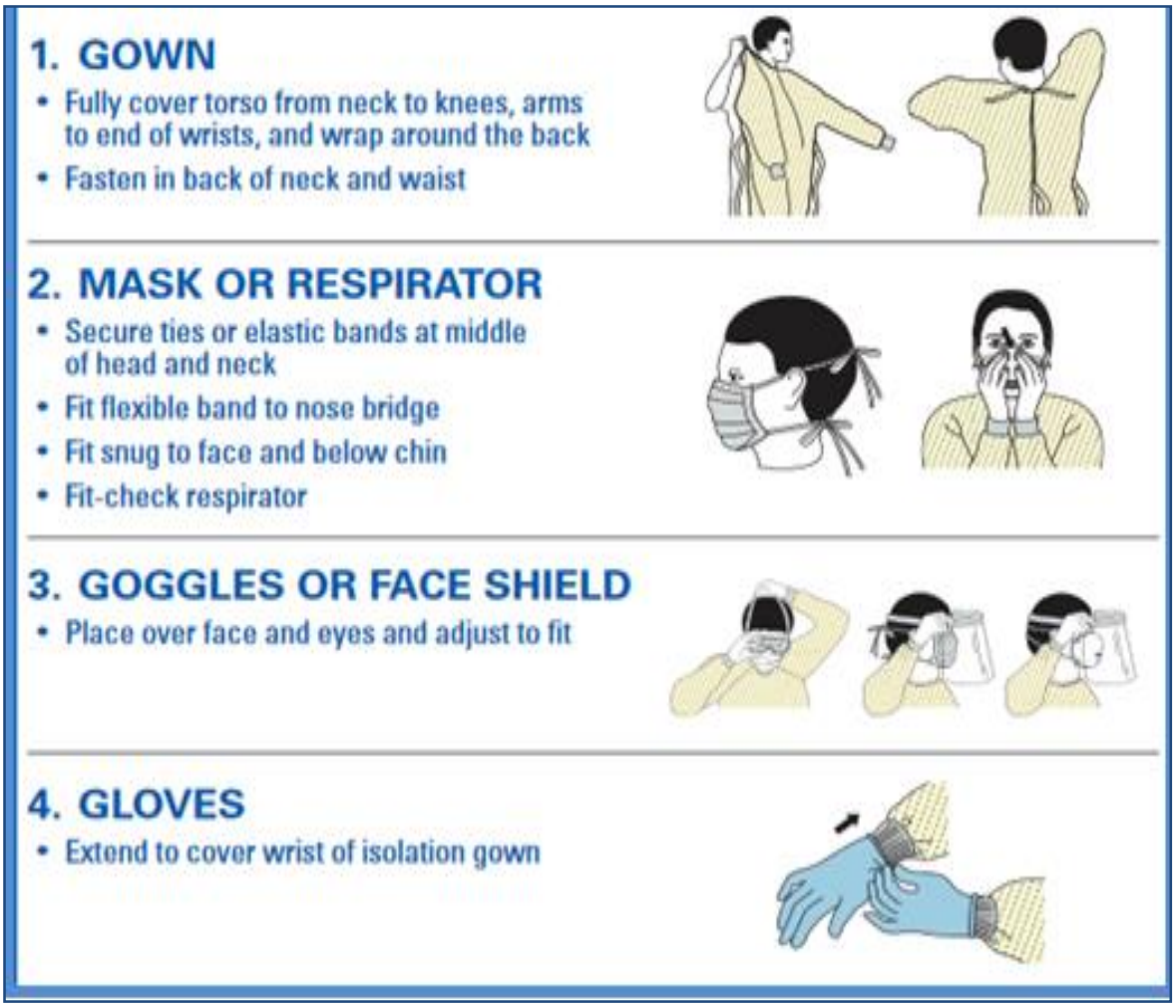
FRONT LINE ESSENTIAL WORKERS (Non health care setting)			
SETTING	**TARGET PERSONNEL**	**ACTIVITY**	**TYPE OF PPE OR PROCEDURE**
Front line workers non- health care setting	Front line workers	Essential workers entering houses for utility services Essential workers in the community setting such as shops and markets, staff of restaurants and cafes	✓ Work clothes ✓ Cloth mask with 3 fabric layers ✓ Reusable face shield if contact within 1 metre without a barrier. • Counters at shops and other places which serve customers should have plastic barrier if possible. • Perform frequent hand hygiene • Maintain physical distancing of at least 1 metre
Front line workers in airport	Immigration counter/customs staff, security personnel, airline counter staff etc	Attending to travellers and tourists	✓ Work uniform/work clothes ✓ Reusable face shield (if contact within one metre without a barrier) ✓ Cloth mask with 3 fabric layers ✓ Closed shoes • Counters which serve customers should have plastic barrier if possible. • Perform frequent hand hygiene • Maintain physical distancing of at least 1 metre
Front line workers in airport **(staff who perform passenger screening)**	Airport staff who perform passenger screening including manual body searches on passengers	Airport staff who perform passenger screening including manual body searches on passengers	✓ Work uniform/work clothes ✓ Reusable face shield ✓ Surgical mask ✓ Closed shoes ✓ Gloves. (Alcohol-based hand sanitizers should be applied to the gloves between each passenger screened. Gloves should be changed when they are obviously soiled or torn. Employees should be advised to wash their hands after removing gloves.)

5.7 FACIAL HAIRSTYLES FOR HCWS USING N95 MASKS



5.8 SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

TRIAGE AREA: Type of PPE used will vary based on the level of precaution
Wash hands -> Gown -> Mask or Respirator -> Goggles or Face Shield -> Gloves



5.9 SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE) (Method 1)

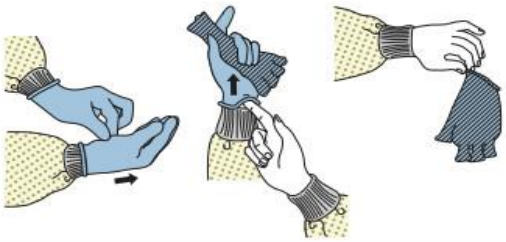
Remove: Gloves -> Goggles or Face Shield -> Gown -> Mask or Respirator

HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in an infectious* waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in an infectious* waste container

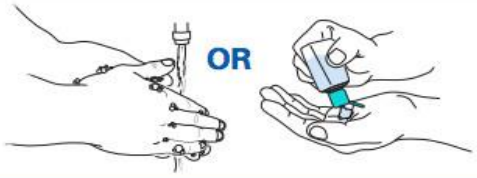
3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in an infectious* waste container

4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in an infectious* waste container

5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



* An infectious waste container is used to dispose of PPE that is potentially contaminated with Ebola virus.

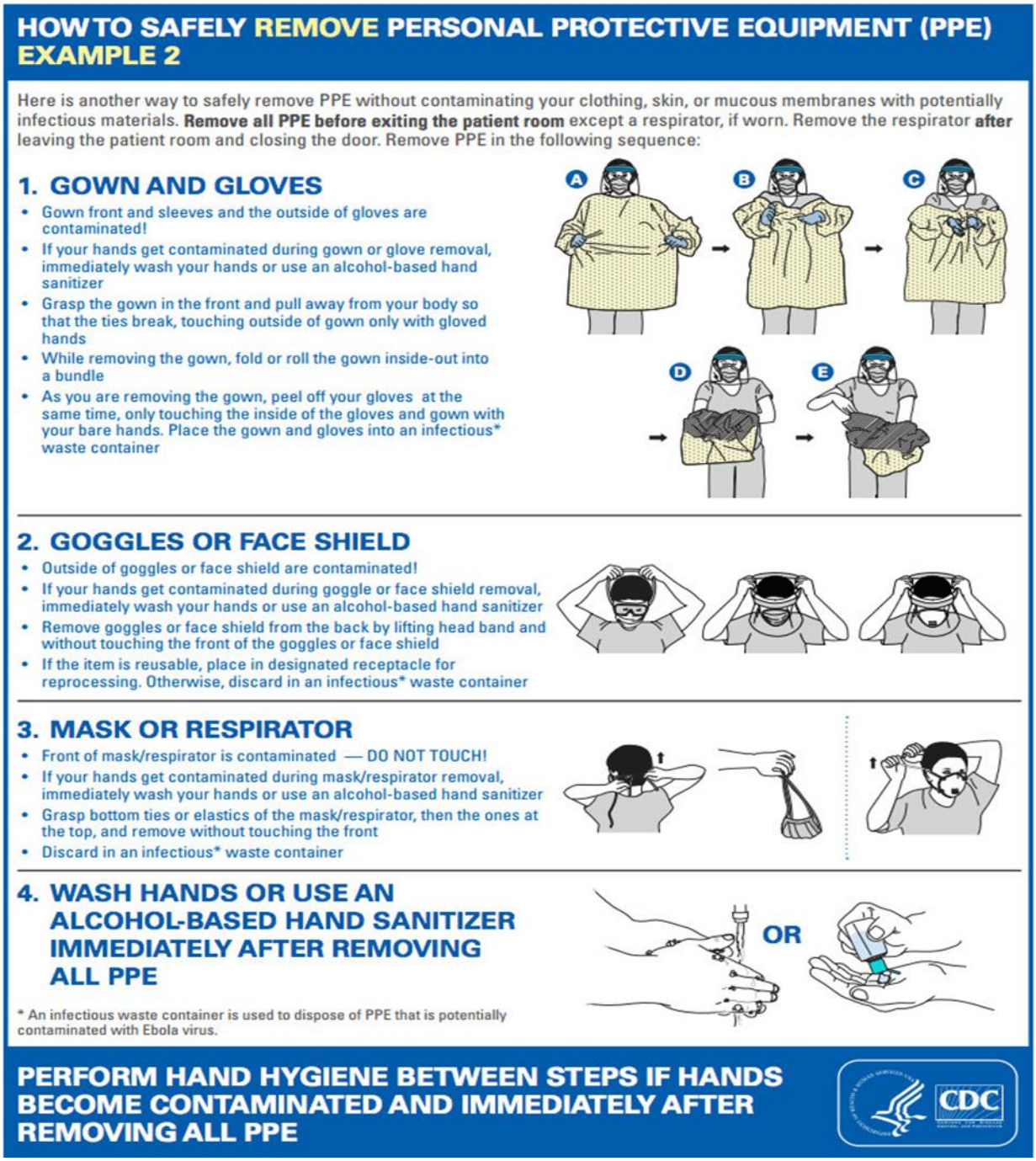
PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

CDC

In clinical areas, HCWs are recommended to wear scrubs, closed shoes or boots

5.10 SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE) (Method 2)

Remove: Gloves -> Gown -> Goggles or Face Shield -> Mask or Respirator



In clinical areas, HCWs are recommended to wear scrubs, closed shoes or boots

Important points:

- **PPE**
  - **It is recommended to have a trained observer, doffing and donning posters and mirrors (if no observer) to ensure correct use of PPE**
  - **Sequence of putting on PPE:**
    - **Wash hands -> Gown -> Mask or Respirator -> Goggles or Face Shield -> Gloves**
  - **Sequence for removing PPE**
    - **Remove: Gloves -> Gown -> Goggles or Face Shield -> Mask or Respirator and wash hands**
    - **OR**
    - **Gloves -> Goggles or Face Shield -> Gown -> Mask or Respirator and Wash hands**

- **Clean areas <u>you can touch</u> while removing**
  - The inside and back of the gown, gown's ties, inside of the gloves, ear pieces/straps of mask/goggles/respirator/face shield

- **Dirty area <u>you</u> CAN'T <u>touch</u> while removing**
  - Outside the front of the gloves, gown (includes sleeves), and outside of the mask, face shield, goggles, respirator
  - If you touch any of the dirty parts while removing PPE, perform hand hygiene with soap and water or alcohol based hand rub and then move to the next step of removal of PPE

- In clinical areas, HCWs are recommended to wear closed shoes or boots (a shoe cover may be used)

- Refer to donning and doffing sequence posters given in the annex

https://www.youtube.com/watch?v=oUo5O1JmLH0

Figure: Doffing area inside patient room shown with the door to the anteroom closed

- Full PPE should be worn before entering the room.
- The doffing or removing PPE should be done inside the patient's room, 6 feet distance away from the patient (exception only for N95 mask after aerosol generating procedures, which should be removed outside the patient's room after closing the door of the patient's room, but other PPE removed inside patients' room).
- If anteroom is available, doffing should be done in the anteroom after closing the door of the patient's room.

6. CONSIDERATIONS FOR PPE UTILIZATION

- Facilities should keep track of their current PPE inventory, supply chain and their PPE utilization rate
- Facilities should coordinate with management and relevant authorities on PPE issues
- Facilities should implement other engineering and administrative control measures (depending on the situation) such as:
    - Use face mask for suspected patients
    - Patient isolation in negative pressure room if available
    - Use physical barriers such as glass or plastic windows at reception areas, curtains between patients, etc.
    - Properly maintain ventilation systems to provide air movement from a clean to contaminated flow direction
    - Reducing the number of patients going to the hospital or outpatient settings
    - Excluding HCW not directly involved in patient care
    - Reduce face-to-face HCW encounters with patients (e.g., bundling activities, use of video monitoring)
    - Exclude visitors to patients with known or suspected COVID-19
    - Cohort patients: Group together patients who are infected with the same organism to confine their care to one area
    - Cohort HCW: Assign designated teams of HCW to provide care for all patients with suspected or confirmed COVID-19
    - Maximizing use of telemedicine
    - Exclude HCW at higher risk for severe illness from COVID-19 from contact with known or suspected COVID-19 patients if resource available
    - Designate convalescent HCW for provision of care to known or suspected COVID-19 patients.
        - During care activities where splashes and sprays are anticipated, which typically includes aerosol generating procedures.
        - During activities where prolonged face-to-face or close contact with a potentially infectious patient is unavoidable.

6.1 CONSIDERATION TO BE GIVEN DURING EXTENDED USE OF EYE PROTECTION:

Extended use of eye protection is the practice of wearing the same eye protection for repeated close contact encounters with several different patients, without removing eye protection between patient encounters. Extended use of eye protection can be applied to disposable and reusable devices.

When using eye protection for extended periods the following points should be kept in mind:

- Eye protection should be removed and reprocessed if it becomes visibly soiled or difficult to see through.
    - If a disposable face shield is reprocessed, it should be dedicated to one HCW and reprocessed whenever it is visibly soiled or removed (e.g., when leaving the isolation area) prior to putting it back on. See protocol for removing and reprocessing eye protection below.
- Eye protection should be discarded if damaged (e.g., face shield can no longer fasten securely to the provider, if visibility is obscured and reprocessing does not restore visibility).
- HCW should take care not to touch their eye protection. If they touch or adjust their eye protection, they must immediately perform hand hygiene.
- HCW should leave patient care area if they need to remove their eye protection. See protocol for removing and reprocessing eye protection below.

6.2 REUSE/REPROCESSING OF GOGGLES OR FACE SHIELD:

- Reusable / reprocessed items if possible, should be reused by the same person.
- Adhere to recommended manufacturer instructions for cleaning and disinfection.
- Cleaning and disinfection of goggles or face shield when manufacturer instructions are unavailable:
    - While wearing gloves, carefully wipe the inside, followed by the outside of the face shield or goggles using a clean cloth saturated with neutral detergent solution. Wipe off with a cloth soaked in water.
    - Carefully wipe the outside of the face shield or goggles using a wipe or clean cloth saturated with EPA-registered hospital disinfectant solution or disinfect with 0.1% sodium hypochlorite solution or diluted bleach solution (1ml bleach: 49 ml water).
    - Wipe the outside of face shield or goggles with clean water or alcohol to remove residue.
    - Fully dry (air dry or use clean absorbent towels).
    - Remove gloves and perform hand hygiene.

6.3 GOWNS AND COVERALLS:

- The disposable coveralls should be prioritized for those working in aerosol generating environments.
- Disposable fluid resistant gowns should be prioritized based upon risk assessment.
    - During care activities where splashes and sprays are anticipated.
    - During the following high-contact patient care activities that provide opportunities for transfer of pathogens to the hands and clothing of healthcare providers, such as:
        - Dressing, bathing/showering, transferring, providing hygiene, changing linens or assisting with toileting, device care or use, wound care
        - Surgical gowns should be prioritized for surgical and other sterile procedures.
- Options for Reusable (i.e., washable) gowns/coveralls:
    - Reusable fluid-resistant clothing (gowns/coveralls) maybe explored based upon risk assessment (areas with low risk of exposure to secretions and non-aerosol generating environment)
    - Reusable gowns are typically made of polyester or polyester-cotton fabrics. Gowns made of these fabrics can be safely laundered according to routine procedures and reused.
    - Care should be taken to ensure that HCW do not touch outer surfaces of the gown/coveralls during care.
    - The isolation gowns (disposable or cloth) maybe used such that the same gown is worn by the same HCW when interacting with more than one patient known to be infected with the same infectious disease when these patients are housed in the same location. Additionally, there should not be additional co-infectious diagnoses transmitted by contact.

6.4 MASK USE IN HEALTH CARE SETTING:

- In addition to the facility staff the facemasks should be made available for all symptomatic patients upon entry to the facility. All facemasks should be placed in a secure and monitored site.
- Face marks should be used properly including the proper technique during donning and doffing (including avoidance of touching the contaminated areas of the mask during doffing).
- The facemask should be removed and discarded if soiled, damaged, or hard to breathe through.
- Only N95 mask should be used during all aerosol generating procedures. Prioritize surgical N95 (fluid resistant N95) for HCW who need protection from both airborne and fluid hazard. If unavailable, to use standard N95 and face shield.

- **Extended use of N95 mask**: refers to the practice of wearing the same N95 respirator for repeated close contact encounters with several patients, without removing the respirator between patient encounters. Extended use may be implemented when multiple patients are infected with the same respiratory pathogen and patients are placed together in dedicated waiting rooms or hospital wards and the N95 are in limited supply.
    - Discard N95 respirators following use during aerosol generating procedures.
    - Discard N95 respirators contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.
    - Discard N95 respirators following close contact with, or exit from, the care area of any patient co-infected with an infectious disease requiring contact precautions.
    - Consider use of a cleanable face shield (preferred) over an N95 respirator and/or other steps (e.g., masking patients, use of engineering controls) to reduce surface contamination.
    - Perform hand hygiene with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the respirator (if necessary, for comfort or to maintain fit).
    - Extended use alone is unlikely to degrade respiratory protection. However, healthcare facilities should develop clearly instructions to advise staff to discard any respirator that is obviously damaged or becomes hard to breathe through.

- **Reuse of N95 mask:** If N95 mask is reused it should be done only on limited reuse basis and this refers to the practice of using the same N95 respirator for multiple encounters with patients but removing it (‘doffing’) after each encounter. The respirator is stored in between encounters to be put on again (‘donned’) prior to the next encounter with a patient. Such a strategy to mitigate the contact transfer of pathogens from the N95 to the wearer during reuse is to issue five respirators to each healthcare worker who may care for patients with suspected or confirmed COVID-19. The healthcare worker will wear one respirator each day and store it in a breathable paper bag at the end of each shift. The order of N95 use should be repeated with a minimum of five days between each N95use. This will result in each worker requiring a minimum of five N95s, provided that they put on, take off, care for them, and store them properly each day. Healthcare workers should treat the N95s as though they are still contaminated and follow the precautions outlined in the reuse recommendations as given below.
    - Limited reuse maybe practiced only with severe shortage of supply and the following points should be followed

- N95 respirators must only be used by a single wearer. To prevent inadvertent sharing of respirators, label the containers used for storing respirators or label the respirator itself (e.g., on the straps, between uses with the user's name
- Discard N95 respirators following use during aerosol generating procedures.
- Discard N95 respirators contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.
- Discard N95 respirators following close contact with any patient co-infected with an infectious disease requiring contact precautions.
- Use a cleanable face shield (preferred) or a surgical mask over an N95 respirator and/or other steps (e.g., masking patients, use of engineering controls like a barrier), when feasible to reduce surface contamination of the respirator. If a surgical mask is used over an N95 respirator, the surgical mask must be discarded after each use or when contaminated during use.
- Hang used respirators in a designated storage area or keep them in a clean, breathable container such as a paper bag between uses. To minimize potential cross-contamination, store respirators so that they do not touch each other and the person using the respirator is clearly identified. Storage containers should be disposed of or cleaned regularly.
- Clean hands with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the respirator (if necessary, for comfort or to maintain fit).
- Avoid touching the inside of the respirator. If inadvertent contact is made with the inside of the respirator, discard the respirator and perform hand hygiene as described above.
- Use a pair of clean (non-sterile) gloves when donning a used N95 respirator and performing a user seal check. Discard gloves after the N95 respirator is donned and any adjustments are made to ensure the respirator is sitting comfortably on your face with a good seal.
- If no manufacturer guidance is available, it is advised to limit the number of reuses to no more than **five** uses per device to ensure an adequate safety margin is maintained.
- It should be ensured that additional training and/or reminders for users to reinforce the need for proper respirator donning techniques including inspection of the device for physical damage (e.g., Are the straps stretched out so much that they no longer provide enough tension for the respirator to seal to the face? Is the nosepiece or other fit enhancements broken? etc.).

- **Decontamination of N95 masks:** Ultraviolet germicidal irradiation (UVGI), vaporous hydrogen peroxide (VHP), and moist heat have been used to decontaminate N95 masks. Refer to the manufacturer recommendation before considering the use of any method of decontamination.

7. OPTIONS FOR TEMPORARY MEASURES DUE TO THE SHORTAGE OF PPE: EXTENDED USE, REPROCESSING, OR USE OF ALTERNATIVE PPE

Medical mask use by health workers		
Measure	**Description**	**Limitations/risks/removal criteria**
1) Extended use	The use without removing for up to 6h, when caring for a cohort of COVID-19 patients	**Risks:** • Extended use of medical mask may increase risk of contamination of the mask with COVID-19 virus and other pathogens • Wearing the mask for a prolonged period may increase the chance of the health care worker touching the mask or having inadvertent under-mask touches; if the mask is touched/adjusted, hand hygiene must be performed immediately • Damage to or reactions of face skin tissue may occur with prolonged use of medical masks • Filtration media of the medical mask may become clogged, thereby increasing breathing resistance and the risk of breathing unfiltered ambient air from the sides of the medical mask • Extended periods of time in active patient wards required for health care workers **Removal criteria and precautions:** • If the mask becomes wet, soiled, or damaged, or if it becomes difficult to breathe through • If the mask is exposed to splash of chemicals, infectious substances, or body fluids • If the mask is displaced from face for any reason. • If the front of the mask is touched to adjust it • The mask needs to be changed whenever providing care outside a designated cohort of COVID-19 patients • Follow the safe procedure for removal and do not touch the front of the mask • Use of the same medical mask by a health care worker between a patient with COVID-19 and a patient who does not have COVID-19 is not recommended owing to the risk of transmission to another patient who would be susceptible to COVID-19

2) Reprocessing	No quality evidence is available to date on medical mask reprocessing and is not advised	NA
3) Alternative items in absence of medical masks	i) FFP1 respirator	**<u>Removal criteria and precautions:</u>** • If the mask becomes wet, soiled, or damaged, or if it becomes difficult to breathe through • If the mask is exposed to splash of chemicals, infectious substances, or body fluids • If the mask is displaced from face for any reason • If the front of the mask is touched to adjust it • The mask needs to be removed whenever providing care outside of designated cohort of COVID-19 patients Follow the safe procedure for removal and do not touch the front of the mask
	ii) Face shield with proper design to cover the sides of the face and below the chin To be used only in the critical emergency situation of lack of medical masks	**<u>Risks:</u>** • Protective against direct direct exposure of mouth, nose and eyes to droplets; however depends on the design and on the positioning of HCW in relation to the patient **<u>Removal criteria:</u>** • If face shield is contaminated by splash of chemicals, infectious substances, or body fluids • If face shield obstructs health care worker safety or visibility of health care environment Follow the safe procedure for removal and do not touch the front of the face shield
Respirators (FFP2, FFP3 or N95)		
1) Extended use	The use without removing up to 6h, when caring for a cohort of COVID-19 patients.	**<u>Risks:</u>** • Extended use of respirators may increase risk of contamination with COVID-19 virus and other pathogens • The prolonged period may increase the chance of health care workers touching the respirator or having inadvertent under-respirator touches; if respirator masks are touched/adjusted, hand hygiene must be performed immediately
		• Facial dermatitis, respirator-induced acne, respiratory fatigue, impaired work capacity,

		increased oxygen debt, early exhaustion at lighter workloads, elevated levels of CO2, increased nasal resistance, and increased non-compliance with best practices while wearing a respirator (adjustments, mask or face touches, under-the-respirator touches, and eye touches), have been reported after prolonged use of respirators. • Extended use may clog the filtration media, leading to increased breathing resistance **<u>Removal criteria and precautions:</u>** • If respirator becomes wet, soiled, damaged, or difficult to breathe through. • If exposed to splash of chemicals, infectious substances, or body fluids • If displaced from the face for any reason. • If the front of the respirator is touched to adjust it • Follow the safe procedure for removal and do not touch the front of the respirator • Use of the same respirator by a health care worker between a patient with COVID-19 and a patient who does not have COVID-19 is not recommended owing to the risk of transmission to another patient who would be susceptible to COVID-19
2) Reprocessing	Process to decontaminate a respirator using disinfection or sterilization methods. <u>Methods (not validated) for respirator reprocessing:</u> • vapor of hydrogen peroxide • ethylene oxide • UV radiation lamp	**<u>Limitations/ Risks:</u>** • Reprocessing methods have not been validated by substantial research and there are currently no standardized methods or protocols for ensuring the effectiveness nor integrity of the respirators after reprocessing • Shelf-life of reprocessed respirators is unknown; however, degradation of the filtration media or elastic strap after one or more sterilization cycles affects the fit of a respirator to the face • Damage to the shape of respirators due to the reprocessing may affect fit and protection properties • Number of reprocessing cycles highly variable, depending on the reprocessing method used and the respirator brand/model

		Disposal criteria and precautions: • After a pre-defined number of reuses the respirator should be discarded in appropriate contained waste receptacle according to local guidance/policy • When a respirator is removed from the face, it should be immediately placed in a designated container for reprocessing and labeled with the original wearer's name. • The respirator should be returned to original wearer after reprocessing cycle
Use of gowns by HCWs		
1) Extended use	The use without removing, when providing care of a cohort of patients with COVID-19. Not applicable if the patient has multidrug resistant microorganisms or other type of disease requiring contact precautions. In such case, the gowns should be changed between patients	**Risks** • Extended use of gowns may increase risk of contamination with COVID-19 virus • The extended use of gowns may increase the risk of transmission of other pathogens between patients **Removal criteria and precautions:** • If gown becomes wet, soiled, or damaged • If gown is exposed to splash of chemicals, infectious substances, or body fluids • When providing care outside designated cohort of COVID-19 patients • Follow the safe procedure for removal of gowns to prevent contamination of environment • Use of the same gown by a health care worker between a patient with COVID19 and a patient who does not have COVID-19 is not recommended due to the risk of transmission to another patient who would be susceptible to COVID-19
2) Reprocessing	Process to decontaminate a cotton gown by washing and disinfection methods. Reprocessing can be done with cotton gowns. Wash and disinfect cotton gowns: washing by machine with warm water (60-90°C) and laundry	**Risk** • In hot and humid weather, the cotton gown can lead to discomfort and sweating **Removal criteria:** • If gown becomes wet, soiled, or damaged

	detergent is recommended for reprocessing of the gown. If machine washing is not possible, linen can be soaked in hot water and soap in a large drum, using a stick to stir, avoiding splashing. Then soak linen in 0.05% chlorine for approximately 30 minutes. Finally, rinse with clean water and let it dry fully in the sunlight	
3) Alternatives	i) Disposable laboratory coats Only for brief contact with the patients; should not be used for prolonged contact or when performing aerosol-generating procedures and support treatments	**Risks:** • Disposable laboratory coats are less durable than gowns, so there is a risk of damage during the patient care **Removal criteria and precautions:** • If disposable alternatives to gowns become wet, soiled, or damaged • If alternative to gown is exposed to splash of chemicals, infectious substances, or body fluids • Follow the safe procedure for removal of laboratory coat to prevent contamination of environment • Use of the same laboratory coat by a health care worker between a patient with COVID-19 and a patient who does not have COVID-19 is not recommended due to the risk of transmission to another patient who would be susceptible to COVID19
	ii) Disposable impermeable plastic aprons Should be avoided when performing aerosol-generating procedures and support treatments	**Risks:** • Plastic aprons do not protect arms and the back of the torso, which can be exposed to splashes **Removal criteria and precautions:** • If disposable alternatives to gowns become wet, soiled, or damaged • If alternative to gown is exposed to splash of chemicals, infectious substances, or body fluids • Follow the safe procedure for removal of apron to prevent contamination of environment

	iii) Reusable (washable) patient gowns, reusable (washable) laboratory coats (see above recommendations for laundry of gowns)	**Risk** • Design and thickness may not be compatible with the full protection of the torso or arms **Removal criteria:** • If gown or coat becomes wet, soiled, or damaged
Use of goggles or safety glasses by health workers		
1) Extended use	The use without removing during the shift period, when caring for a cohort of COVID-19 patients.	**Risks:** • Extended use of goggles may increase the discomfort and fatigue of health care workers • Skin tissue damage may occur to face with prolonged goggle use **Removal criteria and precautions:** • If goggles are contaminated by splash of chemicals, infectious substances, or body fluids • If goggles obstruct health care worker safety or visibility of health care environment or become loose • Follow the safe procedure for removal of goggles to prevent contamination of eyes • Use of the same goggles by a health care worker between a patient with COVID19 and a patient who does not have COVID-19 is not recommended due to the risk of transmission to another patient who would be susceptible to COVID-19
2) Reprocessing	Clean goggles with soap/detergent and water followed by disinfection using either sodium hypochlorite 0.1% (1 ml bleach in 49 ml water) followed by rinsing with clean water, or 70% alcohol wipes Goggles may be cleaned immediately after removal and hand hygiene is performed OR placed in designated closed container	**Risks:** • Residual toxicity of sodium hypochlorite can occur if not thoroughly rinsed after disinfection. • Increases health care worker workload (limitation) **Removal criteria:** • If contaminated by splash of chemicals, infectious substances, or body fluids • If goggles obstruct health care worker safety or visibility of health care environment

	for later cleaning and disinfection. Ensure cleaning of goggles takes place on a clean surface by disinfecting the surface before cleaning of goggles. Appropriate contact time with disinfectant (e.g., at least 1 minute when using sodium hypochlorite 0.1%) should be adhered to before reuse of goggles. After cleaning and disinfection, they must be stored in a clean area to avoid recontamination	
3) Alternative items	Safety glasses (e.g., trauma glasses) with extensions to cover the side of the eyes.	**Removal criteria and precautions:** • If contaminated by splash of chemicals, infectious substances, or body fluids • If goggles obstruct health care worker safety or visibility of health care environment
Use of face shields by health workers		
1) Extended use Face shield must be designed to cover the side of the face and to below the chin	The use without removing during the shift period, when caring for a cohort of COVID-19 patients.	**Risks:** • Extended use of face shield may increase discomfort and fatigue • Skin tissue damage may occur to face with prolonged google use **Removal criteria and precautions:** • If contaminated by splash of chemicals, infectious substances, or body fluids • If face shield obstructs health care worker safety or visibility of healthcare environment • Follow the safe procedure for removal of goggles to prevent contamination of the face and eyes • Use of the same face shield by a health care worker between a patient with COVID-19 and a patient who does not have COVID-19 is not

		recommended due to the risk of transmission to another patient who would be susceptible to COVID19
2) Reprocessing	Cleaning with soap/detergent and water and disinfection with 70% alcohol or sodium hypochlorite 0.1%; finally rinsing with clean water if sodium hypochlorite used after contact time of at least 1 minute. Face shield may be cleaned immediately after appropriate doffing and hand hygiene is performed OR placed in designated closed container for later cleaning and disinfection Ensure cleaning of face shield takes place on surface without contamination. Disinfection of surface for cleaning of face shield is advised. Appropriate contact time with disinfectant (e.g., at least 1 minute when using sodium hypochlorite 0.1%) should be adhered to before reuse of face shield. After cleaning and disinfection, they must be stored in a clean area to avoid recontamination	**<u>Limitations/Risks:</u>** • Damage to plastic, resulting in reduced visibility and integrity • Residual toxicity of the sodium hypochlorite can occur if not thoroughly rinsed after disinfection. **<u>Removal criteria and precautions:</u>** • If contaminated by splash of chemicals, infectious substances, or body fluids • If face shield obstructs health care worker safety or visibility of healthcare environment • Follow the safe procedure for removal of goggles to prevent contamination of the face and eyes
3) Alternative	Local production of face shield	**<u>Limitations/Risks:</u>** • Suboptimal quality, including inadequate shape to ensure face protection **<u>Removal criteria:</u>** • If contaminated by splash of chemicals, infectious substances, or body fluids • If face shield obstructs health care worker safety or visibility of health care environment

8. ENVIRONMENTAL CLEANING IN A NON-HEALTH CARE SETTING

8.1 CLEANING OF AREAS WHERE A SUSPECTED OR CONFIRMED CASE RESIDED

This protocol can be used in any non-healthcare setting where a suspected or confirmed case resided

Hand hygiene:

- Use soap and water OR alcohol (>70%) based hand rub before starting to clean.
- Soap and water must be used if hands are visibly soiled
- Dry hands preferably with disposable paper towels/tissue or use clean cloth towels and replace them when wet.

PPE

- **Wear:** Mask, Apron, Gloves (may use reusable gloves, heavy duty gloves and cleaned afterwards), face shield and closed boots
- **Area:** keep well ventilated by opening the windows during cleaning and disinfection

Product:

- **For regular cleaning:** Soap/ detergent with water
- **Disinfection:**
    - Diluted bleach solution in the ratio of 1ml bleach in 49ml water or use 0.1% sodium hypochlorite solution **OR**
    - Surfaces where diluted bleach solution cannot be used (like metal) 70% ethanol solution may be used. **OR**
    - If an alternative disinfectant is used within the organization, this should be checked and ensure that it is effective against enveloped viruses

Procedure:

- First clean all areas with Soap/detergent and water
- Rinse with water
- Disinfect with diluted bleach solution in the ratio of 1ml bleach in 49 ml water
- Ensure that the premises is well ventilated (open windows) during the procedures
- Wash hands with soap and water after cleaning

Linen/laundry and utensils

- Use a laundry bag to collect dirty laundry. Do not carry dirty clothes against your body and do not shake clothes.
- Wash clothes with laundry detergent/soap in hot water (60-90 ^{o}C) and dry well. Bleach maybe added if available.
- Plates: Wash with regular dish washing liquid and dry. The plates can be reused.
- Do not share towels /beds/clothes/plates.

Cleaning of used equipment

- The clothes/ mop heads used for cleaning should be soaked for 10 minutes in soap/detergent solution in hot water (at 60 – 90 degrees C) and washed and rinsed well. Add Bleach if possible, to the solution (½ cup or 118ml bleach to 3 ½ liters of water).
- Utility gloves maybe washed with soap and water.
- Dry the products well after cleaning.
- Disposable products should be properly disposed of after use.

8.2 CLEANING OF PUBLIC AREAS

This protocol can be used for any non-healthcare setting such as ferry terminal, ferry, bus, taxi, mosques, shops, waiting rooms, hotel rooms, restaurants, cafes etc

<table>
<tr><td colspan="2">Normal cleaning:

• PPE: Apron and gloves. Recommended to wear boots</td><td colspan="2">Cleaning of frequently touched surfaces:
such as door knobs, handles, lift buttons, stair case railings, counter tops, switches, sink taps, tables, chairs, shopping basket/cart handles, floor areas of the mosque etc.

• PPE: Mask, Apron, reusable heavy duty or utility gloves and reusable face shield (if splash is expected), closed shoes
• Area: keep well ventilated by opening the windows during disinfection</td></tr>
<tr><td>Frequency</td><td>Product</td><td>Frequency</td><td>Product</td></tr>
<tr><td>At least once per day</td><td>Soap/detergent and water and rinse</td><td>At least 1- 3 times per day (depending on the usage)</td><td>Clean with Soap/detergent and water and rinse, then disinfect with diluted bleach solution in the ratio of (1ml bleach in 99 ml water)

Surfaces where diluted bleach solution cannot be used (like metal), 70% ethanol solution may be used

If an alternative disinfectant is used within the organization, this should be checked to ensure that it is effective against enveloped viruses</td></tr>
<tr><td colspan="4">• Perform hand hygiene before staring the cleaning process. use soap and water OR alcohol (>70%) based hand rub before starting to clean. Soap and water must be used if hands are visibly soiled
• Ensure that the premises is well ventilated (open windows) during the procedures
• The cleaning frequency maybe increased depending on the number of people using the premises OR the hygienic condition of the premises
• After application of bleach solution, it is recommended to avoid touching/using the surfaces until at least 1 minute. This is to give time for the bleach solution to fully act.
• Wash hands with soap and water after cleaning</td></tr>
</table>

Cleaning of used equipment

- The clothes/ mop heads used for cleaning should be soaked for 10 minutes in soap/detergent solution in hot water (at 60 – 90 degrees C) and washed and rinsed well. Add Bleach if possible, to the solution (½ cup or 118ml bleach to 3 ½ liters of water).
- Utility gloves can be washed with soap and water
- Dry the products well after cleaning.
- Disposable products should be properly disposed of after use.

9. WASTE DISPOSAL

- Waste from areas where suspected or confirmed cases of COVID-19 have resided (such as quarantine and isolation households) including used masks, gloves etc should be discarded in a dustbin lined with two water proof bags inside it.
- When the dustbin is 2/3rd full, the bags should be sealed well, marked as infectious waste and taken to waste disposal area. This waste should be autoclaved (preferred) or incinerated if available.
- If facilities for autoclaving or incineration are not available, this waste can be kept separated from other waste and the bags should not be reopened/manipulated for 72 hours. After 72 hours this waste can be discarded with normal waste.
- For guidance on waste management in health care facilities refer to the HPA guideline on health care waste management, https://covid19.health.gov.mv/wp-content/uploads/2021/03/SOP.pdf

10. ENVIRONMENTAL CLEANING FOR AREAS WITH SUSPECTED CASES IN A HEALTH CARE SETTING

Patient area	Frequency [a]	Additional guidance
Screening/triage area	At least twice daily	• Focus on high-touch surfaces, then floors (last)
Inpatient rooms / cohort – occupied	At least twice daily, preferably three times daily, in particular for high-touch surfaces	• Focus on high-touch surfaces, starting with shared/common surfaces, then move to each patient bed; use new cloth for each bed if possible; then floors (last)
Inpatient rooms – unoccupied (terminal cleaning)	Upon discharge/transfer	• Low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, bed thoroughly cleaned and disinfected
Outpatient / ambulatory care rooms	After each patient visit (in particular for high-touch surfaces) and at the end of every shift duty (at least once daily terminal clean)	• High-touch surfaces to be disinfected after each patient visit (Can use 70 percent alcohol or diluted bleach in the ratio of 1 ml bleach:49 ml water or any product active against enveloped viruses) • Once daily low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, examination bed thoroughly cleaned and disinfected
Hallways / corridors	At least twice daily [b]	• High-touch surfaces including railings and equipment in hallways, then floors (last)
Patient bathrooms/ toilets	Private patient room toilet: at least twice daily Shared toilets: at least three times daily	• High-touch surfaces, including door handles, light switches, counters, faucets, then sink bowls, then toilets and finally floor (in that order) • Avoid sharing toilets between staff and patients

[a] Environmental surfaces should also be cleaned and disinfected whenever visibly soiled or if contaminated by a body fluid (e.g., blood); [b] Frequency can be once a day if hallways are not frequently used.

After cleaning, the following disinfectants and defined concentrations can be used on environmental surfaces and they are also effective against other clinically relevant pathogens in the health-care setting:

- Chlorine-based products (e.g., hypochlorite) at 0.1% (ratio of 1ml bleach : 49 ml water) for general environmental disinfection or 0.5% (ratio of 1 ml bleach : 9 ml water) for blood and body fluid spills
- Ethanol 70-90%
- Other disinfectants can be considered, provided the manufacturers recommend them for enveloped viruses.
- Manufacturers' recommendations for safe use as well as for avoiding mixing types of chemical disinfectants should always be considered when preparing, diluting or applying a disinfectant.

11. SPILL DECONTAMINATION

PPE

- Gloves , mask, water proof apron/gown, goggles/face sheild.

CONTAIN

- Contain the spill by covering with paper towels or other absorbent material
- Saturate the contaminated area with 1% Sodium Hypochlorite solution (1 :9 dilutions)
- Wait for a contact time of at least 1 minute

DISPOSE

- Remove any broken peices by tongs/ forceps or brush and pans (do not pick up pieces with your hands)
- Dispose all contaminated materials in biohazard a bag

DISINFECT

- clean with soap and water, rinse and then swab the contaminated area with 0.5% sodium hypochlorite or diluted bleach solution (1ml bleach in 9 ml water in this proportion)
- Remove gloves and PPE and wash hands with soap and water.

Reusable items should be disinfected before use.
For routine surface cleaning in laboratory: use Sodium Hypochlorite solution at 0.1% (1ml bleach : 49 ml water).

