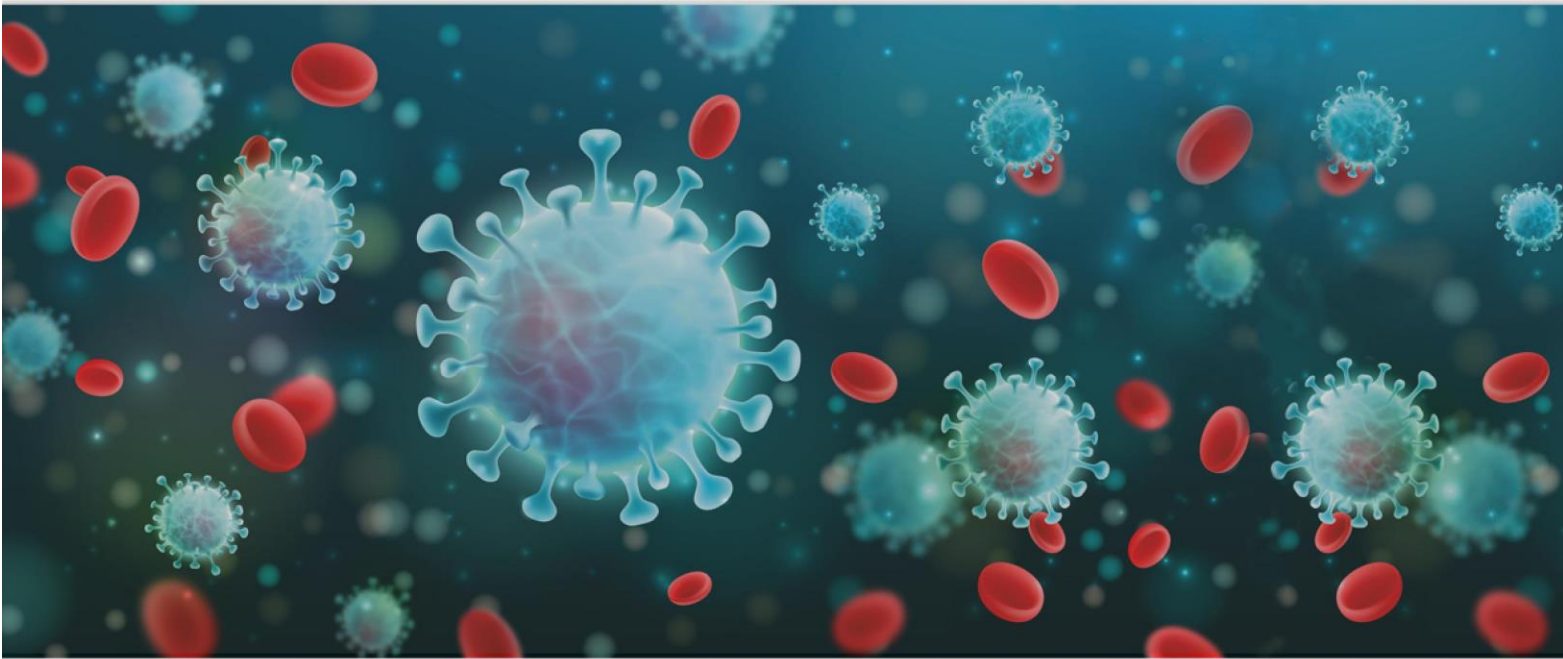




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# Clinical Guidance and Protocols for COVID-19 Case Management

2020

This Guidance was adapted by USAID Health Service Delivery, in collaboration with the Ministry of Health, and made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the USAID Health Service Delivery and do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



## FOREWORD

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The World Health Organization designated the coronavirus disease 2019 (COVID-19) a pandemic in January 30, 2020. On March 2, 2020, the Ministry of Health confirmed the first case of COVID-19 in Jordan. The Government of Jordan acted quickly to prepare and respond to the threat of the pandemic, and has been praised internationally for flattening the curve and avoiding many of the negative health outcomes, as seen in other Middle Eastern countries.

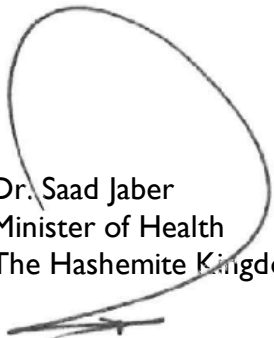
To rapidly prepare for the COVID-19 pandemic in Jordan, the Ministry of Health developed a “National COVID-19 Preparedness & Response Plan,” which includes a comprehensive approach to planning and managing the pandemic at all levels of the health system. A fundamental pillar of this plan is about the management of COVID-19 cases by health care providers. To address this fundamental pillar, the Ministry of Health, in collaboration with United States Agency for International Development (USAID) through USAID Health Service Delivery, developed “Clinical Guidance and Protocols for COVID-19 Case Management.”

This guidance aims to build the capacity of health care providers to deal with cases of COVID-19. It will help health care providers acquire the knowledge and skills necessary for screening, triaging and management of confirmed cases. The guidance will also help health care providers to understand and practice the necessary infection prevention and control measures to limit the spread of COVID-19 infection. This guidance was developed based on the best available evidence and grounded in current international recommendations and resources, to provide quality case management for COVID-19 cases. The guidance will continue to be updated, as the evidence for COVID-19 evolves, and new recommendations from international experts are available.

I would like to extend our deepest gratitude to the contributors of this guidance from the Ministry of Health, university hospitals, and the private health sector for their expertise and unwavering commitment in developing this guidance, first of its kind to support Jordan’s efforts to combat COVID-19 pandemic.

I would like to convey a special note of appreciation to the USAID for their generous support to the Government of Jordan over the years.

Finally, I dedicate a special acknowledgement to the USAID Health Service Delivery team for their diligent efforts in collaborating with the Ministry of Health to develop this important guidance.



Dr. Saad Jaber  
Minister of Health  
The Hashemite Kingdom of Jordan



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## ACRONYMS

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<b>ABHR</b>	Alcohol Based Hand Rub
<b>ABG</b>	Arterial Blood Gases
<b>ACE</b>	Angiotensin Converting Enzyme
<b>ACEI</b>	Angiotensin Converting Enzyme Inhibitors
<b>ACE2</b>	Angiotensin Converting Enzyme 2
<b>AGP</b>	Aerosol Generating Procedure
<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>AKI</b>	Acute Kidney Injury
<b>ALT</b>	Alanine Aminotransferase
<b>ARB</b>	Angiotensin Receptor Blocker
<b>ARDS</b>	Acute Respiratory Distress Syndrome
<b>ARI</b>	Acute Respiratory Infection
<b>AST</b>	Aspartate Aminotransferase
<b>APTT</b>	Activated Partial Thromboplastin Time
<b>AV</b>	Atrioventricular
<b>BID</b>	Twice a Day
<b>°C</b>	Degree Centigrade
<b>CAP</b>	Community Acquired Pneumonia
<b>CBC</b>	Complete Blood Count
<b>CDC</b>	Center for Disease Control and Prevention

<b>COVID</b>	Coronavirus Disease
<b>CPAP</b>	Continuous Positive Airway Pressure
<b>CPK</b>	Creatine Phosphokinase
<b>CRP</b>	C-reactive protein
<b>CS</b>	Caesarian Section
<b>CT</b>	Computed Tomography
<b>CTG</b>	Cardiotocograph
<b>CTPA</b>	Computed Tomography Pulmonary Angiogram
<b>CXR</b>	Chest X-ray
<b>ECG</b>	Electrocardiogram
<b>ECMO</b>	Extracorporeal Membrane Oxygenation
<b>ER</b>	Emergency Room
<b>FiO<sub>2</sub></b>	Fractional Inspired Oxygen
<b>G6PD</b>	Glucose 6 Phosphate Dehydrogenase
<b>GA</b>	General Anesthesia
<b>GI</b>	Gastrointestinal
<b>GOJ</b>	Government of Jordan
<b>HAP</b>	Hospital Acquired Pneumonia
<b>HCP</b>	Health Care Personnel
<b>HIV</b>	Human Immunodeficiency Virus
<b>HFNO</b>	High Flow Nasal Oxygen

<b>HRCT</b>	High Resolution Computed Tomography
<b>ICS</b>	Inhaled Corticosteroids
<b>ICU</b>	Intensive Care Unit
<b>IgG</b>	Immunoglobulin G
<b>INR</b>	International Normalized Ratio
<b>IPC</b>	Infection Prevention and Control
<b>IV</b>	Intravenous
<b>KFT</b>	Kidney Function Test
<b>LDH</b>	Lactate Dehydrogenase
<b>LFT</b>	Liver function test
<b>LMWH</b>	Low Molecular Weight Heparin
<b>MAP</b>	Mean Arterial Pressure
<b>MDI</b>	Metered Dose Inhaler
<b>MDT</b>	Multidisciplinary Team
<b>MERS</b>	Middle East Respiratory Syndrome
<b>mcg/mL</b>	Microgram/Milliliter
<b>MOH</b>	Ministry of Health
<b>NIV</b>	Non Invasive Ventilation
<b>NGT</b>	Nasogastric Tube
<b>NSAIDs</b>	Nonsteroidal Anti Inflammatory Drugs
<b>O<sub>2</sub>Sat</b>	Oxygen Saturation

<b>PCR</b>	Polymerase Chain Reaction
<b>PEEP</b>	Positive End Expiratory Pressure
<b>PHC</b>	Primary Health Care
<b>PaO<sub>2</sub></b>	Partial Pressure of Oxygen in Arterial Blood
<b>PPE</b>	Personal Protective Equipment
<b>PT</b>	Partial Thromboplastin
<b>PTT</b>	Partial Thromboplastin Time
<b>PUI</b>	Patient Under Investigation
<b>QT<sub>c</sub></b>	Corrected QT
<b>RNA</b>	Ribonucleic Acid
<b>RT-PCR</b>	Reverse Transcription – Polymerase Chain Reaction
<b>SARI</b>	Severe Acute Respiratory Infections
<b>SARS</b>	Severe Acute Respiratory Syndrome
<b>SARS-CoV-2</b>	Severe Acute Respiratory Syndrome Coronavirus 2
<b>SOP</b>	Standard Operating Procedure
<b>SpO<sub>2</sub></b>	Peripheral Capillary Oxygen Saturation
<b>TL-6</b>	Interleukin 6
<b>UK</b>	United Kingdom
<b>U/L</b>	Unit/Liter
<b>ug/L</b>	Microgram/Liter
<b>ULN</b>	Upper Limit of Normal

<b>USAID</b>	United States Agency for International Development
<b>V/Q</b>	Ventilation/Perfusion Ratio
<b>VTE</b>	Venous thromboembolism
<b>WBC</b>	White Blood Cells
<b>WHO</b>	World Health Organization



## SUMMARY OF UPDATES

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The first revision were made on June 20, 2020 to reflect the following:

- Updated WHO case definitions for a suspected case - Page number 5.
- Updated PHC and hospital referral pathways - Page numbers 15, 17.
- Updated:
  - Adult ALS algorithm for COVID-19 patients in acute hospital settings – Page number 83.
  - Flowchart on the resuscitation of adult COVID-19 patients in acute hospital settings – Page number 84.

The second revision were made on July 1, 2020 to reflect the following:

- Updated WHO discharge criteria for confirmed COVID-19 cases - Page number 32.

The third revision were made on October 18, 2020 to reflect the following:

- Updated CDC “Pregnancy as a Vulnerability for COVID-19” – Page number 34.
- Including “Fifth Guidance: Home Care for Patients with Suspected or Confirmed COVID-19 and Management of Their Contacts” – Page number 60.



## INTRODUCTION

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The five-year USAID Health Service Delivery is funded by the United States Agency for International Development (USAID). The objective is to improve health outcomes for women of reproductive age and children under the age of five, including Syrian refugees living in Jordanian host communities. Abt Associates and its partners implement USAID Health Service Delivery.

Upon request of USAID, USAID Health Service Delivery adapted a COVID-19 response plan to support the Jordan's National COVID-19 Preparedness and Response Plan 2020, including supporting the Ministry of Health (MOH) develop relevant materials under Pillar 7 "Case Management". To this end, USAID Health Service Delivery in collaboration with MOH adapted customized guidance on the case management of COVID-19.

The USAID Health Service Delivery with the MOH's approval will develop online training and materials on COVID-19 case management, and will support the MOH to train health care providers at primary health care (PHC) and hospital level on this guidance.

This Clinical Guidance and Protocols for COVID-19 Case Management are for the management of COVID-19 infection in both PHC and hospitals in Jordan. This document is based on the most updated evidence from World Health Organization (WHO), Center for Disease Control (CDC), in addition to the current knowledge emerging from China and other countries with high levels of COVID-19. The Clinical Guidance and Protocols for COVID-19 Case Management is aligned with current international guidelines and will serve as a standardized framework for clinical decisions to support best practices for COVID-19 infection management.

The Clinical Guidance and Protocols for COVID-19 Case Management is a living document, to be updated often and adapted to the rapidly evolving COVID-19 information. The MOH will update these guidelines as new information becomes available.

## BACKGROUND

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Viruses continue to emerge and pose challenges to public health. Zoonotic diseases make up 70 percent to 80 percent of emerging and reemerging infectious diseases, and are diseases that circulate among animals but can at times infect humans. Coronaviruses are zoonotic viruses capable of transmitting between animals and humans.

There are four main sub-groupings of coronaviruses, known as alpha, beta, gamma, and delta. The seven coronaviruses that have been documented to infect people include:

### Common human coronaviruses

- 1) 229E (alpha coronavirus)
- 2) NL63 (alpha coronavirus)
- 3) OC43 (beta coronavirus)
- 4) HKUI (beta coronavirus)

### Other human coronaviruses

- 5) MERS-CoV – the beta coronavirus causing Middle East Respiratory Syndrome (MERS) disease
- 6) SARS-CoV-1 – the beta coronavirus causing Severe Acute Respiratory Syndrome (SARS) disease
- 7) SARS-CoV-2 – the beta coronavirus causing the disease known as Coronavirus Disease 2019 (COVID-19)

Globally people are commonly infected with human coronaviruses 229E, NL63, OC43, and HKUI. These illnesses typically last for a short period, and have symptoms including a runny nose, headache, cough, sore throat, fever, and a general feeling of being unwell. However, sometimes more severe coronaviruses evolve. Three recent examples of more severe coronaviruses that evolved to infect humans are MERS-CoV, SARS-CoV-1 and SARS-CoV-2.

SARS-CoV-2 spreads between people mainly via inhalation of respiratory droplets from coughing or sneezing, but can also be passed through fomite/contact. Nosocomial transmission can occur where there is inadequate infection prevention and control (IPC) measures including personal protecting equipment (PPE) use during close contact with infected individuals. The medium incubation period is about 5-6 days (range: 2-14 days). The infectious period is unclear but may be 24-48 hours before symptoms appear, with high virus levels being detected in the upper respiratory tract early in the disease course. The virus is still detected in the upper and lower respiratory tract by Real Time Polymerase Chain Reaction (RT-PCR) test for several days after symptoms have resolved.

On December 31, 2019, WHO was alerted to several cases of pneumonia of unknown origin in Wuhan City in the Hubei Province of China. On January 7, 2020, Chinese authorities confirmed a new coronavirus as the cause of the pneumonia cluster which is different from any other human CoV discovered thus far. Since the first cases were reported, WHO has been working with the Chinese authorities and global experts to learn more about the virus,

including the source of infection, how it spreads, its severity, the high-risk groups, how best to treat patients and how to control the outbreak.

On 11 February 2020, the International Committee on Taxonomy of Viruses announced “Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)” as the name of the new virus causing COVID-19.

On January 22-23, 2020, the International Health Regulations (2005) Emergency Committee on the Outbreak of COVID-19 was first convened by the WHO, and subsequently reconvened on January 30, 2020. On the same day (January 30, 2020) WHO General Director declared the outbreak to be a **Public Health Emergency of International Concern under the 2019 – novel coronavirus acute respiratory disease**. On March 11, 2020, WHO General Director declared the COVID-19 outbreak to be characterized as a **pandemic**, highlighting that it was the first pandemic caused by a coronavirus and the first pandemic that can be controlled with aggressive action.

## RISK FACTORS FOR CONTRACTING SEVERE CASES OF COVID-19

Most symptomatic cases of COVID-19 present respiratory symptoms, including a dry cough, fever, shortness of breath, and pneumonia. Currently, there is no known treatment or vaccine available. Intensive supportive care with the treatment of symptoms is currently the main approach to manage the infection in people with severe manifestations.

Patients with risk factors for severe disease from COVID-19 based on limited data that are available, and data from related coronaviruses such as (SARS-CoV-1) and (MERS-CoV), people with the following conditions:

1. Sixty five years and older.
2. Who live in a nursing home or long-term care facility.
3. All ages with underlying medical conditions, particularly if not well controlled, including:
  - With chronic lung disease or moderate to severe asthma.
  - Who have serious heart conditions.
  - Who are immunocompromised, including:
    - Cancer treatment.
    - Smoking.
    - Bone marrow or organ transplantation.
    - Immune deficiencies.
    - Poorly controlled HIV or AIDS.
    - Prolonged use of corticosteroids and other immune weakening medications.
  - With severe obesity (body mass index of 40 or higher).
  - With diabetes.
  - With chronic kidney disease undergoing dialysis.
  - With liver disease.

## SCOPE

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To provide directions to public and private Jordanian health care facilities and health care providers to manage patients with suspected or confirmed COVID-19 infection.

## AIM OF THE GUIDANCE

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1. Screening and triaging of suspected and confirmed COVID-19 Cases.
2. Clinical management protocol of confirmed COVID-19 Cases.
3. Clinical management of pregnant of confirmed COVID-19 Cases.
4. Clinical management of children of confirmed COVID-19 Cases.
5. Infection prevention and control measures related to COVID-19.
6. Home care for patients with suspected or confirmed COVID-19 and management of their contacts.

## FIRST GUIDANCE: COVID-19 CASE DEFINITION, SCREENING AND TRIAGING, AND CLINICAL MANAGEMENT

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### CASE DEFINITIONS

WHO case definitions are based on the current available information and are regularly revised as new information accumulates. In Jordan, the MOH uses the same definitions used by the WHO.

#### **I. Suspected case**

A person /patient with:

1) Acute respiratory illness:

- Fever ( $\geq 37.8$  orally) plus;
- At least one sign/symptom of respiratory disease (e.g., sore throat, cough, shortness of breath headache, general weakness).

**AND**

2) One of the following:

- Travel history from affected countries during 14 days before the onset of symptoms
- Direct personal contact with COVID-19 laboratory confirmed case during 14 days of the onset of symptoms.

**OR**

A patient with:

3) Severe acute respiratory illness:

- Fever ( $\geq 37.8$  orally) plus,
- At least one sign/symptom of respiratory disease (e.g., cough, shortness of breath) plus,
- Requiring hospitalization

4) Absence of an alternative diagnosis that fully explains the clinical presentation.

#### **Updated WHO Suspected Case Definition:**

1) Any patient has any of the following clinical manifestations: Rise in body temperature ( $\geq 37.5^{\circ}\text{C}$ ), coughing, sneezing, sore throat, shortness of breath, loss of smelling and tasting sensation, generalized fatigue, joint and muscle pain;

And,

Coming from outside country **Or** had contact with a laboratory-confirmed case of COVID-19 during 14 days before the onset of symptoms.

2) Any patient complaining of fever or chills with respiratory symptoms.

3) Any patient of Severe-Acute-Respiratory-Infection or Influenza-Like-Illness case.

**Note:**

- Rare clinical manifestations of COVID-19 may include skin rash or ulcer, and signs of ischemia in fingers and toes with or without shortness of breath.
- Children with COVID-19 and adult till 19 years of age may also show skin rash, changes in the shape and color of the tongue, and signs of multisystem inflammatory syndrome.

**2. Probable case (not used in Jordan)**

- 1) A suspect case for whom testing for the COVID-19 virus is inconclusive.

**OR**

- 2) A suspect case for whom testing could not be performed for any reason.

**3. Confirmed case**

A person with **laboratory confirmation** (positive RT-PCR test) of COVID-19 infection, irrespective of clinical signs and symptoms.

**4. Contacts**

Contacts are two types:

- 1) Person experienced any one of the following exposures during the 4 days before and the 14 days after the onset of symptoms of a confirmed case:
  - Health care workers contacts (high risk and low risk) filling special format with time of exposure:
  - Face-to-face contact with confirmed case within 1 meter and for more than 15 minutes;
  - Direct physical contact with confirmed case;
  - Direct care for a patient with confirmed COVID-19 disease without using proper personal protective equipment;
  - Other situations as indicated by local risk assessments.
- 2) Health Care Personnel (HCP) working in health care settings engaged in confirmed COVID-19 patient care activities, including:
  - Patient assessment for triage.
  - Entering examination rooms or patient rooms to provide care or clean and disinfect the environment.
  - Obtaining clinical specimens.
  - Handling soiled medical supplies or equipment.
  - Coming in contact with potentially contaminated environmental surfaces.

**Note:** for confirmed asymptomatic cases, the period of contact for potential transmission is measured as the 2 days before through the 14 days after the date on which the sample was taken which led to confirmation.

## 5. Laboratory diagnosis:

Diagnosis of COVID-19 requires detection of SARS-CoV-2 Ribonucleic Acid (RNA) by reverse transcription polymerase chain reaction (RT-PCR). Detection of SARS-CoV-2 viral RNA is better in nasopharynx samples compared to throat samples (naso and oropharynx mixed to avoid technique error is usually done). Lower respiratory samples may have better yield than upper respiratory samples. SARS-CoV-2 RNA has also been detected in stool and blood. Detection of SARS-CoV-2 RNA in blood may be a marker of severe illness.

Although many multiple diagnostic test have developed. These simple test kits are based either on detection of proteins from the COVID-19 virus in respiratory samples (e.g. sputum, throat swab) or on detection, in blood or serum of human antibodies generated in response to infection. At present, based on current evidence, WHO recommends the use of these immunodiagnostic tests only in research settings, and not for clinical decision-making, until more evidence in support of efficacy is available.

## SCREENING AND TRIAGING (REFERRAL PATHWAYS)

For a COVID-19 outbreak, screening and triaging is particularly important to separate patients who are likely to be infected with SARS-CoV-2 from other patients in the health care setting. Effective screening and triaging can prevent transmission of SARS-CoV-2 to other patients and health care professional and other non- health care professional.

### 1. Screening

An area (place) in which an **individual is evaluated** and screened using the **case definitions** mentioned above; if the person becomes a **suspected case, refer to COVID-19 referral pathway**.

### 2. Isolation

- 1) If the case definition is met (Suspected COVID-19), the patient should immediately be given a mask and directed to a separate area (an isolation room if available).
- 2) In Jordan an Official letter is sent from the MOH to all public and private hospitals to prepare at least 10 % of the beds and at least two separated equipped rooms for this purposes.
- 3) At least 1-meter distance should be kept between suspected patients and other patients.

### 3. Triage<sup>1</sup>

- 1) Acuity-based triage is the standard method of sorting patients in the medical setting.
- 2) This is used as the basis for identifying patients who:

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<sup>1</sup> The process of sorting people based on their need for immediate medical treatment as compared to their chance of benefiting from such care

- Don't require medical care,
- Require medical care,
- Require immediate medical intervention,
- May need to be transported to a specific facility based upon their condition.

#### **4. Standard operating procedures for screening and triaging of suspected and confirmed COVID-19 cases**

These Standard Operating Procedures (SOPs) are intended for health care facilities that are receiving or are preparing to receive cases with suspected or confirmed COVID-19. This includes health care facilities providing either inpatient or outpatient services. It should be used to guide implementation of procedures at screening and triage that can be effective at preventing transmission of SARS-CoV-2 to patients and HCPs.

These SOPs includes the following details on:

- 1) Patient level.
- 2) Facility level (to reduce transmission):
  - Communicate with patients before arriving for screening and triage.
  - Set up and equip screening and triage.
  - Set up a “respiratory waiting area” for suspected COVID-19 cases.
  - Screening for suspected COVID-19 cases process.
  - Triage confirmed COVID-19 cases process.
- 3) How to protect HCPs and their patients during screening and triage.
- 4) Additional considerations for triage during periods of community transmission.

##### **Patient level**

Patients should take the below prevention measures:

- 1) Inform health care providers if they are seeking care for respiratory symptoms (e.g. cough, fever, shortness of breath) by calling the health care facility ahead of time.
- 2) Wear a facemask during transport and while at triage in the health care facility.
- 3) Rub their hands at health care facility hand-hygiene station upon entering with alcohol-based hand rub.
- 4) Notify screening registration desk about respiratory symptoms as soon as they arrive.
- 5) Carry paper or fabric tissues to cover mouth or nose when coughing or sneezing. Dispose paper tissues in a “trashcan” immediately after use and rub hands with alcohol-based hand rub immediately after
- 6) Maintain social distance by staying at least 1 meter away, whenever possible, from anyone, including those companions or caregivers who may have accompanied the patient.

