

# Navigating COVID-19 Clinical Care Pathways Across the Health Care System

A practical guide for primary health care workers

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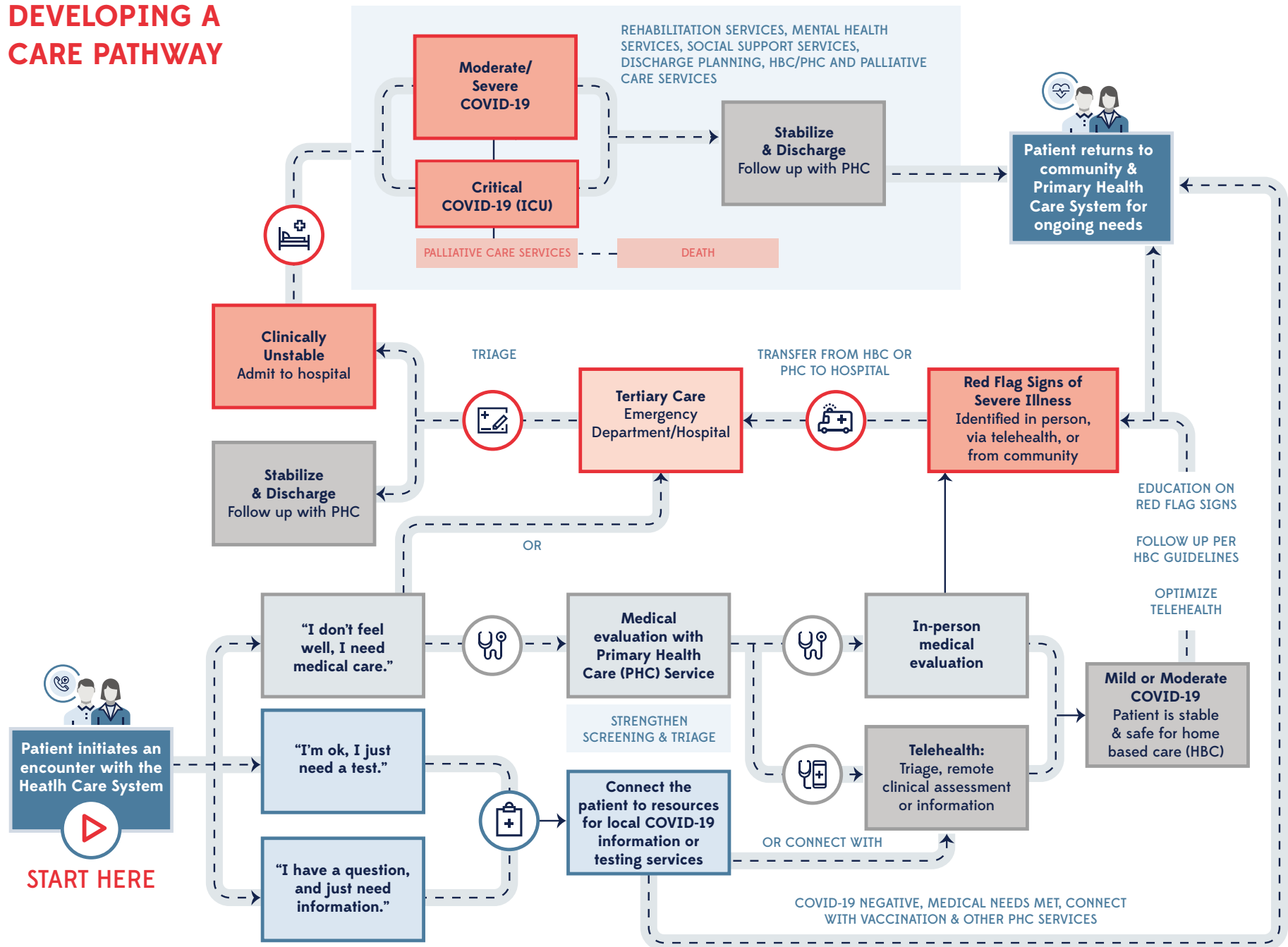
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# DEVELOPING A CARE PATHWAY





# ACRONYMS

<b>ABG</b>	Arterial blood gas
<b>BMI</b>	Body mass index
<b>BP</b>	Blood pressure
<b>CFR</b>	Case Fatality Rate
<b>CHF</b>	Congestive heart failure
<b>CHW</b>	Community health worker
<b>COPD</b>	Chronic obstructive pulmonary disease
<b>CVA</b>	Cerebrovascular accident
<b>HR</b>	Heart rate
<b>ICU</b>	Intensive care unit
<b>IPC</b>	Infection prevention and control
<b>MIS-C</b>	Multisystem inflammatory syndrome in children
<b>NCD</b>	Noncommunicable disease
<b>PPE</b>	Personal protective equipment
<b>SBAR</b>	Situation, background, assessment, recommendation
<b>SPO<sub>2</sub></b>	Oxygen saturation
<b>TB</b>	Tuberculosis
<b>TIA</b>	Transient ischemic attack
<b>VL</b>	Viral load







# INTRODUCTION

## Intended Audience and How to Use this Document

This document offers a framework that health care workers of all disciplines can use to navigate their health care system and serves as a guide to connect patients infected with and affected by COVID-19 to comprehensive, high-quality, and equitable care.

We aim to expand upon the established public health concepts and clinical management principles of COVID-19 care to complement the broader infrastructure of services that must be considered when coordinating comprehensive, high quality, and equitable care. We aim to offer practical technical guidance for how to approach common challenges to assessment, clinical management, and care coordination for all patients seeking primary health care in the context of the COVID-19 pandemic. As COVID-19 becomes endemic, strengthening systems to support the continuum of care is critically important, particularly maintaining—and strengthening—essential health services.

While many clinical protocols and public health guidelines have been published since early 2020, there is a gap in the guidance for health care workers on how to integrate protocols to execute a practical and realistic plan of care within the complex ecosystem of health care service delivery amid the COVID-19 pandemic. Many of the strategies and frameworks included in this guide are applicable to patient care for those who do not have COVID-19, as essential health services for all patients should be maintained throughout and beyond the pandemic. We intentionally focus on primary care and community-based health care teams as the backbone of the health system and often the first point of contact for patients with confirmed or suspected COVID-19. Most people with COVID-19 can be managed at the primary care level, can recover safely at home, and do not require hospitalization. We aim to equip all health care workers at every tier of the health system with the tools to safely triage, assess, and decide where patients need to go for the right care at the right time.

This document is comprised of 11 sections and several additional tools and resources in the annexes. Each section can be used independently and expanded to develop a comprehensive module. However, the combined sections represent a practical guide along the pathways to clinical services including home-based care, acute care/receiving facilities, primary care facilities, and inpatient care.

The intended audience of this document is any cadre of health care worker in the public or private sector who is serving their communities. This includes:

- Physicians: general practitioners, medical officers, and specialists
- Nurses, midwives, and nursing assistants
- Clinical officers, advanced practice nurses, physician assistants, and other non-physician providers
- Community health workers (CHWs)
- Private health sector clinical staff
- Social workers and mental health providers
- Pharmacists
- Clinic or hospital administrators, health program leaders, and health policy leaders
- Other community leaders involved in working to achieve epidemic control (faith-based organizations and groups, societal groups, school health groups, business organizations, etc.)

The COVID-19 pandemic has had an immense effect on our lives, our patients, our communities, and our health care systems. We hope this document will provide guidance to health care workers at this moment in the pandemic and beyond, and that some of these tools will in turn strengthen the health care system and improve preparedness for future challenges.



# SECTION 1

## SECTION 1:

### General information about COVID-19

#### What is COVID-19?

COVID-19 (short for coronavirus disease–2019) is an infectious disease caused by a new type of coronavirus called SARS-CoV-2 (severe acute respiratory syndrome–coronavirus 2). The coronavirus family includes many types of viruses. So far, seven of these coronaviruses are known to cause disease in human beings (**Figure 1**). The first four are responsible for the common cold. SARS-CoV (severe acute respiratory syndrome) and MERS-CoV (Middle Eastern respiratory syndrome) caused serious outbreaks when they emerged in China (2002) and Saudi Arabia (2012), respectively.

SARS-CoV-2, the virus responsible for the current pandemic, was discovered in late 2019 and continues to affect every country across the globe. Several subtypes, or variants, have been identified since the start of the pandemic (e.g., Delta variant, Omicron variant). These variants have arisen from mutations in the virus' genetic code, but all are considered the SARS-CoV-2 virus.

SARS-CoV-2 presents several unique and profound challenges. It is a new virus to humankind; therefore, no human has pre-existing immunity. Because of specific features of the virus including its transmissibility, its ability to be transmitted without or prior to symptoms, and its severity in some populations, it quickly spread across the globe and caused immense strain on health resources. Our health systems have not had to handle the effects of a global respiratory pandemic since the global influenza pandemic more than 100 years ago.

#### How is it transmitted?

An infected person can spread the virus through the tiny droplets (or very small airborne particles) of moisture released from the nose or mouth when she or he is breathing, sneezing, coughing, speaking, or singing. These virus-containing droplets remain in the air or fall on nearby surfaces, like a person's hands, shared utensils, or high-touch surfaces in a common living space.

A healthy person can become infected with the virus when the person inhales virus-containing droplets emitted from another person's mouth or nose. It is also possible to become infected if contaminated surfaces (like hands or shared utensils) come in contact with the mouth, nose, or eyes. It is important to understand that some infected people can be contagious—actively spreading the virus and possibly infecting other people—without showing symptoms of illness.

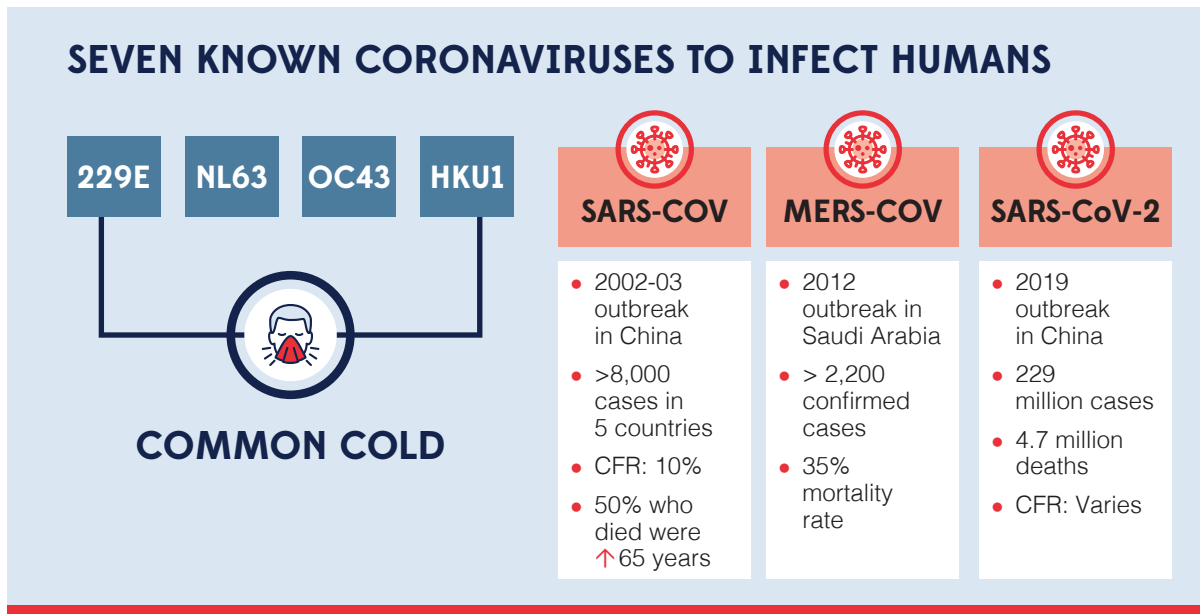


#### IN THIS SECTION

This section will introduce readers to COVID-19, the infectious disease that has caused a global pandemic and challenged health systems in ways the global community has yet to fully measure or understand. In this section, readers will:

- Understand the basic principles of COVID-19 virology and pathophysiology as a novel infectious disease
- Discuss infection prevention and control (IPC) as a general principle and explain why it is a foundational component of COVID-19 response
- Explain the systemic impact of the COVID-19 pandemic beyond morbidity and mortality

**FIGURE 1.** Types of coronaviruses known to infect humans



## IPC: the foundation of the COVID-19 response

When we understand how viral infections spread between people, we can prevent contamination and control the spread—and thus the impact—of an outbreak of a disease like COVID-19.

IPC has been an important part of health care for many years. What is it, and why is it so important in the fight against COVID-19?

🗨️ Infection prevention and control (IPC) is a practical, evidence-based approach preventing patients and health workers from being harmed by avoidable infections. Effective IPC requires constant action at all levels of the health system, including policymakers, facility managers, health workers and those who access health services. IPC...is universally relevant to every health worker and patient, at every health care interaction. Defective IPC causes harm and can kill. Without effective IPC it is impossible to achieve quality health care delivery. 🗨️<sup>1</sup>

World Health Organization

1. World Health Organization. Infection prevention and control. Available from: <https://www.who.int/health-topics/infection-prevention-and-control>.

