



PIH Guide | COVID-19

Part II: Clinical Management of COVID-19

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1 Introduction

The novel coronavirus (SARS-CoV-2) that causes the disease known as COVID-19, a respiratory tract infection spread by contact with droplets onto mucous membranes. As a newly emergent disease, the global population has no immunity and it therefore causes high morbidity and mortality. Most people with COVID-19 develop only mild or uncomplicated illness with flu-like symptoms of muscle pain, fever and mild respiratory symptoms. However, unlike seasonal influenza, up to 14% of people infected with the virus develop serious COVID-19 disease (generally pneumonia) that requires hospitalization and oxygen support, and up to 5% require admission to an intensive care unit. These most severe cases may develop what is known as Acute Respiratory Distress Syndrome (ARDS) where the lung becomes stiff and oxygenation only can be maintained by mechanical ventilation. Other severe complications of COVID-19 include septic shock and multi-organ failure. Older people

and those with co-morbidities appear to be at significantly higher risk of disease. This section of the PIH Guide to COVID-19 elaborates guidelines for the management of patients with suspected or confirmed COVID-19 at home, at the clinic and at the hospital. .

2 Preparing and managing the facility

Because COVID-19 is highly infectious, facility preparedness and management is critical to assure high quality care of patients who are sick with COVID-19 and to protect staff and non-COVID patients from contracting coronavirus. Like the management of Ebola, Lassa, cholera or other infectious diseases, infection control and prevention (IPC) is central to facility management. IPC requires the right staffing, stuff (supplies like PPE), space (for proper distancing and triage) and systems (to assure adherence to IPC protocols). This section describes the preparation and management of a facility for COVID-19 patients.

2.1 Infrastructure requirements

Hospitals and clinics must be able to continue to see patients and triage patients with symptoms of or contact with COVID-19 through a safe pathway of physical spaces.

A. Clinic and hospital outpatient areas:

- **Triage at Designated Points of Entry.** (For Screening #1; See Section 4, Figure 1)
 - Points of entry should be limited.
 - Screening #1: Triage in open air, e.g. as vehicles pull up or on walkway outside. Health worker in PPE screening of patients for symptoms and contact.
 - Patients who are positive for symptoms or contact are persons under investigation (PUI) should be given a mask and told to go to the waiting area for suspects to wash hands and wait **2 m** from nearest patient.
 - Patients negative for symptoms or contacts should go to handwashing nearer to the facility and go to inpatient or outpatient triage area.
- **Waiting area for Person Under Investigation (PUI) COVID-19.** (For Screening #2, See Section 4, Figure 1)
 - Patients have masks.
 - Will have washed hands before entry.
 - Will sit >2 m from other patients with physical barriers between.
 - Area is preferably open to the air on all three sides.
- **Consultative space** contiguous with waiting area and separate from other areas of the facility.
 - Separate entrance for health care worker.
 - Health care worker in PPE.
- **Specimen collection space:**
 - Sputum collection should be done outside in an area designated for sample collection.
 - Nasal and pharyngeal swabs, blood finger prick and blood draws can be done in the consultative space.

B. Hospitals (or clinic) inpatient areas:

- **Isolation room/ward:** negative pressure rooms should be used whenever possible. COVID-19 patient should be cared for in single self-contained isolation room or on wards with other confirmed COVID-19 patients; all patients' beds should be placed at least 1 metre apart. Where negative pressure is not available, patients should be placed in adequately ventilated rooms, considered to be 60 L/s per patient.
- For COVID-19, infrastructure (spaces) should include:
 - Screening tent: at entrance of hospital to screen all patients with temperature and basic symptoms
 - Triage unit: for patients who meet case definition at triage, and require COVID-19 lab testing.
 - Patient Under Investigation (PUI) Ward: for patients under investigation for COVID to get care for respiratory illness, while awaiting COVID-19 testing. Notably, this ward requires the highest level of IPC, to reduce nosocomial transmission, as patients here are a mix of positive/negative.
 - COVID-19 Inpatient Ward(s): for care of stable patients with confirmed or highly suspected COVID-19 (known contact, ARDS).
 - COVID-19 ICU: for care of critically ill patients.
 - Small laboratory space: for COVID-19 testing.
 - Donning stations: Separate from areas with PUI COVID or COVID patients where health personnel can put on protective gear.
 - Doffing stations: for each area where used material will either be sterilized (bucked for goggles), incinerated, or laundered and handled by cleaning personnel in full PPE.
 - Patient exit.
 - Laundry.
- See below for specific infrastructure standards for ventilation, water, power, etc.

2.2 Table 1. Infrastructure and facility standards

Table 1 addresses the infrastructure and facility standards that should be in place to safely address a COVID-19 outbreak.

Facility Needs	COVID-19 Treatment Center Standards
Water Supply 1. Supply 2. Potability 3. Reserve Capacity 4. Redundancy 5. Access Points	<p>Adequate water supply is required for hand washing, drinking water for patients, staff, and family caregivers, cleaning, patient bathing on discharge. This includes water for laundry.</p>
Power Supply 1. Reliability 2. Capacity 3. Redundancy 4. Controls	<p>Consistent electrical power is needed for safe basic care. For non-ICU level care, we will need two sources of electricity. They can be any combination of diesel generator, solar and batteries, or utility grid connection. In the case of generator only, two redundant generators are recommended. Whatever the energy sources are, we should have an automatic transfer switch between the two primary sources of power. If we have an ICU, we recommend that there be a UPS installed to feed the receptacles for lights and power of at least 20 kVA. Main circuit breaker and electrical panel should be readily accessible but located outside of patient areas so that a technician can service without PPE. Automatic transfer switch and saddle tank for generators should be provided. Saddle tank should be sized to provide fuel for a minimum of seven days continuous generator use.</p>
Power Distribution & Lighting 1. Ward level 2. Distribution level 3. Documentation	<p>Treatment and administrative areas need minimum of 40 foot-candles of illumination at 1 meter above the floor. All lighting should be LED strip lighting securely hung on chain or wire at a minimum of 2.6 meters above the floor. All treatment areas should have a minimum of two duplex receptacles for each bed or patient exam chair. There should be no more than five duplex receptacles on each 20 amp circuit breaker. For ICU, there should be three dedicated 20 amp duplex receptacles for each bed all fed from UPS.</p>
Wastewater Treatment 1. Treatment Level 2. Capacity 3. Monitoring and Maintenance	<p>Wastewater from hand sinks, janitorial sinks, and showers should be discharged by gravity into holding tank for 48-hour retention and chlorination and then discharged into soak pit, built to WHO and MSF guidelines. Toilets in temporary facilities should be dedicated pit latrines which discharge into a lined tight tank of sufficient size that it requires pumping no more than twice per month. The lined pit latrine should have access and inspection hatches and vented to promote breakdown of solids to the WHO guidelines for "Improved Pit Latrines". There should be an overflow pipe for liquid</p>

	wastewater at least 15 cm below the floor and run to a separate soak pit.
Biohazardous, Pharma, and Chemical Waste 1. Collection/Sorting 2. Disposal 3. Staff Safety	Sharps Containers should be mounted at between 1.3-1.4 meters above the floor. The container should be placed in a visible location, within easy horizontal reach, and below eye level. The container should also be placed away from any obstructed areas, such as near doors, under sinks, near light switches, etc. Containers should be clearly visible to the health care worker. There should be one 5-liter sharps container for every 4 beds or patient exam stations, and no less than 1 sharps container per room.
Oxygen 1. Supply 2. Distribution 3. Reserve Capacity 4. Redundancy	An oxygen quantity of 10 liters per minute (LPM) per bed is recommended for sizing piped oxygen planning. RESERVE Oxygen is required as well as REDUNDANT CAPACITY if supply fails. If a manifold with high pressure oxygen cylinders is used, then there should be an adequate supply for all the beds for 24 hours of use at 6 liters per minute. In a 16-bed ward this would translate to 96 LPM. A 75% diversity factor then can be applied so the 24-hour supply would be $96 \text{ LPM} \times 60 \text{ Min} \times .75 = 4320$ liters per hour. An H-cylinder yields approximately 7,000 usable liters; so, for a 24 hour supply you would need 15 full cylinders. A reserve manifold (in addition to the 15 cylinders) should have a minimum of 4 full H-cylinders. The manifold and zone valve must be connected to an audible (and if possible) visual alarm to notify if there is a drop in oxygen pressure below 40 PSI. Ideally, there should be redundancy in O ₂ . Bedside O ₂ concentrators are a good option. Anticipate that up to 40% of patients with COVID will require O ₂ .
Ventilation	Either mechanical ventilation through the use of exterior exhaust fans and opposite wall/end air intake louvers to achieve 12 air changes/hour (ACH) by volume in the space. It may be possible in some locations and climates to achieve 12 ACH by using natural ventilation especially a scheme that utilizes low intake and high exhaust. If this method is employed, it is strongly recommended that a professional engineer be consulted and that the space be tested for CO ₂ build up and transfer prior to the space being operationalized.
Network/Internet Connectivity 1. Reliability 2. Speed 3. Availability	Ability to connect to the internet whether via wire or wireless connection wherever layout of facility deems necessary. Suggest: Dual Wired RJ45 connections at each convenient and/or required location. Wireless Access Points placed throughout facility positioned for complete and optimum coverage. Consider backup internet source from 4G cellular routers, if available.

Fire Safety

- 1. Fire Extinguisher**
- 2. Smoke Detectors**
- 3. Fire Assembly Points**
- 4. Fire Evacuation Plan**

Fire safety in temporary facilities in countries with little or no fire safety training and standards is always challenging. We suggest a flexible commonsense approach. Within the temporary wards, try to avoid using sheets or other linens for shading as these are an obvious fire hazard. Fire extinguishers should be employed and hung on the walls in locations that are accessible and highly visible. We recommend a minimum of two per every 1000 square feet, plus one by each exit and entrance. There should be fire extinguishers not more than 50 feet (or 15 meters) apart throughout the facility. The fire extinguishers should be clearly marked with a sign and arrow in the appropriate language.

2.3 Table 2. List of items needed for treatment center

Durable Equipment	Secondary Screening area	Presumptive COVID area	COVID ward	Critical Care area
Scales, adult and pediatric		X	X	X
Thermometer infrared	X	X	X	X
Pulse oximeter	X	X	X	X
VS machines/BP cuff	X	X	X	X
Cardiac monitors				X
Stethoscope	X	X	X	X
Ultrasound			X	X
Infusion pumps				X
Beds with washable mattress		X	X	X
Bedsheets		X	X	X
Pillows (washable)		X	X	X
Plastic chairs	X	X	X	X
Waste bin	X	X	X	X
Nurse station / Provider station table	X	X	X	X
Pharmacy table		X	X	X
Pharmacy cabinet		X	X	X
Shelves		X	X	X
Medication trolley		X	X	X
Fridge		X	X	X
White board with markers for patient tracking		X	X	X
Laryngoscope, various sizes				X
Hemocue		X	X	X
Glucometer	X	X	X	X
Light for clinical exams	X	X	X	X
Clock with second hand	X	X	X	X
Suction machine				X

Oxygen source – O2 tanks vs O2 concentrator		X	X	X
Ventilator				X
CONSUMABLES				
non-sterile glove - small	X	X	X	X
non-sterile glove - medium	X	X	X	X
non-sterile glove – large	X	X	X	X
Bar soap + water source	X	X	X	X
hand sanitizer	X	X	X	X
Chlorine				
Bleach	X	X	X	X
Biohazard bag	X	X	X	X
Sterile gloves, assorted sizes				X
IV cannula 18 – 24 gauge		X	X	X
IV tubing, 15-20 drops/cc		X	X	X
IV tubing, 60 drops/cc		X	X	X
Nasal cannula, pediatric and adult		X	X	X
O2 mask, pediatric and adult		X	X	X
O2 mask, non-rebreather, pediatric and adult		X	X	X
Adhesive tape	X	X	X	X
Bag, Urinal drainage, with non-return valve and tap, Sterile, 85cm tube, 2000mL		X	X	X
Nasogastric tubes for adults and children		X	X	X
Foley Catheter 12Fr and 16Fr		X	X	X
Needle, 18G, 21G and 25G		X	X	X

Spacer for inhalers		X	X	X
Syringes, 5ml, 10ml and 20 ml		X	X	X
Cotton wool, 500g roll		X	X	X
Wristband, Patient Identification		X	X	X
Body bag		X	X	X
Sharps container, 3 gallon		X	X	X
Tablet bag, Resealable, with Pictogram, 80mm x 100mm		X	X	X
Underpad, Tissue, 3 ply, 17in x 24in (chux)		X	X	X
Bag, Specimen transport, 6in x 9in		X	X	X
Tube, Blood collection, Heparin (Green) Vacutainer Tubes Case		X	X	X
Tube, Blood collection, K3 EDTA (K3E), 15% solution, Lavender, 6mL		X	X	X
Tube, Blood collection, Serum, Silicone coated, Red, 6mL		X	X	X
HIV rapid tests		X	X	X
Hemocue microcuvettes		X	X	X
Glucometer strips	X	X	X	
Lancets	X	X	X	

CONSUMABLES FOR MECHANICAL VENTILATION (only if site capable of mechanical ventilation)				
Viral filter for ventilator circuit				X
Ventilator circuit				X
Ambu bag, adult, pediatric and neonatal				X
Endotracheal tube - 4.0 - 8.0				X

2.4 Water, Sanitation, Hygiene & Waste Management

A. Surface Decontamination, Principles:

- It is not certain how long the virus that causes COVID-19 survives on surfaces, but it seems likely to behave like other coronaviruses:
 - Can likely survive between 2 hours to 9 days on surfaces.
 - The survival time depends on the type of surface, temperature, relative humidity and specific strain of the virus.
 - Effective inactivation can be achieved within 1 minute using most disinfectants

2.5 Table 3. Offices and Non-Clinical Areas: COVID-19 Cleaning and Disinfection Guidelines

Please see annex for job aids regarding cleaning and disinfection

OFFICES and NON-CLINICAL AREAS: Recommended Minimum Cleaning and Disinfecting Frequencies

Type of Surface	Examples	Soap and Water	Disinfect
Minimally Touched Surfaces	Floors Ceilings Walls Windows	When Dirty. At least 3 times / week.	After Human Contact / When Dirty. At least weekly.
Frequently Touched Surfaces	Door Handles Table Tops / Desks Light Switches Computers Sinks/Basins	Daily	Daily

CLINICAL AREAS: Including Isolation units: COVID-19 Cleaning and Disinfection Instructions Recommended Minimum Cleaning and Disinfecting Frequencies

Type of Surface	Examples	Soap and Water	Disinfect
Minimally Touched Surfaces	Floors Ceilings Walls Blinds	3 times daily + any known COVID-exposure	3 times daily + any known COVID-exposure
Frequently Touched Surfaces	Door Handles Table Tops / Desks Light Switches Computers Sinks/Basins	3 times daily + between each patient	3 times daily + between each patient

A. Cleaning Preparation

- Wear disposable gloves for all tasks in the cleaning process, including handling trash. Wash hands immediately after gloves are removed.
- Close off areas to be cleaned and wait as long as practical before beginning cleaning and disinfection to minimize the potential for exposure to respiratory droplets.
- Open outside doors and windows to increase air circulation in the area.

B. Soap and Water Cleaning

- Always clean surfaces using a detergent or soap and water *before* disinfection.
- Remove visible pollutants (blood, secretions, excreta) completely.
- Damp mopping is preferable to dry mopping.
- Surfaces should be disinfected if they have come into direct human contact or are frequently touched.
- Always sterilize washing cloths, mops and other supplies used during cleaning.