## What patients can do



Inform healthcare providers if they are seeking care for respiratory symptoms



Wear a facemask, if available



Immediately notify registration desk about symptoms



Rub hands at healthcare facility entrance



Carry a tissue or other alternative to cover mouth or nose



Maintain social distance in accordance with WHO recommendations

Resource: CDC presentation on “SOPs for Triage of Suspected COVID-19 Patients in non-US Healthcare Settings”.  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html>

### Facility level (to reduce transmission)

#### **Communicate with patients before arriving for screening and triage:**

##### **1) Establish a **HOTLINE**:**

- That patients can call or text notifying the facility that they are seeking care due to respiratory symptoms.
- That can be used, if possible, as telephone consultation for patients to determine the need to visit a health care facility and how to enter the facility.
- That serves to inform patients of preventive measures to take as they come to the facility (e.g., wearing mask, having tissues to cover cough or sneeze, maintaining social distance from others).

##### **2) Provide information to the public through local mass media such as radio, television, newspapers, and social media platforms about availability of the hotline or designated COVID-19 phone number, along with the signs and symptoms of COVID-19, and measures to be taken by patients when coming to the facility.**

##### **3) Health care facilities, in conjunction with national authorities, should consider telemedicine (e.g., cell phone videoconference or teleconference) to provide clinical support without direct contact with the non-COVID-19 patients to reduce the number of people at the health care facility to reduce possibility of infection.**

#### **Set up and equip screening area and triage:**

The facility should have the following requirements to setup areas for screening and triaging:

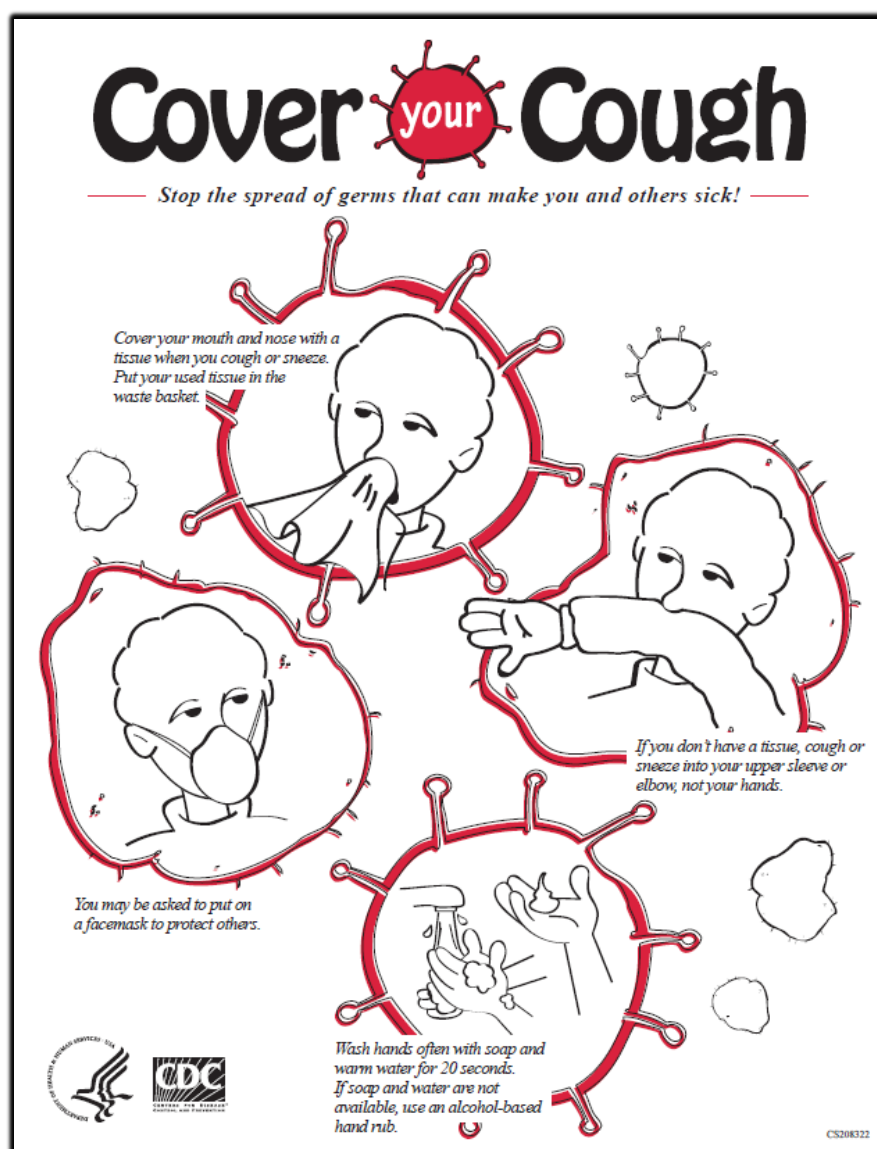
- 1) Have clear signs at the entrance of the facility directing patients with respiratory symptoms to immediately report to the registration desk designated for patients with respiratory symptoms at the facility they are seeking care. Facilities should

consider having clear signs at the entrance directing patients to the designated registration desk.



Resource: CDC, "SOPs for Triage of Suspected COVID-19 Patients in non-US Healthcare Settings".  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html>

- 2) Ensure availability of facemasks and paper tissue at registration desk, and at nearby hand hygiene stations. A bin with lid should be available at triage where patients can discard used paper tissues.
- 3) Install physical barriers (e.g., glass or plastic screens) for registration desk (i.e., reception area) to limit close contact between registration desk personnel and potentially infectious patients.
- 4) Ensure availability of hand hygiene stations in triage area, including waiting areas.
- 5) Post visual alerts at the entrance of the facility and in strategic areas (e.g., waiting areas or elevators) about respiratory hygiene and cough etiquette and social distancing. This includes how to cover nose and mouth when coughing or sneezing, disposing of contaminated items in trashcans, and regularly washing hands or using an alcohol-based rub.



Resource: CDC "SOPs for Triage of Suspected COVID-19 Patients in non-US Healthcare Settings".  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html>

- 6) Assign dedicated clinical staff (e.g. physicians or nurses) for physical evaluation of patients presenting with respiratory symptoms at triage. These staff should be trained on:
  - Triage procedures;
  - COVID-19 case definition;
  - Using appropriate personal protective equipment (PPE), e.g., masks, eye protection, gown, and gloves.
- 7) Train administrative personnel working in the reception of patients on how to perform hand hygiene, maintain appropriate distance, use a face mask, and on how to advise patients on using facemasks, hand hygiene, and separation from other patients.
- 8) A standardized screening algorithm/questionnaire should be available for use and should include questions that will determine if the patient meets the COVID-19

case definition. HCPs should be encouraged to have a high level of clinical suspicion of COVID-19 given the global pandemic.

### **Set up a “respiratory waiting area” for suspected COVID-19 cases**

- 1) Health care facilities without enough single isolation rooms should designate a separate, well-ventilated area, where patients with high risk for COVID-19 (patient who might be infected with COVID-19) can wait. This area should have:
  - Benches, stalls or chairs separated by at least 1-meter distance.
  - Dedicated toilets.
  - Hand hygiene stations.
- 2) Post clear signs informing patients of the location of “Respiratory Waiting Areas.” Train the registry staff to direct patients immediately to these areas after registration.
- 3) Provide paper tissues, alcohol-based hand rub, and trash bin with lid for the “Respiratory Waiting Area.”
- 4) Develop a process to reduce the amount of time patients are in the “Respiratory Waiting Area,” which may include:
  - Allocation of additional staff to triage patients at high risk for morbidity and mortality from COVID-19.
  - Setting up a notification system that allows patients to wait in a personal vehicle or outside of the facility (if medically appropriate) in a place that maintains social distance and be notified by phone or other remote methods when it is their turn to be evaluated.

### **Screening for Suspected COVID-19 cases process**

- 1) A facemask should be given to patients with respiratory symptoms as soon as they get to the facility if they do not already have one. All patients and companions in the “Respiratory Waiting Area” should wear a facemask.
- 2) If facemasks are not available, provide paper tissues or request the patient to cover their nose and mouth with a scarf, bandana, or T-shirt during the entire triage process, including while in the “Respiratory Waiting Area”. A homemade mask with cloth can also be used, if the patient has one. Caution should be exercised as these items will become contaminated and can serve as a source of transmission to other patients or family members.
- 3) Follow referral pathways and immediately isolate/separate patients with high risk for COVID-19 in single-person rooms with doors closed or designated “Respiratory Waiting Areas.”
- 4) Limit the number of accompanying companions in the waiting area for suspected COVID-19 patients (no one less than 18 years old unless the patient is the parent). Anyone in the “Respiratory Waiting Area” should wear a facemask.
- 5) Screening and triaging area, including “respiratory waiting areas,” should be cleaned at least twice a day with a focus on frequently touched surfaces. Cleaning can be done with 0.5% (5000ppm) chlorine or 70% alcohol for surfaces that do not tolerate chlorine.

### **Triaging Confirmed COVID-19 Cases process**

According to Jordan National Response Plan for COVID-19, confirmed COVID-19 cases are identified on admission as the following definitions:

1) **Asymptomatic case:**

Patients who were diagnosed through laboratory confirmed through random screening or by contacts follow up.

2) **Mild cases:**

Patients who present upper respiratory infection symptoms, Oxygen Saturation ( $O_2Sat$ )  $>95\%$ .

3) **Moderate Cases:**

Patients who present lower respiratory infection (bronchitis, pneumonia),  $O_2Sat \geq 95\%$ .

4) **Severe Cases:**

Patients who present respiratory infection with shortness of breath,  $O_2Sat \leq 94\%$ .

5) **Critical cases:**

Patients who present Acute Respiratory Distress Syndrome (ARDS) and need Invasive Mechanical Ventilation.

6) **Critical cases with shock:**

The patient who has septic or any other kind of shock.

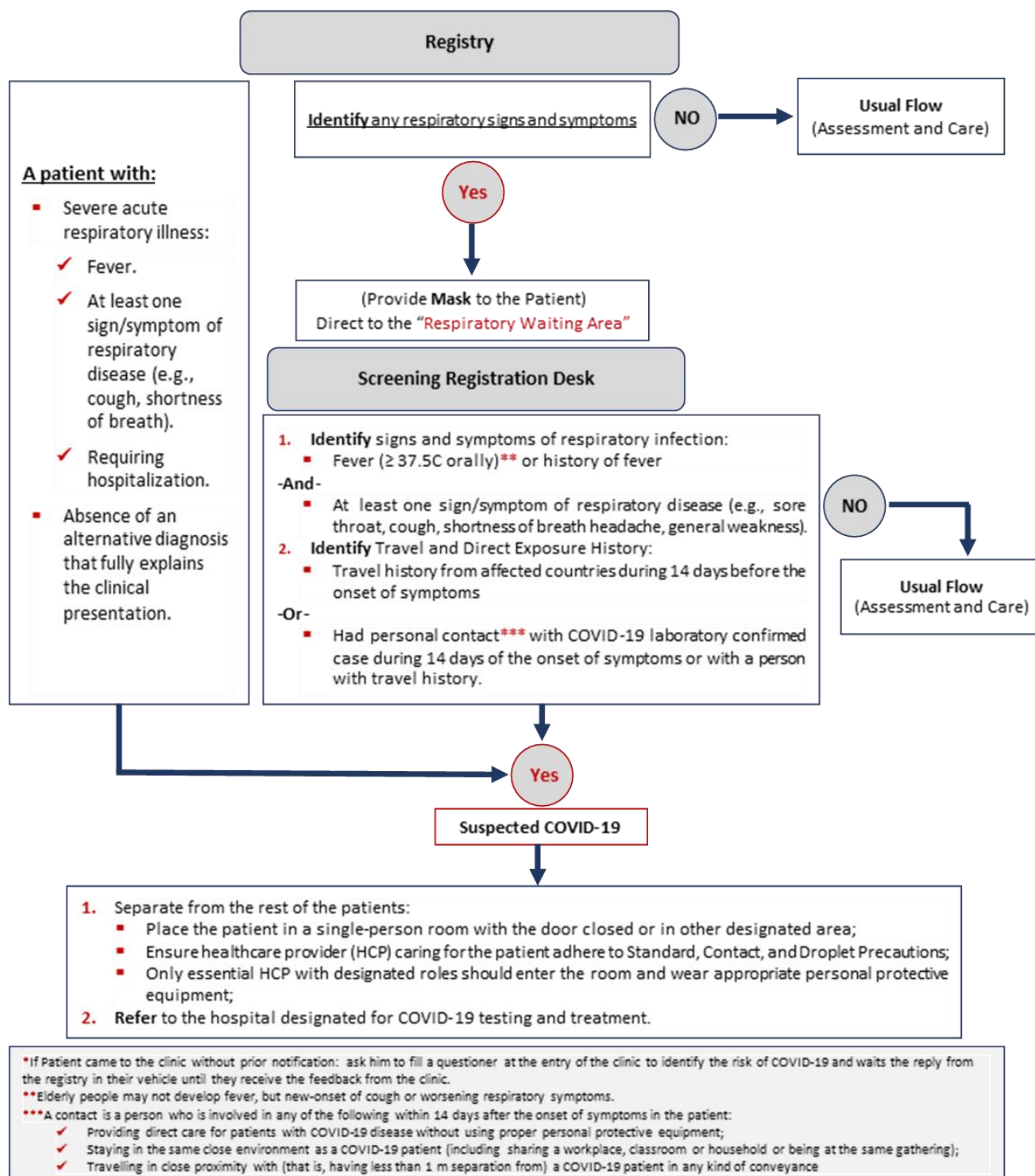
Patients who have the test performed will be admitted according to their clinical condition to one of the following areas:

- 1) **Asymptomatic and mild cases who do not need medical care** will be admitted to isolation rooms in a designated floor or building, with nursing care only, and doctors will be contacted only if signs of clinical deterioration.
- 2) **Mild and moderate cases who need medical care** will be admitted to isolation rooms in designated floor close to the Intensive Care Unit (ICU).
- 3) **Severe and critically ill patients** will be admitted to the isolation ICU (negative pressure room).
- 4) **Any inpatients who have the test performed** should be transferred to an isolated room until the test results are back unless advised to remain in their room by the attending physician.

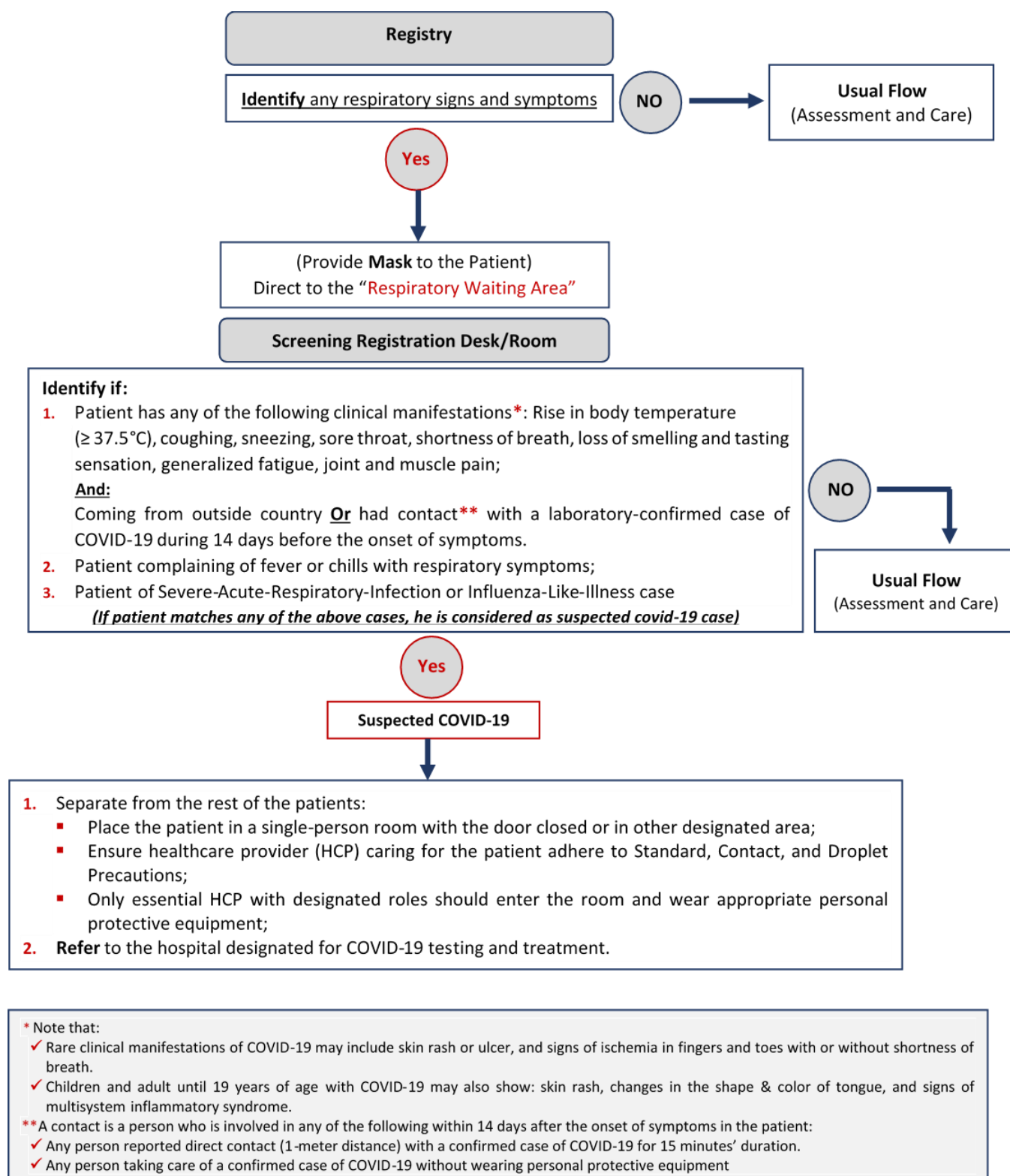
In case of community spread (or when total number of cases becomes more than 500), asymptomatic Lab positive testing or patients with mild clinical presentation (absence of viral pneumonia and hypoxia) may not initially require hospitalization, and many patients will be able to manage their illness at home. The decision to monitor a patient in the inpatient or outpatient setting should be made on a case-by-case basis. This decision will depend on the clinical presentation, requirement for supportive care, and the potential risk factors for morbidity and mortality.

## PHC Facilities (Referral Pathway)

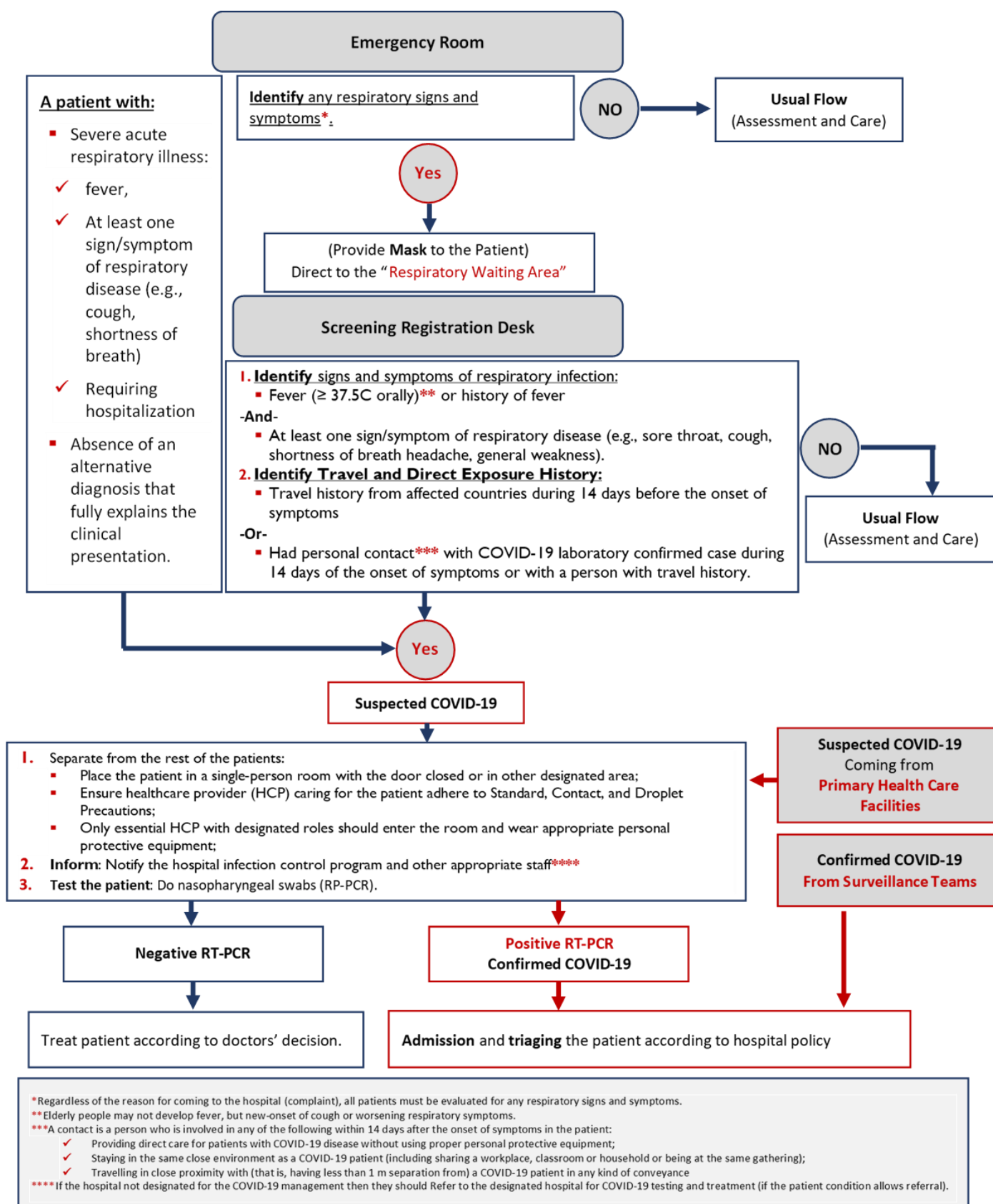
- 1) **PHC- Public center:** Patient comes to health facility.
- 2) **NGOs and Private sector clinics:** Patient calls or text notifying the clinic that they are seeking care\*.



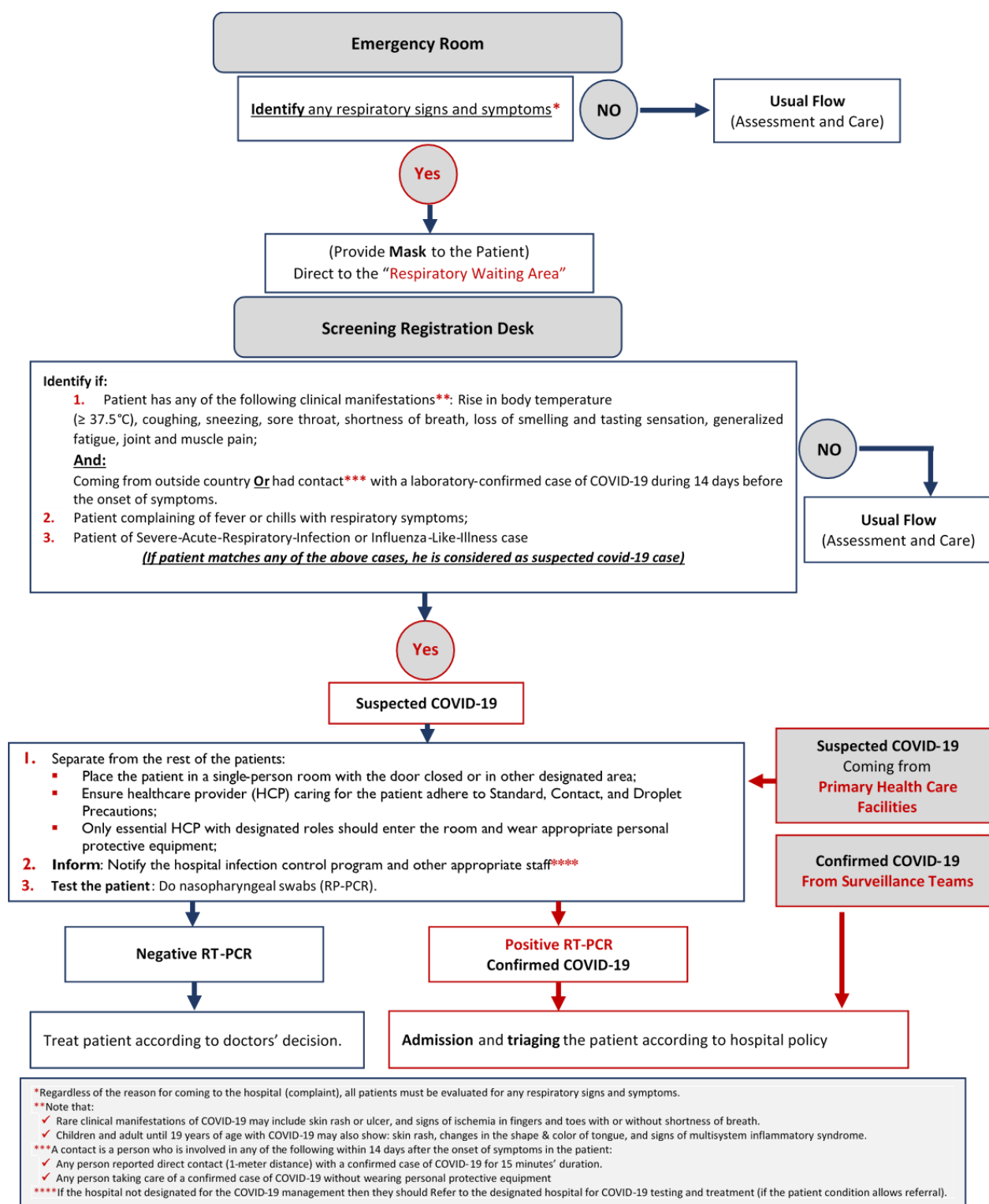
## Updated PHC Facilities (Referral Pathway)



## Hospital (Referral Pathway)



## Updated Hospital (Referral Pathway)




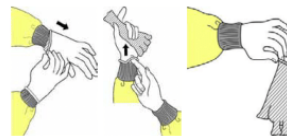



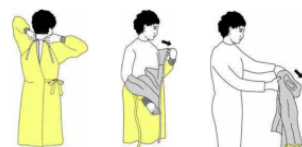


### How to protect HCPs and patients during triage

1) All HCPs should adhere to Standard Precautions, which includes:

- Hand hygiene,
- Selection of PPE based risk assessment,
- Respiratory hygiene, and
- Clean and disinfection and injection safety practices.