Preventing infection and controlling the spread of the virus will protect our communities and our health care systems from being overwhelmed. Many local governments have implemented IPC measures, and these recommendations should be observed. Preventing the spread of the virus is everyone's responsibility, and these simple IPC actions can make a big difference.

## IPC AT HOME

- Get vaccinated against COVID-19 if you are eligible, and encourage your friends and family to get vaccinated as well. Check your local guidelines for updated information on COVID-19 immunization, including recommendations for and availability of booster doses.
- Wash your hands for at least 30 seconds with soap and warm water several times a day, especially after coughing, sneezing, wiping your nose, using the restroom, changing diapers, and before and after eating.
- If soap and water are not readily available, you may also regularly sanitize your hands with an alcohol-based hand sanitizer—a great option when traveling or on the go!
- Ensure that high-touch surfaces, like door handles and countertops, are disinfected regularly.
- Promote adequate ventilation at home; this may include opening windows or redirecting airflow in the home.
- Be mindful of IPC when welcoming visitors into your home; ask them if they are having any symptoms and consider rescheduling the visit if they are feeling unwell. You may consider requesting that visitors wear masks if gathering in your home, or you may prefer to keep your visits outside where you can distance in a well-ventilated, open-air space.
- If someone in your home is sick, follow the local guidelines for isolation and/or quarantine ([see Section 2](#)).

## IPC IN THE COMMUNITY

- Wear a mask over your mouth and nose when in public areas, especially indoors, or in accordance with local guidelines
- Wash or sanitize your hands regularly in public, especially after using doors, after trips to the bathroom, and before and after eating, drinking, or removing your mask. Advocate for well-positioned hand hygiene stations at the places you frequent regularly in the community (i.e. your places of work, education, worship, or commerce).
- Avoid crowds or large gatherings of people, especially if there is low mask usage in the crowd.
- Maintain physical distancing wherever possible (minimum 6 feet, or about 2 meters) in public areas.
- If you feel sick or have been notified that you've been exposed to COVID-19, do not go into the community; self-isolate per your local guidelines, and get tested.
- Every eligible person should get vaccinated against COVID-19 as soon as they are able. Community leaders and health care workers should get vaccinated themselves and advocate for vaccination in their communities. Check your local guidelines for updated information on COVID-19 immunization, including recommendations and availability of booster doses.

## IPC AT A HEALTH CARE FACILITY

Each health facility must have a clear and well-designed IPC plan so that potentially infectious patients can access care without putting health workers or other patients at risk. IPC plans for health care facilities must include the following considerations:

- Redesign patient flow in the health facility to have separate areas for potentially contagious (“sick”) patients and patients without possible COVID-19 symptoms.
- Make all health care workers aware of workflows; promote regular refresher trainings for health care workers on IPC workflows, protocols, and guidelines.
- Strengthen triage with screening at all points of entry to direct patients to the appropriate area of the facility for care. See Section 3 for more detailed information on this.
- Enforce universal masking for all people entering the clinic.
- Make appropriate personal protective equipment (PPE) available for health care workers to safely render care to anyone who meets the case definition for COVID-19.
- Position hand hygiene stations at multiple areas throughout the facility, and heavily promote hand hygiene among staff and people entering the health facility.
- Promote daily symptoms checks for all staff at the health facility; promote workplace policies that allow staff members to report their symptoms, self-isolate, get tested, and get care if they are ill.

## Why is it important to slow the spread and reduce the impact of COVID-19?

COVID-19 is the illness caused by the SARS-CoV-2 virus, and it causes asymptomatic or mild to moderate cold or flu-like symptoms in the vast majority of the population. However, in some cases, it can cause serious illness leading to hospitalization and death, and this happens at a much higher rate than with other viral illnesses. Even though the percentage of people with COVID-19 who get severe disease leading to hospitalization is comparatively low, the more people in a community who get COVID-19, the higher the relative number of complications requiring hospitalization that will arise. This virus can spread very quickly, and thus can quickly overload health facilities, overwhelm health care workers, and have ripple effects on the health systems’ ability to care for all people—with or without COVID-19.

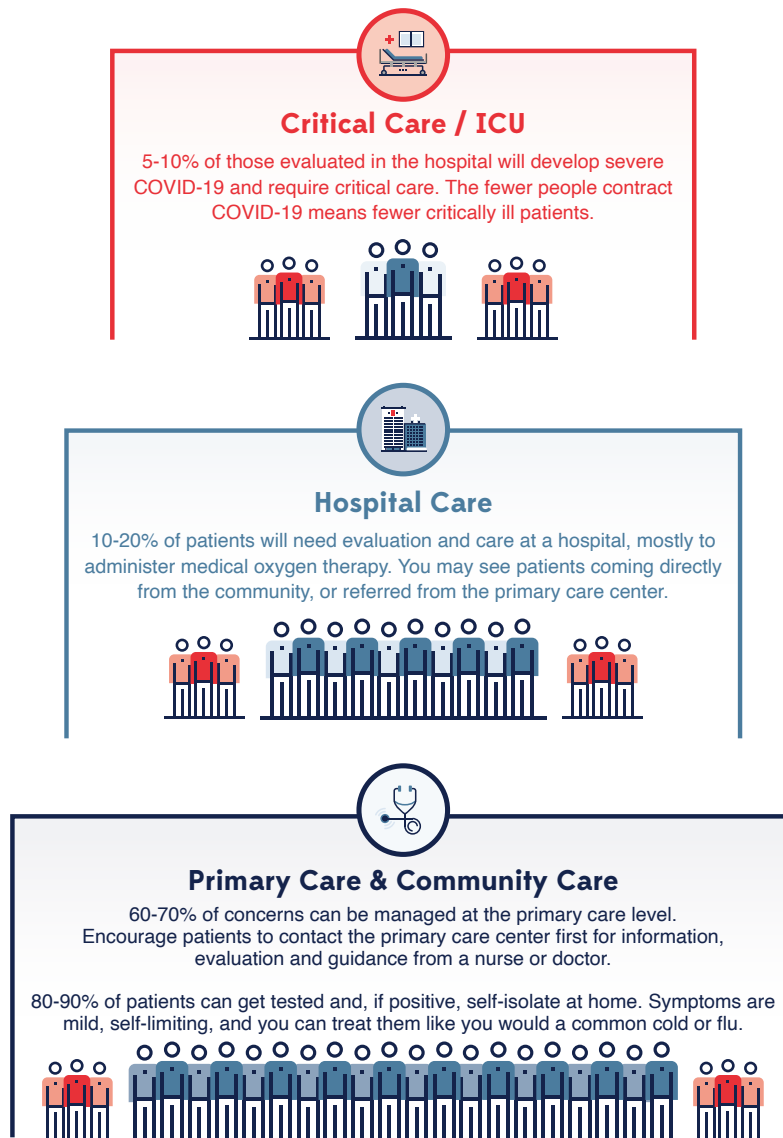
So, why is it important to slow the spread and reduce the impact of COVID-19?

- **Reducing morbidity (sickness) and mortality (death):** By following the basic measures to protect yourself from getting the disease, you also protect your family, your friends, and your community. Even though most people who get COVID-19 will not develop complications, reducing the overall caseload in the community reduces the number of people who get severe illness and require hospitalization.
- **Maintaining essential health services:** The primary health care system needs to continue routine services (like antenatal care, immunizations, and chronic disease management) to keep communities healthy. The pandemic has disrupted these services, which will have lasting effects on the long-term health of populations.

- Protecting our civil institutions:** The COVID-19 pandemic has affected almost every facet of our lives. The sooner we can reduce the burden of sickness and death in our communities, the faster our schools, our economies, and our health care systems can recover.

Health care workers in the community and in primary care centers are well positioned to keep most of their patients safe at home; only about 10-15% of patients with COVID-19 will need any type of hospital care (Figure 2). By guiding patients to the right care at the right time and place, we can save our resources in the hospitals and critical care centers for the sickest patients.

**FIGURE 2.** Distribution Across the Continuum of COVID-19 Care



## EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- National Institutes of Health. Clinical spectrum of SARS-CoV-2 infection. <https://www.covid19treatmentguidelines.nih.gov/overview/clinical-spectrum/>
- World Health Organization: Technical Guidance, Infection Prevention & Control. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance-publications?publicationtypes=d198f134-5eed-400d-922e-1ac06462e676>





# SECTION 2

## SECTION 2:

### “I don’t feel well”: The First Step on the Pathway to Care

#### Self-assessment: It starts with the patient!

All patients start their pathway to care by assessing their own situation and deciding to engage with the health care system in some way. A new symptom or concern usually initiates an individual’s engagement with the health care system, whether a cough, shortness of breath, fever, or possible exposure.

#### 🧡 I don’t feel well: 🧡

The development of symptoms is often the inciting event to seeking care.



## IN THIS SECTION





### Community based health workers will

- Begin to understand what it means to “become a patient,” and the many possible ways people in the community become patients and engage with the health system to seek health care services.
- Identify the different services that patients may require when presenting with COVID-19 symptoms or exposure.
- Learn how to assess the patient’s needs and categorize the services they are requiring at their first point of contact with the health care team.

Whether sick with COVID-19 or another illness, the patient usually needs to connect with the health care system for some or all the following services:

- **Information:** Even if the symptoms are very mild and do not warrant advanced medical care, there are many reasons to connect with the health care system for information or advice on the best next steps to keep the patient, their family, and the community safe.
- **COVID-19 testing:** More information about who does and does not have COVID-19 will help us fight the pandemic and keep communities safe. Even if the patient has mild or no symptoms and doesn’t require advanced medical care, they may contact the health care system to get a test. A positive test may prompt the patient to self-isolate to stop the spread of the virus and notify close contacts to quarantine. However, finding or getting a COVID-19 test can be challenging at times. Consult local guidelines, and if the patient is unable to access COVID-19 testing services easily, it is usually safest to self-isolate at home, notify close contacts to quarantine, and monitor for symptom progression.
- **Medical care:** A health care worker can assess the patient’s symptoms, make a diagnosis, and advise on medical care. See Table 1 for common presenting symptoms of COVID-19.

**TABLE 1. COMMON PRESENTING SYMPTOMS OF COVID-19**

 <b>COMMON MILD SYMPTOMS</b>	 <b>COMMON MODERATE/STRONG SYMPTOMS</b>	 <b>RARE OR ATYPICAL SYMPTOMS</b>	 <b>REMEMBER – you can have and spread the virus with no symptoms at all!</b>
<ul style="list-style-type: none"> <li>• Dry cough</li> <li>• Fever</li> <li>• Headache, body aches</li> <li>• Runny nose, sore throat</li> <li>• Loss of smell or taste</li> <li>• Mild COVID-19 can seem like “just a cold,” or mild allergies—get tested!</li> </ul>	<ul style="list-style-type: none"> <li>• Strong, dry cough; shortness of breath</li> <li>• Chest pain or pressure</li> <li>• Bad headache or body aches</li> <li>• High fever</li> <li>• Diarrhea, vomiting</li> <li>• You can feel very sick and still be considered to have “mild COVID-19” like a bad flu or more severe cold. It can be very uncomfortable!</li> </ul>	<ul style="list-style-type: none"> <li>• Rashes or skin changes</li> <li>• Abdominal pain</li> <li>• Loss of speech or movement or confusion</li> <li>• Only one or two mild symptoms at a time (like, only loss of smell, even without a cough or fever)</li> </ul>	<ul style="list-style-type: none"> <li>• That’s why it’s important to wear a mask and consider getting tested regularly, especially if you’ve recently had contact with a sick person.</li> </ul>

**I may have been exposed to COVID-19**

It can be very unsettling for a person to learn they might have been exposed to COVID-19. Advise anyone who thinks they might have been exposed to COVID-19 to take key steps to handle this situation safely. The purpose of quarantine is to

reduce the risk of spreading the virus to others. We know that SARS-CoV-2 can be transmitted and infect others before a patient experiences symptoms. If there has been an exposure, the exposed person should be notified to begin their quarantine as soon as possible to reduce the risk of spread to others.

Try to get as much information as possible about the potential exposure.

- When was their last interaction with the person? When did they start feeling ill? Have they had a COVID-19 test that has returned positive? What was the nature of exposure?
- A “high-risk exposure” is defined as spending more than 15 minutes within 6 feet of someone who is infectious, where neither person was wearing a mask. People living in the same household as someone with COVID-19 are considered to have high-risk exposure.
- A “low-risk exposure” is defined as a possible exposure to someone whose COVID-19 status was unknown at the time, a fleeting interaction (< 15 minutes), or if both parties were masked during the interaction.

Begin to quarantine to reduce the risk of spread to others. Remember: An individual can be infected and contagious before developing symptoms or may never develop symptoms. If someone is aware of an exposure to a case of COVID-19, they should quarantine. Check your local guidelines for specific recommendations regarding quarantine, as there are variations. In many places, quarantine should last five, 10, or 14 days after the last day of exposure to the person with COVID-19.

Monitor for symptoms every day. Consider being tested three to five days after the day of exposure, or at any point if the patient start to feel ill, in accordance with local/national guidelines.