12. PROTOCOL FOR TRANSPORTATION OF PATIENTS WITH SUSPECTED OR CONFIRMED COVID-19 INFECTION

Inform HPA	•**Transfers of suspected or confirmed cases of COVID-19 should be discussed with HPA and concerned local task force**
Sending facility	•Inform transport department about patient's condition, any special requirements during transportation. •Inform nursing team and doctors at the receiving facility regarding patients condition. If possible give an estimated time of arrival. •A written summary of the case should accompany the patient.
IPC measures for patient	•Patient should wear a medical mask. •The surface on which patient is seated (wheel chair/ vehicle seat) or lying down (stretcher) should be covered with a sheet or other physical barrier. •Tissue and hand sanitizer should be provided to the patient.
IPC measures for transport personnel	•Should wear gloves, mask and gown/overall. •Staff who were taking care of the patient in the facility should change to new PPE if they are going to accompany the patient during transport. •After transportation of patient, wash hands with soap and water or an alcohol based hand rub after gloves are removed. •The gowns/overall maybe discarded or if reusable maybe washed and reused.
Transporting the patient	•The most direct route to the destination should be taken. •Avoid contact with staff of the facility and visitors as much as possible. •The transport vehicle should preferrably have a seperate driver compartment •Open the windows of the vehicle to allow ventilation
Disinfection of vehicle and surfaces after transport	•Cleaning of wheelchairs should focus on the seat, arm rest, and back rest. •Cleaning of stretchers should focus on upper and lower surface of the stretcher pad. •Inspect the padded and metal parts of wheelchairs and stretches for contamination with blood and other body fluids. •Household soap or detergent should be used for cleaning the surfaces first and then, after rinsing, regular household disinfectant containing 0.1 % sodium hypochlorite (i.e. 1-part bleach to 49 parts of water) should be applied. If the surface has been contaminated with blood or body fluids use 0.5% sodium hypochlorite solution (1 part bleach to 9 parts of water) (refer to cleaning and spill decontamination protocol)

13. DIAGNOSTIC TESTING FOR COVID-19

13.1 DETECTION OF VIRAL RNA BY RT-PCR

To date, the most reliable and widely used diagnostic test for COVID-19 has been the RT-PCR test, using respiratory samples. Common viral gene targets include nucleocapsid (N), envelope (E), spike (S), and RNA-dependent RNA polymerase (RdRp), as well as regions in the first open reading frame.

A positive test for SARS-CoV-2 generally confirms the diagnosis of COVID-19. A negative result does not rule out the possibility of COVID-19 virus infection. A number of factors could lead to a negative result in an infected individual, including: poor quality of the specimen (small material), collection of specimens was very early or too late in the infection, the specimen was not handled properly, technical reasons inherent in the test such as virus mutation or PCR inhibition.

If the test is negative for a patient with a high index of suspicion for COVID-19, repeat testing preferably from the lower respiratory tract if possible, should be collected and tested.

Over the course of infection, the virus has been identified in respiratory tract specimens 1–2 days before the onset of symptoms and recovered patients can continue to have SARS-CoV-2 RNA detected in their upper respiratory specimens for up to 12 weeks after symptom onset due to shedding of fragments of viral RNA.

13.2 SEROLOGICAL TESTING

Serologic tests detect antibodies to SARS-CoV-2 in the blood, can help in identifying patients who have had COVID-19 infection and aid investigation of an ongoing outbreak and retrospective assessment of extent of an outbreak.

Serologic tests cannot be used for early identification of current infection as they are less likely to be reactive in the first several days to weeks of infection. Serological testing can be used to aid the diagnosis of COVID-19 re- infection, by demonstration of seroconversion or a rising titre of antibodies.

Covid-19 vaccination can affect the results of serological testing. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, these individuals may have positive antibody tests as a result of immunization. Antibody test which detects antibodies again the N-antigen (Nucleocapsid antigen) could be used in these instances. Patients who have received inactivated whole virus vaccines such as Sinopharm vaccine, may have detectable antibodies again S type antigen as well and N type antigen. Antibody testing is not currently recommended to assess immunity to COVID-19 following immunization.

13.3 ANTIGEN BASED TESTING

Antigen based tests detects the presence of viral proteins (antigens) expressed by the COVID-19 virus in a respiratory sample. If the target antigen is present in sufficient concentrations in the sample, it will bind to specific antibodies fixed to a paper strip enclosed in a plastic casing and generate a visually detectable signal, typically within 30 minutes. Antigen based tests have lower sensitivity as compared to PCR based testing.

13.4 COMPARISON BETWEEN DIAGNOSTIC TESTS

Type of test	**Molecular Test** **(Laboratory based/ rapid point of care -POC)**	**Antigen Detection**	**Antibody Test** **(Lab based / Rapid-POC)**
Sample collection			
Detection	Detect genetic material of the virus	Detect pieces of virus	Detect antibodies produced by the infected person (immune cells produced antibody needed to fight the virus)
Timing	Most likely to be positive 1-2 days before symptom onset and in early days of symptomatic infection	In symptomatic infection, within 5-7 days of symptom onset.	Take at least 7- 14 days after symptom onset to develop antibodies, and varies depending on the antibody class.
Performance	Sensitivity varies depending on sampling technique and specimen type (≈70% for NP specimens), but test is highly specific (>99%)	Antigen tests are very specific for the virus, but are not as sensitive as molecular PCR tests. Predictive value also depends on the infection rate within the community.	Both sensitivity and specificity are highly variable depending on type of test

13.5 RAPID ANTIGEN DIAGNOSTIC TESTING FOR COVID-19

The clinical performance of rapid antigen diagnostic tests largely depends on the circumstances in which they are used. SARS-CoV-2 Rapid antigen tests (Ag-RDT) perform best when the person is tested in the early stages of infection with SARS-CoV-2 when viral load is generally highest.

General recommendations:

i) Ag-RDT testing is recommended to be performed only on symptomatic persons, within the first 5-7 days of symptoms onset (when the viral load is high). In case the test is performed after 5 days of symptom onset and the result is positive this should be counted as a valid result but if the test is negative after 5 days of symptoms onset, this should be confirmed with a PCR test.

ii) The RDT should be performed by trained technologists in government run facilities and under strict infection control and prevention measures.

iii) The antigen tests used must have a specificity of at least 99.5% and at least 80% sensitivity

13.5.1 SCENARIOS WHERE AG-RDT CAN BE PERFORMED

1. To respond to suspected outbreaks of COVID-19 in remote settings, institutions and semi-closed communities where COVID-19 PCR is not immediately available. Positive Ag-RDT results from multiple suspects is highly suggestive of a COVID-19 outbreak and would allow for early implementation of infection control measures. Where possible, all samples giving positive Ag-RDT results (or at least a subset) should be transported to laboratories with PCR capability for confirmatory testing.
2. To support outbreak investigations (e.g. in closed or semi-closed groups including schools, care-homes, cruise ships, prisons, work-places and dormitories, etc.) In PCR-confirmed COVID-19 outbreaks, Ag RDTs could be used to screen at-risk individuals and rapidly isolate positive cases (and initiate other contact tracing efforts) and prioritize sample collection from RDT-negative individuals for PCR).
3. To monitor trends in disease incidence in communities, and particularly among essential workers and health workers during outbreaks or in regions of widespread community transmission where the positive predictive value and negative predictive value of an Ag-RDT result is sufficient to enable effective infection control.

4. Where there is widespread community transmission, RDTs may be used for early detection and isolation of positive cases in health facilities, COVID-19 testing centres /sites, care homes, prisons, schools, front-line and health-care workers and for contact tracing in these settings.
5. Use of Ag-RDTs is not recommended in settings or populations with low expected prevalence of disease (e.g. screening at points of entry, blood donation, elective surgery), especially where confirmatory testing by molecular or PCR testing is not readily available.

Note:

The safe management of patients with RDT-negative samples will depend on the RDT performance and the community prevalence of COVID-19. A negative Ag-RDT result cannot completely exclude an active COVID-19 infection, and, therefore, repeat testing or preferably confirmatory testing (PCR) should be performed whenever possible, particularly in symptomatic patients.

Antigen testing should only be done in specific situations approved by HPA/MOH based on disease epidemiology and in an establishment registered under MOH and approved for conducting Ag-RDTs. This approval may be for a specific geographical area and for a specific period depending on disease spread in these regions. Results of Ag-RDTs must be reported to HPA

13.5.2 EPIDEMIOLOGIC CONSIDERATIONS FOR USING ANTIGEN TESTING FOR COVID-19 OUTBREAK CONTROL

Antigen Tests are available currently with high sensitivity and specificity. Due to their rapid turn-around time for results, and the ability to be deployed in the field, antigen testing can be used as a complement to PCR testing for Covid in specific situations where there is a large outbreak and testing capacity is overwhelmed.

The positive predictive value of tests increases with increased prevalence and with tests of high sensitivity and specificity.

If the following conditions are met, antigen tests may be used as an adjunct to PCR testing **in that geographical area, for the duration in which the conditions remain.**

a) Epidemiological criteria

- Prevalence above 5% OR weekly incidence above 150/100,000[a]
- Test positivity (by RT-PCR testing remains above 20%) [b]

[a] In prolonged outbreaks that are worsening, both prevalence and incidence can be used. In newly detected outbreaks, prevalence may not reach the threshold, and incidence maybe used

[b] after testing at least 100 samples with RT-PCR or, if population is small (or in a congregate setting), more than 30% of the population

b) Characteristics of the tests

- The antigen tests used must have a specificity of at least 99.5% and at least 80% sensitivity

Other conditions that must be fulfilled

- The tests must only be administered to those who are symptomatic, within 7 days of their symptom onset
- Those who are symptomatic and test negative for antigen must undergo confirmatory PCR testing
- All test results should be reported to HPA through the normal lab test reporting channels
- For those who are being evaluated for re-infection, a confirmatory PCR must be done after a positive antigen test is obtained

Table 4: Situations where SARS-CoV-2 Ag-RDTs should not be used, based on currently available information

Do not use SARS-CoV2 Ag-RDT in the following situations:	Explanation
Do not use SARS-CoV-2 Ag-RDTs in individuals without symptoms unless the person is a contact of a confirmed case in the scenarios described above.	Pre-test probability (the likelihood, before testing, that the patient has the disease based on epidemiology, case contact, clinical findings) is low.
Where there are zero or only sporadic cases, Ag-RDTs are not recommended for routine surveillance purposes or case management in this setting.	Positive test results would likely be false positives. Molecular testing is preferred.
Appropriate biosafety and infection prevention and control measures (IPC) are lacking	To safeguard health workers, respiratory sample collection for any test from patients with suspected COVID-19 requires that operators wear gloves, gown, mask and face shield or goggles
Management of the patient does not change based on the result of the test	If test-positive and test-negative patients will be treated the same way because of unknown or low positive predictive value (PPV) and/or negative predictive value (NPV), then there is no benefit to testing
For airport or border screening at points of entry	For airport or border screening at points of entry Prevalence of COVID-19 will be highly variable among travelers, and it is therefore not possible to determine PPV and NPV of test

	results. Positive and negative tests would require confirmatory testing to increase PPV and NPV for decision making.
In screening prior to blood donation	A positive RDT result would not necessarily correlate with presence of viremia. Asymptomatic blood donors do not meet the definition of a suspect case

13.6 RAPID MOLECULAR POINT OF CARE TESTING FOR COVID-19

Rapid molecular tests are nucleic acid amplification tests which use rapid techniques such as isothermal nucleic acid amplification. These techniques are capable of providing results as early as within 15 minutes. The clinical performance of rapid diagnostic tests largely depends on the circumstances in which they are used. Point-of-Care (POC) tests are intended to supplement laboratory testing, making testing available to communities and populations that cannot readily access laboratory testing, and bolstering testing to quickly address emerging outbreaks.

General recommendations:

i) The rapid molecular POC testing should be done in a laboratory registered at Ministry of Health and the laboratory should be affiliated with a certified PCR laboratory.

i) The laboratory testing should be conducted by trained laboratory technicians or by a trained medical practitioner registered at the relevant professional bodies.

ii) Rapid molecular POC testing should be done according to the HPA COVID-19 testing guideline and in coordination with HPA

iii) Testing should be conducted according to the manufacturer's instructions

iv) All results of rapid molecular POC tests should be entered into the national COVID-19 surveillance system.

v) The rapid molecular POC tests should have > 90 % sensitivity and > 97% specificity

vi) The COVID-19 tests used in the country will have to be WHO or US FDA approved tests or those with at least an emergency use authorization from WHO or US FDA

13.6.1 RECOMMENDATIONS ON RAPID MOLECULAR POC TESTING SCENARIOS:

1. POC testing can be done in those with symptoms within the first 7 days of symptoms onset.
    a. High risk person e.g. a close contact of a case should get a PCR done if the result of the initial test is negative.
    b. A low-risk person with an initial negative POC testing should get a PCR test done if the symptoms persist or worsen.

2. In situation where the result of the test is required urgently as in contact tracing investigation in outbreaks or for urgent travel requirements, asymptomatic people may be tested with the rapid molecular POC testing.
    a. All positive results in a low prevalence or low risk exposure setting have to be confirmed with PCR testing
    b. During the investigation of an outbreak a subset of initial positive samples would need to be confirmed with PCR testing.

14. STRATEGY FOR EARLY CASE DETECTION, TESTING PRIORITIZATION AND MONITORING OF DISEASE TRANSMISSION DYNAMICS IN AREAS WITH COMMUNITY TRANSMISSION

1. Enhanced mechanism for reporting and testing of symptomatic people.

Anyone presenting with symptoms compatible with COVID-19 should undergo COVID-19 PCR testing (see COVID-19 suspected case definition)

Those in the following categories should be given priority during sampling:

- All Severe Acute Respiratory Infections
- Healthcare facility workers, workers in crowded living settings, and first responders
- Residents living in crowded dormitory settings, including prisons and shelters,
- Persons with high-risk conditions such as; elderly ≥ 60 years, cardiovascular conditions, diabetes, chronic lung conditions, bedridden patients, thalassemia, chronic kidney disease, chronic liver disease, pregnancy, immunocompromising conditions, obesity with BMI≥30, sickle cell disease.

2. Monitor and report the community trends in Acute respiratory illness (ARI) and the proportion tested and attributable to COVID-19 to assess the extent of community transmission and the effectiveness of public health measures aimed at both prevention and case detection. ARI data should be collected from both government and private health facilities, both online and walk-in clinics catering for patients presenting with COVID-19 like symptoms (such clinics include flu clinics, outpatient clinics, emergency department visits etc.)

3. Undertake strategically targeted asymptomatic screening of special occupational groups or populations. In sampling of asymptomatic populations priority should be given to frontline health workers, aged care workers, populations who may not reporting symptoms and during an initial outbreak investigation in a healthcare setting or residential setting with overcrowding.

4. Antibody testing to determine the seroprevalence rates by population group to understand population transmission. Antibody prevalence (Immunoglobulin IgG) to SARS-CoV-2 (virus causing COVID-19) can be determined by age group, sex, risk group (e.g. by age, health care workers, people in crowded settings) and over time (before, during and after epidemic peaks).

15. SAMPLE COLLECTION PROTOCOL

Type of Specimen

- *Upper respiratory tract(URT) samples*: Nasopharyngeal (NP) aspirate or combined oropharyngeal (OP) and nasopharyngeal (NP) swabs
- *Lower respiratory tract(LRT) specimens*: if URT samples are negative and clinical suspicion remains, to get LRT samples. Sputum (if produced. Sputum induction is not recommended), endotracheal aspirate, or bronchoalveolar lavage fluid

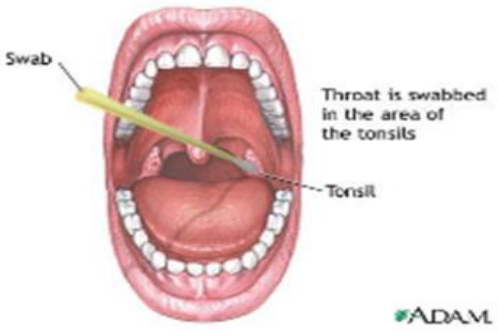
PPE and IPC Measures

- Use **Gloves, N95 mask (If not available, use surgical mask), Goggles/Face shield and long sleeved Gowns**
- Use **N95 mask** with goggles, gloves and gowns if collected under **aerosole generating procedures** (tracheal aspiration, bronchoalveolar lavage or by sputum induction)
- **Fluid resistant gown:** if anticipating increased fluid exposure

Sample Technique: OP

- Hold the tongue out of the way with a tongue depressor
- Insert the OP swab into the posterior pharynx and tonsillar areas, rub swabs over both tonsillar pillars and posterior oropharynx
- Avoid swabbing the soft palate and do not touch the tongue with the swab tip
- Place the swab immediately into a VTM.

Oropharyngeal swab (OP)



Sample Technique: NP

- Insert NP swab through the nares parallel to the pallet (not upwards) until resistance is encountered
- Gently rub and roll the swab and leave the swab in place for several seconds to absorb secretions before removing
- Withdraw slowly with a rotating motion

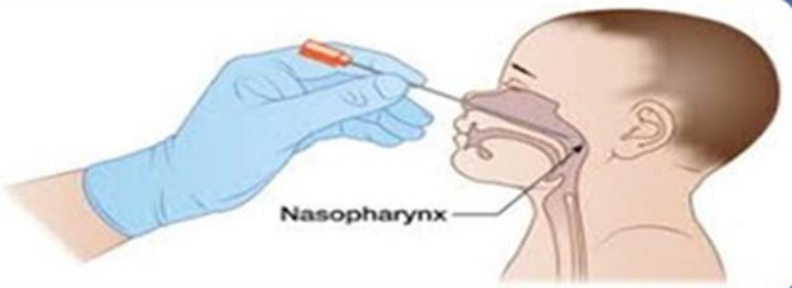
Collection Medium

- **NP/OP swab**: Swabs used for inluenza sampling
- **Lower respiratory samples**: sterile container
- Use **VTM**(viral transportation medium) for transportation and the OP and NP swab maybe kept in the same VTM.
- Keep the samples in **2-8˚C**(in a fridge) immediately, Ideally this should be transported within 72 hours to the laboratory.

Sample Transportation

- Label properly and to put a **sticker** to identify the samples as **COVID-2019 suspected and** wrap the specimen tube with an absorbent material
- Specimens in viral transport media and other samples like blood, urine should be packed in separate zip lock bags(primary container) individually.
- All samples of same patients should be packed in a big zip lock bag and sealed & labelled properly (secondary container)
- Samples **should be transported by hand** with proper documents (Request forms /**case reporting form** for acute respiratory illness)
- Transport in **cooler box with ice packs** (if sent from another center other than IGMH).
- If any spillage during transport, to follow spill decontamination procedure

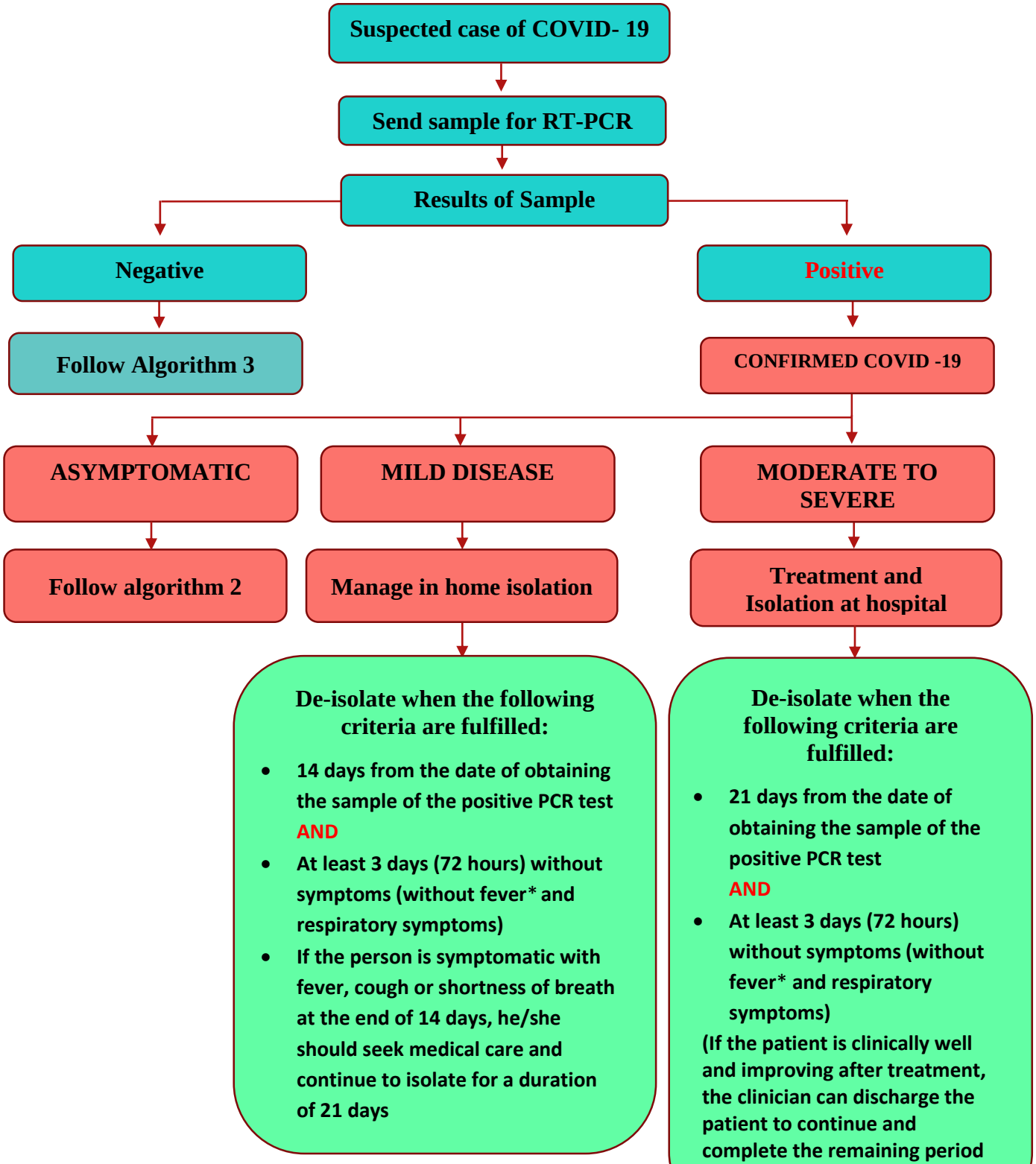
Nasopharyngeal swab (NP)



https://www.youtube.com/watch?v=mfZYAMDpGNk&feature=emb_logo

16. VIROLOGICAL EVALUATION OF COVID 19 INFECTION

Algorithm 1

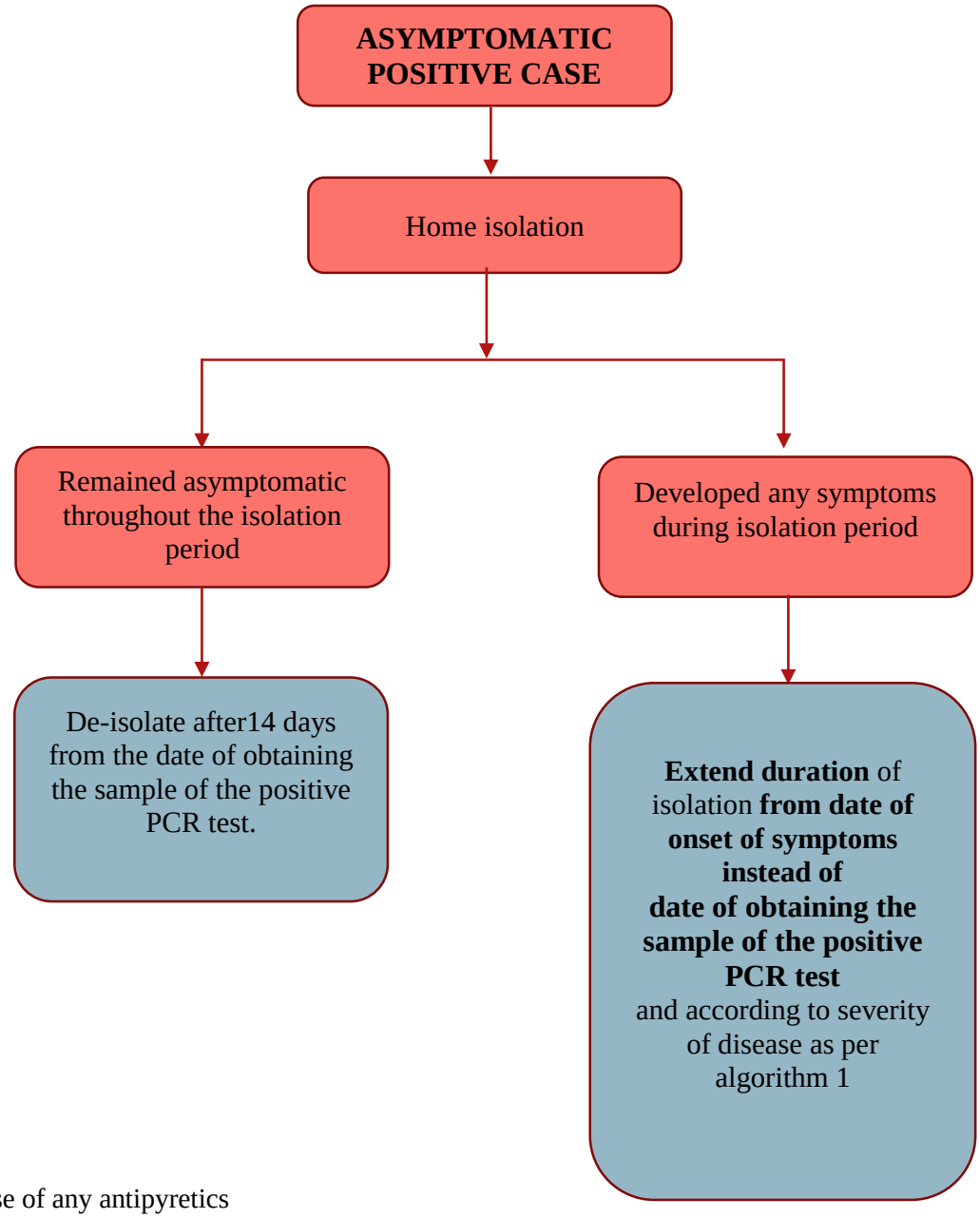


* without the use of any antipyretics

NOTE:

For an immunocompromised patient, deisolation will be 21 days from the date of obtaining the sample of the positive PCR test **AND** at least 3 days (72 hours) without fever and respiratory symptoms **AND** 2 consecutive negative PCR tests done at least 24 hours apart. Immunocompromised patients include: transplant recipients, patients receiving prolonged steroid treatment (prednisone >20mg/day for more than 14 days) or another immune suppressant medication, cancer on chemotherapy, patients with HIV and low CD4 count and patients with haematological malignancies

Algorithm 2



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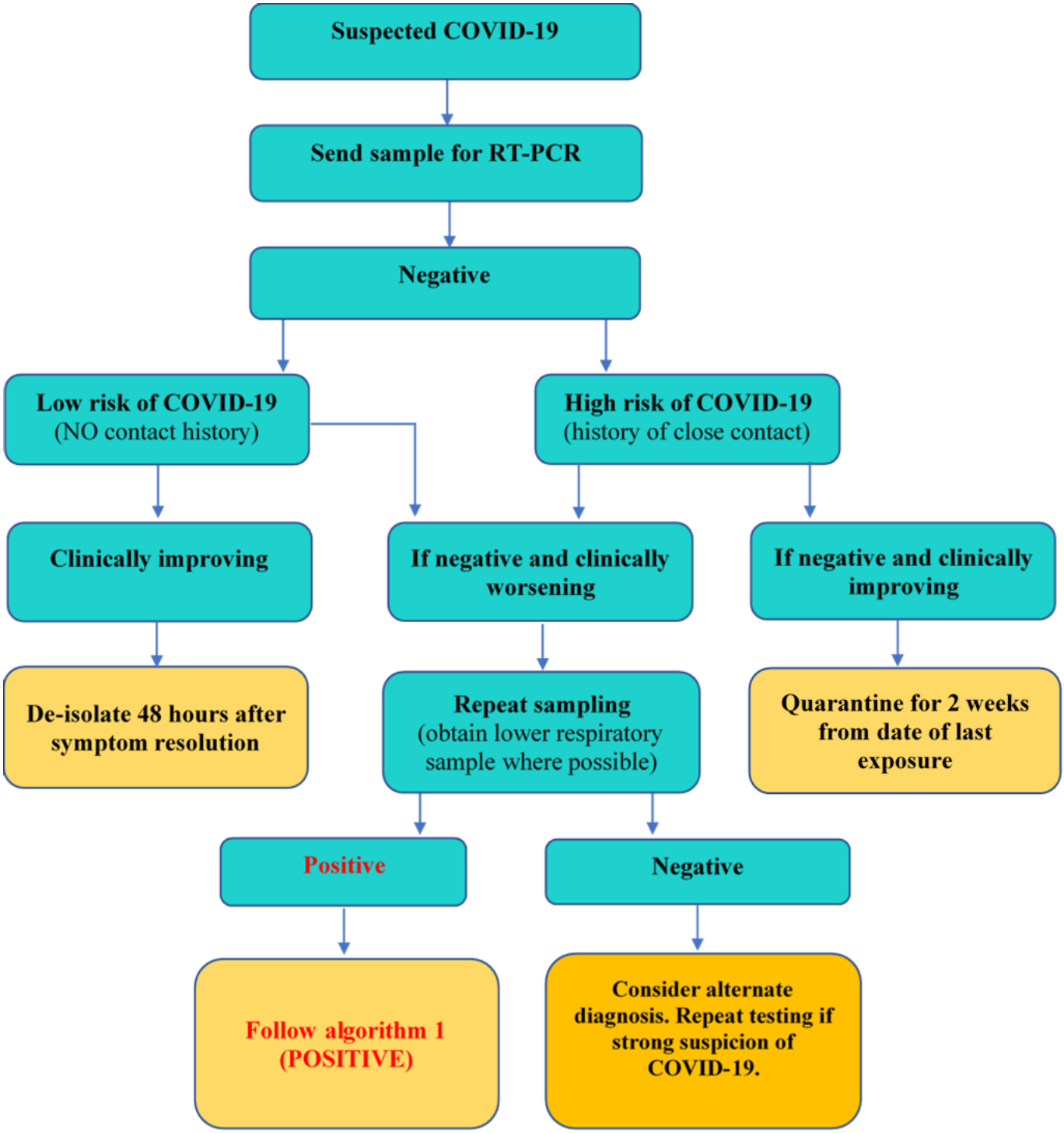
NOTE:

For an immunocompromised patient, deisolation will be 21 days from the date of obtaining the sample of the positive PCR test **AND** at least 3 days (72 hours) without fever and respiratory symptoms **AND** 2 consecutive negative PCR tests done at least 24 hours apart. Immunocompromised patients include: transplant recipients, patients receiving prolonged steroid treatment (prednisone >20mg/day for more than 14 days) or another immune suppressant medication, cancer on chemotherapy, patients with HIV and low CD4 count and patients with haematological malignancies

Algorithm 3


Suspected COVID-19
Send sample for RT-PCR
Negative
Low risk of COVID-19
(NO contact history)
High risk of COVID-19
(history of close contact)
Clinically improving
If negative and clinically worsening
If negative and clinically improving
De-isolate 48 hours after symptom resolution
Repeat sampling
(obtain lower respiratory sample where possible)
Quarantine for 2 weeks from date of last exposure
Positive
Negative
Follow algorithm 1
(POSITIVE)
Consider alternate diagnosis. Repeat testing if strong suspicion of COVID-19.

17. CLINICAL MANAGEMENT OF COVID-19 INFECTION

COVID-19 CASE DEFINITIONS

Suspected COVID-19 case is a person who fulfils criteria A or B or C below:

A- A person who meets the clinical **AND** epidemiological criteria

Clinical Criteria:

AT LEAST ONE of the following symptoms:

- cough
- fever
- shortness of breath
- sudden onset (new onset) of anosmia (loss of smell) or ageusia (loss of taste) in the absence of any other identified cause.

OR

ANY TWO OR MORE of the following symptoms: Myalgia, headache, sore throat, runny nose, red eyes, generalized weakness /fatigue, nausea/vomiting, diarrhoea, altered mental status. (Symptoms separated with slash (/) are to be counted as one symptom).

Epidemiological Criteria:

Any one of the following criteria:

- A history of travel to or residence or working in a location with risk of transmission* of COVID-19 during the 14 days prior to symptom onset.
  OR
- A person who is a close contact of a traveler coming from an area with risk of transmission of COVID-19
  OR
- In the past 14 days having visited or worked at a health care facility

B- A patient with severe acute respiratory illness (SARI: acute respiratory infection with history of fever or measured fever of ≥ 38° C; AND cough; with onset within the last 10 days; AND requires hospitalization).

C- Death in a person who meets the clinical AND epidemiological criteria.[3]

Probable COVID-19 case is a person who fulfils any of the criteria below:

A. patient who meets clinical criteria **AND** is a contact of a probable or confirmed case, or linked to a COVID-19 cluster[1]

B. A suspected case with chest imaging showing findings suggestive of COVID-19 disease[2]

C. Death, not otherwise explained, in a person who meets the clinical criteria **AND** was a contact of a probable or confirmed case or linked to a COVID-19 cluster[1]

[1] A group of symptomatic individuals linked by time, geographic location and common exposures, containing at least **one PCR confirmed** case.

[2] Typical chest imaging findings suggestive of COVID-19 include the following:

- Chest radiography: hazy opacities, often rounded in morphology, with peripheral and lower lung distribution
- Chest CT: multiple bilateral ground glass opacities, often rounded in morphology, with peripheral and lower lung distribution
- Lung ultrasound: thickened pleural lines, B lines (multifocal, discrete, or confluent), consolidative patterns with or without air bronchograms.

Confirmed case of COVID-19: is a person who fulfils any of the criteria below:

A. A person with laboratory confirmation of COVID-19 by detection of SARS-CoV-2 RNA (positive PCR test) irrespective of clinical signs and symptoms.

B. A person with a positive SARS-CoV-2 Antigen detection rapid diagnostic test (Ag-RDT) AND meeting the suspected or probable case criteria, where the test has been performed in situations approved by HPA for antigen test based on epidemiological situation and performed at an establishment which has been approved by Ministry of Health for performing Ag-RDT[4].

*locations with risk of transmission include: countries, cities or islands with local or community spread of COVID-19; Islands and tourist establishments which receive international tourists such as tourist resorts, tourist guest house islands and safaris; islands which receive travellers from Greater Male' Area or receive travellers from other islands; islands under construction; people staying or working in closed residential settings such as drug rehabilitation centres, prisons and shelter homes for children, adults and disabled persons.

NOTE- PCR testing MUST be done in all suspected or probable cases of COVID-19.

- **Clinical and public health judgement should be used to determine the need for further investigation in patients who do not strictly meet the clinical or epidemiological criteria.**
- [3]**Any death** in a person under quarantine, **Any unexplained death** in any city or island or in any tourist establishment or in any island under development must be informed to HPA and must be tested for COVID-19.
- [4]**Antigen testing should only be done in specific situations approved by HPA/MOH based on disease epidemiology and in an establishment registered under MOH and approved for conducting Ag-RDTs. This approval may be for a specific geographical area and for a specific period depending on disease spread in these regions. Results of Ag-RDTs must be reported to HPA.**

17.1 CLINICAL PRESENTATION OF COVID-19 AND RISK FACTORS FOR SEVERE DISEASE

Clinical presentation	• Most persons experience fever (83–99%), cough (59–82%), fatigue (44–70%), anorexia (40–84%), shortness of breath (31–40%), myalgias (11–35%). Other non-specific symptoms, such as sore throat, nasal congestion, headache, diarrhoea, nausea and vomiting, have also been reported. Loss of smell (anosmia) or loss of taste (ageusia) preceding the onset of respiratory symptoms has also been reported. • Older people and immunosuppressed patients in particular may present with atypical symptoms such as fatigue, reduced alertness, reduced mobility, diarrhoea, loss of appetite, delirium, and absence of fever. • Children might not have reported fever or cough as frequently as adults.
Risk factors for severe disease	• Age more than 60 years (increasing with age). • Underlying comorbid conditions such as: Diabetes, hypertension, cardiac disease, severe chronic lung disease, cerebrovascular disease, chronic kidney disease. • Immunocompromising conditions and cancer • pregnancy • Sickle cell disease • BMI ≥ 30kg/m2

17.2 CLASSIFICATION OF DISEASE SEVERITY IN COVID-19

Mild disease	Symptomatic patients meeting the case definition for confirmed case of COVID-19, without evidence of viral pneumonia or hypoxia.
Moderate disease **(Pneumonia)**	**Adolescent or adult** with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) but no signs of severe pneumonia, including SpO2 ≥ 94% on room air. **Child** with clinical signs of non-severe pneumonia (cough or difficulty breathing + fast breathing and/or chest indrawing) and no signs of severe pneumonia. Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40 While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.
Severe disease **Severe pneumonia**	**Adolescent or adult** with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) plus one of the following: • Respiratory rate > 30 breaths/min; • Severe respiratory distress; or • SpO2 < 94% on room air. **Child** with clinical signs of pneumonia (cough or difficulty in breathing) + at least one of the following: • Central cyanosis or SpO2 < 94%; severe respiratory distress (e.g. fast breathing, grunting, very severe chest indrawing); general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. • Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40. While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.

Critical disease **a. Acute respiratory distress syndrome (ARDS)**	**Onset**: within 1 week of a known clinical insult (i.e. pneumonia) or new or worsening respiratory symptoms. **Chest imaging**: (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by volume overload, lobar or lung collapse, or nodules. **Origin of pulmonary infiltrates**: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/oedema if no risk factor present. **Oxygenation impairment in adults**: • Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥ 5 cmH2O). When PaO2 is not available, SpO2/FiO2 ≤ 315 suggests ARDS (including in non-ventilated patients) • Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤ 200 mmHg (with PEEP ≥ 5 cmH2O). • Severe ARDS: PaO2/FiO2 ≤ 100 mmHg (with PEEP ≥ 5 cmH2O). **Oxygenation impairment in children**: note OI and OSI. Use OI when available. If PaO2 not available, wean FiO2 to maintain SpO2 ≤ 97% to calculate OSI or SpO2/FiO2 ratio: • Bilevel (NIV or CPAP) ≥ 5 cmH_2O via full face mask: PaO2/FiO2 ≤ 300 mmHg or SpO2/FiO2 ≤ 264. • Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5. • Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3. • Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3
Critical disease b. **Sepsis**	**Adults**: acute life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection. Signs of organ dysfunction include: Altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate, or hyperbilirubinemia. **Children**: suspected or proven infection and ≥ 2 age-based systemic inflammatory response syndrome (SIRS) criteria, of which one must be abnormal temperature or white blood cell count.

Critical disease **c. Septic shock**	**Adults**: persistent hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥ 65 mmHg and serum lactate level > 2 mmol/L. **Children**: any hypotension (SBP < 5th centile or > 2 SD below normal for age) or two or three of the following: altered mental status; bradycardia or tachycardia (HR < 90 bpm or > 160 bpm in infants and heart rate < 70 bpm or > 150 bpm in children); prolonged capillary refill (> 2 sec) or weak pulse; fast breathing; mottled or cool skin or petechial or purpuric rash; high lactate; reduced urine output; hyperthermia or hypothermia.
Critical disease **d. Thrombosis**	Acute venous thromboembolism (i.e. pulmonary embolism), acute coronary syndrome, acute stroke.
Critical disease **e. MIS-C**	See section on Multisystemic inflammatory syndrome in children and adolescents for case definition

17.3 IMPLEMENTATION OF APPROPRIATE IPC MEASURES

- Initiate IPC at the point of entry of the patient to a health facility.
- Suspected COVID-19 patients should be given a mask and directed to designated area. Keep at least 1 metre distance between suspected patients.
- Standard precautions should be taken. (Standard precautions include hand hygiene, use of appropriate PPE, prevention of needle-stick or sharps injury; respiratory hygiene, safe waste management; cleaning and disinfection of equipment; and cleaning of the environment)
- Apply contact and droplet precautions for all suspected and confirmed COVID-19 patients.
- Apply airborne precautions when performing aerosol-generating procedures such as tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy.
- In settings where aerosol-generating procedures are frequently in place such as ICU or HDU, airborne instead of droplet precautions should be used, in combination with contact precautions.

17.4 COLLECTION OF SPECIMENS FOR LABORATORY DIAGNOSIS

- For COVID-19 testing by RT-PCR, collect specimens from the upper respiratory tract (nasopharyngeal and oropharyngeal) AND, where clinical suspicion remains and URT specimens are negative, collect specimens from the lower respiratory tract when readily available (expectorated sputum, endotracheal aspirate, or bronchoalveolar lavage in ventilated patients) for COVID19 virus testing by RT-PCR. In addition, testing for influenza and bacterial stains/cultures should be considered when clinically indicated.

- In a patient with suspected COVID-19, especially with pneumonia or severe illness, a single negative URT sample does not exclude the diagnosis, and additional URT and LRT samples are recommended. LRT (vs URT) samples are more likely to be positive and for a longer period. Clinicians may choose to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients). Sputum induction should be avoided owing to increased risk of aerosol transmission.

- Use appropriate PPE for specimen collection.

- In suspected pneumonia and sepsis, do sputum Gram staining and cultures, collect blood cultures ideally before antimicrobial therapy.

- If sepsis is suspected, DO NOT delay antimicrobial therapy.