C. Disinfecting Guidelines

- Wear disposable gloves for all tasks in the disinfection process, including handling trash. Wash hands immediately after gloves are removed.

- Use freshly made solutions, or premix and follow manufacturer's instructions or table below for appropriate dilution.
- Wipe the area with the disinfectant solution using a cloth.
- Wipe cleaner regions first, then more contaminated regions.
- Dispose or sterilize cloth immediately after use.
- After cleaning, wash hands well using soap and water. If water is unavailable, clean hands with alcohol-based hand rub.

D. Choosing the Right Disinfectant

- Chlorine Bleach can damage computers, plastic, fabric and metal
- Use chlorine bleach on non-porous surfaces such as floors, sinks, toilets, walls
- Use an Alcohol-based cleaner (if available) on biomedical equipment, electronics, computers, phones, screens, etc.
 - If not available, clean with bleach, if possible
- DO NOT MIX SOLUTIONS

E. Preparation and use of disinfectant solution

- Gloves should be worn when handling and preparing bleach solutions.
- Protective eye wear should be worn in case of splashing.
- Cleaning solutions (example chlorine bleach) should be made up daily.
- Leave the disinfectant solution on the surface for a sufficient time is required to kill the virus – a minimum of 10 minutes for chlorine/bleach.
- Always rinse chlorine/bleach with water after 10 minutes. Hydrogen peroxide and alcohol-based cleaners do not need to be rinsed.

2.6 Table 4. Acceptable Disinfectants

Disinfecting Solution	Concentration	Directions	OK to use on	Do NOT use on
Diluted chlorine bleach (5.25% sodium hypochlorite)	0.5% (1:50)	Apply, leave for 10 min, rinse	Floors, desks, non-porous surfaces	Computers, phones, screens, fabric, can discolor plastic, metal
Chlorine (see table below to mix chlorine)	0.5%	Apply, leave for 10 min, rinse	Floors, desks, non-porous surfaces	Computers, phones, screens, fabric, can discolor plastic, metal
Hydrogen Peroxide	0.5%	Apply	Floors, desks, non-porous surfaces, metal	Fabric
Ethanol / Ethyl Alcohol	62% minimum	Apply	Computers, Phones, Non-porous surfaces	Can discolor plastic
Isopropyl Alcohol	70% minimum	Apply	Computers, Phones, Non-porous surfaces	Can discolor plastic
Propanol	70% minimum	Apply	Computers, Phones, Non-porous surfaces	Can discolor plastic
Do NOT use: Ammonia, vinegar Do NOT: mix multiple disinfectants				

Liquid Chlorine Preparation				
	% Solution	0,05 %	0,5 %	2 %
Basic Product	Use for:	Hands, skin, laundry, clothes	Floors, walls, equipment	Disinfection of stool, vomit, blood. Disinfection of corpses.
	Bleach, 5% sodium hypochlorite (5% active chlorine)	10 milliliters in 10 liters of water	1 liter in 10 liters of water	4 liters in 6 liters of water
	Chlorine laundry powder (30% active chlorine)	16 grams (1 tablespoon) in 10 liters of water	16 grams (1 tablespoon) in 1 liter of water	64 grams (4 tablespoons) in 1 liter of water
	Chlore en granules (HTH) (70 % de chlore actif)	8 grams (1/2 tablespoon) in 10 liters of water	8 grams (1/2 tablespoon) in 1 liter of water	32 grams (2 tablespoons) in 1 liter of water
ALWAYS label solutions using a permanent marker				
Note: WaterGuard is 1.25% Sodium Hypochlorite --> if this is used, then will need to use different ratios				

A. Disposal of excreta

- It is critical to conduct hand hygiene when there is suspected or direct contact with feces (if hands are dirty, then soap and water are preferred to the use of an alcohol-based hand rub).
- If the patient is unable to use a latrine, excreta should be collected in either a diaper or a clean bedpan and immediately and carefully disposed of into a separate toilet or latrine used only by suspected or confirmed cases of COVID-19.
- Feces must be treated as a biohazard and handled as little as possible. Anyone handling feces should follow WHO contact and droplet precautions and use PPE to prevent exposure, including long-sleeved gowns, gloves, boots, surgical masks, and goggles or a face shield. If diapers are used, they should be disposed of as infectious waste as they would be in all situations.
- If a bedpan is used, after disposing of excreta from it, the bedpan should be cleaned with a neutral detergent and water, disinfected with a 1% chlorine or 0.5% sodium hypochlorite solution, and then rinsed with clean water; the rinse water should be disposed of in a drain or a toilet or latrine.
 1. Laundry:
 - All individuals dealing with soiled bedding, towels and clothes from patients with COVID-19 infection should wear appropriate PPE before touching it, including heavy duty gloves, a mask, eye protection (goggles or a face shield), a long-

sleeved gown, an apron if the gown is not fluid resistant, and boots or closed shoes.

- Soiled linen should be placed in clearly labelled, leak-proof bags or containers, after carefully removing any solid excrement and putting it in a covered bucket to be disposed of in a toilet or latrine.
- Machine washing with warm water at 60–90° C with laundry detergent is recommended. The laundry can then be dried according to routine procedures.
 - If machine washing is not possible, linens can be soaked in hot water and soap in a large drum using a stick to stir and being careful to avoid splashing. The drum should then be emptied, and the linens soaked in 1% chlorine for approximately 30 minutes. Finally, the laundry should be rinsed with clean water and the linens allowed to dry fully in sunlight.
 - If excreta are on surfaces (such as linens or the floor), the excreta should be carefully removed with towels and immediately safely disposed of in a toilet or latrine. If the towels are single use, they should be treated as infectious waste; if they are reusable, they should be treated as soiled linens.
- Water: Persistence of SARS-CoV-2 in drinking-water is possible. There is no evidence to date about survival of the virus that causes COVID-19 in water or sewage, but this virus is likely to become inactivated significantly faster than non-enveloped human enteric viruses with known waterborne transmission (such as adenoviruses, norovirus, rotavirus and hepatitis A).

2.7 Dead Body Management

As of March 20, 2020, the World Health Organization has not yet given specific guidance around dead body management (DBM) in the COVID-19 pandemic. However, there is a risk of transmission post-mortem, and the US CDC and several Ministries of Health have given guidance to reduce transmission of disease to HCWs and family members (<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-postmortem-specimens.html>)

Based on this guidance, PIH recommends:

A. Removal of the body from the room or isolation ward:

- Perform hand hygiene and ensure proper use of PPE, including gown, goggles/face shield, surgical mask and gloves.
- Remove all tubes, IVs and other lines from the patient.
- Place the body in a leak-proof plastic body bag.
- Decontaminate the exterior of the body bag with chlorine or bleach, as above.
- The family may then be given the body or it may be taken to the mortuary.
- Provide counseling to the family.
- Ensure that all equipment used and the patient's bed are cleaned, as per the protocol above.

B. Mortuary procedures:

- Ensure that mortuary staff wear appropriate PPE, including gown, goggles/face shield, surgical mask and gloves. Then may continue usual mortuary procedures.
- Ensure daily cleaning of the mortuary, as above, with chlorine or bleach, as above

3 Operational Support, Supply Chain, Procurement, and Logistics

Logistics and supply chain are a critical part of any emergency response. Below are some key lessons from PIH's coordination of other emergency responses. It is also important to ensure operations staff, including logisticians, couriers, drivers, and warehouse workers, receive basic education about COVID-19, including modes of transmission, proper hand-hygiene and any enhanced precautions required (wiping down equipment, wearing gloves to handle boxes, and wearing masks to pick up medications at pharmacy vendors).

3.1 Clarify PIH Supply Chain Governance

- A. Clearly identify a specific individual to lead emergency supply chain efforts.
- B. Develop protocols for how the emergency and routine supply chains should interact, including storage, information systems, and purchasing.
 - Commonly, they are not separated at the outset of the response out of necessity and are later separated as dedicated funding becomes available. More restrictive funders, such as bilateral agencies (USAID, DFID, etc.), will require this.
- C. Clearly identify and authorize specific funds for emergency procurement in the earliest stages of the response and identify ongoing funding approval process.
- D. Clearly identify a specific individual to lead clinical decisions for emergency supply chain efforts (ie product specifications, substitutions, forecasting, etc.).

3.2 Clarify Country Level Governance of Emergency Supply Chain in partnership with Ministry of Health

- A. Determine whether the UN Logistics Cluster System has been established and identify how PIH will engage.
 - Among other things, this global mechanism coordinates requests of supplies across local, regional, and global implementers of all sizes, including donors (USAID, DFID) and local governments. At minimum, review LogCluster reports.
- B. If Log Cluster is not active, identify mechanism to coordinate efforts with other partners involved in emergency response.
 - Often this happens through the Ministry of Health and/or the implementing partner for USAID-funded supply chain projects.

3.3 Map PIH's current systems and available resources:

- A. Conduct review of stock levels of all items on PIH COVID-19 Response Formulary/Clinical Protocols.
- B. Conduct rapid assessment of essential clinical and non-clinical equipment/systems and spare parts (oxygen, generators, incinerators, patient monitoring equipment, etc.).
- C. Conduct rapid assessment of vehicle fleet and stocks of spare parts (SUVs, ambulances, motos, etc.).
- D. Review PIH's in-country supply chain management system (importation and customs, strategic stockpiling, storage, security, transportation, distribution, information systems, and requisitions) for clinical and other essential supplies and equipment.

- E. Assess storage and warehousing infrastructure and capacity.

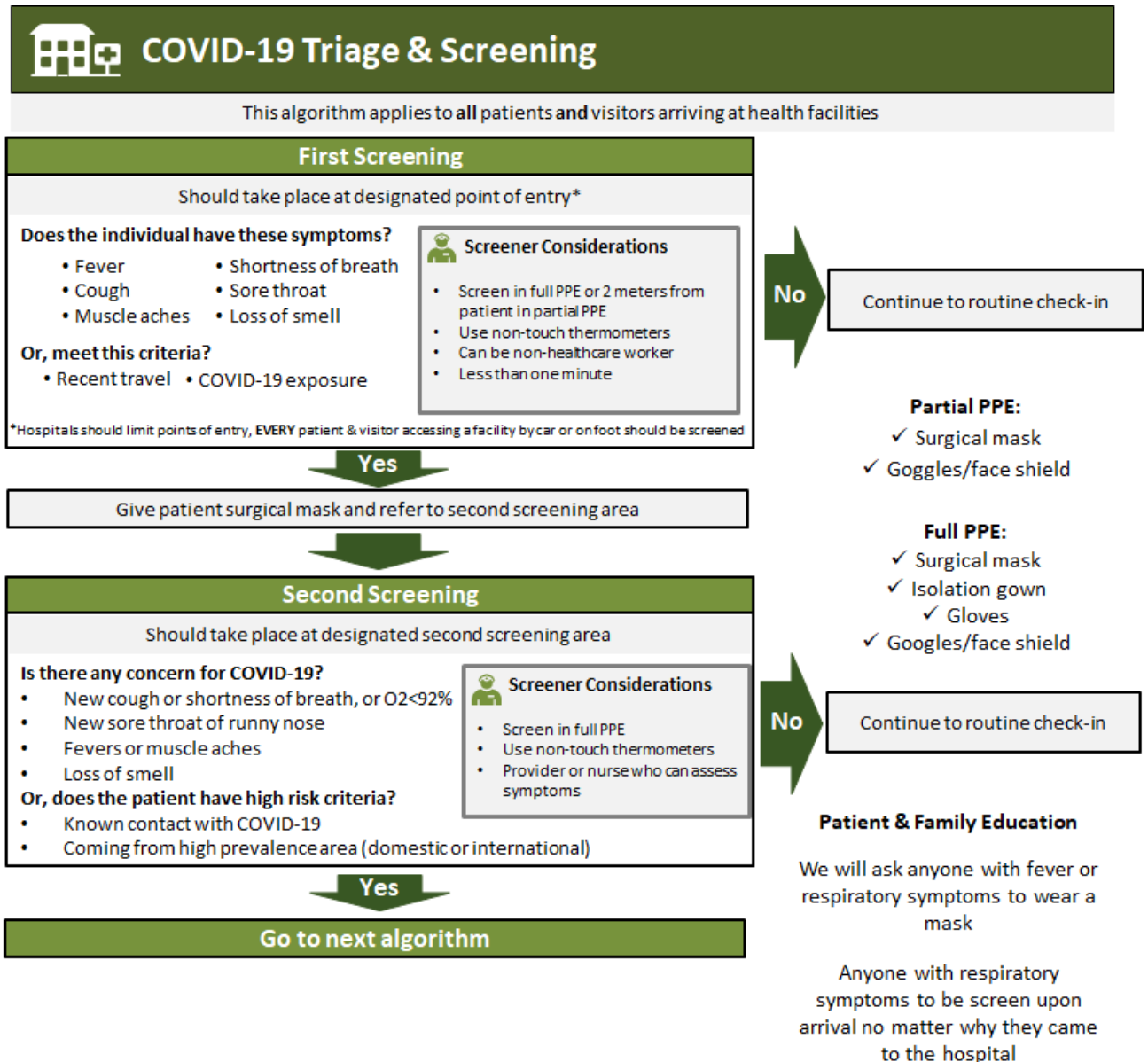
3.4 Map current supply systems and available resources, in health and other sectors:

- A. If UN LogCluster has been activated, utilize their mapping, which will include local & global partners, including military, private, and public agencies.
- B. Assess basic in-country logistics and identify any major (or potential) infrastructure breakdowns (port closures, road or bridge disruptions, etc.).
- C. Coordinate closely with district and national Ministry of Health Colleagues to understand public supply chain processes, even if they are seemingly sparse.
- D. Assess the capacity of the local market to meet increased demand for clinical & other essential supplies. Encourage preference for qualified local sources when possible.
- E. Assess the capacity of the international market to meet increased demand for clinical & other essential supplies; prioritize order placement based on knowledge of at-risk and essential items.
- F. Work with donors to ensure in-kind donations align with identified need.
- G. Assess likely funders of medium and long-term response efforts to anticipate allowable commodities and other restrictions.

4 Screening, Triage and Infection Control and Isolation

COVID-19 is highly infectious. Infection control and prevention are critical to protect patients and staff. Administrative controls, environmental controls and personal protection are all key elements of a safe environment. All of these controls rely on vigilance for suspected cases and safe screening, testing and isolating confirmed cases.