If the patient does develop symptoms within their quarantine period, they should count their isolation period from the day they begin to feel unwell.

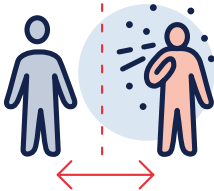

Check your national or local guidelines for specific information on isolation and quarantine recommendations. These guidelines are changing in the context of vaccination (Figure 3).

**Someone in my home is sick or tested positive for COVID-19**


Remember: Anyone can spread the virus without having symptoms—in fact, most people are contagious, meaning they can infect others, for about two days before they start to feel symptoms. Some people can be contagious and never develop symptoms.

If someone in your household is sick with an illness like COVID-19, it is very likely that other household members have been exposed. If someone in the home is sick with confirmed or suspected COVID-19, take as many precautions as possible to avoid close contact within the home. This can include mask-wearing at home to minimize transmission, in addition to distance, if possible, and frequent handwashing.

**FIGURE 3.** ISOLATION VS. QUARANTINE Understanding the difference

	
<p><b>ISOLATION</b></p>	<p><b>QUARANTINE</b></p>
<p><b>FOR PEOPLE WHO ARE SICK, ISOLATION:</b></p> <ul style="list-style-type: none"> <li>• Separates people infected with diseases like COVID-19 from those who are not</li> <li>• Restricts movement of sick people to avoid spread of the illness</li> <li>• Keeps people out of the public until the risk of transmission to others is low</li> </ul>	<p><b>FOR PEOPLE WHO ARE NOT SICK, BUT MAY HAVE BEEN EXPOSED, QUARANTINE:</b></p> <ul style="list-style-type: none"> <li>• Restricts movement of people to monitor symptoms for early detection</li> <li>• Prevents the spread of infection or contamination</li> <li>• Should be communicated with clear guidelines from authorities</li> </ul>

**FIGURE 4.** WHAT DOES THE PATIENT NEED? FIRST STEPS ON THE COVID-19 PATHWAY

<b>WHAT DOES THE PATIENT DO NOW?</b> What kind of care might they need?			
<b>INFORMATION ABOUT HOW TO SAFELY ISOLATE OR QUARANTINE AT HOME?</b>	<b>INFORMATION FOR WHERE AND HOW TO GET A COVID-19 TEST?</b>	<b>MEDICAL CARE FOR SYMPTOMS OR OTHER HEALTH CONDITIONS?</b>	<b>HELP WITH OTHER RESOURCES LIKE FOOD, SHELTER, UTILITIES, OR PSYCHOSOCIAL SUPPORT?</b>
 <p>There are many barriers that may make it difficult to “get on the right path” to care—or even get on the path at all. People in the community may lack knowledge, lack a method of communication, lack transportation, or lack finances to access care—even though many COVID-19 services are free. There may be fear of stigma, fear of losing income if they are asked to quarantine, or fear of severe illness or death if they present to a health facility. Some family members—like women, children, and the elderly—may not be able to make the decision to get themselves tested or to seek care. Some people may not know—or believe—that mild cold-like symptoms can be COVID-19. Some people may prefer to seek care for symptoms or other services outside of the formal health sector (e.g., traditional healers, private pharmacies, borrowing medication, self-isolation without formally testing).</p> <p>It is important to understand that all people are patients who deserve care that is considerate of their unique situation. Systems should be designed to acknowledge these experiences, and all health care workers should be prepared to care for patients wherever they may be on the pathway.</p>			

Because you can be infected with COVID-19 and spread it to others before you develop symptoms (or without developing symptoms at all), it is important to avoid contact with others (quarantine) while isolating the sick person as much as possible to reduce continuous exposure (isolation) (**Figure 3**).

### The next step: connecting patients to care

The goal is to help individuals connect to the right care at the right time in the right way. Not everyone with mild symptoms or exposure needs immediate medical attention. Many individuals with COVID-19 symptoms can stay at home, but everyone should consider getting a test or connecting with their local health system for information and guidance. Being connected to medical care is particularly important for people with other health conditions (HIV, diabetes, hypertension, age > 60, etc.) pregnant patients, and people with vulnerable immune systems.

## What does your patient need?

### 👂 I need some basic information about COVID-19 🗣️

All health care workers should know the basic principles of COVID-19 care, including basic IPC principles, common signs and symptoms, warning signs and signs of complications, how and when to perform a test, how to interpret the results, isolation and quarantine recommendations, and vaccination information. However, it's not enough to know what to do—health care workers must be prepared to guide their patients where to go for care and how to follow these recommendations.

- Prepare a comprehensive list of basic COVID-19 care information so all health care facility staff can quickly review these frequently asked questions (FAQs).
- Make all health care facility staff aware of the processes and protocols to connect patients to the clinical services they need, if any.
- Prepare a comprehensive list of local resources for COVID-19 testing, vaccination, and other types of support to direct information-seeking patients to the right place.
- Prepare information about contact tracing in your community. While large-scale contact tracing/testing efforts may not be active or sustainable in all settings, health care workers should be familiar with the principles and practices of contact tracing as a valuable tool to manage clusters of cases or outbreaks in key populations.
- Consider updating health care facility websites with these FAQs and local resources; consider using SMS/text announcements or radio announcements to guide information-seeking patients to the right resource.
- Connect with your local public health workers or CHWs to integrate this information or an educational campaign into their work in communities.

### 👂 I want to get a COVID-19 test 🗣️

Ideally, COVID-19 tests should be readily available to everyone, either for symptomatic testing or screening tests. However, testing should be encouraged for anyone with symptoms—even mild symptoms—that could be COVID-19. Not all requests for a COVID-19 test require a formal medical visit with a health care provider, especially if symptoms are very mild. People should also get a test if they have been informed of a potential exposure or if there is a sick person in their home. Some people may want to get tested regularly if they work in a very public place with a lot of exposure to the public—especially health care workers! Surveillance testing can occur weekly, biweekly, or monthly in accordance with the employer's guidelines or local and national recommendations.

All health care workers should be prepared with the following information to guide patients requesting COVID-19 testing:

- The local guidelines for obtaining a COVID-19 test. In some places, patients may need a physician's order or a referral through a CHW.
- What types of tests are available? Only certain types of tests may be available, and health care workers should be prepared to discuss the types of testing available, including the results turnaround time, accuracy of tests, and the process of collecting the test.
  - » The polymerase chain reaction (PCR) test is the gold standard for detecting SARS-CoV-2, and results usually take 24–72 hours to process. Most PCR tests are simple swabs of nose or deeper nasal passageway (the nasopharyngeal swabs go a bit deeper). They shouldn't hurt and usually take less than 10 seconds to collect.
  - » The rapid antigen diagnostic test (RDT) can sometimes be less sensitive, and results usually take 10–20 minutes to process. Sometimes, an RDT result needs to be confirmed with a PCR test. For instance, if the patient has symptoms that could be COVID-19 but the RDT is negative, it may be advisable to confirm with a PCR test. Check your local guidelines to best advise patients on how to safely use and interpret rapid tests.

### 🌀 What do I do while waiting for test results? 🌀

If a patient is symptomatic, or has had a high-risk exposure, they should consider themselves infected with COVID-19 until proven otherwise. While waiting on the test results, they should self-isolate, avoid contact with others, and always wear a mask if they have to be in the same room as another person.

## Using telehealth services to improve access to care

“Telehealth” refers broadly to electronic and telecommunications technologies and services used to provide care and clinical services at a distance. While telehealth has been a novel tool for clinical service delivery for many years, the COVID-19 pandemic has demanded and motivated a robust adoption of remote services and proven that telehealth can greatly improve access to essential health services for patients with barriers to presenting for on-site care.

Telehealth has also allowed patients with COVID-19 the ability to receive care and advice from their health care providers safely from their homes, reducing the risk of spread in the community and the health care facility.



### RED FLAG REMINDER

If a patient develops any clinical signs of severe illness or complications, they should seek medical care immediately, even if their results aren't available yet.

All stakeholders should aim to maximize technological tools to guide patients to the right care, at the right time, at the right place:

- Many local public health organizations have options to get information about COVID-19, including testing and vaccination services, via websites, SMS/text-based chatbots, or hotlines.
- Many health care facilities offer the option to use video, audio, or text/SMS to screen symptoms; get medical advice; get an appointment for testing or care; and have the ability to consult with a health care worker about health issues from home if it is difficult to come to a health center.

### Technology and telehealth for screening and education

Telehealth services can make it easier to triage patients before they arrive at the primary health care facility. Clinicians or CHWs can screen patients over the phone to assess for symptoms, exposure history, and any warning signs that may change the recommendation for where the patient presents for care.

Health care workers can also provide a lot of education by phone, video, or SMS about caring for symptoms at home, IPC, and psychosocial support.

Health care workers can also use telehealth to follow up with patients who have recently come home from a hospital to complete a post-discharge assessment, ensure they understand the plan of care, and coordinate any follow-up services that may be needed.

### Technology and telehealth for clinical services

Health care workers can use SMS/text, phone, or video calls to remotely assess and clinically manage patients. While the idea of examining and advising a patient virtually may seem strange or uncomfortable at first, this platform can greatly improve access to medical care.

Telehealth visits can allow clinicians to:

- Determine if the patient is stable, improving, or deteriorating. Ask them to describe their breathing, count their respirations/pulse, check their oxygen saturation if they have a pulse oximeter, and schedule regular follow-ups every 24–48 hours (with a physician, nurse, or CHW) to look for signs of change.
- Advise the patient on supportive care for COVID-19 symptoms at home, prescribe medicine if it is warranted, and counsel the patient on warning/red flag signs.
- Initiate an in-person examination or a transfer to a higher level of care. If you are concerned for a patient's status over telehealth, use your clinical judgement to guide the best next steps. You can recommend the patient present to your facility for an in-person exam, coordinate a home-visit if that service is available in your area, or recommend the patient transfer to an emergency department or hospital.
- Continue to provide essential primary health services. Even if patients don't have COVID-19-related concerns, physicians can often manage their other health conditions, if any, over a phone or video call.





## THE ROLE OF CHWS

Many communities have teams of CHWs integrated into their primary health care system that bring critical support to connect patients and families to information and clinical services. CHWs can serve as the first point of contact to keep communities safe and healthy by:

- Educating communities about COVID-19 and promoting effective IPC at home and in the community
- Connecting patients with COVID-19 testing services
- Educating patients on local isolation and quarantine guidelines and supporting home-based isolation strategies.
- Collaborating with local primary health centers and hospitals to connect patients to medical care when needed:
  - ▶ Facilitating telehealth services where available
  - ▶ Presenting to a health care facility safely
- Connecting patients to vaccination services and promoting vaccination campaigns
- Connecting patients to other community resources if, due to isolation, quarantine, or illness, they are unable to get necessities like food, water, medicines, or other household supplies
- Providing psychosocial support and connecting community members to mental health services if needed

In many places, CHW programs have leveraged mobile communications technology to keep their teams and their clients connected with local health services. Local health care teams should work together to optimize the use of telehealth in the context of community COVID-19 care.

Technology and telehealth can also help physicians talk with each other. If you have a complicated case or are not sure about the best next step, you may be able to use video/audio calls to virtually connect with other health care providers for a second opinion or a specialty consultation about how to best manage the case.

### Seeking care at a primary health care facility

There are many reasons patients will seek medical attention at a primary health care center. Some patients will seek in-person care despite having only mild COVID-19. Some patients will seek in-person information. Some patients will seek medical care for other reasons, related or unrelated to COVID-19. Some people will present to a primary health care facility after seeking informal care (i.e, purchasing their own medicine at a pharmacy or visiting a traditional healer). In any case, it is crucial that all members of the health care team know how to effectively assess the patient's needs to connect them to the right type of care at the right time. It is also crucial for health care workers to recognize the need for medical care, regardless of what brought the patient to the clinic.

When should health care workers advise that someone with confirmed or suspected COVID-19 seek medical care in person at a primary

 **NOTE**

Coughing, even a lot of coughing, can be common with COVID-19. It can be really uncomfortable! However, the presence of a persistent cough is NOT the same as severe shortness of breath. If there are no red flag signs, encourage the patient to keep monitoring their symptoms and to try to calm their cough at home.