- Obtain CXR for all persons with clinical features of pneumonia and for all hospitalized patients. Obtain baseline investigations for all hospitalized patients and patients in community-based isolation facility (patients in community-based isolation facilities are mild disease but with high-risk conditions) (send CBC with differential count, CRP, LFT, RFT, Electrolytes, ECG.

- All suspected cases must be isolated until PCR test result for COVID-19 is available. If mild disease, patient can be sent for home isolation with proper instructions for isolation measures. If patient has features of moderate to severe disease, patient has to be admitted in the hospital in an isolation area for suspected cases.

17.5 ALGORITHM FOR TRIAGE AND CLINICAL MANAGEMENT OF A CONFIRMED CASE OF COVID-19

Confirmed case of COVID-19 infection

- Positive case, tested from a flu clinic or any outpatient facility.
- Positive case identified in screening at hospital.
- Positive case identified during testing of contacts.
- Positive case detected in active surveillance

Clinical assessment and Investigations

- Advise IPC measures for patient, such as wearing of medical mask, physical distancing and frequent hand hygiene.
- HCWs must wear appropriate PPE when attending to the patient.
- Clinical assessment to assess severity of disease and assess presence of high-risk conditions*
- CXR and blood tests as clinically indicated

Mild disease or Asymptomatic patient

- Advise for **home isolation.** Some high-risk patients who may require close observation, and patients with certain social situations such as lack of a care giver at home will require facility-based isolation where medical care is available.
- Register patient on "Haalubelun" for assessment via phone.
- Persons in home isolation, particularly persons with **high-risk** conditions must be regularly monitored by "Haalubelun"
- There should be a mechanism for physical consultation by a health worker or medical officer if there is any complaints suggestive of worsening of disease.
- Educate patients on IPC measures.
- Provide symptomatic treatment.

Moderate disease (pneumonia but no signs of severe pneumonia)

- Admit patient to a **hospital-based isolation facility.**
- Antibiotics (As for CAP or HAP depending on clinical context)
- Initiate Oxygen therapy if patient has sPO2 <94% on room air (maintenance sPO2 target 92-96%).
- Give IV Dexamethasone for patients who require supplemental oxygen. (see text)
- I/V Remdesivir for patients who require supplemental oxygen (see therapeutics in COVID19)
- Thromboembolism prophylaxis. (see text)
- Fluids as needed.
- Monitoring for respiratory failure and sepsis and upgrade to critical care if any

Triage patient to the level of care according to severity of disease, presence of high-risk conditions*

Severe disease or critical disease (Severe pneumonia, ARDS, sepsis or Septic shock)

- Admit patient to an intensive care facility/intensive care area of health facility.
- Oxygen therapy with a sPO2 target of 92 to 96%
- Give IV Dexamethasone for patients requiring supplemental oxygen (see text)
- I/V Remdesivir for patients who require supplemental oxygen (see therapeutics in COVID19)
- Antibiotics (As for CAP or HAP depending on clinical context)
- Thromboembolism prophylaxis. (see text)
- Fluids as needed
- Ventilatory support and other supportive therapy as required
- Close monitoring

High risk conditions*
• Age > 60 years
• Chronic lung disease
• Diabetes
• Heart disease
• Chronic kidney disease
• Immunocompromising conditions/ receiving immunosuppressants
• Pregnancy
• Sickle cell disease
• Obesity- BMI ≥ 30 kg/m2

17.6 MANAGEMENT OF MILD COVID-19

- Patients with mild disease do not require admission at a facility, but home isolation is necessary to contain virus transmission. Certain high-risk patients with mild disease who may require close observation (such as bedridden patients, very elderly and frail patients have high mortality), and patients with certain social situations such as lack of a care giver at home will require facility-based isolation where medical care is available.
- There has to be a "Haalubelun" mechanism for monitoring of the condition of persons who are in home isolation, particularly persons with high-risk factors who are in home isolation. There has to be a mechanism for physical consultation by a health worker or medical officer if there is any complaints suggestive of worsening of disease.
- Implement appropriate IPC measures.
- Provide symptomatic treatment such as antipyretics for fever.
- **Routine antibiotic therapy or prophylaxis should not be given in mild disease.**
- Counsel patients about signs and symptoms of severe disease.

17.7 MANAGEMENT OF MODERATE COVID-19

- Patients should be managed in a designated hospital-based isolation facility (designated hospital or repurposed building converted in to a hospital set up where medical care and monitoring is available)
- Initiate oxygen therapy if patient has sPO2 <94 % on room air (see section below on oxygen therapy). Target for a maintenance sPO2 level of 92-96% on oxygen.
- Give IV Dexamethasone 6 mg once daily for 10 days to patients who require oxygen therapy
- Give I/V Remdesivir for patients who require supplemental oxygen
- Thromboembolism prophylaxis should be given to all patients admitted with moderate disease. (see section on thromboembolism prophylaxis)
- Administer antibiotics (As for community acquired pneumonia or hospital acquired pneumonia depending on clinical context)
- Give fluids as needed. Oral fluids are preferred to IV fluids if patient is able to take orally adequately.
- Patients should be assessed daily (vital signs monitoring, pulse oximetry and clinical examination) and as needed to look for development of severe pneumonia ARDS or sepsis.
- Upgrade to critical care if patients' condition deteriorates.

17.8 MANAGEMENT OF SEVERE COVID-19

- These patients should be treated in an intensive care facility based on clinical assessment.
- All areas where severe patients may be cared for should be equipped with SpO2 and other vitals monitoring capacity. Oxygen should be available with oxygen-delivering devices such as (nasal cannula, Venturi mask, mask with reservoir bag).
- Investigations such as CBC with differential count, CRP, LFT, RFT, Electrolytes, ABG, ECG, CXR should be performed at admission and as clinically indicated to monitor for complications.

Oxygen therapy

Adults with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma and/or convulsions) should receive emergency airway management and oxygen therapy during resuscitation to target SpO2 ≥ 94%. Once the patient is stable, target for a maintenance sPO2 of 92 to 96 %.

Supplemental oxygen should also be given to any patient without emergency signs but with SpO2 <94% (Target for a maintenance sPO2 of 92 to 96 %).

For patients with oxygen dependent COPD, the maintenance sPO2 target is 88 to 94%.

Oxygen supplementation is recommended for pregnant patients if SpO2 is below 95% on room air to accommodate physiologic changes in oxygen demand during pregnancy and to ensure adequate oxygen delivery to the fetus (to a target sPO2 of ≥ 95% in pregnant women).

Deliver oxygen flow rates using appropriate delivery devices:

- Use nasal cannula for rates up to 5 L/min
- Venturi mask with flow rates 6–15 L/min (Venturi mask is able to deliver up to 60% FiO2)
- Face mask with reservoir bag (Non-rebreather mask) with flow rate 15 L/min (Non-rebreather mask is able to deliver up to 80-90% FiO2)
- Closely monitoring for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis and respond immediately with supportive care interventions.

Steroids

Give IV Dexamethasone 6 mg once daily for 10 days to patients who require supplemental oxygen or non-invasive or invasive mechanical ventilation. (also see section on COVID-19 therapeutics below)

Fluid therapy

Use conservative fluid management when there is no evidence of shock.

Aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation.

Antibiotic therapy

- Empiric antibiotic treatment should be based on the clinical diagnosis (community-acquired pneumonia, health care-associated pneumonia or sepsis), local epidemiology and susceptibility data.
- Administer appropriate empiric antimicrobials within 1 hour of identification of sepsis.
- Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment.

Anti-viral therapy

- Give I/V Remdesivir for patients who require supplemental oxygen. (see section below on therapeutics in COVID-19)

17.9 ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing to respond to standard oxygen therapy. Patient may continue to have increased work of breathing or hypoxemia despite high flow oxygen delivered by venturi mask or Non-rebreather mask (flow rates of 10–15 L/min).

17.9.1 Non-invasive ventilation in ARDS

- Non-invasive ventilation (NIV) should be used only in selected patients with hypoxemic respiratory failure. Patients receiving a trial of NIV should be in a monitored setting.
- Patients with hemodynamic instability, multiorgan failure, or abnormal mental status should not receive NIV and should be considered for early invasive ventilation.
- NIV should be used with airborne precautions.
- In case the patient acutely deteriorates or does not improve after a short trial (about 1 hour) patient should be considered for intubation.

17.9.2 Invasive mechanical ventilation in ARDS

- Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions.
- Following intubation, for adult patients, implement mechanical ventilation using lower tidal volumes (4–8 mL/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure < 30 cmH2O). In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested (PEEP ≥ 10).
- In adult patients with severe ARDS, (PaO2/FiO2 < 150) prone ventilation for 12–16 hours per day is recommended.
- Avoid disconnecting the patient from the ventilator, which results in loss of PEEP, atelectasis and increased risk of infection of health care workers.
- Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required. Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.

17.10 SEPSIS AND SEPTIC SHOCK

Fluid therapy, antimicrobial therapy and vasopressors (when indicated) should be initiated within 1 hour of recognition of sepsis and septic shock

Fluid therapy

- In adults, for resuscitation in septic shock, give 250–500 mL crystalloid (Normal saline or Ringers Lactate) as rapid bolus in first 15–30 minutes and reassess for signs of perfusion and fluid overload after each bolus.
- Determine need for additional fluid boluses (250–500 mL in adults or 10–20 mL/kg in children) based on clinical response and improvement of perfusion targets.
- Perfusion targets include MAP (> 65 mmHg in adults), urine output (> 0.5 mL/kg/hr in adults) and improvement of skin mottling and extremity perfusion, capillary refill, heart rate, level of consciousness, and lactate.
- Fluid resuscitation may lead to volume overload, including respiratory failure, particularly with ARDS. If there is no response to fluid loading or signs of volume overload appear (e.g. jugular

venous distension, crackles on lung auscultation, pulmonary edema on imaging then reduce or discontinue fluid administration.

Vasopressors

- In adults, administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP ≥ 65 mmHg in adults and improvement of markers of perfusion.
- If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein.
- Norepinephrine is considered first-line treatment in adult patients.
- Monitor blood pressure frequently and titrate the vasopressor to the minimum dose necessary to maintain perfusion and prevent side effects.

17.11 PREVENTION OF COMPLICATIONS IN HOSPITALIZED AND CRITICALLY ILL PATIENTS WITH COVID-19

- Monitor patients with COVID-19, for signs or symptoms suggestive of thromboembolism, such as stroke, deep venous thrombosis, pulmonary embolism or acute coronary syndrome. If these are clinically suspected they should be managed accordingly.

17.11.1 THROMBOEMBOLISM PROPHYLAXIS

- Coagulopathy is common in patients with severe COVID-19, and both venous and arterial thromboembolism have been reported.
- All hospitalized adults and adolescents with COVID-19 should receive standard prophylactic dose of anticoagulation with low molecular weight heparin (preferred) or unfractionated heparin unless any contraindications. For those with contraindications, where available mechanical prophylaxis (intermittent pneumatic compression devices) can be used.
- For non-hospitalized patients with COVID-19, anticoagulants and antiplatelet therapy should not be initiated for the prevention of venous thromboembolism (VTE) or arterial thrombosis unless the patient has other indications for the therapy.
- Patients on standard thromboprophylaxis dosing of anticoagulation do not require monitoring of coagulation, except for platelet count monitoring after 5–7 days if unfractionated heparin is used. Dosing should be adjusted according to body weight/BMI and renal function.

- Suggested dosing of standard thromboprophylaxis is as follows:
    - Enoxaparin 40 mg by subcutaneous injection every 24h:
        - If creatinine clearance (CrCl) is15 to 30 mL/min, reduce the dose to 30 mg every 24h. For CrCl < 15 ml/min, or for patients on renal replacement therapy, use unfractionated heparin.
        - If BMI > 40 kg/m2 or weight > 120 kg, give enoxaparin 40 mg by subcutaneous injection every 12h.
    - Unfractionated heparin (UFH) 5000 units by subcutaneous injection every 8 or 12h:
        - If BMI > 40 kg/m2 or weight > 120 kg: 7500 units q12h or 5000 units every 8h.
- Continue VTE prophylaxis for the duration of the hospital stay.

17.12 MENTAL HEALTH AND PSYCHOSOCIAL SUPPORT

Basic mental health and psychosocial support should be provided for all persons with suspected or confirmed COVID-19 including children, older adults, pregnant women. Ask patients about their needs and concerns around the diagnosis, prognosis and other social, family or work-related issues and address them. Provide accurate information on the person's condition and treatment plans as lack of information can be a major source of stress for patients.

17.13 COVID-19 IN PREGNANCY

Pregnant women are at an increased risk for severe illness from COVID-19 compared to non-pregnant people. Additionally, pregnant women with COVID-19 might be at increased risk for other adverse outcomes, such as preterm birth. An increased risk for congenital anomalies has not been reported.

Pregnant women with suspected, probable, or confirmed COVID-19, including women who may need to spend time in isolation, should have access to obstetric care and neonatal care, as well as mental health and psychosocial support.

17.14 CARING FOR INFANTS AND MOTHERS WITH COVID-19

Relatively few cases have been reported of infants confirmed with COVID-19; those that have been reported experienced mild illness.

- Infants born to mothers with suspected, probable, or confirmed COVID-19 should be breast fed if possible while applying necessary precautions for IPC (mother should be advised regarding hand hygiene and should wear medical mask).
- Benefits of breast feeding outweighs any theoretical risks to the baby and should be initiated within 1 hour of birth.
- All confirmed or suspected COVID-19 cases, should wear medical mask when near the child, perform hand hygiene before and after contact with the child, and routinely clean and disinfect surfaces with which the symptomatic mother has been in contact.
- In situations when severe illness in a mother with COVID-19 or other complications prevents her from caring for her infant or prevents her from continuing direct breastfeeding, mothers should be encouraged and supported to express milk, and safely provide breastmilk to the infant, while applying appropriate IPC measures.

For further information on clinical management of COVID-19 in infants and children, please also refer to: *Clinical Guideline on Management of COVID-19 in Children, Department of Child Health, IGMH.*

18. THERAPEUTICS IN COVID-19

18.1 CORTICOSTEROIDS

The Randomised Evaluation of COVID-19 Therapy (RECOVERY) trial, a multicentre, randomized, open-label trial in hospitalized patients with COVID-19, showed that in patients with severe COVID-19 who required supplemental oxygen, using dexamethasone 6 mg daily for up to 10 days reduced mortality at 28 days. The benefit of dexamethasone was most apparent in hospitalized patients who were mechanically ventilated. There was no observed benefit of dexamethasone in patients who did not require oxygen support. No benefit of dexamethasone was seen in patients who did not require supplemental oxygen at enrolment.

WHO guidelines recommend the use of systemic corticosteroids for patients with severe or critical COVID-19 infection. US NIH guideline recommends use of dexamethasone for COVID-19 patients who require supplemental oxygen particularly in patients who require mechanical ventilation.

Recommended dose of dexamethasone is 6 mg IV or PO once daily for up to10 days.

If dexamethasone is not available, the following alternative glucocorticoids can be used (doses equivalent to 6 mg of dexamethasone daily):

Injection Hydrocortisone 50 mg IV every 8 hours for 10 days

Prednisolone 40 mg orally once daily for 10 days.

18.2 ANTI-VIRAL DRUGS

18.2.1 Lopinavir/ritonavir and Hydroxychloroquine

There is lack of evidence that these agents improved outcomes such as reduced mortality, need for mechanical ventilation or time to clinical improvement. WHO guidelines strongly recommend against administering Lopinavir /Ritonavir or Hydroxychloroquine for treatment of COVID-19 to patients with any disease severity and any duration of symptoms.

18.2.2 Remdesivir

Based on interim results of the SOLIDARITY trial, WHO guidelines recommend against administering Remdesivir in addition to usual care, for patients with COVID-19 infection, regardless of disease severity (Conditional recommendation, low certainty of evidence).

The Adaptive COVID-19 Treatment Trial (ACTT-1) a multinational, randomized, double-blind, placebo-controlled trial of Remdesivir verus Palcebo in hospitalized patients, showed that in patients with severe COVID-19, Remdesivir reduced the time to clinical recovery. The benefit of Remdesivir was most apparent in hospitalized patients who only required supplemental oxygen. There was no observed benefit of Remdesivir in those who were on high-flow oxygen, non-invasive ventilation, mechanical ventilation, or ECMO.

Remdesivir is approved by the US Food and Drug Administration for the treatment of COVID-19 in hospitalized adult and paediatric patients (aged ≥12 years and weighing ≥40 kg). The US National Institutes of Health, COVID-19 treatment guidelines recommend Remdesivir for use in hospitalized patients who require supplemental oxygen including for patients requiring non-invasive mechanical ventilation but not for patients who require invasive mechanical ventilation due, to the lack of data showing benefit at this advanced stage of the disease.

The Remdesivir dose is 200 mg IV for one dose, followed by 100 mg IV once daily for 4 days. Treatment duration maybe extended to up to 10 days if there is no substantial clinical improvement by Day 5.

Remdesivir is contraindicated in those with liver dysfunction (ALT >5 times normal) or renal dysfunction (eGFR <30 mL/minute).

18.3 OTHER THERAPEUTIC AGENTS

18.3.1 Monoclonal antibodies

Monoclonal antibodies that target the receptor binding domains of the spike protein of SARS-CoV-2 are being evaluated in outpatients with mild to moderate disease. By blocking the binding of the receptor binding domain to the host cell they may block SARS-CoV-2 entry in to host cells. Limited data show reduced viral loads and reduced risk of hospitalization with these agents. The combination of Bamlanivimab/Etesevimab and Casirivimab/Imdevimab have received US Food and Drug Administration (FDA) Emergency Use Authorization (EUA) for the treatment of non-hospitalized patients with mild to moderate COVID-19 who are at high risk for progressing to severe disease and/or hospitalization. At the moment these agents are not considered the standard of care for the treatment of patients with COVID-19.

18.3.2 Immunomodulators

COVID-19-associated systemic inflammation and hypoxic respiratory failure seen in critical and fatal COVID-19 is associated with heightened cytokine release, as indicated by elevated blood levels of IL-6, C-reactive protein (CRP), D-dimer, and ferritin. Blocking these inflammatory pathways may prevent disease progression.

Tocilizumab: is a recombinant humanized anti-IL-6 receptor monoclonal antibody. The results of the randomized control trials RECOVERY trial and REMAP-CAP provide evidence that tocilizumab, when administered with corticosteroids, offers a modest mortality benefit in certain patients with COVID-19 who are severely ill, rapidly deteriorating with increasing oxygen needs, and have a significant inflammatory response.

US NIH COVID-19 treatment guidelines recommend using tocilizumab (single intravenous [IV] dose of tocilizumab 8 mg/kg actual body weight up to 800 mg) in combination with dexamethasone (6 mg daily for up to 10 days) in certain hospitalized patients who are exhibiting rapid respiratory decompensation due to COVID-19. These patients are:

- Recently hospitalized patients (i.e., within first 3 days of admission) who have been admitted to the intensive care unit (ICU) within the prior 24 hours and who require invasive mechanical ventilation, noninvasive ventilation, or high-flow nasal canula (HFNC) oxygen
- Recently hospitalized patients (i.e., within first 3 days of admission) not admitted to the ICU who have rapidly increasing oxygen needs and require noninvasive ventilation or HFNC oxygen and who have significantly increased markers of inflammation (CRP ≥75 mg/L).

Sarilumab: is a recombinant humanized anti-IL-6 receptor monoclonal antibody. Preliminary efficacy results from REMAP-CAP for sarilumab were similar to those for tocilizumab. Compared to placebo, sarilumab reduced both mortality and time to ICU discharge, and increased the number of organ support-free days; however, the number of participants who received sarilumab in this trial was relatively small, limiting the conclusions and implications of these findings.

19. MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN AND ADOLESCENTS WITH COVID-19

Clinical manifestations of COVID-19 are generally milder in children and the highest risk of severe COVID-19 has been in the elderly and persons with underlying chronic medical conditions. However, there have been reports of clusters of children and adolescents presenting with multisystem inflammatory conditions with some similarities to Kawaski disease and toxic shock syndrome. Initial hypothesis is that this may be related to COVID-19, based on initial laboratory testing showing positive serology in majority of patients. It is imperative that clinicians have high index of suspicion for this condition. Clinicians are advised to notify HPA via concerned local COVID-19 taskforce if any patient fitting the criteria given below is identified. (*WHO Case Reporting Form for MIS-C.*)

Below is the WHO preliminary case definition for **multisystem inflammatory disorder in children and adolescents.**

Preliminary case definition:

Children and adolescents 0–19 years of age with fever ≥ 3 days

AND two of the following (Clinical signs of multisystem involvement)

1. Rash or bilateral non-purulent conjunctivitis or muco-cutaneous inflammation signs (oral, hands or feet).
2. Hypotension or shock.
3. Features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities (including ECHO findings or elevated Troponin/NT-proBNP),
4. Evidence of coagulopathy (by PT, PTT, elevated d-Dimers).
5. Acute gastrointestinal problems (diarrhoea, vomiting, or abdominal pain).

AND

Elevated markers of inflammation such as ESR, C-reactive protein, or procalcitonin.

AND

No other obvious microbial cause of inflammation, including bacterial sepsis, staphylococcal or streptococcal shock syndromes.

AND

Evidence of COVID-19 (RT-PCR, antigen test or serology positive), or likely contact with patients with COVID-19.

20. MULTISYSTEM INFLAMMATORY SYNDROME IN ADULTS (MIS-A)

Several case reports have described a syndrome similar to multisystem inflammatory syndrome in children, but occurring in adults. This syndrome has been termed as Multisystem inflammatory syndrome in adults (MIS-A). An analysis from the Centre for Disease Control and Prevention (CDC) noted 27 reported cases of MIS-A[1]. In the reported cases, MIS-A onset was approximately 2-5 weeks after the initial symptoms of COVID-19. Some patients had no preceding symptoms of COVID-19.

The pathophysiology of MIS in both children and adults is currently unknown. Some of these patients have a negative PCR and positive SARS-CoV-2 antibody test results, suggesting MIS might represent postinfectious processes. Proposed mechanisms include endothelial damage and thromboinflammation and dysregulated immune responses.

Presentations include, fever; cardiac symptoms such as chest pain or palpitations with evidence of cardiac abnormalities such as ECG abnormalities, elevated troponins, arrhythmias, echocardiographic evidence of left or right ventricular dysfunction; gastrointestinal; dermatologic manifestations including mucositis; and neurological presentations such as stroke.

Although hyperinflammation and extrapulmonary organ dysfunction have been described in patients with severe disease in acute COVID-19, in acute COVID-19, they are generally accompanied by respiratory failure. In contrast, patients described with MIS-A had minimal respiratory symptoms, hypoxemia, or radiographic abnormalities.

Patients typically have markedly elevated laboratory markers of inflammation, such as CRP, ferritin and elevated markers of coagulopathy including D-dimer.

They have positive test results for SARS-CoV-2 by PCR or antibody assays indicating recent infection. **Some of these patients may only have a positive antibody test with a negative PCR.**

In the review of suspected cases of MIS, CDC had used the following working MIS-A case definition to identify cases, which include the following five criteria[1]:

1) A severe illness requiring hospitalization in a person aged ≥ 21 years;

2) A positive test result for current or previous SARS-CoV-2 infection (nucleic acid, antigen, or antibody) during admission or in the previous 12 weeks;

3) Severe dysfunction of one or more extrapulmonary organ systems (e.g., hypotension or shock, cardiac dysfunction, arterial or venous thrombosis or thromboembolism, or acute liver injury);

4) Laboratory evidence of severe inflammation (e.g., elevated CRP, ferritin, D-dimer, or Interleukin 6 (IL-6));

5) Absence of severe respiratory illness (to exclude patients in which inflammation and organ dysfunction might be attributable simply to tissue hypoxia).

In the CDC review, patients with mild respiratory symptoms who met these criteria were included as fulfilling the working case definition of MIS-A and patients were excluded if alternative diagnoses such as bacterial sepsis were identified.

Treatment of MIS-A: Supportive treatment with inotropes or vasopressors, intravenous immunoglobulins and corticosteroids have been used for treatment with good response.

Clinical suspicion and SARS-CoV-2 testing, including antibody testing, is needed to recognize and treat MIS-A.

1 *Morris SB, Schwartz NG, Patel P, et al. Case Series of Multisystem Inflammatory Syndrome in Adults Associated with SARS-CoV-2 Infection - United Kingdom and United States, March-August 2020. MMWR Morb Mortal Wkly Rep 2020; 69:1450.*

21. FOLLOW UP OF COVID-19 PATIENTS AFTER DISCHARGE FROM ACUTE CARE

After the acute illness, some COVID-19 patients may present with complications related to the acute illness and some may present with persistent symptoms. Patients who had received mechanical ventilation and had prolonged immobilization during hospital stay are likely to have rehabilitation needs during recovery due to impaired lung function, muscle weakness, physical deconditioning, cognitive impairment and psychological disorders. COVID-19 patients may experience a wide range of symptoms after recovery from acute illness. In most cases these prolonged symptoms resolve before 12 weeks from the start of the acute illness but for a smaller proportion, they may continue for longer. Some patients require evaluation and management for persistent or new symptoms.

The National Institute for Health and Care Excellence, UK, defines the stages of COVID-19 infection and recovery as follows[1]:

- Acute COVID-19: signs and symptoms of COVID-19 for up to 4 weeks.
- Ongoing symptomatic COVID-19: signs and symptoms of COVID-19 from 4 to 12 weeks.
- Post-COVID-19 syndrome: signs and symptoms that develop during or after an infection consistent with COVID-19, continue for more than 12 weeks and are not explained by an alternative diagnosis.

Common persistent symptoms include fatigue (commonest symptom), shortness of breath, chest pain, neurocognitive symptoms such as difficulty in concentration and memory, psychological symptoms such as anxiety and depression.

A study from the United Kingdom reported that among 100 hospitalized patients (32 received care in the ICU and 68 received care in hospital wards only), 72% of the ICU patients and 60% of the ward patients experienced fatigue and breathlessness at 4 to 8 weeks after hospital discharge, 24% reported post-traumatic stress disorder, 18% had new or worsened problems with memory, and 16 % had new or worsened problems with concentration; numbers were higher among patients admitted to the intensive care unit (ICU)[2]. A retrospective study from China showed that pulmonary function (measured by spirometry) was still impaired 1 month after hospital discharge in 31 of 57 patients (54.4%)[3]. In a study from Germany that included 100 patients who had recently recovered from COVID-19 (67 patients recovered at home, while 33 patients required hospitalization), cardiac MRI performed a median of 71 days after diagnosis revealed cardiac involvement in 78% of patients and ongoing myocardial inflammation in 60% of patients[4]. Severe COVID-19 can lead to acute respiratory distress syndrome (ARDS). The majority of patients with ARDS develop histopathological evidence of pulmonary fibrosis

and in survivors of ARDS, a significant proportion have CT evidence of residual pulmonary fibrosis and functional impairment [5].

Specific aims of follow up of COVID-19 patients after discharge from acute care:

- Serious and potentially life-limiting complications of COVID-19 are identified at the earliest possible stage without over investigating those patients who will make a full recovery.
- The early, medium and long-term respiratory complications of COVID-19 pneumonia are identified and affected patients are appropriately treated.
- Patient needs such as breathlessness and other symptom management, rehabilitation, and psychosocial needs are identified and addressed.

At discharge from hospital or isolation, patient should be explained about the following:

- Common new or ongoing symptoms that may be expected after acute COVID-19.
- Prolonged symptoms are not necessarily linked to severity of their acute disease.
- Recovery time is variable but for most people prolonged symptoms will resolve by 12 weeks.
- Follow up plan and when to seek urgent medical care (urgent medical care should be sought if new onset or worsening of symptoms such as chest pain, shortness of breath, cough, confusion or abnormal behaviour, limb weakness, syncope or presyncope, recurrence of fever, persistent vomiting, diarrhoea or abdominal pain)
- How to self-manage persistent symptoms. Patients can be provided with information material with advice on managing mild breathlessness with breathing techniques and positioning, gradual fitness and muscle strengthening exercises, managing problems with attention, thinking and memory, managing anxiety and depression, psychosocial support mechanisms available. For advice on self-management of symptoms, see: Support for Rehabilitation Self-Management after COVID-19- Related Illness

Timing of follow up visits: (see follow up algorithm)

The patient can be reviewed by a medical officer or a specialist. Upon review by a medical officer, if patient is suspected to have any complications, the patient should be referred to a specialist. Patients who are discharged after having fulfilled the de-isolation criteria are considered non-infectious and can be seen in a general OPD with non-COVID patients if required.

- Asymptomatic patients or patients with mild disease who are discharged from home isolation or facility-based isolation does not routinely require a COVID-19 follow-up visit unless the patient has persistent, progressive, or new symptoms.
- Patients with moderate, severe disease or critical disease who were admitted in hospital should be followed at 2 weeks from discharge unless advised for an earlier follow up for a specific reason. This initial follow up could be done by physical or phone call consultation.
- Patients who had radiological evidence of pneumonia during the acute illness and patients who have persistent symptoms should have a further follow up visit at 12 weeks to assess radiological resolution and for assessment/evaluation of persistent symptoms.
- Patient should review in the relevant specialist clinic as per discharge advise for follow up of a specific complication which the patient may have been treated for (e.g. cardiology review for follow up of myocardial infarction and cardiac rehabilitation).
- Patient should have an urgent medical consultation if any new onset or worsening of symptoms such as chest pain, shortness of breath, cough, confusion or abnormal behaviour, limb weakness, syncope or presyncope, recurrence of fever, persistent vomiting, diarrhoea or abdominal pain. These presentations should alert clinicians to consider complications of COVID-19 such as pulmonary embolism, acute coronary syndrome, stroke, Multi System Inflammatory Syndrome, hospital acquired or secondary bacterial pneumonia, cardiac arrhythmias etc.

Initial follow up visit (2 weeks after discharge from hospital or community isolation facility):

- Review the history of the acute illness from the patient and discharge documents (duration, severity, complications such as thromboembolism, AKI, requirement for ventilatory support while admitted, and medications upon discharge and any specific orders to be carried out during follow up.
- History from care giver maybe necessary sometimes such as in elderly patients.
- Assess for any persistent, new or worsening symptoms. New or worsening symptoms may reflect development of complications of COVID-19. Hence, for these patients consider and work up for complications (such as thromboembolic disease, cardiac failure, Multi System Inflammatory Syndrome, hospital acquired or secondary bacterial pneumonia etc).
- Symptomatic management of symptoms such as pain, fatigue, breathlessness (which has been appropriately investigated)
- Assessment and management of anxiety, depression. Treatment may be provided by physician. In severe cases, psychiatry referral should be considered.
- Assess any physical impairment, and determine the need for referral for physical rehabilitation.
- Review patients regular and newly started medications and optimize (for example adjusting insulin therapy based on sugar control)
- Address social issues- Available help at home, issues with returning to work or education due to persistent or prolonged symptoms such as fatigue.
- Patients who had mild disease, normal CXR done during the acute illness and currently asymptomatic can be discharged from follow up. They can review if any new symptoms develop within the 3 months.
- Patients who had radiographic abnormalities during the acute illness must be further reviewed after 3 months from discharge with a repeat CXR to look for resolution of X ray abnormalities. Patients who have persistent symptoms also should further review at 12 weeks.

Laboratory testing at initial follow up

- Routine follow up biochemistry is not required for follow up unless patient had severe pneumonia or patient had a biochemical abnormality at discharge such as an impaired renal function or LFT.
- Routine follow up X rays during the initial follow up visit at 2 weeks is not necessary unless patient has new or worsening respiratory symptoms. Patients who had pulmonary infiltrates on chest X rays during hospitalization and whose symptoms are stable or resolved, will require a follow up X ray at 12 weeks to look for resolution of infiltrates.

- Those with new or worsening symptoms or significant persistent symptoms would require investigations after appropriate clinical assessment if a complication is suspected. If patient has persistent shortness of breath or any chest pain, investigations such as CXR, ABGs, CBC, ECG, cardiac troponins should be ordered. If pulmonary embolism is suspected CT pulmonary angiogram will be required. If cardiac failure is suspected echocardiography should be obtained.

Subsequent follow up at 12 weeks:

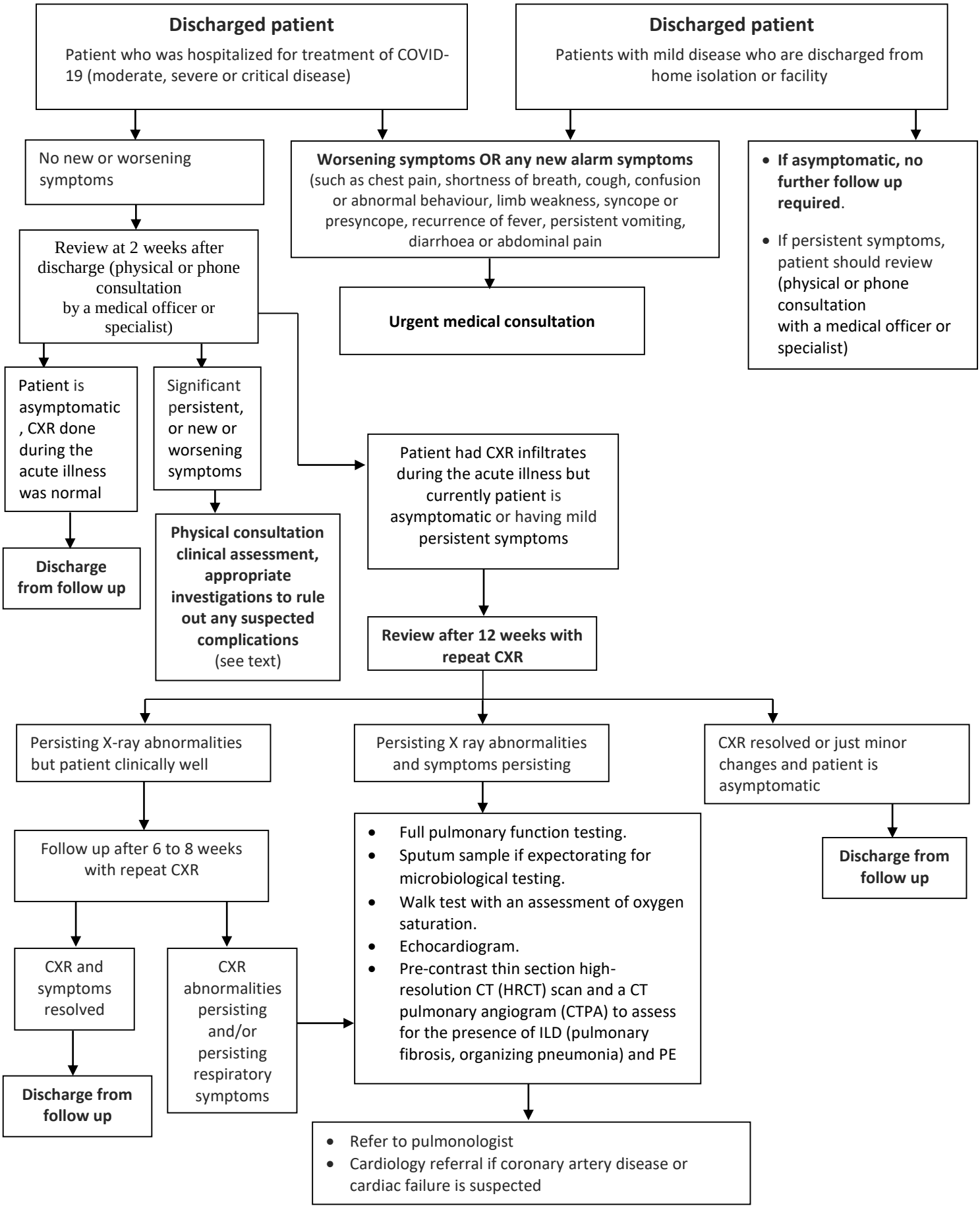
- Patients should undergo clinical assessment as in the initial follow up visit. New, persistent or worsening symptoms should be assessed.
- Repeat CXR (for patients who initially had X ray infiltrates) is assessed and compared with previous CXRs. If the CXR changes have fully resolved by this point (or if there are only minor insignificant changes such as small areas of atelectasis) and the patient is asymptomatic having made a full recovery, then they can be discharged from further follow up.
- In some cases, a patient will have satisfactorily improved clinically but the CXR may still have persisting changes that may require further assessment. In this case, clinician should consider arranging a further CXR in 6–8 weeks to assess for clearance prior to discharge.
- If the CXR changes have not satisfactorily resolved and / or the patient has ongoing respiratory symptoms, the clinician should consider the following:
    - Full pulmonary function testing.
    - Walk test with an assessment of oxygen saturation.
    - Echocardiogram.
    - Sputum sample if expectorating for microbiological testing.
    - High-resolution CT (HRCT) to rule out the presence of Interstitial lung disease (ILD) (such as organizing pneumonia or pulmonary fibrosis) and CTPA to rule out PE or post PE complications (such as pulmonary hypertension) if PE diagnosed during the acute illness.
    - Referral to pulmonary rehabilitation

- Patients with persistent significant chest X ray abnormalities or with any persistent respiratory symptoms at this point in time should be referred to a pulmonologist. Patient should also be referred to cardiology for further evaluation if coronary artery disease or cardiac failure is suspected.

1- COVID-19 rapid guideline: managing the long-term effects of COVID-19 https://www.nice.org.uk/guidance/ng188

2- Halpin SJ, McIvor C, Whyatt G, et al. Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: a cross-sectional evaluation. J Med Virol. 2020).
3- Huang Y, Tan C, Wu J, et al. Impact of coronavirus disease 2019 on pulmonary function in early convalescence phase. Respir Res. 2020;21(1):163
4- Puntmann VO, Carerj ML, Wieters I, et al. Outcomes of cardiovascular magnetic resonance imaging in patients recently recovered from coronavirus disease 2019 (COVID-19). JAMA Cardiol. 2020;5(11):1265- 1273.
5- George PM, Barratt SL, Condliffe R, et al. Respiratory follow-up of patients with COVID-19 pneumonia. Thorax 2020;75:1009-1016

Algorithm: Follow up of COVID-19 patients after discharge from acute care



NOTE: Upon discharge from hospital, patient may be required to follow up in a particular specialist OPD for a specific complication which the patient may have been treated for (e.g., cardiology review for follow up of myocardial infarction and cardiac rehabilitation).

- At all clinic visits clinicians should address patients' symptoms, consider complications, and address patients psychosocial and rehabilitation needs.

22. COVID-19 RE-INFECTON

Cases with suspected or confirmed reinfections with SARS-CoV-2 have been reported in various countries. Studies indicate that most patients (>91%) develop IgG seropositivity and neutralising antibodies (>90%) following primary infection with SARS-CoV-2. However, the protective role of antibodies and the duration of protective immunity is unknown.

While seroconversion to previously circulating SARS-CoV-2 strains may generate neutralising antibodies that protect against reinfection by a homologous virus, the neutralising capacity of these antibodies is reduced against variants of concern (VOCs), particularly those bearing the E484K mutation. SARS-CoV-2 variants of concern – in particular B.1.351 and P.1 variant have demonstrated a capacity to escape protective immune responses mounted by individuals that have recovered from a prior infection.

Challenges to identifying cases of re-infection include the following:

- There is currently no uniformly accepted case definition for a SARS-CoV-2 reinfection
- There is uncertainty regarding the duration of the time period between two episodes that should be considered for evaluating a suspected re-infection (a longer time duration between episodes would indicate a higher likelihood of possible reinfection).
- SARS-CoV-2 PCR positivity may persist for prolonged periods (frequently up to 90 days, sometimes beyond) following initial infection without necessarily having viable virus.
- PCR may also be intermittently negative
- Limited availability of diagnostics to routinely identify reinfection

22.1 CRITERIA FOR SUSPECTED CASE OF RE-INFECTION

A. A person with detection of SARS-CoV-2 RNA > 60 days after a previous SARS-CoV-2 infection whether or not symptoms are present

B. New COVID-19 symptoms in a patient with previous SARS-CoV-2 PCR positive infection after apparent full recovery (resolution of previous symptoms) AND a repeat positive SARS-CoV-2 PCR test (including within 60 days after a previous SARS-CoV-2 infection)

Duration from the previous infection should be counted from the date of the PCR sample which confirmed the diagnosis of the previous infection.

22.2 EVALUATION OF A SUSPECTED CASE OF COVID-19 RE-INFECTION

Clinicians must report suspected cases of COVID-19 re-infections. HPA will liaise with clinicians to conduct the initial evaluation and further testing of suspected cases. (See algorithm)

Initial evaluation

1) Evaluating the history to capture both clinical and epidemiological information which includes:
    - Reason for current and previous testing
    - Onset or timing of symptoms relative to prior confirmed infection and whether new versus persistent symptoms
    - Nature of symptoms if present (consistency with COVID-19) and severity of infection in the current and previous episode.
    - Underlying immunosuppression
    - Contact with a confirmed case within the past 14 days.
    - History of travel to or residence in an area of high community prevalence in the past 14 days
    - Whether other members of the family/household/accommodation and other contacts also became positive

The following factors make re-infection much less likely:

- If the second PCR test is within 60 days from the initial infection and the individual is asymptomatic with no history of contact with a positive case, it is more likely to be a persistent positive result
- Persistent rather than new symptoms since previous positive test

2) Evaluating cycle threshold (Ct) values of the PCR tests in the current and previous infection:

Ct value should be reviewed for both episodes of infection. Ct value threshold depends on the type of PCR test kit used.