4.1 Figure 1: Screening, testing and isolation of suspects and confirmed cases with COVID-19



Partial PPE:

- ✓ Surgical mask
- ✓ Goggles/face shield

Full PPE:

- ✓ Surgical mask
- ✓ Isolation gown
- ✓ Gloves
- ✓ Goggles/face shield

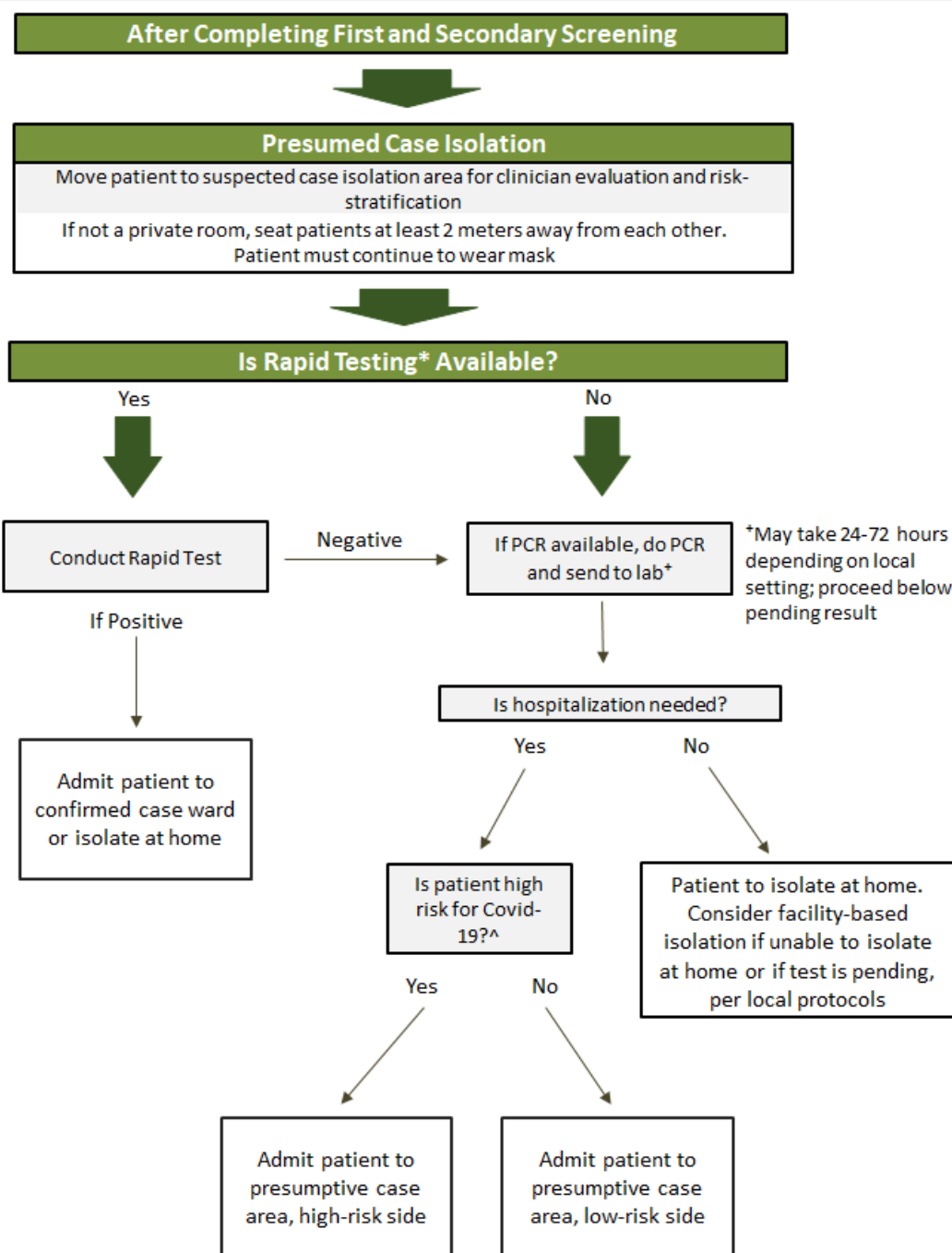
Patient & Family Education

We will ask anyone with fever or respiratory symptoms to wear a mask

Anyone with respiratory symptoms to be screen upon arrival no matter why they came to the hospital

COVID-19 Triage & Screening

This algorithm applies to all patients and visitors arriving at health facilities



[^]Based on clinical judgement and risk factors. Can consider other lab testing to help risk stratify if available, including lymphocyte count, LFTs, and C-reactive protein

4.2 Screening, Triage & Testing, Isolation

- A. **1st Screening**
- Separate screening area outside of health care facility or at hospital entrance
 - All patients entering healthcare facility are screened for fever, cough, SOB, known contact of COVID-19 patient, or recent travel that may place them at risk.
 - Screener should wear full PPE.
 - If initial screen positive:
 - Immediately place facemask on patient and provide patient with alcohol based hand sanitizer.
 - Direct patient to triage & testing area.
- B. **Triage & Testing**
- Secondary screening space should be separated from other patients.
 - Providers should don full PPE and observe contact and droplet precautions.
 - Follow protocols for specimen collection for laboratory testing.
 - Asymptomatic patients may be directed home with follow up and to self-quarantine pending test results.
 - Symptomatic patients will be admitted to isolation area per protocol.
- C. **Persons Under Investigation (PUI) for COVID:** There should be separate isolation areas for PUI for COVID who have not been confirmed to have COVID.
- When a patient comes to a facility with symptoms consistent with COVID or known contact with COVID, it is important that IPC is adhered to—there are three levels of isolation:
 - Asymptomatic PUI: known contact, but not displaying symptoms. Once tested asymptomatic suspect patients may return home with close follow up and instructed to self-quarantine pending test results.
 - Symptomatic PUI: should be evaluated clinically for admission and separated from asymptomatic suspects pending the test result.
 - Presumptive case areas for PUIs should be separated into low and high risk sides depending on clinical suspicion
- D. **Isolation for confirmed positive patients OR highly symptomatic PUI** (especially with a close family contact with a symptomatic or confirmed case): should be separated from suspect patients **should be moved immediately to the isolation unit.**
- E. **General Practices Procedures:**
- Providers should move from asymptomatic to symptomatic and then to confirmed patients.
 - Limit transport and movement of patients. When transport is necessary don clean PPE, place face mask on patient, and follow respiratory/hygiene etiquette.
 - The isolation areas must be a separate enclosed space removed from other patients.
 - Equipment (stethoscope, BP cuff, pulse oximeter) must remain in the room and must be cleaned and disinfected between each patient (e.g., by using ethyl alcohol 70%).

- No visitors for suspected or confirmed patients (see exceptions below) as a strategy to help conserve PPE. All parents must wear PPE and can remain with the child as a caregiver.
- Once patient is in the isolation area they cannot leave unless to dedicated bathroom for isolated patients, movement within the hospital per health care provider, or discharge.
- Maintain a record of all persons entering a patient's room or isolation space, including all staff and visitors.

4.3 Social Distancing in the hospital setting

When an epidemic shifts into the community transmission phase, it is important to maintain appropriate measures to reduce transmission within the hospital.

- A. Ensure isolation wards and hospital operations for COVID suspects and confirmed cases are maintained separately from routine hospital operations.
- B. Visitors to the hospital for non-COVID patients:
 - All visitors should be screened at entry point according to guidelines.
 - The health facilities should adopt restricted visitation policies in ALL wards.
 - Restrict visitation to one person for patients who require visitation for food or assistance with activities of daily living.
- C. Visitors should not be permitted in COVID isolation wards.
- D. Additional staff may be needed to help care for basic patient needs (see visitor guidelines below).
- E. Minimize staff gatherings:
 - Avoid large gatherings of staff in confined spaces, including staff meetings, meal times, or congregating at nurses' stations.
 - Consider holding staff meetings outdoors where there can be ample space between people.
 - Consider rotating meal times to avoid crowds in dining areas.

4.4 Visitor Guidelines

- A. Visitors will be allowed in based on the exception list outlined below. The exception list applies provided there is absence of symptoms on screening:
 - Obstetric patients may have one partner and one birth support person accompany them.
 - No children under the age of 16.
 - Patients who are under the age of 18 may have one visitor, or parents or guardians.
 - Must stay in the room for the duration of the visit.
 - For the Nursery/Neonatal Care Unit:
 - Birth parent plus one significant other.
 - Must stay in the room for the duration of the visit.
 - Patients who are at the end-of-life may have only 2 visitors.
 - Must stay in the room for the duration of the visit.

- Patients with disruptive behavior, where a family member is key to their care, may have only 1 visitor.
 - Must stay in the room for the duration of the visit.
- Patients who have altered mental status or developmental delays (where caregiver provides safety) may have only 1 visitor.
 - Must stay in the room for the duration of the visit
- Patients who require a home caregiver to be trained.
 - Must stay in the room for the duration of the visit.
- Patients undergoing surgery or procedures may have 1 visitor.
 - Visitor to leave medical center as soon as possible after the procedure/surgery.

4.5 Infection Prevention and Control

A. IPC in healthcare centers:

- Early triage.
- Establish early identification of suspected COVID-19 infection.
- Establish triage station to entrance of health care facility, supported by trained staff.
- Screen patients for fever >38 degrees Celsius, cough, SOB or known COVID-19 contact.

B. Ensure the correct IPC precautions are used based on guidelines outlined below (standard precautions, droplet precautions, contact precautions, airborne precautions).

C. Environmental precautions.

- Adhere to environmental services disinfecting procedures.
- Limit movement of patients in the health facility.
- If a patient must be moved, all staff who come into contact with the patient must wear PPE (gown, gloves, mask, goggles).
- Maintain good ventilation, open doors and windows when possible.
- Medical equipment including stethoscopes, BP machines, pulse oximeters to remain in isolation areas and decontaminated per protocol.
- Implement administrative controls.
 - Prompt lab testing for early identification.
 - Prevent overcrowding, especially in the ED.
 - Provide dedicated waiting areas for symptomatic or suspected patients.
 - Isolate confirmed patients.
 - Provide dedicated bathroom for suspected and confirmed patients.
 - Limit visitors per visitation policy.

4.6 Standard, Droplet and Airborne Precautions

Standard, droplet, and airborne precautions should be practiced for all patients under investigation for COVID-19 or confirmed to have COVID-19. These include hand and respiratory hygiene, the use of appropriate PPE, safe injection practices, safe waste management, proper linens, environmental cleaning, and sterilization of patient care equipment.

- A. **Standard Precautions** Hand washing is always a critical protection for staff and patients. Gloves should be used for all blood and body fluids.

WHO's 5 Moments for Hand Hygiene

- 1 Before touching a patient.
- 2 Before clean/aseptic procedures.
- 3 After touching a patient.
- 4 After body fluid exposure/risk.
- 5 After touching the patient's surroundings.

- B. **Droplet Precautions for PUI and Confirmed COVID-19 patients.** In addition, because of the infectiousness of the SARS-CoV-2 virus, PPE is required for personnel in contact with infected persons or infectious material. The virus is spread through droplets that contact mucous membranes (it may also have an airborne component). Therefore, respirators, gowns, gloves and eye protection are recommended.

- Don appropriate PPE (gloves, gown, surgical mask, goggles/face mask).
- If possible, place patients in single rooms.
- When single rooms not available, patients suspected of being infected with COVID-19 may be grouped together. Space should be separated and removed from other patients.
- Maintain at least 1-meter distance between all patients. All patients should don surgical masks.
- Limit transport and movement of patients. When transport is necessary don clean PPE, place face mask on patient, and follow respiratory/hygiene etiquette.
- Equipment (stethoscope, BP cuff, pulse oximeter) must be cleaned and disinfected between each patient (e.g., by using ethyl alcohol 70%).
 - Equipment should not be moved between rooms.
- No visitors for suspected or confirmed patients (with the exception of parents for children) as a strategy to help conserve PPE.
- Maintain a record of all persons entering a patient's room or isolation space, including all staff and visitors.

- C. **Airborne precautions for aerosol-generating procedures.** *Indication: tracheal intubation, non-invasive ventilation, tracheotomy, CPR, manual ventilation before intubation, bronchoscopy, nebulizer treatment, use of high flow oxygen masks (i.e. Venturi masks).*

- Perform procedure in adequately ventilated space.
- Don N95 mask in addition to PPE above (gloves, gown, face shield/goggles).
- Limit the number of people in the room to those necessary.
 - There should be no other patients present.

4.7 Table 5: Recommended PPE for those in contact with persons infected with SARS-CoV or infectious material

Item	Description	Technical Specifications
Gown	Single-use, long sleeve, ties in back, length to mid-calf.	<ul style="list-style-type: none"> • EU PPE Regulation 2016/425 and EU MDD Directive 93/42/EEC • FDA Class I or II medical device, or equivalent • EN 13795 any performance level, or • AAMI PB70 all levels acceptable, or equivalent
Particulate respirator, Type N95 or greater	Reserved for HCW in contact with highly aerosolizing procedures (intubation, ventilation, nebulization, deep suctioning, oxygen supplementation with venturi masks)	<ul style="list-style-type: none"> • Minimum "N95" respirator according to FDA Class II, under 21 CFR 878.4040, and CDC NIOSH, or • Minimum "FFP2 according to EN 149, EU PPE • Regulation 2016/425 Category III, or equivalent
Surgical mask	Used by all HCWs in normal care settings for COVID cases, and for patients who may expose others	EU MDD Directive 93/42/EEC Category III or equivalent <ul style="list-style-type: none"> • EN 14683 Type II, IR, IIR • ASTM F2100 minimum level 1 or equivalent
Face shield or goggles (below)	Made of clear plastic and providing good visibility to both the wearer and the patient. Adjustable band to attach firmly around the head and fit snugly against the forehead. Completely cover the sides and length of the face. May be re-usable (made of robust material which can be cleaned and disinfected) or disposable.	EU PPE Regulation 2016/425 <ul style="list-style-type: none"> • EN 166 • ANSI/ISEA Z87.1
Goggles or face shield (above)	Good seal with the skin of the face, flexible PVC frame to easily fit with all face contours with even pressure, enclose eyes and the surrounding areas, accommodate wearers with prescription glasses, adjustable band to secure firmly so as not to become loose during clinical activity, indirect venting to avoid fogging. May be re-useable or disposable.	EU PPE Regulation 2016/425 <ul style="list-style-type: none"> • EN 166 • ANSI/ISEA Z87.1 or equivalent
Gloves, exam, non-sterile	Gloves, examination, nitrile, powder-free, non-sterile, single-use Gloves should have longer cuffs, reaching above the wrist. Sizes: small, medium, large.	EU MDD Directive 93/42/EEC Category III <ul style="list-style-type: none"> • EU PPE Regulation 2016/425 Category III • EN 455 • EN 374 • ANSI/ISEA 105, • ASTM D6319, or equivalent

4.8 Table 6: Donning and Doffing of PPE

Putting on (donning) and taking off (doffing) PPE is an important part of infection control as improper placement of protective gear places staff at risk. Similarly, contamination of mucous membranes while removing gear can expose staff to the virus. (Please see additional details about PPE guidance in annex) Please see annex for further detail on PPE strategies.

Donning	Doffing
<ol style="list-style-type: none"> 1. Perform hand hygiene* 2. Don gown 3. Don N95 respirator mask/surgical mask 4. Don face shield 5. Don gloves, ensuring wrist covered 	<ol style="list-style-type: none"> 1. Remove gloves 2. Perform hand hygiene 3. Remove gown 4. Perform hand hygiene 5. Remove face shield 6. Perform hand hygiene 7. Leave the treatment area 8. Remove N95 (outside the treatment area) 9. Perform hand hygiene 10. Thoroughly wash hands with soap & water

*When using alcohol-based hand gel, allow gel to dry before continuing.

4.9 Table 7: Strategies for Conserving PPE

Conservation of PPE can begin prior to any cases of covid-19 detection. It is CRITICAL that as triage and isolation systems are rapidly planned and implemented, early efforts are made to **conserve PPE** as stock is limited globally. Conserving PPE now will ensure enough supplies to keep providers safe throughout the epidemic. Please see annex for further detail on PPE strategies.