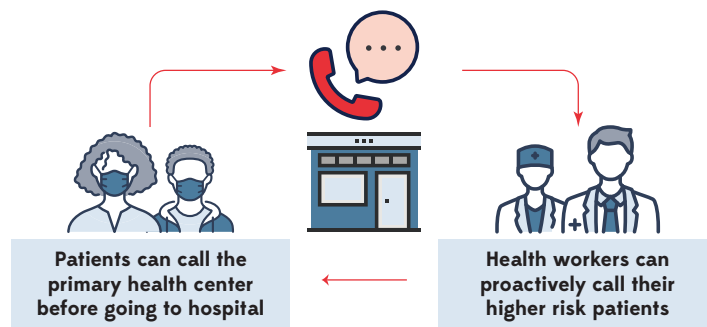
care center? Here are some signs that medical attention—though not necessarily emergency medical care—may be needed:

- The patient suddenly feels much worse. Complications from COVID-19 can develop quickly, even over the course of a few hours. If your patient suddenly feels much worse, especially with worsening breathing function, they should call their provider or present to a health facility to get checked out. Examples of worse breathing function include:
  - » Breathing very fast and shallow, or feeling short of breath, even when resting

- » Getting out of breath just by walking around the home or getting out bed
- » The patient hasn't been able to drink much water or eat much food, or hasn't been able to keep fluids down due to excessive vomiting or diarrhea. They may feel dizzy or weak.
- » The patient has another health condition, and they're not sure what to do. Examples of this may be high or low blood sugars in people with diabetes, low blood pressures with people with hypertension, or pregnant women experiencing pregnancy-related symptoms.
- » Patients who are unsure whether it's time to come in for a medical evaluation should try to contact the facility first; usually, a health care worker can help decide the best next step by talking on the phone or other remote telecommunications platform.
- » Ultimately, if patients would like to consult with their local health care team for assessment and management of their symptoms, they should do so.

See **Sections 5, 6, and 7** for more information about clinical assessment and red flag signs.

Patients who decide to go to the health center should come prepared with a list of their health conditions, allergies, and current medications. Advise patients to bring a family member if needed, and ensure that everyone is masked and adhering to the IPC protocols of your health facility (Figure 5).



**FIGURE 5.** HOW HEALTH CARE WORKERS AND PATIENTS CAN BE PROACTIVE



## FOR CHWS OR OTHER COMMUNITY MEMBERS HELPING A PATIENT GET TO CARE

If you have identified that a patient may need medical care, you want to facilitate a smooth and safe referral. Here are some tips:

- Develop a plan with your local health centers first, and check in regularly about changes in their capacity to see or check on patients with COVID-19 symptoms.
- Explain to the patient why you're recommending medical evaluation, and help them prepare for their medical visit, involving family members as much as possible.
- Contact the receiving facility (which may be a primary care center, hospital, or ER), and give a brief report on the patient. A brief report should include: patient name, date of birth, their contact information, any relevant medical history, current status, and the plan to refer them for an evaluation.
- You may also include the mode of transportation the patient is using to get to the health center, approximately when they will be arriving, whether any family members are accompanying them, and other information that may make the referral easier (e.g., language spoken, medications taken, known COVID-19 positive status).
- After giving a brief report, you should confirm that the facility can accept the patient, get instructions for how the patient should present (e.g., wait in the car, approach a different door), and confirm understanding by repeating the key information. You should also have a plan to follow up with the patient or family in a day or so.

**A note on privacy and confidentiality:** The personal health information of individuals must always be protected in accordance with your local guidelines. Be mindful that any disease—including COVID-19—can have stigma attached to it that can negatively affect people's lives.

When communicating about patient care matters over the phone or in public, remember that personal health information of the patient or beneficiary should be confidential and protected at all times.



## EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- CORE group. Home-based care. Reference guide for COVID-19.  
<https://coregroup.org/wp-content/uploads/2020/06/Home-Based-Care-Reference-Guide-for-COVID-19-July-16.pdf>
- CDC.gov. Uses of telehealth during COVID-19 in low resource non-U.S. settings.  
<https://www.cdc.gov/coronavirus/2019-ncov/global-COVID-19/telehealth-covid19-nonUS.html>



# SECTION 3

## SECTION 3:

### Triage at the Health Care Facility

#### Why is triage important?

It is essential to build a workflow that addresses the needs of the sickest patients as quickly as possible while also physically separating the sick (or possibly contagious) patients from the well patients. Triage is a system that simultaneously promotes safety and IPC with efficiency and strategic use of limited health care resources.

Triage aims to organize large groups of people into categories that can keep the whole group safe from a contagious disease while connecting individuals to the right type of care at the right time in the right way.

Sometimes, patients only need information, testing, or advice on how to stay safe at home. By identifying the needs of each patient early, the health care team can connect patients to the services they need and save limited health care resources for the patients who need more medical attention.

Many people will present directly to the health center. It is imperative that all staff are aware of the principles of physical triage to direct patient flow—which patients go where in the clinic setting—and clinical triage to decide the type of care each patient needs.

#### Physical triage and patient flow at a health care facility

All staff should be aware of clear and consistent workflows to organize, or cohort, patients as they present to a health care facility.

Initial separation of suspected cases will allow for more advanced separation as more severe cases may require initial treatment and stabilization. Patient flow guides or triage maps (Figure 6) may be useful for both staff and patients as health care teams consider triage strategies at their own facility.

#### Screening: physical and clinical triage

Screening is a process whereby every person entering a common space (in this case, a health care facility) is proactively checked for the possibility they may have an infectious disease like COVID-19.

The goal of screening is to help everyone entering the facility safely get on the right path to care by following the IPC and patient flow processes that have been established. The screener should not reject patients or send them home. Instead, the screener should be familiar with the patient flow plans in place at his or her health care facility and check that the patient follows the correct protocol to safely access medical care.



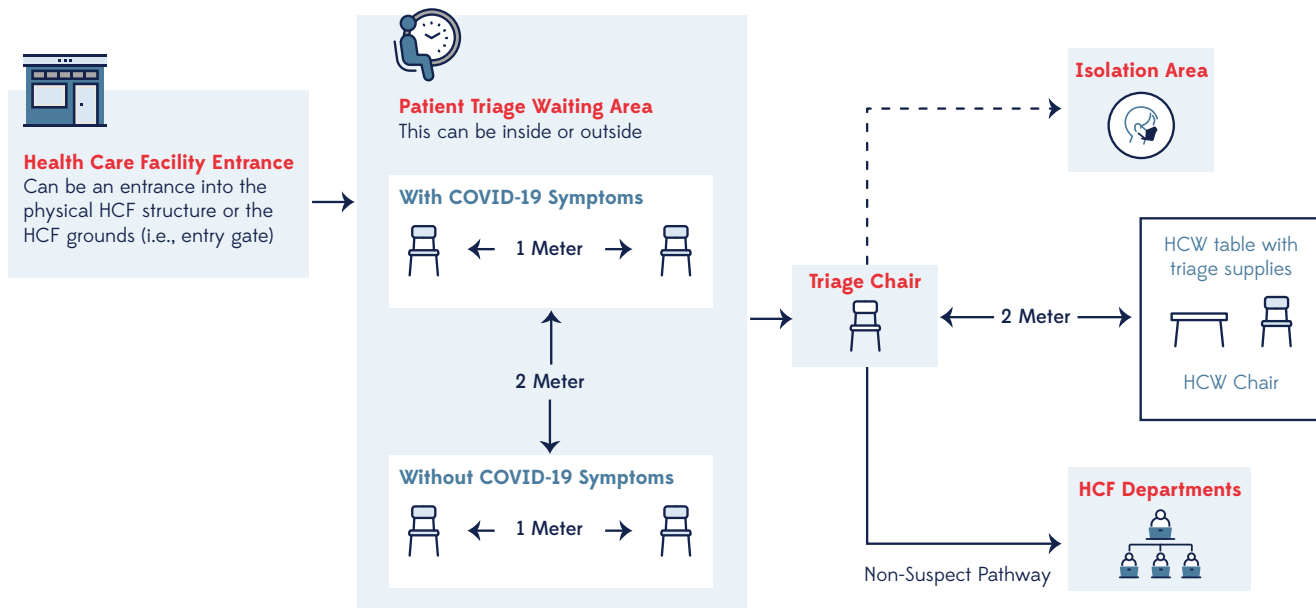
## IN THIS SECTION

### Readers will

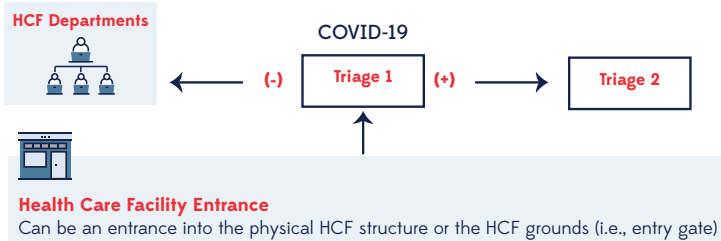
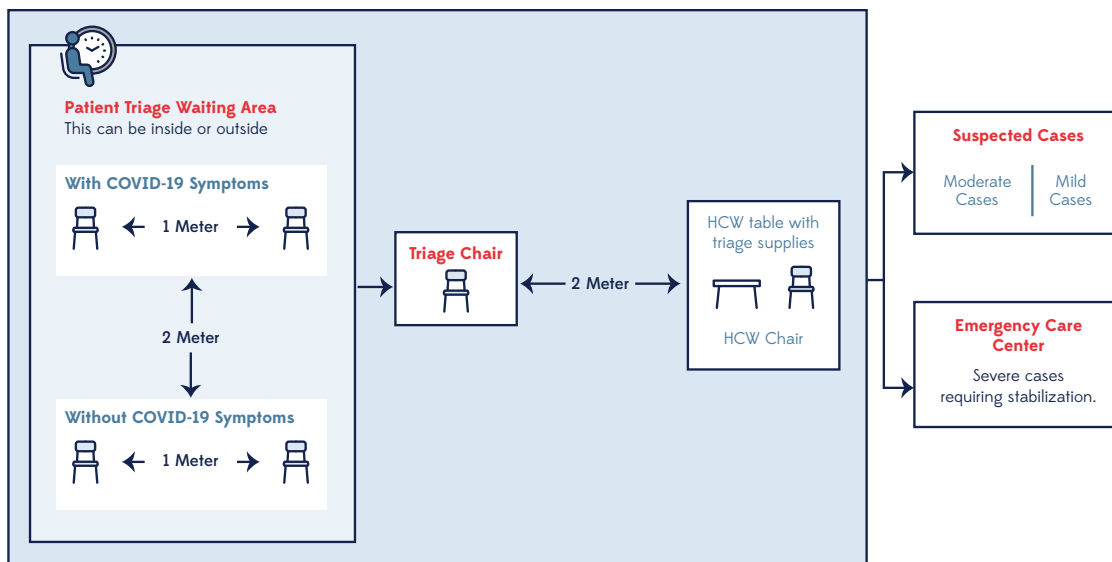
- Understand the basic principles of physical and clinical triage, and discuss why it is important in the context of COVID-19.
- Discuss the rationale for redesigning patient flows in the context of COVID-19, and work with your health care team to evaluate your own facilities' patient designs.

**FIGURE 6. SETTING UP TRIAGE STATIONS**

### Basic Triage Station Set-Up (minimum requirements): Option A



### Advanced Triage/Emergency Care Center Set-Up: Option B



## The role of the screener at a health care facility

Many facilities employ dedicated staff members to perform this screening before anyone enters the facility, stationing them at every point of entry to the facility. This screening should be performed consistently, completely, and in the language spoken by the people presenting for care. Also, the screener can check that all people entering the facility are meeting the IPC requirements by reminding everyone to wear a mask over their nose and mouth, and promoting hand hygiene upon facility entry.

Consult your local guidelines for recommendations and guidance about triage and screening at health care facilities. There may be sample screening forms or other tools from your local government.

## When and how should screening take place?

Screening can and should happen at multiple points in the patient's interaction with the health care team:

- On the phone or via SMS before a scheduled appointment or upon arrival to the facility
- In person upon arrival to the facility
- At the beginning of the encounter with a health care provider (nurse or doctor)

People accompanying the patient to the facility should complete the screening, even if they are not seeking care. All staff members or other guests to the facility should complete the screening every day and follow their local protocols if their screening is positive.

All people entering the clinic should be screened for:

- Signs and symptoms of COVID-19
- A positive COVID-19 test in the past 10 days
- Contact with a confirmed or suspected COVID-19 case within the past 14 days (See Annex I for a sample screening form.)

Once the patients have been screened, the screener will direct them where to go to continue their health care encounter. Many facilities have separate areas for sick people and well people to wait for care. Some facilities will also incorporate temperature checks using remote digital thermometers to assess for fever.

Once the patients have passed through initial screening and physical triage in the facility, the next is clinical triage.

A clinical triage assessment can be performed by a nurse, physician, or other qualified health worker. Clinical triage involves getting more information about the severity of illness, the reason for the visit, and signs and symptoms so that the health care team can safely and expeditiously start to plan care for the patient. Patients with suspected COVID-19 should then be divided into those with mild or moderate cases and those with severe or critical cases. Patients seeking care

for other reasons may also have signs and symptoms of COVID-19 and should be tested or treated accordingly.

Across the world, various triage tools are used, including but not limited to the WHO Interagency Integrated Triage Tool, Emergency Triage and Treatment (ETAT) for pediatric patients, the South African Triage Scale, and the Emergency Severity Index. While each of these tools is slightly different, the common focus is on prioritization of the sickest patients using a combination of high-risk chief complaints and presenting signs (red flag signs) and objective criteria including vital signs. It is important for every facility to consider triage pathways for both COVID-suspected patients and non-COVID-suspected patients, and how to appropriately separate and simultaneously prioritize the sick (See Annex II for sample triage algorithms).

Figure 7 displays clinical triage categories that can help any member of the health care team assess the situation and guide the patient to safe and appropriate care.