2) All **HCPs** should be **trained on** and familiar with **infection prevention and control (IPC) precautions** (e.g. contact and droplet precautions, appropriate hand hygiene, donning and doffing of PPE) related to COVID-19.

- Follow appropriate PPE donning (putting on) and doffing (removing) steps.

SEQUENCE FOR PUTTING ON PPE	SEQUENCE FOR REMOVING PPE
<b>HAND HYGIENE</b> <ul style="list-style-type: none"> <li>• Perform hand hygiene</li> </ul> 	<b>GLOVES</b> <ul style="list-style-type: none"> <li>• <b>Outside of glove is contaminated!</b></li> <li>• Grasp outside of glove with opposite gloved hand; peel off</li> <li>• Hold removed glove in gloved hand</li> <li>• Slide fingers of ungloved hand under remaining glove at wrist</li> <li>• Peel glove off over first glove</li> <li>• Discard gloves in waste container</li> <li>• Perform hand hygiene</li> </ul> 
<b>GOWN</b> <ul style="list-style-type: none"> <li>• Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back</li> <li>• Fasten at the back of neck and waist</li> </ul> 	<b>PROTECTIVE EYEWEAR OR FACE SHIELD</b> <ul style="list-style-type: none"> <li>• <b>Outside of eye protection or face shield is contaminated!</b></li> <li>• To remove, handle by head band or ear pieces</li> <li>• Place in designated receptacle for reprocessing or in waste container</li> </ul> 
<b>MASK or RESPIRATOR</b> <ul style="list-style-type: none"> <li>• Secure ties or elastic bands at middle of head and neck</li> </ul> 	<b>GOWN</b> <ul style="list-style-type: none"> <li>• <b>Gown front and sleeves are contaminated!</b></li> <li>• Unfasten ties</li> <li>• Pull away from neck and shoulders, touching inside of gown only</li> <li>• Turn gown inside out</li> <li>• Fold or roll into a bundle and discard</li> </ul> 
<b>PROTECTIVE EYEWEAR OR FACE SHIELD</b> <ul style="list-style-type: none"> <li>• Place over face and eyes and adjust to fit</li> </ul> 	<b>MASK or RESPIRATOR</b> <ul style="list-style-type: none"> <li>• <b>Front of mask is contaminated – DO NOT TOUCH!</b></li> <li>• Grasp bottom, then top ties or elastics and remove</li> <li>• Discard in waste container</li> <li>• Perform hand hygiene</li> </ul> 
<p>Note that for surgical procedures and dentistry, the sequence for putting on PPE differs. In these situations, masks and protective eyewear are applied first prior to hand preparation. Gown and gloves are then put on.</p>	
<p><b>Perform hand hygiene immediately after removing all PPE</b></p>	

Resource 3 – Australian Veterinary Association Guidelines for Veterinary Personal Biosecurity.

Source: Australian guidelines for the prevention and control of infection in healthcare, adapted from <http://www.cdc.gov/hicpac/2007ip/2007isolationprecautions.html>, and used with permission.

Sponsored by CEVA Animal Health



- Perform hand hygiene frequently with an alcohol-based hand rub if your hands are not visibly dirty or with soap and water if hands are dirty.

3) HCP who come in contact with suspected or confirmed COVID-19 patients should wear appropriate PPE:

- HCP in triage area who are conducting preliminary screening do not require PPE if they **DO NOT** have direct contact with the patient and maintain distance of at least one meter.
- HCPs at the registration desk that are asking limited questions based on triage protocol. Installation of physical barriers (e.g., glass or plastic screens) are encouraged if possible.

- HCP providing facemasks or taking temperatures with infrared thermometers as long as spatial distance can be safely maintained.
  - When physical distance is NOT feasible and yet NO direct contact with patients, use mask and eye protection (face shield or goggles).
  - HCP conducting physical examination of patients with respiratory symptoms should wear gowns, gloves, medical mask and eye protection (goggles or face shield).
  - Cleaners in triage, waiting and examination areas should wear gown, heavy-duty gloves, medical mask, eye protection (if risk of splash from organic material or chemical), and boots or closed work shoes.
- 4) **HCP who develop respiratory symptoms** (e.g., fever, cough, shortness of breath) should inform related supervisor, perform RT-PCR test and stay home until he/she is clear from COVID-19 risk.
  - 5) Ensure that environmental cleaning and disinfection procedures are followed consistently, correctly, and frequently.

**Additional considerations for triage during periods of community transmission**

- 1) Begin or reinforce existing alternatives to face-to-face triage and visits such as *telemedicine*.
- 2) **Designate an area** near the facility (e.g., **an ancillary building or temporary structure**) or identify a location in the area **to be a “respiratory virus evaluation center”** where patients with fever or respiratory symptoms can seek evaluation and care.



Resource: CDC, “SOPs for Triage of Suspected COVID-19 Patients in non-US Healthcare Settings”.  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html>

- 3) **Expand hours of operation**, if possible, to limit crowding at triage during peak hours.
- 4) **Cancel non-urgent outpatient visits** to ensure enough HCP are available to provide support for COVID-19 clinical care, including triage services. *Critical or urgent outpatient visits* (e.g. infant vaccination or prenatal checkup for high-risk pregnancy) *should continue, however, facilities should ensure separate/dedicated entry for patients coming for critical outpatient visits to minimize their risk of exposure to COVID-19.*

- 5) Consider postponing or cancelling elective procedures and surgeries depending on the local epidemiologic context.

## CLINICAL MANAGEMENT PROTOCOL FOR CONFIRMED COVID-19 CASES

### I. Laboratory investigations

- 1) For all patients upon admission, perform the following tests and recheck according to the following:

Investigation upon admission	Re-check
CBC, Differential WBC, PT, PTT	Every three days.
Lymphocyte count	
LFT, KFT	
CRP	
D-Dimer Baseline, Ferritin	No need.
Procalcitonin	
Base line ECG	
Lipid Profile baseline	If needed.
RT-PCR	At day seven.

- 2) For moderate and severe or symptomatic patients, consider the following:

Investigation	Re-check	Patient Category
D-Dimer Baseline,	Every day.	Moderate and severe cases.
Procalcitonin	If infiltrate developed.	
ABG baseline	If needed.	
Chest X-Ray, HRCT	If needed.	Patient is symptomatic.

**3) For patients who are taking Hydroxychloroquine medication, consider the following:**

Investigation	Re-check
G6PD level	Before starting Hydroxychloroquine.
Ophthalmology evaluation <sup>2</sup>	
Base line ECG	daily

## **2. Management**

The management interventions of confirmed COVID-19 cases differs according to the severity. Asymptomatic and mild cases may need only nursing care with symptomatic treatment, while mild to moderate and severe and critical cases may include some or all levels of interventions listed below:

- 1) Hemodynamic Support.
- 2) Supportive care (symptomatic therapy), which may include:
  - Proper oxygen therapy.
  - Ventilator Support.
- 3) Medical Therapy.

The below table should be used to assist health care providers to select the best available supportive care and medical therapy for COVID-19 according the best available and current evidence. However, it is not intended to replace the clinical judgement of providers, but rather to complement it and aid in clinical decision-making.

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<sup>2</sup>Some people who take hydroxychloroquine for more than five years and/or in high doses are at increased risk of damage to their retina, the light sensitive layer of cells at the back of the eye. This is known as retinal toxicity or retinopathy.

**Table 1: Supportive Care and Medical Therapy for Confirmed COVID-19 Cases according to Severity.**

<b>1- Asymptomatic and Mild cases:</b>
<ul style="list-style-type: none"> <li>• Respiratory infection symptoms.</li> <li>• Hemodynamically stable.</li> <li>• Without respiratory distress.</li> <li>• Has none of the risk factors for severe disease.</li> <li>• Blood O<sub>2</sub>Sat &gt;95%.</li> </ul>
<b>Supportive Care</b>
<ul style="list-style-type: none"> <li>• Symptomatic treatment such as antipyretics for fever.</li> <li>• Nursing care only.</li> <li>• Doctors will be contacted only if signs of clinical deterioration.</li> </ul>
<b>COVID-19 Off-labelled<sup>3</sup> Medication<sup>4</sup></b>
None
<b>Precautions</b>
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<b>2- Moderate and Severe cases:</b>
<ul style="list-style-type: none"> <li>• <b>Symptoms ≥ 1 of the following:</b> <ul style="list-style-type: none"> <li>➤ Respiratory rate ≥ 30/min (adults).</li> <li>➤ Blood oxygen saturation ≥ 95% for moderate cases.</li> <li>➤ Blood oxygen saturation ≤ 94% for severe cases.</li> <li>➤ PaO<sub>2</sub>/FiO<sub>2</sub> ratio &lt; 300.</li> <li>➤ Lung infiltrates &gt; 50% of the lung field within 24-48 hours.</li> </ul> </li> </ul>

<sup>3</sup> Medications prescribed for the treatment of a malady or condition that has not been approved by the Food and Drug Administration for that particular usage.

<sup>4</sup> - Refer to the WHO Core Clinical Randomized Controlled Trial protocol for use in evaluating the efficacy and safety of investigational therapeutic agents in combination with standard of care for the treatment of hospitalized patients with novel coronavirus disease (COVID-19).

- If conducting an RCT is not possible, then investigational therapeutics should be used under Monitored Emergency Use of Unregistered Interventions Framework (MEURI), until an RCT can be initiated.

## Supportive Care

- **Medications:**

- Antipyretic: **Paracetamol** if  $\geq 38,5^{\circ}\text{C}$
- Start **multi vitamins**: Vitamin **D** oral 50000 units every 14 days or 2000 BID. **Vitamin C** 1000 daily, IV if available or orally 3 times daily. **Zinc** orally 220 mgs once daily.

- **Oxygen Therapy and Monitoring:**

Give supplemental oxygen therapy immediately to patients with severe acute respiratory infections (SARI) and respiratory distress, hypoxemia or shock and target  $\text{SpO}_2 > 94\%$ .

- Use nasal cannula, simple facemask or (nonrebreathing mask if no hypercapnia) for **supplemental oxygen** therapy.
- Don't initiate noninvasive ventilation (NIV), if patient is not improving. Arrange for early elective intubation (*Identify patients who are likely to require intubation, make sure the intubation is performed by a trained and experienced provider using airborne precautions, Intubation should be (rapid sequence intubation) using video laryngoscopy rather than direct laryngoscopy if feasible.*
- Continuous positive airway pressure (CPAP) might be beneficial according to latest evidence, always discuss its use with on call respiratory consultant or colleague.
- All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, nasal prongs, simple face mask, and mask with reservoir bag).

Closely monitor patients with COVID-19 for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and respond immediately with supportive care interventions.

- **Understand the patient's co-morbid condition(s) to tailor the management of critical illness.**

Determine which chronic therapies should be continued and which therapies should be stopped temporarily. Monitor for drug-drug interactions.

- **Use conservative fluid management in patients with SARI when there is no evidence of shock.**

Patients should be treated cautiously with intravenous fluids, because aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation.

- **Treatment of co-infections:**

Give empiric **antimicrobials** to treat all likely pathogens causing SARI and sepsis as soon as possible, within 1 hour of initial assessment for patients with sepsis.

- For patients with influenza or at risk for severe disease, empiric therapy with a neuraminidase inhibitor should be considered for the treatment.

**Supportive Care**

- Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment.

**COVID-19 Off-labelled<sup>5</sup> Medication<sup>6</sup>, consider to use:**

- **Hydroxychloroquine<sup>7</sup>**, if no contraindication:  
Dose: 400 mg every 12 hours for 1 day, followed by 200 mg BID for 9 days
- **Chloroquine** if Hydroxychloroquine is not available:  
Dose: Chloroquine base 600 mg at diagnosis (equivalent to chloroquine phosphate 1000 mg), followed by 300 mg (equivalent to chloroquine phosphate 500 mg) 12 hours later BID for 9 days
- Consider combination therapy of **Hydroxychloroquine with (Lopinavir/Ritonavir)**:  
Dose: 400/100 mg (= 2 tablets of 200/50 mg) BID and (hydroxy) chloroquine up to 10 days.

**Precautions**

- **Hydroxychloroquine and Chloroquine:**
    - Avoid chloroquine in Glucose 6 Phosphate Dehydrogenase (G6PD).
    - Check QT interval before initiation (causes drug-induced prolongation of the QTc, which may lead to ventricular rhythm abnormalities that can culminate in sudden cardiac death).
    - Use with caution in diabetic patients; hypoglycemia may occur. Insulin requirements may decrease.
    - Avoid Hydroxychloroquine with antacids. Separate administration by at least 4 hours.
    - Hydroxychloroquine can be crushed. Extemporaneous oral suspension recipe is available.
  - **Lopinavir/ritonavir:**
    - Patients with renal and/or hepatic impairment
- 3) Current evidence doesn't support using Lopinavir / Ritonavir as monotherapy.

**3- Critical cases:**

- Symptoms ≥ 1 of the following:
  - ARDS ( $\text{PaO}_2/\text{FIO}_2 < 300$ , diffuse interstitial infiltrates and no clinical evidence of left atrial hypertension {volume overload, heart failure}).

<sup>5</sup> Medications prescribed for the treatment of a malady or condition that has not been approved by the Food and Drug Administration for that particular usage.

<sup>6</sup> - Refer to the WHO Core Clinical Randomized Controlled Trial protocol for use in evaluating the efficacy and safety of investigational therapeutic agents in combination with standard of care for the treatment of hospitalized patients with novel coronavirus disease (COVID-19).

- If conducting an RCT is not possible, then investigational therapeutics should be used under Monitored Emergency Use of Unregistered Interventions Framework (MEURI), until an RCT can be initiated.

<sup>7</sup> Available in Jordan.

- Sepsis.
- Altered consciousness.
- Multiple organ failure.
- Cytokine release syndrome.
- Criteria for patients at high-risk for developing cytokine storm (1 or more of the following):
  - Serum IL-6  $\geq 3\times$  upper normal limit.
  - Ferritin  $>300$  ug/L (or surrogate) with doubling within 24 hours.
  - Ferritin  $>600$  ug/L at presentation and LDH  $>250$ .
  - Elevated D-dimer ( $>1$  mcg/mL).

### Supportive Care

- **Use conservative fluid management in patients with SARI when there is no evidence of shock. (see above).**
- **Medications:**
  - Antipyretic: **Paracetamol** if  $\geq 38,5$  °C.
  - Start **multi vitamins**: Vitamin **D** oral 50000 units every 14 days or 2000 BID. **Vitamin C** 1000 daily, IV if available or orally 3 times daily. **Zinc** orally 220 mgs once daily.

- **ARDS:**

Recommendations for adult patients with ARDS who are treated with non-invasive or high-flow oxygen systems.

- Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target  $SpO_2 \geq 93\%$  during resuscitation; or use face mask with reservoir bag (at 10–15 L/min) if patient in critical condition. Once patient is stable, the target is  $> 90\%$   $SpO_2$ .
- High-flow nasal oxygen (HFNO) should be used only in selected patients with hypoxemic respiratory failure. Adult HFNO systems can deliver 60 L/min of gas flow and  $FiO_2$  up to 1.0.
- Use **CPAP** without humidification and with helmet (first choice), with mask (second choice) set CPAP value between 10 and 12 cm  $H_2O$  according to patient's needs, tolerance and any side-effects.
- Use NIV with face mask as third choice (oronasal/total full face mask with filter between mask and whisper)

NIV/CPAP can be used in the post extubation phase of ARDS

- Non-invasive ventilation (NIV) should be used only in selected patients with hypoxemic respiratory failure.
- Patients treated with either HFNO or NIV should be closely monitored for clinical deterioration, as deterioration occurs earlier.

## Supportive Care

- High-flow nasal oxygen, NIV, including bubble CPAP, should be used with airborne precautions in a protected environment because of uncertainty around the potential for aerosolisation.
- Patients receiving HFNO, NIV should be in a monitored setting and cared for by experienced personnel capable of performing endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hour).
- NIV guidelines do not recommend using it in hypoxemic respiratory failure except in cardiogenic pulmonary oedema and postoperative respiratory failure or pandemic viral illness. Risks include delayed intubation, large tidal volumes, and injurious transpulmonary pressures. Limited data suggest a high failure rate in patients with other viral infections such as MERS-CoV who received NIV.
- Patients with hemodynamic instability, multiple organ failure, or abnormal mental status should likely not receive NIV in place of other options such as invasive ventilation.

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing to respond to standard oxygen therapy and prepare to provide advanced oxygen/ventilator support.

- **Intubation:** A trained and experienced provider using airborne precautions should perform endotracheal intubation. Rapid-sequence intubation is appropriate after an airway assessment that identifies no signs of difficult intubation using video laryngoscopy rather than direct laryngoscopy.
- Implement mechanical ventilation using lower tidal volumes (4–8 mL/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure < 30 cmH<sub>2</sub>O). It is suggested also for patients with sepsis-induced respiratory failure who do not meet ARDS criteria.
- Use of deep sedation may be required to control respiratory drive and achieve tidal volume targets.
- In adult patients with severe ARDS, prone ventilation for 12–16 hours per day recommended.
- Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion. The main effect is to shorten the duration of ventilation.
- Patients with moderate or severe ARDS, higher PEEP instead of lower PEEP suggested.
- Patients with moderate-severe ARDS ( $\text{PaO}_2/\text{FiO}_2 < 150$ ), neuromuscular blockade by continuous infusion should not be routinely used.
- *Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis.*
- Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required (for example transferring patient from ER to ICU, or taking patient for imaging )

## Supportive Care

Recommendations for adult patients with ARDS in whom lung protective ventilation strategy fails.

- Consider extracorporeal membrane oxygenation (ECMO), in settings with access to expertise.

### • **Septic Shock**

Recognize septic shock when infection is suspected or confirmed AND vasopressors are needed to maintain mean arterial pressure (MAP)  $\geq 65$  mmHg AND lactate is  $\geq 2$  mmol/L, in absence of hypovolemia.

- In the absence of a lactate measurement, use blood pressure (i.e. MAP) and clinical signs of perfusion to define shock.
- Standard care includes early recognition and the following treatments *within 1 hour of recognition*: antimicrobial therapy, and initiation of fluid bolus and vasopressors for hypotension.

Recommendations regarding resuscitation strategies for adult patients with septic shock

- Give 250–500 mL crystalloid fluid as rapid bolus in first 15–30 minutes and reassess for signs of fluid overload after each bolus. *Fluid resuscitation may lead to volume overload, including respiratory failure, particularly with ARDS. If there is no response to fluid loading or signs of volume overload appear, reduce or discontinue fluid administration. This step is particularly important in patients with hypoxemic respiratory failure.*
- Determine need for additional fluid boluses (250–500 mL) based on clinical response and improvement of perfusion targets. *Perfusion targets include MAP ( $> 65$  mmHg or age-appropriate targets in children), urine output ( $> 0.5$  mL/kg/hr in adults,  $1$  mL/kg/hr in children), and improvement of skin mottling and extremity perfusion, capillary refill, heart rate, level of consciousness, and lactate.*

Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP  $\geq 65$  mmHg and improvement of markers of perfusion.

- Norepinephrine is considered first-line treatment in adult patients; epinephrine or vasopressin can be added to achieve the MAP target. *Because of the risk of tachyarrhythmia, reserve dopamine for selected patients with low risk of tachyarrhythmia or those with bradycardia.*
- Vasopressors (i.e. norepinephrine, epinephrine, vasopressin, and dopamine) are most safely given through a central venous catheter at a strictly controlled rate, but it is also possible to safely administer them via peripheral vein and intraosseous needle. *Monitor blood pressure frequently and titrate the vasopressor to the minimum dose necessary to maintain perfusion and prevent side effects.*
- If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseous needles.
- If signs of poor perfusion and cardiac dysfunction persist despite achieving MAP target with fluids and vasopressors, consider an inotrope such as Dobutamine.

## Supportive Care

Administer corticosteroids only for patients in whom adequate fluids and vasopressor therapy do not restore hemodynamic stability. You must monitor and treat hyperglycemia, hypernatremia, and hypokalemia. Monitor for recurrence of inflammation and signs of adrenal insufficiency after stopping corticosteroids, which may have to be tapered.

## COVID-19 Off-labelled<sup>8</sup> Medication<sup>9</sup>, consider to use:

- Consider **Hydroxychloroquine or Chloroquine** (see dosing above).
- Consider combination therapy of **Hydroxychloroquine with (Lopinavir/Ritonavir)** (see dosing above).
- Consider **Remdesivir** (which is now approved by National Epidemiological Committee):  
Dose: 200 mg loading dose (IV, within 30 min), followed by 100 mg once daily for 5 to 10 days
- Consider **Favipiravir** (once available)  
Dose: 1600 mg/dose twice a day on the first day; followed by 600 mg/dose twice a day for 7 - 10 days
- If cytokine release syndrome confirmed, consider **tocilizumab (Actemra)**:  
Dose: Single dose 4 – 8 mg/kg (usual dose 400 mg; maximum 800 mg) by IV infusion; repeated within 12 hours for maximum of 2 doses.

## Precautions

- Hydroxychloroquine and Chloroquine (see precautions above)
- Lopinavir/Ritonavir (see precautions above)
- Remdesivir:
  - Exclusion criteria evidence of multiple organ failure, need of inotropes, Creatinine clearance < 30 ml/min, dialysis/hemofiltration, transaminases > 5X ULN, or concomitant use of Lopinavir/Ritonavir
- Favipiravir:
  - Contraindicated in pregnancy
- Tocilizumab:
  - Should perform IL6 and other inflammatory markers testing prior to start (CRP, Ferritin, D-dimer).
  - Watch for infusion reaction.

<sup>8</sup> Medications prescribed for the treatment of a malady or condition that has not been approved by the Food and Drug Administration for that particular usage.

<sup>9</sup> - Refer to the WHO Core Clinical Randomized Controlled Trial protocol for use in evaluating the efficacy and safety of investigational therapeutic agents in combination with standard of care for the treatment of hospitalized patients with novel coronavirus disease (COVID-19).

- If conducting an RCT is not possible, then investigational therapeutics should be used under Monitored Emergency Use of Unregistered Interventions Framework (MEURI), until an RCT can be initiated.

## Other Medications' Considerations

### Corticosteroids:

- Routine corticosteroids should be avoided unless they are indicated for another reason (exacerbation of asthma or COPD, septic shock).
- When indicated starts Inhaled Corticosteroids (ICS).
- ICS are discouraged for COVID-19 patient as they may decrease local immunity and promote viral replication.

Use **Oseltamivir** when influenza A/B is suspected or known to be circulating. If testing for influenza is not possible, empiric treatment is indicated.

Dose: 150mg BD x 5 days

For patients who needs **nebulized medication** *replace* nebulizers with **Salbutamol MDI and Ipratropium MDI** all the time with the use of spacer as nebulized medications increase the risk of viral transmission.

### Antibiotics:

- Should follow the same guidelines for community acquired pneumonia (CAP)/ hospital acquired pneumonia (HAP).
- Start antibiotics on all patients who have evidence of pneumonia on CXR and leukocytosis with neutrophilia and high Procalcitonin and CRP.

### Statins:

- Continue if already prescribed, *if no contraindication*,
- Start for those who have a guideline indication, consider starting: **Atorvastatin 40 mg daily** or **Rosuvastatin 20 mg daily**.
- Statins may help promote antiviral innate immune response. If elevated CPK  $\geq 500$  U/L, consider not starting a statin.