Strategies for conserving PPE

- When evaluating patients with concern for coronavirus, providers should wear a surgical mask, gown, gloves, and eye protection. N95 masks should **only** be used for aerosolizing procedures for coronavirus patients (such as nebulization, NIPPV, and intubation) or with patients that require Venturi masks for oxygen supplementation. This is a WHO and CDC recommendation. Some procedures (nebulization, NIPPV) should be avoided unless absolutely necessary.
 - When possible, concentrate patient care activities to minimize sets of PPE needed. For example, take vital signs and give medications at the same time to use one set of PPE instead of returning a second time and using a second set of PPE.
 - Minimizing people in an isolation area or for a patient needing PPE to the caregivers involved in direct care of those patients. For example:
 - For patient rounds, consider only having the direct caregivers interact with the patient rather than members of the team responsible for the care of other patients.
 - On any single day, try to have a dedicated set of caregivers for an isolation area, and another set for a non-isolation area, instead of a larger number of caregivers that work in both.
- 6 Limit the number of observers and non-essential personnel in operating rooms to reduce the use of masks and gowns.
- 7 As needed, consider the extended use of masks between patients (meaning that the mask is not removed between patients but stays on a provider's face continuously). These strategies are being used at many hospitals, including many in the United States. CDC guidelines for extended use (including when the mask should be changed) can be found at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/contingency-capacity-strategies.html>
- 8 Eye protection can be cleaned with a bleach solution and reused between patients.
- 9 To ensure that global PPE shortages do not negatively impact care of any kind of patient (including TB patients and surgical patients), it is important to conserve the use of PPE in all clinical areas.

Please note none of these suggestions should detract from patient care. The safety of staff and patients is always the top priority!

4.10 N95 Equivalencies

While the purchase of N95 masks will be prioritized, it is likely that due to global PPE shortages, procurement of substitutes for N95 masks will be needed. The CDC provides the following guidance below on purchase and subsequent use of N95 substitutes.

Taken from CDC website: <https://www.cdc.gov/coronavirus/2019-ncov/hc/respirators-strategy/crisis-alternate-strategies.html>

Use of respirators approved under standards used in other countries that are similar to NIOSH-approved N95 respirators

Other countries approve respirators for occupational use and approve respirators to these standards. These products are evaluated using some methods similar to those used by NIOSH, and some methods that are different, but are expected to protect HCPs. These respirators are expected to provide protection to workers. Those with equivalent or similar protection to NIOSH-approved respirators may be available to provide respiratory protection to workers exposed to harmful airborne particulate matter. These devices are expected to be suitable alternatives to provide protection during the COVID-19 response when supplies are short. The country, conformity assessment standards, acceptable product classifications, standards and guidance documents, and protection factor determination are provided in alphabetical order. All of these respirators have protection factors of at least 10 in the countries listed below, as outlined in the standards and guidance documents specified.

Country	Performance Standard	Acceptable product classifications	Standards/Guidance Documents	Protection Factor ≥ 10
Australia	AS/NZS 1716:2012	P3 P2	AS/NZS 1715:2009	YES
Brazil	ABNT/NBR 13698:2011	PFF3 PFF2	Fundacentro CDU 614.894	YES
China	GB 2626-2006	KN 100 KP100 KN95 KP95	GB/T 18664—2002	YES
Europe	EN 149-2001	FFP3 FFP2	EN 529:2005	YES
Japan	JMHLW-2000	DS/DL3 DS/DL2	JIS T8150: 2006	YES
Korea	KMOEL-2017-64	Special 1st	KOSHA GUIDE H-82-2015	YES
Mexico	NOM-116-2009	N100, P100, R100 N99, P99, R99 N95, P95, R95	NOM-116	YES
US NIOSH Requirements	NIOSH approved 42 CFR 84	N100, P100, R100 N99, P99, R99 N95, P95, R95	OSHA 29CFR1910.134	YES

4.11 Options for when recommended PPE is not available

- A. Maintain > 1 meter distance to avoid inhalation of droplets or droplets making contact with mucous membranes.
- B. Frequent hand washing >20 seconds.
- C. Avoid touching face, mucous membranes.
- D. Avoid touching surfaces without gloves.
- E. If performing aerosolizing procedure that would normally need an N95, consider double surgical mask, and remaining out of direct-line from patient's nose, mouth.
- F. Any additional eye protection can be used to cover the eyes.

4.12 Decontamination of PPE equipment

- A. 70% ethyl alcohol to disinfect small areas between uses, such as reusable dedicated equipment (for example, thermometers).
- B. Sodium hypochlorite at 0.5% (equivalent to 5000 ppm) for disinfecting surfaces.
- C. Reusable face shields can be soaked in sodium hypochlorite 0.5% for 1 hour and left in a clean, open space to dry for at least 1 hour.
- D. If reusable gowns are used, they should be machine washed with warm water at 60-90° C with laundry detergent is recommended. The laundry can then be dried according to routine procedures.
 - a. If machine washing is not possible, linens can be soaked in hot water and soap in a large drum using a stick to stir and being careful to avoid splashing. The drum should then be emptied, and the linens soaked in 0.05% chlorine for approximately 30 minutes. Finally, the laundry should be rinsed with clean water and the linens allowed to dry fully in sunlight.

4.13 Discharge of Patients from Facility:

Once a patient is breathing without oxygen and able to perform basic functions, the patient may be discharged. In some settings, a negative PCR x 2 is performed. As Ab and Ag tests are widely available and have increased data associated with them, they may be able to be used for discharge. Patients who recover from COVID-19 may shed the virus as long as 37 days with a median of 20 days. Therefore, if the patient is not cleared by successive negative PCR tests, it is reasonable to keep the patient isolated for 21 days from the onset of symptoms.

- A. Consider discharging patient from hospital when they are clinically stable (clinician judgement) and meet the following criteria:
 - Oxygen saturation $\geq 94\%$.
 - Respiratory rate < 22.
 - BP > 90/60.
 - No signs of increased work of breathing, respiratory distress.
- B. Asymptomatic for > 72 hours.
- C. Refer patient to psychosocial support program.

4.14 Surge situations

- A. Growing patient numbers can outpace hospital capacity, requiring adjustments to operations.
- B. Ideally, hospitals should have an incident command structure set up before this happens. If not, an ad hoc structure can be created:

4.15 Table 8: Incident Management Committee

Recommended membership for hospital incident command center	
Administration	Security
Communication	Pharmacy
Medical personnel and nursing administration	Laboratory
Infection control	Maintenance and engineering
Respiratory therapy	Dietary services
Human Resources	Laundry, cleaning, and waste management

4.16 Managing surge capacity:

- A. Estimate both your maximum total demand and your maximum total capacity (including space, supplies, and staff).
- B. Plan for staffing interruptions. Staffing needs will surge, and risk of staff exposures or illness can increase.
- C. Identify what services must be preserved and maintained at all times. Consider prioritizing in order to temporarily stop some services.
- D. Plan in advance for changes in where patients are admitted as patient numbers increase.

4.17 Table 9: Strategies for Managing Surge and Increasing Hospital Capacity.

Strategies for managing surge capacity: increasing hospital capacity
<ul style="list-style-type: none"> • Converting wards typically used for other reasons into COVID-treatment wards. • Cancelling elective procedures and surgeries (at least 1 week prior to patient surge). • Shifting outpatient appointments to other times or settings. This may be particularly useful for chronic disease, for example. • CHWs distribute medication refills. • Phone or text messaging for virtual appointments instead of in-person consultation. • Consider increasing the time duration between follow up visits for stable patients, so they are given sufficient quantities of medications until their next visit. • Shift non-coronavirus inpatients to alternate treatment sites. For example: <ul style="list-style-type: none"> • Malnutrition treatment to health centers or local community settings or CHW supported. • Transition patients on long courses of antibiotics to oral antibiotics and home. • Move all routine hospital outpatient visits (e.g. ANC, <5) to primary care centers to repurpose outpatient space for inpatient or isolation beds. • Identify alternate treatment sites for mild cases (churches, hotels, schools, etc.) with local authorities. • If several beds can be freed from each ward, wards can be combined to create an empty space for COVID treatment. • These approaches require a multidisciplinary team, including physicians, nurses, CHWs, facilities managers, and hospital administration. • Allocation of advanced care services may become necessary for treatment such as oxygen therapy or ventilation. There are two key recommendations to consider: <ul style="list-style-type: none"> • Plan in advance: this is critical to ensure equity and to protect staff from making very difficult decisions without support. • Focus on saving the most amount of lives and likelihood of survival <i>from COVID-19</i>: Allocation systems which incorporate factors such as age, gender, social or economic characteristics, or other illnesses may lead to inequity and be difficult to apply. In addition, some of these (e.g. age) will already impact likelihood of survival and therefore are inherently included.

4.18 Table 10: Strategies for Rationing protocols and Allocation Systems

Principles to consider in rationing protocols	
1	Health care providers have a duty to provide care.
2	Health systems have a duty to responsibly and equitably manage resources.
3	Health systems have a duty to plan for these scenarios to avoid placing the burden on frontline health care workers.
4	Rationing systems should ensure just and equitable allocation of resources.
5	Protocols and decisions must be transparent.
Procedures to consider for allocation systems	
1	Utilize an officer or committee to guide decisions. This can help avoid individual health care workers from making tough decisions alone.
2	A simple system might include: <ul style="list-style-type: none"> • <i>Assessing eligibility.</i> Exclusion criteria for advanced care resources may include factors that will lead to near-term death regardless of intervention (e.g. cardiac arrest, irreversible septic shock and/or organ damage, severe traumatic brain injury). • <i>Standardize risk assessment:</i> A replicable way for an officer or committee to use clinical data to assess mortality risk can help determine patients most likely to survive coronavirus infection. One example is the Sequential Organ Failure Assessment (SOFA) calculator. • <i>Reassess at routine intervals:</i> Decisions should be ongoing as clinical parameters change.

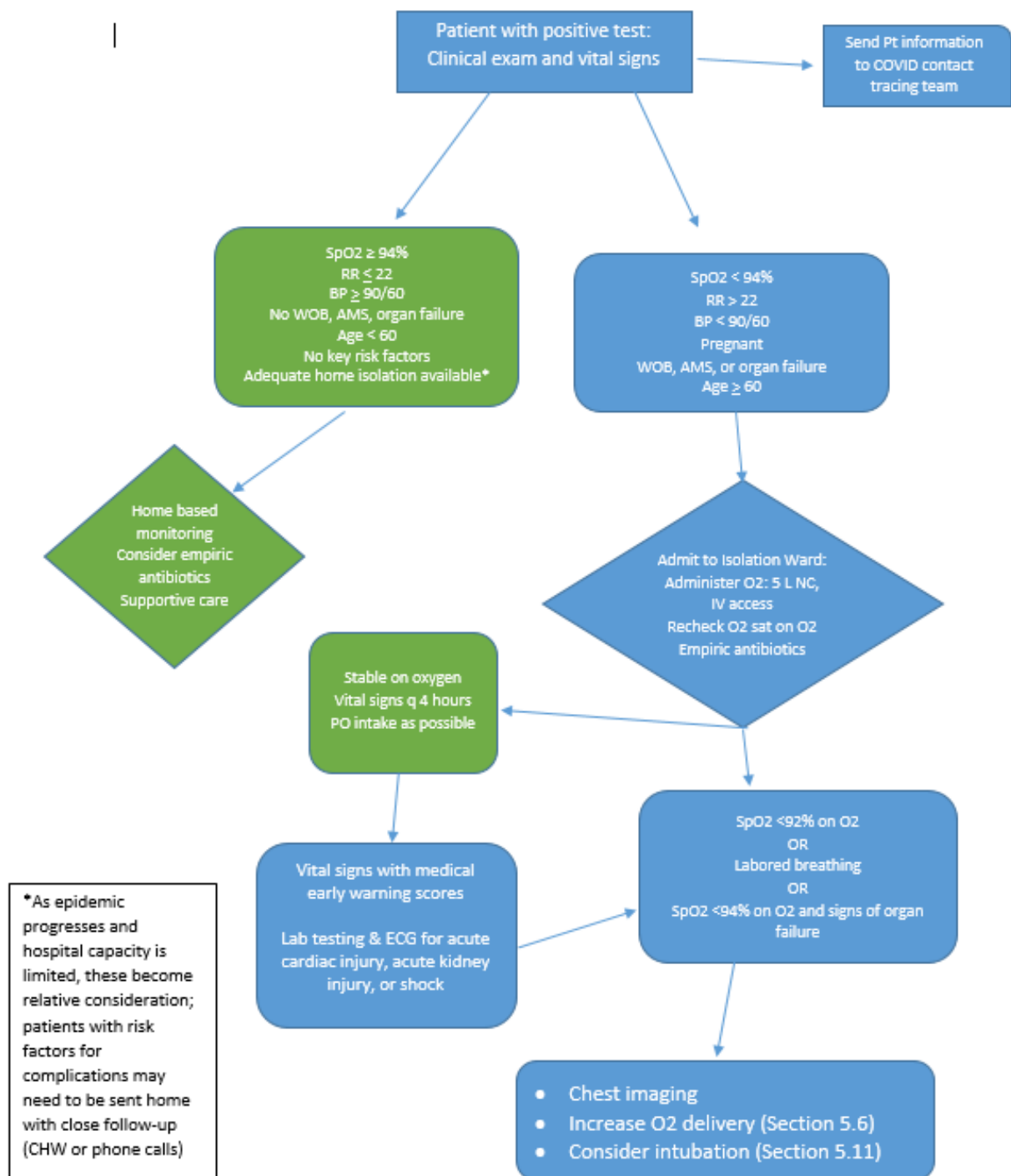
5 Clinical Management of Patients with COVID-19

As of March 20, 2020 there is no vaccine to prevent COVID-19 and there is no approved therapy for this disease. The strategy to manage patients with COVID-19 is to assess their severity. For those who are mildly symptomatic, they should remain at home with social support that allows for safe isolation. Unfortunately, more than 15% of those suffering from COVID may become severely ill. This percentage may be even higher in countries with high rates of immune suppression from HIV, TB or malnutrition. Delivering high quality supportive care will be lifesaving. Treatment ranges from oxygen and IV fluids to mechanical ventilation. There are some drugs described in this section that may have anti-viral activity against COVID-19 and can be used in serious cases in an off-label manner. This guide will be regularly updated as new therapies become known.

5.1 Initial Evaluation of a confirmed COVID-19 patient

The most common serious illness among patients with COVID is pneumonia. The initial evaluation of the patient with confirmed COVID-19 disease is to assess the blood pressure, pulse, respiratory rate and oxygenation of the patient. Assessment should only be done by personnel in proper PPE.

5.2 Figure 2: Initial assessment of a confirmed patient with COVID



5.3 Mild COVID-19 and Home-Based Management

Providing care at home should be considered for patients with mild illness where there is no concern for rapid deterioration, and for those who are symptomatic but no longer require hospitalization. In environments where home-based care and quarantine is not possible other options could be

considered such as rented houses, hotels, or schools. The following guidelines should then be applied with minimum stay being 14 days and until full recovery. For full recovery patients need to have been symptom free for at least 72 hours with they are released from isolation. In some cases, a PCR (or other tests as they become available) will be used to confirm that the patient is no longer shedding virus.