- A low Ct value in the current episode of infection is suggestive of recent infection and high viral load (CT value threshold depends on the type of PCR test kit used)
- A high Ct value can be more indicative of a prolonged PCR positive result

- Even if the patient had a documented negative PCR result after recovery from the previous infection, a repeat positive result is possible due to the previous infection, in which case the CT value could be high near the threshold limit of detection.

3) Evaluating for alternative diagnosis:

   If the patient has presented with COVID-19 like symptoms, alternative diagnosis should be excluded if the clinical suspicion or likelihood for COVID-19 is low, such as patient having recovered very recently from COVID-19 infection (less than 45 days)

   - Testing for influenza (if compatible with ILI or SARI definition)
   - Testing for other viruses with a respiratory viral panel profile, if available
   - Gram staining and culture for evaluation of bacterial infection
   - Atypical pneumonia screen (serologies and PCR) where available
   - Evaluating for other infections and non-infective etiologies depending on patients' symptoms and clinician's judgement.

Based on the above initial evaluation, a decision is made whether re-infection is likely. If re-infection is likely further investigations are done as follows:

Further investigations for a likely case of re-infection:

Further testing of likely cases of re-infection will be authorized and arranged by HPA.

1) Antigen testing:
   Antigen testing can be done in symptomatic persons (preferably within 7 days of their symptoms). Antigen testing can also be done in asymptomatic contacts, if in a high COVD-19 transmission setting (prevalence above 5% OR weekly incidence above 150/100,000 AND test positivity by RT-PCR testing remains above 20%)

2) Serological testing:
   Should be done if the current episode is more than 7 weeks after the first episode. It can be done in asymptomatic persons or in symptomatic persons with a negative antigen test or where antigen testing is not available. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies again the N type antigen (Nucleocapsid antigen) should be used.

Both IgM and IgG levels are measured at 0, 2 and 4 weeks from the date of positive PCR sample of the current episode. A rising titer of antibodies or seroconversion is likely to point to a re-infection. Patients whose antigen testing or serological testing is suggestive of re-infection will be classified as **probable cases COVID-19 re-infection**

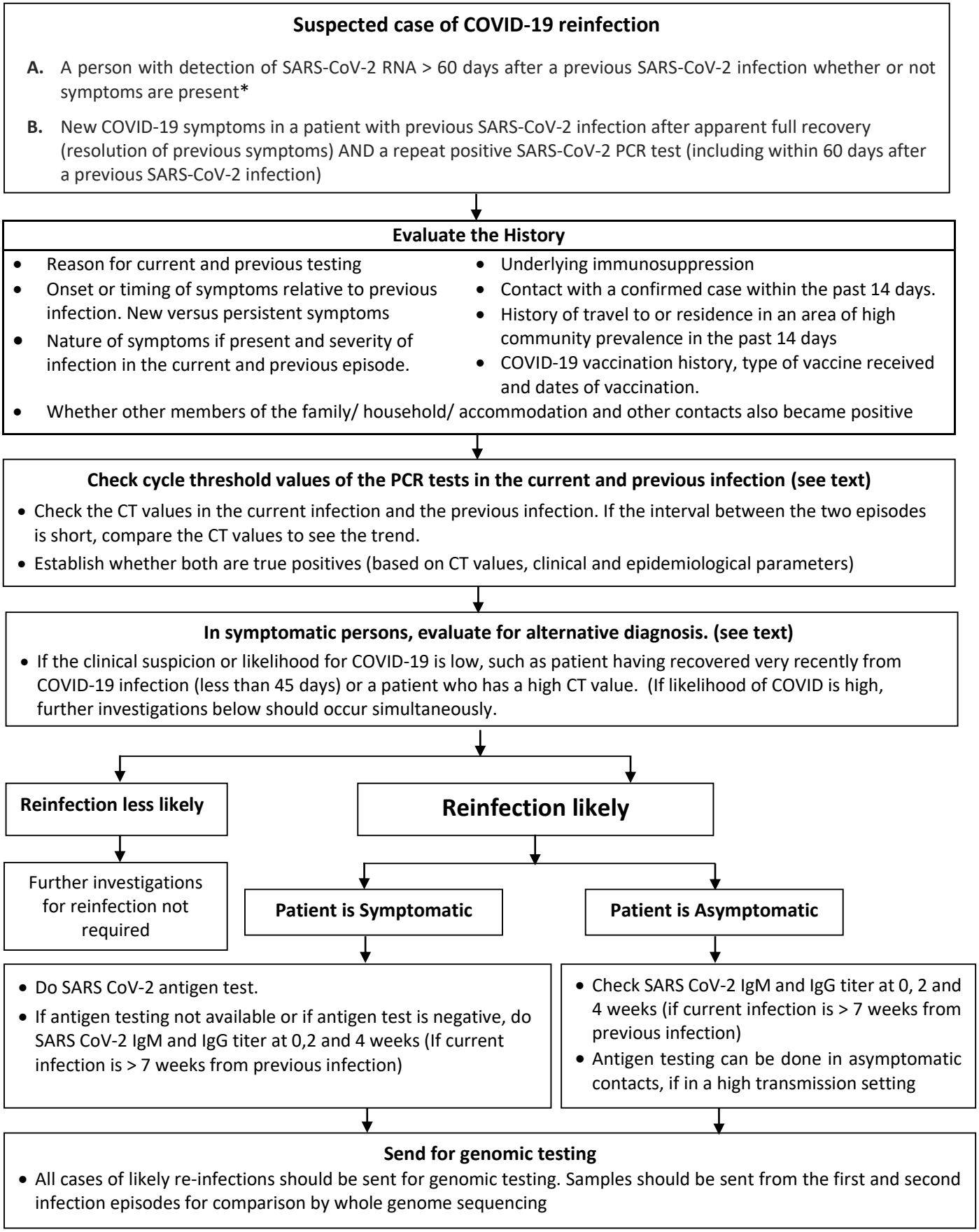
Confirmation of COVID-19 re-infection:

Complete genomic sequencing is used to compare the genomic variability between the previous infection and current infection episodes.

Reinfection is confirmed if complete genomic sequencing of SARS-CoV-2 for both the previous and current infections indicate that they belong to different genetic clades or lineages, regardless of the number of single nucleotide variations (SNV) (the virus is expected to mutate by approximately two SNVs per month) OR Complete genomic sequencing indicates that the number of SNV among SARS-CoV2 infections, including differences in high-confidence minority variants, correlate with the probability that different episodes are caused by different viral lineages

22.3 Algorithm for evaluation of a suspected case of COVID-19 re-infection

Health facilities must inform all cases of suspected re-infections to HPA. HPA will liaise with clinicians to conduct the evaluation



* Duration from the previous infection should be counted from date of the PCR sampling which confirmed the diagnosis of the first infection.

NOTE: If the second infection is diagnosed with antigen testing, a PCR test must be done prior to further evaluation for suspected reinfection. If further evaluation with antigen or serological testing is suggestive of re-infection the case will be classified as **probable COVID-19 re-infection**

22.4 MANAGEMENT OF A POSSIBLE CASE OF COVID-19 RE-INFECTION

Isolation, clinical management, infection prevention and control measures, contact tracing in cases of possible re-infection should be carried out similar to individuals infected for the first time.

23. MANAGEMENT OF CONTACTS

If any suspected or positive case is found, proper disinfection, contact tracing, quarantine of contacts, provision of psychosocial support should be carried out. A contact is a person who was in contact with a confirmed case of COVID-19 from 2 days before and up to 14 days after onset of symptoms in the case. *If the case had no symptoms*, a contact is defined as someone who had contact with the case within a time frame ranging from 48 hours before sample which led to confirmation was taken to 14 days after the sample was taken.

Close contact:

- Being within 1metre of a confirmed or probable COVID-19 case for >15 minutes.
- Direct physical contact with a confirmed or probable COVID-19 case.
- Providing direct care for a patient with a confirmed or probable COVID-19 disease - without using proper personal protective equipment.
- In a public or shared transport, anyone sitting within two rows of a COVID-19 patient for >15 minutes and any staff (e.g. train or airline crew) in direct contact with the case.
- other situations case by case as outlined in Table below.

Contact of a confirmed case should be advised for qurantine for 14 days from the last contact with the COVID-19 infected patient

Contact of a suspected case shoud be advised for quarantine until the suspected case is confirmed to be negative on testing.

For contact tracing, healthcare worker should be defined as all staff in the health care facility involved in the provision of care for a COVID-19 patient (clinical and non clinical contact with patient or contaminated surface or materials):

If a healthcare associated exposure occurs to a confirmed case without appropriate PPE, the HCW must be advised for quarantine for 14 days from the date of last exposure, even if the HCW is asymptomatic

Respiratory samples from quarantined persons should be tested for SARS-CoV2, initially upon being identified as a contact and at the end of monitored quarantine period. Also, they should be tested anytime during the quarantine period if they develop symptoms. The initial testing of contacts upon being identified as a contact will help to control the spread quickly by identifying positive cases early

23.1 COVID-19: CONTACT TRACING IN VARIOUS SETTINGS

SARS CoV-2 is transmitted mainly by respiratory droplets (up to 6 feet) when the person coughs or sneezes and by contact transmission.

Factors for consideration in contact tracing include the following:

- Duration of exposure
    - longer exposure time likely increases exposure risk
- Clinical symptoms of the patient
    - coughing likely increases exposure risk
- Type of interaction
    - did the patient cough directly on to the face of the HCW
- Whether the patient was wearing a facemask
    - which can efficiently block respiratory secretions from contaminating others and the environment if worn properly
- PPE used by personnel
- Whether aerosol-generating procedures were performed

Table 5: Examples of identifying contacts in various settings

Setting	Specific contact by setting	Ways to identify contacts
Known/identifiable contacts		
Household and community/social contacts	• Being in contact with a case within 1 metre and for >15 mins • Direct physical contact with a COVID-19 patient • Providing direct care for a COVID-19 patient in the home without proper PPE • Anyone living in the household	• Direct interview with the COVID-19 patient and/or their caregiver(s). This could be done in person or by telephone
Closed settings, such as long- term living facilities, and other high-risk congregational/closed settings (prisons, shelters, hostels)	• Being in contact with a case within 1 metre and for >15 mins • Direct physical contact with a COVID-19 patient • Providing direct care for a COVID-19 patient in the home without proper PPE • Sharing a room, meal, or other space with a confirmed patient • If contact events are difficult to assess, a wider definition may be used to ensure that all residents, especially high-risk residents, and staff are being monitored and screened	• Direct interview with the COVID-19 patient and/or their caregiver • List of residents, visitors, and all staff members working during the relevant timeframe • Interview with coordinator or manager of facility
Known context, but contacts unknown		
Healthcare settings	• Health care workers: any staff in direct contact with a COVID-19 patient, where strict adherence to PPE has failed. • Contacts exposed during hospitalization: any patient hospitalized in the same room or sharing the same bathroom as a COVID-19 patient, visitors to the patient, or other patient in the same room; other situations as dictated by risk assessment • Contacts exposed during outpatient visits: Anyone in the waiting room or equivalent closed environment at the same time as a COVID-19 should be listed as a contact • Anyone within 1 metre of the COVID-19 patient in any part of the hospital for >15 minutes	• Identify all staff who have been in direct contact with the COVID-19 patient or who may have been within 1 metre of the COVID-19 patient without PPE for >15 minutes without direct contact (e.g. chaplain) • Review the list of patients hospitalized in the same room or room sharing same bathroom • List of visitors who visited the patient or another patient in the same room during the relevant timeframe • Undertake a local risk assessment to determine whether any additional exposures may be relevant, such as in common dining facilities

Public or shared transport (Bus, Ferry, Speed boat, domestic or international airlines)	• Anyone within 1 metre of the COVID-19 patient for >15 minutes • Direct physical contact with a COVID-19 patient • Anyone sitting within two rows of a COVID-19 patient for >15 minutes and any staff (e.g., train or airline crew) in direct contact with the case	• Contact identification is generally possible only where there is allocated seating • Airlines/transport authorities should be contacted to obtain details of passengers and flight manifests • For public or shared transport where passenger lists or allocated seating is not available, a media release may be required to request passengers to self- identify. Media release may specify the date, time, pick-up location and arrival/destination, and stops along the way, requesting people self-identify as a potential contact
Public or shared transport (Sea planes)	• Due to small enclosed environment of a sea plane, predominantly horizontal airflow in the cabin and lack of an air filtration system in sea planes, all passengers and cabin crew who travelled with a positive case of COVID-19 in a sea plane within the contact tracing period will be considered as close contacts. Flight pilots will not be considered as contacts as pilots' compartment is separate and direction of airflow is outwards from the cockpit to cabin.	
Other well-defined settings and gatherings (places of worship, workplaces, schools, private social events)	• Anyone within 1 metre of the COVID-19 patient for >15 minutes • Direct physical contact with a COVID-19 patient • When events are difficult to assess, the local risk assessment may consider anyone staying in the same close and confined environment as a COVID- 19 patient as a contact	• Undertake a local risk assessment and collaborate with organizers/leadership to notify potential contacts either actively or passively (for example, through 'warn and inform' messages to an audience of potential attendees) • Communication with focal points about potential transmission events to raise awareness ('warn and inform') • For private social events, work from guest registration and booking lists • When necessary, consider media release specifying the event day and time, with request for people to self-identify as a potential contact

23.2 QUARANTINE

Definitions:

Quarantine separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick.

Self-monitoring means people should monitor themselves for fever by taking their temperatures twice a day and remain alert for symptoms of COVID-19. If they develop symptoms of COVID-19 during the self-monitoring period, they should self-isolate, and seek advice by telephone to HPA hotline number 1676 or any other established mechanism. If symptoms develop during quarantine, testing for COVID-19 must be done.

Self-monitoring with public health supervision: Provide a plan for self-monitoring and clear instructions for notifying the health department before the person seeks health care if they develop fever, cough, or difficulty breathing. Health authorities follow up daily/ as resource allow communicate with these people over the course of the self-monitoring period.

Self-observation means people should remain alert for symptoms of COVID-19 during the self-observation period. If they develop symptoms of COVID-19 during the self-observation period, they should self-isolate, and seek advice by telephone to HPA hotline number 1676 or any other established mechanism. If symptoms develop during quarantine, testing for COVID-19 must be done.

Physical distancing means remaining out of congregate settings, avoiding local public transportation (e.g., bus, taxi, ride share), and maintaining distance (approximately 3 feet or 1 meters) from others.

For Contacts of asymptomatic contacts:

Symptom monitoring or special management for people exposed to asymptomatic people with potential exposures to SARS-CoV-2 (such as in a household), i.e., “contacts of contacts;” are not needed.

23.3 CONTACT TRACING AND PUBLIC HEALTH ACTIONS

Person	Exposure to	Action
• Household member • Intimate partner • Individual providing care in a household without using recommended PPE • Individual who has had close contact	• Person with symptomatic COVID-19 during period from 48 hours before symptoms onset until meets criteria for de-isolation • Person with asymptomatic COVID-19 during period from 48 hours before sample which led to confirmation was taken to 14 days after sample was taken	• Initial sample should be done at the time of quarantine initiation to diagnose early and facilitate outbreak control. If this sample is negative, the contact has to remain in quarantine. If positive, proceed to isolation as per isolation guidelines. • Quarantine until 14 days after last exposure to the positive case (This means when the contact last met the positive person during the contact tracing period or, if within a household or a shared accommodation, when the positive person was isolated). In counting the duration of quarantine, the first 24 hours after last exposure is counted as day zero. Self-monitor for symptoms: o Check temperature twice a day if possible o Watch for fever, respiratory and other symptoms compatible with COVID-19 • RT-PCR should be done at any time if person becomes symptomatic during quarantine and at the end of completion of quarantine. • If a person becomes symptomatic during quarantine and undergoes RT-PCR testing as above, and this sample is negative and the respective duration of quarantine has not been completed, they should remain in quarantine until quarantine is completed, sample taken upon completion of quarantine and released if this is negative.
• Travel from a country with ongoing local or community transmission to Greater Male area*****	• Potential travel associated exposure	• All travelers (including Maldivians and expatriate workers and tourists) are required to do pre arrival PCR testing • Self-observation for symptoms • Mandatory quarantine for a period of 14 days from arrival in Maldives (The first 24 hours of arrival is counted as Day 0). • Mandatory quarantine period should be followed by PCR testing. • If a person becomes symptomatic during quarantine and undergoes RT-PCR testing and this sample is negative and the respective duration of quarantine has not been completed, they should remain in quarantine

		until quarantine is completed, sample taken upon completion of quarantine and released if this is negative.
• Travel from a country with ongoing local or community transmission to an inhabited island (irrespective of whether or not there is community spread of COVID-19 in the island*	• Potential travel associated exposure	• All travelers (including Maldivians and expatriate workers and tourists) are required to do pre arrival PCR testing • Self-observation for symptoms • Maldivians and expatriate workers are required to undergo mandatory quarantine for a period of 14 days from arrival to the island (The first 24 hours of arrival to the island is counted as Day 0). • Mandatory quarantine period should be followed by PCR testing. • If a person becomes symptomatic during quarantine and undergoes RT-PCR testing as and this sample is negative and the respective duration of quarantine has not been completed, they should remain in quarantine until quarantine is completed, sample taken upon completion of quarantine and released if this is negative.
• Travel from Greater Male area or any island with local or community transmission to an inhabited island where there is no community spread of COVID-19*****	• Potential travel associated exposure	• Mandatory quarantine for 14 days after arrival to the island. (The first 24 hours of arrival to the island is counted as Day 0). • Self-observation for symptoms • RT-PCR at the end of quarantine • If a person becomes symptomatic during quarantine and undergoes RT-PCR testing as and this sample is negative and the respective duration of quarantine has not been completed, they should remain in quarantine until quarantine is completed, sample taken upon completion of quarantine and released if this is negative.

*** Recommendations on travel related quarantine are subject to local and global COVID-19 situation. The recommendations on travel related quarantine are as per the existing recommendation at the time of publishing this guideline. Please follow the most current HPA recommendations.**

23.4 IMPORTANT POINTS TO CONSIDER WHEN IMPLEMENTING HOME QUARANTINE

Conduct an assessment to find out whether home situation is adequate for home quarantine. The following points should be checked:

- If there is a person of 60 years and above or other high-risk person in the house and he/she is not a contact, then preferably (where resources and facilities are available), facility-based quarantine should be arranged for the exposed person. This is to minimize exposure to a high-risk person from COVID-19.

Consideration for a person with underlying medical conditions in quarantine:

If a person with comorbidities such as; ≥ 60 years, diabetes mellitus, cancer on chemotherapy or on medication causing immunosuppression, chronic kidney disease, chronic lung disease, bedridden, ischemic heart disease, thalassemia or pregnancy is quarantined:

- Details of the person should be informed to the team who are monitoring the condition of quarantined persons. In the case of Greater Male area, the quarantined persons are encouraged to register on HPA, *"Haalubelun*" application. In the case of islands, these persons should be informed to the island task force. The team who are monitoring the condition of quarantined persons, will monitor the conditions of the quarantined persons daily or periodically by phone call.
- In case a caretaker is needed There should be a dedicated non exposed/ low risk contact to take care of the person.
- There should be dedicated personal items for the quarantined person including utensils, towels, bedsheets etc.
- If the house is shared with others the quarantined person should take food in the room and during delivery of food, there should not be contact with other people within 6 feet distance.

Rooms and toilet:

- The person should have a separate room, preferably with an attached en-suite bathroom. If the toilet is shared with others the toilet should be cleaned and the frequently touched surfaces should be disinfected after use (with diluted bleach solution with 1ml of bleach in 49ml of water).

- If unable to have separate rooms for each person under quarantine they may share a room with another person under quarantine, and provided that there is no person of age ≥ 60 years or with underlying conditions. If two people are sharing a room it should be ensured that they:

    - Wear masks at all times
    - Keep distancing of at least 3 meters between each other at all times.
    - Ensure frequent hand hygiene, especially, before touching the face, before eating, after using the toilet, in case the hands get soiled, after contact with another person or secretions.

Other people in the house without exposure:

- Should avoid contact with the quarantined person as much as possible and to ensure a distance of 6 feet be maintained at all times from the person under quarantine.

General measures:

- Easy access to health care and mechanism for daily self-reporting to HPA (advise to install and use "Haalubelun" application)
- Access to information on COVID-19 including; symptoms, danger signs, reporting mechanisms, psychosocial support and infection preventive measures such as hand hygiene, respiratory hygiene, cleaning disinfection, laundry and waste management should be available.
- The care taker should wear mask if entering the room and should wear gloves with mask if cleaning, changing the linen or providing care for the quarantined person.

- **For mandatory quarantine after contact with a positive case, PCR must be done initially upon being identified as a contact and upon completion of 14 days of quarantine. For mandatory travel related quarantine, PCR testing must be done upon completion of 14 days of quarantine. Any person who, while in quarantine as a contact or in travel related quarantine develops COVID-19 like symptoms, they must undergo PCR testing.**

Considerations for releasing from quarantine when contacts share an accommodation in quarantine:

- If quarantined together with others (living and eating together, sharing bathroom), everyone should have completed their duration of quarantine, and all samples must have tested negative before anyone of the group is released.

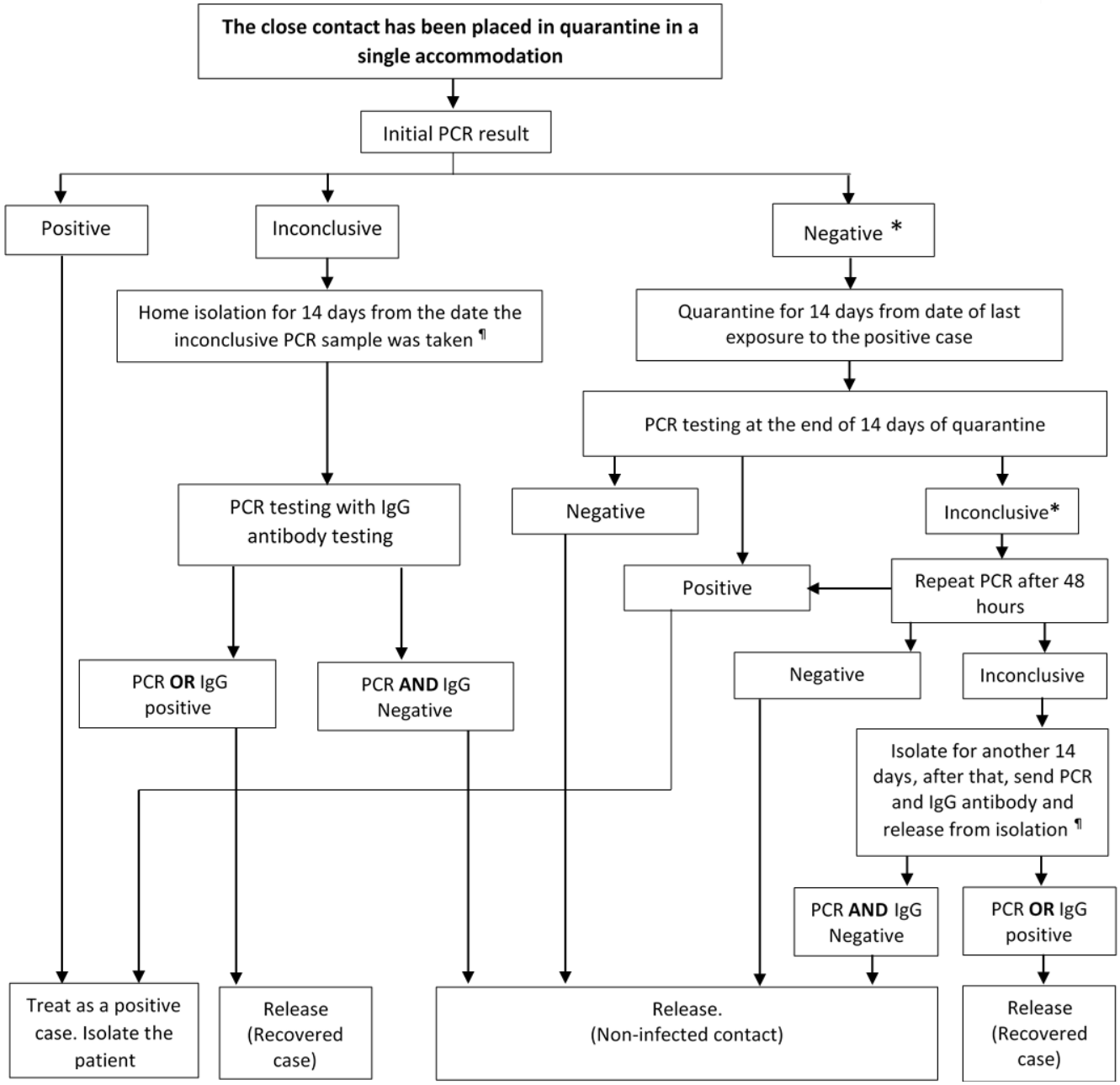
- If during quarantine, or at the end of quarantine, anyone among the group tests positive, the positive person should be isolated and the others' quarantine period will be reset. Their quarantine will start from the day the positive person was isolated, and for a duration of 14 days.

- In cases where the positive person cannot be separated from the contacts who are quarantined (for example a mother tests positive while small child who is a contact is negative, or when an elderly person who require care is positive but their caregiver is negative), contacts must undergo PCR testing at the time of de-isolation of the positive person (when the positive person completes his/her isolation period). If this PCR test is negative, the contact must start 14 days quarantine from the day the positive person was de-isolated. They must be tested at the end of this quarantine. The reason for this extension of quarantine period for contacts who cannot be separated from the positive person is that, the positive person is infectious until he/she completes the duration of isolation and hence, a contact could get infected even towards the end of this isolation period of the positive case.

- If a PCR negative carer accompanies a patient to a Covid-19 facility or community isolation centre, the carer must be tested upon discharge of the positive person from the facility and upon the positive person completing his/her isolation. If this test is negative, they must be quarantined for 14 days from the day the positive person completes his/her isolation period.

- For large groups, guidelines for quarantining in large groups apply. Some such sites may be placed under monitoring for 45 days if the number of people accommodated is too large and cannot be separated into small groups.

23.5 ALGORITHM FOR TESTING AND MANAGEMENT OF A CLOSE CONTACT OF COVID-19 WHO IS QUARANTINED IN A SINGLE ACCOMODATION



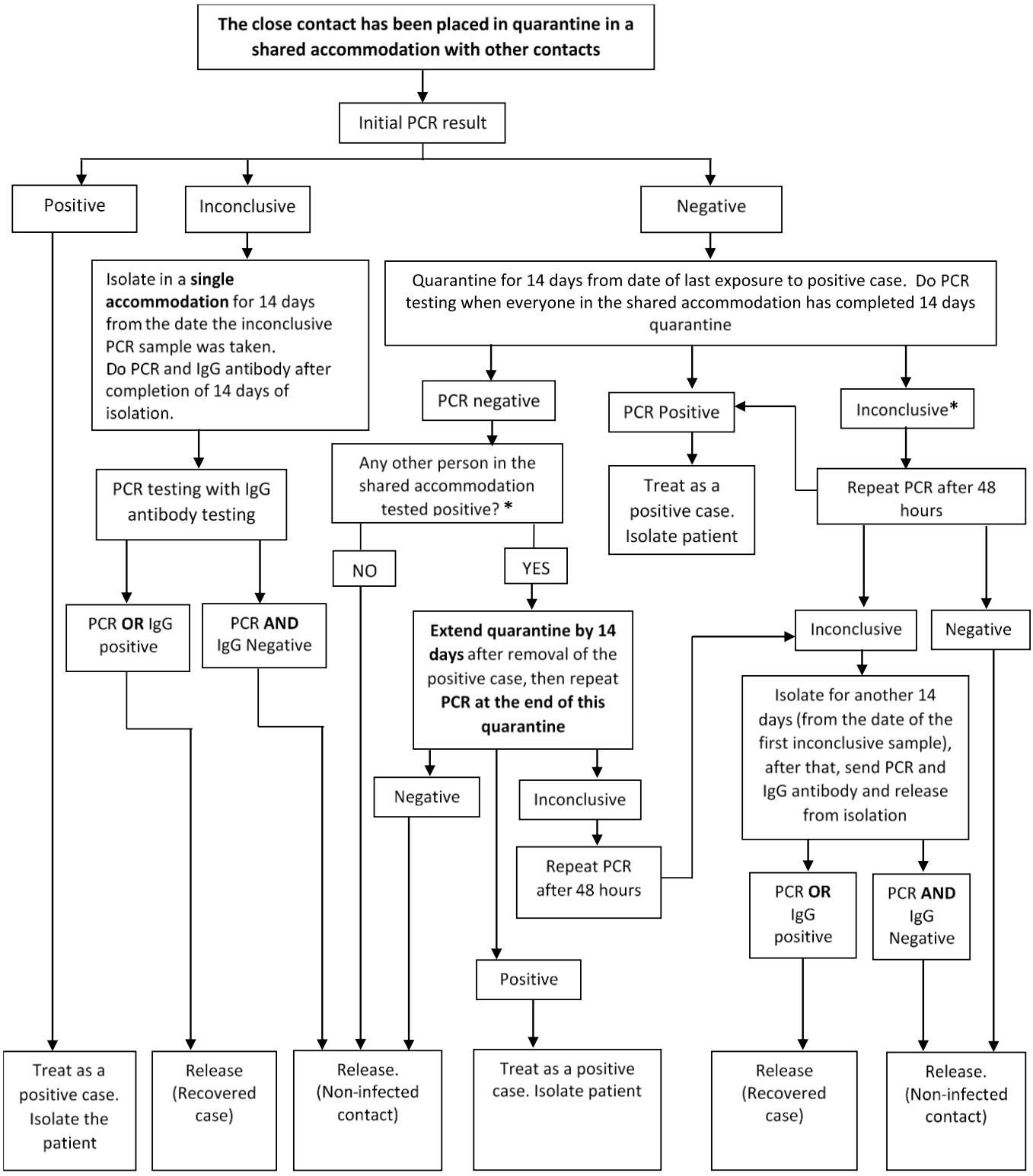
NOTE:

- Single accommodation refers to a quarantine arrangement where a contact is kept in a separate room and does not share his living space (room, toilet /bathroom, dining arrangement) with another contact.
- PCR testing must be done for any person who becomes symptomatic while in quarantine. If this PCR result is positive, the person must be isolated. If this PCR result is negative, he/she must continue and complete the quarantine period.
- COVID-19 vaccination could affect antibody testing results. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies against the N type antigen (Nucleocapsid antigen) should be used in assessing antibodies from natural infection in patients who have a history of vaccination with these vaccines.

* Follow this pathway for quarantine release evaluation if the person placed in quarantine did not have initial testing at the time of contact tracing and placing in quarantine.

¶ These persons are regarded as potential positives and must be isolated at home. If they become symptomatic, PCR test must be done and if a symptomatic person is positive, they should be treated as confirmed cases of COVID-19 with their isolation period counted from the date of onset of symptoms

23.6 ALGORITHM FOR TESTING AND MANAGEMENT OF A CLOSE CONTACT OF COVID-19 WHO IS QUARANTINED IN A SHARED ACCOMODATION



See foot notes given below:

NOTE:

- Shared accommodation refers to a quarantine arrangement where a group of contacts live and meet in a common living space such as a room or dormitory or share toilets/bathrooms/dining areas.
- PCR testing must be done for any person who becomes symptomatic while in quarantine. If this PCR result is positive, the person must be isolated. In case of shared accommodation during quarantine, the positive person must be removed from the shared accommodation and the quarantine period will be reset for the remaining contacts in the accommodation beginning from the date the positive person is removed from the shared accommodation.
- COVID-19 vaccination could affect antibody testing results. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies against the N type antigen (Nucleocapsid antigen) should be used in assessing antibodies from natural infection in patients who have a history of vaccination with these vaccines.

*if in a group quarantine, one person tests inconclusive do not release the others until the PCR inconclusive person is further evaluated and determined to be negative.

23.7 MEASURES TO BE FOLLOWED IN ISOLATION

Those who have mild disease may be isolated in home isolation.

- The room should preferably have **good natural ventilation** with open windows.
- Basic supplies (clothing, food, hand-hygiene supplies, laundry services) should be available
- Mechanism for addressing special needs, if any disability.
- Access to medical care must be available. Patients in home isolation must be registered at "Haalubelun" and monitored by phone. Emergency medical services must be available and there should be a mechanism for these patients to access emergency medical services. If patients with high-risk conditions are managed in a community isolation facility, the facility should have medical care available. These patients should be physically assessed by a health care worker at least once daily.

- Mechanism for communication, including telephone (gaining access to support services and communicating with family)
- Access to mental health and other psychological support services.
- Delivery systems for food, water and other needs as required.
- If an unexposed/negative care taker is taking care of the patient:
    - Recommended to keep 6 feet distance from other people/ if the caretaker needs to be with the patient, they should be briefed about IPC measures such as appropriate PPE/waste disposal/ food handling/ cleaning and other IPC measures
    - It is recommended that care taker be a person without underlying conditions
    - Adequate supply of appropriate Personal Protective Equipment (PPE) and hand hygiene materials (gloves, mask for the care taker and soap and water)
    - Availability of education materials on the IPC practices and COVID-19
    - Caretaker should stay in a separate room or be separated from the patient as much as possible.
    - Household members should use a separate bedroom and bathroom, if available
    - Avoid touching the eyes, nose, and mouth with unwashed hands
    - Wear a medical face mask and gloves when they touch or have contact with the patient's, blood, stools or other body fluid like saliva, nasal mucus, sputum, vomit, urine.
    - When removing the PPE first remove gloves wash hands with soap and water then remove mask and again wash hands with soap and water.

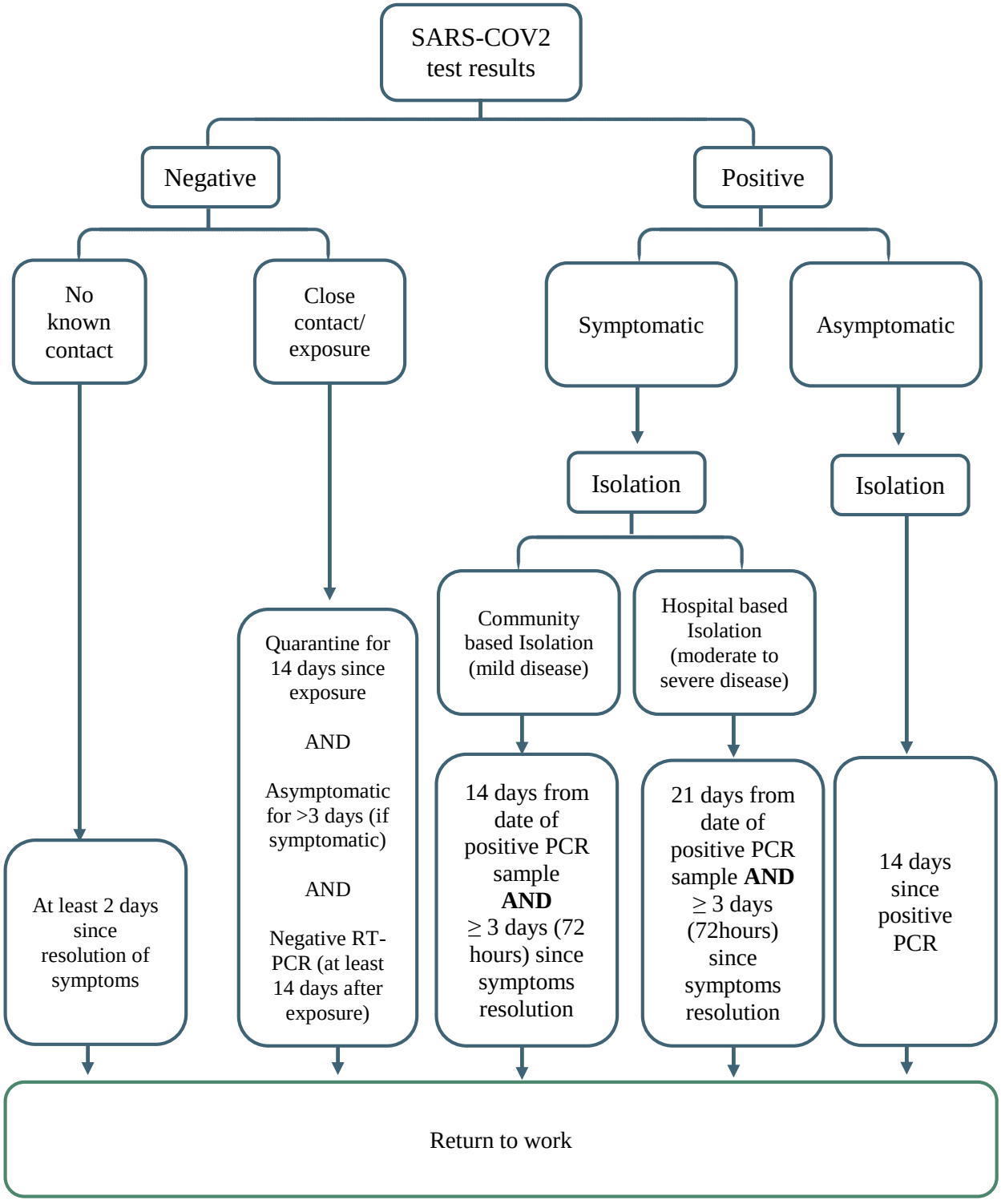
- **Adequate IPC protocols:**
    - Environmental cleaning, linen and laundry, waste disposal, water, sanitation and hygiene, respiratory hygiene
        - Clean and disinfect bathroom and toilet surfaces at least once daily with a hospital grade disinfectant or regular household disinfectant containing diluted bleach solution (1-part bleach to 49 parts water).
        - Clean clothes, bedclothes, bath and hand towels of ill persons with regular laundry soap and water at 60–90 °C with common household detergent, and dry thoroughly.
        - Place contaminated linen into a laundry bag. Do not shake soiled laundry and avoid direct contact of the skin and clothes with the contaminated materials.
        - Use disposable gloves to provide oral or respiratory care and when handling stool, urine and waste.
        - Gloves, tissues, masks and other waste generated by ill persons or in the care of ill persons should be placed in a lined (with double bags), lidded container in the ill person's room before disposal with other household waste.
        - Eating utensils and dishes should be cleaned with either soap or detergent and water after use and may be re-used instead of being discarded. Keep separate utensils for the isolated person
        - Clean and disinfect frequently touched surfaces such as bedside tables, bedframes, and other bedroom furniture daily with regular household disinfectant containing a diluted bleach solution (1-part bleach to 49 parts water).
        - Any surfaces that become soiled with respiratory secretions or blood or body fluids should be cleaned with soap and water and disinfected with 0.5% sodium hypochlorite solution (1 part bleach to 9 parts of water)

23.8 MANAGEMENT OF AN ASYMPTOMATIC HCW WHO WAS EXPOSED TO AN INDIVIDUAL WITH CONFIRMED COVID-19

Exposure	PPE used	Actions
HCW who had close contact with a confirmed COVID-19	• HCW not wearing a respirator or medical mask • HCW not wearing eye protection (in addition to medical mask or respirator) if the person with COVID-19 was not wearing a cloth face covering or facemask • HCW not wearing all recommended PPE (i.e., gown, gloves, eye protection, respirator) while performing an aerosol-generating procedure	• Exclude from work and quarantine for 14 days after last exposure and then do PCR at the end of quarantine • Advise HCW to monitor themselves for fever or symptoms consistent with COVID-19. • Any HCW who develop fever or symptoms consistent with COVID-19 should immediately contact their established focal point to arrange for medical evaluation and testing.
HCW other than those with exposure risk described above	• N/A	• No work restrictions • Follow all recommended IPC measures including wearing a facemask for source control while at work, monitoring themselves for fever or symptoms consistent with COVID-19 and not reporting to work when ill, and undergoing active screening for fever or symptoms consistent with COVID-19 at the beginning of their shift. • Any HCW who develop fever or symptoms consistent with COVID-19 should immediately self-isolate and contact their established focal point to arrange for medical evaluation and testing.

23.9 RETURN TO WORK CRITERIA FOR HEALTHCARE WORKERS

Follow this flow chart for decision making with regard to return to work for HCWs in areas of community transmission.



24. MEASURES TO BE FOLLOWED WHEN ASYMPTOMATIC QUARANTINED HOSPITAL STAFF ARE NEEDED TO CONTNUE WORK DURING QUARANTINE DUE TO STAFF SHORTAGE

In the case of community transmission, all HCW are at some risk for exposure to COVID-19, whether in the workplace or in the community.

Facilities should shift emphasis to more routine practices, which include:

- Asking HCW to report recognized exposures,
- Regularly monitor themselves for fever and respiratory symptoms and not report to work when ill.

Facilities should develop a plan for how they will screen for symptoms and evaluate ill HCW. This could include having HCW report absence of fever and symptoms prior to starting work each day.

Facilities could consider allowing asymptomatic HCW who have had an exposure to a COVID-19 patient to continue to work **after options to improve staffing have been exhausted** and in consultation with HPA.

The following instructions and precautions must be taken and adhered to when asymptomatic quarantined staff are advised to continue working during their quarantine period.