### Multi-vitamins:

- Vitamin **D** oral 50000 units every 14 days or 2000 BID. **Vitamin C** 1000 daily, IV if available or orally 3 times daily. **Zinc** orally 220 mgs once daily.
- Studies say that *Hydroxychloroquine* helps the zinc get inside the infected cells to destroy the virus, and *vitamins C and D* support immune function.

Alter **NSAIDs** esp. **Ibuprofen** as there is evidence from observational study that some COVID-19 patients developed clinical deterioration after starting NSAIDs.

While WHO recent study conclude that: "At present there is no evidence of severe adverse events, acute health care utilization, long-term survival, or quality of life in patients with COVID-19, as a result of the use of NSAIDs".

### Convalescent Plasma (IgG Antibodies) transfusion:

It is available as part of a clinical trial for the following critically ill patients:  $\geq 18$  years old, confirmed COVID-19 PCR, requiring ICU care or severe or immediately life threatening care (see severe and critical symptoms above).

## Other Medications' Considerations

### Thromboprophylaxis<sup>10</sup>:

Thromboprophylaxis with *low molecular weight heparin (LMWH)* should be considered in ALL patients (including non-critically ill) who require hospital admission for COVID-19 infection, in the absence of any contraindications (active bleeding and platelet count less than  $25 \times 10^9/L$ ; monitoring advised in severe renal impairment; abnormal PT or APTT is not a contraindication)

D-Dimer (mcg/mL)	Weight (Kg)	LMWH
Less than 1	Less than 100	Enoxaparin 40 mg twice daily
	100-150	Enoxaparin 40 mg twice daily
	More than 150	Enoxaparin 60 mg twice daily
More than 1	Less than 100	Enoxaparin 40 mg twice daily
	100-150	Enoxaparin 80 mg twice daily
	More than 150	Enoxaparin 1200 mg twice daily

All doses may need adjustment based on renal function. In the absence of bleeding, coagulopathy is not a contraindication to anticoagulation with heparin/LMWH unless platelets fall below 30 for prophylaxis or below 50 for therapeutic heparin/LMWH.

For patients with Heparin-induced thrombocytopenia (HIT), please follow HIT standard institutional protocol for alternative anticoagulation.

### ACE-Inhibitors (ACEI) / Angiotensin Receptor Blockers (ARBs):

- SARS-CoV-2 virus binds to the ACE2 receptor for cellular entry. There are theories these may either help or worsen COVID-19 disease.
- Currently there are no data to support either starting or stopping ACEI/ARBs on any patients with COVID-19. Discuss the possibility of switching to other antihypertensive. *No for initiating ACE or ARBS for COVID 19 patients.*

<sup>10</sup> COVID-19 has been associated with inflammation and a prothrombotic state, with increases in fibrin, fibrin degradation products, fibrinogen, and D-dimers. Although the true incidence of thrombosis is unknown, there have been reports of increased incidence of thromboembolic disease associated with COVID-19 in patients in the intensive care unit.

Prevention of complications:

Implement the following interventions in the table to prevent complications associated with critical illness. These interventions are based on Surviving Sepsis or other guidelines, and are limited to feasible recommendations based on high-quality evidence.

Anticipated Outcome	Interventions
Reduce days of invasive mechanical ventilation	<ul style="list-style-type: none"><li>• Use weaning protocols that include daily assessment for readiness to breathe spontaneously.</li><li>• Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions.</li></ul>
Reduce incidence of ventilator- associated pneumonia	<ul style="list-style-type: none"><li>• Oral intubation is preferable to nasal intubation in adults.</li><li>• Keep patient in semi-recumbent position (head of bed elevation 30 –45°).</li><li>• Use a closed suctioning system; periodically drain and discard condensate in tubing.</li><li>• Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged, but not routinely.</li><li>• Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 day.</li></ul>
Reduce incidence of venous thromboembolism	<ul style="list-style-type: none"><li>• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).</li></ul>
Reduce incidence of catheter-related bloodstream infection	<ul style="list-style-type: none"><li>• Use a 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.</li></ul>
Reduce incidence of pressure ulcers	<ul style="list-style-type: none"><li>• Turn patient every 2 hours.</li></ul>
Reduce incidence of stress ulcers and gastrointestinal (GI) bleeding	<ul style="list-style-type: none"><li>• Give early enteral nutrition (within 24–48 hours of admission).</li><li>• 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 ≥ 48 hours, coagulopathy, renal replacement therapy, liver disease, multiple comorbidities, and higher organ failure score.</li></ul>
Reduce incidence of ICU-related weakness	<ul style="list-style-type: none"><li>• Actively mobilize the patient early in the course of illness when safe to do so.</li></ul>

### Resuscitation guidelines according to UK Resuscitation Council

The Resuscitation guidelines according to UK resuscitation council is considered as a job aid for health providers in ICU. (Annex 1)

### Diet as part of management for all cases:

#### **Nutrition can be administered:**

- Enterally -within the gastrointestinal tract- if good gut function exists.
- Parenterally in patients unable to tolerate enteral feeding.

#### **Nutritional goals in the intensive care unit include:**

- Maintenance of body weight
- Lean body mass.

#### **Proper nutritional therapy includes:**

- Assessment of adequate caloric requirements.
- Appropriate protein, carbohydrate, and fat composition of the nutritional support.

### **3. Discharge criteria**

An overview of recommendations for the de-isolation of COVID-19 patients are following:

- 1) **Clinical resolution of symptoms.**
- 2) At least **two upper respiratory tract samples negative for SARS-CoV-2**, collected at **≥ 24 hour intervals** are recommended to document SARS-CoV-2 clearance, (CDC advice : a total of 4 negative specimens).
- 3) For symptomatic patients after the **resolution of symptoms**, **samples** should be collected **at least seven days after the onset or after > 3 days without fever**.
- 4) For asymptomatic SARS-CoV-2-infected persons, the **tests** to document virus clearance should be **taken at a minimum of 14 days after the initial positive test**.

#### **Updated WHO criteria for releasing COVID-19 patients from isolation:**

WHO updated the criteria for discharge from isolation. These criteria apply to all COVID-19 cases regardless of isolation location or disease severity.

Criteria for discharging patients from isolation (i.e., discontinuing transmission-based precautions) without requiring retesting:

- **Symptomatic patients:**

10 days after symptom onset, *plus* at least 3 additional days without symptoms (including without fever and without respiratory symptoms).

- **Asymptomatic cases:**

10 days after positive test for SARS-CoV-2.

Examples:

- *If a patient had symptoms for two days, then the patient could be released from isolation after 10 days + 3 = 13 days from date of symptom onset;*
- *A patient with symptoms for 14 days, the patient can be discharged (14 days + 3 days =) 17 days after date of symptom onset;*

- *A patient with symptoms for 30 days, the patient can be discharged (30+3=) 33 days after symptom onset.*

There is a minimal residual risk that transmission could occur with these non–test-based criteria. That’s why a laboratory-based approach can still be useful in the below situations:

- Situations where a minimal residual risk is unacceptable, like:
  - *Individuals at high risk of transmitting the virus to vulnerable groups.*
  - *In high-risk situations or environments.*
- Patients who are symptomatic for prolonged periods of time.

After discharge, patients are recommended to:

- 1) Continue 14 days of isolation management and health monitoring
- 2) Wear a mask
- 3) Self-isolate in a room with good ventilation
- 4) Reduce close contact with family members
- 5) Eat separately, wash or sanitize hands every hour
- 6) Avoid outdoor activities.

According to CDC, it is recommended that discharged patients should have **follow-up visits after 2 and 4 weeks**

## SECOND GUIDANCE: CASE MANAGEMENT FOR PREGNANT WOMAN CONFIRMED WITH COVID-19

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The WHO states that “All pregnant women, including those with confirmed or suspected COVID-19 infection, have the right to have high quality care before, during, and after childbirth. This includes antenatal, postnatal, intrapartum and mental health care as well as neonatal care.” To date, there are limited data on clinical presentation and perinatal outcomes after COVID-19 during pregnancy or the puerperium.

**Pregnancy as a Vulnerability for COVID-19:** Currently, there is no evidence pregnant women are at higher risk of severe COVID-19 or more likely to be seriously unwell than other adults. The large majority of pregnant women will experience only mild or moderate cold or flu like symptoms. However, most recent CDC COVID-19 guidance recommends considering pregnant woman in a vulnerable group. This guidance underscores the changes in a pregnant woman’s body and immune system during pregnancy, and existing evidence, that indicates that pregnant women can be badly affected by respiratory infections. Therefore, it is important for pregnant women to take precautions to protect themselves against contracting COVID-19, and report possible symptoms (including fever, cough or difficulty breathing) to their health care providers.

**Updated CDC “Pregnancy as a Vulnerability for COVID-19”:**

According to the latest known updates by CDC, pregnant woman might be at an increased risk for severe illness from COVID-19 compared to non-pregnant woman. Additionally, pregnant woman with COVID-19 might have an increased risk of adverse pregnancy outcomes, such as preterm birth.

- These findings highlight the importance of preventing and identifying COVID-19 in pregnant women.

**Precautions Pregnant Women Should Take to Avoid COVID-19 Infection:**

Pregnant women should follow infection prevention measures:

- Regular hand washing
- Use a tissue when she or anyone in her family coughs or sneezes, discard and wash hands
- Avoid contact with someone who is displaying symptoms of coronavirus, and keep at least 1-meter from other people.
- Avoid non-essential use of public transport when possible.
- Work from home, where possible.
- Avoid large and small gatherings in public spaces.
  - Avoid gatherings with friends and family. Keep in touch using remote technology such as the phone, internet, and social media.
  - Use the telephone or online services to contact for health advice or assistant or other essential services.

**Transmission of COVID-19:** There is no evidence yet on mother-to-child transmission when infection manifests in the third trimester, based on negative samples from amniotic fluid, cord blood, vaginal discharge, neonatal throat swabs or breastmilk.

The following recommendations should be followed during a pregnant woman's stay at the hospital:

- Commence droplet, contact, and standards precautionary IPC measures.
- Isolation.
- Discuss fetal outcome and mode of birth.
- Prior to discharge, provide instruction to risk minimization strategies to catch COVID-19.

## ANTENATAL CARE

### 1. Antenatal care during COVID-19 pandemic

In period of COVID-19 pandemic, antenatal care services must continue to be provided but the following approaches must be taken into consideration:

- Respectful Maternity services should continue to be prioritized as an essential core health service.
- If woman report symptoms or contact with suspected-confirmed COVID-19, follow the national screening and triaging “referral pathway” for COVID-19.
- Pregnant women with symptoms of COVID-19 should be prioritized for testing, as they may need specialized care.
- Limit the attendance of companions to the minimum.
- Adjustment the standard antenatal care schedule, so that some antenatal appointments are conducted using telehealth (virtually by phone, video chat); refer to alternate antenatal care schedule during COVID-19 (Annex 2).
- If a pregnant woman in self-isolation for possible COVID-19 (contact case) seeks medical care, she should be advised to use private transport where possible. If an ambulance is required, the woman should alert ambulance staff that she is currently in self-isolation for possible COVID-19. The facemask should not be removed until the woman is isolated.

### 2. Antenatal care: primary health care level

According to WHO, antenatal care models recommends a minimum of eight medical contacts to reduce perinatal mortality and improve women's experience of care. During COVID-19, antenatal care contact reduced in many countries to be four or less contacts.

To ensure maternity care providers can deliver respectful and individualized antenatal care services that promote the safety of women, HCPs need to apply the following:

- For ANC services happening in facilities, organize client flow, as needed, to reduce wait times and contacts with other patients and improve efficiency of service delivery to promote satisfaction among clients.
- Minimize the physical presence of the pregnant through providing group components of care together at the same visit (i.e.: supplement, vaccines, laboratory investigations, physical assessment etc.).
- Assure that women receive recommended amounts of iron, folic acid, calcium etc. to help avoid facility visits just to obtain supplies.

- Some antenatal services should be provided, if possible, virtually or through telehealth services. Midwives and other key providers of antenatal care will need to use clinical judgment in deciding which women are suitable for an alternate or virtual schedule of face-to-face care.
- Regardless of type of contact ALL women need to have:
  - Assessment for, and information on, possible COVID-19 symptoms<sup>11</sup>
  - Comprehensive Antenatal counselling (focusing on the antenatal anxiety and depression and domestic violence due to the economic and social impacts of the COVID-19 pandemic)
  - Ongoing pregnancy risk assessment – including emotional wellbeing and personal safety
  - Documentation of care provision to ensure appropriate care planning
- Assessment of risk and identification of risk factors should be continuous as pregnancy status can change from week to week, which may change the planned antenatal care schedule.

### **3. Antenatal care: hospital level**

Pregnant women who are suspected or confirmed COVID-19 and are experiencing any pregnancy related symptoms/complications needs to be evaluated separately from others in an isolated room or floors if admitted to hospital, to lower the chance of transmission to the maternity care provider and other women attending for care.

Antenatal services is also provided in the out-patient clinics of hospitals, these pregnant woman may visit the hospital during COVID-19 seeking medical care can be categorized as the following:

- 1) Pregnant woman attend hospital and admission is not indicated.
- 2) Pregnant woman admitted to hospital for any medical reasons.
- 3) Pregnant woman admitted to hospital suspected or confirmed with COVID-19.
- 4) Pregnant woman admitted to hospital for delivery with suspected or confirmed COVID-19.

#### **Pregnant woman attends hospital and admission is not indicated:**

A pregnant woman who attends the hospital for any medical reason other than COVID-19, and does not need admission can keep routine usual care and commence IPC precautionary measures, for example:

- Regular hand washing
- Use a tissue when she or anyone in her family coughs or sneezes, discard and wash hands
- Avoid contact with someone who is displaying symptoms of coronavirus, and keep at least 1-meter from other people at the facility.

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<sup>11</sup> COVID-19 Symptoms – fever, tiredness, dry cough, aches and pains, nasal congestion, runny nose, sore throat or diarrhea (World Health Organization, 2020)

**Pregnant woman admitted to hospital for any medical reasons**

Pregnant women who needs to be admitted to hospital for medical reasons not related to COVID-19:

- Commence IPC measures and hospital protocols.
- Treat according to her health condition and indication for admission.
- Monitor maternal and fetal conditions.
- Prior to discharge, provide instruction to risk minimization strategies to catch COVID-19.
  - Advise to return home using personal transport (not public transport or ride sharing options).
  - Resume usual antenatal care schedule.
  - Advise to telephone hospital if any concerns emerge.

**Pregnant women admitted to hospital suspected or confirmed with COVID-19**

Pregnant women with suspected, probable, or confirmed COVID-19, including women who may need to spend time in isolation, should have access to skilled service provider, including midwives, obstetric, fetal medicine and neonatal care, as well as mental health and psychosocial support, with readiness to care for complications who will comply with the infection prevention control measures for COVID-19.

**General considerations for pregnant women with moderate or severe confirmed COVID-19:**

- 1) A multidisciplinary team (MDT) planning meeting ideally involving a consultant physician (infectious disease specialist where available), consultant obstetrician, midwife-in-charge and consultant anesthetist responsible for obstetric care should be arranged urgently. The discussion should be shared with the woman.
- 2) The priority for medical care should be to stabilize the woman's condition with standard therapies.
- 3) Hourly observations should include respiratory rate and oxygen saturations.
- 4) Fetal surveillance as clinically indicated.
- 5) Delay investigations/procedures that require the woman to be transported out of isolation whenever it is clinically safe.
- 6) Signs of decompensation include an increase in oxygen requirements or  $\text{FiO}_2 > 40\%$ , a respiratory rate of greater than 30, reduction in urine output, or drowsiness, even if the saturations are normal.
- 7) Escalate urgently if any signs of decompensation develops.
- 8) In addition to usual maternal and fetal antenatal observations, monitor oxygen saturation ( $\text{O}_2 \text{ Sat}$ ).
- 9) Titrate oxygen to keep saturations  $> 94\%$ .
- 10) Ultrasound scan for fetal wellbeing as indicated and after resolution of acute symptoms.

- 11) If positive COVID-19 result occurs in first trimester, consider a detailed morphology scan at 18–24 weeks.
- 12) Radiographic investigations should be performed as for the non-pregnant adult; this includes chest X-ray and CT of the chest.
- 13) Chest imaging, especially CT chest, is essential for the evaluation of the unwell patient with COVID-19 and should be performed when indicated, and not delayed because of fetal concerns
- 14) Abdominal shielding can be used to protect the fetus as per normal protocols.
- 15) Consider additional investigations to rule out differential diagnoses e.g. ECG, CTPA, echocardiogram.
- 16) Do not assume all pyrexia is due to COVID-19. Perform full sepsis-six screening.
- 17) Maintain index of suspicion for bacterial pneumonia
- 18) Consider bacterial infection if the white blood cell count is raised (lymphocytes usually normal or low with COVID-19) and commence antibiotics.
- 19) Apply caution with IV fluid management:
  - Monitor using hourly fluid input/ output charts.
  - Target achieving neutral fluid balance in labour to avoid the risk of fluid overload.
  - Try boluses in volumes of 250-500mls and then assess for fluid overload before proceeding with further fluid resuscitation.
- 20) All pregnant women admitted with COVID-19 infection (or suspected COVID-19 infection) should receive prophylactic LMWH, unless birth is expected within 12 hours.
- 21) The diagnosis of pre-eclampsia should be considered in women with chest pain, worsening hypoxia (particularly if there is a sudden increase in oxygen requirements) or in women whose breathlessness persists or worsens after expected recovery from COVID-19.
- 22) The frequency and suitability of fetal heart rate monitoring should be considered on an individual basis, taking into consideration the gestational age of the fetus and the maternal condition. If urgent intervention for birth is indicated for fetal reasons, birth should be expedited as normal, as long as the maternal condition is stable.
- 23) An individualized assessment of the woman should be made by the MDT to decide whether emergency caesarean birth or induction of labour is indicated, either to assist efforts in maternal resuscitation or where there are serious concerns regarding the fetal condition.
- 24) Individual assessment should consider: the maternal condition, the fetal condition, the potential for improvement following elective birth and the gestation of the pregnancy. The priority must always be the wellbeing of the woman.
- 25) If maternal stabilization is required before intervention for birth, this is the priority, as it is in other maternity emergencies, e.g. severe pre-eclampsia.
- 26) Steroids should be given when indicated.

The below table shows specific clinical considerations that must be taken into account in the management of pregnant woman with COVID-19:

Aspect of care	Specific Clinical Considerations
Antenatal corticosteroids	<ul style="list-style-type: none"><li>• No alteration to usual indications/recommendations when given for fetal lung maturity.</li><li>• For women with severe COVID-19 disease requiring ICU admission or ventilation, consider individual circumstances and consult with multi- disciplinary experts.</li></ul>
Magnesium sulfate	<ul style="list-style-type: none"><li>• No evidence to alter usual indications/recommendations.</li><li>• Consider need for conservative fluid management with COVID-19</li></ul>
Tocolytics	<ul style="list-style-type: none"><li>• <b>Nifedipine</b> may be beneficial in COVID-19 due to similarities between efficacy in treatment of high altitude pulmonary oedema and lung manifestations of COVID-19.</li><li>• <b>NSAID (e.g. indomethacin)</b> use in setting of COVID-19 has raised concern, however there is no data to suggest use should be altered at this time.</li><li>• Avoid <b>Betamimetics</b> in women with COVID-19 as may exacerbate maternal hypotension, tachycardia and pulmonary oedema</li></ul>
Treatment (Medication and Supportive care)	<ul style="list-style-type: none"><li>• Currently no proven antiviral treatment</li><li>• Treatment (e.g. anti-pyrexia medicines, anti-diarrhoeal medicines, intensive care unit admission) is directed by signs and symptoms, and severity of illness</li><li>• Monitor and maintain fluid and electrolyte balance</li><li>• Minimize maternal hypoxia<ul style="list-style-type: none"><li>➢ Oxygen therapy as indicated to maintain target SpO<sub>2</sub> of 92–95%.</li><li>➢ Use PPE as recommended for Aerosol Generating Procedures (AGP) in case there was a need for intubation.</li></ul></li><li>• Consult with infectious diseases/microbiology regarding empiric antibiotic therapy for superimposed bacterial pneumonia</li></ul>
Venous thromboembolism (VTE) risk	<ul style="list-style-type: none"><li>• For women with suspected or confirmed COVID-19, consider VTE prophylaxis (antenatal and postpartum) even in the absence of other risk factors.<ul style="list-style-type: none"><li>➢ Pregnancy is a state of increased risk for VTE.</li><li>➢ Patients with COVID-19 reported to have an additional procoagulant state compared to other hospitalized patients, including activation of coagulation through various infectious and inflammatory mechanisms.</li><li>➢ Reduced mobility resulting from self-isolation at home or from admission to hospital may also increase risk.</li></ul></li></ul>

#### **4. Hospital: intrapartum care for women with suspected and/or confirmed COVID-19**

According to the national policy all suspected and confirmed COVID-19 cases are hospitalized in a designated floor in designated hospitals.

##### **Pregnant woman with true labor pain with suspected or confirmed COVID-19**

##### **Case Management will include:**

- Commence droplet isolation with contact and standards precautions:
  - Alert consultant obstetrician, consultant anesthetist, midwife-in-charge, and consultant neonatologist, neonatal nurse in charge and infection control team.
- Once settled in an isolation room, a full maternal and fetal assessment should include:
  - Assessment of the severity of COVID-19 symptoms by the most senior available clinician.
  - Discussion with a MDT, including an infectious diseases or public health specialist.
  - Maternal observations including temperature, respiratory rate and oxygen saturations.
  - Confirmation of the onset of labour, as per standard care.
  - Cardiotocograph (CTG).
  - Continuous electronic fetal monitoring (EFM) in labour is currently recommended for all women with COVID-19.
  - If labour is confirmed, then care in labour should ideally continue in the same isolation room.

##### **Care in labour:**

##### **Considerations when caring for women in spontaneous or induced labour:**

- When a woman with confirmed or suspected COVID-19 is admitted, the following members of the MDT should be informed: consultant obstetrician, consultant anesthetist, midwife-in-charge, consultant neonatologist, neonatal nurse in charge and infection control team.
- Minimize the number of staff members entering the room
- Maternal observations and assessment should be continued as per standard practice, with the addition of hourly oxygen saturations. Aim to keep oxygen saturation more than 94%, titrating oxygen therapy accordingly.
- In case of deterioration in the woman's symptoms, make an individual assessment regarding the risks and benefits of continuing the labour versus preceding to emergency caesarean birth if this is likely to assist efforts to resuscitate the woman.
- The neonatal team should be given sufficient notice at the time of birth, to allow them to attend and wear PPE before entering the room/theatre.
- Delayed cord clamping is still recommended following birth, provided there are no other contraindications. The baby can be cleaned and dried as normal, while the cord is still intact.

Mode of birth:

- There is currently no evidence to favor one mode of birth over another and therefore Cesarean delivery is indicated for obstetric causes.
- Mode of birth should not be influenced by the presence of COVID-19, unless the woman’s respiratory condition demands urgent intervention for birth.
- For emergency caesarean births, donning PPE is time-consuming. This may impact on the decision to delivery interval but it must be done. Women and their families should be told about this possible delay.
- Shortening the length of the second stage of labour with elective instrumental birth in a symptomatic woman who is becoming exhausted or hypoxic should be considered.

Analgesia:

- Epidural analgesia should therefore be recommended in labour, to women with suspected or confirmed COVID-19 to minimize the need for general anesthesia if urgent intervention for birth is needed.
- Entonox (if available) should be used with a single-patient microbiological filter. There is no evidence that the use of Entonox is an AGP.

Planned induction of labour

- An individual assessment should be made regarding the urgency of planned induction of labour for women currently suspected or confirmed COVID-19.
- Women should be admitted into an isolation room; in which they should ideally be cared for the entirety of their hospital stay.

Elective (planned) caesarean birth

- In women with suspected or confirmed COVID-19, an individual assessment should be made to determine whether it is safe to delay elective caesarean birth until her recovery. The individualized assessment should consider the urgency of the birth, and the risk of infectious transmission to other women, healthcare workers and, postnatally, to her baby.
- Obstetric management of elective caesarean birth should be according to usual practice.

Consideration for healthcare professionals dealing with suspected/confirmed COVID-19 pregnant requiring surgical interventions

Specific consideration for healthcare professionals caring for pregnant women requiring surgical intervention including Cesarean Section (CS) with suspected/confirmed COVID-19
<ul style="list-style-type: none"><li>• Elective/planned obstetric procedures (e.g. cervical cerclage or caesarean) should be scheduled at the end of the operating list.</li><li>• Emergency procedures should be carried out in a second obstetric theatre, where available, allowing time for a full postoperative theatre clean as per local health protection guidance.</li><li>• The number of staff in the operating theatre should be kept to a minimum, and all must wear appropriate PPE.</li></ul>

Specific consideration for healthcare professionals caring for pregnant women requiring surgical intervention including Cesarean Section (CS) with suspected/confirmed COVID-19

- Regarding PPE:
  - The level of PPE required by healthcare professionals should be determined based on the risk of requiring a GA. *Intubation is an AGP, which increases the risk of transmission of coronavirus to the attending staff. Using regional anesthesia (spinal, epidural or combined spinal-epidural) is not an AGP.*
  - Where GA is planned from the outset, all staff in theatre should wear PPE, with face mask. The scrub team should scrub and don PPE before the GA is commenced.