- Home Assessment: If possible, a healthcare or community health worker should assess the home to assist with isolation procedures and ensure a safe environment.
- Communication: The patient and family should be provided with clear instructions of what to do and who to call if the condition worsens. These are good strategies to disseminate widely through community education initiatives so good understanding of home based care is widely present in the community.
- Education: The patient and family should be educated about home isolation procedures and infection prevention

5.4 Table 10: Considerations for Home-based care for patients with mild COVID-19

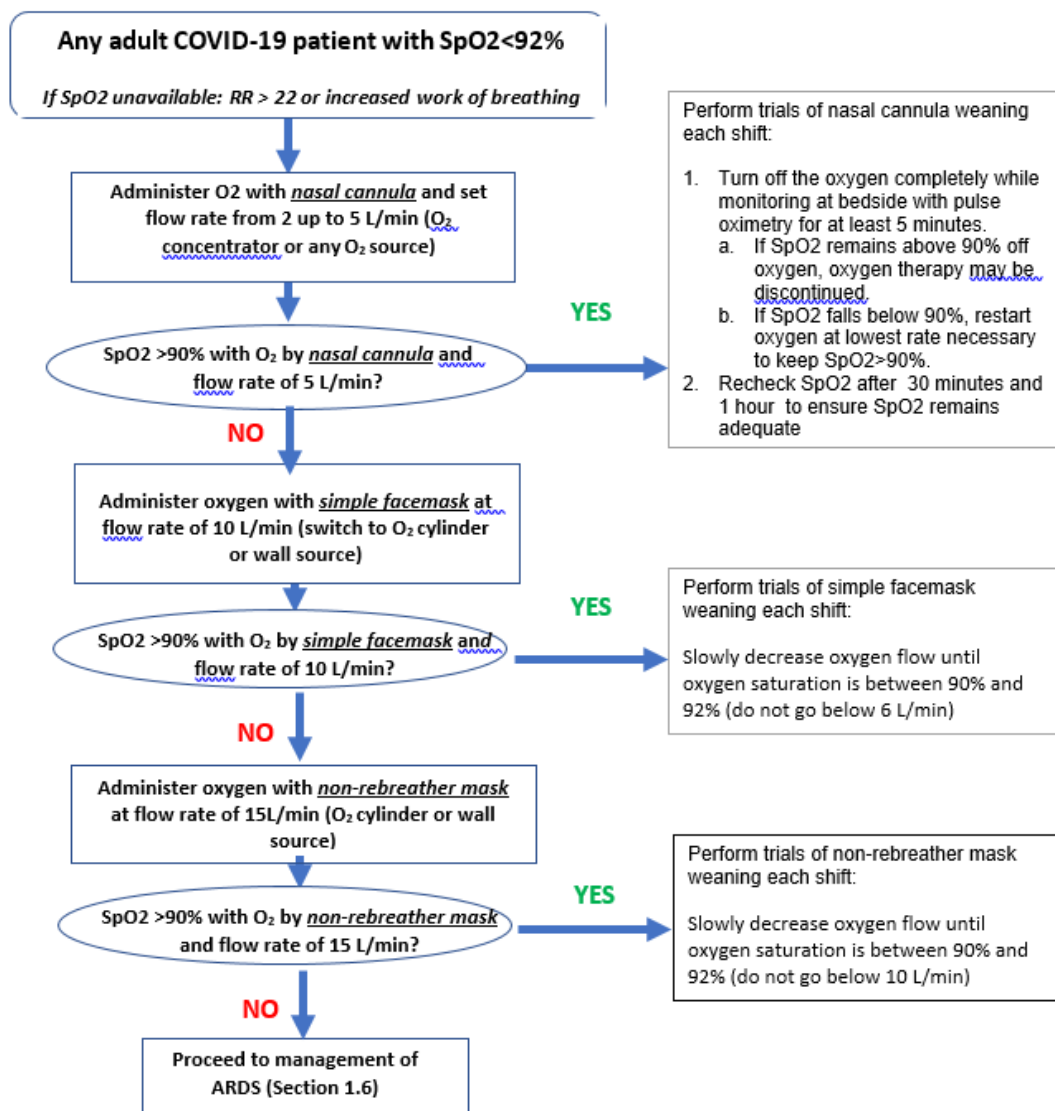
Considerations for Home-Based Care	
Isolation	<ul style="list-style-type: none"> • Quarantine should last 14 days. No visitors during this time. • Social support, including food supplementation is critical. • Well-ventilated single room; maintain distance of >1 meter from other household members. • Minimize use of shared spaces and eating utensils; ensure that spaces are well ventilated. If a fan is available, point it out of one window and keep another window open to facilitate increased air exchange in the room. • Assign one person to be the caregiver. • No visitors should come to the home during the 14 days.
Hygiene	<ul style="list-style-type: none"> • Wash hands after any type of contact with the patient, before and after preparing food, and before eating. • Cover mouth with cloth or paper when coughing or sneezing. • Clean eating utensils with soap and water after using. Clean linens with detergent and surfaces with soap.
Materials	<ul style="list-style-type: none"> • Safe distance should be focused on for patients in isolation and masks should be preserved for health care workers. • Cloth masks are NOT recommended. • Use dedicated sheets and eating utensils for the patient. • Bleach solutions can be diluted 1 part bleach to 9 parts water to make 0.5% solution from 5% pure bleach.
Care	<ul style="list-style-type: none"> • Assess for and provide home care kits including food support. Please see social support section in final chapter. • Monitor daily for worsening symptoms. Call healthcare provider or report to facility if patient develops shortness of breath, altered mental status or severe sleepiness, inability to eat/drink or walk, or has any other significant change in condition. • Community Health Workers should visit on a frequent basis, checking in with family members and patients <i>outside</i> the home rather than entering, maintaining a distance of at least 1 meter away.

	<ul style="list-style-type: none"> If the patient worsens and needs to be transported to a facility, where possible the CHW can have adequate face masks to give to the family prior to transport If possible, the CHW can offer families a small bag of Paracetamol and Oral Rehydration Solution to help generate trust. This trust could help with coordination efforts if the patient's condition worsens.
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5.5 Management of patients with COVID-19 Pneumonia requiring oxygen
If the initial assessment shows that the patient has hypoxia, or a rapid respiratory rate, supplemental oxygen should be given with a goal is to maintain the oxygen saturation (SpO₂) 92% to 96%.

- Oxygen delivered by nasal cannula (at 2 to 5 L/min) FiO₂ 25-49%
- If oxygen saturation remains <90% with O₂ by nasal cannula at 5 L/m then administer oxygen with simple facemask (at 6-10 L/min) FiO₂ 40-60%
- If oxygen saturation remains <90% with simple face mask, administer oxygen with non-rebreather facemask (at 10-15L/min) FiO₂ 60-95%

5.6 Figure 3: Management of Oxygen in Patient with COVID-19 pneumonia



5.7 Figure 4: Oxygen delivery systems for different levels of flow

Oxygen Delivery	Oxygen Flow	Acceptable Oxygen Sources		
 Nasal cannula/prongs	1 to 5 L/min	 Oxygen concentrator	 Oxygen cylinder	 Piped oxygen from central source
 Simple facemask	6 to 10 L/min	 Oxygen concentrator	 Oxygen cylinder	 Piped oxygen from central source
 Non-rebreather	10 to 15 L/min	 Oxygen concentrator	 Oxygen cylinder	 Piped oxygen from central source

Note that nebulizer treatments should be used very sparingly as they pose a significant risk to staff exposure. Efforts should be made to limit nebulizers to patients who really need them including those wheezing and/or patients with asthma or COPD.

5.8 Oxygen weaning protocols:

- A. As the patient improves they may be weaned off oxygen: For patients who are and receiving oxygen by nasal cannula, trials of oxygen weaning should be done each shift.
 - Turn off the oxygen completely while monitoring at bedside with pulse oximetry for at least 5 minutes.
 - If oxygen saturation falls below clinical target (92% if no target specified), restart the oxygen at the lowest flow rate necessary to meet the patient's clinical goal.
 - If patient maintains saturations above clinical target without oxygen, oxygen therapy may be discontinued.
 - Monitor oxygen saturation 30 minutes later and then again at 1 hour to ensure saturation remains adequate without oxygen therapy.




- B. For patients who are stable and on simple face mask or non-rebreather, trials of oxygen weaning should be done each shift by slowly decreasing oxygen flow until oxygen saturation is between 92% to 96%.

5.9 Table 11: Determining Fraction of Inspired Oxygen (FiO₂)

Oxygen Device	O ₂ Flow (L/min)	FiO ₂
Nasal Cannula	1	0.24
	2	0.28
	3	0.32
	4	0.36
	5	0.40
Simple Facemask	6	0.44
	7	0.48
	8	0.52
	9	0.56
	10	0.60
Non-Rebreather Mask*	10 to 15	~0.80

*Non-rebreather reservoir bag must be fully inflated to be effective

5.10 Figure 5: Type of oxygen delivery and resulting FIO₂

		 Make sure bag is full
O ₂ dose 1–5 L/min	O ₂ dose 6–10 L/min	O ₂ dose 10–15 L/min
FiO ₂ 0.25–0.40	FiO ₂ 0.40–0.60	FiO ₂ 0.60–0.95
Nasal cannula	Simple face mask	Face mask with reservoir bag

- High flow oxygen and Non-invasive positive pressure ventilation (NIPPV)

- Non-invasive positive pressure ventilation (CPAP or BiPAP) is not recommended for coronavirus due to lack of demonstrated efficacy as well as the potential for pathogen transmission (there is a higher risk of aerosolization of particles that can leak into the air around the mask).
- High flow oxygen can be considered in the situation of respiratory failure and no availability of invasive mechanical ventilation. Due to concerns about the risk of aerosolization with high flow oxygen, airborne precautions should be instituted when it is used.

5.11 Management of mechanically ventilated patient

Only facilities with already an established ICU with Mechanical Ventilation procedures available should consider this option, always performed by experience staff.

A. Considerations for Intubation

- Intubation is an *aerosol generating procedure* with increased risk for health worker exposure (see Section 5). Airborne precautions should be established and staff should don appropriate PPE (gown, gloves, N95 mask, eye mask/goggles). Intubation should be done in a private room away from other patients, ideally one with negative pressure if available.
- Only most experienced available staff should perform to minimize risk of multiple attempts and spreading virus particles.
- Pre-oxygenation and rapid sequence induction should be used to avoid manual ventilation of the patient.

B. Initial ventilator settings

- Mode: Assist control volume cycled (AC/VC)
- PEEP: 8 to 10 cmH₂O
- Respiratory Rate: 16 (consider setting higher RR if patient has acidemia or respiratory distress/tachypnea)
- FiO₂: 100% then reduce to PaO₂ goal of >55 (or SpO₂>90%)
- Tidal Volumes: start at 8ml/Ideal Body Weight (IBW) then reduce to 6ml/IBW

C. If available, check arterial blood gas (ABG) 15 minutes after connecting patient to ventilator (I-STAT)

D. If available, check portable x-ray to confirm endotracheal tube placement

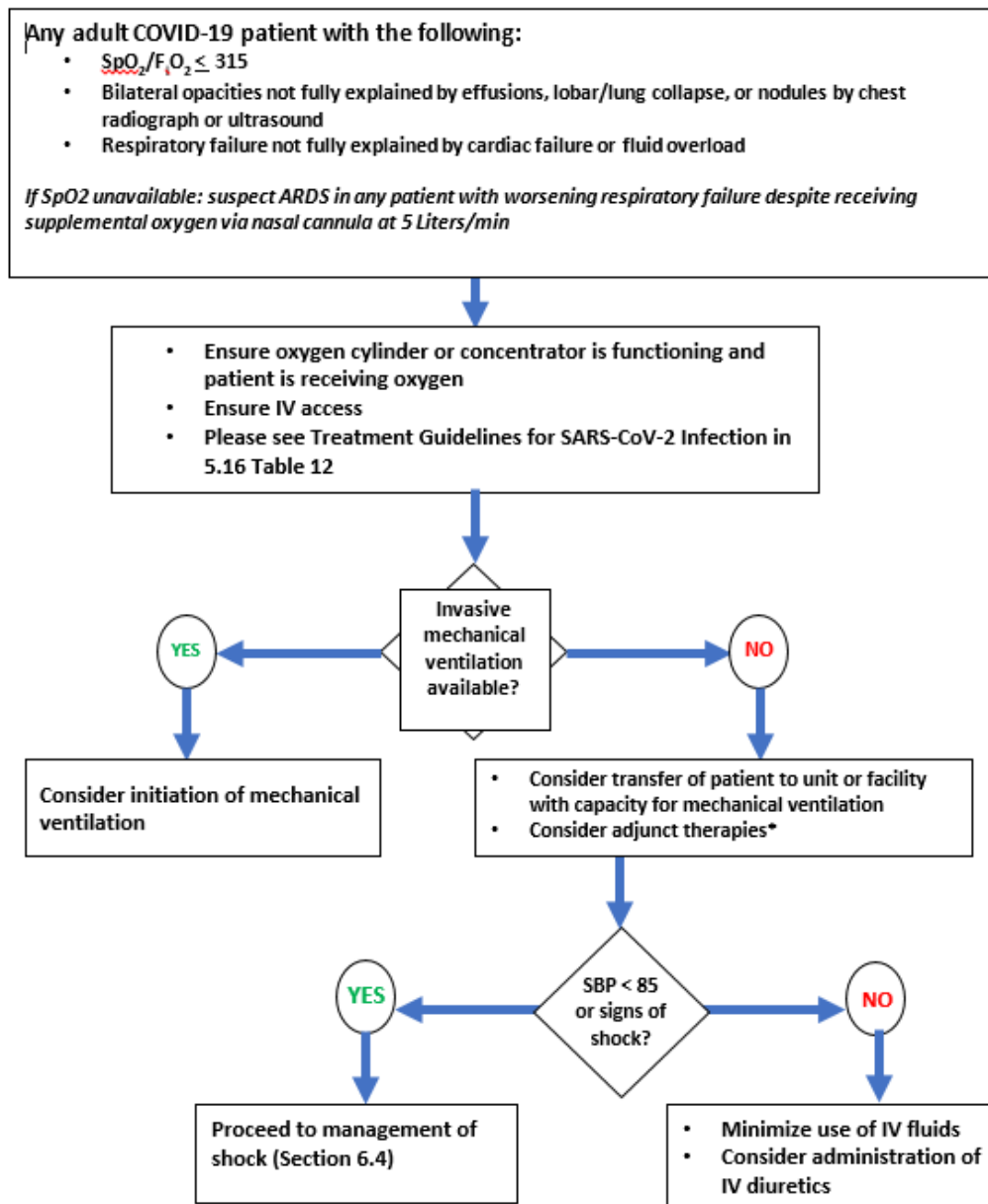
E. Titrate ventilator using a high-PEEP, lung protective strategy

F. Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.

5.12 Acute respiratory distress syndrome (ARDS)

One of the most severe complications of COVID-19 is Acute Respiratory Distress Syndrome. In which breathing becomes extremely labored, the lungs become stiff and the patient's ability to oxygenate is severely impaired. ARDS often is seen on X-ray or CT scan as bilateral opacities in the lungs and often will require mechanical ventilation.