1. The staff should have a negative PCR test result before joining to work, must repeat a PCR if any symptoms develop and also at the end of quarantine period.
2. Adhere to correct use of personal protective equipment (PPE) at all times during work.
3. Practice diligent hand hygiene.
4. Break should be taken unaccompanied, without the presence of any co-worker.
5. Quarantine staff who are being utilized due to staff shortage must maintain physical distancing from their co-workers, and must stay within their own working space.
6. Quarantine staff and their co-workers must put on surgical mask and face shields at all times inside hospital premises.
7. Ensure adequate ventilation of the workspace by opening the windows and doors intermittently.
8. Ensure that health screening log is provided and that it is filled daily. The quarantine staffs should be advised to monitor themselves closely for any new symptoms associated with COVID-19 (i.e., measured or subjective fever, cough, shortness of breath, chills, headache,

muscle pain, sore throat, or loss of taste or smell) and if possible, measure temperature daily before coming to work.

9. If any symptoms are noted during this period, staff must be advised to stay home and continue home isolation.
10. Staff should remain at home and notify hospital focal point if staff develops any respiratory symptoms or have a measured body temperature of ≥100 degrees F/ 37.8^{o} C.
11. It is not permissible to use public transport and if personal transport is not available, the hospital must provide transport services for pick up and drop off to attend duties.
12. It is also not permissible to visit any other areas inside hospital except for the designated areas or outside areas like shops/cafes etc.

25. HEALTH FACILITY PREPAREDNESS

All health facilities should ensure their staff are trained, equipped and capable of practices needed to:

- Prevent the spread of respiratory diseases including COVID-19 within the facility. Follow the new normal guideline on physical distancing, handwashing, disinfection and other IPC measures.
- Collect and provide daily updated information on SARI and ARI to HPA
- Promptly identify and isolate patients with possible COVID-19 and inform the relevant facility staff and HPA
- Depending on the available resource's facility should have provision to care for a limited number of patients with confirmed or suspected COVID-19 as part of routine operations
- Potentially care for a larger number of patients in the context of an escalating outbreak
- Monitor and manage any healthcare personnel that might be exposed to COVID-19
- Communicate effectively within the facility and appropriate external communication with HPA related to COVID-19

Please fill (shade) the boxes according to the facility preparedness

Green ☺: Accomplished

Orange 😐: Partially implemented/ in process

Red ☹: Not initiated

Important elements to be assessed	
1. Infection prevention and control policies and training of health care workers:	
• The facility should have an identified COVID-19 taskforce/IPC team with a focal point responsible for organizing and implementing required measures	☐
• All stakeholders including the front-line staff in emergency department, internal medicine, pulmonology, pediatrics, gynecology, staff at QID, laboratory staff, radiology technicians, physiotherapy units, dietetics, heads of services (house-keeping, transportation) should be familiar with protocols of attending to suspected and confirmed cases of COVID-19.	☐
• Facility should have written guidelines/SOPS for IPC measures for the facility. All staff must be familiar with this SOP and IPC team must ensure that the measures are implemented.	☐
• Facility should have mechanism to collect, evaluate and provide the data on SARI, ARI and pneumonia to facility level COVID-19 task force and HPA	☐

• Facility should provide education to all health care worker (HCW) and concerned staff regarding COVID-19 including training sessions should be conducted periodically and facility must ensure that all newly joining staff should be trained in relevant protocols. o Case definitions of suspected and confirmed case , o How to safely collect a specimen, o Correct infection control practices and personal protective equipment (PPE) use, o Triage procedures including patient placement and clinical management o HCW sick leave policies and recommended actions for unprotected exposures (e.g., not using recommended PPE, an unrecognized infectious patient contact) , o How and to whom COVID-19 cases should be reported o How to safely transport a patient o Environmental cleaning and disinfection	☐
2. Process for rapidly identifying and isolating patients with confirmed or suspected COVID-19: • Triage - All health facilities (including health centers and hospitals in all islands) must establish triage for all patients, staff and others attending the facility irrespective of whether there are active cases of COVID-19 in the island or city. Although many islands do not have COVID-19 cases they are all at risk of importation of COVID-19 and health facilities are at high risk of transmission of the disease. Triage should be placed at the entrance to the facility building. At triage temperature should be checked and questions should be asked to assess for presence of symptoms of COVID-19 and whether there is history of contact with a suspected or confirmed case of COVID-19. • Instructions posted at entrance: - All patients, bystanders and staff must be wearing mask when entering the hospital - Cover their mouth/nose when coughing or sneezing with tissue, and dispose of tissues in dustbins - Perform frequent hand hygiene. • Signs are posted in ER and OPD area - Patients with fever, respiratory or other symptoms of COVID-19 and living or recent travel within 14 days to an area with known COVID-19 transmission in community, to immediately notify. • Facility has a SOP on what to do after identification of a suspected case including referral of stable patients identified at hospital triage to flu clinic of the island or sending the patient to a designated place in the COVID pathway of the hospital for sampling. Sick patients would need to be admitted and treated in a designated room/ward for suspected cases	☐ ☐ ☐ ☐
3. Arrangements for isolation of a suspected cases of COVID-19: • Facility has an identified separate room or a separate ward for isolation of a sick patient suspected to have COVID-19 infection. - The ward should have equipment for monitoring a sick patient who needs close observation. It should have an emergency trolley and resuscitation equipment when an ill patient is being managed. - The room/ward should have good natural ventilation and open windows or a negative pressure room maybe used	☐

- A designated ward maybe used for suspected COVID-19 patients with the bed distance kept at minimum 3 feet - Provision for medical mask, tissues and a lined dustbin should be available - Access to hand sanitizers and soap and water for hand hygiene should be available - The ward/ room should be in a place where other patients and staff do not visit. only essential personnel should enter. Entrance should not be through other wards or patient areas. - Facility has plans to minimize the number of HCW who enter the room/ward with suspected COVID-19 patients. - Facilities should consider caring for these patients with dedicated HCW to minimize risk of transmission and exposure to other patients and HCW - There should be access to a separate (regularly cleaned) toilet for the suspected patients. The toilet should have a sink with access to soap and water. - Designated donning/doffing areas should be identified and marked.	
4. Clinical Management Team in facilities where positive cases are managed: • Hospitals should have a clinical management team for COVID. This should comprise clinicians from the various specialties and the team should have a head. Clinical management team should: - Manage COVID patients who are admitted in hospital or in community isolation or home isolation. - In the case of islands, update the island task force daily regarding any important issues relating to the COVID cases in the island. - Coordinate with the island task force if any COVID patient requires to be transferred to a higher centre. - Discuss with clinical management teams from other facilities such as regional COVID facilities and CMAT from IGMH in clinical management of COVID patients and referral of COVID patients to higher centres. - Make clinical SOPS for the facility (e.g. SOPSs for managing a suspected case is identified in the ward or at triage, a positive case identified in the island, a positive case who requires and urgent surgery or delivery etc. - Conduct clinical discussions and briefings for all clinical staff on COVID-19 SOPS and guidelines and updates.	☐
5. Transmission based precautions: • Facility should implement IPC measures - Source control measures: all patients and bystanders entering health facility should wear masks. - Physical distancing measure: o maintain a distance of at least 1 meter in waiting areas o Barrier at service counters o Facility has a separate well-ventilated space that allows waiting patients to be separated by 3 or more feet, with easy access to respiratory hygiene and cough etiquette supplies (extra spaces near island health facilities can be used as waiting areas) - Facilities where the waiting areas are small and crowded could use online memo/token systems to avoid queuing at counters - Employment of non-contact measures where possible such as automatic dispensers for hand sanitizers or use of foot operated doors etc.	☐

- Hand hygiene
  o Alcohol based hand rub for hand hygiene should be made available at each entrance and in all common areas
  o Soap and water with sinks available in toilets and tissues for drying hands
- Facility provides no-touch lined dustbins for disposal of tissues in waiting rooms, toilets and in common areas.
• Facility should have adequate PPE for all clinical and non- clinical staff involved in caring for COVID-19 patient (doctors, nurses, technicians, attendants, cleaners etc.).
- Staff should be trained on proper use and indications of PPE
- Medical mask, gown, gloves and eye protection for patient contact
- N95 mask with other PPE when doing aerosol generating procedures
- Fluid resistant gowns and face shield for procedures expecting splash
- Provision of dedicated equipment or cleaning and disinfection of equipment between patients
- Ensure that staff working with suspected patients does not go to other wards in the hospital. Visit to other areas of the hospital should only be after properly removing PPE and washing hands with soap and water.	

6. Hand hygiene - Provision of alcohol-based hand rub at all areas of the health facility - Provision of soap and water with access to sinks to wash hands and tissues to dry	☐
7. Movement of patients with confirmed or suspected COVID-19 within and out of facility - Patient transportation within and outside the facility should be limited - There should be SOP on transportation of patient - Patient should be given a medical mask and a clean sheet should be kept on the stretcher or chair used to transport patient	☐
8. Environmental cleaning, laundry and waste disposal - SOP should be there on environmental cleaning - Staff should be trained in cleaning procedures - Any linens used by the patients should be laundered in the hospital premises (refer to the cleaning guidelines) - Waste from the COVID-19 ward should be considered as infectious waste and should be segregated and labelled as infectious waste.	☐
9. Monitoring and managing HCW - It is recommended that staff should change to scrub/separate clothes when on duty - The scrubs/clothes worn during the duty time should be washed on premises - Register should be kept in the wards/unit to track exposure of HCW - Facility has the process to conduct symptoms and temperature check of staff before start of shift. - All staff working in the hospital should have readily available access to medical consultations and testing if symptoms develop - Symptomatic HCW should not come to work - Staff should be provided with a separate refreshments and toilet with shower facility if possible.	☐

10. Visitor access and movement within the facility - Visitors should not be allowed to enter area where COVID -19 patients are admitted - Facility should restrict all visitation to the hospital (visitation timing and numbers depending on the epidemic situation) - Facility should restrict visitors having acute respiratory illness (spread awareness through posters kept at the entrance) and through triage of visitors at hospital entrance - Ensure that visitors limit their movement within the facility - Visitors' policy should be regularly reviewed - If there is an outbreak in the island, suspend visitations and reduce bystanders of patients and limit bystanders to certain hours.	☐
11. Ensure adequate stock - PPE - Medications as per the management guidelines and other consumables - Laboratory sampling materials (Viral transport media and synthetic swabs) and other consumables - Environmental cleaning products - Stocks should be regularly checked and inventory updated and replenishment stocks should be requested within an adequate timeframe to ensure stock does not run out.	☐
12. Facility should make provision for basic necessities for the patient including: food and water, clothing, toiletries etc. - Ideally use designated utensils for the patient or disposable items - Plates and spoons should not be shared between patients	☐
13. Facility should regularly monitor and update the situation to HPA	☐
14. Facility should have a contingency plan Facility should have a contingency plan to provide clinical care during a local transmission or community transmission of COVID-19. This includes providing outpatient care by tele consultation, mechanism for physical consultation of urgent and important cases, providing emergency care at the hospital, elective and urgent surgeries.	☐

26. RESPONSE TO AN OUTBREAK IN HEALTHCARE SETTING

27. PREVENTIVE MEASURES IN OUTPATIENT CLINICS AND PHARMACIES

The health and safety of healthcare workers and other staff working at healthcare premises is paramount for their own protection and also to help prevent the spread of the virus and to improve overall care

ALL CLINICS	MEASURES
Training of staff: (Doctors in different specialties, dentists, nurses, reception staff, cleaners, physiotherapists, Lab/x-ray technicians, waste handlers, drivers etc.)	• Hand hygiene • Respiratory Hygiene • Use of appropriate PPE (see ANNEX 5) • Physical distancing guidelines • Cleaning and disinfection practices • COVID-19 symptoms, procedures to follow when a suspected case is identified • Testing, isolation and quarantine guidelines
IPC measures	• Appoint an IPC focal point for the facility. In addition, for larger health care facilities, a COVID-19 taskforce should be established. • Develop SOPs for the facility on procedure to follow if a suspected case is identified. Staff should be familiar with the SOP. • Update the staff regarding HPA recommendations and guidelines • Consider partitions at counters in reception or if not available and contact with clients within 3 feet, to use face shield in addition to mask. • Ensure physical distance of at least 3 feet between individuals. Use floor markings at counters, seating arrangements, • Hand hygiene should be frequently and meticulously practiced by staff and clients. Proper hand hygiene facility should be available i.e. soap and water with single use towels/ disposable tissue paper and alcohol based hand rubs. Signs/posters reminding about hand hygiene and how to perform should be displayed. • Respiratory hygiene should be practiced. This involves coughing or sneezing in to a tissue or into the elbow. If a tissue is used it should be carefully disposed of into a lined dustbin. There should be posters for awareness. • All health care staff should wear a surgical mask. Surgical masks should be available for staff, customers/clients. • Proper PPE should be available for staff • Proper cleaning and disinfection should be performed

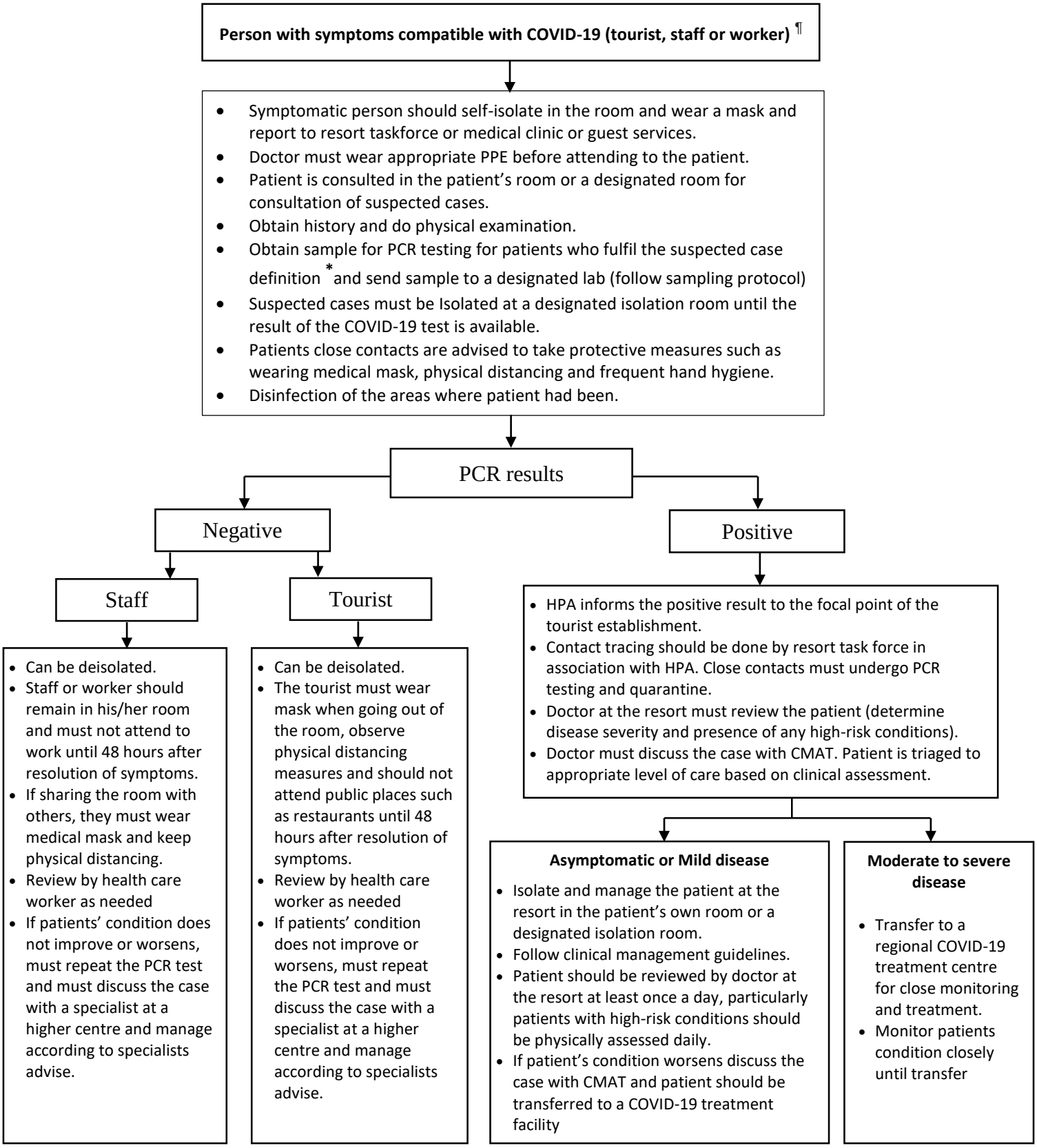
	• Ensure adequate ventilation and good air exchange in enclosed spaces. This may be ensured by opening windows for natural ventilation or by use of exhaust fans. Other measures such as Installation of high-efficiency particulate air (HEPA) filters maybe used. Institutions using HEPA filters should follow the manufacturer's instructions, including for cleaning and maintenance procedures for the proper functioning of the filters. If available, in areas performing aerosol generating procedures, negative pressure room should be used.
Staffing and work place consideration	• Ensure adequate number of staff for all areas. Plan should be made to deal with work overload, anticipating possible sick leaves. • Staff who develop symptoms compatible with COVID-19 should not report for work. They should self-isolate at home, and be advised to inform the facility and HPA for COVID-19 testing. In addition, any staff who gets exposed to a suspected/ positive case without proper PPE should inform the IPC focal point in the facility. • Mechanism to organize and assign teleworking should be considered, along with a mechanism to provide staff with the necessary equipment to carry out their normal workload remotely • Staff with underlying health conditions at increased risk of COVID-19 complications should preferably be assigned to activities with little or no clinical contact with the patients/customers (e.g. phone, email or online consultation), as feasible. • Written guidelines on utilization and plans to track key supplies (PPE, cleaning and disinfection material, alcohol solution, etc.) should be in place to avoid misuse and/or overuse of limited resources
Before patient arrives	• When giving appointments, clinic or health facility should ask whether patient has any history of fever or other symptoms compatible with COVID-19. It should also be ascertained that the patient is not under isolation and not under quarantine or from a quarantined household. Patients should be advised to visit a designated flu clinic if they are experiencing symptoms compatible with COVID-19 disease for testing. • In areas where there is community transmission, remote assessment of patients should be considered: patients who need a face-to-face consultation, should visit a clinic only by appointment in order to keep waiting times and the number of patients in the waiting room low (only one appointment at a time with enough time for the consultation to minimize possible delays). • In areas of local or community transmission, a service for online renewal of prescriptions without the presence of the patient could be considered for prescription refills. • In areas of community transmission, dedicated home visiting services should be considered for vulnerable patients, if available. • Minimize entry of people accompanying a patient to the clinic

	• A record of staff and customers or clients entering the clinic should be kept to facilitate contact tracing if needed.
During patient visit	• Ensure use of mask by all • Triage patients (ask for symptoms of COVID-19 and contact history and whether the patient is in quarantine or isolation) • Ask to perform hand hygiene at entry; information on how to perform proper hand hygiene should be available. Handwashing facilities and/or sanitizers should also be readily available. • In areas of local or community transmission, consider closing down areas in waiting rooms that have a playground or toys for children; remove the toys. The same applies to magazines, books or other non-essential objects that patients/companions may touch. • Adequate PPE by HCW: Recommended to use work clothes/scrubs in health care setting with closed work shoes (clean the shoes after work or use dedicated footwear in the clinic). The reusable PPE should be cleaned and disinfected after use on site. The scrubs should be taken in laundry bags in dedicated container for washing with soap and hot water (at 60 to 900 C). Scrubs should ideally be washed on site/assigned site. • **PPE:** o **Patient with COVID like symptoms:** ▪ Medical mask, gown, gloves, face shield/goggles. ▪ Aerosols Generating Procedures (AGPs) use N95 mask with full sleeved disposable gown, gloves and goggles. Ensure adequate ventilation if performing AGPs. o **Non COVID related:** ▪ At least medical mask with face shield. Gloves should be used with risk assessment, perform hand hygiene meticulously between patients whether gloves are used or not. ▪ For **AGPs**: If possible, in areas with community transmission AGPs should be delayed or alternative procedures can be performed, or If performing AGPs full PPE with N95 mask should be used, this is especially important for dental facilities. Ideally AGPs should be performed in negative pressure rooms with a minimum of 12 air changes per hour or at least 160 L/second/patient in facilities with natural ventilation. • Ensure proper donning and doffing areas in the clinic with demarcation of clean and contaminated areas. • Recommended PPE as above also apply for home consultations. • Any patient who visits an outpatient clinic in Great Male area' with symptoms suggestive of COVID-19 should be referred to a Flu clinic for sampling for COVID-19. Patient can be given symptomatic treatment before referral. Patient referred for sampling must be informed to HPA so that these patients can be followed by HPA to ensure that their sampling was done. • Any patient who visits an outpatient clinic in an island with symptoms of COVID-19 must be referred to the flu clinic of the island for sampling. The patients referred in this manner must be informed to the island task force so that they can be followed by task force to ensure that sampling is done.
After patient leaves	In areas of local or community transmission: • After each patient the frequently touched surfaces or objects in the room should be carefully cleaned and disinfected before a new patient is seen.

	• Clean with soap and water followed by removal of soap by rinsing and application of disinfectant. For disinfectant use diluted bleach solution (1ml bleach in 49 ml of water) or EPA approved disinfectant products active against enveloped viruses or 70% ethanol solution for surface disinfection depending on specific surfaces. Premises should be cleaned and disinfected after every shift • All rooms (e.g. waiting and consultation rooms) visited by a possible or confirmed case of COVID-19 should be mechanically or naturally ventilated, depending on the type of room. • Rooms where AGPs were performed need to be mechanically or naturally ventilated before cleaning and allowing new patients. If AGPs were performed, the room needs to be aired out and surfaces cleaned disinfected before admitting new patients; details depend on the procedure, available anti-aerosol devices, the room size, and the presence of windows. • The cleaners should wear appropriate PPE: Medical mask, overalls/ full sleeved work clothes with apron, face shield, gloves. • Hand hygiene should be performed every time PPE (gloves, face masks, etc.) is removed. • Staff engaged in waste management should wear PPE. Waste Cleaners should be trained on proper donning and doffing of PPE. Infectious clinical waste should be treated according to the waste management guidelines.
SPECIFIC SITES	**MEASURES**
Dental clinics, Additional precautions	In addition to the points given above, dental clinics should take extra precaution during local or community transmission. • **Procedures to continue during a local or community transmission:** Minimally invasive restorations that do not require high speed maybe used with absolute isolation and specific indications. Extractions (preferably non-surgical). Manual scaling (not ultrasonic or sonic), manual periodontal procedures, prosthodontic procedures without curving. Other procedures as needed that do not generate aerosols maybe performed under professional assessment. • AGPs should only be performed if it is necessary (emergencies) and only in hospital set up. Avoid the use of dental hand pieces and the air/water syringe. Use of ultrasonic scalers is not recommended. Prioritize minimally invasive/atraumatic restorative techniques (hand instruments only). o If aerosol-generating procedures are necessary for dental care, use four-handed dentistry, high evacuation suction and dental dams to minimize droplet spatter and aerosols. The number of HCW present during the procedure should be limited to only those essential for patient care and procedure support. Ensure adequate PPE, proper ventilation, cleaning and disinfection. • Preprocedural mouth rinses (PPMR): There is no published evidence regarding the clinical effectiveness of PPMRs to reduce SARS-CoV-2 viral loads or to prevent transmission. Although COVID-19 was not studied, PPMRs with an antimicrobial product (chlorhexidine gluconate, essential oils, povidone-iodine or cetylpyridinium chloride) may reduce the level of oral microorganisms in aerosols and spatter generated during dental procedures • Extra oral X-ray should be considered instead of intra oral X-ray.

Pharmacy	• Mask should be worn inside the pharmacy • Perform hand hygiene at entry to the pharmacy • Consider installing glass or plastic panels at the counters to protect the staff from respiratory droplets and enhance physical distancing. • Establish maximum number of customers who can stay at a time inside the pharmacy with physical distancing measures. • Floor markings indicating safe distancing can be considered, both in and out of the pharmacy. • Signages should be displayed at pharmacy entrances to inform customers to attend flu clinics in they have any symptoms of COVID_19 • Customers should avoid visiting the pharmacy if they are experiencing symptoms compatible with COVID19. • Home delivery of medicines should be considered in order to reduce the number of patients visiting the pharmacy. • Before delivering medicines, pharmacists should always check with customers whether they are experiencing symptoms compatible with COVID-19 disease (such as fever and cough) or if they are in quarantine. • Physical distance should be maintained when medicines are delivered to a person's home. • If pharmacist is dispensing over the counter medications for fever or flu symptoms, always advise them to attend the flu clinic for sampling.

28. PROTOCOL TO RESPOND TO A SUSPECTED CASE OF COVID-19 AT A TOURIST RESORT



¶ Resort must inform and encourage all staff, workers and tourists to report any illnesses and inform if they develop symptoms such as fever, cough, shortness of breath, sore throat, red eyes, loss of smell or loss of taste, body ache, headache, sore throat, runny nose, generalized weakness, vomiting or diarrhea or any other symptoms of concern.

* Refer to the case definition for suspected case of COVID-19

29. OUTBREAK MANAGEMENT PLAN FOR SAFARI OR OTHER VESSELS WHEN COVID-19 IS SUSPECTED

Pre-boarding

- Health declaration at airport on arrival to Maldives (for tourists arriving to safaris)
- Provide awareness about COVID-19. Signage and posters should be displayed in the vessel to promote preventive measures such as wearing masks, physical distancing and frequent hand hygiene

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Identify suspected case

- Any person (tourist or crew member) with symptoms compatible with COVID-19.
- Crew and tourists must report any illnesses and inform if they develop symptoms such as fever, cough, shortness of breath, loss of smell or loss of taste, body ache, headache, sore throat, runny nose, generalized weakness, vomiting or diarrhea. (refer to the latest COVID-19 suspected case definitions)

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Isolate suspected case

- Isolate in a single well-ventilated room. If it is not possible to isolate in a single room, the symptomatic person must keep a distance of at least 1 metre from others who are sharing the room. The symptomatic person and those sharing the room must wear medical masks and perform frequent hand hygiene.

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People who take care of the sick person should:

- Wear a medical mask, gloves, apron, goggles or face shield when attending to the symptomatic case. Perform hand washing with soap and water after attending.

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Clean and disinfect the areas where the symptomatic case has been

- Clean with soap and water, rinse, in addition, the frequently touched surfaces should be disinfected with diluted bleach solution 1 ml bleach to 49 ml water (keep for at least 1 minute).
- Use medical mask, face shield/goggles, work clothes, disposable or reusable (washable) apron over the work clothes, heavy duty gloves and closed shoes for cleaning and disinfection

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CALL HPA (1676)

- HPA will make arrangements for sample to be taken for PCR testing for COVID-19.
- The symptomatic person will remain in isolation on board the vessel until PCR results.
- **If PCR result is positive the patient MUST be transferred to an on-shore isolation facility**.
- **If PCR result of the symptomatic person is positive, all direct contacts of the positive case MUST undergo PCR testing.**
- If PCR sample results is negative, isolate the patient on board the vessel until 48 hours after symptom recovery.

30. CONTACT TRACING AND MANAGEMENT OF CONTACTS WHEN THERE IS A SUSPECTED CASE OF COVID-19 ON BOARD A SAFARI OR OTHER VESSELS

The close contacts who have been exposed to the index case from 48 hours before the onset of symptoms should be identified. Contact tracing should be started immediately as soon as a suspected case (symptomatic case) is identified.

Definition of close contacts on board a vessel:

A person is considered to have had a high-risk exposure if they meet one of the following criteria:

- Sharing the same cabin as a suspected or confirmed COVID-19.
- They had close contact (contact anywhere within 1 metre for more than 15 mins) or were in a closed environment with a suspected or confirmed COVID-19 case:
    - For passengers, this may include participating in common activities on board the vessel or while ashore, if within 1 meter distance for more than 15 minutes such as member of a group travelling together, dining at the same table etc.
    - For crew members, this includes the activities described above, as applicable, as well as working in the same area of the vessel as the suspected or confirmed COVID-19 case, for example, cabin stewards who cleaned the cabin or restaurant staff who delivered food to the cabin.
- A person who provided care for a suspected or confirmed COVID-19 case without appropriate PPE.
- Direct physical contact with a suspected or confirmed COVID-19 case.

Management of contacts in a safari or other vessel

Identify close contacts

- Keep them in separate rooms in the vessel, separate from other passengers ASAP after they are identified as close contacts of a symptomatic person (even before PCR results of the symptomatic case is available):
- If it is not possible to isolate contacts in separate rooms they can be kept together with physical distancing with use of medical masks (keep at least 3 feet from each other)

Management of contacts depending on results of the index case:

- **If Sample of symptomatic patient is Positive**: All close contacts MUST undergo PCR testing. All passengers and crew members must be quarantined in an on-shore facility. Up to 2 crew members may remain quarantined on the vessel for maintenance of the vessel. These crew members who remain on the vessel must wear masks, maintain physical distancing and use separate cabins. The vessel will be under HPA monitoring until the crew on the vessel complete their quarantine period and test negative on PCR at the end of quarantine.

- **If Sample of symptomatic patient is Negative** then the contacts maybe released and kept on self-observation.

- In the case of a positive case detected on the vessel, the vessel may allow new passengers onboard only after all the passengers and crew members have been transferred to an on-shore quarantine facility and after the vessel has been thoroughly cleaned and disinfected.
- The vessel may operate with a new set of crew.

31. IMPORTANT POINTS FOR PREVENTION OF COVID-19 IN ALL LONG-TERM CARE FACILITIES AND CLOSED RESIDENTIAL SETTINGS SUCH AS SHELTER HOMES FOR CHILDREN, ADULTS AND DISABLED PERSONS, DRUG REHABILITATION CENTRES, PRISONS

Improve awareness and plan ahead

- Ensure that the residents and the staff in the facility have information on COVID19
- Develop an outbreak response plan.
- Keep up to date information provided by HPA
- Ensure that immunizations are up to date

Prevent the introduction of COVID-19 into the facility

- Post signs at entrance instructing visitors not to visit if they have fever or respiratory symptoms.
- Ensure sick leave policies allow employees to stay home if they have fever or other symptoms of COVID-19. Symptomatic staff should attend a flu clinic for sampling.
- All newly arriving residents could be quarantined for 14 days in a designated quarantine area followed by PCR testing. They could be released in to the facility if this PCR test is negative.
- Assess incoming residents. Check temperature, assess whether they have any history of fever respiratory or other symptoms compatible with COVID-19 or contact with a confirmed case of COVID-19 within the past 14 days. Isolate in a separate room and do PCR test if the person is symptomatic or if they have a contact history.
- Report all suspected cases of COVID-19 and all acute respiratory infections to HPA.

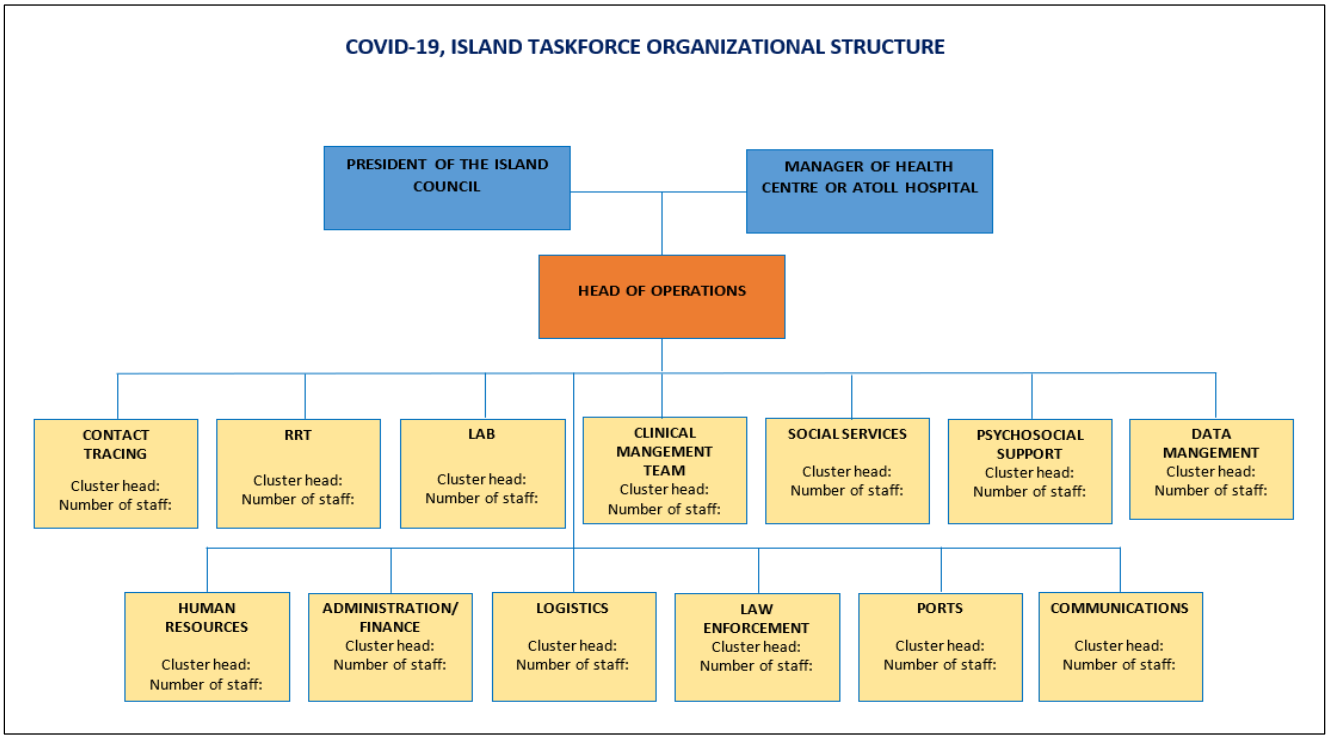
Prevent the spread of COVID-19 WITHIN the facility

- Those having fever or symptoms compatible with COVID-19 should be isolated and tested. They must wear medical mask (if no contraindication to wear masks).
- When caring for residents with respiratory infection use appropriate PPE. (frequent hand washing, use medical mask, gloves when handling secretions).
- Inform HPA if anyone (residents and staff) with in facility have history of contact to a COVID19 confirmed/suspected case or travel history within last 14 days to an area with COVID19 community transmission.
- Support hand and respiratory hygiene, as well as cough etiquette by residents, visitors, and staff.
- Ensure staff and residents wash their hands with soap and water / hand sanitizer frequently (soap and water preferred if hands are soiled or after using the toilet or before eating.
- Make sure tissues hand washing and drying supplies are available.
- Report all suspected COVID-19 and all acute respiratory infections in residents or staff to HPA.

- Environmental cleaning
- Ensure Frequent Cleaning of the surface with
  - Soap/detergent with water -> rinse at least daily once or twice
  - Bathrooms should be cleaned once or twice daily and disinfected with diluted bleach solution in the ratio of 1ml bleach: 49ml water.
  - The frequently touched surfaces: clean at least 3 to 4 times /per day (door knobs, chairs, stair railings etc.). They should be cleaned with soap/detergent and water and disinfected with diluted bleach solution in the ratio of 1ml bleach: 49ml water.
  - The areas where a suspected person resided should be cleaned with soap/detergent and water and disinfected with diluted bleach solution in the ratio of 1ml bleach: 49ml water.
  - Bleach solution should be prepared fresh and should be kept in covered containers and used within 24 hours.
- Ensure proper disposal of waste (waste from a suspected case should be put in a bin with double bags, labeled as infectious waste and the waste collectors need to be informed not to open the bag.
  Laundry of a suspected case should be washed in hot water (60-90 deg C) with soap /detergent with bleach added if possible.
- Use appropriate PPE when cleaning and dealing with waste and laundry.

32. MEASURES TO BE IMPLEMENTED IN THE ATOLLS FOR COVID-19 PREPAREDNESS

- All islands should have a COVID-19 taskforce. The structure and essential components of the island task force is shown below:



  - Each cluster in the task force should have a cluster head. Taskforces must meet regularly (at least once a week even if there is no active cases in the island) to discuss issues related to preparedness for COVID -19 and implementation of COVID-19 public health measures on the island.
- Enhance surveillance and reporting of ARIs from all over the country.
- All islands:
  - Should quarantine all travelers who come from areas of community transmission or from abroad for a period of 10 days (should be in a single room ideally with en suite bathroom). PCR testing for COVID-19 must be done for all quarantine persons any time they develop symptoms and upon completion of the 10 days quarantine period.
  - Establish a mechanism for active surveillance of high-risk groups including frontline workers in the airport, tourism establishments, health care workers, crew of ferries and cargo ships etc.
  - As there is a risk of community transmission in any island, all health facilities should implement measures outlined in the health facility preparedness check list, notably:
    - Strict ARI and SARI surveillance.
    - Establish triage at all health centres and hospitals.

- All staff of health facilities who attend to patients or are exposed to patients' secretions (including doctors, nurses, clinical assistants, laboratory workers, radiographers, other technicians, receptionists, cleaners and laundry workers MUST wear appropriate PPE at all times while in the health facility which includes wearing a surgical mask and face shield even when attending to patients who are not suspected COVID-19 cases. (See ANNEX 5)
- Establish flu clinics in all inhabited islands and do PCR sampling for ALL symptomatic persons in the island.
- Establish an isolation room/ward in the health facility for managing sick patients with suspected or confirmed COVID-19.
- During the COVID-19 response, care should be taken to ensure that all essential services as per MOH guideline are continued (emergency services, care of people with chronic conditions, vaccination, mother and child health).
- Mechanism to address health needs of vulnerable groups such as migrant workers.
- Establish mechanisms to provide medical care during a community transmission such as mechanisms for:
    - Conducting online or phone consultations for outpatients including regular follow up/prescription renewal of elderly and patients with chronic medical conditions.
    - Arrangements for home delivery of medications

- Conduct regular awareness for general public regarding COVID-19:
    - Targeted sessions for the vulnerable and high-risk populations such as those with chronic conditions (like diabetes, heart disease, kidney diseases, chronic lung disease, cancer etc.)
    - Physical distancing measures such as minimum of 3 feet distancing between people, minimize non-essential movement from house to house, use non-contact greetings, use partition at counters, utilization of online mechanism of communication/transaction and wear a mask in public spaces, service outlets and in crowded areas.
    - Advise symptomatic people to
        - Inform/attend the flu clinic for consultation and COVID sampling
        - Avoid going to public places
        - Proper cough hygiene (use tissue / flexed elbow to cover mouth and nose if coughing and dispose in dustbins lined with bags).
        - Use medical mask if sick and for those taking care of the sick.
    - Precautionary measures for shopping during a community transmission:
        - Use online transaction methods if possible
        - Use of home delivery mechanisms
        - If going out for shopping:
            - There should be a healthy person designated to go for shopping or for essential services as needed.

- Use queue markings in shop (minimum of 3 feet distance)
- Use mask if going out
- Make a list and buy necessary items to last at least 3 or 4 days.
- Do not touch items unless you wish to buy them.
- Avoid touching your eyes, nose, or mouth with unwashed hands
- After coming home wash hands with soap and water and rinse fruits and vegetables with water
- Avoid going for shopping if you are sick

  - Handling of goods and cargo
    - Wear work clothes during cargo handling. Take a bath and change clothes after work.
    - Ensure frequent hand washing with soap and water
    - Use utility gloves if carrying heavy loads
    - Wash hands frequently
    - Refer to HPA guidelines on disinfection of shops and cargo handling units.
  - Cleaning and disinfection of public areas according to the cleaning guidelines
  - Ensure good ventilation of enclosed spaces (keep windows open or if air conditioned open the windows intermittently).

- Islands with large number of expatriate workers/immigrants
  - Identify leaders in the expatriate worker communities
  - Disseminate awareness messages on COVID19
  - Identify ways to decongest crowded dormitories
  - Make arrangement for active surveillance/ encourage them to seek health care and to attend flu clinic for consultation and sampling if symptomatic. Conduct outreach sessions to find the people with acute respiratory infections in these groups and take their samples for testing.
- The island task forces must ensure that the following measures are implemented regarding staff and workers of tourist resorts and islands under construction when they come to inhabited islands for services such as medical consultation.
  - Wearing masks is mandatory.
  - Physical distancing measures must be observed at all times.
  - They should not enter shops or restaurants.
  - In dining at restaurants should not be allowed. If meal has to be arranged, delivery or take away should be done.
  - During travel for medical treatment, patient must go directly from the vessel to the health facility and back.
  - If person has fever or respiratory symptoms or other symptoms compatible with COVID-19, the person should be consulted in the flu clinic of the island.

- Specialist consultations should be scheduled with prior appointment. The appointments must be scheduled for the end of the outpatient department (OPD) time or to a time where there are minimum number of regular patients waiting in OPD area.
- Health care workers attending to these patients must wear appropriate PPE including surgical mask and face shields.

- **A list of measures for COVID-19 preparedness to be implemented in all islands is given in ANNEX 1** of this SOP. The island COVID-19 task force, island health facility and other relevant agencies must ensure that these measures are implemented and the tasks outlined in the table are completed.