**Risk of VTE**

- Following birth, women should be risk assessed for VTE.
- The first dose after delivery of LMWH should be administered as soon as possible after birth, provided there is no postpartum hemorrhage and regional analgesia has not been used.
- Where regional analgesia has been used, LMWH can be administered 4 hours after the last spinal injection or removal of the epidural catheter.

## **THIRD GUIDANCE: CASE MANAGEMENT FOR CHILDREN CONFIRMED WITH COVID-19**

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Current evidence suggest that pediatric COVID-19 cases might be less severe than cases in adults and children. Possible explanations: higher expression of Angiotensin-converting enzyme 2 (ACE2) receptors in children, leading to downregulation of inflammatory processes and immunity system in children fight viruses better than adults.

Although most cases reported among children to date have not been severe, health care providers should maintain a high index of suspicion for COVID-19 infection in all children and monitor for progression of illness, particularly among infants and children with underlying conditions. However, recently new information suggests that in rare cases, children who have been exposed to COVID-19 may develop symptoms associated with toxic shock or Kawasaki disease. While this has not been fully confirmed by research, it underlies the importance of health care provider vigilance, especially if the child develops a rash, fever, rash, abdominal pain or vomiting.

The majority of children are expected to have asymptomatic or mild disease only. They likely play a role in transmission and spread of COVID-19 in the community, and social distancing and everyday preventive behaviors are recommended for persons of all ages to slow the spread of COVID-19. (In Jordan up to 1<sup>st</sup> May 2020, COVID-19 Age Specific incidence rate and Age Specific mortality rate per 100000 for the age group 0-9 year's old equal to 2 and 0 respectively compared to 9 and 1.3 among 60 years old and above).

### **CLINICAL AND DIAGNOSTIC FEATURES IN CHILDREN**

The symptoms of COVID-19 are similar in children and adults. Reported symptoms in children include cold-like symptoms, such as fever, runny nose, myalgia, lethargy, and cough. Gastrointestinal symptoms including vomiting and diarrhea have also been reported. The most frequent symptoms in children with COVID-19 are fever and/or cough (each present in approximately 50% of children with COVID-19). Fever in children with COVID-19 often subsides within three days. The cough is typically dry, though a productive or wet cough was reported in 3 percent of cases in one study. The symptoms generally begin 2-14 days after being exposed to the virus.

No symptoms on admission to a health care facility predict the outcome in children. Unlike in adults, whereby high fever on admission was associated with subsequent development of ARDS and death. Hematology and biochemistry laboratory testing and ECG should be performed at admission and as clinically indicated to monitor for complications, such as acute liver injury, acute kidney injury, acute cardiac injury, or shock.

Although a consistent pattern of characteristic laboratory findings has not yet been identified in children with confirmed COVID-19, the following abnormalities have been observed:

- Leukopenia (The commonest white cell abnormality reported in 30% of children).
- Increased levels of liver and muscle enzymes and lactate dehydrogenase.
- Increased myoglobin and creatine kinase isoenzyme levels.
- Elevated C-reactive protein (CRP) level.
- Elevated erythrocyte sedimentation rate.
- Increased procalcitonin level.

Children with viral infections do get transient derangement of liver function, but this is self-limiting. It is more likely that this would happen in children who are generally unwell, those with pneumonia, and those receiving medical treatments.

Chest x-rays of children with COVID-19 show patchy infiltrates consistent with viral pneumonia, and chest CT scans have shown nodular ground glass opacities. However, these findings are not specific to COVID-19, may overlap with other diagnoses, and some children may have no radiographic abnormalities. Chest radiograph or CT alone is not recommended for the diagnosis of COVID-19. It is crucial to isolate children and avoid movement around the hospital, so chest x-rays should be portable.

## COMORBIDITIES

There is little evidence that children with comorbidities are at greater risk of morbidity and mortality from COVID-19. Unlike in adults, where comorbidities are an important risk factor for mortality. The relevant pre-existing conditions include:

- Long-term respiratory conditions including chronic lung disease of prematurity with oxygen dependency, Cystic fibrosis, childhood interstitial lung disease, asthma, and respiratory complications of neuro disability.
- Immunocompromise (disease or treatment) including treatment for malignancy, congenital immunodeficiency, HIV Immunosuppressive medication, including long term > 28 consecutive days of daily oral or IV steroids (not alternate day low dose steroid or hydrocortisone maintenance), post-transplant patients (solid organ or stem cell), Asplenia (functional or surgical), and Trisomy 21.
- Haemodynamically significant and/or Cyanotic heart disease.

A small number of children develop severe COVID-19 infection characterized by a massive proinflammatory response or cytokine storm that results in ARDS and multi- system dysfunction. Health care providers should screen patients presenting severe COVID-19 should be screened for hyper-inflammation using laboratory trends (e.g. increasing ferritin, decreasing platelet counts or erythrocyte sedimentation rate and increased levels of interleukins IL2-2, IL-7 and other cytokines.) to identify the subgroup of patients for whom anti-inflammatory treatment could improve mortality. In a few reported cases, multi-system inflammatory presented with overlapping features of toxic shock syndrome and atypical Kawasaki disease.

The following conditions indicate a greater likelihood of severe disease:

- Dyspnea: Respiration rate > 50 breaths/min in children aged 2-12 months; > 40 breaths/min in children aged 1-5 years; > 30 breaths/min in patients older than 5 years old (after excluding the effects of fever and crying).
- Persistent high fever for 3-5 days.
- Central cyanosis, hypoxia.
- Poor mental response, lethargy, disturbance of consciousness, and other changes of consciousness.
- Abnormally increased levels of enzymes, such as myocardial and liver enzymes and lactate dehydrogenase.
- Unexplained metabolic acidosis.
- Chest imaging findings indicating bilateral or multi-lobe infiltration, pleural effusion, or rapid progression of conditions during a very brief period.
- Age younger than 3 months.
- Extra pulmonary complications.
- Coinfection with other viruses or bacteria.

## CLINICAL MANAGEMENT PROTOCOL FOR CHILDREN CONFIRMED WITH COVID-19 CASES

- 1) Confirmed COVID-19 positive cases should be isolated, droplet and contact precautions (gloves, gown, surgical mask, and eye wear) should be observed for all HCPs, family members, and visitors.
- 2) Reassure parents and involve them in caring for their child. Be extra-cautious in children with pre-existing conditions, but reassure parents that the risks of comorbidities is much greater in adults than in children.
- 3) For mild to moderate disease supportive care only is recommended. Recommendations for supportive care for children with COVID-19 are similar to those for adults. Among the recommendations are bed rest, fever management, ensuring sufficient calorie, and fluid intake.
- 4) Oxygen therapy is recommended for patients with hypoxia. Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive airway management and oxygen therapy during resuscitation to target  $SpO_2 \geq 94\%$ ; otherwise, the target  $SpO_2$  is  $\geq 90\%$ . Use of nasal prongs or nasal cannula is preferred in young children, as they may be better tolerated.
- 5) Most children with mild illness do not require fluid restriction below normal maintenance values. If children have respiratory compromise consider fluid restriction as this may reduce the risk of ARDS. Be aware that febrile children, and those who are tachypneic, will have increased insensible losses. Diuretics are not indicated routinely but should be considered in some children with worsening respiratory failure requiring CPAP or NIV, particularly if there is evidence of pulmonary oedema on chest x-ray. If improvement is not possible, mechanical ventilation with endotracheal intubation and a protective lung ventilation strategy should be adopted.
- 6) Antipyretics: Paracetamol is the first line antipyretic. Avoid ibuprofen in children with poor fluid intake or suspected AKI. There are unsupported reports of ibuprofen being implicated in severe cases of COVID-19. One theory is that NSAIDs can upregulate expression of ACE receptors in the lung.
- 7) Antibiotics should generally be reserved for children with bacterial co-infection. Antibiotic choice should be based on local guidelines. A respiratory sample for microbiological culture should ideally be sent prior to starting antibiotics. For children with co-morbidities, such as cystic fibrosis, antibiotic choice should be based on known bacterial colonization where available.
- 8) Systemic steroids are not routinely indicated. Some adult papers promote the use of steroids. However, they are likely to be harmful, immunosuppressive, prolong viral shedding and are likely to have more side-effects than beneficial effects in children.
- 9) Bronchodilators should not be used routinely unless there is strong suspicion of bronchoconstriction (wheeze, and prolonged expiratory phase). The side effects of bronchodilators include pro-inflammatory effects on the alveoli, worsening of V/Q mismatch, and tachycardia.
- 10) For patients with cytokine release syndrome or multi-system hyperinflammatory consider use of immunomodulatory on a case by case. Therapeutic options include steroids, intravenous immunoglobulin, selective cytokine blockade (e.g. anakinra or tocilizumab).

### **Specific Off-Label<sup>12</sup> Anti-COVID-19 Treatments**

There are insufficient data to recommend for or against the use of specific antivirals or immunomodulatory agents for the treatment of COVID-19 in pediatric patients. The decision to start treatment should be made carefully on a case-by-case basis.

The decision to use antiviral medication should be based on signs of progressive respiratory deterioration regardless of comorbidity.

The following are off-label treatment options:

#### **Hydroxychloroquine and chloroquine**

Hydroxychloroquine and chloroquine have in vitro activity against SARS-CoV, SARS-CoV-2, and other coronaviruses, with hydroxychloroquine having relatively higher potency against SARS-CoV-2. To date, in children it is unlikely to have clinically significant benefit when given routinely, but may be considered in the rare event of pediatric ICU admission.

#### **1) Hydroxychloroquine**

- Dose: 6.5 mg/kg 12hourly on day 1 (maximum initial dose = 400 mg) orally or by NG, followed by 3.25 mg/kg 12hourly on days 2 - 5 (maximum dose = 200 mg). For 5 days.
- Adverse Effects:
  - Prolonged QTc interval, Torsades de Pointes, AV block, ventricular arrhythmia.
  - Gastrointestinal effects (e.g., nausea, vomiting, diarrhea, hepatitis).
  - Hypoglycemia.
  - Myopathy.
  - Anxiety, agitation, hallucinations, psychosis.
  - Allergic reaction/rash.

#### **2) Chloroquine**

- Dose: 10mg/kg chloroquine base (max 620mg) initial dose orally or by NG, followed by dose of 5mg/kg after 6 hours, then 5mg/kg (maximum: 300 mg) once daily thereafter for 3 days only.
- Adverse effect:
  - Prolonged QTc interval, Torsades de Pointes, AV block, ventricular arrhythmia.
  - Gastrointestinal effects (e.g., nausea, vomiting, diarrhea, hepatitis).
  - Hypoglycemia.
  - Hemolysis (especially if G6PD deficient).
  - Myopathy.
  - Rash.

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<sup>12</sup> Medications prescribed for the treatment of a malady or condition that has not been approved by the Food and Drug Administration for that particular usage.

Remdesivir (once available)

Remdesivir is an investigational antiviral drug s that inhibits viral replication and has in vitro activity against SARS-CoV-2 and in-vitro and in-vivo activity against related.

- Dose:
  - < 40 kg 5mg/kg IV loading dose, then 2.5mg/kg once daily.
  - ≥ 40 kg 200mg IV loading dose, then 100mg once daily for a total of 10 days.
- Adverse Effects:-
  - Transient elevations in ALT or AST, typically after multiple days of therapy.
  - Mild, reversible PT prolongation without INR change or hepatic effects.
  - Potential for sulfobutyl ether  $\beta$  -cyclodextrin sodium accumulation in moderate to severe renal impairment.
  - Gastrointestinal symptoms (e.g., nausea, vomiting).

**Table 2: Treatment Guidance for COVID-19 in Children**

I- Asymptomatic
Supportive Care
Isolation Ensuring sufficient calorie and water intake
Medications
None
Precautions
---

2- Mild – Moderate
<ul style="list-style-type: none"><li>• Patients uncomplicated upper respiratory tract viral infection may have non-specific symptoms</li><li>• Child with non-severe pneumonia who has cough or difficulty breathing + fast breathing: fast breathing (in breaths/min): &lt; 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40, and no signs of severe pneumonia.</li></ul>
Supportive Care
<ul style="list-style-type: none"><li>• Treat symptoms, e.g., using warm fluids or compresses for respiratory infections, using antipyretics for fever, increasing levels of vitamin C to fight infection</li><li>• Nursing care, including increased rest, fluid intake, and proper nutrition</li></ul>
Medications
Symptomatic treatment such as antipyretics for fever.
Precautions
---

**3- Sever** <sup>13</sup>

Child with cough or difficulty in breathing, plus at least one of the following:

- Increased respiratory rate:  $\geq 70$  times/min ( $< 1$  year),  $\geq 50$  times/min ( $\geq 1$  year) (after ruling out the effects of fever and crying).
- Oxygen saturation  $< 92\%$ .
- Hypoxia: assisted breathing (moans, nasal flaring, and three concave sign), cyanosis, intermittent apnea.
- Disturbance of consciousness: somnolence, coma, or convulsion.

**Supportive Care**

- ICU admission.
- Give supplemental oxygen therapy immediately to patients respiratory distress, hypoxemia or shock and target  $SpO_2 > 94\%$ .
- Use of nasal prongs or nasal cannula is preferred in young children, as they may be better tolerated.

**Medications**

Treatment with chloroquine/ Hydroxy-chloroquine or Remdesivir (once available) may be considered.

**Precautions**

There is insufficient up to date evidence to recommend for or against the use of chloroquine/ Hydroxy-chloroquine or antiviral.

**4- Critical** <sup>14</sup>

- Respiratory failure requiring mechanical ventilation.
- Shock.
- Multi-organ failure.

**Supportive Care**

- Implement mechanical ventilation using lower inspiratory pressures (plateau pressure  $< 30$  cm  $H_2O$ ).
- Initiation of fluid bolus and vasopressors for hypotension.
- Restrict IV fluid.

**Medications**

- Treatment with antivirals may be considered.

<sup>13</sup> For more detailed management, see WHO - Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected, Interim guidance - 13 March 2020 [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)

<sup>14</sup> For more detailed management, see WHO - Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected, Interim guidance - 13 March 2020 [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)

<b>4- Critical <sup>14</sup></b>
<ul style="list-style-type: none"><li>• Consider use of immunomodulatory therapy.</li><li>• Antibiotics and antifungals according to local antibiogram and hospital policy.</li></ul>
<b>Precautions</b>
There are insufficient data up to date to recommend for or against the use of chloroquine/ Hydroxy-chloroquine or antiviral.

Discharge criteria Children with body temperature back to normal for at least 3 days, significant improvement in respiratory symptoms, and completion of two consecutive negative tests of respiratory pathogenic nucleic acid (sampling interval of at least 1 day) can be discharged. If necessary, home isolation for 14 days is suggested after discharge.

**CONSIDERATIONS IN MANAGEMENT OF INFANTS, BORN TO MOTHERS  
CONFIRMED COVID-19**

- Following birth, newborns, born to mothers with COVID-19 should be bathed to remove virus from the skin. Newborns should undergo testing for SARS-CoV-2 at 24 hours and 48 hours after birth.
- Infants born at or near term who are well-appearing at birth may be admitted to specific areas physically separate from newborns unaffected by maternal COVID-19.
- There is currently no evidence that COVID-19 is transmitted through placenta, vaginal secretions, or breastmilk. Evidence to date indicates that babies acquire the disease postnatally from symptomatic mothers. There are no reports of transmission from asymptomatic mothers.
- A mother with COVID-19 is advised to maintain a distance of at least 6 feet from the newborn, and when in closer proximity use a mask and hand-hygiene for newborn care, until she is afebrile for 72 hours without use of antipyretics, and at least 7 days have passed since symptoms first appeared.
- Discuss with the mother the risks and benefits of close contact versus postnatal separation from parents, including discharge home care of the well-baby if the mother requires continued in-hospital care.
  - The WHO recommends immediate and continued skin-to-skin care, including kangaroo mother care, to improve thermal regulation of newborns and several other physiological outcomes, including associated reduced neonatal mortality. However, the American Academy of Pediatrics Committee on Fetus and Newborn recommends temporary separation of mother and newborn to minimize the risk of postnatal infant infection of COVID-19 from maternal respiratory secretions.
  - The WHO encourages that infants born to mothers with suspected, probable, or confirmed COVID-19 should be fed according to standard infant feeding guidelines, while applying necessary precautions for IPC. While the American Academy of Pediatrics Committee on Fetus and Newborn currently advises mothers to express breast milk (after appropriate breast and hand hygiene), and have this milk fed to the infant by designated caregivers.
- If a mother is confirmed/suspected to have COVID-19 has just coughed over her exposed breast or chest, then she should gently wash the breast with soap and warm water for at least 20 seconds prior to feeding. It is not necessary to wash the breast before every breastfeed or prior to expressing milk.

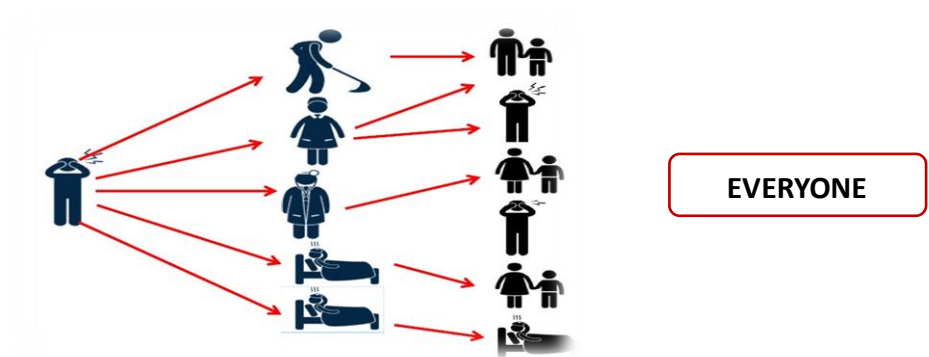
- In situations when severe illness in a mother with COVID-19 or other complications prevent her from caring for her infant or prevent her from continuing direct breastfeeding, mothers should be encouraged and supported to express milk, and safely provide breastmilk to the infant, while applying appropriate IPC measures.
- Infants requiring neonatal intensive care optimally should be admitted to a single patient room with the potential for negative room pressure (or other air filtration system). If this is not available, or if the health care facility must cohort multiple COVID-19 exposed infants, maintain at least 6 feet (2 meter) between infants and/or place them in air temperature-controlled isolates.

## FOURTH GUIDANCE: IPC MEASURES RELATED TO COVID-19

Infection Prevention and Control (IPC) should be implemented by all staff at all facility levels. IPC is a scientific approach with practical solutions designed to prevent harm, caused by infections, to patients and health care personnel grounded in principles of infectious disease, epidemiology, social science and health system strengthening, and rooted in patient safety and health service quality. IPC Goals in outbreaks preparedness are:

- 1) To reduce transmission of health care associated infections.
- 2) To enhance the safety of staff, patients and visitors.
- 3) To enhance the ability of the organization/health facility to respond to an outbreak.
- 4) To lower or reduce the risk of the hospital (health care facility) itself amplifying the outbreak.

### WHO IS AT RISK OF INFECTION?



Resource: IPC for COVID-19 presentation  
[https://s3.xopic.de/openwho-public/courses/3ETDuDYSMmNA6Ec8YtyPcS/rfiles/h7HLDobgxqSrIIOCBjAp3/WHO\\_IPC\\_COVID\\_FINAL.18.3.20.V2\\_Module1.pdf](https://s3.xopic.de/openwho-public/courses/3ETDuDYSMmNA6Ec8YtyPcS/rfiles/h7HLDobgxqSrIIOCBjAp3/WHO_IPC_COVID_FINAL.18.3.20.V2_Module1.pdf)

### WHO-IPC STRATEGIES RECOMMENDATIONS

WHO recommend implementing the following IPC strategies for preventing or limiting the spread of COVID-19:

- 1) Applying standard precautions for all patients; including environmental control.
- 2) Ensuring triage, early recognition, and source control.
- 3) Implementing additional transmission based precautions for suspected cases of COVID-19 infection.
- 4) Implementing administrative controls.
- 5) Using engineering controls.

#### **1. Applying standard precautions for all patient; including environmental control**

The minimum prevention measures that apply at all times to all patient care regardless of suspected or confirmed status of the patient. Risk assessment is critical for all activities, i.e. assess each health care activity and determine the PPE that is needed for adequate protection.

Standard Precautions consists of the following eight elements:

- 1) Hand hygiene.

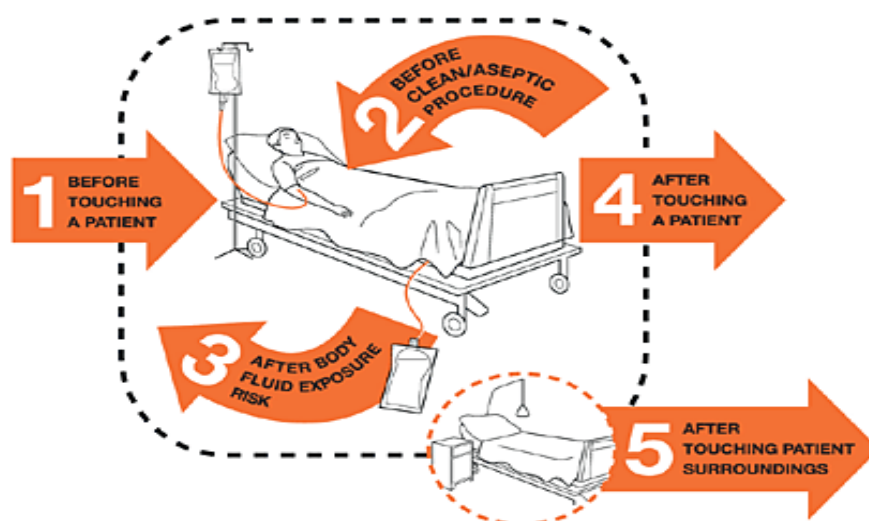
- 2) Respiratory hygiene/etiquette.
- 3) PPE according to the risk assessment.
- 4) Safe injection practices, sharps management and injury prevention.
- 5) Safe handling, cleaning and disinfection of patient care equipment.
- 6) Environmental cleaning in isolation rooms/areas.
- 7) Safe handling and cleaning of soiled linen.
- 8) Waste management.

### Hand Hygiene

Hand hygiene is the best way to prevent the spread of germs in the health care setting and community. Hands are our main tool for work as health care workers- and they are the key link in the chain of transmission.

#### **Hand Hygiene: WHO 5 moments**

According to WHO, hand hygiene to be performed on following 5 moments:



Resource: IPC for COVID-19 presentation  
[https://www.who.int/gpsc/tools/Five\\_moments/en/](https://www.who.int/gpsc/tools/Five_moments/en/)

#### **Hand hygiene: HOW**

- Use appropriate product and technique:
  - Alcohol-based hand rub product (is preferable), if hands are not visibly soiled. Rub hands for 20–30 seconds!
  - Soap, running water and single use towel, when visibly dirty or contaminated with proteinaceous material. Wash hands for 40–60 seconds!

### Respiratory Hygiene

Good respiratory hygiene/cough etiquette can reduce the spread of microorganisms (germs) that cause respiratory infections (colds, flu).

#### **Respiratory hygiene/etiquette procedures**

- Turn head away from others when coughing/sneezing.
- Cover the nose and mouth with a tissue.

- If tissues are used, discard immediately into the trash.
- Cough/sneeze into your sleeve if no tissue is available.
- Clean your hands with soap and water or 60-70% alcohol-based products.

**Promoting respiratory hygiene**

- Encourage handwashing for patients with respiratory symptoms.
- Provide masks for patients with respiratory symptoms.
- Patients with fever and cough or sneezing should be kept at least 1 meter away from other patients.
- Post visual aids reminding patients and visitors with respiratory symptoms to cover their cough.
- Consider having masks and tissues available for patients in all areas.

**PPE According to the Risk Assessment**

**PPE** is equipment that will protect the user against health or safety risks at work. Following are examples of PPE for use in health care settings for COVID-19:



Resource: IPC for COVID-19 presentation  
[https://s3.xopic.de/openwho-public/courses/3ETDuDYSMmNA6Ec8YtyPcS/rfiles/19BmiWNjZ2JlFQrZM6agHA/WHO\\_IPC\\_COVID\\_FINAL.15.03.20.V2\\_Module3-min.pdf](https://s3.xopic.de/openwho-public/courses/3ETDuDYSMmNA6Ec8YtyPcS/rfiles/19BmiWNjZ2JlFQrZM6agHA/WHO_IPC_COVID_FINAL.15.03.20.V2_Module3-min.pdf)

**Risk assessment** is the risk of exposure and extent of contact anticipated with blood, body fluids, respiratory droplets, and/or open skin. Select which PPE items to wear based on this assessment, perform hand hygiene according to the WHO’s “5 Moments”. Risk assessment should be done for each patient, each time. The below table shows the most important scenarios where PPE should be used to minimize direct unprotected exposure to blood and body fluids.