5.13 Figure 6: Management of the patient with ARDS

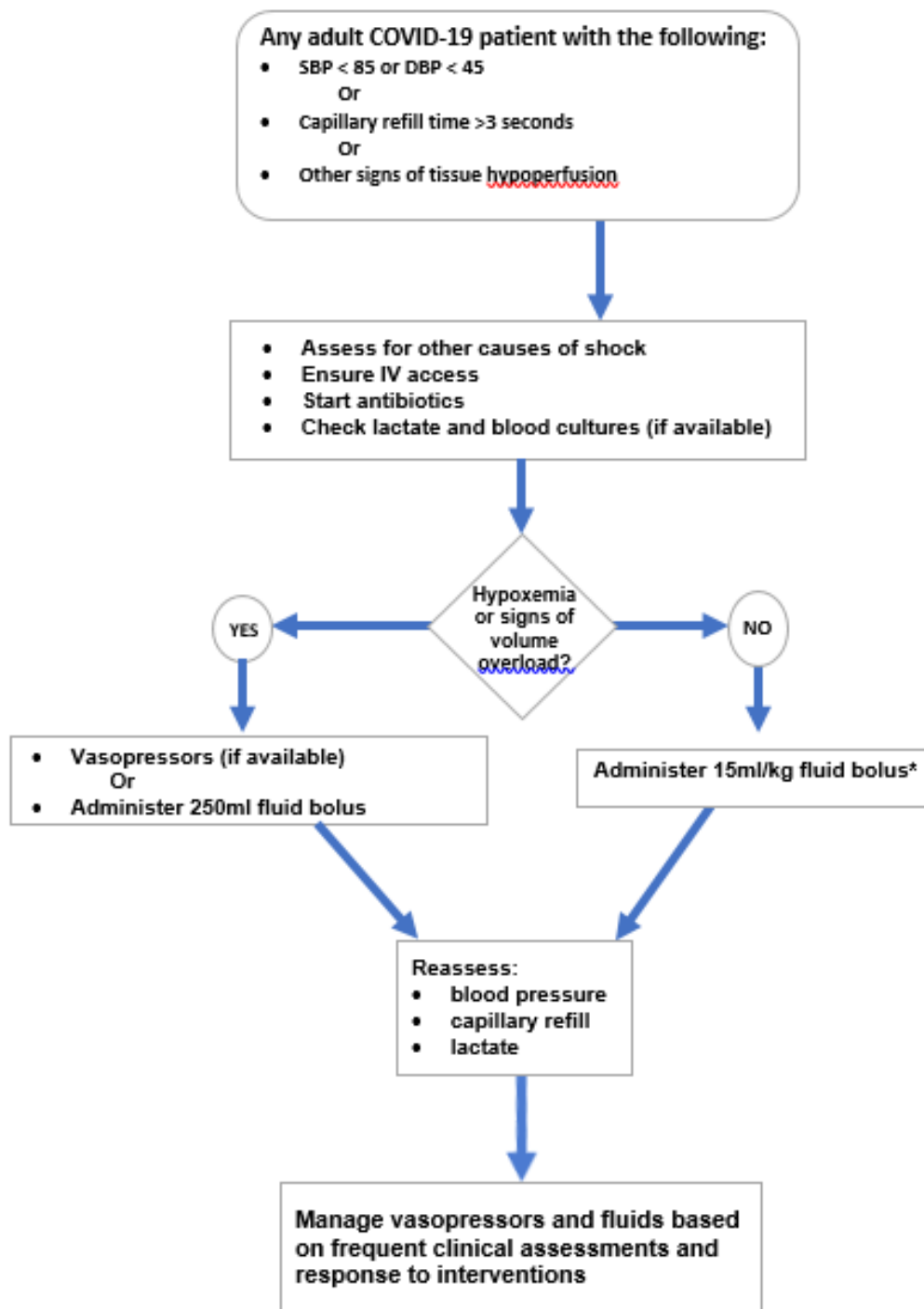


Definitions from the protocol:

- SpO_2 : Oxygen saturation measured from a pulse oximeter
- FiO_2 is defined as the percentage or concentration of oxygen that a person inhales (the fraction of inspired oxygen). The atmospheric air that we inhale on a day to day basis is made up of 21% oxygen.
- Effective oxygen therapy is about finding a balance between delivering the lowest FiO_2 in order to achieve normal oxygen saturations for the patient.
- Hypoxia is not a good thing, but neither is too much FiO_2 .

5.14 Figure 7: Multisystem organ failure/shock

The diagram is meant to illustrate the overall management of organ failure/shock and does not replace more detailed intensive care guidelines.



**Manage vasopressors and fluids based on a conservative fluid strategy: give patients smaller volume fluid boluses (15ml/kg instead of 30ml/kg) and, when available, initiate vasoactive medications (e.g. norepinephrine, dopamine) earlier in the course of shock.*

5.15 Drug therapy:

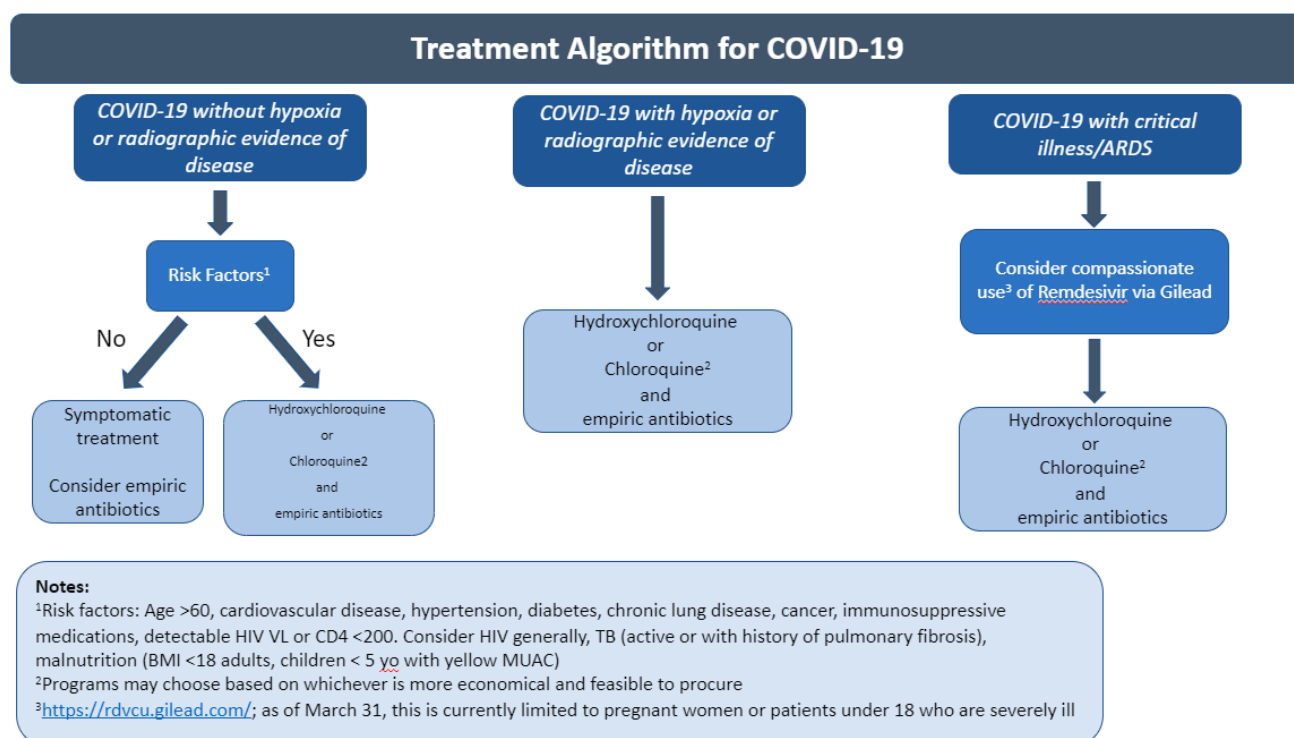
As of March 20, 2020 there are no known therapies for COVID-19. Several drugs have been used and a few more are currently under investigation. The following table and algorithms represent drugs in current use for COVID-19 with minimum data demonstrating efficacy. Remdesivir, also mentioned here, is used in trial conditions or under compassionate use protocols.

5.16 Table 12: **Partners In Health Treatment Guideline for SARS-CoV-2 Infection**

Clinical Severity	Treatment	Considerations
COVID-19 diagnosis without hypoxia AND NO radiographic evidence of disease (if X-ray is available)	Symptomatic treatment Empiric antibiotics: doxycycline for adults and amoxicillin for children for all cases of COVID-19 pneumonia	
COVID-19 without hypoxia or radiographic evidence of disease BUT With risk factors: Age >60, cardiovascular disease, hypertension, diabetes, chronic lung disease, cancer, immunosuppressive medications, detectable HIV VL or CD4 <200 Consider all HIV, TB pts (active or with history of pulm fibrosis), malnutrition (BMI <18 adults, children < 5 yo with yellow MUAC).	First line: Hydroxychloroquine 400 mg PO q12h x 24 hours, then 200 mg q12h for total 5-10 days (depending on clinical course) OR Chloroquine phosphate 500mg PO bid for 10 days AND Empiric antibiotics: doxycycline and ceftriaxone for adults and ceftriaxone for children	Hydroxychloroquine and Chloroquine: <ul style="list-style-type: none"> Adverse events: arrhythmia (QT prolonging effects), cardiomyopathy, bone marrow suppression, and hypoglycemia Caution in: prolonged QT, epilepsy (reduces seizure threshold), porphyria Note: No dosing adjustments For renal or hepatic dysfunction
COVID-19 diagnosis with hypoxia OR Radiographic evidence of disease	First line: Hydroxychloroquine 400 mg PO q12h x 24 hours, then 200 mg q12h for total 5-10 days (depending on clinical course) OR	Hydroxychloroquine and Chloroquine: see above Note: No dosing adjustments For renal or hepatic dysfunction

	<p>Chloroquine phosphate 500mg PO bid for 10 days</p> <p>AND</p> <p>Empiric antibiotics: doxycycline and ceftriaxone for adults and ceftriaxone for children</p>	
<p>COVID-19 with critical illness or ARDS</p>	<p>**Consider compassionate use of remdesivir if patient qualifies via Gilead</p> <p>First line: Hydroxychloroquine 400 mg PO q12h x 24 hours, then 200 mg q12h for total 5-10 days (depending on clinical course)</p> <p>OR</p> <p>Chloroquine phosphate 500mg PO bid for 10 days</p> <p>AND</p> <p>Empiric antibiotics: doxycycline and ceftriaxone for adults and ceftriaxone for children</p>	<p><u>Hydroxychloroquine and Chloroquine</u>: see above</p> <p><u>**Corticosteroids**</u>:</p> <p>Avoid systemic corticosteroids if possible. Data are uncertain, but steroids may carry more risk than benefit in most patients in COVID19 due to reduced viral clearance (based on studies in other coronaviruses)</p> <p>Note: No dosing adjustments For renal or hepatic dysfunction</p>

5.17 Figure 8: Algorithm for Drug treatment for patients with COVID-19



5.18 Table 13: Prevention of Complications in Critically Ill Patients

Prevention of Complications	
Anticipated Outcome	Interventions
Reduce days of invasive mechanical ventilation	Use wearing protocols that include daily assessment for readiness to breathe spontaneously Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions
Reduced incidence of ventilator associated pneumonia	Oral intubation is preferable to nasal intubation in adolescents and adults Keep patient in semi-recumbent position (head of bed elevation 30-45 degrees) Use a closed suctioning system, periodically drain and discard condensate in tubing Use a new ventilator circuit for each patient, once patient is ventilated, change circuit if it is soiled or damaged but not routinely Change heat moisture exchanger when it malfunctions, when soiled, or every 5-7 days
Reduce incidence of venous thromboembolism	Use pharmacological prophylaxis (low molecular-weight heparin (preferred if available) or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those

	with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices)
Reduce incidence of catheter-related bloodstream infection	Use checklist with completion verified by a real time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure ulcers	Turn patient every 2 hours
Reduce incidence of stress ulcers and gastrointestinal (GI) bleeding	Give early enteral nutrition (within 24-48 hours of admission) Administer histamine-2 receptor blockers or proton pump inhibitors in patients with risk factors for GI bleeding. Risk factors for GI bleeding include mechanical ventilation for greater than or equal to 48 hours, coagulopathy, renal replacement therapy, liver disease, multiple comorbidities and high organ failure score
Reduce incidence of ICU - related weakness	Actively mobilize patient early in the course of illness when safe to do so

5.19 Considerations for patients with chronic disease

Patients with chronic conditions have specific risks and needs related to COVID-19 diagnosis and treatment. As health systems are overburdened by illness due to COVID-19, it is crucial that access to essential services be maintained for all, including those with chronic disease. Important strategies for protecting patients with chronic diseases during this period will include infection control (limiting exposure at health facilities), minimizing disruptions in treatment (by shifting to community-based delivery of medications and services), addressing disease-specific considerations regarding COVID-19, and social support (to allow for safe isolation/quarantine as needed).

Considerations for all patients with chronic conditions: HIV, TB, NCDs, mental health	
Risk considerations	All patients with chronic disease are at increased risk of poor health due to disruptions in access to essential health care services.
Strategies to limit COVID-19 transmission	<ul style="list-style-type: none"> • Minimize time spent by stable patients at facilities by increasing the time duration between follow-up clinic visits. <ul style="list-style-type: none"> ○ Provide multiple months of medications ○ Capacitate CHWs to deliver medications to patients' homes (with appropriate infection control measures including PPE) <ul style="list-style-type: none"> • Establish district sites outside health facilities for medication distribution and essential clinical services (e.g. viral load testing, blood pressure measurement) ○ Consider phone-based encounters in place of in-person consultation (some routine clinical decisions can be made without physical exam or testing) • Minimize transmission amongst patients at outpatient facilities: <ul style="list-style-type: none"> ○ Provide patients with specific appointment times or windows to minimize overcrowding ○ Screen patients for symptoms of COVID-19 at point of entry to facility, send for prioritized testing if positive

	<ul style="list-style-type: none"> ○ Set up handwashing stations for all staff and patients at entrance to clinic ○ Increase physical space between patients in waiting areas <ul style="list-style-type: none"> ● Replace group activities (e.g. patient support groups, peer education sessions) with individual outreach, telephone contact, printed materials, radio contact
Considerations for patients with HIV & TB	
Risk considerations	<ul style="list-style-type: none"> ● Immunocompromised patients may be at increased risk of acquisition as well as severe illness, bacterial superinfection. ● Patients with pulmonary TB may be at increased risk of severe respiratory disease. ● Patients with malnutrition and food insecurity are more vulnerable to disruptions in food access.
Disease-specific diagnostic / treatment considerations	<ul style="list-style-type: none"> ● Clinical presentations of COVID may be atypical in patients with HIV and TB (e.g. fever may be less frequent). ● Patients with HIV who present with respiratory symptoms should be evaluated for TB in addition to COVID as clinically indicated. ● A lower threshold for testing, monitoring, and isolation or quarantine of patients with HIV and TB (to prevent contact with people with confirmed or suspected COVID-19 infection) may be considered. ● Person-centered education and support strategies to encourage ARV / TB medication continuation is important to minimize interruptions in treatment. ● Given the high prevalence of malnutrition among patients with TB/HIV, ensuring continued social support including food packages is important for disease control.
Considerations for patients with NCDs	
Risk considerations	<ul style="list-style-type: none"> ● Patients with diabetes, hypertension, heart disease, and obesity have been shown to have higher rates of hospitalization and severe illness due to COVID-19. ● Chronic diseases including type I diabetes and epilepsy may complicate disease course.
Disease-specific diagnostic / treatment considerations	<p><u>T1D:</u></p> <ul style="list-style-type: none"> ● More frequent blood glucose and ketone (blood or urine) monitoring may be indicated, with goal blood glucose level between 4 and 10 mmol/L (70-180 mg/dL) and blood ketones below 0.6 mmol/L during illness. ● Patient education may include: <ul style="list-style-type: none"> -NEVER STOP INSULIN: If there is FEVER, insulin needs are usually higher -Monitor and maintain hydration with adequate salt and water balance -Treat underlying illness and symptoms (fever) <p><u>Cardiovascular disease:</u></p> <ul style="list-style-type: none"> ● There is no clear association between ACE Inhibitor use and adverse outcomes among people infected with COVID-19. Patients on ACE-I should be continued. ● For patients on anticoagulation therapy, fever may increase response to warfarin/Coumadin. INR should be monitored close and the warfarin/Coumadin dose may be reduced if the patients develops fever. <p><u>Chronic respiratory disease</u></p>

	<ul style="list-style-type: none"> There is a lower risk of pneumonia in patients using inhaled steroids. For patients with asthma and COPD, inhaled steroids should not be discontinued due to COVID-19. Cleaning of the mouth after each dose should be reinforced.
Considerations for patients with Mental illness	
Risk considerations	<ul style="list-style-type: none"> Persons with poor health and disease literacy may be less likely to seek care if they have symptoms. Patients who are less able to safely isolate / quarantine couldx accidentally spread COVID-19.
Disease-specific diagnostic / treatment considerations	<ul style="list-style-type: none"> Social isolation may exacerbate underlying mental health problems and increase risk for those living in unsafe environments (intimate partner violence, etc.) <p><u>Depression</u></p> <ul style="list-style-type: none"> Persons with depression may be at risk for worsening symptoms and suicidality with significant social isolation. CHW outreach for patients with depression and suicidality may be needed in order to provide psychosocial support.