## TRIAGE CHALLENGES

The process of triage can be new for both health care workers and patients. As with any new process, trainings for staff will be essential, accompanied by monitoring of the process as it is implemented. Publicly displayed signage may help to streamline and communicate these processes. Specific trainings can be useful for knowledge dissemination as well as tools for communicating these processes with patients; for some, the concept of prioritizing the sickest patients rather than taking a linear approach will be new.

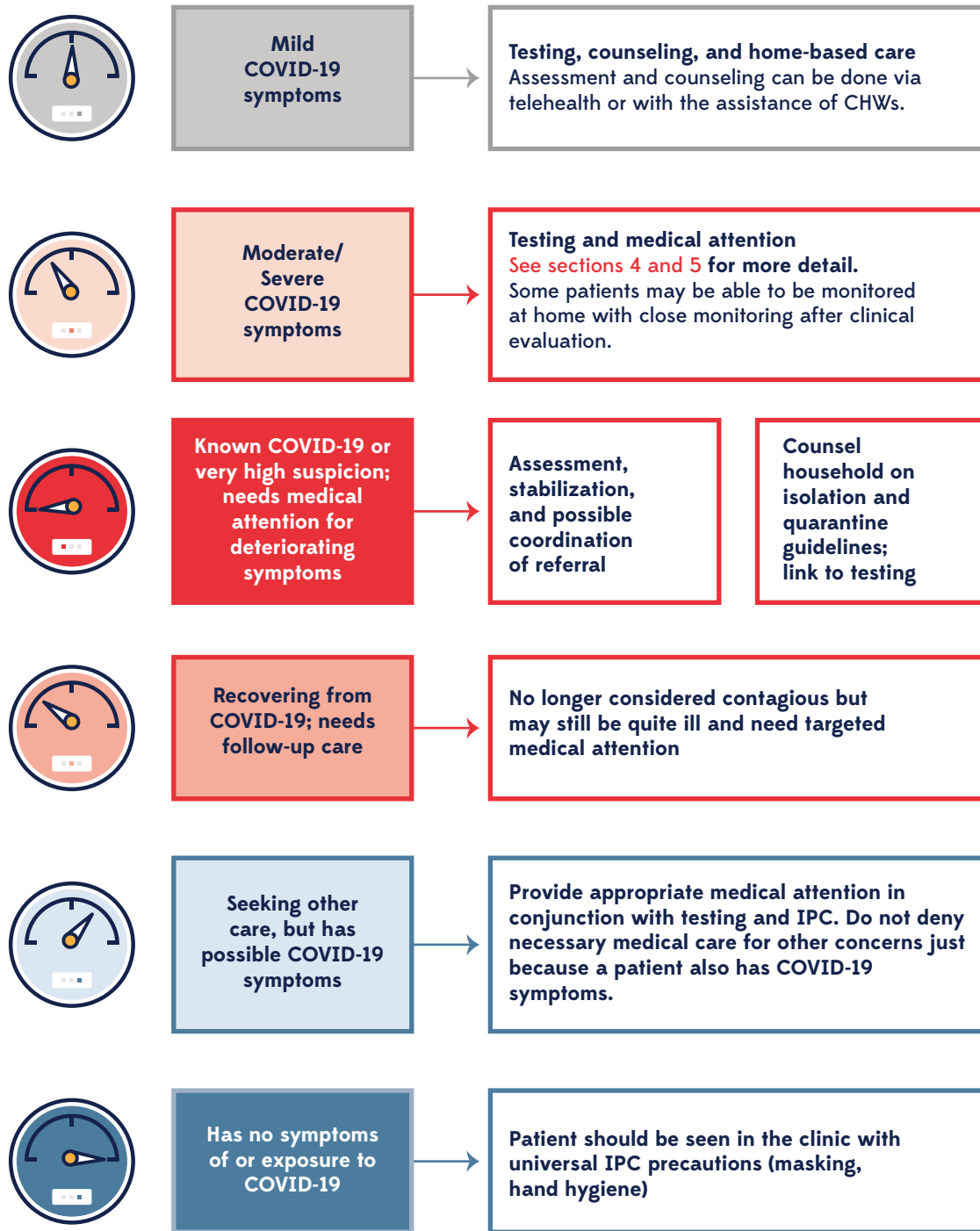


### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- **Establishing COVID-19 Triage Stations at Healthcare Facilities: Key Instructions and Tips.** World Health Organization Regional Office for Africa.  
<https://www.afro.who.int/sites/default/files/COVID-19/Technical%20documents/Establishing%20COVID-19%20triage%20stations%20at%20healthcare%20facilities%20-%20Key%20instructions%20and%20tips.pdf>
- **Clinical Assessment & Triage. Open Critical Care:**  
<https://opencriticalcare.org/suggested-trainings/clinical-assessment-triage/>



**FIGURE 7.** TRIAGE AND COHORTING PATIENTS PRESENTING FOR HEALTH CARE SERVICES IN THE CONTEXT OF COVID-19





# SECTION 4

## SECTION 4:

# Approaching the Patient with Symptoms of COVID-19: Initial Clinical Assessment

## Basic assessment and history of present illness

Health care workers have an important role: They gain essential information as part of a basic assessment that will guide the next steps along the right pathway of care.

### Develop an initial impression of a patient.

Within the first few moments, you will know whether the patient needs urgent or emergent care. Does the patient sound as if they are unable to breathe or appear unable to answer questions appropriately? If so, you should immediately move to patient evaluation and stabilization of a potential medical emergency, or if you are speaking by phone, consider a plan for safe and expedient in-person evaluation of the patient.

See [Section 5](#) for a comprehensive list of “red flag signs.” If the patient does not exhibit these signs, continue with your assessment as follows:

**Take a targeted history of present illness:** Getting a clear and thorough history, either from the patient or an accompanying support person, is essential to make an appropriate plan of care. When evaluating patients who are seeking care for confirmed or suspected COVID-19, key points to collect include:

- Date of onset of symptoms
- Type and severity of symptoms; perform a complete review of systems if appropriate
- Exposure to any sick people, especially in the home or workplace
  - » **Remember:** Even mild symptoms can be COVID-19, and many people may not have been tested. Ask about exposure to confirmed COVID-19 cases, as well as exposure to anyone with symptoms.
- Vaccination status
  - » **Remember:** People are only fully immunized two full weeks after their last recommended dose of their primary series.
  - » In many places, “booster” doses of vaccination are recommended to maintain immunity. In accordance with local guidelines, people who are eligible for booster doses of vaccines should get “boosted.”



## IN THIS SECTION

### Readers will

- Understand the basic principles of physical and clinical triage, and discuss why it is important in the context of COVID-19.
- Discuss the rationale for redesigning patient flows in the context of COVID-19, and work with your health care team to evaluate your own facilities’ patient designs.

- » While their symptoms are typically less severe, vaccinated people can get COVID-19. Knowing their vaccination status still helps to inform your clinical assessment.
- Past medical history, including comorbidities, medication list, and allergies. You want to know the patient's medical history to determine their risk of complications if they have COVID-19, to plan for their medical care for comorbid conditions, and to make a well-developed list of differential diagnoses to ensure the patient receives the best care for their needs.
  - » Cardiopulmonary conditions like chronic obstructive pulmonary disease (COPD), asthma, and congestive heart failure (CHF) are important to account for when developing a differential diagnosis and considering your patient's risk stratification in the context of suspected COVID-19.
  - » Tobacco use or other smoke exposure may affect cardiopulmonary risk factors.
  - » Chronic kidney disease, including patients with total renal failure who are on dialysis, are at risk for complications from COVID-19, and COVID-19 infection can worsen underlying kidney disease.
  - » Obesity is a risk factor for complications of COVID-19.
  - » Patients with diabetes may need medications adjusted to manage hyper- or hypoglycemic episodes; they are also at higher risk for complications of COVID-19 and should be monitored closely for signs of deterioration.
  - » Patients with a compromised immune system, including people living with HIV/AIDS, people on chemotherapy or other cancer treatments, and people with other immune-suppressing conditions, are more at risk for severe manifestations of COVID-19.
  - » Psychiatric and neuropsychiatric conditions should be screened for, as these may mimic alterations in mental status or may affect a patient's ability to give a complete history or understand a plan of care.
- It is important to know your patient as a person, especially their social history. Even in a brief visit, you can assess important aspects of their lived experience, such as their living environment, support system, occupation, and access to necessities like food, clean water, and transportation. While this information may not always seem relevant to the clinical encounter, it is often essential to develop an effective plan of care.

## Physical exam for a confirmed or suspected COVID-19 patient

In many ways, the physical exam for a confirmed or suspected COVID-19 patient is the same as that for any patient with a respiratory illness. Conversely, it is important to consider COVID-19 as a potential diagnosis for patients with other non-acute respiratory symptoms as well.

### Demographics and vital signs:

- Age, sex/gender, preferred name or pronouns, preferred language, smoking status, body mass index (BMI)
- Height, weight, blood pressure (BP), pulse rate, respiratory rate, temperature, oxygen saturation (SpO<sub>2</sub>)
- Women: consider screening for pregnancy (last menstrual period or urine pregnancy test)
- Children: confirm immunization history

### How to assess vital signs if equipment is not available:

- The most important vital sign when evaluating a patient with confirmed or suspected COVID-19 is oxygen saturation and respiratory status.
- Assess a patient's temperature by using your hands to feel the skin on the forehead or chest/trunk for the presence of a fever.
- Assess the characteristic of the radial pulse. Is it weak? Thready? Faint? Rapid? Irregular? Inconsistent with the rate/rhythm of the heart?
- Assess for dizziness upon standing (orthostatic hypotension) to check for low or sudden drops in blood pressure.
- Count the respiratory rate and assess the "work of breathing." Look for signs of respiratory distress, like visibly difficult breathing, rapid or shallow breathing, and use of accessory muscles.
  - » Twelve to 20 breaths/minute is normal for an adult.
  - » At rest, children can breathe at a faster rate than an adult but identifying pediatric tachypnea (faster breath rate) is very important. The parameters for pediatric tachypnea are displayed in Table 2.
  - » In pediatric patients, especially babies, respiratory distress can also include nasal flaring, grunting, belly breathing, or retractions.

**TABLE 2.** PARAMETERS FOR ASSESSING FAST BREATHING, OR TACHYPNEA, IN PEDIATRIC PATIENTS

AGE	FAST BREATHING/TACHYPNEA
Under 30 days	> 60 breaths per minute
2 to 12 months	> 50 breaths per minute
1 to 5 years	> 40 breaths per minute



## HOW TO USE A PULSE OXIMETER CORRECTLY

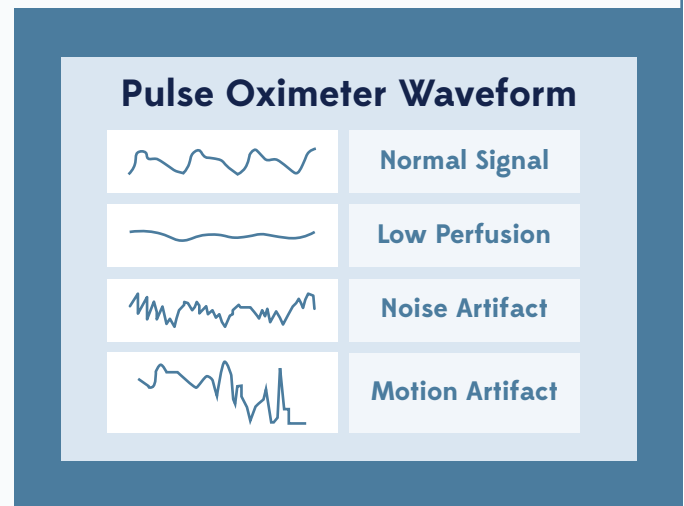
If a pulse oximeter is available at home or in community settings, patients can check their oxygen saturations from home at least daily and as needed in the event of worsening respiratory symptoms. They should take one measure while sitting and one measure while ambulating (or marching in place if they are quarantined in a small area).

Use the pulse oximeter on a finger without nail polish or nail abnormalities. Ideally, hands should be warm and relaxed. If a reading cannot be taken on a finger (i.e., in the event of amputation), toes, noses, and earlobes are acceptable alternatives if the proper equipment or probe is available.

Wait at least 20 seconds for sampling time as the SpO<sub>2</sub> displayed is generally the average of the last 10–15 seconds. Taking the average of two or three measurements could give a more reliable measure of the blood oxygen level.

If the pulse oximeter has a visible waveform (plethysmograph), the shape should show a regular rise and fall (corresponding with the pulse) when the machine is reading correctly. If the machine is not giving a reliable reading (not registering, number not steady, number very low), try it on a different finger. This diagram exemplifies both a normal waveform as well as abnormal waveforms. An abnormal waveform could be due to poor perfusion or artifact, which can give a false reading. In that case, the reading should be repeated.