Scenario	Hand Hygiene	Gloves	Gown	Medical Mask	Eye Wear
Always before and after patient contact, and after contaminated environment	X				
If direct contact with blood, any body fluids, secretions, excretions, mucous membranes, non-intact skin	X	X			
If there is risk of splashes onto the health care worker's body	X	X	X		
If there is a risk of splashes onto the body and face	X	X	X	X	X

**Principles for using PPE**

- Always clean your hands before and after wearing PPE.
- PPE should be available where and when it is indicated:
  - In the correct size.
  - Select according to risk or per transmission-based precautions.
- Always put on before contact with the patient.
- Always remove immediately after completing the task and/or leaving the patient care area.
- NEVER reuse disposable PPE.
- Clean and disinfect reusable PPE between each use.
- Change PPE immediately if it becomes contaminated or damaged.
- PPE should not be adjusted or touched during patient care.
- Never touch your face while wearing PPE.
- If there is concern and/or breach of these practices, leave the patient care area when safe to do so and properly remove and change the PPE.
- Always remove PPE carefully to avoid self-contamination (from dirtiest to cleanest areas). See PPE donning and doffing steps in page 18.

**Safe injection practices, sharps management and injury prevention**

Health Care providers should apply the following steps for safe injection practices:

- Clean workplace.
- Hand hygiene.
- Sterile safety-engineered syringe.
- Sterile vial of medications and dilute.
- Skin cleaning and antisepsis.
- Appropriate collection of sharps.
- Appropriate waste management.

### Safe handling, cleaning and disinfection of patient care equipment.

To prevent the spread of micro-organisms and other noxious contaminants that may found on the patient care equipment, decontamination must be performed. Decontamination is the process of removing soil and pathogenic microorganisms from objects, so they are safe to handle for further processing, use, or discard. Decontamination is done through the following steps:

- **Cleaning:** The physical removal of foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms). Cleaning physically removes rather than kills microorganisms. To clean, use water, detergents, and mechanical action.
- **Disinfection:** A process to reduce the number of viable microorganisms to a less harmful level. This process may not inactivate bacterial spores, prions, and some viruses.
- **Sterilization:** A validated process used to render an object free from viable microorganisms, including viruses and bacterial spores, but not prions.

The following principles should be followed while handling, cleaning and disinfection of patient care equipment:

- Always be sure to clean patient care equipment between each patient use.
- Where possible, dedicate cleaning supplies in higher risk areas (e.g., isolation, delivery, and operating rooms).
- Cleaning supplies for isolation should be stored within and only used in the isolation area/room.
- Always move from cleanest area to dirtiest area- clean from high areas to low areas, outer to inner: clean isolation areas last.
- Damp dusting and wet mopping is recommended to minimize dust.
- Use a 3-bucket system for cleaning and disinfection.
- Water for cleaning should be clean water.
- Spraying of disinfectants is not recommended.

### Environmental cleaning in isolation rooms/areas

The following principles should be implemented through environmental cleaning:

- Increase frequency of cleaning by housekeeping staff in patient care areas.
- Isolation areas should have their own cleaning supplies that are separate from clean patient care areas.
- All waste from the isolation area is considered contaminated, and should be disposed of following your facilities methods for contaminated waste.
- Cleaners/housekeeping should ensure they are wearing the appropriate PPE when cleaning an isolation room or area.
- Cleaning supplies for isolation should be stored within, and only used within the isolation area/room.
- Thorough cleaning environmental surfaces with water and detergent and applying commonly used hospital level disinfectants (such as sodium hypochlorite, 0.5%, or 70% ethanol,) are effective and sufficient procedures.

### Safe handling and cleaning of soiled linens

Health care personnel should apply the following procedures during linens handling to ensure safety:

- Wear PPE according to the risk when handling used or soiled linen.
- Handle soiled linen with minimum agitation to avoid contamination.
- Place soiled linen into bags/containers at point of care.
- If linen is grossly soiled:
  - Remove gross soil (e.g. feces, vomit) with a gloved hand and using a flat, firm object.
  - Discard solid material into flush toilet and dispose of towel into waste.
  - Place soiled linen into a clearly labeled, leak-proof container (e.g., bag and closed bin) in the patient care area.
- Clean linen must be sorted and transported in a way to prevent contamination (i.e. closed bins).
- Linen on the patient care wards should be stored in a designated area (i.e. a closet or room) or closed containers away from public access.

### Waste management

Health care personnel should apply waste management according to the following process diagram:



Resource: IPC for COVID-19 presentation  
[https://s3.xopic.de/openwho-public/courses/3ETDuDYSMmNA6Ec8YtyPcS/rfiles/I9BmiWNjZ2JlFQrZM6agHA/WHO\\_IPC\\_COVID\\_FINAL.15.03.20.V2\\_Module3-min.pdf](https://s3.xopic.de/openwho-public/courses/3ETDuDYSMmNA6Ec8YtyPcS/rfiles/I9BmiWNjZ2JlFQrZM6agHA/WHO_IPC_COVID_FINAL.15.03.20.V2_Module3-min.pdf)

## **2. Ensuring triage, early recognition, and source control**

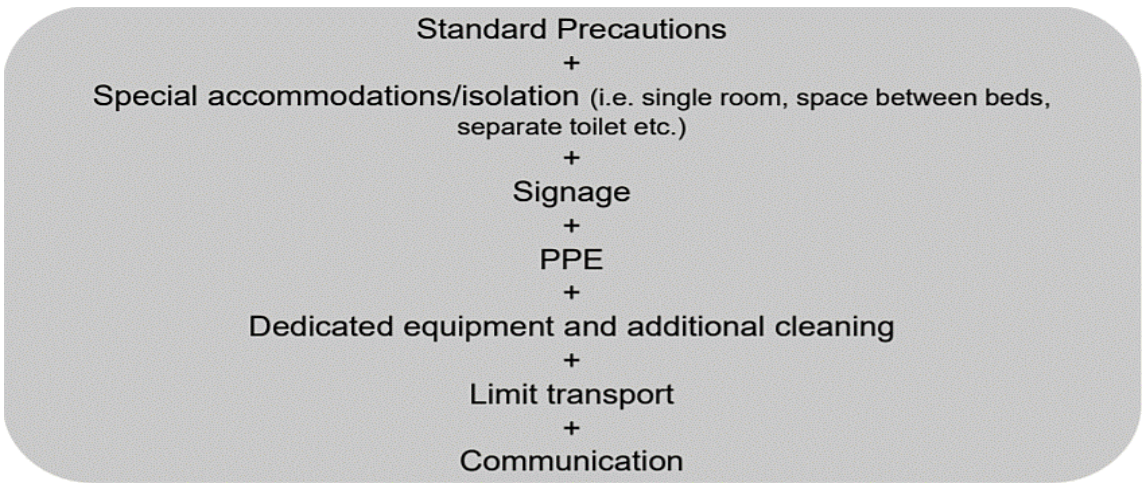
Health facilities should perform clinical triage for early identification of patients with acute respiratory infection (ARI) to prevent the transmission of pathogens to health care workers and other patients. For more information please refer to Screening and Triaging part of this guidance.

**3. Implementing additional transmission based precautions for cases of COVID-19 infection**

Additional precautions are based on two modes of transmission:

- **Direct modes:** includes direct contact and droplets spread. Direct contact Occurs through touching; an individual may transmit microorganisms to others by skin-skin contact or contact with surfaces. While Droplet spread Refers to spray with relatively large, short-range aerosols produced by sneezing or coughing.
- **Indirect modes:** Refers to the transfer of an infectious agent from a reservoir to a host through:
  - Airborne transmission occurs when infectious agents are carried by dust or droplet nuclei suspended in air.
  - Vehicles may indirectly transmit an infectious agent.
  - Vectors may carry an infectious agent or may support growth or changes in the agent.

**Additional Precautions Include:**



***The following principles should be applied for patients suspected or confirmed COVID-19:***

- Contact and droplet precautions for all patients with suspected or confirmed COVID-19.
- Airborne precautions are recommended only for aerosol generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation).
- Single room: all patients with respiratory illness should be in a single room, or minimum 1-meter away from other patients while waiting.
- Dedicated staff: a team of health care personnel should be dedicated to care exclusively for suspected/confirmed patients.
- Health care personnel to wear PPE: a medical mask, goggles or face shield, gown, and gloves.
- Hand hygiene should be done anytime the WHO “5 Moments” apply, and before PPE and after removing PPE.
- Equipment should be single use when possible, dedicated to the patient and disinfected between uses

- Avoid transporting suspected or confirmed cases – if necessary, have patients wear masks. Health care personnel should wear appropriate PPE.
- Routine and additional cleaning of the environment is crucial
- Limit the number of Health care personnel, and family members who are in contact with the patient. If necessary, everyone must wear PPE.
- All persons entering the patient's room should be recorded (for contact tracing purposes).
- Precautions should continue until the patient is asymptomatic and two negative tests are done.

**Principles to be implemented for each precaution for COVID-19:**

**Contact precautions:**

- Single room.
- Hand hygiene.
  - According to the “5 Moments,” in particular before and after contact with the patient and after removing PPE.
  - Avoiding touching eyes, nose or mouth with contaminated gloved or ungloved hands.
- PPE: Gown + gloves.
- Equipment: Cleaning, disinfection, and sterilization.
- Environmental cleaning.
  - Avoiding contaminating surfaces not involved with direct patient care (e.g., doorknobs, light switches, mobile phones).

**Droplet precautions:**

- Single room
  - If single rooms are not available, separating patients from others by at least 1 meter.
- PPE: Health care workers must wear appropriate PPE.
  - Medical mask.
  - Eye protection (goggles or face shield).
  - Gown.
- Limit movement: Patient to stay in the room
- If transport/movement is required, require the patient using a medical mask and use predetermined transport routes to minimize exposure for staff, other patients, and visitors.

**Airborne precautions (in the context of COVID-19):**

- Recommended **ONLY** for aerosol generating procedures such as:
  - Bronchoscopy, tracheal intubation, pressure on the chest during cardiopulmonary resuscitation may induce production of aerosol, and others that are aerosol producing.
- The following is required:
  - Single room.

- Adequate ventilation: Natural ventilation or in negative pressure rooms and controlled direction of airflow.
- PPE: Gown, gloves, N-95, or equivalent masks, eye protection (goggles or face shield).

#### **4. Implementing administrative controls**

Administrative controls and policies for the prevention and control of transmission of COVID-19 within the health care setting include, but may not be limited to:

- Establishing sustainable IPC infrastructures and activities.
- Educating patients' caregivers.
- Developing policies on the early recognition of acute respiratory infection potentially caused by COVID-19 virus.
- Ensuring access to prompt laboratory testing for identification of the etiologic agent.
- Preventing overcrowding, especially in emergency departments.
- Providing dedicated waiting areas for symptomatic patients.
- Appropriately isolating hospitalized patients.
- Ensuring adequate supplies of PPE.
- Ensuring adherence to IPC policies and procedures for all aspects of health care.

##### **Administrative measures related to health care personnel:**

- Provision of adequate training for health care personnel.
- Ensuring an adequate patient-to-staff ratio.
- Establishing a surveillance process for acute respiratory infections potentially caused by COVID-19 virus among health care personnel.
- Ensuring that health care personnel and the public understand the importance of promptly seeking medical care.
- Monitoring health care personnel compliance with standard precautions and providing mechanisms for improvement as needed.

#### **5. Implementing engineering controls**

Consider designing and installing engineering controls to reduce or eliminate exposures by shielding health care personnel and other patients from infected individuals. Examples of engineering controls include **physical barriers or partitions to guide patients through triage areas, curtains between patients in shared areas**, as well as appropriate **air-handling systems** that are installed and properly maintained.

## **FIFTH GUIDANCE: HOME CARE FOR PATIENTS WITH SUSPECTED OR CONFIRMED COVID-19 AND MANAGEMENT OF THEIR CONTACTS**

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This guidance aims to provide information to service providers, caregivers, and patients to support the delivery of care at home.

In this pandemic, we appreciate that caregivers are looking after the people in their homes.

As part of the National Preparedness and Response Plan, the Ministry of Health has issued instructions directed to home care for suspected and confirmed COVID-19 patients. This includes those patients discharged from hospital given recuperation is better at home, and because hospitals need to have enough beds to treat acutely sick cases. Not all of this information is new, but aims to be a helpful resource that brings together all guidance related to coronavirus and home care in one place.

### **HOME CARE –SERVICE PROVIDER ROLES AND RESPONSIBILITIES**

Service providers, should take into consideration the following, each under their specialty:

- 1) Identifying patients who could receive care at home.
- 2) Infection prevention and control (IPC) requirements for the household to be suitable for caring for COVID-19 patients in the home.
- 3) Clinical monitoring and treatment of COVID-19 patients at home.
- 4) Waste management in the home setting in the context.

#### **1. Identifying patients who could receive care at home**

The decision as to whether to isolate and care for an infected person at home depends on the following three factors:

- 1) Clinical evaluation of the COVID-19 patient,
- 2) Evaluation of the home setting, and
- 3) The ability to monitor the clinical evolution of a person with COVID-19 at home.

#### **Clinical evaluation of COVID-19 patient:**

The decision to isolate and monitor a COVID-19 patient at home should be made on a case-by-case basis. Their clinical evaluation should include:

- 1) Clinical presentation.
- 2) Any requirement for supportive care.
- 3) Risk factors for severe disease (i.e. age (> 60 years), smoking, obesity and non-communicable diseases such as cardiovascular disease, diabetes mellitus, chronic lung disease, chronic kidney disease, immunosuppression and cancer)

Patients who are asymptomatic or those with mild or moderate disease without risk factors for poor health outcomes may not require emergency interventions or hospitalization, and could be suitable for home isolation and care, provided the following two requirements are fulfilled in the home setting:

- Conditions for implementing appropriate IPC as outlined in this document are met;
- Close monitoring (physical or virtual) for any signs or symptoms of deterioration in their health status by a health service provider.

These two requirements also apply to pregnant and postpartum women, and to children. Ensure adequate provisions for appropriate PPE for both patients and caregivers.

#### Evaluation of the home setting:

A health service provider, if possible, should assess whether the home is suitable for the isolation and provision of care to a COVID-19 patient, including whether the patient, caregiver and/or other household members have all they need to adhere to the recommendations for home care isolation. See the checklist in Annex 3. Recommendations are:

- Hand and respiratory hygiene supplies<sup>15</sup>,
- Environmental cleaning materials,
- Ability to impose and adhere to restrictions on people's movement around or from the house:
  - The COVID-19 positive case should be in a separate room or bedroom,
  - Other family member who were in close contact have the ability to not come in contact with the COVID-19 positive case and to adhere to 14 day quarantine
- Access to water and sanitation, and resources for cleaning and disinfection.

#### **Note on Children** (See below [“HOME CARE – CAREGIVER / PATIENT ROLES AND RESPONSIBILITIES” / section 6](#)):

- Children should remain with their (Isolated or quarantined) primary caregivers wherever possible and this should be decided in consultation with their primary caregivers.
- A plan in advance should be prepared on how the care will be provided for the children in case the children become ill while the primary caregiver is also ill or elderly, disabled or have underlying health conditions.

If caregivers or other vulnerable persons are present in the home setting and cannot be kept apart from the patient, then the health service provider should offer to arrange for an alternative location for isolation for the patient, including children, if available.

If adequate isolation and IPC measures *cannot be ensured* at home, then isolation may need to be arranged, with consent from the patient, and agreement from the caregiver, and members of the household in designated and equipped community facilities (institutional isolation), such as repurposed hotels, stadiums or gymnasiums or in a health facility.

#### Ability to monitor the clinical evolution of a patient with COVID-19 at home

Make sure that the patient can be adequately monitored at the home:

- Lines of communication between the caregiver and health service providers, should be established for the duration of the home-care period, that is, until the patient's symptoms have completely resolved.

<sup>15</sup> The ability to address safety concerns such as accidental ingestion of and fire hazards associated with alcohol-based hand rubs and cleaning products should also be considered in the assessment.

- Health service providers can monitor patients and caregivers in the home by telephone, email, social media applications, or any other communication method.
- If possible, service providers should provide home-based care when needed.

## **2. IPC requirements for the household to be suitable for caring for COVID-19 patients in the home**

Service providers, should take the following measures into consideration when providing care at the home:

- 1) Determine appropriate personal protective equipment (PPE) that must be used when caring for the patient and following the recommendations for droplet and contact precautions.
- 2) Patient must be placed in adequately ventilated rooms with large quantities of fresh and clean outdoor air to control contaminants and odors (consider using natural ventilation, by opening windows if possible and safe to do so).
- 3) If heating, ventilation and air-conditioning (HVAC) systems are used, they should be regularly inspected, maintained, and cleaned. Rigorous standards for installation and maintenance of ventilation systems are essential to ensure that they are effective and contribute to a safe environment.
- 4) When providing care or working within the home of the patient, request that the patient wear a medical mask. Individuals who cannot tolerate a medical mask should practice rigorous respiratory hygiene; that is, coughing or sneezing into a bent elbow or tissue and then immediately disposing of the tissue followed by hand hygiene.
- 5) Perform hand hygiene after any type of contact with the patient or his/her immediate environment and according to the WHO 5 moments ([See fourth guidance / WHO-IPC strategies recommendations / hand hygiene](#)). Service providers should have with them a supply of alcohol-based hand rub for their use.
- 6) When washing hands with soap and water, use disposable paper towels to dry hands. If paper towels are not available, use clean cloth towels and replace them frequently.
- 7) Provide instructions to caregivers and household members on how to clean and disinfect the home, as well as on the safe and correct use and storage of cleaning materials and disinfectants (if available provide information, education and communication (IEC) materials).
- 8) Clean and disinfect any reusable equipment used in the care of the patient before using on another patient according to standard precautions and established protocols.
- 9) Remove PPE and perform hand hygiene before leaving the home and discard disposable PPE. Clean and disinfect reusable items (i.e. eye protection) or store reusable items for decontamination later according to established protocols.
- 10) Do not reuse single use (disposable) PPE.

## **3. Waste management in the home setting in the context**

Service providers should dispose all the waste generated from providing care to the patient as infectious waste in strong bags or safety boxes as appropriate, close completely and remove the waste from the home and dispose according to protocols.

## **4. Clinical treatment and monitoring of COVID-19 patients at home**

Clinical considerations for home-based care of patients with mild or moderate COVID-19:

### Symptomatic treatment:

WHO recommends that patients with COVID-19 receive treatment for their symptoms, such as antipyretics for fever and pain (according to manufacturers' instructions) as well as adequate nutrition and appropriate hydration.

WHO advises against antibiotic prophylaxis or treatment for patients with mild COVID-19. For patients with moderate COVID-19, antibiotics should not be prescribed unless there is clinical suspicion of a bacterial infection.

For details on prescribing antimicrobials, see the Ministry of Health's Clinical Guidance: Clinical Management Protocol for Confirmed COVID -19 Cases.

In case of co-infections that cause fever or other symptoms, patients must be examined and treated for those infections following routine protocols, irrespective of the presence of respiratory signs and symptoms.

### Drug supply management for patients with chronic diseases

COVID-19 patients with non-communicable diseases or other controlled chronic conditions receiving home-based care should have an adequate supply of medication (i.e. 6-month drug supply in lieu of the usual 60-90 day supply). Repeat prescriptions and mechanisms for delivering refills should be readily available. *This will be required also when vulnerable patients return from the hospital to continue to convalesce at home.*

### Monitor for worsening symptoms regularly

COVID-19 patients (including children) and their caregivers must ask for urgent medical care if any of the following signs and symptoms of complications appeared:

- Fever (above 37.5 °C).
- Difficulty\ fast or shallow breathing
- Pain\chest pressure
- Weakness or numbness in limbs
- Lips\face cyanosis
- Mental confusion
- Loss of appetite
- For infants these include: grunting and an inability to breastfeed

Monitor these regularly. If a patient has had any of the mentioned symptoms, he or she should be directed to seek urgent care.

Home pulse oximetry is a safe, non-invasive way to assess oxygen saturation in the blood and can support the early identification of low oxygen levels in patients with initially mild or moderate COVID-19 or silent hypoxia, when a patient does not appear to be short of breath but his or her oxygen levels are lower than expected. Home pulse oximetry can identify individuals in need of medical evaluation, oxygen therapy or hospitalization, even before they show clinical danger signs or worsening symptoms, the cutoff measure for SpO<sub>2</sub> is **92%**.

## **5. Releasing COVID-19 patients from isolation at home**

COVID-19 patients who have been discharged from hospital may continue to be cared for at home. This may include individuals who have clinically recovered from severe or critical illness and who may no longer be infectious.

Service providers need to establish a means of communicating with the caregivers of individuals with COVID-19 for the duration of the isolation period.

Patients who are cared for at home should be isolated until they are no longer infectious:

- **For asymptomatic persons: 10 days after testing positive.**
- **Patients with mild to moderate symptoms** (who receive home-based care) **or have been discharged from hospital** should remain in isolation for a **minimum of 10 days after symptom onset, plus at least 3 additional days without symptoms** (including without fever and without respiratory symptoms).

**6. Management of contacts**

A contact is a person who has experienced any one of the following exposures during the two days before and the 14 days after the onset of symptoms of a probable or confirmed case. Contacts should remain quarantined at home.

- 1) Face-to-face contact with a probable or confirmed case within 1 meter and for at least 15 minutes;
- 2) Direct physical contact with a probable or confirmed case; or
- 3) Direct care for a patient with probable or confirmed COVID-19 disease without using recommended PPE.

**Quarantine:** This method is used to keep someone *who might have been exposed to COVID-19* away from others. It helps prevent spread of disease that can occur before a person knows they are sick or if they are infected with the virus without feeling symptoms. People in quarantine should stay home, separate themselves from others, monitor their health, and follow directions from their state or local health department.

Who Needs to Quarantine	Steps to Take
<ul style="list-style-type: none"><li>• People who have been in close contact with someone who has COVID-19 (<i>excluding people who have had COVID-19 within the past 3 months</i>).</li><li>➤ People who have tested positive for COVID-19 do not need to quarantine or get tested again for up to 3 months as long as they do not develop symptoms again.</li><li>➤ People who develop symptoms again within 3 months of their first bout of COVID-19 may need to be tested again if there is no other cause identified for their symptoms.</li></ul> <p><u>What counts as close contact?</u></p> <ol style="list-style-type: none"><li>1) A person was within 2 meters of someone who has COVID-19 for a total of 15 minutes or more</li><li>2) A person provided care at home to someone who is sick with COVID-19</li></ol>	<ul style="list-style-type: none"><li>• Stay home and monitor your health:<ul style="list-style-type: none"><li>➤ Stay home for 14 days after the last contact with a person who has COVID-19</li><li>➤ Watch for: fever (38 °C), cough, shortness of breath, or other symptoms of COVID-19</li><li>➤ If possible, people should stay away from others, especially people who are at higher risk for getting very sick from COVID-19</li></ul></li></ul>

Who Needs to Quarantine	Steps to Take
3) A person had direct physical contact with the person (hugged or kissed them) 4) A person shared eating or drinking utensils with someone with COVID-19 5) A COVID-19 positive patient sneezed, coughed, or somehow got respiratory droplets on a person.	

When to start and end quarantine?

You should stay home for 14 days after your last contact with a person who has COVID-19.

**Note:** Even if you test negative for COVID-19 or feel healthy, you should stay home (quarantine) since symptoms may appear 2 to 14 days after exposure to the virus.

HOME CARE – CAREGIVER / PATIENT ROLES AND RESPONSIBILITIES

In general, people should adhere to home isolation until the risk of secondary transmission is thought to be low.

If you are caring for someone with COVID-19 at home, follow the advice to protect yourself and others. Learn what to do when someone has symptoms of COVID-19, or when someone has received a positive diagnosis for the virus. For example, the following information should be followed when caring for people who have tested positive but are not showing symptoms.

1. What to do if you are sick?

If you have a fever, cough or [other symptoms](#), you might have COVID-19. Most people have mild illness and are able to recover at home. If you think you may have been exposed to COVID-19, contact your healthcare provider.

- Keep track of your symptoms.
- **If you have an emergency warning sign below, seek emergency medical care immediately:**
  - Fever (above 37.5 °C).
  - Difficulty \ fast or shallow breathing
  - Pain \ chest pressure
  - Weakness or numbness in limbs
  - Bluish Lips \ face
  - Inability to wake or stay awake
  - Mental confusion
  - Loss of appetite
  - For infants these include: grunting and an inability to breastfeed

### Steps to help prevent the spread of COVID-19.

#### **Stay home except to get medical care:**

- **Stay home.** Most people with COVID-19 have mild illness and can recover at home without medical care. Do not leave your home, except to get medical care. Do not visit public areas and do not have other people, including family, come to your home unless there is an emergency.
- **Take care of yourself.** Get rest and stay hydrated. Take over-the-counter medicines, such as Paracetamol, to reduce fever, and increase your nutritional intake of Vitamin C, Vitamin D and Zinc: such as eating dark green leaves, bell pepper, citrus fruits, eggs and dairy products.
- **Stay in touch with your doctor.** *Call before you get medical care.* Be sure to seek medical care if you have trouble breathing, or have any other emergency warning signs, or if you think it is an emergency.
- **Avoid public transportation.** Ride sharing, or taxis.