6 Occupational Health

5.20 Healthcare worker monitoring

Random testing of healthcare workers is covered in the PIH Guide to Testing and Community Management.

All Healthcare workers interacting with COVID-19 patients should maintain awareness of any early symptoms that may be indicative of COVID-19. If symptoms develop healthcare worker should inform their line manager or respective supervisor and remove themselves from patient care areas. Testing protocol should be initiated, and healthcare worker should self-quarantine until test results are obtained and symptoms resolve. If test is negative and symptoms remain continue to self-quarantine and re-test in 5 days.

5.21 High Risk Exposure **Table 14. High Risk Exposure**

High-risk exposures refer to HCP who have had close contact with patients with COVID-19 and were with-in 1-meter of patient not wearing a facemask or had other breaks in PPE or exposure to biological fluids or respiratory secretions
<ul style="list-style-type: none"> Exposure to symptomatic and confirmed COVID-19 patient (with in 1-meter distance) without proper PPE donned Known exposure with biological fluid/respiratory secretion (ex. Biological fluids/respiratory secretion in mucous membrane – eyes, mouth, nose, non-intact skin) Needle stick with contaminated needle Aerosolizing without proper PPE (i.e. N95 mask, gown, gloves) Cleaning area with suspect or confirmed patient without proper PPE

5.22 Guidelines for Healthcare workers

- Stop all health care interaction with patients for a period of 14 days after the last day of high-risk exposure to a confirmed COVID-19 patient.
- Get tested for COVID-19 virus infection (see test protocols).
- Submit Incident report per hospital protocol.
- Self-quarantine for 14 days and monitor for symptoms.
- If symptoms develop call hospital/health care facility and get re-tested if initial test negative.
- If positive follow guidelines for home-based versus facility-based treatment.

5.23 Guidelines for Healthcare Facility

- Provide psychosocial support to HCW during quarantine, or duration of illness if HCW becomes a confirmed COVID-19 case.
- Provide compensation for the period of quarantine and for the duration of illness.
- Ensure incident report filed.
- Work with IPC & QI team to identify systems improvements for IPC and HCW protection.
- Initiate contact tracing procedures if confirmed positive.

6 Data Collection

6.1 Data flow

Data collection forms have been designed in a modular fashion, to allow for flexible adoption across disparate care delivery contexts. While most forms have been designed for settings where paper and Excel-based data entry are the primary solution, this content is also in the process of being integrated into various digital health platforms, including CommCare, OpenMRS, and REDCap.

The goal for all of the data collection solutions profiled below is to facilitate data-driven service provision while also minimizing data entry burdens on busy staff.

Please see annex for further detail and data collection forms.

6.2 Forms

Based on WHO standard forms and input from PIH's clinical leads, individual-level forms have been developed to cover the following topics (see attached annexes for copies of each of these):

- Symptom screening for COVID-19 cases and contacts
- Lab testing registers & lab request & result forms
- Patient intake and exposure history for COVID-19 cases and contacts
- Facility admission, daily progress, and discharge forms
- Final outcomes for COVID-19 cases and contacts

Additionally, several registers have been developed to facilitate efficient tracking of large numbers of cases and contacts who may need to be followed over time in community and facility settings:

- Contact tracing and isolation monitoring register for COVID-19 contacts
- Suspected case testing follow-up register
- Case monitoring in community register
- COVID-19 Patient treatment register

The following forms are currently under development and will be available soon:

- Management of home-based care patients (daily symptom diaries, etc.)
- Mental health and social support forms

6.3 Practical concerns

In times like these where PPE is in short supply and we are fighting a disease with high transmissibility, data collection practices must adapt—for example, paper forms should not exit isolation areas and data collection staff should not enter these areas unless they are equipped with appropriate PPE. In order to continue collecting data under these circumstances, some creative tactics may be employed.

For example, clinicians with appropriate PPE use paper forms to record vital information. For information that needs to leave the isolation unit for programmatic or research purposes, a cell phone or tablet can be used to photograph the data forms. Data clerks outside the isolation unit can then enter the data from the photographs into Excel. If the isolation unit is internet connected, the photos can be securely transmitted electronically, using Microsoft 365 shared folders or other encrypted file sharing solution (email Dave Mayo dmayo@pih.org for advice on specific secure data transfer options). If the isolation units are not internet connected, the cell phone or tablet can be sterilized and brought out of the isolation unit to share the photos with data clerks through wired upload from phone to laptop.

For community health workers or other outreach staff collecting data at households or other community settings, IDinsight has created a helpful guide with resources for maximizing staff safety even as they engage in this important work (<https://www.idinsight.org/data-collection-practices-and-recommendations-for-covid-19>)

6.4 Digital data collection tools

For sites with sufficient human resources and other required infrastructure, digital data solutions may allow health workers to avoid lengthy paper forms and benefit from real-time decision support and other features available through phone or tablet-based applications. Currently, there are a variety of COVID-19 modules built in software platforms that are commonly used at PIH sites, specifically:

- **CommCare:** Standard application available based on WHO FFX protocol; a simplified, PIH-specific app under development by Zanmi Lasante, which could be adapted to other care delivery site contexts. A simple SMS-based app also under development to assist with home-based monitoring for mild cases in self-isolation.
- **OpenMRS:** COVID-19 related laboratory functionality in use at 2 PIH facilities: University Hospital in Mirebalais, Haiti, and Wellbody Health Center in Sierra Leone. Additional functionality currently under development by the OpenMRS global community.
- **REDCap:** App under development by Harvard Research Core to support operational research around healthcare provider screening; Research Core team is available to help create a broader suite of REDCap forms to support patient care, if requested.

For sites interested in potentially using/adapting an application in CommCare, REDCap, or OpenMRS, please contact Annie Michaelis (amichaelis@pih.org).

6.5 Aggregation, synthesis & dissemination of data

Whether entered in Excel or a digital health solution, data can be imported into PIH's data warehouse and then aggregated into helpful dashboards using JET Reports or PowerBI. Draft dashboards are under development. To provide inputs on what data would be most useful to see visualized in PIH dashboards please email BostonSIS@pih.org.

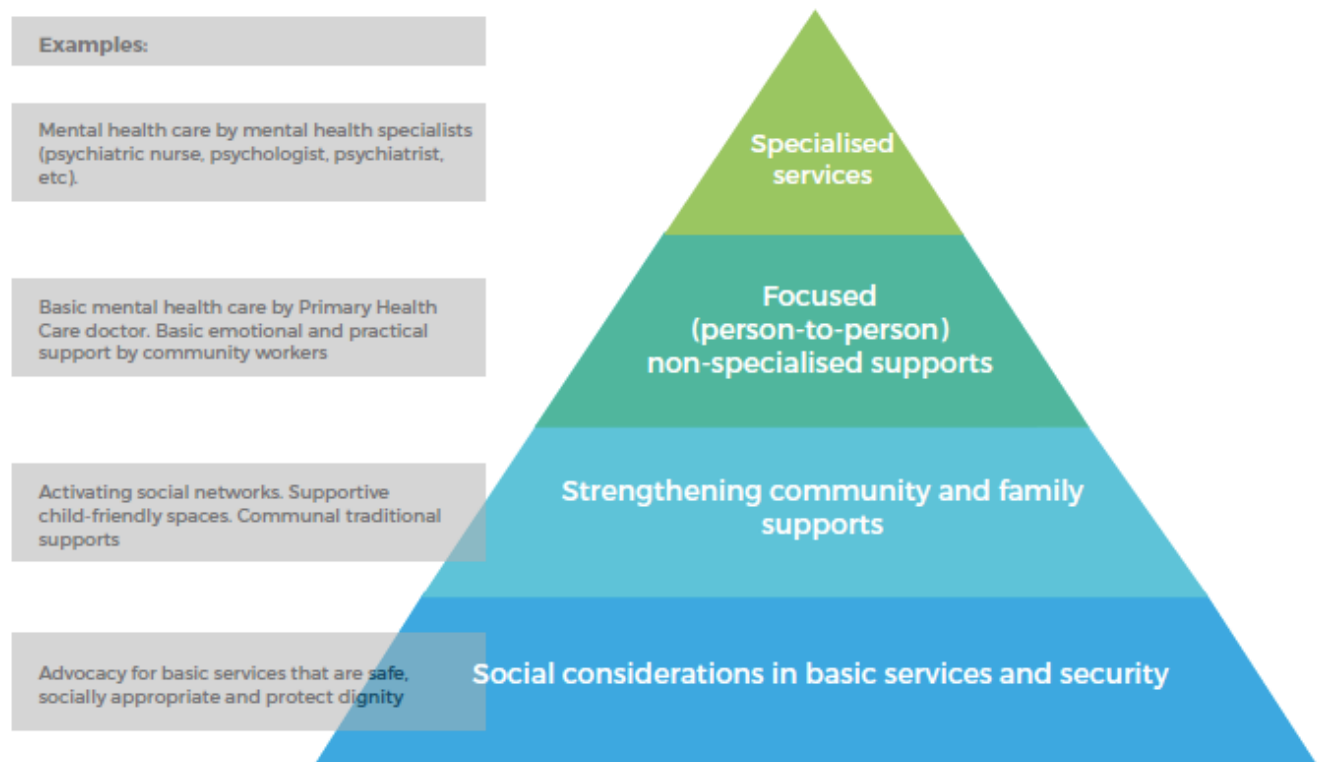
7 Mental Health and Psychosocial Support

The following guidelines have been articulated to help teams to mount an initial mental health and psychosocial response to the COVID-19 pandemic. These guidelines are in part adapted from the Inter-Agency Standing Committee (IASC) Guidelines on Mental Health and Psychosocial Support in Emergency Settings, the recent WHO updates for COVID19 response, and previously articulated PIH guidelines.

7.1 Initial Response

The Guidelines recommend that multiple levels of interventions be integrated within outbreak response activities. These levels align with a spectrum of mental health and psychosocial needs and are represented in a pyramid of interventions ranging from embedding social and cultural considerations in basic services, to providing specialized services for individuals with more severe conditions (Figure 9)

7.2 Figure 9: Intervention pyramid for mental health and psychosocial support (IASC)



During this first acute emergency stage, the focus of mental health and psychosocial support response should be to work closely with the broader health and public health system to strengthen efforts of Ministries of Health on infection risk management and treatment, including: 1) prevention of COVID-19 transmission; 2) support of surveillance, case triage and contact tracing; 3) support of

persons testing positive and those in quarantine/isolation, as well as their family members; and 4) support for health care workers.

7.3 Recommended initial actions in the acute phase of the response

- 1) Facilitate a collaboration across teams and stakeholders, both within PIH (such as community health and POSER programs) and with Ministries of Health, to ensure a coordinated response.
- 2) Develop a plan to continue supporting the ongoing mental health and psychosocial services at sites.
- 3) Assess what human, financial and other resources are available for the MHPSS COVID19 response.
- 4) Establish a strategy for supporting specific groups affected by the pandemic, including individuals testing positive for COVID19, those in quarantine/isolation and their families, as well as the elderly, those with disabilities, and children.
- 5) Work closely with CH to ensure that front-line workers have accurate information on COVID19.
- 6) Train all front-line workers on essential psychosocial care principles, including communication techniques, psychosocial care principles, psychological support, and referral pathways.
- 7) Develop M&E system for MHPSS activities.

7.4 Interventions and specific activities

Communities

Sharing of helpful information and coping strategies to help all community members adapt to social distancing, and a situation of “acute on chronic uncertainty”:

- It is normal to feel sad, distressed, worried, confused, scared or angry during this crisis. Anxiety related directly to fear of contracting Covid-19, or related to the short or long term consequences of the crisis related to Covid-19, is normal. Talk to people you trust. Contact your friends and family.
- Social distancing does not mean emotional distancing; use technology to connect widely. Keep in touch with family and friends through email, phone calls, video chat, and use of social media platforms.
- While staying at home maintain a consistent routine and a healthy lifestyle (including a proper diet, sleep, exercise and social contact with loved ones at home and through use of technology). Exercise and physical activity daily. Try to maintain clear routines and schedule, 7 days a week—don’t go overboard, particularly with children. Don’t let your own anxiety dictate an overly rigid schedule for children.
- Maintain a tone of positive family time in the household. It is essential to work together as a household to manage tensions and provide positive support to children, elderly and vulnerable family and community members. All need to feel safe, and have a sense of power and responsibility until there is greater clarity. Work together to counter negativity. In crises such as these child abuse can increase in some households.
- Model positive behaviors for children. Be conscious of the use of language, or the expression on strong emotions. Don’t use tobacco, alcohol or other drugs to cope with your emotions. These promote depression, erratic behavior, and poor sleep.
- Limit exposure to television and internet news; choose small windows and then find ways to cleanse yourself of it. Search information from reliable sources, reduce time looking for information (1-2 times per day, rather than every hour), and reduce time paying attention to rumors.

- Remember the things that you really enjoy doing, that you can do in this situation, and find a way to do them. Draw on skills that you have used in the past during difficult times to manage your emotions during this crisis.
- Engage in relaxation or spiritual exercises (e.g. breathing, meditation, mindfulness, religious practice), as well as physical movement (stretching, yoga)
- Bathe daily, if possible, to reinforce the feeling of cleanliness.
- If you feel overwhelmed, talk to a health worker, social worker, similar professional, or another trusted person in your community (e.g., religious leader or community elder), or by phone or video.
- Have a plan where to go and seek help for physical and mental health and psychosocial needs, if required.

7.5 Social support and COVID-19

Access to social support enhances treatment success and/or stops the spread of the virus, and provides essential components to maximize prevention among the most vulnerable groups. Indications and packages for social support may vary depending on context.