**A caution on reliability:** Pulse oximeters are less reliable in people with darker skin tones and may read artificially high. One study showed that pulse oximetry failed to correctly identify 11.7% of black patients with SpO<sub>2</sub> of <88% (confirmed with an arterial blood gas [ABG] test), relative to only 3.6% of white patients.<sup>a</sup> Pulse oximeters also may not work properly in patients with blood flow abnormalities in their hands, such as peripheral vascular disease or Raynaud's syndrome.<sup>b</sup>



Watching the pulse oximeter reading over time may be better than a single value, and you may get more information by measuring the oxygen while moving or walking. If a patient's reading drops below 92% while walking or moving, this is a red flag that indicates the patient needs supplemental oxygen support and a higher level of medical care.

Pulse oximeters can be used to assess a patient's oxygen saturation at a health care facility, in the community, or within the patient's home. A pulse oximeter can help the patient and their health care team decide when the patient needs to seek a higher level of medical care.

**! Patients should seek medical care if SpO<sub>2</sub> ≤ 94% or ≤ 92% with exertion (activity)**

**A note on silent hypoxia:** There have been reports that people with COVID-19 can have urgently low oxygen saturations, even with no significant respiratory symptoms. Even if a person doesn't seem ill, or doesn't appear to have respiratory symptoms, SpO<sub>2</sub> < 94% warrants a medical evaluation or a higher level of care where supplemental oxygen can be provided.

a. Sjoding MW, Dickson RP, Iwashyna TJ, Gay SE, Valley TS. Racial bias in pulse oximetry measurement. *N Engl J Med.* 2020 Dec 17;383(25):2477-2478. doi: 10.1056/NEJMc2029240.

b. Luks AM, Swenson ER. Pulse oximetry for monitoring patients with COVID-19 at home. Potential pitfalls and practical guidance. *Ann Am Thorac Soc.* 2020 Sep;17(9):1040-1046. doi: 10.1513/AnnalsATS.202005-418FR.

## Not every cough is COVID-19! Building a differential diagnosis

Health care workers must balance the possibility that a sick patient is infected with COVID-19 with the possibility that a sick patient is sick with something other than COVID-19. Or, they can be sick with COVID-19 and another medical problem at the same time. This can be confusing or overwhelming, but it is crucial to consider both possibilities when approaching a patient.

**TABLE 3** COMMON PRESENTING SYMPTOMS AND DIFFERENTIAL DIAGNOSES FOR COVID-19

COMMON PRESENTING SYMPTOMS	POSSIBLE DIAGNOSES
<ul style="list-style-type: none"> <li>• Cough, shortness of breath</li> <li>• Fever</li> <li>• Runny nose, congestion</li> <li>• Sore throat</li> <li>• Headaches, body aches, muscle aches</li> <li>• GI symptoms (nausea, vomiting, diarrhea)</li> <li>• Chest pain</li> <li>• Confusion, altered mental status</li> </ul>	<ul style="list-style-type: none"> <li>• COVID-19</li> <li>• Community-acquired pneumonia</li> <li>• Influenza</li> <li>• Chronic obstructive pulmonary disease (COPD)</li> <li>• Asthma, with or without exacerbation</li> <li>• Alternative infectious causes (consider causes of fever in your community)</li> <li>• Acute coronary syndrome</li> <li>• Acute kidney injury/renal failure</li> <li>• Congestive heart failure (CHF)</li> <li>• Acid reflux, gastrointestinal distress</li> <li>• Strep throat</li> <li>• Common cold</li> <li>• Seasonal allergies</li> <li>• Stroke/cerebrovascular accident (CVA)/transient ischemic attack (TIA)</li> <li>• Electrolyte abnormalities</li> </ul>

### Rare but “must not miss” causes of certain isolated symptoms

- A fever can be a sign of sepsis, urinary tract infections (UTIs), ear infections (especially in children), or early HIV infection. Check ears, nose, throat, lungs, and abdomen, and consider checking a urinalysis or appropriate bloodwork if possible. Remember to consider local causes of fever, including malaria, dengue fever, and typhoid fever, depending on your location and the season.
- Severe headache can be a sign of a migraine or a stroke. Perform a comprehensive neurological exam on patients with severe headache.
- Sore throat, especially with vocal change or sense of choking, can be a peritonsillar abscess, epiglottitis, or a throat mass.
- Gastrointestinal (GI) symptoms, especially with abdominal pain, can have many causes, including an acute abdomen, pregnancy-related complications, and electrolyte imbalances.

- Shortness of breath or cough can be signs of organ failure, like CHF, renal failure, or hepatobiliary disease. Look for signs of volume overload, like peripheral edema, ascites, elevated BP, new cardiac murmur, or crackles in the lungs; check for jaundice, ask about recent urine output, and assess for new cardiac murmur or crackles in the lungs

## Differential diagnoses and considerations for assessing special populations

### Pediatrics:

While infants and children can contract COVID-19, they typically present with mild, cold-like symptoms and most of the time do not have complications from COVID-19. However, it is important to identify those who do have COVID-19 and those with more severe cases, and to watch for other causes of childhood illness.

On the one hand, even children with mild symptoms can have—and spread—COVID-19, so it is important to use appropriate PPE when evaluating a sick child.

On the other hand, many symptoms can be signs of other childhood illnesses that need to be cared for appropriately. It is also possible for a patient to have COVID-19 and another medical condition.

Always complete a full examination and care for a child with respiratory symptoms, fever, or GI distress. You do not want to miss conditions that require expedient management, such as:

- Pneumonia, or other respiratory illnesses like pertussis, influenza, or asthma, which can quickly result in pediatric respiratory failure
- Malaria
- Other local causes of fever
- Diarrheal disease
- Otitis media (ear infection)
- Strep throat
- UTIs

### Pregnant and postpartum women:

While it is not unusual for pregnant and postpartum women to get common viral respiratory infections (like mild coughs or colds), remember that pregnant women are at much higher risk of complications related to COVID-19 than non-pregnant women.

- A fever in a pregnant woman may represent a systemic infection, so a thorough evaluation is indicated. In women who have recently given birth, fever can be a sign of endometritis or puerperal sepsis.



### RED FLAG REMINDER

Warning signs for any pediatric patients include respiratory distress, listlessness/non-responsiveness, or signs of decreased perfusion. Don't wait! Know the best option for pediatric referral for your area and refer early for stabilization of an acutely ill child.



- Cough, shortness of breath, or chest pain or tightness should be thoroughly evaluated. Pregnant or recently postpartum women are considered hypercoagulable, or at a higher than average risk for a clot (i.e., pulmonary embolism, deep vein thrombosis, or other type of clot).
- As with any medical evaluation of a pregnant woman, assess the fetus for signs of fetal distress. Transfer to a higher level of care if there are signs of obstetric complication or fetal distress.

See **Sections 5** and **6** for further recommendations for clinical management of pregnant and postpartum women with COVID-19.

### People with HIV:

People living with HIV may be prone to opportunistic infections that can present with fever, cough and other conditions. Always get a complete medical history and inquire about their normal HIV plan of care, if any, and any recent lapses in medication. Ask about last viral load or CD4 count, if known, to consider a broader differential diagnosis for opportunistic infections that more commonly affect the HIV+ population.

### Geriatrics:

Older patients can present symptoms or signs of illnesses in subtly different ways, and it's very important to get a thorough history, with family or caregiver input if available, and perform a thorough examination.

Older patients may present with:

- Confusion, tiredness, or "altered mental status": This can be an alarm sign but could be caused by many different things, including but not limited to infection, dehydration or electrolyte imbalance, medication side effects, and stroke or CVA.
- Older patients tend not to run fevers for mild illnesses that may cause fevers in younger people. However, fevers in a geriatric patient can be a sign of systemic infection (e.g., sepsis, viral infection) or localized infection (e.g., UTI, pneumonia).

Try to talk with a family member who is familiar with their baseline as well as their medical history. Assess for change in their recent food and water intake, toileting, ability to walk and talk, or breathing pattern.

**Remember:** Older patients are at a higher risk for complications from COVID-19 and may need a higher level of care more quickly if there are red flag signs. However, not all older patients will have complications. If they are not confused or mentally altered, and if they are breathing, talking, and eating and drinking fairly normally, they may be safe to send home. Consider close follow-up from a nurse or doctor within 24–48 hours, recommend home pulse oximetry if available (especially if this is a confirmed or strongly suspected COVID-19-positive patient), and counsel the family members on signs of deterioration.

If a patient has an underlying condition or chronic disease, the health care worker must include that in his or her assessment and decision-making to consider all possible differential diagnoses to care for the patient presenting with some of the symptoms of COVID-19. Below are examples of the type of patient that commonly presents to a primary health care facility. Try to think through a plan of care:

## Case studies: Patients with cardiopulmonary disease or other comorbidities



### PATIENT 1:

Alma is a 68-year-old female with a history of hypertension, obesity, and probably COPD, though doesn't use any inhalers. She has had a hard time getting her blood pressure medications since the start of the pandemic, as she's been afraid to come to the health center. Her daughter brings her in today, reporting 10 days of increasing shortness of breath, coughing, and

headache. Her daughter reports that she's slept upright in a chair the last few nights because she "feels like she's choking" when lying in bed. Upon exam, she has gained 40lbs since her last visit a year ago. T 98.7, BP 192/98, P 78, SpO<sub>2</sub> 92%, RR 26 with notably increased work of breathing after walking in from the waiting room. There are no sick contacts in the home. You also notice +2 pitting edema in the bilateral lower extremities. Alma is coherent and reports she "feels just awful."

**Differential diagnoses:**

**Plan of care:**

**IPC considerations?**

**Care coordination:**



### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- World Health Organization. Clinical management of patients with COVID-19: initial approach to the acutely ill patient  
<https://openwho.org/courses/clinical-management-COVID-19-initial-approach>
- World Health Organization. Coronavirus disease (COVID-19) training: online training.  
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/training/online-training>



## PATIENT 2:

Ravi is a 55-year-old male with a history of insulin-dependent diabetes and hyperlipidemia with a history of an acute myocardial infarction five years ago. His whole household is sick with COVID-19, and he began to show symptoms of cough, fever, and headaches about three days ago. His wife brings him to the clinic—she is also mildly ill. He is very weak, pale, and diaphoretic, but he is alert and oriented x 4 and can walk with assistance into the clinic. T 101.9, BP 92/64, P 124, SpO<sub>2</sub> 90%, RR 30. He reports taking his normal dose of insulin last night and this morning. His capillary blood glucose is 482, although he hasn't eaten today. Normally, it's around 125 in the mornings.

**Differential diagnoses:**

**Plan of care:**

**IPC considerations?**

**Care coordination:**

**Next steps:**



## PATIENT 3:

Jaime is a 9-year-old male who lives in a small home near the river with his parents, aunt, four siblings, and three cousins. They have a lot of chickens, pigs, and a few cats that live around the home, and his mother does some of the cooking inside the home. His mom brings him to the health center afraid he has COVID-19 because he and some of his siblings have been coughing more over the last several months, worse in the last few weeks, and a neighbor tested positive for COVID-19 last week. T 99.0, BP 79/55, P 116, RR 36, SpO<sub>2</sub> 95%. He has a hard time finishing sentences without coughing, and you can see his neck bones when he breathes in. Listening to his lungs with a stethoscope, you hear loud wheezes in all lung fields and a few crackles in the bases.

**Differential diagnoses:**

**Plan of care:**

**IPC considerations?**

**Care Coordination:**



# SECTION 5

## SECTION 5: Clinical Management for Mild and Moderate COVID-19

The case definitions for COVID-19 by severity are as follows:

- Asymptomatic infection: Individuals who test positive for SARS-CoV-2 using a virologic test but who have no symptoms consistent with COVID-19
- Mild illness: Individuals who have any of the signs and symptoms of COVID-19 (such as fever, cough, sore throat, malaise, headache, muscle aches, or loss of taste and smell) but have no shortness of breath, dyspnea, or abnormal imaging (e.g., chest X-ray)
- Moderate illness: Individuals who show evidence of lower respiratory disease but maintain an  $SpO_2 \geq 94\%$  on room air at sea level
- Severe illness: Individuals who have  $SpO_2 < 94\%$  on room air at sea level, respiratory rate  $> 30$  breaths per minute, or lung infiltrates  $> 50\%$ .
- Critical illness: Individuals with respiratory failure, septic shock, or multiple organ dysfunction

These case definitions are guidelines and extend across ages and risk factors. One individual can experience all these stages of COVID-19 throughout the course of their illness.

Remember: COVID-19 is a spectrum of disease severity, and most patients improve without requiring extensive intervention. The goal is to appropriately identify those patients who need extra care and monitoring and have a plan for tracking cases. When you find someone with higher needs, you should know what to do next!