33. COVID19: HANDLING OF DEAD BODIES

SOP for preparation of dead body and funeral procedure for a suspected or confirmed case of covid-19 infection

- This SOP should be followed for a dead body suspected or confirmed to have COVID-19 infection (follow case definition for suspected or confirmed COVID-19 infection).
- A dead body discovered at a home or on the road should be taken to the cemetery directly instead of health facility. A health professional should attend the body at the cemetery.
- Any death in a person under quarantine must be informed to HPA and must be tested for COVID-19. Any unexplained death in a city or island where there is local or community transmission of COVID-19 or in any tourist establishment or in any island under development must be informed to HPA and must be tested for COVID-19. This sampling will be done at the health facility or cemetery or mortuary by a health care personnel such as a doctor, nurse or health worker.
- In case of foreign nationals follow the diplomatic protocols in dealing with the dead body.
- If for any reason burial would be delayed, the body may be kept in a mortuary.
- **As per Ministry of Islamic Affairs guideline (OTHR)142-C1/142/2020/42 the recommended procedure in Maldives for purification of the dead body suspected or confirmed to have COVID-19 infection will be *Tayammum* instead of *Ghusl* ("Hinevun")**
- The health facility should inform the mortuary staff/cemetery staff/burial personnel regarding status of the dead body as a suspected or confirmed case of COVID-19 so that the appropriate procedures for dead body purification and burial could be carried out.
- Embalming must be avoided for bodies suspected or confirmed to have COVID-19 infection.
- Adults > 60 years, and immunosuppressed persons should not directly interact with the body including preparing or performing burial procedures.

<u>SOP for preparation of dead body and funeral procedure for a suspected or confirmed case of covid-19 infection</u>

A. In the hospital, health facility, mortuary, cemetery or site where a dead body is discovered, staff who handle the body should use appropriate PPE and take infection prevention and control measures. See Table 5 (below) for appropriate PPEs for personnel who handle the dead body.

B. Sequence of handling the dead body

1. If the body is in a health facility, the body can be cleaned and prepared in a hospital ward or any other allocated area of the health facility.
2. Remove the tubes, cannula, catheter, jewelries, etc from the dead body.
3. Any oozing wounds, cuts and abrasions, should be covered with waterproof bandages or dressings.
4. Clean with wet cotton any blood stains or secretions on the surface of the body.
5. Close the eyes of the deceased and plug the orifices with cotton.
6. Fold the arms keeping the right above the left over the upper abdomen.
7. Support the chin with a bandage tied over the chin and head.
8. Keep the legs together and put ties at the level of the knees and ankle joints.
9. Wrap the body with white cotton linen leaving the face and hands exposed.
10. Put the body of the deceased in an impermeable body bag.
11. The outer surface of the body bag is wiped with soap and water, then disinfected with 0.1% sodium hypochlorite (1 part of bleach to 49 parts of water), this procedure may require two people with PPE.
12. The body bag is placed on a trolley to be transported. The trolley must be disinfected with 0.1% sodium hypochlorite prior to leaving the area where the body is prepared.
13. Prior to leaving the area where the body was prepared, the staff members must remove their PPE. The patient's area is considered a contaminated area and the PPE should be removed inside this area. Hands should be washed with soap and water before leaving the area.

C. Transportation of the dead body

1. After initial preparation of the body at the health facility the body should be transported to the cemetery for funeral procedures. In greater Male' area the designated cemetery is Hulhumale cemetery.
2. The body bag should not be carried by hand. It can be taken on a stretcher. The body must be transferred to the funeral site in a designated vehicle/ ambulance.
3. The personnel transporting the body should wear appropriate PPE.
4. The vehicle and any trolley used to transport the body should be disinfected. Use 0.1% sodium hypochlorite solution (1 part of bleach to 49 parts of water). If any surface is contaminated with blood or secretions, the surface should be cleaned with 0.5% sodium hypochlorite solution (1 part of bleach to 9 parts of water).

D. <u>At the funeral site</u>

As per Ministry of Islamic Affairs guideline (OTHR)142-C1/142/2020/42 the recommended procedure in Maldives for purification of the dead body suspected or confirmed to have COVID-19 infection will be *Tayammum* instead of *Ghusl* ("Hinevun")

1. Keep a white cotton linen sheet on the platform where the body will be placed on.
2. Place the body bag on the cotton sheet and open the body bag. The body should NOT be removed from the body bag.
3. A few close family members of the deceased are allowed to view the body. They should stand at least 1 meter from the dead body and should not be allowed to touch the body. Family members should wear a mask. Physical distancing should be maintained by family members while viewing the body.
4. Perform Tayammum. Tayammum is performed by trained and designated personnel wearing appropriate PPE.
5. After Tayammum is completed, cover the face and hands of the dead body.
6. Close the body bag. The body bag is then wrapped with white cotton linen ("kafun").
7. The wrapped body bag is then placed in the coffin. The coffin should have a wooden bottom and be closed from all the sides.
8. The persons who assist in placing the body in the coffin should wear appropriate PPE.
9. Clean and disinfect the outer surface of the coffin. Wipe with 0.1% sodium hypochlorite solution (1 part of bleach to 49 parts of water). It is not advisable to cover the coffin further with a cloth.
10. Prayer is performed by the assigned personnel/ family members (Keep minimum number of people and maintain social distancing).
11. Do not carry the coffin inside the prayer area of the mosque. Prayer is to be performed at the funeral site and not inside the prayer area of the mosque.
12. Persons who assist in carrying the coffin and performing the burial should wear appropriate PPE.
13. Clean and disinfect the platform where the body was prepared on. Use 0.1% sodium hypochlorite solution (1 part of bleach to 49 parts of water). If any surface is contaminated with blood or secretions, the surface should be cleaned with 0.5% sodium hypochlorite solution (1 part of bleach to 49 parts of water).
14. Remove the PPE and perform hand hygiene.

Table 5: Appropriate PPE for personnel who handle or attend to the dead body

Personnel	Gloves	Surgical mask	Gown	Shield or goggles	Closed shoes/boots
Staff who prepare the body in the hospital	✓	✓	✓ Impermeable gown with plastic apron	✓	✓
Staff who transport the body to funeral site or mortuary	✓	✓	✓ Reusable work clothes with plastic apron	-	✓
Staff who prepare the body at funeral site including performing tayammum	✓ (heavy duty gloves)	✓	✓ Reusable work clothes with plastic apron	✓	✓
Persons who assist to lift the coffin	✓ (heavy duty gloves)	✓	✓ Reusable work clothes with plastic apron	-	-
Persons who perform the burial	✓ (heavy duty gloves)	✓	✓ Reusable work clothes with plastic apron	-	✓
Persons who perform vehicle decontamination/ surface decontamination	✓ (heavy duty gloves)	✓	✓ Impermeable work clothes with plastic apron	✓	✓
Family members or relatives who attend to view the body	-	✓	-	-	-

Transportation of human tissues

Ensure that the remains are put in water proof double bags and sealed properly. Disinfect the outside of the bag using soap/detergent with water-> rinse and disinfect with diluted bleach solution 1ml bleach in 49ml water. Wear disposable utility gloves when handling the bags. Mark as infectious and take for burial.

34. CONSIDERATIONS REGARDING BLOOD TRANSFUSION

1. Transmission of SARS-CoV-2 via transfusion of blood and components has not been reported and is currently considered highly unlikely.
2. Individuals with confirmed COVID-19 or recent contact with a known infected person should be deferred temporarily from donating blood to reduce the risk of respiratory and contact- mediated transmission in blood collection facilities and as a precaution against potential transmission of SARS-CoV-2 through transfusion of blood or components.
3. The blood donation centers should have adequate IPC measures including physical distancing, hand hygiene, good ventilation, environmental cleaning and disinfection in place.
4. Routine laboratory testing for SARS-CoV2 in asymptomatic blood donors is not recommended at this time.
5. Potential blood donors should be educated about the need to self-defer based on risk factors for SARS-CoV-2 infection or feeling unwell.
6. The standard blood donor screening measures that are already in place, like checking body temperature should be continued.
7. During donor screening, the donor should be asked about recent history of COVID-19, exposure to COVID-19 case within the last 14 days, travel history from abroad within the last 14 days, ensure that the donor is not in quarantine or isolation.
8. Individuals whose symptoms meet standard definitions for COVID-19 should be deferred and referred for COVID-19 testing and isolation.
9. Close contact of a confirmed case and those who have travelled from areas with high levels of local or community transmission should refrain from blood donation for a period of 14 days (their quarantine period) and should be tested negative at the end of this quarantine period to ensure absence of active SARS-CoV-2 infection prior to blood donation.
10. Persons who have recovered from symptomatic COVID-19 infection should defer routine blood donation for 14 days after full resolution of symptoms and cessation of therapies for their illness.
11. Persons who had COVID-19 infection confirmed by laboratory testing in the absence of symptoms should defer blood donation for 14 days after the last positive test.
12. Donors should be advised to inform the blood centre immediately if they develop fever or a respiratory illness or are subsequently confirmed of being infected with SARS-CoV-2 through laboratory testing within 14 days following donation.

13. Blood and components collected within 14 days prior to disease onset or a positive virologic test for SARS CoV2 in the donor, or collected within 14 days subsequent to contact exposure, may be recalled as a precautionary measure.

Blood donation following COVID-19 vaccination:

Individuals who received a nonreplicating, inactivated, or mRNA-based COVID-19 vaccine can donate blood without a waiting period if they feel well.

35. AWARENESS INFORMATION ON COVID-19 PREVENTIVE MEASURES

FACE MASK

- **Medical mask/surgical mask are recommended for use by HCWs providing direct care of patients, symptomatic patients, their care providers and vulnerable populations**
- **This should be changed when wet, soiled, or damaged;**
- **These are not reusable masks; they are to be safely removed and disposed after each use.**

- **Cloth mask can be used during a community spread as a *complementary* measure to physical distancing, hand hygiene and other IPC measures**
- **They are not intended for use in healthcare settings**
- **It should be washed after each use preferably with hot water and detergent at 60-90 degrees Celsius.**

- **A respirator or filtering face piece (FFP), is designed to protect the wearer from exposure to airborne contaminants**
- **Respirators are used by HCWs to protect themselves, especially during aerosol-generating procedures.**
- **Prioritize surgical N95 (fluid resistant N95) for HCW who need protection from both airborne and fluid hazard. If unavailable, use standard N95 and face shield.**
- **They can be reused (refer to the reuse policy)**

GENERAL INFORMATION

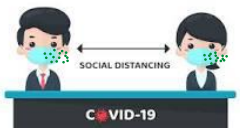
- **Make sure that the face mask completely covers your face from the bridge of your nose down to your chin.**

- **Before putting the face mask on or removing the mask, clean your hands with soap and water or alcohol-based hand sanitizers.**

- **When removing the face mask, remove it from behind. Do not touch the front of the mask.**

- **If the face mask is disposable, dispose of it in a safe way.**

PREVENTIVE MEASURES IN THE WORK PLACE

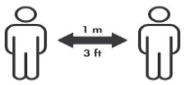
• SCREENING SHOULD BE DONE AT ENTRY • (TEMEPERATURE AND RESPIRATORY SYMPTOM SCREENING) OF STAFF AND VISITORS ENTERING THE BUILDING (IF FEASIBLE)	
• USE MASKS IN WORK PLACE • ENSURE A MINIMUM 3 FEET DISTANCE BETWEEN WORKERS • ENCOURAGE USE OF NON-TOUCH OR FOOT OPERATED DOORS • IF DOORS CAN BE KEPT OPEN, BETTER TO KEEP THEM OPEN TO REDUCE FREQUENT TOUCHING	
• STAGGERING OF WORK SCHEDULES (WORKERS LEAVE AND ENTER AT DIFFERENT TIMES/WORKING IN SMALLER GROUPS)	
• DECREASE SOCIAL CONTACTS (ENCOURAGE VIDEO CONFERENCES/ MEETINGS, AVOID GATHERINGS DURING BREAK TIME) • ENCOURAGE ONLINE TRANSACTIONS	
• MINIMISE SHARING LAPTOPS OR OTHER OFFICE TOOLS • SHARED EQUIPMENTS TO BE DISINFECTED AFTER USE	
• ANY WORKPLACE SHOULD HAVE A GOOD VENTILATION	
• FREQUENT HAND HYGIENE TO BE PRACTICED • FACILITIES FOR HAND HYGIENE SHOULD BE AVAILABLE AT WORKPLACE • ENCOURAGE USE OF NON-TOUCH TECHNIQUE FOR DISPENSERS	
• WORKPLACES SHOULD BE CLEANED AND DISINFECTED DAILY AND BETWEEN SHIFTS	
• ANY SICK PERSONNEL/STAFF SHOULD STAY AT HOME AND TAKE COVID SAMPLE • REVISE SICK LEAVE POLICY (SPECIALLY TO PROTECT HIGH RISK GROUP)	

36. MEASURES TO PROTECT THE ELDERLY DURING COVID-19

Older adults and people who have severe underlying medical conditions (like heart, lung disease, diabetes or Cancer) are at higher risk for developing more serious complications from COVID-19 illness.

There are things that can be done to reduce risk of getting COVID-19 in an area with community transmission.

PREVENTIVE MEASURES TO PROTECT THE ELDERLY AND HIGH-RISK POPULATION

• **USE A SEPARATE ROOM WITH PREFERRABLY A SEPARATE TOILET** • **IF SHARING THE SAME TOILET, CLEANING OF FREQUENLTY TOUCHED SURFACES LIKE TAPS, DOOR KNOBS AND UTENSILS WITH SOAP AND WATER ARE REQUIRED** • **AVOID GOINIG TO PUBLIC PLACES UNLESS NECESSARY** • **SEEK HELP OF A CARETAKER OR A RELATIVE WITH SHOPPING OR USE THE OPTION OF HOME DELIVERY**	
• **HAVE A DEDICATED PERSON TO HELP IN THE HOUSEHOLD (PREFERRABLY SOMEONE WHO ALSO STAYS HOME AND DO NOT GO OUT FREQUENTLY)** • **TAKE PRECAUTION TO KEEP MINIMUM DISTANCE OF 3 FEET BETWEEN YOURSELF AND OTHERS AT ALL TIMES** • **MINIMIZE CONTACT WITH OTHER PEOPLE INCLUDING YOUNG CHILDREN** • **USE A MASK IF TOLERATED WHEN IN CLOSE CONTACT WITH OTHERS**	
• **FREQUENTLY WASH YOUR HANDS WITH SOAP AND WATER OR USE HAND SANITIZER (CARETAKER AND OTHERS IN THE HOUSE ALSO SHOULD PRACTICE THE SAME)** • **REGULARLY CLEAN THE HOUSE AND DISINFECT THE FREQUENTLY TOUCHED SURFACES** • **MAINTAIN GOOD VENTILATION IN THE HOUSE** • **USE DEDICATED UTENSILS (SPOON PLATES) AND PERSONEL ITEMS SUCH AS TOWELS ETC.**	
• **KEEP A CONTACT DIARY** • **ENCOURAGE CONNECTION TO OTHER FAMILY MEMBERS VIA ONLINE MECHANISM**	
• **CONNECT TO HCW ONLINE AND KEEP MEDICATIONS UPTODATE** • **CONTINUE REGULAR MEDICATIONS AND KEEP AN EXTRA STOCK OF THESE MEDICINES**	

• **KEEP A COPY OF LATEST PRESCRIPTION OR MEDICAL RECORDS**	
• **FOLLOW A HEALTHY DIET AS PER YOUR DOCTOR** • **BE ACTIVE AND DO REGULAR EXERCISES**	
• **CALL A HEALTH PROFFESSIONAL OR EMERGENCY NUMBER IF NEEDED**	

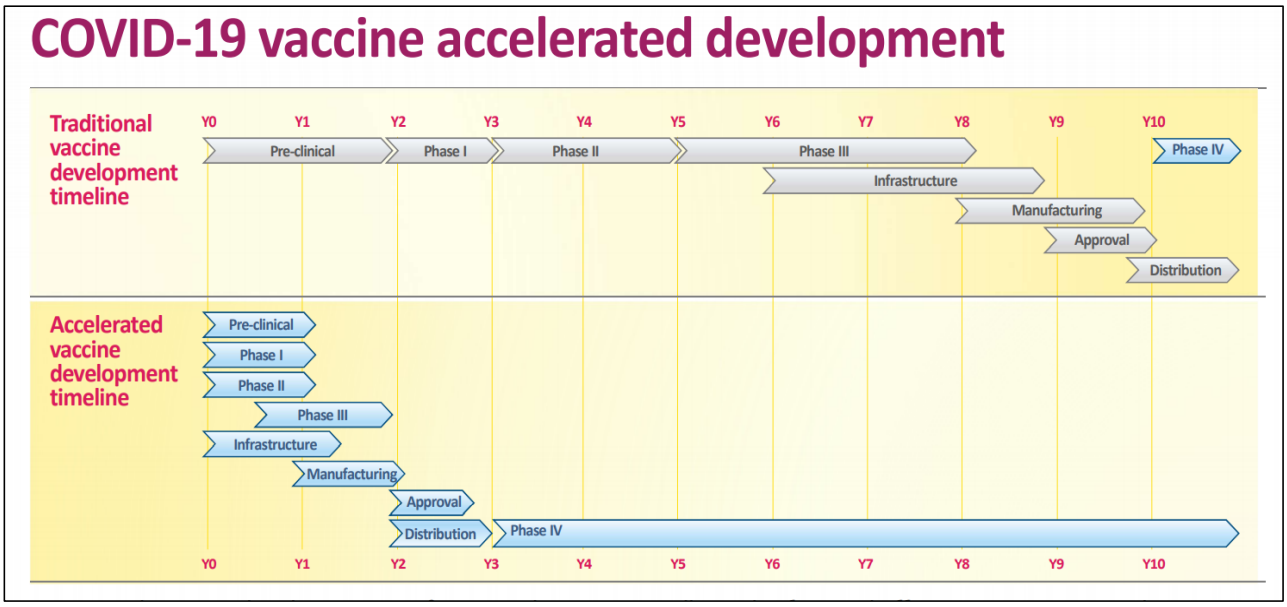
37. COVID-19 VACCINATION

There are currently six COVID-19 vaccines which have received emergency use listing by WHO. 101 COVID-19 vaccine candidates are in clinical stages of development. The primary antigenic target for SARS-CoV-2 vaccines is the large surface spike protein, which binds to the angiotensin-converting enzyme 2 (ACE2) receptor on host cells and induces membrane fusion.

37.1 COVID-19 VACCINE ACCELERATED DEVELOPMENT

As with the development of pharmaceuticals, vaccine development progresses through preclinical evaluation and three distinct clinical stages, phases I, II, and III. Traditionally, these steps occur sequentially, and each usually takes several years for completion. SARS-CoV-2 vaccine development has been accelerated with each step occurring over several months and steps are done in parallel, nevertheless all usual safety and efficacy monitoring mechanisms remain in place such as adverse event surveillance, safety data monitoring & long-term follow-up. Phase IV post-marketing surveillance for side effects is critical and essential.

• **Pre-clinical studies** Vaccine is tested in animal studies for efficacy and safety, including challenge studies. Vaccines that stimulate an immune response without toxicity concerns in animal studies progress to phase I human trials.
• **Phase I clinical trial** Small groups of healthy adult volunteers (usually less than 100 individuals, generally between ages of 18 to 55 years). Primary objective is to test the safety of the experimental vaccine although immunogenicity is also measured.
• **Phase II clinical trial** Vaccine is given to people who have characteristics (such as age and physical health) similar to those for whom the new vaccine is intended. Involves larger numbers of subjects, generally several hundred.
• **Phase III clinical trial** Designed to determine whether the vaccine prevents a predefined endpoint related to infection, usually laboratory-confirmed disease. Vaccine is given to thousands of people and tested for efficacy and safety. Subjects are randomized and blinded to receipt of either vaccine or a control preparation, typically a placebo.
• **Phase IV post marketing surveillance** Ongoing studies after the vaccine is approved and licensed, to monitor adverse events and to study long-term effects of the vaccine in the population.



37.2 VACCINE PLATFORMS:

SARS-CoV-2 vaccines are being developed using several different platforms. Some of these are traditional approaches, such as inactivated virus or live attenuated viruses. Other approaches use newer platforms, such as recombinant proteins, vectors and RNA and DNA vaccines.

RNA vaccines – RNA vaccines were the first vaccines for SARS-CoV-2 to be produced and represent an entirely new vaccine approach. Once administered, the RNA is translated into the SARS-CoV-2 spike protein, which elicits an immune response. The mRNA remains in the cell cytoplasm and does not enter into the nucleus. mRNA vaccines do not interact with or integrate into the recipient's DNA. Some of these vaccines must be maintained at ultra-cold temperatures, which causes challenges in storage and transport. Examples of mRNA vaccines include Pfizer-BioNTech and Moderna COVID-19 Vaccines.

Viral vector vaccines- The viral vector vaccines currently in use are replication-incompetent vector vaccines. Replication-incompetent vector vaccines use a different vector virus that has been engineered to not replicate in vivo and to express the viral protein that is the antigenic target. Many replication-incompetent vector vaccine candidates use adenovirus vectors. These include **ChAdOx1 nCoV-19 vaccine** developed by University of Oxford, AstraZeneca and the Serum Institute of India and **Sputnik V** developed by Gamaleya Research Institute, Russia.

Inactivated vaccines – Inactivated vaccines are produced by growing SARS-CoV-2 in cell culture, then chemically inactivating the virus. Immune responses to a SARS-CoV-2 inactivated vaccine would target not only the spike protein but also other components of the virus. Examples of inactivated COVID-19 vaccines include **Sinopharm vaccine** (produced by Beijing Institute of Biological Products) and **COVAXIN** vaccine (produce by Bharat Biotech)

37.3 COMPARISON OF VARIOUS VACCINES

Vaccine Brand	Type (platform)	Doses	Vaccine efficacy against symptomatic COVID-19	Storage
Pfizer-BioNTech	RNA	2 doses 21 days apart	95%	-60 ^{0}C to - 80 ^{0}C up to 6 months, 2-8 ^{0}C up to 5 days
Moderna	RNA	2 doses 28 days apart	94.5%	-15 ^{0}C to - 20 ^{0}C up to 6 months, 2-8 ^{0}C up to 30 days
(ChAdOx1 nCoV-19) AstraZaneca / COVISHIELD	Viral vector	2 doses 8 to 12 weeks apart	62 - 70 %	2-8 ^{0}C
Gamaleya (Sputnik V)	Viral vector	2 doses 28 days apart	92%	2-8 ^{0}C
Sinopharm	Inactivated vaccine	2 doses 28 days apart	79%	2-8 ^{0}C

Note: Different vaccines may have different efficacies against COVID-19 variants of concern. The COVID-19 vaccines which have been approved are expected to provide at least some protection against these variants particularly after complete immunization because these vaccines elicit a broad immune response. Therefore, changes or mutations in the virus should not make vaccines completely ineffective.

Patient counselling – Health care workers must be aware of the contraindications and common adverse effects of the vaccine to be administered.

- Vaccine recipients should be advised about the common side effects that could occur with the vaccine.
- They should be informed that COVID-19 infection might still occur despite vaccination though with reduced severity, and the duration of protection is uncertain.
- They should be explained the importance of continuing personal preventive measures to reduce transmission of COVID-19.
- They should be explained that vaccination would not give rise to false positive PCR results.
- It's common for people to have fever, headache or body ache after vaccination, however these and other symptoms should not be always be attributed to vaccination and if symptoms persist beyond 48 hours, they should attend a flu clinic for PCR sampling for COVID-19.
- If a vaccine recipient develops flu symptoms, and has a contact history with a suspected or confirmed case of COVID-19, they should immediately attend a flu clinic for testing.

37.4 REPORTING OF ADVERSE EVENTS FOLLOWING COVID-19 IMMUNIZATION (AEFIs)

An adverse event following immunization is any untoward medical occurrence which follows immunization, and which does not necessarily have a causal relationship with the usage of the vaccine. The adverse event may be any unfavourable or unintended sign, abnormal laboratory finding, symptom or disease. A serious AEFI is an event that results in death, hospitalization or prolongation of an existing hospitalization, persistent or significant disability or incapacity, congenital anomaly/birth defect or is life-threatening. The types and characteristics of serious AEFIs that can occur particularly the rare and very rare adverse events following COVID-19 vaccines are currently not completely known.

Vaccine providers are required to report all AEFIs as per HPA AEFI reporting mechanism. This is to facilitate ongoing safety evaluation of COVID-19 vaccines.

AEFI Reporting system:

- All AEFIs should be reported using the standard COVID-19 AEFI reporting form using the fastest means possible.
- When the AEFI is judged to be serious, refer to the diagram below. Reporting should also include a telephone call, direct conversation or notification to NIP.
- Reporting can be done by completing AEFI reporting form and also through the vaccination portal (AEFI reporting forms contain a minimum set of core variables in order to make the global evaluation of signals possible and thus help countries to evaluate the reported AEFIs). It is important to record the brand name, the manufacturer, as well as the batch numbers.
- The clinical surveillance focal point in coordination with PHU / QID and vaccinator will be usually responsible for providing most of the information required in the COVID-19 AEFI reporting form.
- When a COVID-19 standard AEFI reporting form is received, it should be reviewed for seriousness.
- If AEFI is considered to be minor or NOT serious, detailed investigation and causality assessment will not be required; this should be noted on the form.
- Detailed investigation and causality assessment will be required if the AEFI is considered to be:
    - a serious AEFI, i.e., death, hospitalization, significant disability, life threatening, congenital anomaly, birth defect or a medically important event or reaction, or part of a cluster; or
    - part of a group of events with an unexpected high rate or severity, or a suspected signal.

The surveillance focal points of Islands and Atolls should monitor the number of cases of each trigger event that have been reported by each health center/hospital each month. In this way, NIP and AEFI committee can identify patterns, such as clusters, within or across health centers/hospitals and take appropriate action.

Clinical Surveillance Focal Point/ public health unit (PHU)

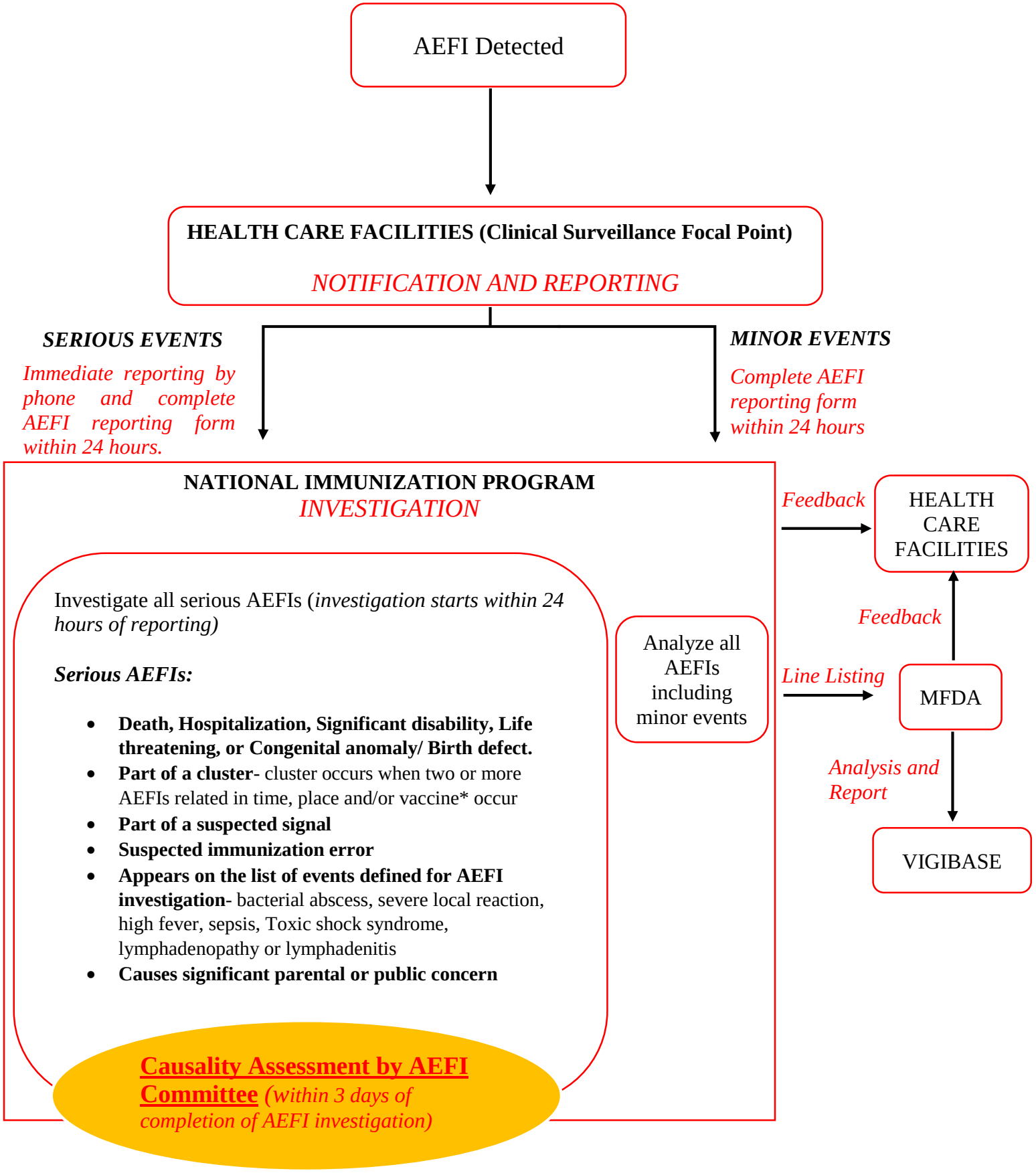
Doctor or Nurse from Health facilities will act as Surveillance Focal Point. The focal point will be coordinating with the PHU/QID

Role of surveillance focal points

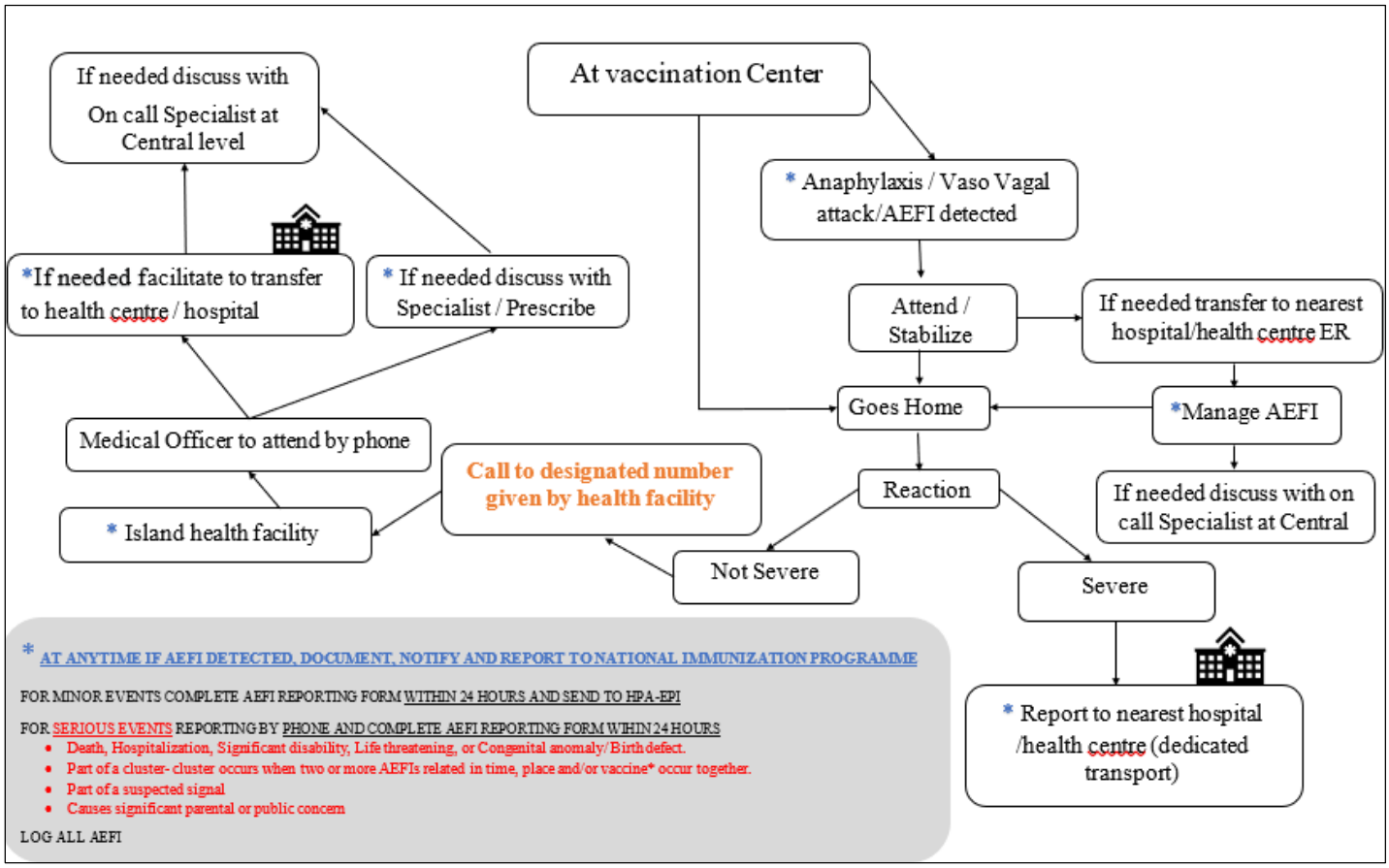
- Ensure appropriate case management of an AEFI
- Encourage Health care workers/vaccinators to report AEFI
- Communicate immediately with NIP in case of serious AEFI
- Report and investigate all the minor AEFIs with
- Assist to analyze AEFI data and maintain monthly line list and timely monthly report to NIP
- Provide feedback to vaccinators
- Assist in investigating AEFIs
- Report results of investigation to NIP
- Provide feedback to health care workers or vaccinators on results of investigation and corrective actions to be taken
- Monitor for clustering events
- Inform HPA/NIP immediately of deaths, hospitalization, clusters of events, events causing significant community concern
- Reassure the parents/ community
- Assist island focal points to deal with media

37.5 AEFI SURVEILLANCE - ORGANIZATIONAL STRUCTURE

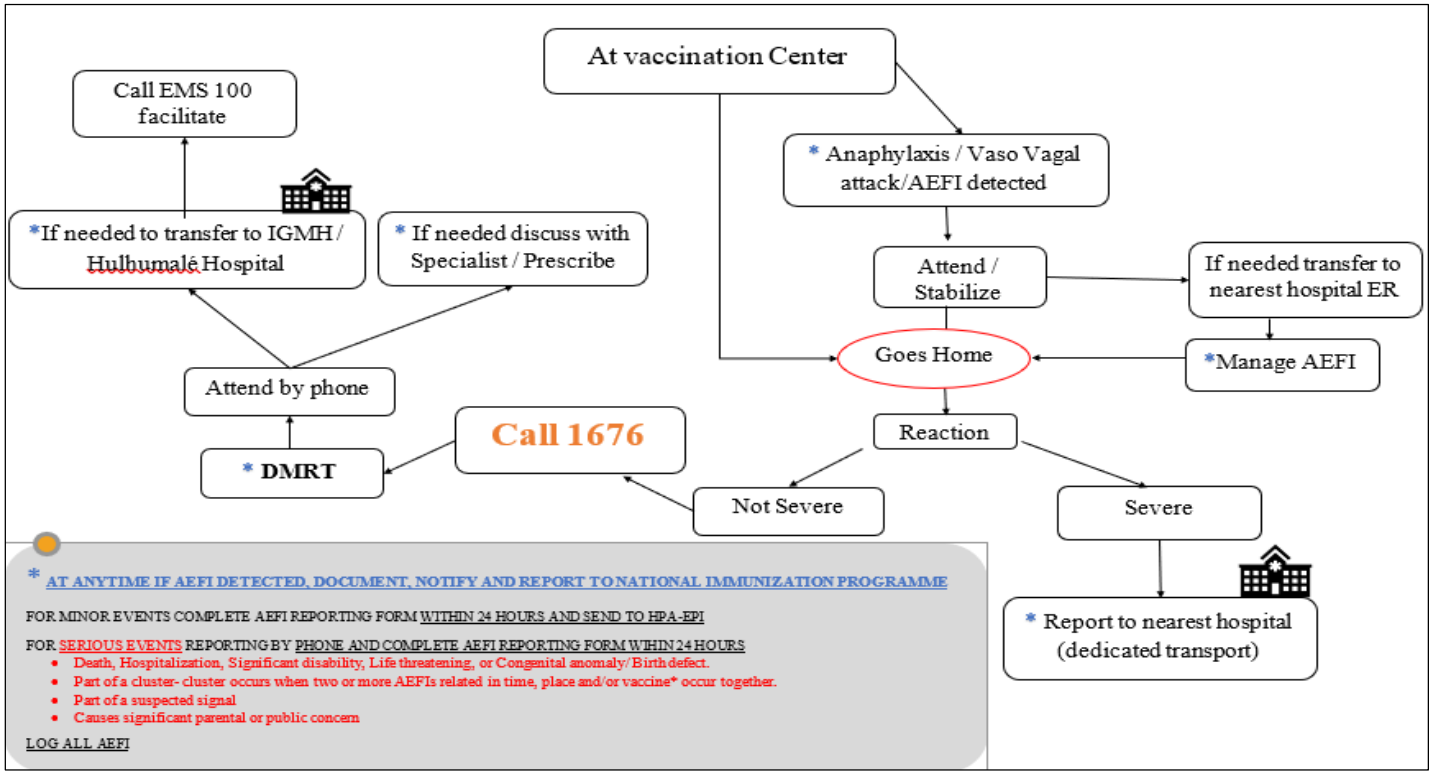
Standard AEFI Surveillance System in the Country



AEFI ATOLL RESPONSE DURING COVID-19 VACCINATION



AEFI GREATER MALE' REGION RESPONSE DURING COVID-19 VACCINATION



37.6 ANAPHYLAXIS AND IMMUNIZATION STRESS RELATED REACTIONS (ISRR)

Anaphylaxis is a rare potentially life-threatening, IgE mediated allergic reaction to a vaccine.
Anaphylaxis must be distinguished from Immunization stress related response which are also AEFIs which could present acutely related to immunization.

ISRR is a spectrum of symptoms and signs occurring in some individuals in response to stress resulting from the process of immunization. These include general acute stress responses and vasovagal reactions. Such responses are due to activation of the autonomic nervous system which may be precipitated by anxiety, fear, pain, prolonged standing, the sight of a needle etc. Most ISRR occur in the immediate time period surrounding a vaccine administration. Symptoms may manifest immediately before, during or after immunization. An acute stress response or vasovagal reaction is usually transient and resolves spontaneously.

As anaphylaxis may be life-threatening and requires immediate medication, it should be considered and ruled out quickly. The differences between anaphylaxis, general acute stress response and vasovagal reaction with syncope are outlined in the table below:

Differences between anaphylaxis, general acute stress response and vasovagal reaction with syncope:

	Immunization stress related response		**Anaphylaxis**
	General acute stress response	**Vasovagal reaction with syncope**	
Onset	Suddenly, before, at time of or soon after injection	Suddenly, before, at time of or soon after injection	Seconds to minutes after exposure, almost all cases within 1 hour
Skin	Pale, cold, sweaty, clammy	Pale, cold, sweaty, clammy	Red, raised itchy rash, swollen eyes and face, generalized rash.
Respiratory	Rapid deep breathing	Normal to deep breaths	Noisy breathing, wheeze or stridor, persistent cough.
Cardiovascular	Normal or fast pulse, elevated blood pressure	Slow pulse, transient hypotension	Fast pulse, hypotension
Gastrointestinal	Nausea	Nausea, vomiting	Abdominal cramps, vomiting, nausea
Neurological	Fearfulness, dizziness, numbness, weakness, tingling around lips, spasms in hands and feet	Transient loss of consciousness reversed by supine position.	May develop loss of consciousness not relieved by supine position.

Vaccines should be administered in settings where immediate allergic reactions, should they occur, can be appropriately managed. All vaccinators (health workers, nurses and doctors) must be trained to recognize immediate vaccine reactions including anaphylaxis. Ambulance must be ready with trained personnel and equipment for transportation of a patient from a vaccination site to a health facility as needed. All individuals should be monitored for immediate vaccine reactions following receipt of the vaccine. Individuals with a past history of anaphylaxis should be monitored for 30 minutes and others for 15 minutes. In the case of an anaphylaxis following immunization, the vaccinator must call for assistance and must administer the emergency treatment at the site of immunization. Arrangements must be made to transfer the patient to hospital for further observation and treatment. Vaccination teams must carry an anaphylaxis response kit as given below.

Contents of the anaphylaxis response kit (AEFI Kit):

- Copy of anaphylaxis management protocol.
- 3 ampoules of Injection Adrenaline 1mg/mL
- 1 mL syringes – quantity (4)
- Needles (25 to 27 gauge)
    - 1 inch length- quantity (4)
    - 1½ inch length- quantity (4)
- Alcohol swabs

Note: 1 dose of Injection Adrenaline must be loaded, labelled and kept ready at the vaccination site during the vaccination session.

37.7 MANAGEMENT OF ANAPHYLAXIS FOLLOWING IMMUNIZATION

1) Assess situation: Is it anaphylaxis? Assess (ABCDE) Airway, breathing, circulation, disability and exposure. To assess adequately the nature of any post-immunization reaction that could be of an anaphylactic nature, it is important to assess comprehensively the various organ systems that may be implicated.