#### **Call ahead before visiting your doctor:**

- **Call ahead.** Many medical visits for routine care are being postponed or done by phone or telemedicine. *Patients with non-communicable diseases or other chronic conditions receiving home-based care* should have an adequate supply of medication (i.e. 6-month drug supply in lieu of the usual 60-90 day supply).

#### **Separate yourself from other people:**

- **As much as possible, stay in a specific room** and be isolated or away from other people in your home. If possible, you should use a separate bathroom. If you need to be around other people for any reason or if you need to outside of the home, *wear a mask and practice respiratory hygiene and hand hygiene regularly.*
- **Tell your close contacts** that they may have been exposed to COVID-19 (*An infected person can spread COVID-19 starting 48 hours (or 2 days) before the person has any symptoms or tests positive*). By letting your close contacts know they may have been exposed to COVID-19, you are helping to protect everyone.
  - If you are diagnosed with COVID-19, someone from the health department may call you. *Answer the call to slow the spread.*

#### **Monitor your symptoms:**

- **Symptoms of COVID-19** include fever, cough, loss of taste and/or smell and muscle aches.
- **Follow care instructions from your healthcare provider and local health department.** Your local health authorities may give instructions on checking your symptoms and reporting information.

#### **When to seek emergency medical attention?**

Look for **emergency warning signs\*** for COVID-19. If someone is showing any of these signs, **seek emergency medical care immediately:**

- Fever (above 37.5 °C).
- Difficulty\ fast or shallow breathing
- Pain\chest pressure

- Weakness of numbness in limbs
- Bluish Lips \ face
- Inability to wake or stay awake
- Mental confusion
- Loss of appetite
- For infants these include: grunting and an inability to breastfeed

\*This list is not all possible symptoms. Please call your medical provider for any other symptoms that are severe or concerning to you.

**Call 111 or call ahead to your local emergency facility:** Notify the operator that you are seeking care for someone who has or may have COVID-19.

**If you are sick, wear a mask over your nose and mouth:**

- **You should wear a mask over your nose and mouth** if you must be around other people.
- **If you are alone**, you don't need to wear the mask.
- **If you cannot put on a mask** (because of trouble breathing, for example), cover your coughs and sneezes in some other way. Try to stay at least 2 meters away from other people. This will help protect the people around you.
- Masks **should not be placed** on:
  - Young children **under age 2 years**,
  - Anyone who has trouble breathing,
  - Anyone who is not able to remove the mask without help.

**Note:** During the COVID-19 pandemic, medical grade facemasks are reserved for healthcare workers and some first responders.

**Cover your coughs and sneezes:**

- **Cover your mouth and nose** with a tissue when you cough or sneeze.
- **Throwaway used tissues** in a trash can with lid.
- **Immediately wash your hands** with soap and water for at least 20 seconds. If soap and water are not available, rub your hands with alcohol based hand rub that contains at least 60% alcohol.

**Clean your hands often:**

- **Wash your hands** often with soap and water for at least 20 seconds. This is especially important after blowing your nose, coughing, or sneezing, going to the bathroom, and before eating or preparing food. Soap and water are the best option, especially if your hands are visibly dirty.
- **Use hand sanitizer** if soap and water are not available, rub your hands with alcohol based hand rub that contains at least 60% alcohol, covering all surfaces of your hands and rubbing them together until they feel dry.
- **Avoid touching** your eyes, nose and mouth with unwashed hands.

**Avoid sharing personal household items:**

- **Do not share** dishes, drinking glasses, cups, eating utensils, towels or bedding with other people in your home.
- **Wash these items thoroughly after using them** with soap and water or put in the dishwasher.

**Clean all “high-touch” surfaces everyday:**

- **Clean and disinfect** high-touch surfaces in your “sick room” and bathroom; wear disposable gloves. Let someone else clean and disinfect surfaces in common areas, but you should clean your bedroom and bathroom, if possible.
- **If a caregiver or other person needs to clean and disinfect** a sick person’s bedroom or bathroom, they should do so on an as-needed basis. The caregiver/other person should wear a mask and disposable gloves prior to cleaning. They should wait as long as possible after the person who is sick has used the bathroom before coming in to clean and if needed use the bathroom.

**Note:** High-touch surfaces, to be cleaned often, include phones, remote controls, counters, tabletops, doorknobs, bathroom fixtures, toilets, keyboards, tablets, and bedside tables.

- Clean and disinfect areas that may have blood, stool, or body fluids on them.
- Use **household cleaners and disinfectants**. Clean the area or item with soap and water or another detergent if it is dirty. Then, use a household disinfectant.
  - Be sure to follow the instructions on the label to ensure safe and effective use of the product. Many products recommend keeping the surface wet for several minutes to ensure germs are killed. Many also recommend precautions such as wearing gloves and making sure you have good ventilation during use of the product. Most household disinfectants are effective at killing COVID-19 germs.

**2. Isolate if you are sick:**

**ISOLATION** is used to separate people with COVID-19, from people who are not positive cases.

- People who are in isolation should stay home until it is safe for them to be around others.
- In the home, anyone sick or infected should separate themselves from others by staying in a specific “room” and using a separate bathroom (if available). If not available, the bathroom should be disinfected, ideally by the COVID-19 positive case, after each use, so that others can use. The COVID-19 positive patient should wear a mask while using the bathroom. It is also advisable that others refrain from touching surfaces in areas shared with COVID-19 positive cases, also wear masks, and wash their hands often.

Who Needs to Isolate	Steps to Take
<p><b>People who have COVID-19:</b></p> <p>1) People who have mild to moderate symptoms of COVID-19 and are able to recover at home.</p> <p>2) People who have no symptoms (are asymptomatic) but have tested positive for infection with SARS-CoV-2.</p>	<p><b>Stay home except to get medical care:</b></p> <p>1) Monitor your symptoms. If you have an emergency warning sign, seek emergency medical care immediately.</p> <p>2) Stay in a separate room from other household members, if possible.</p>

Who Needs to Isolate	Steps to Take
3) COVID-19 patients discharged from hospital (who didn't finish their isolation period).	3) Use a separate bathroom, if possible. 4) Avoid contact with other members of the household and pets. 5) Do not share personal household items, like cups, towels, and utensils. 6) Wear a mask when around other people, if you are able to.

When can you be around others after you had or likely had COVID-19?

The end of home isolation depends on different factors for different scenarios.

Scenario I	Scenario II	Scenario III
I suspect I have COVID-19, and I have symptoms	I have COVID-19, and I have mild symptoms	I tested positive for COVID-19 but have no symptoms
<ul style="list-style-type: none"><li>• At least <b>10 days</b> since symptoms <b>first appeared</b> <b>and</b></li><li>• At least <b>3 days</b> with <b>no fever</b> without fever-reducing medication <b>and</b></li><li>• <b>Other symptoms of COVID-19 are improving</b><sup>16</sup></li><li>• <i>If your PCR test were negative then you can stop your isolation.</i></li></ul>	<ul style="list-style-type: none"><li>• At least <b>10 days</b> since symptoms <b>first appeared</b> <b>and</b></li><li>• At least <b>3 days</b> with <b>no fever</b> without fever-reducing medication <b>and</b></li><li>• <b>Other symptoms of COVID-19 are improving</b></li><li>• <i>If you had severe illness from COVID-19 (you were admitted to a hospital and needed oxygen), your healthcare provider may recommend that you stay in isolation for longer than 10 days after your symptoms first appeared (possibly up to 20 days) and you may need to finish your period of isolation at home.</i></li></ul>	<ul style="list-style-type: none"><li>• <b>10 days</b> have passed since the <b>date you had your positive test.</b></li><li>• <i>If you develop symptoms after testing positive, follow the guidance above for “Scenario I- I think or know I had COVID, and I had symptoms.”</i></li></ul>

**Note:** If testing is available in your community, your healthcare provider may recommend that you undergo repeat testing for COVID-19 to end your isolation earlier than would be done according to the criteria above. If so, you can **stop isolation** after you receive two negative tests results in a row, from tests done at least 24 hours apart.

<sup>16</sup> Loss of taste and smell may persist for weeks or months after recovery and need not delay the end of isolation

3. When to quarantine?

- **Quarantine** is used to keep **someone who might have been exposed** (close contact) to COVID-19 away from others.
- Quarantine helps prevent spread of disease that can occur before a person knows they are sick or if they are infected with the virus without feeling symptoms.
- People in quarantine should stay home, again separate or isolate themselves from others, monitor their health, and follow directions from their healthcare provider or local health department.

Who Needs to Quarantine	Steps to Take
<ul style="list-style-type: none"><li>• <b>People who have been in close contact with someone who has COVID-19 (excluding people who had COVID-19 within the past 3 months).</b><ul style="list-style-type: none"><li>➤ <i>People who have tested positive for COVID-19 do not need to quarantine or get tested again for up to 3 months as long as they do not develop symptoms again.</i></li><li>➤ <i>People who develop symptoms again within 3 months of their first bout of COVID-19 may need to be tested again if there is no other cause identified for their symptoms.</i></li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Stay home and monitor your health:</b><ul style="list-style-type: none"><li>➤ Stay home for <b>14 days</b> after your <b>last contact</b> with a person who has COVID-19,</li><li>➤ <b>Watch for:</b> fever (38 °C), cough, shortness of breath, or other symptoms of COVID-19.</li><li>➤ <i>If possible, stay away from others, especially people who are at higher risk (e.g. those who work in the service industry, those who take public transport, children in schools, immunocompromised, etc.) for getting very sick from COVID-19.</i></li></ul></li></ul>

**What counts as close contact?**

- 1) You were within 2 meters of someone who has COVID-19 for a total of 15 minutes or more
- 2) You provided care at home to someone who is sick with COVID-19
- 3) You had direct physical contact with a person with COVID-19 (hugged or kissed them)
- 4) You shared eating or drinking utensils with a person with COVID-19
- 5) The suspected COVID-19 case sneezed, coughed, or somehow got respiratory droplets on you.

When to start and end quarantine?

You should stay home for 14 days after your last contact with a person who has COVID-19.

**Note:** For all of the following scenarios, even if you test negative for COVID-19 or feel healthy, you should stay home (quarantine) since symptoms may appear 2 to 14 days after exposure to the virus.

See scenarios below to determine when you can end quarantine and be around others.

**Scenario 1:**

**Close contact with someone who has COVID-19 →will not have further close contact**

- I had close contact with someone who has COVID-19 and will not have further contact or interactions with the person while they are sick (e.g., co-worker, neighbor, or friend).
- Your last day of quarantine is **14 days** from the date you had close contact.

**Formula: Date of last close contact with person who has COVID-19 + 14 days = end of quarantine**

**Scenario 2:**

**Close contact with someone who has COVID-19 →live with the person but can avoid further close contact through isolating COVID-19 patient**

I live with someone who has COVID-19 (e.g., roommate, partner, family member), and that person has isolated by staying in a separate bedroom. I have had no close contact with the person since they isolated.

- Your last day of quarantine is **14 days** from when the person with COVID-19 began home isolation.

**Formula: Date person with COVID-19 began home isolation + 14 days = end of quarantine**

**Scenario 3:**

**Under quarantine and had additional close contact with someone who has COVID-19**

I live with someone who has COVID-19 and started my 14-day quarantine period because we had close contact. I ended up having close contact with the person who is sick during my quarantine, or another household member got sick with COVID-19. Do I need to restart my quarantine?

- Yes. You will have to restart your quarantine from the last day you had close contact with anyone in your house who has COVID-19. Any time a new household member gets sick with COVID-19 and you had close contact, you will need to restart your quarantine.

**Formula: Date of additional close contact with person who has COVID-19 + 14 days = end of quarantine**

<b>Scenario 4:</b>
<b>I live with someone who has COVID-19 and cannot avoid continued close contact.</b>
I live in a household where I cannot avoid close contact with the person who has COVID-19. I am providing direct care to the person who is sick. We do not have a separate room to isolate the person who is sick, and/or live in close quarters where we are unable to keep a physical distance of 2 meters.
<ul style="list-style-type: none"><li>You should avoid contact with others outside the home while the person is sick, and quarantine for 14 days after the person who has COVID-19 meets the criteria to end home isolation.</li></ul>
<b>Formula: Date the person with COVID-19 ends home isolation + 14 days = end of quarantine</b>

4. Caring for someone sick at home

Provide support

**Help cover basic needs:**

- Help the person who is sick follow their doctor’s instructions for care and medicine.
  - For most people, symptoms last a few days, and people usually feel better after a week.
- Make sure the person who is sick drinks a lot of fluids and rests, and increases their nutritional intake of vitamin C and vitamin D and Zinc: such as dark green leaves, bell pepper, citrus fruits, eggs and dairy products.
- For grocery shopping, filling prescriptions, and getting other items a patient needs, the caregiver may need consider having the items delivered through a delivery service.
- Take care of the patient’s pet(s), and limit contact between the person who is sick and their pet(s) when possible.
- Follow IPC protocols when caring for the person’s basic needs, including wearing a mask at all times and washing hands frequently.

**Watch for warning signs:**

- Have their health service provider phone number on hand.
- Call their health service provider if the person has worsening symptoms. For medical emergencies, call 111.

<b>When to seek emergency medical attention?</b>
Look for <b>emergency warning signs*</b> for COVID-19. If someone is showing any of these signs, <b>seek emergency medical care immediately:</b>
<ul style="list-style-type: none"><li>• Fever (above 37.5 °C).</li><li>• Difficulty\ fast or shallow breathing</li><li>• Pain\chest pressure</li><li>• Weakness of numbness in limbs</li><li>• Bluish Lips\face</li></ul>

- Inability to wake or stay awake
- Mental confusion
- Loss of appetite
- For infants these include: grunting and an inability to breastfeed

\*This list is not all possible symptoms. Please call your medical provider for any other symptoms that are severe or concerning to you.

**Call 111 or call ahead to your local emergency facility:** Notify the operator that you are seeking care for someone who has or may have COVID-19.

Protect yourself

**Limit contact:**

- COVID-19 spreads between people who are in close contact (within about 2 meters) through respiratory droplets, created when someone talks, coughs or sneezes. Staying away from others helps stop the spread of COVID-19.

**The caregiver should not be someone who is at higher risk for severe illness from COVID-19:**

- 1) Elderly people.
- 2) Adults of any age with the following conditions **are at increased risk** of severe illness from the virus that causes COVID-19:
  - Cancer.
  - Chronic kidney disease.
  - COPD (chronic obstructive pulmonary disease).
  - Heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies.
  - Immunocompromised state (weakened immune system) from solid organ transplant.
  - Obesity (body mass index [BMI] of 30 kg/m<sup>2</sup> or higher but < 40 kg/m<sup>2</sup>).
  - Severe Obesity (BMI ≥ 40 kg/m<sup>2</sup>).
  - Sickle cell disease.
  - Smoking.
  - Type 2 diabetes mellitus.

**The person who is sick should isolate:**

- The sick person should separate themselves from others in the home.
- If possible, have the person who is sick use a separate room (ideally bedroom) and bathroom. If possible, have the person who is sick stay away from others. Try to stay at least 2 meters away from the sick person.
- Shared space; If the person has to share space, make sure the room has good air flow:
  - Open the window to increase air circulation.
  - Improving ventilation helps remove respiratory droplets from the air.
- Everyone should wear masks and wash hands frequently.
- Avoid having visitors.

### Caregivers should quarantine

- Caregivers and anyone who has been in close contact with someone who has COVID-19 should stay home. For more information, refer to “when to quarantine.”

### Eat in separate rooms or areas:

- **Stay separated:** The person who is sick should eat (or be fed) in their room, if possible.
- **Wash dishes and utensils using gloves and hot water:** Handle any dishes, cups/glasses used by the person who is sick with gloves. Wash them with soap and hot water or in a dishwasher.
- Clean hands after taking off gloves or handling used items.

### Avoid sharing personal items:

- **Do not share:** Do not share dishes, cups/glasses, silverware, towels, bedding, or electronics (like a cell phone) with the person who is sick.

### When to wear a mask or gloves:

#### The person who is sick:

- The person who is sick should wear a mask when they are around other people at home and out.
- The mask helps prevent a person who is sick from spreading the virus to others. It keeps respiratory droplets contained and from reaching other people.
- Masks should not be placed on young children under age 2, anyone who has trouble breathing, or is not able to remove the covering without help.

#### Caregiver:

- Wear gloves when you touch or have contact with the sick person’s blood, stool, or body fluids, such as saliva, mucus, vomit, and urine. Throw out gloves into a lined trashcan and wash hands right away.
- The caregiver should ask the sick person to put on a mask before entering their room.
- The caregiver may also wear a mask when caring for a person who is sick.
  - To prevent getting sick, make sure the caregiver practices everyday preventive actions: clean hands often; avoid touching your eyes, nose, and mouth with unwashed hands; and frequently clean and disinfect surfaces.

**Note on Mask-Wearing:** Masks must cover mouth and nose when they are used. Masks should not be touched or handled during use. If the mask gets wet or dirty from secretions, it must be replaced immediately with a new clean, dry mask. Remove the mask using the appropriate technique, which is to untie it, rather than touching the front of the mask, to discard it immediately after use and then to perform hand hygiene.

### Clean your hands often:

- **Wash hands:** Wash your hands often with soap and water for at least 20 seconds. Tell everyone in the home to do the same, especially after being near the person who is sick.

- **Hand sanitizer:** If soap and water are not readily available, use alcohol based hand rub that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.
- **Hands off:** Avoid touching your eyes, nose, and mouth with unwashed hands.

#### Track your own health

- Caregivers should stay home and monitor their health for COVID-19 symptoms while caring for the person who is sick.
  - Symptoms include fever, cough, and shortness of breath but other symptoms may be present as well. Trouble breathing is a more serious warning sign that you need medical attention.
- Caregivers should continue to stay home after care is complete. Caregivers can leave their home 14 days after their last close contact with the person who is sick (based on the time it takes to develop illness), or 14 days after the person who is sick meets the criteria to end home isolation.
- **If you are having trouble breathing, call 111:**  
Call your doctor or emergency room and tell them your symptoms before going in. They will tell you what to do.

### **5. Cleaning and disinfecting home if someone is sick**

#### What you need to know:

- Wear reusable or disposable gloves for routine cleaning and disinfection.<sup>17</sup>
- Clean surfaces using soap and water, then use disinfectant.
- Clean or launder items according to the manufacturer's instructions.
- Wash your hands often with soap and water for 20 seconds.
- If someone is sick, keep a separate "sick" room, ideally bedroom, and bathroom for the person who is sick (if possible).

#### How to clean and disinfect when someone is sick:

##### **Clean:**

- Wear reusable or disposable gloves for routine cleaning and disinfection.
- Clean surfaces using soap and water, then use disinfectant.
- Cleaning with soap and water reduces number of germs, dirt and impurities on the surface. Disinfecting kills germs on surfaces.
- Practice routine cleaning of frequently touched or high touch surfaces. High touch surfaces include: Tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, sinks, etc.

##### **Disinfect:**

- Disinfect with a household disinfectant. Follow the instructions on the label to ensure safe and effective use of the product. Many products recommend:

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<sup>17</sup> The best way to protect yourself from germs when shopping and after going out is to regularly wash your hands with soap and water for 20 seconds or use hand sanitizer with at least 60% alcohol. Wearing gloves when using a shopping cart or using an ATM will not necessarily protect you from getting COVID-19 and may still lead to the spread of germs.

- Keeping surface wet for a period of time (see product label)
- Precautions such as wearing gloves and making sure you have good ventilation during use of the product.
- Diluted household bleach solutions (Clorox) can be used if appropriate for the surface. Unexpired household bleach will be effective against coronaviruses when properly diluted.
  - Use bleach containing 5.25–8.25% sodium hypochlorite. Do not use a bleach product if the percentage is not in this range or is not specified.
  - Follow the manufacturer's application instructions for the surface, ensuring a contact time of at least 1 minute.
  - Ensure proper ventilation during and after application.
  - Check to ensure the product is not past its expiration date.
  - Never mix household bleach with ammonia or any other cleanser. This can cause fumes that may be very dangerous to breathe in.
- Prepare a bleach solution by mixing:
  - Five tablespoons (1/3rd cup) of 5.25–8.25% bleach per gallon of room temperature water
- OR
  - Four teaspoons of 5.25–8.25% bleach per quart of room temperature water
- Bleach solutions will be effective for disinfection up to 24 hours.
- Alcohol **solutions with at least 70% alcohol may also be used.**

**Always read and follow the directions on the label to ensure safe and effective use**

- Wear skin protection and consider eye protection for potential splash hazards.
- Ensure adequate ventilation.
- Use no more than the amount recommended on the label.
- Use water at room temperature for dilution (unless stated otherwise on the label).
- Avoid mixing chemical products.
- Label diluted cleaning solutions.
- Store and use chemicals out of the reach of children and pets.
  - You should never eat, drink, breathe or inject these products into your body or apply directly to your skin as they can cause serious harm.
  - Special considerations should be made for people with asthma and they should not be present when cleaning and disinfecting is happening as this can trigger asthma exacerbations.

**Specific guidance on cleaning different areas or items in the household of a person with COVID-19:**

<b>Soft Surfaces</b>	<ul style="list-style-type: none"><li>• Such as carpeted floor, rugs, and drapes.</li><li>• <b>Clean the surface using soap and water</b> or with cleaners appropriate for use on these surfaces.</li><li>• <b>Laundry items</b> (if possible) according to the manufacturer’s instructions. Use the warmest appropriate water setting (60 to 90 °C) and dry items completely.</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>• <b>Disinfect with a household disinfectant.</b></li><li>• Vacuum as usual.</li></ul>
<b>Electronics</b>	<ul style="list-style-type: none"><li>• <u>Such as tablets, touch screens, keyboards, and remote controls.</u></li><li>• Consider putting a wipe able cover on electronics.</li><li>• Follow manufacturer’s instruction for cleaning and disinfecting.<ul style="list-style-type: none"><li>➤ If no guidance, use alcohol-based wipes or sprays containing at least 60% alcohol. Dry surface thoroughly.</li></ul></li></ul>
<b>Laundry</b>	<p>4) For clothing, towels, linens and other items.</p> <ul style="list-style-type: none"><li>• Launder items according to the manufacturer’s instructions. Use the warmest appropriate water setting (at temperature 60 to 90 °C) and dry items completely.</li><li>• Wear disposable gloves when handling dirty laundry from a person who is sick.</li><li>• Dirty laundry from a person who is sick can be washed with other people’s items.</li><li>• Do not shake dirty laundry.</li><li>• Clean and disinfect clothes hampers according to guidance above for surfaces.</li><li>• Remove gloves, and wash hands right away.</li></ul>
<b>Clean Hands Often</b>	<ul style="list-style-type: none"><li>• <b>Key times to clean hands</b><ul style="list-style-type: none"><li>➤ Immediately after removing gloves and after contact with a person who is sick.</li><li>➤ After blowing one’s nose, coughing, or sneezing</li><li>➤ After using the restroom</li><li>➤ Before eating or preparing food</li><li>➤ After contact with animals or pets</li><li>➤ Before and after providing routine care for another person who needs assistance (e.g. a child)</li></ul></li><li>• <b>Wash your hands often with soap and water for 20 seconds.</b></li><li>• <b>Hand sanitizer:</b> If soap and water are not readily available and hands are not visibly dirty, use alcohol based hand rub that contains at least 60%</li></ul>

	<p>alcohol. However, if hands are visibly dirty, always wash hands with soap and water.</p> <ul style="list-style-type: none"><li>• <b>Avoid touching</b> your eyes, nose, and mouth with unwashed hands.</li></ul>
<b>Bedroom and Bathroom</b>	<ul style="list-style-type: none"><li>• Keep <b>separate bedroom and bathroom for a person who is sick</b> (if possible).</li><li>• The person who is sick should stay separated from other people in the home (as much as possible).</li></ul> <p><b>If you have a separate bedroom and bathroom:</b> Wear disposable gloves and only clean the area around the person who is sick when needed, such as when the area is soiled. This will help limit your contact with the person who is sick.</p> <ul style="list-style-type: none"><li>➤ Caregivers can <b>provide personal cleaning supplies</b> to the person who is sick (if appropriate). Supplies include tissues, paper towels, cleaners, and disinfectant. If they feel up to it, the person who is sick can clean their own space.</li></ul> <ul style="list-style-type: none"><li>• <b>If shared bathroom:</b> The person who is sick should clean and disinfect after each use. If this is not possible, the caregiver should wait as long as possible before cleaning and disinfecting.</li></ul>
<b>Food</b>	<ul style="list-style-type: none"><li>• <b>Stay separated:</b> The person who is sick should eat (or be fed) in their room if possible.</li><li>• <b>Wash dishes and utensils using disposable gloves and hot water:</b> Handle any used dishes, cups/glasses, or silverware with gloves. Wash them with soap and hot water or in a dishwasher.</li><li>• Clean hands after taking off gloves or handling used items.</li></ul>
<b>Trash</b>	<ul style="list-style-type: none"><li>• <b>Dedicated, lined trash can:</b> If possible, dedicate a lined trashcan for the person who is sick.</li><li>• Use disposable gloves when removing garbage bags, and handling and disposing of trash.</li><li>• Wash hands afterwards.</li></ul>

6. Parents or caregivers who are sick

If a parent or a sole caregiver has COVID-19:

Everyone in the home should practice everyday preventive actions. Those in the home who are sick with COVID-19 should follow guidance for what to do if you are sick, and when it is safe to end your isolation.