### IN THIS SECTION

**Most patients diagnosed with COVID-19 will have mild symptoms or none at all. This means most patients can safely recover from their illness in the comfort and safety of their homes, in accordance with local guidelines. This section will review how health care workers can:**

- Assess and decide which patients can safely recover at home
- Counsel on appropriate comfort measures
- Advise patients and household members about red flag signs and symptoms
- Determine which patients should have more regular monitoring directly from a health care worker

## Basic management and support measures for mild COVID-19

Mild illness: Individuals who have any of the signs and symptoms of COVID-19 (such as fever, cough, sore throat, malaise, headache, muscle aches, loss of taste and smell) but have no shortness of breath, dyspnea, or abnormal imaging (e.g., chest X-ray)

- » Mild cases of COVID-19 require supportive care and monitoring for worsening symptoms or clinical deterioration—much like any other viral illness. Supportive measures such as rest and good hydration and nutrition, and symptom control measures such as antipyretics and cough suppressants can help the patient feel better while the body fights off the illness. Supportive care for mild cases does not require prescription or management from a health care provider. If symptoms are mild, a patient can recover at home while focusing on isolation to prevent the spread to others.

## Basic management and support measures for moderate COVID-19

**Moderate illness:** Individuals who show evidence of lower respiratory disease but maintain an SpO<sub>2</sub>  $\geq$  94% on room air at sea level

Many patients with moderate COVID-19 are still appropriate to recover at home, continuing with the strategies of supportive care (e.g., antipyretics and cough suppressants), in combination with close observation for worsening symptoms.

**Ambulatory pulse oximetry** is one of the most useful tools in determining the appropriate plan of care for patients who are moderately ill with COVID-19. Patients can check their oxygen saturation by themselves or with the support of a friend, family member, or CHW. If the oxygen saturation level is  $<$  94% at rest or  $<$  92% while walking or moving around, this is a warning sign! This is the time to seek an in-person medical evaluation to determine if more advanced care is necessary.

**Self-proning** can be a useful technique to protect and support respiratory function for patients at home.

“Proning” is another word for positioning on the belly, side, or sitting upright—anywhere but flat on the back. The concept is to make the best use of all the lung space that is available. By changing position, including lying facedown instead of faceup, different parts of the lungs can be accessed and utilized. The concept is to make the best use of all the lung space that is available.

See **Figure 8** for a guide to proning at home, with tips and tricks for success, along with precautions.



### RED FLAG REMINDER

Red Flag symptoms also include difficulty breathing rapid rate of breathing, confusion, severe weakness and chest pain.

**TABLE 4. MANAGEMENT OF MILD AND MODERATE COVID-19**

COMMON SYMPTOMS	SUPPORTIVE CARE AND MANAGEMENT AT HOME	WHEN TO SEEK MEDICAL ATTENTION
Fever (can fluctuate between hot flashes and cold chills) T >100.4°F or >38°C.	<ul style="list-style-type: none"> <li>• Antipyretics (fever-reducing medications such as acetaminophen)</li> <li>• Hydration with clean water</li> <li>• Cold compresses or lukewarm bath</li> <li>• Warm compresses, hot drinks, or extra blankets if feeling chills or rigors</li> </ul>	<ul style="list-style-type: none"> <li>• If a high fever does not come down even with antipyretics; do not give more antipyretics beyond the recommended dosing. Seek medical attention.</li> </ul>
Cough and shortness of breath	<ul style="list-style-type: none"> <li>• Cough suppressant medications and albuterol inhalers can help somewhat, but the COVID-19 cough can be uncomfortable.</li> <li>• Rest and avoid strenuous activity if causing significant shortness of breath.</li> <li>• Deep breathing exercises, pursed lip breathing, or incentive spirometry</li> <li>• Get plenty of fresh air by opening windows and taking some time outside</li> </ul>	<ul style="list-style-type: none"> <li>• Rapid, shallow breathing, even at rest</li> <li>• Cannot finish a sentence without stopping to cough or catch a breath</li> <li>• Have to stop to catch breath even with short walks around the home</li> <li>• If the patient has a pulse oximeter SpO<sub>2</sub> &lt; 94% at rest, or SpO<sub>2</sub> &lt; 92% with exertion</li> </ul>
Headaches, muscle aches, joint pain	<ul style="list-style-type: none"> <li>• Acetaminophen or other analgesic</li> <li>• Hydration with clean water</li> <li>• Warm compresses or bath</li> <li>• Rest when needed, but consider gentle activity or stretching if tolerated</li> </ul>	<ul style="list-style-type: none"> <li>• “Worst headache ever” or thunderclap headache; headache with vision change or unilateral weakness may be sign of a clot</li> <li>• Legs and back may ache; however, new swelling, redness, or pain in one leg may be a sign of a clot.</li> </ul>
Runny nose, congestion, loss of taste or smell, sore throat	<ul style="list-style-type: none"> <li>• Treat these symptoms like a common cold. Use decongestants, or gently inhale steam from a pot of warm water.</li> <li>• Warm drinks with honey can soothe a sore throat.</li> <li>• Loss of taste and smell can be uncomfortable but not dangerous. Try adding chili, salt, and spices, or experiment to see what foods taste good to you. Try to be patient and focus on nutrition and hydration rather than taste.</li> </ul>	<ul style="list-style-type: none"> <li>• Sore throat becomes severe with vocal changes or inability to swallow food or water</li> </ul>

**FIGURE 8.** GUIDANCE AND PATIENT INSTRUCTIONS FOR PRONING AND REPOSITIONING OF AWAKE, NON-INTUBATED COVID 19 PATIENTS



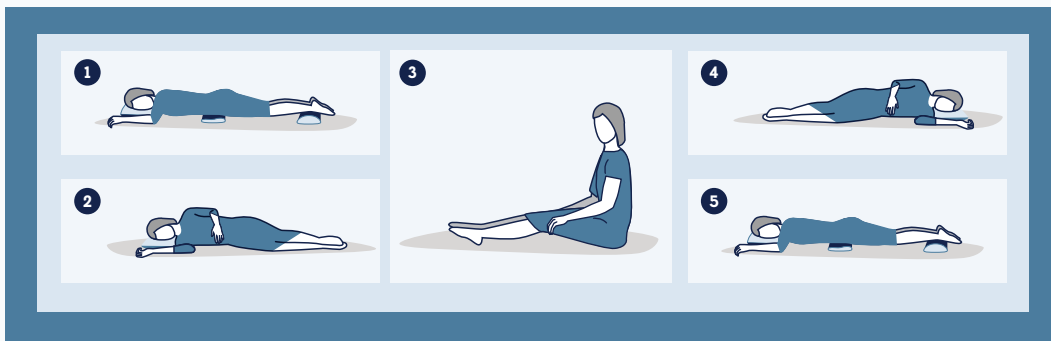
## INSTRUCTIONS FOR PATIENTS WITH COUGH OR TROUBLE BREATHING

Please try not to spend a lot of time lying flat on your back! Laying on your stomach and in different positions will help your body to get air into all areas of your lungs. You may notice improvement in breathing immediately or several minutes after positioning change. Please do not stay in any position that causes discomfort or pain; skip such positions in the rotation. It is most important you do not just lay flat in bed and this guide is designed to help you change positions in bed.

Your healthcare team recommends trying to change your position every 30 minutes to 2 hours and even sitting up is better than lying on your back. If you are able, please try this:

1. 30 minutes – 2 hours: lying on your belly
2. 30 minutes – 2 hours: lying on your right side
3. 30 minutes – 2 hours: sitting up
4. 30 minutes – 2 hours: lying on your left side
5. Then back to position #1

### ILLUSTRATIONS BELOW DEMONSTRATE THIS:



Self-positioning Guide/Instructions by Suzanne Bentley, MD MPH, Laura Lavicoli, MD, David Cherkas, MD, Rikki Lane, MD. New York City Health + Hospital/Elmhurst, last updated May 8, 2020



## Risk Factors for Development of Severe Disease

Many patients with mild and moderate COVID-19 can recover safely at home, caring for themselves using the supportive care measures described in the previous sections. However, it is important for health care workers to know the risk factors for complications. Patients with the following risk factors or comorbidities should be explicitly counseled on their risk factors, red flag signs, or signs of complications, and should have more regular monitoring from a health care worker.

- Age more than 60 years (increasing with age)
- Underlying noncommunicable diseases (NCDs): diabetes, hypertension, cardiac disease, chronic lung disease, cerebrovascular disease, dementia, mental health disorders, chronic kidney disease, immunosuppression, and cancer
- Pregnancy: Risk for complications of COVID-19 in pregnancy increases with pregnancy-related comorbidities, such as advanced maternal age, pre-pregnancy BMI > 30, non-white ethnicity, and pre-existing and pregnancy-specific conditions such as hypertension (pre-existing, pregnancy-induced hypertension, or pre-eclampsia) and diabetes (pre-existing or gestational).
- Smoking
- Obesity (BMI > 30)
- Immunocompromised patients (e.g., people with HIV or AIDS, people with cancer or undergoing treatment for cancer, recipients of organ transplants on immunosuppressive medications, patients on chronic immunosuppressive medications).
- Any patient with COVID-19 who has not been vaccinated against COVID-19 is at higher risk for complications than a vaccinated patient.

## Check-ins and remote monitoring for COVID-19 patients in the community

Many communities can monitor COVID-19 patients throughout the course of their illness by mobilizing CHWs and outreach teams. Telehealth (or virtual/remote monitoring) can facilitate communication with doctors or nurses at the primary health care facility. Where possible, and in accordance with local guidelines, offer COVID-19 patients the option of “check-ins” with a CHW or a health care provider.

These check-ins should be scheduled more regularly for patients with more significant illness, as well as those with risk factors for developing severe COVID-19. A suggested schedule for check-ins is every one to two days with any health care worker (including CHWs), and on days four, seven, and 10 of symptoms with a clinician.



### IPC REMINDER

If these visits are done in person, all staff should be familiar with local IPC recommendations, including proper distancing and use of appropriate PPE.

## Remote monitoring: What to ask

As the health care worker providing regular care to patients with mild or moderate COVID-19 who are recovering at home, you may find this list of questions useful when evaluating a patient at a distance. This may be done in person during a home visit, or remotely via phone call, video call, text message, or other forms of communication.

- How are you feeling? *Same, better, or worse than yesterday?*
- Are you able to monitor your oxygen saturation? If so, what are the readings? *Remember, SpO<sub>2</sub> <94% at rest or < 92% while walking or moving around is a red flag!*
- Are you feeling new or worsening shortness of breath? *If yes, red flag!*
- Are you breathing faster than usual? If so, how fast? *In an adult, >20 breaths per minute at rest is a red flag!*
- Do you have chest pain? *Some mild chest discomfort while coughing or related to muscle soreness is common, but new, severe chest pain is a red flag!*
- Have you been able to eat and drink adequate fluids? If no, why not? *If oral intake of food and especially fluids is greatly diminished, or if there is decreased urine output over a 24-hour period, consider this a red flag!*

A key to success is giving patients the knowledge and information to monitor themselves at home for symptom progression, while having resources available to support patients safely through the course of the illness. Most patients will feel very unwell, but only some patients with moderate disease will require increased levels of medical care and hospitalization. A system of remote monitoring coupled with high-quality counseling and patient education will help to identify patients with complications who need to transition to a higher level of care.

The use of at-home monitoring tools, especially pulse oximeters, is strongly recommended to provide objective data during a community-based check-in or remote/virtual monitoring visit with a health care worker.

Stay one step ahead as a health care worker by knowing the resources in your community: Where are the facilities with bed availability? What is the safest, fastest way to get there? Create a COVID-19 Care Pathway plan so it is ready when the time comes.

## Mild to moderate COVID-19 in pediatric patients

**Mild COVID-19 illness** in pediatric patients is defined as those that are COVID-19 positive without evidence of pneumonia.

**Moderate COVID-19 illness** in pediatric patients is defined as those who are COVID-19 positive with non-severe pneumonia.

Acutely ill pediatric patients can quickly deteriorate, going from mild to moderate illness in a matter of minutes or hours. Close monitoring and regular clinical assessment is key!

Most children with COVID-19 will not develop severe or critical illness, and most will recover without requiring significant intervention. However, as with all patients, the goal is to monitor symptoms closely, identify complications early, and quickly refer patients to the right level and location of care at the right time.

As with adults and with children experiencing other respiratory illnesses, the most important clinical signs to monitor are breathing rate and pattern as well as oxygen saturation (Table 5).

**TABLE 5. ABNORMAL PEDIATRIC CLINICAL SIGNS AND RECOMMENDATIONS**

CLINICAL SIGN	ABNORMAL FINDING	RECOMMENDATION
High temperature (fever)	T >100.4°F or >38°C	Rectal temperatures are most accurate for children <2. Oral, axillary temperatures are also acceptable.  Tactile fever (feeling hot to touch) is acceptable if a thermometer is not available  <b>Antipyretic* dosing by weight:</b>  Acetaminophen: 10–15mg/kg every 4–6 hours  *Do not give more antipyretic if fever does not resolve. Seek immediate medical attention or advance to a higher level of care.
Fast respiratory rate (tachypnea)	Age <60 days: >60 breaths per minute (bpm)  Age 2–12 months: >50bpm  Age 1–5 years > 40bpm	Watch for other signs of respiratory distress, like grunting, retractions, belly breathing, nasal flaring, or cyanosis (bluish hands, feet, or lips). Seek immediate medical attention or advance to a higher level of care.
Low oxygen (hypoxia)	SpO <sub>2</sub> <94% on room air	Seek immediate medical attention where supplemental oxygen therapy is available
Dehydration	Sudden weight loss, especially in infants  Decreased urine output  Not making tears  Not eating/drinking normally  Lethargy	Trial oral fluids, consistently offering clear liquids (or breastmilk, if breastfeeding infant). If oral liquids are not tolerated, seek immediate medical attention. If lethargy or listlessness is severe, or does not improve with oral hydration, plan for a higher level of care.