Assessment- Signs and symptoms of anaphylaxis

System	Signs and symptoms
Cutaneous	Inspect for: Injection site(s) redness, swelling or hives, facial flushing, itching, hives or welts and their extent, angioedema, other rashes. In general, the sooner the onset, the more rapidly evolving and severe the anaphylactic reaction.
Cardiovascular	Check: • Pulse rate (assess for rapid, weak pulse) • Palor or cyanosis around peri-oral area • Capillary refill time (if a compromise in circulation is suspected) • Blood pressure if required equipment is available • Level of consciousness (impairment may reflect hypoxia)
Upper airway	Observe and auscultate: Hoarseness of voice/hoarse cry, Stridor (a high-pitched noisy sound occurring during inhalation), cough, wheeze, shortness of breath, labored breathing, use of accessory muscles of respiration. Assess respiratory rate.
Gastrointestinal	Nausea, vomiting, diarrhea, abdominal pain. In general, the sooner the onset, the more rapidly evolving and severe the anaphylactic reaction.

2) Call for help. Do not leave the patient under any circumstances.
3) Position the patient in the recumbent position (lay flat on back) and elevate legs, as tolerated symptomatically. If breathing difficulty, elevate head and chest slightly as tolerated. This slows progression of circulatory compromise if present, by preventing orthostatic hypotension and diverting effective circulation from the periphery to the head, heart and kidneys. If unconscious or vomiting, keep in recovery position or on one side.
4) Administer undiluted injection adrenalin (1:1,000) IM into an unimmunized limb immediately (see algorithm below for age-appropriate dosage). DO NOT GIVE ADRENALIN TO THE LIMB USED FOR IMMUNIZATION (this may increase blood flow locally, thereby increasing absorption of the agent). Failure to use adrenaline promptly is more dangerous than its improper use. There is no contraindication to adrenaline administration in anaphylaxis.

5) The correct site for intra muscular administration of adrenaline is the vastus lateralis muscle located at the middle third of the anterolateral thigh (see figure 1).
6) Injection of adrenaline through the clothing is acceptable in emergency situations.
7) Repeat dosing of adrenaline is required if major symptoms (i.e, breathing difficulty, hemodynamic instability, level of consciousness) do not improve or worsen after the first dose. Repeat adrenaline twice at five-minute intervals, as needed (maximum: three doses).
8) Alternate right and left thigh or arm sites for repeat doses of epinephrine (to maximize absorption of epinephrine). DO NOT give in the limb used for vaccination.
9) Twenty percent of anaphylaxis episodes follow a biphasic course with recurrence of the reaction after a two-to nine-hour asymptomatic period hence, hospitalization or a long period of observation is recommended for monitoring.

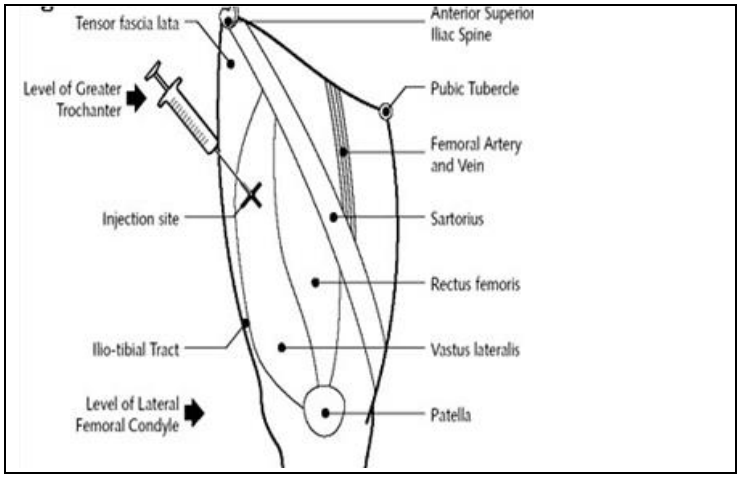


Figure 1- Injection site for intramuscular administration of Adrenaline at the thigh.

Algorithm: Management of anaphylaxis

Anaphylactic reaction?

Asses Airway, Breathing, Circulation, Disability and Exposure (ABCDE)

Diagnosis – Look for:

- Acute onset of illness
- Life threatening Airway and/ or breathing and or Circulation problems
- And usually with skin changes

- Call for help
- Lie patient flat
- Raise patient's legs

ASSESSMENT

In anaphylaxis 2 or more systems are affected and usually presents with skin rash.

System	Sign and symptoms
Cutaneous	• Injection site(s) redness, swelling or hives Facial flushing, itching, hives or welts and their extent, angioedema, other rashes.In general, the sooner the onset, the more rapidly evolving and severe the anaphylactic reaction
Respiratory	• Hoarse cry/voice, stridor (a high-pitched noisy sound occurring during inhalation), cough, wheezing, shortness of breath or labored breathing, use of accessory muscles, etc. • Respiratory rate
Cardiac	• Pulse rate (assess for rapid, weak, irregular pulse). • Pallor or cyanosis around perioral area • Capillary refill time (if a compromise in perfusion is suspected) • Blood pressure, if required equipment is available • Level of consciousness (impairment might reflect hypoxia)
Gastrointest-inal system	• Nausea, vomiting, diarrhea, abdominal pain • In general, the sooner the onset, the more rapidly evolving and severe the anaphylactic reaction.

Administer UNDILUTED Injection Adrenaline (1:1000) through deep intramuscular route to mid third of anterolateral thigh

- **0.01ml/kg for age <6 months (max 0.15ml)**
- **0.15ml for age 6months - 6 years**
- **0.3ml for age 6 years - 12 years**
- **0.5ml for age > 12 years of age and adults**
- Repeat dose of adrenalin maybe given at 5 minute intervals at different sites (for maximum 3 doses if symptoms does not improve) and further doses if required maybe given in hospital setting (do not give adrenalin to the limb used for vaccination)
- **CPR should be initiated at any point if necessary**
- **MONITOR VITALS AND TRANSFER TO NEAREST EMERGENCY CARE**

AS SOON AS SKILLS AND EQUIPTMENT AVAILABLE

- Establish airway and give high flow oxygen
- Administer IV fluid (Normal saline or Ringer lactate) to maintain blood pressure 20ml/kg in children, 500-1000ml in adults.
- Administer Injection Pheniramine Maleate (Inj Avil 45.5mg/ 2ml), children IM only~ 0.3mg/kg/dose
  0.5-0.7ml age 1-2 years (~11-14 kg body weight)
  0.8-1.3ml age 3-5 years (about 20 kg body weight)
  1.0 -1.5ml aged 6-11 years (up to about 25 kg body weight)
  1.0-2ml age ≥12 years and adults
- Administer Injection Hydrocortisone IM or slow IV
  25mg age < 6 months
  50mg age 6 months to 6 years
  100mg age 6-12 years
  200 mg >12 years of age and adults
- Monitor and maintain vitals: Heart rate, respiratory rate, blood pressure, pulse oximetry and ECG

The normal respiratory rate varies by age (approximate):

- <1 year 30-40 min
- >1 to 2 years 26-34 min
- >2 to 5 years 24-30 min
- >5 to 12 years 20-24 min
- **>12 years 12-20 min**

Normal heart rate by age (approximate)

- Newborn to 3 months 140 min
- >3 months to 2 years 130 min
- >2 to 10 years 80 min
- >10 years 75 min
- **Adults 60-100 min**

Lower Limit of SBP by Age

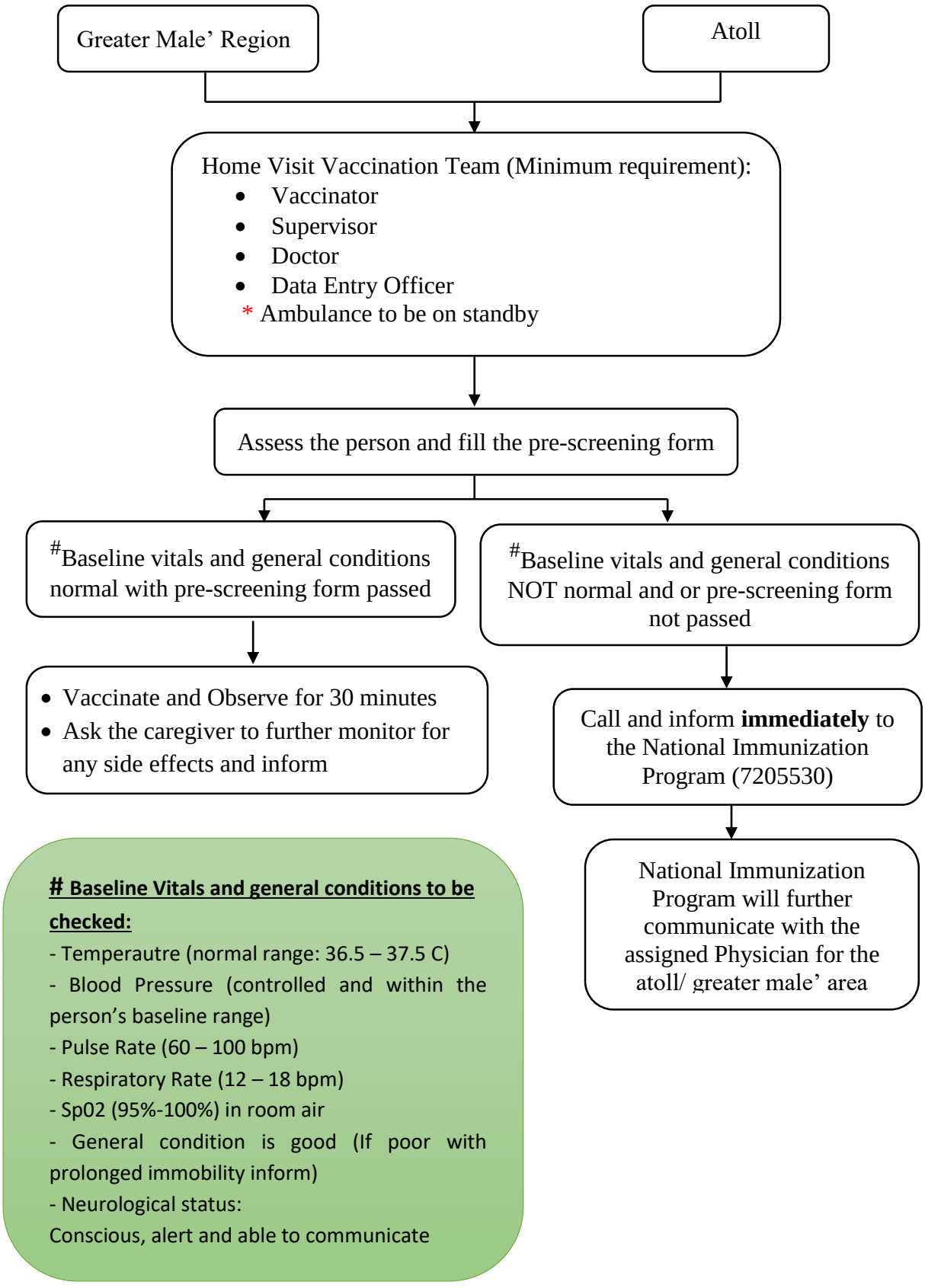
- 0 to 1 month 50-60 mmHg
- >1 to 12 months 70 mmHg
- >1 to 10 years 70 + (age in years x 2) mmHg
- >10 years 90 mmHg
- **Adults: aim to keep at usual BP or if not known aim for >100 mmHg**

37.8 ASSESSMENT OF IMMOBILE, FRAIL ELDERLY PERSONS PRIOR TO COVD-19 VACCINE ADMINISTRATION

Proper assessment should be done prior to vaccination for all individuals (see algorithm below). This is especially important for people who are immobile and for those frail elderly persons with poor mobility, impaired communication, multiple chronic conditions and requiring assistance in self-managing. People with these conditions could develop a life-threatening situation even with a mild AEFI such as vomiting or diarrhoea. Hence a proper assessment must be done prior to administration of COVID-19 vaccine to these individuals.

1. Prior to vaccination monitor vitals and document the required information on prescreening form.
2. Assess social support available at home (availability of a family member at home as a care giver to look after the patient in the days following vaccination). Vaccination should be deferred until family can guarantee good support for the patient after vaccination.
3. Explain that in a patient who have poor level of alertness minor events such as vomiting may lead to a life-threatening situation. In such patients if vomiting occurs, caregivers should pay extra attention and care to avoid vomitus aspiration. ***Please inform National immunization program (phone 7205530) prior to vaccinating anyone in this category.***
4. Defer vaccination if patient has any new symptoms currently or any change in the baseline status, or history of admission to hospital within the past 1 month. If history of recent admission should be ***informed to National Immunization program prior to vaccination by phone 7205530.***
5. Explain the common adverse effects of vaccine such as fever, loose motion and vomiting
6. Hydrate the person with liquids (avoid sugary drinks).
7. Give properly made ORS if loose motion (do not add anything else to the ORS including glucose powder)
8. Any food or drink should be given in propped up position.
9. If the person is having nausea or vomiting keep the person on to one side, monitor well and advice to take to the health facility.
10. Inform the caretaker to take to the nearest health facility as soon as possible if any new symptoms develop or any change in condition of patient after vaccination.

Process flow for immobile, frail elderly persons prior to vaccine Administration



ANNEX 1- LIST OF MEASURES FOR COVID-19 PREPAREDNESS TO BE IMPLEMENTED IN ALL ISLANDS

	Tasks	Responsible Agency/ cluster	Deadline	Focal Point	Status
Strengthen island taskforce					
1.	Appoint co-leads (hosp. manager and council president)	Taskforce			
2.	Set-up leaders and teams for each individual cluster in taskforce	Taskforce			
3.	Identify a person in each cluster who can take lead if current lead unavailable	Taskforce			
4.	Mobilize and train additional people for contact tracing	Contact Tracing lead			
5.	Mobilize and train additional people for RRT	RRT lead			
6.	Set-up operations centre	Taskforce			
7.	Mobilize volunteers for the response	Taskforce			
8.	Identify and mobilize resources required for taskforce operations (e.g. vehicles, locations for EOC)	Taskforce (HEOC to assist)			
Strengthen IPC measures at hospital					
1.	Establish triage at entrance to the health facility building	Health facility			
2.	Establish flu clinic. Flu clinic should ideally be established at a location near to the health facility. (Flu clinic can be established within the health facility compound but not within the main health facility building where other clinical services are provided)	Taskforce			
3.	• For ease of doing triage, redirect patient flow so that patients only use one entrance to the health facility and one exit. • If flu clinic is located in the health centre or hospital compound, they must have a separate entrance from the road so that patients attending the flu clinic do not mix with others.				
4.	Symptomatic people or those with contact history identified at triage must be directed to the flu clinic of the island or a designated area of the health facility.	Health facility			
5.	Set-up hospital waiting areas according to social distancing guidelines. If patient	Health facility/task force			

	waiting area does not have enough capacity, establish additional waiting areas at hospital compound or compounds nearby the hospital.				
6.	Establish a mechanism for online memo services	Health facility			
7.	Staff to wear adequate PPE as per IPC guidelines. Health facility management MUST ensure that all staff who attend to ALL patients (even if they are not suspected COVID-19 cases) or exposed to patients' secretions, (including doctors, nurses, clinical assistants, receptionists, laboratory workers, radiographers, other technicians, cleaners and laundry workers) must wear appropriate PPE which includes wearing a medical mask and face shield and other PPE as appropriate for the situation. (See ANNEX 5)	Health facility			
8.	Keep masks at entry to hospital to provide for anyone coming without masks. No one should be allowed inside hospital without masks	Health facility			
9.	Define visiting hours- only allow visits to patients during these hours. Suspend visitations if an outbreak is occuring	Health facility			
10.	Allow only one bystander to accompany patient into the hospital	Health facility			
11.	Keep hand sanitizers at the hospital entrance and at common areas in the hospital with posters on hand hygiene steps	Health facility			
12.	Assign nursing staff to designated wards, if possible, with current staffing levels. Avoid nurses from working in multiple wards to reduce health care related transmission of COVID.	Health facility			
13.	Health facility should have an IPC team with an IPC focal point. IPC team must ensure that IPC measures are implemented. Conduct IPC training to all staff at the facility.	Health facility			

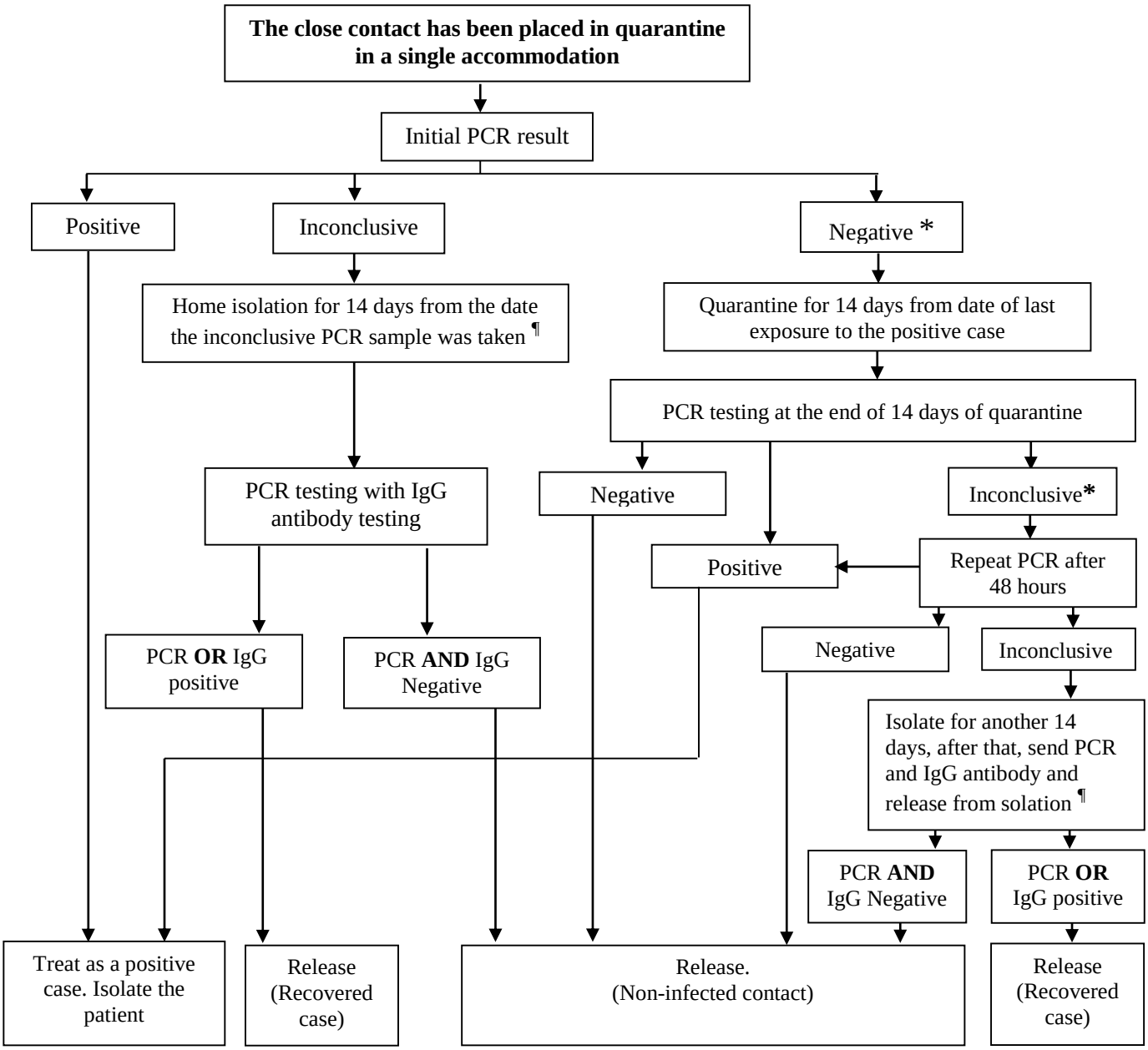
Establish COVID and non-COVID pathway in the health facility					
1.	Identify/establish an isolation room/ward for isolation of sick suspected cases or a positive case which is sick and requires in patient management. This ward/room should be separate from other patient areas and should have a dedicated donning and doffing area.	Health facility			
2.	Establish a community isolation place for positive cases (stable positive cases in home isolation can be given temporary minor medical care at this facility if needed rather than taking them to the hospital). However, if the patient appears sick, vitally unstable or having alarm symptoms such as chest pain or shortness of breath or any other symptoms that requires in-hospital management as determined by the health care worker, they should be managed in the hospital, or any appropriate facility where a sick patient can be closely monitored and treated to ensure patient safety.	Task force			
3.	Establish clinical management team	Health facility			
4.	Clinical management team should prepare COVID protocols for the facility.	Health facility			
Facility to provide medical care to contacts in quarantine					
1.	Identify/establish a place in the community where people in quarantine who require medical care can be managed without bringing the patient to the hospital. However, if the patient appears sick, vitally unstable or having alarm symptoms such as chest pain or shortness of breath or any other symptoms that requires in-hospital management as determined by the health care worker, they should be managed in the hospital, or any appropriate facility where a sick patient can be closely monitored and treated to ensure patient safety.	Task force			
Transit facility					
1.	Allocate designated guest houses or other facilities to keep patients and relatives who come from other islands to this island for medical treatment and other purposes	Task force			
2.	Encourage visitors to the island to utilize these designated facilities instead of staying at relatives' houses.	Task force			

Epidemiological measures					
1.	Spread awareness messages throughout the island that everyone with fever, respiratory symptoms or other symptoms compatible with COVID-19 must attend flu clinic	Task force			
2.	Everyone with symptoms compatible with COVID-19 must be sampled (see suspected case definition)	Task force			
3.	Map all migrants on the islands	Task force			
4.	Conduct active surveillance- under HPA guidance	Task force			
5.	Identify people in group accommodation such as barracks	Task force			
6.	Identify potential quarantine and isolation places for migrants	Task force			
Communications					
1.	Ramp-up messaging on symptoms, what to do when they have symptoms, and preventive measures	Task force			
2.	Educate patients about need to go to hospital only when required and only one person to attend hospital with patients	Task force			
3.	Educate patients about proper infection prevention measures at hospital such as wearing masks and maintaining distancing	Task force/ Health facility			
4.	Use local opinion leaders to give messages	Task force			
5.	Reach migrants with messages about flu clinic and preventive measures	Task force			
6.	Provide information to carers of disabled and bed-ridden people on preventive measures	Task force			
7.	Visible messages about preventive measures should be placed within the hospital	Health facility			
8.	Visible messages on preventive measures should be placed in public areas around the island	Task force			
Prepare for community transmission and potential lock-down					
1.	Contingency plans to be established at clinical departments for providing clinical services	Health facility			
2.	Establish a mechanism for tele-consultations for patients in the island and for patients from other islands who depend on this health facility for medical care.	Health facility			
3.	Medicine delivery system from the pharmacy for online prescriptions.	Health facility			

4.	Assess clinical specialty and diagnostic services in various regions and develop a plan to divert those seeking care at particular health facilities	Ministry of Health			
5.	Business continuity plans need to be developed for all institutions and companies providing essential services	Task force and relevant institutions			
Essential services					
1.	Make an alternative arrangement for providing banking services to other islands in the atoll (e.g. Dhoni banking) (to be used when island is under monitoring)	Task force			
2.	Waste collectors to be trained in IPC	Health facility (IPC team)			
3.	Monitor port area	Task force			

ANNEX 2- Algorithm for testing and management of contacts

Annex 2.1 Algorithm for testing and management of a close contact of COVID-19 who is quarantined in a single accommodation



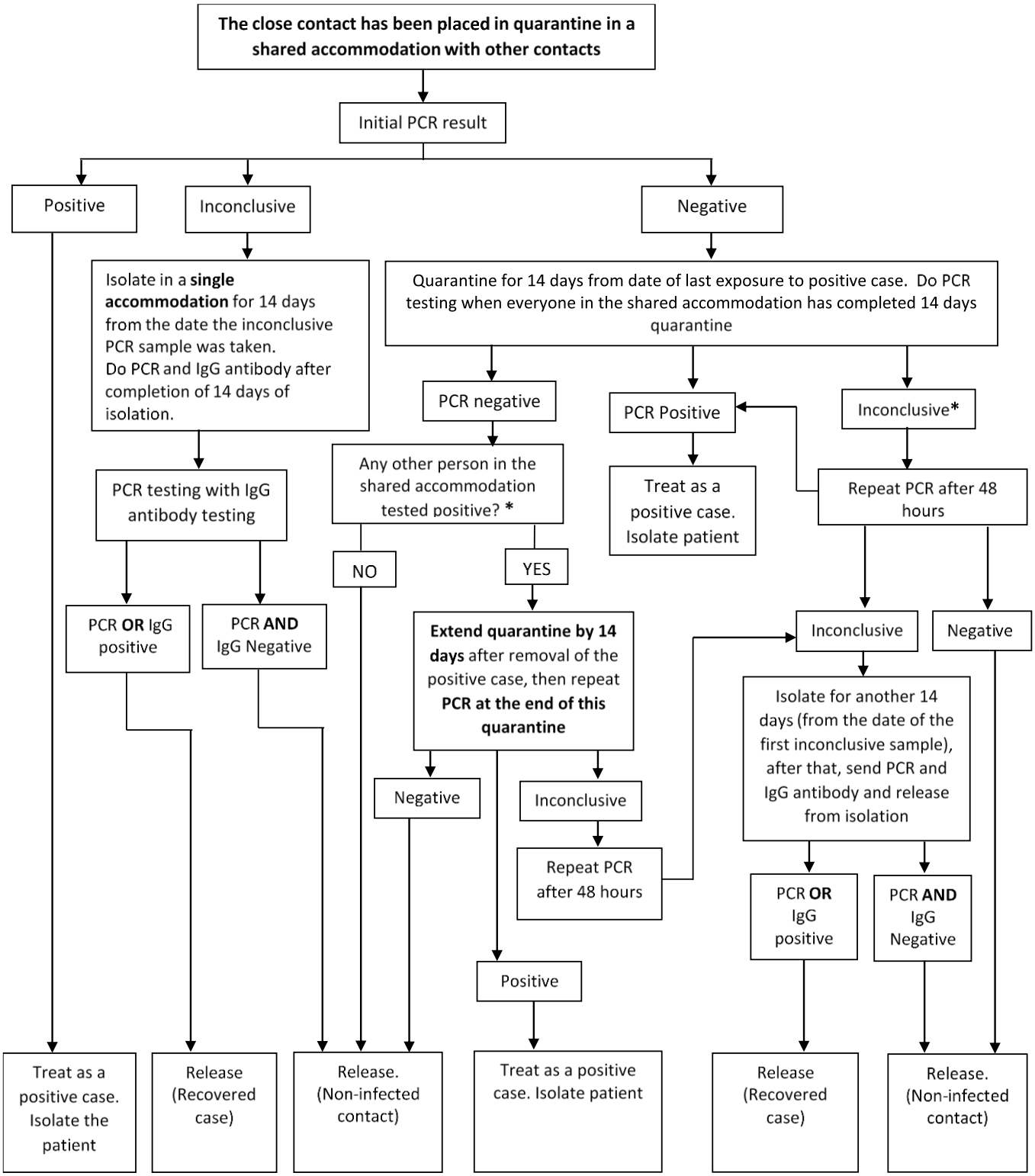
NOTE:

- Single accommodation refers to a quarantine arrangement where a contact is kept in a separate room and does not share his living space (room, toilet /bathroom, dining arrangement) with another contact.
- PCR testing must be done for any person who becomes symptomatic while in quarantine. If this PCR result is positive, the person must be isolated. If this PCR result is negative, he/she must continue and complete the quarantine period.
- COVID-19 vaccination could affect antibody testing results. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies against the N type antigen (Nucleocapsid antigen) should be used in assessing antibodies from natural infection in patients who have a history of vaccination with these vaccines.

* Follow this pathway for quarantine release evaluation if the person placed in quarantine did not have initial testing at the time of contact tracing and placing in quarantine.

¶ These persons are regarded as potential positives and must be isolated at home. If they become symptomatic, PCR test must be done and if a symptomatic person is positive, they should be treated as confirmed cases of COVID-19 with their isolation period counted from the date of onset of symptoms

Annex 2.2 Algorithm for testing and management of a close contact of COVID-19 who is quarantined in a shared accommodation



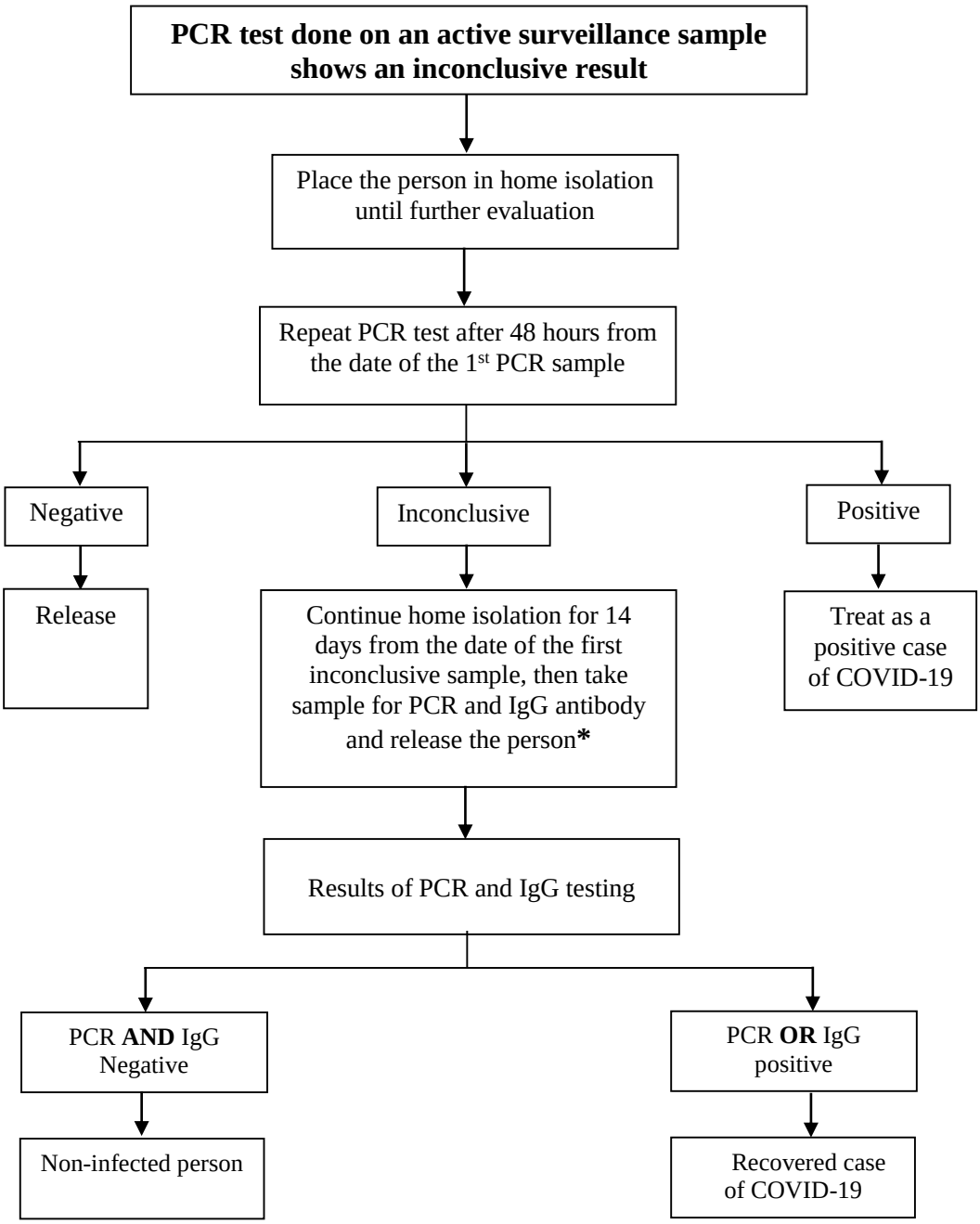
See foot notes given below

NOTE:

- Shared accommodation refers to a quarantine arrangement where a group of contacts live and meet in a common living space such as a room or dormitory or share toilets/bathrooms/dining areas.
- PCR testing must be done for any person who becomes symptomatic while in quarantine. If this PCR result is positive, the person must be isolated. In case of shared accommodation during quarantine, the positive person must be removed from the shared accommodation and the quarantine period will be reset for the remaining contacts in the accommodation beginning from the date the positive person is removed from the shared accommodation.
- COVID-19 vaccination could affect antibody testing results. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies against the N type antigen (Nucleocapsid antigen) should be used in assessing antibodies from natural infection in patients who have a history of vaccination with these vaccines.

*if in a group quarantine, one person tests inconclusive do not release the others until the PCR inconclusive person is further evaluated and determined to be negative.

Annex 3 Algorithm for further evaluation of inconclusive results obtained during testing for COVID-19 active surveillance.

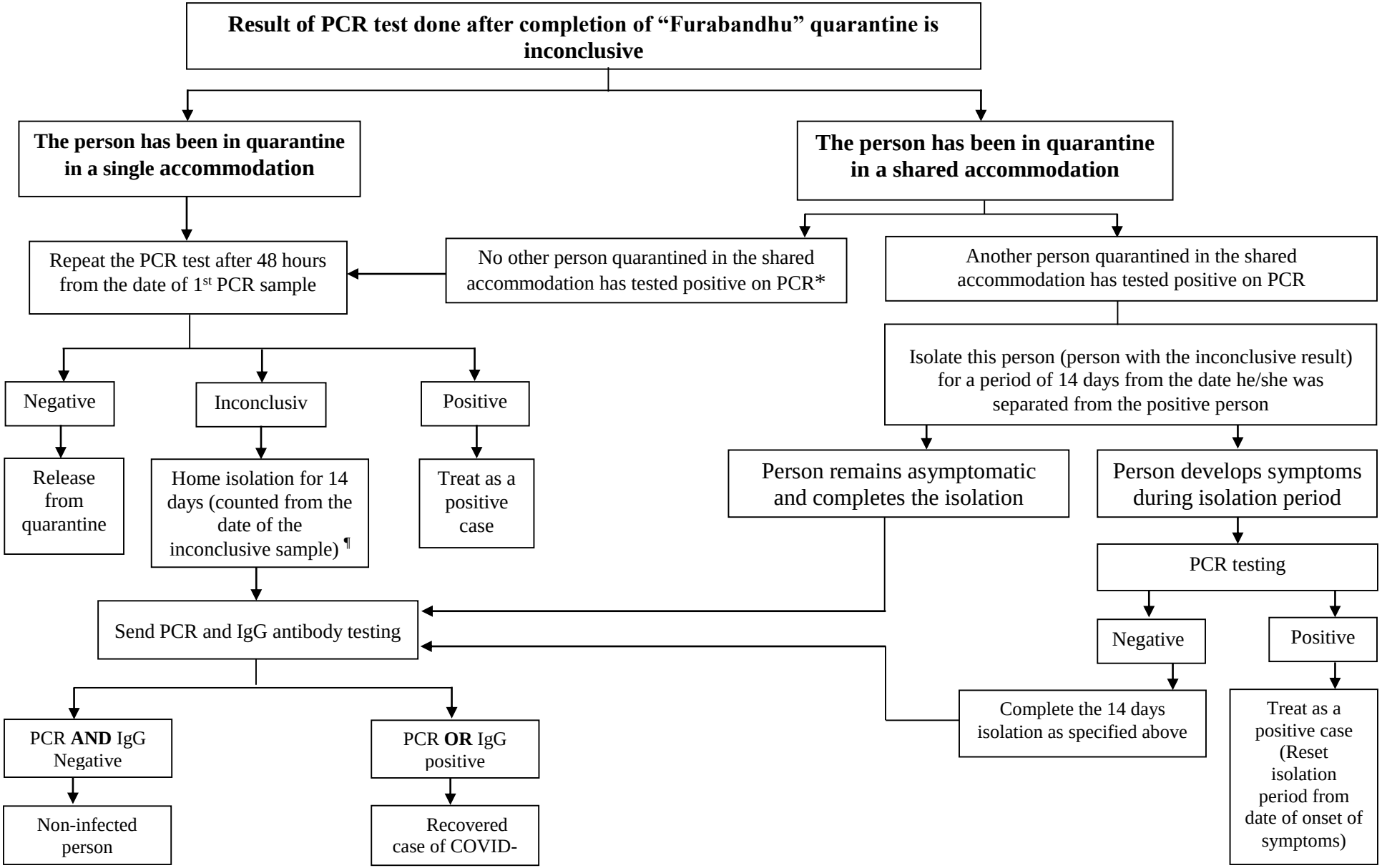


NOTE:

*If a person in home isolation becomes symptomatic, PCR testing must be done. If the result of this PCR is positive, the person should be treated as a case of COVID-19 and the duration of isolation should be counted from the date of obtaining sample of the positive PCR test. If the symptomatic persons PCR test is negative, he/she should continue and complete the specified isolation period.

- COVID-19 vaccination could affect antibody testing results. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies against the N type antigen (Nucleocapsid antigen) should be used in assessing antibodies from natural infection in patients who have a history of vaccination with these vaccines.

Annex 4: Algorithm for evaluation of a person with an inconclusive PCR result obtained on testing prior to release from "Furabandhu" quarantine



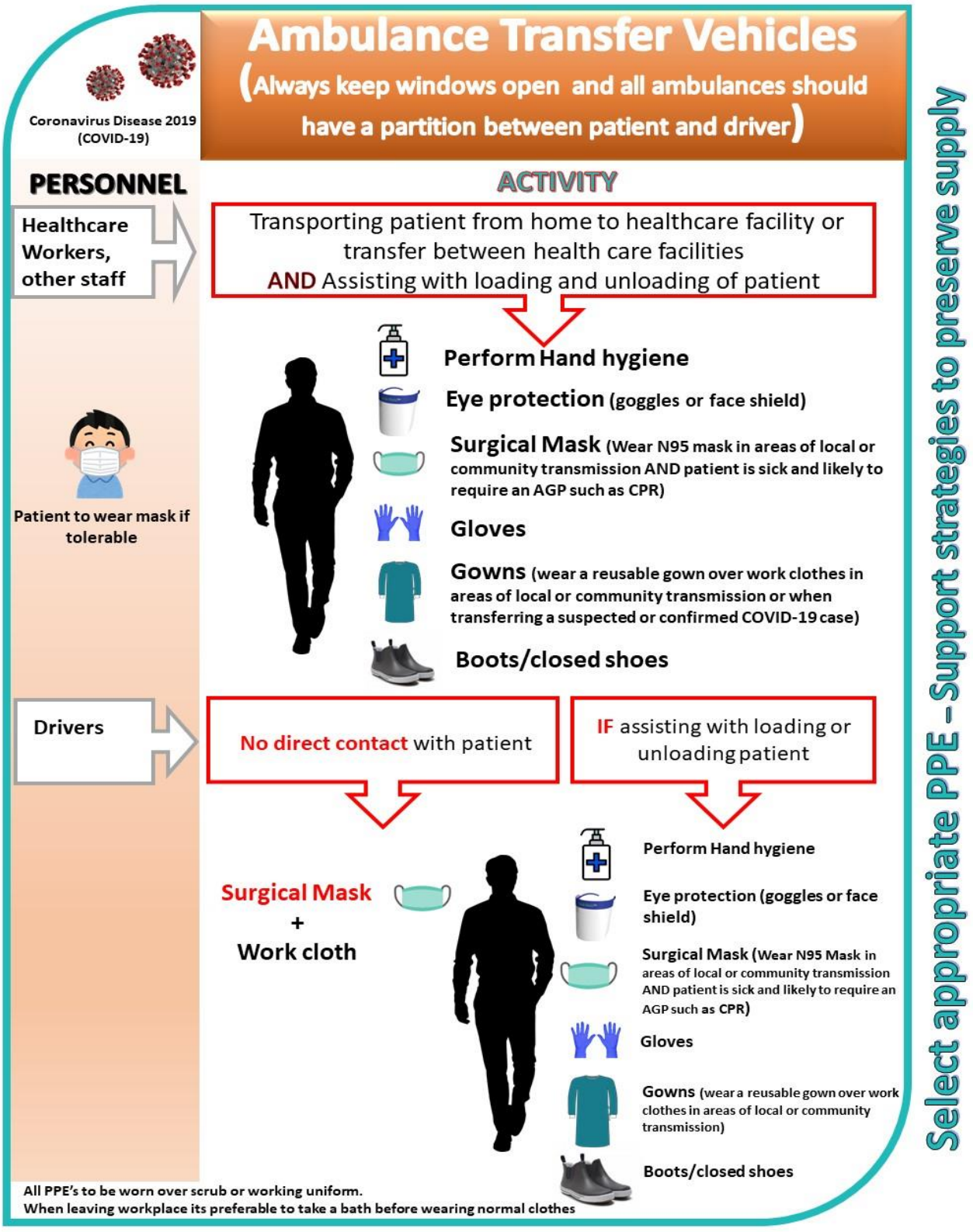
* Do not release the other people who are in quarantine in this shared accommodation until the further evaluation of this person is completed and he/she is not considered as a positive case of COVID

¶ If this person becomes symptomatic, PCR testing must be done. If PCR is positive the person should be treated as a positive case. If PCR is negative, the person should continue and complete the isolation period followed by testing as shown

COVID-19 vaccination could affect antibody testing results. As most of the COVID-19 vaccines use COVID-19 spike protein (S protein) as the antigen target including COVISHIELD vaccine and Pfizer vaccine, an antibody test which detects antibodies against the N type antigen (Nucleocapsid antigen) should be used in assessing antibodies from natural infection in patients who have a history of vaccination with these vaccines.