If a child’s parent or caregiver is sick with COVID-19, follow the steps below to help protect the child from infection:

Older children

The child should avoid physical contact with the sick parent or caregiver until all sick people have ended their home isolation.

For the child to safely have no interaction with the parent or caregiver, the child should be old enough to legally be home alone and mature enough to care for themselves.

### Younger children

If the parent or sole caregiver will be caring for the child while sick, they should contact the child's health service provider for advice on how to best protect the child from infection.

- Young children should be supervised at all times.
- If the parent or the sole caregiver is too ill to care for the child, they should see if there is a caregiver outside of the home with whom the child can stay. The caregiver should not be someone who is at higher risk for severe illness from COVID-19, as the child has likely been exposed to the virus. The caregiver will need to help the child quarantine for 14 days since they last had close contact (less than 2 meters away from someone for more than 15 minutes) with the sick person.

### Children staying in the home with the sick parent or caregiver

If the child will stay in the home with you (the parent or caregiver who is sick), you should:

- Wash your hands frequently with soap and water for at least 20 seconds. If soap and water is not available, use alcohol based hand rub containing at least 60% alcohol and rub your hands together until they are dry.
- Try to stay 2 meters away from the child, if possible and if safe.
- Wear a mask if you are in a room where the child may come into contact with you.
- Note that masks should not be placed on:
  - Children younger than 2 years old,
  - Anyone who has trouble breathing or is unconscious,
  - Anyone who is incapacitated or otherwise unable to remove the mask without assistance.
- Increase ventilation by opening windows in rooms you are in.
- When you need to bring items to the child, disinfect the items before giving them to the child.
- For fruits and veggies, you will need to wash them. However, do not *disinfect* food (with chemicals) when you need to bring food to the child.
- Watch for symptoms:
  - During this time, the caregiver should monitor themselves for symptoms.
  - Check the child's temperature twice a day and watch for symptoms of COVID-19, such as fever, cough or shortness of breath, or symptoms specific to children.\*
  - If the child does develop symptoms, call the child's healthcare provider for medical advice and follow the steps for caring for someone who is sick.
  - If possible, the child should stay away from people who are at higher-risk for getting very sick from COVID-19.

**Signs or symptoms of COVID-19 specific in children include:**

- Fever
- Fatigue
- Headache
- Myalgia
- Cough
- Diarrhea
- Sore throat
- Nasal congestion or rhinorrhea
- New loss of taste or smell
- Poor appetite or poor feeding
- Shortness of breath or difficulty breathing
- Abdominal pain
- Nausea or vomiting

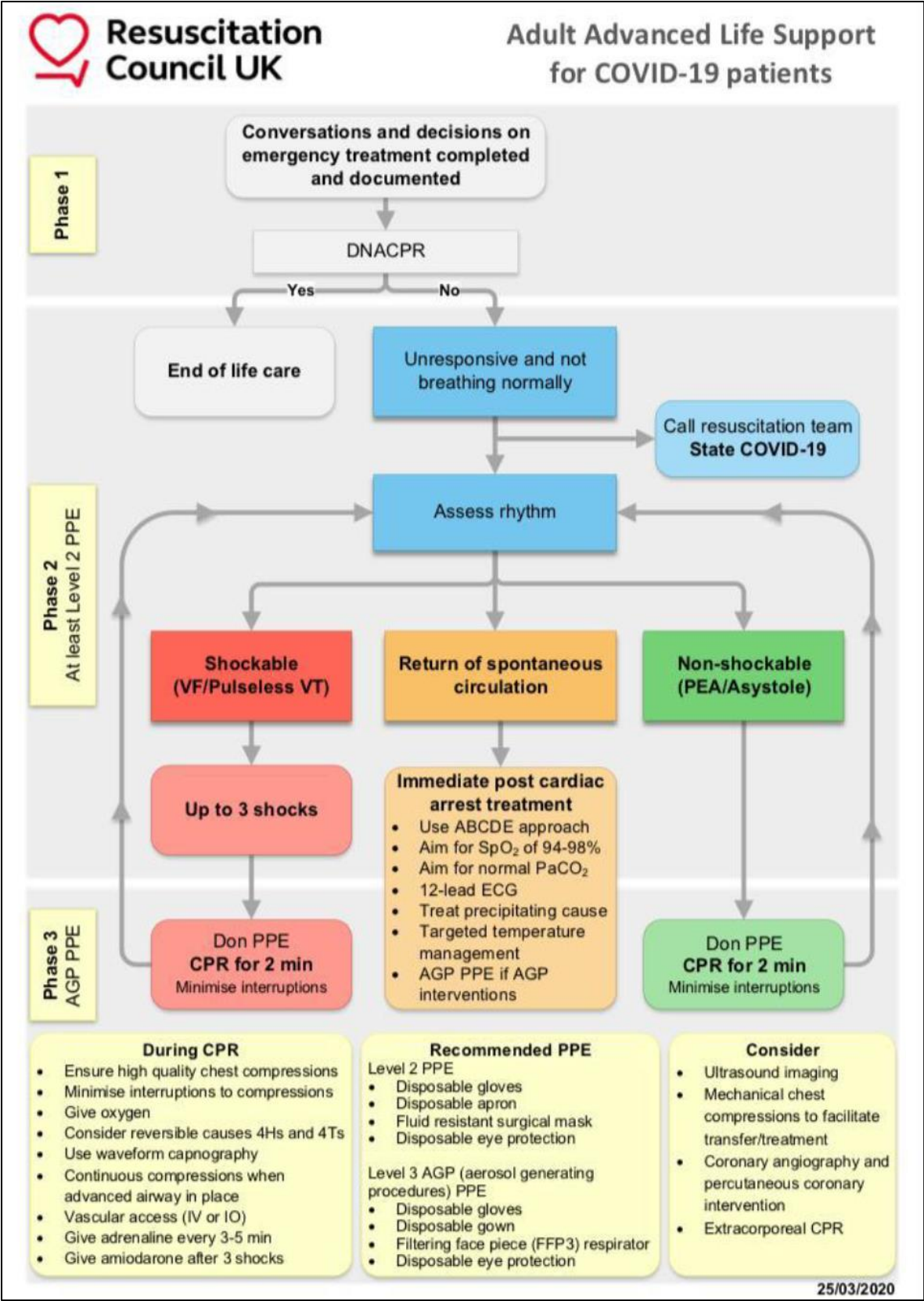
**Children staying outside the home with a temporary caregiver**

If the child will stay outside of their own home with a temporary caregiver, the new caregiver should help the child to quarantine and do the following:

- The child should stay inside the caregiver’s home until 14 days after their last close contact with the sick person.
- Watch for symptoms.
  - During this time, the caregiver should monitor themselves for symptoms and practice everyday preventive actions.
  - Check the child’s temperature twice a day and watch for symptoms of COVID-19, such as fever, cough or shortness of breath, or symptoms specific to children.
  - If the child does develop symptoms, call the child’s healthcare provider for medical advice and follow the steps for caring for someone who is sick.
- If possible, the child should stay away from people who are at higher-risk for getting very sick from COVID-19.
- The caregiver should then quarantine for 14 days after the last day the caregiver had contact with the sick child.

ANNEXES

ANNEX ONE: RESUSCITATION GUIDELINES ACCORDING TO UK RESUSCITATION COUNCIL





## Resuscitation Council UK

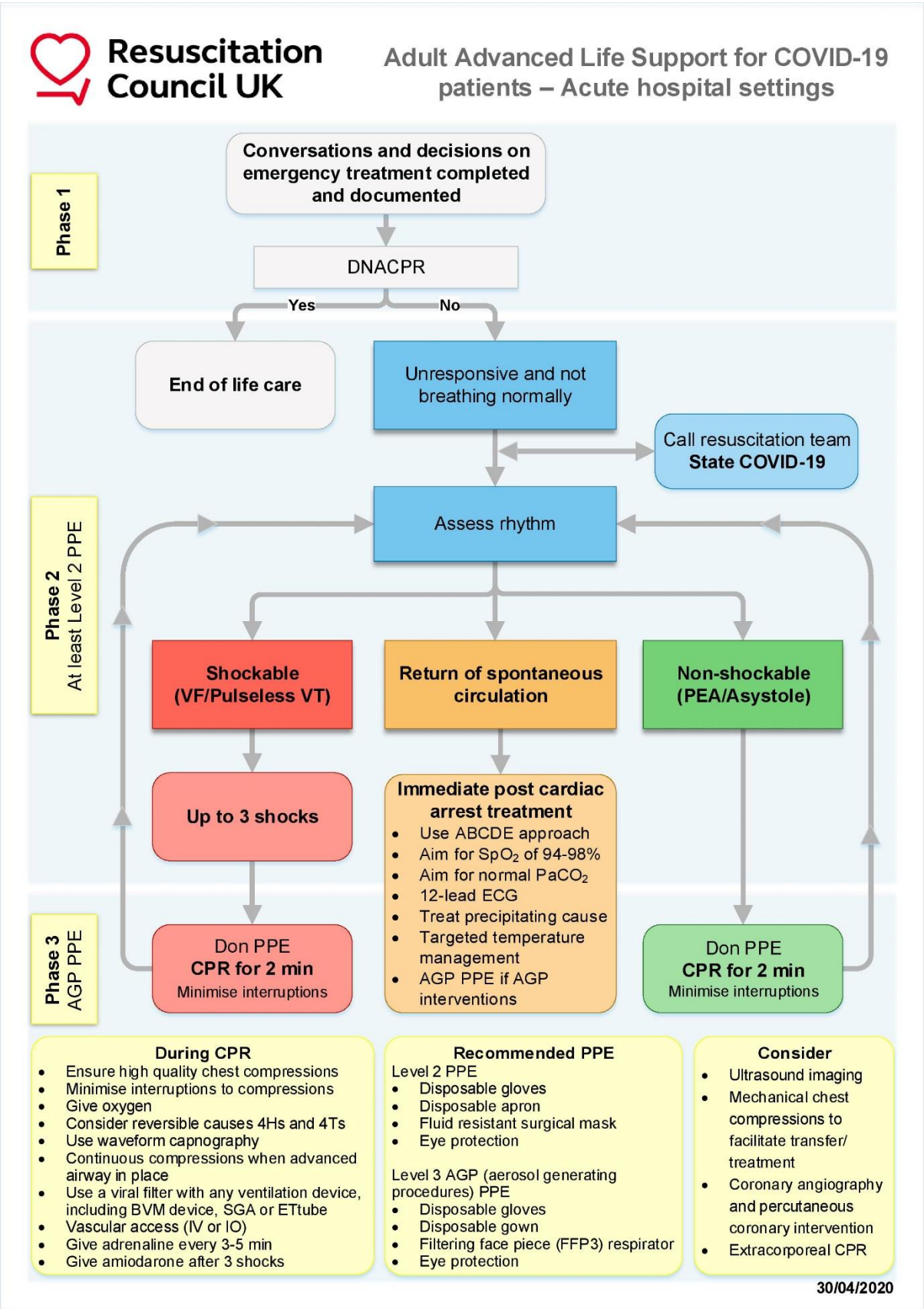
### Resuscitation of COVID-19 patients in hospital

- 1 Recognise cardiac arrest. Look for the absence of signs of life and normal breathing. Feel for a carotid pulse if trained to do so. Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth. When calling 2222, state the risk of COVID-19.
- 2 If a defibrillator is readily available defibrillate shockable rhythms rapidly prior to starting chest compressions. The early restoration of circulation may prevent the need for further resuscitation measures. Local guidance must be followed about equipment entering the area.
- 3 Full Aerosol Generating Procedure (AGP) Personal Protective Equipment (PPE) must be worn by all members of the resuscitation/emergency team before entering the room. Sets of AGP PPE must be readily available where resuscitation equipment is being locally stored. No chest compressions or airway procedures such as those detailed below should be undertaken without full AGP PPE. Once suitably clothed, start compression-only CPR and monitor the patient's cardiac arrest rhythm as soon as possible. Do not do mouth-to-mouth ventilation or use a pocket mask. If the patient is already receiving supplemental oxygen therapy using a face mask, leave the mask on the patient's face during chest compressions as this may limit aerosol spread. If not in situ, but one is readily available, put a simple oxygen mask on the patient's face. Restrict the number of staff in the room (if a single room). Allocate a gatekeeper to do this.
- 4 Airway interventions (e.g. supraglottic airway (SGA) insertion or tracheal intubation) must be carried out by experienced individuals. Individuals should use only the airway skills (e.g. bag-mask ventilation) for which they have received training. For many HCWs this will mean two-person bag-mask techniques with the use of an oropharyngeal airway. Tracheal intubation or SGA insertion must only be attempted by individuals who are experienced and competent in this procedure.
- 5 Identify and treat any reversible causes (e.g. severe hypoxaemia) before considering stopping CPR. Discussion should be maintained throughout the resuscitation event and early planning of the post resuscitation phase undertaken. Contact senior help and gain advice from critical care partners as part of the planning.
- 6 Dispose of, or clean, all equipment used during CPR following the manufacturer's recommendations and local guidelines. Any work surfaces used for airway/resuscitation equipment will also need to be cleaned according to local guidelines. Specifically, ensure equipment used in airway interventions (e.g. laryngoscopes, face masks) is not left lying on the patient's pillow, but is instead placed in a tray. Do not leave the Yankauer sucker placed under the patient's pillow; instead, put the contaminated end of the Yankauer inside a disposable glove.
- 7 Remove PPE safely to avoid self-contamination and dispose of clinical waste bags as per local guidelines. Hand hygiene has an important role in decreasing transmission. Thoroughly wash hands with soap and water; alternatively, alcohol hand rub is also effective.
- 8 Post resuscitation debrief is important and should be planned.

Resource: Resuscitation Council UK

<https://www.resus.org.uk/media/statements/resuscitation-council-uk-statements-on-covid-19-coronavirus-cpr-and-resuscitation/covid-healthcare-resources/>

UPDATED RESUSCITATION GUIDELINES ACCORDING TO UK RESUSCITATION COUNCIL



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Resuscitation of adult COVID-19 patients in acute hospital settings

- 1 Recognise cardiac arrest. Look for the absence of signs of life and normal breathing. Feel for a carotid pulse if trained to do so. Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth. When calling 2222, state the risk of COVID-19.
- 2 If wearing Level 2 PPE (surgical mask, gloves, apron and eye protection) and a defibrillator is readily available, defibrillate shockable rhythms rapidly prior to starting chest compressions. The early restoration of circulation may prevent the need for further resuscitation measures. Local guidance must be followed about equipment entering the area.
- 3 Full Aerosol Generating Procedure (AGP) Personal Protective Equipment (PPE) (disposable gloves, fluid resistant gown/suit, filtering face piece respirator and eye protection) must be worn by all members of the resuscitation/emergency team before entering the room. Sets of AGP PPE must be readily available where resuscitation equipment is being locally stored. No chest compressions or airway procedures such as those detailed below should be undertaken without full AGP PPE. Once suitably clothed, start compression-only CPR and monitor the patient's cardiac arrest rhythm as soon as possible. Do not do mouth-to-mouth ventilation or use a pocket mask. If the patient is already receiving supplemental oxygen therapy using a face mask, leave the mask on the patient's face during chest compressions as this may limit aerosol spread. If not in situ, but one is readily available, put a simple oxygen mask on the patient's face. Restrict the number of staff in the room (if a single room). Allocate a gatekeeper to do this.
- 4 Airway interventions (e.g. supraglottic airway (SGA) insertion or tracheal intubation) must be carried out by experienced individuals. Individuals should use only the airway skills (e.g. bag-mask ventilation) for which they have received training. For many HCWs this will mean two-person bag-mask techniques with the use of an oropharyngeal airway. Tracheal intubation or SGA insertion must only be attempted by individuals who are experienced and competent in this procedure. Use a viral filter between the self-inflating bag and airway (mask, SGO or tracheal tube). Liaise with your anaesthetic department about the use of filters
- 5 Identify and treat any reversible causes (e.g. severe hypoxaemia) before considering stopping CPR. Discussion should be maintained throughout the resuscitation event and early planning of the post resuscitation phase undertaken. Contact senior help and gain advice from critical care partners as part of the planning.
- 6 Dispose of, or clean, all equipment used during CPR following the manufacturer's recommendations and local guidelines. Any work surfaces used for airway/resuscitation equipment will also need to be cleaned according to local guidelines. Specifically, ensure equipment used in airway interventions (e.g. laryngoscopes, face masks) is not left lying on the patient's pillow, but is instead placed in a tray. Do not leave the Yankauer sucker placed under the patient's pillow; instead, put the contaminated end of the Yankauer inside a disposable glove.
- 7 Remove PPE safely to avoid self-contamination and dispose of clinical waste bags as per local guidelines. Hand hygiene has an important role in decreasing transmission. Thoroughly wash hands with soap and water; alternatively, alcohol hand rub is also effective.
- 8 Post resuscitation debrief is important and should be planned.

Version 5. Published 1 May 2020.

**ANNEX TWO: ANTENATAL CONTACTS – REMOTE CONTACT AVAILABLE**

#	Current WHO Recommended Antenatal Contacts	Alternate Modality of Antenatal Contact – where remote contact available (must have COVID-19 Symptoms <sup>18</sup> , Danger Signs <sup>19</sup> and Birth Preparedness <sup>20</sup> information)
1.	12 weeks	<u>Face-to-Face</u> <ul style="list-style-type: none"><li>• Comprehensive history and plan for care.</li><li>• BP/Blood test.</li><li>• USS – where available.</li><li>• Initial risk assessment.</li></ul>
2.	20 weeks	<b>Remote contact</b> – including ongoing risk assessment
3.	26 weeks	<b>Remote contact</b> – including ongoing risk assessment
4.	30 weeks	<u>Face-to-Face</u> <ul style="list-style-type: none"><li>• BP/Blood tests and Abdominal palpation including FHR.</li><li>• Ongoing risk assessment.</li></ul>
5.	34 weeks	<b>Remote contact</b> – including ongoing risk assessment
6.	36 weeks	<u>Face-to-Face</u> <ul style="list-style-type: none"><li>• BP/Blood tests and Abdominal Palpation including FHR.</li><li>• Ongoing risk assessment.</li><li>• Birth planning.</li></ul>
7.	38 weeks	<b>Remote contact</b> – unless risk factors for hypertension in pregnancy or growth restriction identified previously
8.	40 weeks	<u>Face-to-Face</u> <ul style="list-style-type: none"><li>• BP/Blood tests and Abdominal Palpation including FHR.</li><li>• Ongoing risk assessment.</li><li>• Birth planning</li></ul>

<sup>18</sup> COVID-19 Symptoms – fever, tiredness, dry cough, aches and pains, nasal congestion, runny nose, sore throat or diarrhea (World Health Organization, 2020)

<sup>19</sup> Danger signs include: Vaginal bleeding; Convulsions/fits; Severe headache and/or blurred vision; Fever and too weak to get out of bed; Severe abdominal pain; Fast or difficult breathing (world Health Organization, 2017)

<sup>20</sup> Birth Preparedness planning includes knowing Danger Signs: Planned birth place, skilled birth attendant and transport; identifying companion (World Health Organization, 2016)

## Annex Three: HOUSEHOLD CHECKLIST

### Factors to consider when assessing households

House Hold Requirements for Home Care	
• A separate room for isolation and preferably separate toilet.	
• Adequate room ventilation(keeping the window open as possible)	
• Shared areas like kitchen and bathrooms are well ventilated.	
• Hand-hygiene supplies are available:	
➤ Alcohol based rub near the point of care and the room door	
➤ Sink area with suitable supplies for handwashing	
• Non-essential furniture removed and the remaining furniture is easy to clean, and does not conceal or retain dirt or moisture within or around it.	
• PPE supply and linen outside the isolation room (on a table)	
• Appropriate waste bags in a bin (If possible, use a touch-free bin) inside the isolation room.	
• Patient's personal belongings to a minimum	
• All items necessary for attending to personal hygiene within the patient's reach (pitchers and cups, tissue wipes etc.).	
• Non-critical patient-care equipment for the patient use only (e.g. thermometer, blood pressure cuff, etc.).	
• Appropriate container with a lid outside the door for equipment that requires disinfection.	
• Adequate equipment required for cleaning or disinfection inside the isolation room	
• A telephone or other method of communication in the isolation room	
Patient / Caregiver Assessment	
• The patient and other household members are capable of adhering to precautions recommended as part of home care or isolation	
• <b>Caregiver</b> must be healthy with no risk factor for chronic or immunodeficiency diseases	
• Aware of the IPC measures for cleaning the utilities, laundry, furniture, etc.	
• Aware of identifying warning signs for deterioration and the need for admission.	
• Knows who and how to contact for help.	
Medical Equipment's	
• Thermometer	
• Pulse oximeter	

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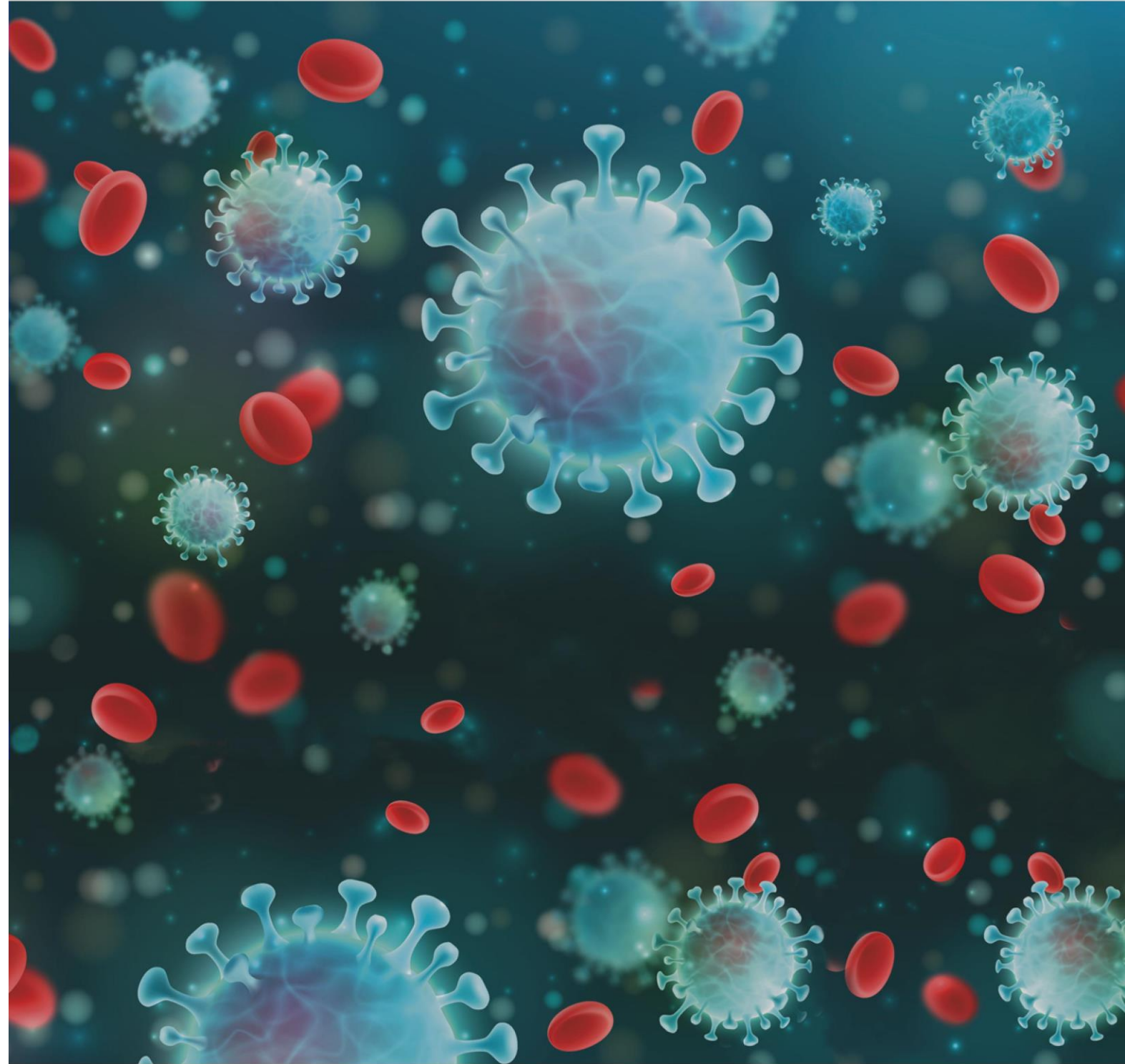
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