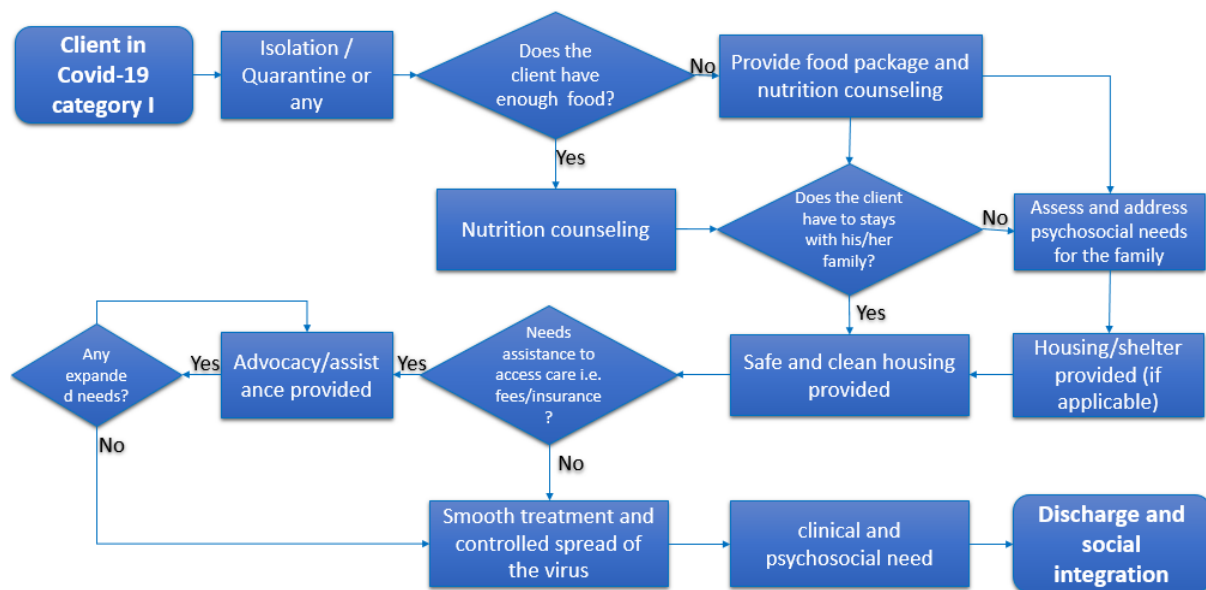
Category I	Patient diagnosed with coronavirus Individuals in isolation/quarantine Patient with severe co-morbidity
Category II	Health care workers, including CHWs Older adults (sick or not) People with pre-existing chronic conditions (e.g. lung disease, HIV, TB, heart disease, diabetes)
Category III	Non-exposed family members (children, pregnant women, disabled) Poor families (living in slums)

7.6 Social support package

Home-based care*	Hygiene kit: soap, water bucket, towel, sanitary pads, detergent, bleach, Plate/cup/fork for patient to use exclusively Food packages
Inpatient care	Food packages Cash transfers for prolonged stay where possible

**Please note that masks should not be given for home-based care as they should be conserved to protect health care workers and social distancing >1meter should be used at home instead*

7.7 Figure 10. Covid-19 Social Support Algorithm:



7.8 Special populations

7.9 Figure 11: Helping older adults cope with stress (IASC, February 2020)

INTERVENTION 1:
Helping older adults cope with stress during the COVID-19 outbreak

- Older adults, especially in isolation and those with cognitive decline/dementia, may become more anxious, angry, stressed, agitated, withdrawing, overly suspicious during the outbreak/while in quarantine. Provide emotional support through informal networks (families) and mental health professionals. Share simple facts about what is going on and give clear information about how to reduce risk of infection in words older people with/without cognitive impairment can understand. Repeat the information whenever necessary.
- The suggestions below generally apply to community-dwelling older people. For older people in residential care (e.g., assisted living, nursing homes), administrators and staff need to ensure safety measures are in place to prevent mutual infection and the outbreak of excessive worries or panic (the same as in hospitals). Likewise, support needs to be provided to care staff who may be in extended lock-down/quarantine with residents and not able to be with their families.
- Older adults are particularly vulnerable to COVID-19 given their limited information sources, weaker immune systems, and the higher COVID-19 mortality rate found in the older population. Pay specific attention to high-risk groups, i.e. older people who live alone/without close relatives, who have low socioeconomic status and/or comorbid health conditions such as cognitive decline/dementia or other mental health conditions. Older people with mild cognitive impairment or early stages of dementia need to be informed of what is happening within their capacity and provided support to ease their anxiety and stress. For people at moderate and late stages of dementia, their medical and daily living needs need to be met during the quarantine time.
 - Medical needs of older adults with/without COVID-19 need to be met during the outbreak. This includes uninterrupted access to essential medicines (for diabetes, cancer, kidney disease, HIV). Tele medicine and online medical services can be used to provide medical services.
 - Isolated or infected older people shall be presented with truthful information on risk factors and chances of recovery.
 - During quarantine, adjust respite or home care services to use technology (WeChat, WhatsApp) to provide trainings/counseling for family caregivers at home, also include psychological first aid training for family caregivers.
- Older people may have limited access to messaging apps, like WeChat.
 - Provide older adults with accurate accessible information and facts about the COVID-19 outbreak, the progression, treatment, and effective strategies to prevent an infection.
 - Information needs to be easily accessible (i.e. clear, simple language, large font) and come from multiple trusted (media) sources (public media, social media and trustworthy health care providers) to prevent irrational behaviour such as stocking of non-effective medical herbs.
 - The best way to contact older people is via their landline phones or through regular personal visits (if possible). Encourage family or friends to call their older relatives regularly and teach older people how to use video (chat).
- Older people might not be familiar with the use of protective devices or prevention methods or refuse to use them.
 - Instructions on how to use protective devices need to be communicated in a clear, concise, respectful and patient way.
- Older people may not know how to use online services such as online shopping for daily supplies, consultation/helpline, or health care.
 - Provide older people with details and how to get practical help if needed, like calling a Taxi, or dropping off supplies.
 - Distribution of goods and services such as preventive materials (e.g., facial masks, disinfectants), sufficient grocery supplies, and emergency transportation access can reduce anxiety in everyday life.
- Provide older people with simple physical exercises to perform at their home/in quarantine to maintain mobility and reduce boredom.
- Encouraging older adults with expertise, experiences and strengths to volunteer in community efforts to respond to the COVID-19 outbreak. Elders can provide peer support, neighbour checking, and childcare for medical personnel restricted in hospitals fighting against COVID-19.



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7.10 Figure 12: Supporting the needs of people with disabilities (IASC, February 2020)

INTERVENTION 2:
Supporting the needs of people with disabilities during a COVID-19 outbreak

People with disabilities and their caregivers face barriers that could prevent them from accessing care and essential information to reduce their risk during the COVID-19 outbreak. These barriers might include:

- **Environmental barriers:**
 - Risk communication is essential to promote health and prevent the spread of infection and reduce stress in the population, however information is often not developed and shared inclusive to people with communication disabilities.
 - Many health centres are not accessible to people with physical disabilities. Due to urban barriers and lack of accessible public transit systems, people with disabilities might not be able to access health care in facilities.
- **Institutional barriers:**
 - The cost of health care prevents many people with disabilities from being able to afford essential services.
 - A lack of protocols established to take care of people with disabilities in quarantine.
- **Attitudinal barriers:**
 - Prejudices, stigma and discrimination against people with disabilities, including the belief that people with disabilities cannot contribute to the outbreak response or make their own decisions.

These barriers can lead to additional stress for people with disabilities and their caregivers during the COVID-19 outbreak.

The inclusion of the voices and needs of people with disabilities during outbreak planning and emergency response is critical to maintaining both physical and mental health while reducing risk of being infected with COVID-19.

- Accessible communication messages need to be developed, including considerations for people with disabilities (including sensory, intellectual, cognitive and psychosocial disabilities). Examples might include:
 - Accessible websites and factsheets ensuring that people with visual disabilities can read key information about the outbreak.
 - News and press conferences about the outbreak include certified sign language interpreters validated by people with deafness.
- Health staff know sign language or at least have certified sign language interpreters validated by people with deafness.
- Messages being shared in understandable ways to people with intellectual, cognitive and psychosocial disabilities.
- Forms of communication that do not rely solely on written information should be designed and utilised. These include face to face communication or use of interactive websites to communicate information.
- If caregivers need to be moved into quarantine, plans must be made to ensure continued support for people with disabilities who need care and support.
- Community based organizations and leaders in the community can be useful partners in communicating and providing MHPSS support for people with disabilities who have been separated from their families and caregivers.
- People with disabilities and their caregivers should be included in all stages of the outbreak response.

Sources
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7.11 Figure 13: Messages and activities for helping children deal with stress (IASC, February 2020)

INTERVENTION 3:
Messages & activities for helping children deal with stress during the COVID-19 outbreak

Encourage active listening and an understanding attitude with the children. Children may respond to a difficult/unsettling situation in different ways: clinging to caregivers, feeling anxious, withdrawing, feeling angry or agitated, having nightmares, bedwetting, frequent mood-changes, etc.

- Children usually feel relieved if they are able to express and communicate their disturbing feelings in a safe and supportive environment. Every child has his/her own way to express emotions. Sometimes engaging in a creative activity, such as playing and drawing can facilitate this process. Help children find positive ways to express disturbing feelings such as anger, fear and sadness.
- Encourage an increased sensitive and caring environment around the child. Children need adults' love and often more dedicated attention during difficult times.
- Remember that children often take their emotional cues from the important adults in their lives, so how adults respond to the crisis is very important. It's important that adults manage their own emotions well and remain calm. Listen to children's concerns and speak kindly to them and reassure them. If appropriate and depending on the age, encourage parents/caregivers to hug their children and repeat that they love them and are proud of them. This will make them feel better and safer.
- If possible, make opportunities for children to play and relax.
- Keep children close to their parents and family, if considered safe for the child, and avoid separating children and their caregivers as much as possible. If a child needs to be separated from his/her primary caregiver, ensure that appropriate alternative care is provided and that a social worker, or equivalent, will regularly follow up on the child.
- If children are separated from their caregivers, ensure regular and frequent contact (e.g. via phone, video calls) and re-assurance. Ensure all child protection and safeguarding measures are addressed.
- Keep regular routines and schedules as much as possible or help create new ones in a new environment, including learning, playing and relaxing. If possible, maintain schoolwork, study or other routine activities that do not endanger children or go against health authorities. Children should continue to attend school if it is not a risk to their health.
- Provide facts about what is going on and give clear child-friendly information about how to reduce risk of infection and stay safe in words they can understand. Demonstrate to children how they can keep themselves safe (e.g. show them effective handwashing)
- Avoid speculating about rumours or unverified information in front of children.
- Provide information about what has happened or could happen in a reassuring, honest and age-appropriate way.
- Support adults/caregivers with activities for children during home isolation/quarantine. Activities should explain the virus but also keep children active when they are not at school, for example:
 - hand washing games with rhymes
 - Imaginary stories about the virus exploring the body
 - make cleaning and disinfecting the house into a fun game
 - draw pictures of virus/microbes that to be coloured by children
 - explain person protective equipment (PPE) to children so that they are not scared

Source: WHO. Helping children cope with stress during the 2019 nCoV outbreak (Handout). WHO. Geneva, 2020.

7.12 Figure 14: Supporting people working in the Covid-19 response and front line workers



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INTERVENTION 5:

Supporting people working in the COVID-19 response

MESSAGES FOR FRONTLINE WORKERS:

- Feeling stressed is an experience that you and many of your colleagues are likely going through. In fact, it is quite normal to be feeling this way in the current situation. Workers may feel that they are not doing a good enough job, that there is a high demand on them, and additional new pressures including following strict OSH procedures.
- Stress and the feelings associated with it are by no means a reflection that you cannot do your job or that you are weak, even if you feel that way. In fact, stress can be useful. Right now, the feeling of stress may be keeping you going at your job and providing a sense of purpose. Managing your stress and psychosocial wellbeing during this time is as important as managing your physical health.
- Take care of your basic needs and employ helpful coping strategies: ensure rest and respite during work or between shifts, eat sufficient and healthy food, engage in physical activity, and stay in contact with family and friends. Avoid using unhelpful coping strategies such as tobacco, alcohol or other drugs. In the long term, these can worsen your mental and physical wellbeing.
- Some workers may unfortunately experience ostracization by their family or community due to stigma. This can make an already challenging situation far more difficult. If possible, staying connected with your loved ones through digital methods is one way to maintain contact. Turn to your colleagues, your manager or other trusted persons for social support: your colleagues may be having similar experiences to you.
- This is likely a unique and unprecedented scenario for many workers, particularly if they have not been involved in similar responses. Even so, using the strategies that you have used in the past to manage times of stress can benefit you now. The strategies to benefit feelings of stress are the same, even if the scenario is different.
- If your stress worsens and you feel overwhelmed, you are not to blame. Everyone experiences stress and copes with it differently. Ongoing and old pressures from your personal life can affect your mental wellbeing in your day

to day job. You may notice changes in how you are working, your mood may change such as increased irritability, feeling low or more anxious, you may feel chronically exhausted or it may feel harder to relax during respite periods, or you may have unexplained physical complaints such as body pain or stomach aches.

- Chronic stress can affect your mental wellbeing and your work and can affect you even after the situation improves. If the stress becomes overwhelming, please approach your lead or the appropriate person to ensure you are provided with appropriate support.

MESSAGES FOR TEAM LEADERS OR MANAGERS:

If you are a team leader or manager, keeping all staff protected from chronic stress and poor mental health during this response means that they will have a better capacity to fulfil their roles- whether health workers or in allied supporting roles.

- Regularly and supportively monitor your staff for their wellbeing and foster an environment which promotes staff speaking with you if their mental wellbeing worsens.
- Ensure good quality communication and accurate information updates are provided to all staff. This can help to mitigate any worry about uncertainty that workers have and helps workers to feel a sense of control.
- Consider if there is any capacity to ensure your staff get the rest and recuperation they need. Rest is important for physical and mental wellbeing and this time will allow workers to implement their necessary self-care activities.
- Provide a brief and regular forum to allow workers to express their concerns and ask questions and encourage peer-support amongst colleagues. Without breaking confidentiality, pay particular attention to any staff who you may be aware are experiencing difficulties in their personal life, previously experiencing poor mental health or who are lacking in social support (possibly due to community ostracization).

7.13 Community Health Worker roles in COVID-19 response

Community Health Workers (CHWs) are in a unique position to help with the response. Programs should address with existing CHWs about how this will impact their work and their individual risk tolerance, as the response may significantly shift these factors. This is particularly true in places where CHWs are doing routine home visits or other patient contact and likely do not have access to PPE. Routine workflows may need to be changed in order to adequately protect CHWs. This could include measures such as conducting routine home visits outside and at a distance greater than 1 meter, rather than entering households and doing any activities that require physical contact.

CHWs can help in two ways, detailed in the table below. The decision about this should be guided based on local availability, context, previous training, availability of sufficient hours, funding and compensation, and PPE. All CHWs can do Strategy 1; Strategy 2 is ideal but only if sufficiently equipped to avoid putting CHWs at risk.

6.14 Table 15: Roles of CHW in COVID-19 epidemic

Strategy 1: Information and advising <i>Maintain safe distance (>2 meter); do not enter homes; do not meet groups; do not touch patients</i>	
Community education	Disseminate information, answer questions, encourage social distancing, inform when to seek care. Possible mechanisms: Fliers to leave at houses; bullhorn for village communication; consider possible cases at a distance; distribute paracetamol and ORS generously (treatment and trust)
Strategy 2: Active accompaniment <i>Requires sufficient funding, staffing hours, PPE, and data systems. Consider working in teams. Preparation includes mapping catchment areas and dividing up which teams visit where and how to relay back information. Known cases should be mapped and communicated with the coordinating hospital.</i>	
Case finding	Symptom based screening. Community rapid tests can be administered by CHWs. Some tests will be similar to rapid malaria tests (which may require little additional training for CHWs who do iCCM), and some may be nasal swabs (which may require some additional training).
Contact tracing	Contact and household tracing of known contacts. Follow up and assess for symptoms. Facilitate referral to a facility when necessary.
Home testing	If training possible, perform rapid test in the community for contacts and other community members meeting testing requirements.
Home based care	Ensure understanding of quarantine, hygiene, and distancing protocols. Routine check-ins as possible (at least twice a week) to monitor for worsening symptoms and possible need for referral to a facility. Facilitate transport if severe cases are identified: where possible, call health facility to inform them and ask for ambulance transport.

8 References

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