ANNEX 5: PPE SELECTION

(modified with permission from QID, IGMH)



Coronavirus Disease 2019 (COVID-19)

VEHICLE CLEANING STAFF (COVID and non-COVID areas)

PERSONNEL

ACTIVITY

Cleaning staff

Cleaning transport vehicles (by land and sea) after and between transport of patients

Perform Hand hygiene

Heavy Duty Gloves

Washable jumpsuit/ Washable, waterproof, Long sleeved top and pants or aprons over working uniform

Surgical Mask

Gum Boots

Face shield

Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

COVID-19 PCR Sample Collection

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Healthcare workers

ACTIVITY

Providing direct care to patient including sample collection

- **Perform Hand hygiene**
- **Face shield or goggles**
- **N95 Mask**
  (If N95 not available, wear a surgical mask and take NP swab only and make the patient wear a surgical mask to cover the mouth during NP sampling)
- **Gloves**
- **Gown**
- **Closed shoes**

Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Triage
(All health facilities)

Coronavirus Disease 2019 (COVID-19)

PERSONNEL | **ACTIVITY**

Healthcare workers

Providing **direct care** to patient

- Perform Hand hygiene
- Face shield or goggles
- **Surgical Mask** (Wear N95 Mask in areas of local or community transmission AND likely to perform AGP such as CPR)
- Gloves
- **Gowns** (wear a reusable gown over work clothes in areas of local or community transmission)
- Closed work shoes

Patient to wear mask

Other Staff

No direct contact with patient
(no exposure within 6 feet or presence of barrier)

- Perform Hand hygiene
- Surgical Mask
- Work clothes
- Closed work shoes

rub or working uniform.
preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Screening Area (All health facilities)

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Staff at hospital entry who perform temperature check (thermal camera or manual)

Patient to wear mask

ACTIVITY

No **direct contact* with** patient

Perform Hand hygiene

Surgical Mask

Closed shoes

Face shield if no barrier

* This category include the use of no touch thermometers thermal imaging camera's and limited observation and questioning while maintaining a spatial distance of at least 1m

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

ER of non-COVID pathway

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Healthcare workers

ACTIVITY

HCWs in resus/red zone/ other areas of ER where patients are admitted for observation or treatment

Patient to wear mask if tolerable

Perform Hand hygiene

Face shield/ goggles

Surgical Mask (Wear N95 Mask in areas of community transmission)

Gloves (standard precaution and risk assessment)

Surgical Scrub

Gown (wear a reusable gown over scrubs in areas of local or community transmission)

closed shoes/boots

If performing any Aerosol generating procedures (AGP) in areas of local or community transmission

Gloves (2nd pair)

N95 Mask

Goggles AND face shield

No hazmat coverall

If risk of exposure to fluids

Water proof apron

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Non-COVID WARD

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Doctors & Healthcare workers

ACTIVITY

Doctors, Nurses and other health care workers involved in direct care of the patient

- **Perform Hand hygiene**
- **Face shield/ goggles**
- **Surgical Mask** (Wear N95 Mask in high-risk wards in areas of local or community transmission, where respiratory and other sick cases who may need AGPs are managed)
- **Gloves** (standard precaution and risk assessment)
- **Gown** (wear a reusable gown over scrubs in areas of local or community transmission)
- **Closed shoes/boots**

Patient to wear mask if tolerable

If performing any Aerosol generating procedures (AGP) in areas of local or community transmission

- **Gloves (2nd pair)**
- **N95 Mask**
- **Goggles AND face shield**

No hazmat coverall

If risk of exposure to fluids

- **Water proof apron**

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

General OPD

PERSONNEL

Doctors, Clinical assistants & other healthcare workers

Patient to wear mask

ACTIVITY

Performing consultation of patient in outpatient department

- Perform Hand hygiene
- Face shield
- Surgical Mask
- Gloves (standard precaution and risk assessment)
- Gown or apron (standard precaution and risk assessment)
- closed shoes/boots

If performing any Aerosol generating procedures (AGP) in areas of local or community transmission

- Gloves (2nd pair)
- N95 Mask
- Goggles AND face shield

If risk of exposure to fluids

- Water proof apron

No hazmat coverall

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

General ICU/NICU/CCU/HDU (non-COVID pathway)

Coronavirus Disease 2019 (COVID-19)

Select appropriate PPE – Support strategies to preserve supply

PERSONNEL

Healthcare workers

ACTIVITY

Doctors and Allied health professionals

Patient to wear mask if tolerable

- Perform Hand hygiene
- Face shield/ goggles
- **Surgical Mask** (Wear N95 Mask in areas of local or community transmission
- **Gloves** (standard precaution and risk assessment)
- Surgical Scrub
- **Gown** (wear a reusable gown over scrubs)
- closed shoes/boots

If performing any Aerosol generating procedures (AGP) in areas of local or community transmission

- Gloves (2nd pair)
- N95 Mask
- Goggles AND face shield

No hazmat coverall

If risk of exposure to fluids

- Water proof apron

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Coronavirus Disease 2019 (COVID-19)

OPERATION THEATRES (non-COVID pathway)

PERSONNEL

Healthcare workers

ACTIVITY

Healthcare workers posted in the area; Providing direct care to patient

Patient to wear mask if tolerable

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- Surgical Mask
- Gloves
- Surgical Scrub
- Gowns

If performing any Aerosol generating procedures (AGP) in areas of local or community transmission

- Gloves (2nd pair)
- N95 Mask
- Goggles AND face shield

If risk of exposure to fluids

- Water proof apron

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

Dialysis Unit (non-COVID pathway)

PERSONNEL

Healthcare workers

ACTIVITY

Healthcare workers posted in the area; Providing direct care to patient

Perform Hand hygiene

Face shield/goggles

Surgical Mask

Patient to wear mask if tolerable

Gloves (standard precaution and risk assessment)

Surgical Scrub

Gowns

If performing any Aerosol generating procedures (AGP) in areas of community transmission

Gloves (2nd pair)

N95 Mask

Goggles AND face shield

If risk of exposure to fluids

Water proof apron

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

DISPENSARY

PERSONNEL

ACTIVITY

Pharmacist

While handling patient prescriptions and dispensing medication

Patient to wear mask

Perform Hand hygiene

Eye protection (if no barrier)

Surgical Mask

Closed shoes

Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Coronavirus Disease 2019 (COVID-19)

LABORATORY/BLOOD BANK

PERSONNEL

Lab staff and support services

ACTIVITY

While handling samples and performing laboratory tests

Patient to wear mask

Perform Hand hygiene

Face shield/goggles (direct contact with patient without barrier or risk of splash)

Surgical Mask

Gloves (standard precaution and risk assessment)

Gown or apron (standard precaution and risk assessment)

Closed shoes

all manipulations of potentially infectious materials that may cause splashes, droplets, or aerosols of infectious materials like loading and unloading of sealed centrifuge cups, grinding, blending, vigorous shaking or mixing, sonic disruption, opening of containers of infectious materials whose internal pressure may be different from the ambient pressure should be performed in appropriately maintained and validated BSCs or primary containment devices

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

RADIOLOGY DEPARTMENT

PERSONNEL

Staffs in direct contact with patients

Patient to wear mask

ACTIVITY

Any radiological procedure with direct contact with patients

- Perform Hand hygiene
- Face shield
- Surgical Mask
- Gloves (standard precaution and risk assessment)
- Surgical Scrub
- Closed shoes

In areas of local or community transmission

- Long sleeved water proof apron if performing procedure with risk of fluid splash
- N95 Mask if performing an AGP

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

Cleaners of non-COVID areas

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Cleaners

ACTIVITY

General OPD and general ward: Cleaning hospital premises, cleaning after and between transfer of patients, after and in-between consultation with patients, before and after Waste disposal

OPD

- Perform Hand hygiene
- Surgical Mask
- Gloves
- Boots/closed work shoes
- Water proof apron over work clothes (if risk of splash)

WARD

- Perform Hand hygiene
- Surgical Mask
- Heavy Duty Gloves
- Water proof apron over work clothes
- Boots/closed work shoes

When performing splash generating procedures:

- Eye protection
- Eye protection

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

Cleaners of COVID areas

PERSONNEL

ACTIVITY

Cleaners in all COVID areas

Cleaning hospital premises, cleaning after and between transport of patients with suspected COVID-19 patients, after and in-between consultation with patients with respiratory symptoms, Waste cleaning isolation area

Perform Hand hygiene

Utility or Heavy Duty Gloves

Reusable, waterproof, Long sleeved top and pants/ water proof aprons over working uniform

Surgical Mask

Boots/closed work shoes

When performing splash generating procedures:

Face shield

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

Laundry (COVID or non-COVID)

PERSONNEL

ACTIVITY

Laundry Staff

DO NOT enter patient care areas

Perform Hand hygiene

Heavy Duty Gloves

Reusable, waterproof, Long sleeved top and pants / water proof aprons over working uniform

Surgical Mask

Boots/closed work shoes

When sorting and loading of laundry items; (to minimize sorting as much as possible)

Face shield

Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Coronavirus Disease 2019 (COVID-19)

Waste Management (COVID or non-COVID)

PERSONNEL

ACTIVITY

Waste Management staff

DO NOT enter patient care areas.
Waste should be collected in double bag

- Perform Hand hygiene
- Heavy Duty Gloves
- Reusable, waterproof, Long sleeved top and pants/ water proof aprons over working uniform
- Surgical Mask
- Boots or closed work shoes
- Face shield(depending on risk assessment)

Porters (Waste Transporting staff)

No Direct Contact with Waste

- Perform Hand hygiene
- Heavy Duty Gloves
- Surgical Mask
- Boots/closed work shoes
- Water proof apron (depending on risk assessment)

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

HANDLING OF DEAD BODIES ① (COVID and non-COVID areas)

PERSONNEL

ACTIVITY

Healthcare workers & other staff

Perform handling, moving and transporting of dead bodies in health facilities

- Perform Hand hygiene
- Face shield
- Surgical mask
- Gloves
- Long sleeve impermeable gown
- Closed shoes
- Water proof apron over gown (if using cloth gown)

Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or work clothes.
When leaving workplace its preferable to take a bath before wearing normal dress

Coronavirus Disease 2019 (COVID-19)

HANDLING OF DEAD BODIES ② (COVID and non-COVID areas)

PERSONNEL

ACTIVITY

Cemetery Staff

Prepare the dead for burial and placing the body in the grave

- **Perform Hand hygiene**
- **Face shield or goggles (depending on the risk assessment)**
- **Surgical mask**
- **Gloves**
- **Long sleeved water-resistant reusable gown over working uniform**
- **Gum Boots**
- **Waterproof apron over gown**
  If using cloth gown

Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or work clothes.
When leaving workplace its preferable to take a bath before wearing normal clothes

COVID ER 1

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Healthcare workers

ACTIVITY

Healthcare workers posted in Resus/Red Zone of the COVID area of ER, providing direct care to patient

Patient to wear mask if tolerable

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- N95 Mask
- Gloves
- Scrub
- Gown/ Hazmat Cover all
- Closed shoes and Boot cover

if performing any procedure or splash is expected

- Gloves (2nd Pair)
- Face shield
- Water proof apron over Gowns, if increased fluid is anticipated

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

COVID ER 2

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Healthcare workers

ACTIVITY

Healthcare workers posted in areas other than Resus/Red Zone; Providing direct care to patient

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- N95 Mask
- Gloves
- Surgical Scrub
- Gowns
- Closed shoes

if performing any procedure or splash is expected

- Gloves (2nd Pair)
- Face shield
- Water proof apron over Gowns
- Boot cover

Patient to wear mask if tolerable

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

COVID ER 3

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Healthcare workers

ACTIVITY

Visiting Doctors and Allied health professionals

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- N95 Mask
- Gloves
- Surgical Scrub
- Gowns
- Closed shoes

if performing any procedure or splash is expected

- Gloves (2nd Pair)
- Face shield
- Water proof apron over Gowns
- Boot cover

Patient to wear mask if tolerable

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

COVID ICU/OT ①

PERSONNEL

Healthcare workers

ACTIVITY

Healthcare workers posted in the area; Providing direct care to patient

Patient to wear mask if tolerable

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- N95 mask
- Gloves x 2
- Surgical Scrub
- Head bonnet
- Hazmat Cover all/Gown
- Closed shoes and Boot cover

if performing any procedure or splash is expected

- Face shield
- Water proof apron over gowns

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

COVID ICU ②

Coronavirus Disease 2019 (COVID-19)

PERSONNEL

Healthcare workers

ACTIVITY

Visiting Doctors and Allied health professionals

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- N95 Mask
- Gloves x2
- Scrub
- Gowns
- Closed shoes and Boot cover

if performing any procedure or splash is expected

- Face shield
- Water proof apron over Gowns

Patient to wear mask if tolerable

No hazmat coverall

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

COVID WARD/DIALYSIS UNIT

PERSONNEL

Healthcare workers

ACTIVITY

Healthcare workers posted in the area; Providing direct care to patient and visiting health care workers

Patient to wear mask if tolerable

- Perform Hand hygiene
- Surgical head cover
- Eye Protection
- N95 Mask (if N95 not available, may use surgical mask unless performing AGP)
- Gloves
- Scrub
- Gowns
- Closed shoes

if performing any procedure or splash is expected

- Gloves (2nd Pair)
- Face shield
- Water proof apron over Gowns
- Boot cover

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal dress

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

FRONTLINE ESSENTIAL WORKERS (NON-HEALTH CARE SETTING)

PERSONNEL

Frontline workers

ACTIVITY

Essential workers entering house for utility services or others working in the community such as shops, staff of restaurants and cafes

Always maintain 1m distance from household members

Perform Hand hygiene

Reusable face shield (if contact within 1m without a barrier)

Cloth mask (with 3 fabric layers)

Work clothes

Closed shoes

If doing heavy duty work to use heavy duty gloves

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

AIRPORT STAFFS

PERSONNEL

Frontline workers in airport

ACTIVITY

Immigration counter/customs staff, security personnel, airline counter staff etc, attending to travellers and tourists

Perform Hand hygiene in between each traveler (if in contact)

Reusable face shield (if contact within 1m without a barrier)

Cloth mask (with 3 fabric layers)

Work clothes

Closed shoes

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

AIRPORT STAFFS

PERSONNEL

Frontline workers in airport

ACTIVITY

Staff who perform passenger screening at airports including manual body searches

- Perform Hand hygiene
- Reusable face shield
- Surgical mask
- Work clothes
- Closed shoes
- Perform Hand hygiene in between each traveler (if in contact)

If performing body searches, wear gloves and perform hand hygiene with alcohol based hand sanitizer in between each traveler. Gloves should be changed if they are visibly soiled or torn. Wash hands with soap and water after removing gloves

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

Select appropriate PPE – Support strategies to preserve supply

Coronavirus Disease 2019 (COVID-19)

AIRPORT STAFFS

PERSONNEL

Frontline workers in airport

ACTIVITY

Luggage handlers

Perform Hand hygiene

Cloth mask (with 3 fabric layers)

Work clothes

Closed shoes

Perform Hand hygiene after luggage handling

Reusable heavy-duty gloves if risk of physical hazards

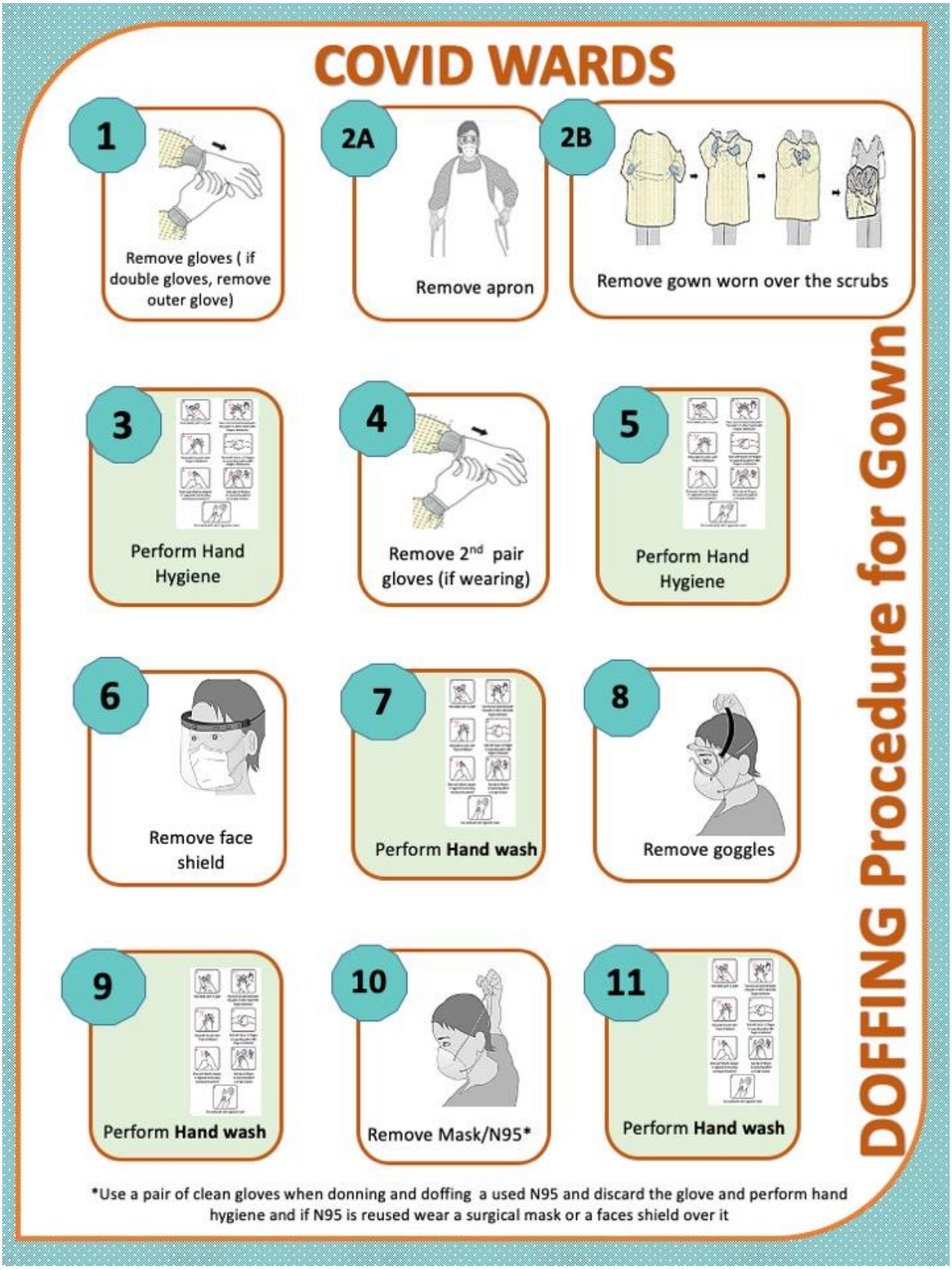
Select appropriate PPE – Support strategies to preserve supply

All PPE's to be worn over scrub or working uniform.
When leaving workplace its preferable to take a bath before wearing normal clothes

ANNEX 6: DONNING AND DOFFING PROCEDURES

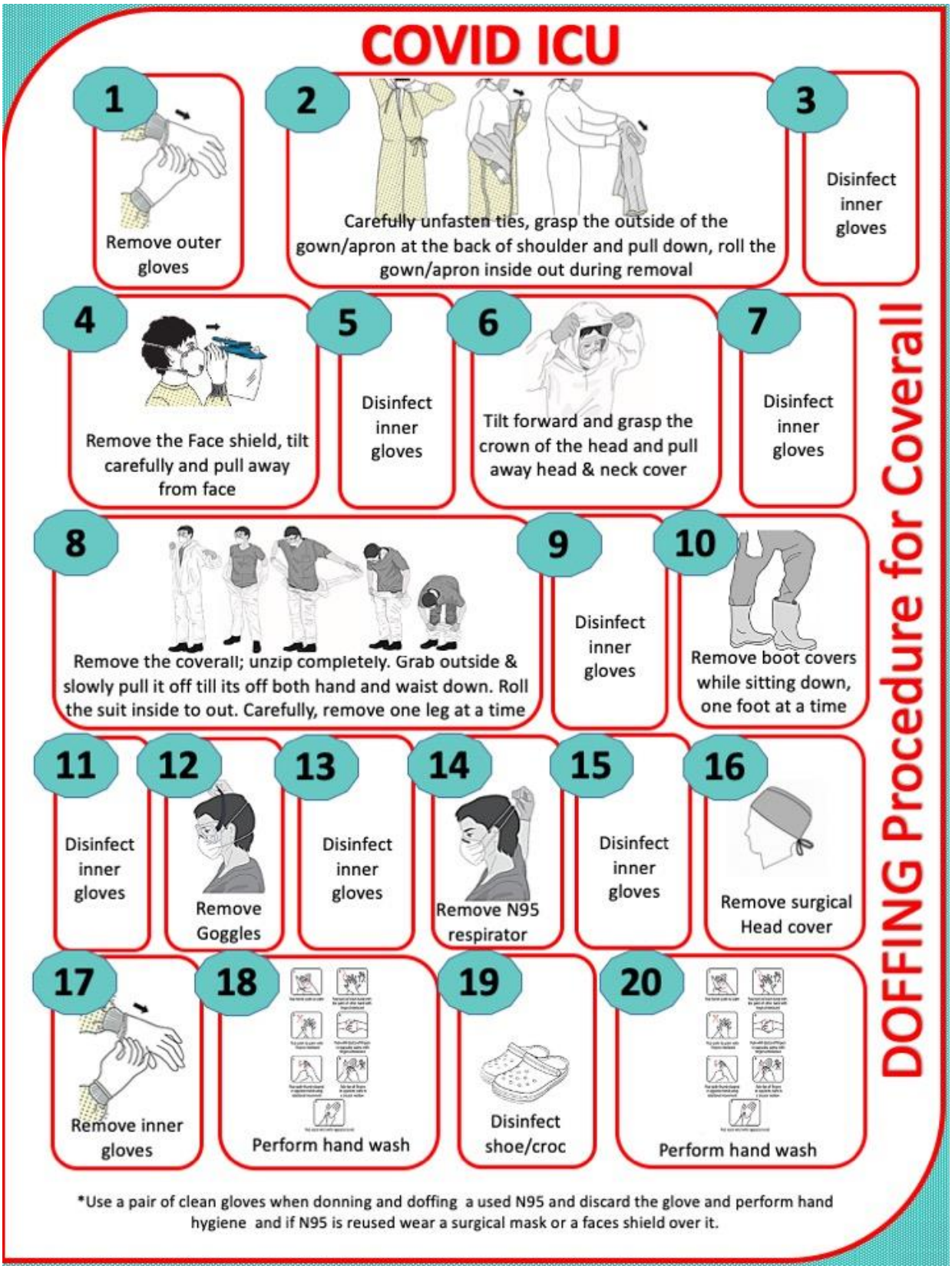
ANNEX 6.1: DONNING PROCEDURE FOR WARD

ANNEX 6.2: DOFFING PROCEDURE FOR WARD



ANNEX 6.3: DONNING PROCEDURE FOR ICU

ANNEX 6.4: DOFFING PROCEDURE FOR ICU



ANNEX 6.5: DONNING AND DOFFING SEQUENCE FOR RRT

RRT

TEAM SHOULD TAKE: EXTRA TESTING KITS AND PPE

ALCOHOL BASED HAND RUB
DISINFACTANT WIPES/SPRAY TO CLEAN THE SHIELD (ALCOHOL BASED DISINFECTANTS OR DILUTED BLEACH SOLUTION 1ML IN 49ML WATER)
TAKE AT LEAST TWO SEPARATE IMPERMEABLE BAGS OR CONTAINERS TO KEEP THE DISCARDED USABLE AND REUSABLE PPE SEPERATELY

DONNING SEQUENCE

1. WEAR SCRUBS OR WORK CLOTHS
2. CLOSED WORK SHOES
3. HAND HYGIENE
4. GOWN OR APRON
5. MASK
6. FACE SHIELD OR GOGGLES
7. GLOVE

ENTER THE HOUSE FOR SAMPLING

IF SAMPLING MORE THAN ONE CASE IN A HOUSEHOLD, CHANGE THE GLOVES IN BETWEEN THE CASES

COME OUT OF THE CONTAMINATED AREA AND PERFORM DOFFING

DOFFING TO GO FOR MORE SAMPLING REMEMBER TO PERFORM HAND HYGIENE IN BETWEEN EVERY STEP

1. **REMOVE THE GOWN OR APRON AND GLOVE AFTER COMING OUT OF THE CONTAMINATED AREA**
2. **CLEAN THE FACE SHIELDS/ GOGGLES**
3. **HAND HYGIENE AT EVERY STEP AND AT THE END**
4. **IF GOING TO ANOTHER HOUSE DON GOWN OR APRON FOLLOWED BY GLOVES**

DOFFING AT THE END OF THE SAMPLING (HAND HYGIENE IN BETWEEN EVERY STEP)

1. **REMOVE THE GOWN/APRON AND GLOVE**
2. **PERFORM HAND HYGEINE**
3. **REMOVE FACE SHIELDS/GOGGLES**
4. **PERFORM HAND HYGEINE**
5. **REMOVE THE MASK**
6. **REMOVE / CLEAN THE SHOES**
7. **HAND HYGIENE AT EVERY STEP AND AT THE END**
8. **ENTER THE VEHICLE**

ANNEX 8: DILUTION OF DISINFECTANT

1:50 dilution (1 part of sodium hypochlorite to 49 parts of water)

To make a solution of	Add sodium hypochlorite	Add Water
50 ml	1 ml	49 ml
100 ml	2 ml	98 ml
500 ml	10 ml	490 ml
1 liter	20 ml	980 ml
2 liters	40 ml	1960 ml
3 liters	60 ml	2940 ml
4 liters	80 ml	3920 ml
5 liters	100 ml	4900 ml
6 liters	120 ml	5880 ml
7 liters	140 ml	6860 ml
8 liters	160 ml	7840 ml
9 liters	180 ml	8820 ml
10 liters	200 ml	9800 ml
15 liters	300 ml	14700 ml
20 liters	400 ml	19600 ml
25 liters	500 ml	24500 ml
30 liters	600 ml	29400 ml

ANNEX 9: NOVEL CORONAVIRUS (COVID-19) - FIGHTING PRODUCTS

12TH MARCH 2020

COMPERCIALLY AVAILABLE PRODUCT NAME	COMPANY/DISTRIBUTER	EPA REG. NO
Accel Tb	Virox Technologies, Inc.	74559-1
Advantage	Wechem, Inc.	1839-83-34370
AERO TB FRESH	AERO CHEMICAL CO	1839-83-13103
Af Ultra Acid Free Total Bathroom Cleaner	Ultra Chem	1839-83-57839
All Purpose Virex	Diversey, Inc.	1839-83-70627
Aviation RTU Cleaner	Zep	6836-152-1270
Avistat-D RTU Spray Disinfectant Cleaner	National Chemical Laboratories, Inc.	1839-83-2296
Bioesque Solutions Botanical Disinfectant Solution 12/1 qt	Bioesque Solutions/Natureal, LLC	87742-1-92595
Bioesque Solutions Botanical Disinfectant Solution 4/1 gal	Bioesque Solutions/Natureal, LLC	87742-1-92595
Bioesque Solutions Botanical Disinfectant Solution 5 gal	Bioesque Solutions/Natureal, LLC	87742-1-92595
Bioesque Solutions Botanical Disinfectant Solution 55 gal	Bioesque Solutions/Natureal, LLC	87742-1-92595
BLEACH DISINFECTANT CLEANER	Ecolab Inc	1677-235
Bright Solutions Lemon Zip Disinfectant RTU	Bright Solutions	1839-83-75473
Bright Solutions RTU Bathroom Cleaner Non-Acid Bowl and Restroom Disinfectant	Bright Solutions	1839-83-75473
BS & H	NATIONAL AMERICAN SALES CORP.	1839-83-50718
Byotrol Bathroom Disinfectant Cleaner	Byotrol, Inc.	83614-1
Byotrol Disinfectant Cleaner	Byotrol, Inc.	83614-1
CaviCide Bleach	Metrex	46781-15
CaviCide1	Metrex	46781-12
Clear Gear Sports Spray	On Track Enterprises, Inc d/b/a Clear Gear	6836-152-89301
Clorox 4 In One Disinfecting Spray	Clorox Professional Products Company	67619-29
Clorox Clean Up Cleaner + Bleach	The Clorox Company	5813-21
Clorox Commercial Solutions® Clorox® 4-in-One Disinfectant & Sanitizer	Clorox Professional Products Company	67619-29
Clorox Commercial Solutions® Clorox® Disinfecting Bathroom Cleaner	Clorox Professional Products Company	5813-40-67619
Clorox Commercial Solutions® Clorox® Disinfecting Biostain & Odor Remover	Clorox Professional Products Company	67619-33
Clorox Commercial Solutions® Clorox® Disinfecting Spray	Clorox Professional Products Company	67619-21
Clorox Commercial Solutions® Hydrogen Peroxide Cleaner Disinfectant	Clorox Professional Products Company	67619-24
Clorox Commercial Solutions® Tilex Soap Scum Remover	Clorox Professional Products Company	5813-40-67619
Clorox Commercial Solutions® Toilet Bowl Cleaner with Bleach1	Clorox Professional Products Company	67619-16
Clorox Commericial Solutions® Clorox® Clean-Up Disinfectant Cleaner with Bleach1	Clorox Professional Products Company	67619-17
Clorox Disinfecting Bathroom Cleaner	The Clorox Company	5813-40
Clorox Healthcare® Bleach Germicidal Cleaner Spray	Clorox Professional Products Company	56392-7
Clorox Healthcare® Fuzion® Cleaner Disinfectant	Clorox Professional Products Company	67619-30
Clorox Healthcare® Hydrogen Peroxide Cleaner Disinfectant	Clorox Professional Products Company	67619-24
Clorox Multi Surface Cleaner + Bleach	The Clorox Company	5813-105
Clorox Pet Solutions Advanced Formula Disinfecting Stain & Odor Remover	The Clorox Company	5813-110
Clorox Scentiva Bathroom Disinfectant Foamer	The Clorox Company	5813-40
Clorox Scentiva Bathroom Disinfecting Foam Cleaner	The Clorox Company	5813-115
Clorox Toilet Bowl Cleaner Clinging Bleach Gel	The Clorox Company	5813-89
Clorox Toilet Bowl Cleaner with Bleach	The Clorox Company	5813-89
CloroxPro™ Clorox Total 360® Disinfecting Cleaner1	Clorox Professional Products Company	67619-38
DETERGENT DISINFECTANT PUMP SPRAY	Stepan Company	1839-83
D-Germ TB	Wechem, Inc.	1839-83-34370
DIC-1 Spray Disinfectant	The Deirdre Imus Environmental Health Center®	1839-220-83908
Disinfectant Spray Cleaner RTU Victoria Bay	Victoria Bay	1839-83-68168
Don-O-Mite	Edward Don & Company	6836-152-14462

COMPERCIALLY AVAILABLE PRODUCT NAME	Company/Distributor	EPA REG No.
	Franklin Cleaning Technology	1839-83-1124
Dutch®Plus Ready-To-Use Disinfectant Spray		
Fight Bac RTU	Betco Corporation	1839-83-4170
Foster First Defense	HB Fuller Construction Products Inc.	6836-152-63836
GERM BANDIT TB	ENVIROCHEMICAL INC	1839-83-66061
Germi-Kleen Non-Acid Bowl & Bathroom Disinfectant	National Chemical Laboratories, Inc.	1839-83-2296
HI-TIDE RTU DISINFECTANT	MID-AMERICAN RESEARCH CHEMICAL CORP.	1839-83-12204
INTERvention Farm Animal Care Disinfectant Cleaner & Deodorizer Ready to Use	Virox Technologies, Inc.	74559-9
KLERCIDE 70/30 IPA	Ecolab Inc	1677-249
Lemon Disinfectant	American Chemical Systems	6836-152-86408
LX-0307 RTU QUAT CLEANER DISINFECTANT	ABC COMPOUNDING CO., INC	1839-83-3862
LYSOL BRAND BLEACH MULTI-PURPOSE CLEANERLYSOL BRAND BLEACH MOLD AND MILDEW REMOVER	RB	777-83
LYSOL BRAND CLING & FRESH TOILET BOWL CLEANER	RB	777-70
LYSOL BRAND POWER PLUS TOILET BOWL CLEANER	RB	777-132
LYSOL BRAND POWER TOILET BOWL CLEANERLYSOL BRAND LIME & RUST TOILET BOWL CLEANER	RB	777-81
LYSOL® DISINEFCTANT MAX COVER MIST	RB	777-127
LYSOL® DISINFECTANT SPRAYPROFESSIONAL LYSOL® DISINFECTANT SPRAY	RB	777-99
MAPS- 1 RTU	SynBionic Evolution, LLC.	6836-289-92677
Maxim GSC Germicidal Spray Cleaner	Midlab	1839-83-45745
Maxim No Acid Non-Acid Bowl & Restroom Disinfectant Cleaner RB 352 Brite	Midlab	1839-83-45745
Medline Micro-Kill R2	Medline Industries, Inc	1839-220-37549
Micro-Kill Bleach Germicidal Bleach Solution	Medline Industries, Inc	37549-2
Micro-Kill Bleach Germicidal Bleach Wipes	Medline Industries, Inc	37549-1
Miracle Disinfectant Spray and Wipe Cleaner	Swish Maintenance Limited	1839-83-67205
Non-Acid Bathroom Cleaner Victoria Bay	Victoria Bay	1839-83-68168
One-Step Disinfectant Cleaner	Schultz Supply Company	6836-152-46493
Oracle 1	Share Corporation	88494-3-11547
OXIVIR 1	Diversey, Inc.	70627-74
OXIVIR Tb	Diversey, Inc.	70627-56
PERIMO RTU SURFACE DISINFECT	CERTUS MEDICAL INC	1839-83-88205
PEROXIDE DISINFECTANT AND GLASS CLEANER RTU	Ecolab Inc/Kay Chemical Co.	1677-251
PEROXIDE MULTI SURFACE CLEANER AND DISINFECTANT RTU	Ecolab Inc/Kay Chemical Co.	1677-251
Peroxigard Ready to Use One-Step Disinfectant Cleaner and Deodorizer for Use inLife Sciences	Virox Technologies, Inc.	74559-9
POWER-CIDAL R-T-U	MID-AMERICAN RESEARCH CHEMICAL CORP.	1839-83-12204
PREempt RTU	Virox Technologies, Inc.	74559-1
Protection that Lives on Microban 24 Hour Keeps Killing 99.9% of Bacteria for Up to 24 Hours Multipurpose Cleaner" (Microban 24 Hour Multi-Purpose Cleaner)	The Procter & Gamble Company	4091-21-3573
"Protection that Lives on Microban 24 Hour Keeps Killing 99.9% of Bacteria for Up to 24 Hours Bathroom Cleaner" (Microban 24 hour Bathroom Cleaner)	The Procter & Gamble Company	4091-22-3573
PURACLEEN DISINFECTANT SPRAY	QBASED SOLUTIONS, INC.	1839-83-83894
PURELL Food Processing Surface Sanitizer	GOJO Industries, Inc.	84368-1-84150
PURELL Foodservice Surface Sanitizer	GOJO Industries, Inc.	84368-1-84150
PURELL Healthcare Surface Disinfectant	GOJO Industries, Inc.	84368-1-84150
PURELL Multi Surface Disinfectant	GOJO Industries, Inc.	84368-1-84150
PURELL Professional Surface Disinfectant	GOJO Industries, Inc.	84368-1-84150
Quat Plus TB	Rochester Midland Corporation	1839-83-527
Quatricide TB	Pharmacal Research Labs., Inc.	1839-83-8714

Rejuvenate Ready to Use One Step Disinfectant Cleaner For Use in Spas, Salons & Clinics	Virox Technologies, Inc.	74559-1
REScue Ready to Use One Step Disinfectant Cleaner & Deodorizer	Virox Technologies, Inc.	74559-9
RestorOx	Virox Technologies, Inc.	74559-9
RTU Disinfectant Cleaner	U S Chemical	70627-2-7546
Sani-24 Germicidal Spray	Professional Disposables International, Inc.	42182-9-9480
Sanicare TBX	Buckeye International, Inc.	1839-83-559
Sani-HyPerCide Germicidal Spray	Professional Disposables International, Inc.	9480-14
Sani-Prime Germicidal Spray	Professional Disposables International, Inc.	9480-10
Sani-Spritz Spray	Nyco Products Company	6836-152-8370
SaniZide Pro 1 Spray	Safetec of America, Inc.	88494-3-67161
SaniZide Pro 1 Wipes	Safetec of America, Inc.	88494-4-67161
SC-RTU DISINFECTANT CLEANER	Stepan Company	1839-220
SC-RTU-360 DISINFECTANT	Spectral Chemical Co Inc	1839-220-33466
SELECT ACID FREE	BROOKMEADE HARDWARE & SUPPLY COMPANY	1839-83-58336
Simple Green Clean Finish	Sunshine Makers, Inc	1839-220-56782
SPRITZ	CARE LABS, INC	1839-83-56669
SUPER Q	SELECT SPECIALTY PRODUCTS	1839-83-50735
SURFACE KLEEN TB	GENERAL PRODUCTS & SUPPLY INC.	1839-83-41316
SUV Ultra 5 Disinfectant & Cleaner	OSHA Review, Inc.	6836-366-70809
T.B. QUAT	PRO CHEM, INC.	1839-83-11861
TB DISINFECTANT CLEANER READY-TO-USE	Ecolab Inc/Kay Chemical Co.	1839-83-1677
TB Quat	Gordon Food Service	70627-2-45133
TB QUAT	AERO CHEMICAL CO	1839-83-13103
TB Quat Disinfectant	Warsaw Chemical Holdings LLC	1839-83-2230
VIRASEPT	Ecolab Inc	1677-226
Viro-Stat RTU	Share Corporation	6836-152-11547
Wet & Forget Indoor Mold+Mildew Disinfectant Cleaner	Wet & Forget USA	6836-152-85342
Xpress Detergent Disinfectant	Auto-Chlor System	1839-83-6243
X-Ray Apron Cleaner Disinfectant	BioXco LLC / MediRedi LLC	6836-289-93240
Zep Antibacterial Disinfectant & Cleaner	Zep	1839-83-40849
Zep Quick Clean Disinfectant	Zep	1839-220-40849
Zep Spirit II	Zep	1839-83-1270

Ref: CBC COVID19 Product List 3_10_20202841518642447442667476188543183429445 4.pdf

38. REFERENCES

World Health Organization. Laboratory testing for coronavirus disease (COVID-19) in suspected human cases: interim guidance, 19 March 2020. World Health Organization; 2020.

World Health Organization. Cleaning and disinfection of environmental surfaces in the context of COVID-19: interim guidance, 15 May 2020. World Health Organization; 2020.

World Health Organization. Criteria for releasing COVID-19 patients from isolation: scientific brief, 17 June 2020. World Health Organization; 2020.

World Health Organization. Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages: interim guidance, 6 April 2020. World Health Organization; 2020.

World Health Organization. Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19): interim guidance, 19 March 2020. In Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19): interim guidance, 19 March 2020 2020

World Health Organization. Laboratory testing strategy recommendations for COVID-19: interim guidance, 22 March 2020. World Health Organization; 2020.

World Health Organization. Advice on the use of point-of-care immunodiagnostic tests for COVID-19: scientific brief, 8 April 2020. World Health Organization; 2020.

Centers for Disease Control and Prevention. Evaluating and testing persons for coronavirus disease 2019 (COVID-19). National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases. 2020 Apr.

World Health Organization. Clinical management of COVID-19: interim guidance, 27 May 2020. World Health Organization; 2020.

World Health Organization. Operational considerations for managing COVID-19 cases or outbreaks on board ships: interim guidance, 25 March 2020. World Health Organization; 2020 Mar 25.

Centers for Disease Control and Prevention. Infection control guidance for healthcare professionals about coronavirus (COVID-19).

Centers for Disease Control and Prevention, 2020. Interim US guidance for risk assessment and public health management of healthcare personnel with potential exposure in a healthcare setting to patients with coronavirus disease (COVID-19).

Centers for Disease Control and Prevention. Discontinuation of transmission-based precautions and disposition of patients with COVID-19 in healthcare settings (interim guidance)

Australian Government 2020 , Australian National Disease Surveillance Plan for COVID-19 May 2020 - https://www.health.gov.au/sites/default/files/documents/2020/05/australian-national-disease-surveillance-plan-for-covid-19.pdf

Public Health England, Government of UK 2020- Guidance COVID-19 Personal Protective Equipment (PPE)- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/881669/COVID-19_personal_protective_equipment__PPE__-_GOV.UK.pdf

COVID-19 Clinical management Living guidance 25 January 2021.World Health Organization

COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health. https://covid19treatmentguidelines.nih.gov

Therapeutics and COVID-19 LIVING GUIDELINE 17 December 2020. World Health Organization

COVID-19 rapid guideline: Managing the long-term effects of COVID-19 https://www.nice.org.uk/guidance/ng188

Maintaining a safe and adequate blood supply and collecting convalescent plasma in the context of the COVID-19 pandemic. Interim guidance,17 February 2021. World Health Organisation.

SARS-CoV-2 Reinfection: Considerations for the Public Health Response: ECDC; 2020 European Centre for Disease Prevention and Control.

Investigation and management of suspected SARS-CoV-2 reinfections: a guide for clinicians and infection specialists: Public Health England, Published 15 March 2021.