## Mild to moderate COVID-19 in pregnant and postpartum patients

Risk factors for severe COVID-19 disease in pregnancy include advanced maternal age, high BMI, non-white ethnicity, pre-existing comorbidities, and pregnancy-specific conditions such as gestational diabetes and pre-eclampsia.

Remember to consider all possible diagnoses for pregnant or postpartum patients with a fever, including pregnancy-related issues such as chorioamnionitis, urinary tract infection or pyelonephritis, endometritis (postpartum), or other endemic causes of fever.

Severe or critical disease is uncommon among pregnant patients with COVID-19; however, being pregnant does cause increased risk of progression to severe disease, and pregnant patients should be monitored closely for signs of deterioration. This includes fetal monitoring, when available, and all pregnant patients with COVID-19 should be counseled on self-monitoring of fetal movement (“kick counts”), especially in the third trimester, and report decreased fetal movement.

All pregnant patients with concern for moderate disease should be evaluated in person by a health care worker. A higher level of concern is warranted for these patients. Warning signs for worsening COVID-19 symptoms are similar to signs in other patient populations but include some signs specific to obstetrics, including:

- Increased shortness of breath or breathlessness, or tachypnea. Respiratory rate > 20–24 breaths per minute or heart rate (HR) > 100 beats per minute at rest warrant further assessment and possible intervention.
- Bradycardia, or slow heart rate (HR < 50)
- Hypoxia, or low oxygen saturation measured by pulse oximetry (SpO<sub>2</sub> < 94%)
- Dehydration or inability to tolerate oral hydration; consider IV fluid resuscitation
- Persistent pleuritic chest pain
- Lower extremity swelling, erythema (redness), or pain (unilateral or bilateral)
- Confusion, altered mental status, severe or abnormal headache with or without focal neurological deficits
- Severe abdominal or pelvic pain
- Obstetric complications (preterm contractions, vaginal bleeding, rupture of membranes)
- Signs of fetal distress, including decreased fetal movement, or fetal heart tones <110bpm or >160bpm.
- If non-stress tests are available, evaluate for signs of fetal distress, including non-reactive tracings or prolonged decelerations.

Update birth preparedness and complication readiness plans so the pregnant patient, her family or support system, and her antenatal care team know when and where to seek care in the event of complications related to COVID-19 or the pregnancy—or both.

### **Intrapartum care for laboring women with COVID-19**

All pregnant women and their newborns, including those with confirmed or suspected COVID-19 infections, have the right to high quality care before, during, and after childbirth, including mental health care. Laboring women and their support people should be encouraged to always wear masks while in the facility and during the intrapartum and postpartum period.

The presence of active COVID-19 infection or a positive COVID-19 test should not affect decisions to deliver vaginally or by cesarean section; per World Health Organization (WHO) guidance, cesarean sections should only be performed when medically justified.

The laboring patient with COVID-19 should be closely monitored for signs of cardiopulmonary complication through regular checks of vital signs and assessments of the patient's overall condition.

### **Postpartum dyad care for women with COVID-19 and their infants**

A woman with COVID-19 should not be separated from her infant unless she is medically unable to care for the baby. She should be counseled on hand hygiene and constant mask use to avoid the transmission of virus-containing droplets to the baby. The newborn baby should not be made to wear a mask or cover their nose or mouth.

Caring for a newborn while having COVID-19 can be immensely challenging. Assess the patient's mood and support system at home. Screen for postpartum depression at routine postpartum visits.

### **Breastfeeding recommendations for women with COVID-19**

If a mother has COVID-19, she should continue to breastfeed. There is no evidence that the virus can pass to infants through a mother's breastmilk, and the benefits of breastfeeding outweigh the risks of potentially transmitting SARS-CoV-2 to the infant.

Counsel the breastfeeding mother to always wear a mask when around her infant and while breastfeeding. Encourage her to perform hand hygiene and wash her breasts with soap and water prior to breastfeeding.

If the mother is too sick or medically unstable to breastfeed, she should be encouraged to express and store breastmilk for someone else to administer via a bottle.

### **Other vulnerable and high-risk patients**

As previously described, patients older than 60 years, and those with underlying medical conditions, are already at risk for more significant disease with COVID-19. Important considerations with this group include:

- Consider dedicated outreach to patients in your community with known existing comorbidities for more frequent check-ins or assessments. It is important that these patients can access regular health care services during and beyond the pandemic.

- If adjunctive treatments are available in your community, such as monoclonal antibodies or other therapeutics, patients with underlying risk may benefit the most.
- Develop and communicate a clear back-up plan of care. Most patients with moderate COVID-19 illness (even those with underlying medical conditions) will recover at home without significant intervention. However, these patients are most at risk of needing further intervention. Consider more frequent monitoring intervals for these patients at home, and have a plan in place in case you need to guide them to a higher level of medical care.

The evidence suggests that many groups of people who are marginalized or have barriers to accessing routine essential primary health services are also at the greatest risk for complications of COVID-19 or the socioeconomic or psychosocial effects of the pandemic. People with disabilities; mental health or substance use disorders; who are homeless; who are migrants or immigrants; who do not speak the native language; who are lesbian, gay, bisexual, transgender, queer/questioning, intersex, asexual, and other diverse sexual orientations/gender identities (LGBTQIA+); and members of ethnic or religious minorities, are particularly vulnerable to contracting SARS-CoV-2, getting COVID-19, and experiencing complications of the disease.

## Use of evidence-based therapeutics in the community and primary care setting

COVID-19 is a new disease. Therefore, studies and data regarding effective treatment options are new, though rapidly progressing as the scientific community races to understand how the virus affects the body so we can understand how to fight it, how to prevent complications, and how to save lives.

It is important to realize that most cases of COVID-19 are similar to other mild viral infections, such as the common cold, and do not require a specific medicine or treatment intervention. Relevant information is also changing regularly as more is learned about effective treatment options and evidence-based care. Be cautious when recommending medicines, and only use medicines that are approved by regulatory bodies.

Identify a reliable source of information to regularly learn about available therapeutic options and the rapidly evolving recommendations that emerge as new studies are completed. Some sources are listed below; always keep in mind what is applicable to your practice environment and follows your local and national guidelines.

There are a few treatment options for patients with moderate disease and risk factors who are not hospitalized.

**Monoclonal Antibody Therapy:** Monoclonal antibody therapy can reduce the risk of hospitalization in mild and moderate cases. In theory, monoclonal antibody therapy works through the infusion of neutralizing antibodies to reduce the viral burden due to SARS-CoV-2. In places where this therapeutic option is available, it can be considered a therapeutic for outpatient treatment for patients at higher risk of complications of COVID-19. Many places may not have this therapy available for some time due to barriers, and we are learning more about specific monoclonal antibody therapies as they relate to emerging or novel variants of the virus. Stay alert to changes in

**TABLE 6. EVIDENCE-BASED GUIDELINES FOR COVID-19**

SOURCE	WEBSITE LINK
World Health Organization. Therapeutics and COVID-19: living guidance	<a href="https://www.who.int/publications/i/item/WHO-2019-nCoV-therapeutics-2021.3">https://www.who.int/publications/i/item/WHO-2019-nCoV-therapeutics-2021.3</a>
National Institutes of Health: COVID-19 Treatment Guidelines	<a href="https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/">https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/</a>
Open Critical Care Dashboard for Evidence-Based COVID-19 Treatment Guidelines	<a href="https://opencriticalcare.org/covid-dashboard/">https://opencriticalcare.org/covid-dashboard/</a>
BMJ Best Practice COVID-19 Guidelines	<a href="https://bestpractice.bmj.com/topics/en-gb/3000201/guidelines">https://bestpractice.bmj.com/topics/en-gb/3000201/guidelines</a>

guidelines and recommendations. Additional therapeutic options are continuously being tested and developed, so it is important to stay up to date with options in your area.

**Oral Therapeutics:** There are new anti-viral drugs in use that have been shown to reduce the severity and length of symptoms for mild and moderate COVID-19. Health care workers and local health care system leaders should closely monitor the rapidly evolving guidance on and availability of these new pharmaceutical products.

**Supplemental Oxygen:** Some communities or primary health care facilities may be equipped to provide supplemental oxygen therapy for patients with minimal oxygen needs and to observe these patients for signs of deterioration before referring to a tertiary care center. Supplemental oxygen should only be administered if the patient can be closely monitored for signs of deterioration with regular and reliable pulse oximetry. **See Section 7** for more information.



## EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- National Institutes of Health. COVID-19 treatment guidelines: What's new in the guidelines? <https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/>
- COVIDProtocols v2.0. Awake proning protocol. <https://covidprotocols.org/en/chapters/inpatient-management/#awake-proning-protocol-w144du6d2l4x>
- Open Critical Care. Guidelines dashboard. <https://opencriticalcare.org/covid-dashboard/>
- Society for Maternal Fetal Medicine. Publications & clinical guidance: COVID-19. <https://www.smfm.org/covidclinical>



# SECTION 6



## SECTION 6:

# Stabilization and Clinical Management of Patients with Severe or Deteriorating COVID-19

## Definition and clinical presentation of severe COVID-19

**Severe illness:** Individuals who have  $\text{SpO}_2 < 94\%$  on room air at sea level, respiratory rate  $> 30$  breaths per minute, or lung infiltrates  $> 50\%$ .

**Critical illness:** Individuals with respiratory failure, septic shock, or multiple organ dysfunction

Severe COVID-19 patients are sick! Most of these patients will appear unwell, although some patients with cases of silent hypoxia appear clinically stable but have a low oxygen level when measured.



## IN THIS SECTION

Health care teams in primary health facilities and emergency and hospital settings may receive patients who meet criteria for severe or deteriorating COVID-19. All patients with severe illness will require inpatient care in a facility, except patients who choose not to pursue further care. However, many of these patients will be identified in the community or at a primary health care facility. This section will review steps that health care workers in these settings should know, including:

- How to assess and identify patients with severe COVID-19
- Initial steps of stabilization
- How to facilitate a referral and safely transfer the patient to a higher level of inpatient care.

## Step-by-step care for severe COVID-19 patients

Know before you go! These are the top three tips when approaching a patient with severe COVID-19:

- **Identify** these patients using your clinical acumen and the tools available to you.
- **Protect yourself.** Always start with having your own adequate PPE as you evaluate and initiate care for a patient with confirmed or suspected severe COVID-19
- **Know your resources.** Oxygen therapy will be the most frequent, necessary, and immediate intervention. Be familiar with what is available and where.

## INITIAL ASSESSMENT AND STABILIZATION

**Measure the patient's oxygen saturation.** When possible, use pulse oximetry to measure oxygen saturation, and provide supplemental oxygen as needed to a target  $\text{SpO}_2 > 92\%$ . Choose the right device for the situation (see **Section 7: Appropriate Use of Medical Oxygen** for more detail).

**Consider other interventions as clinically indicated.** Maintain a broad perspective as patients may have other illnesses coinciding with COVID-19.

- Consider basic labs given what is available at your facility that could quickly help guide your clinical decision-making.
- Use a point-of-care glucose test for anyone with an altered level of consciousness.
- Use a point-of-care urinalysis for anyone with a fever; consider a urine pregnancy test for women.
- Have an EKG, if available, for patients who have a fast heart rate or have chest pain.
- Intravenous fluids may be considered for a patient with low blood pressure or other signs of dehydration.

**Repositioning or proning** to positionally promote effective work of breathing and use of all lung tissue should be considered if you are unable to maintain adequate oxygen saturation with the equipment available to you.

## Therapeutics

Most additional therapeutics and interventions for patients severely ill with COVID-19 will be predominantly managed by the inpatient or hospital-based team. For all health care workers, keep in mind that COVID-19 is a new disease, and relevant information is updated regularly as more is learned about effective treatment options and evidence-based care. Therefore, it is important to identify a reliable source of information to get regular updates and learn about available therapeutic options. See Table 6 for a list of regularly updated and reputable resources.

It is also important to recognize myths and misconceptions about the use of other medications in the treatment of COVID-19. For example, the use of ivermectin and hydroxychloroquine are not considered evidence-based at the time of this publication and are not recommended for use in treatment of COVID-19 patients.

A few evidence-based interventions are recommended for inpatient care of severely ill patients with COVID-19. These interventions are listed below. Keep in mind that these options may not be available and should always be used in accordance with local guidelines and standard operating procedures:

**Systemic Corticosteroids/Dexamethasone:** Dexamethasone (or an alternative, equivalent steroid) is recommended for use in all hospitalized patients with COVID-19 who require supplemental oxygen, including those who are mechanically ventilated. Dexamethasone can be dosed at 6 mg daily for 10 days, or until discharge, whichever is shorter. Dexamethasone can be given orally or IV. If dexamethasone is not available, it is reasonable to use other glucocorticoids at equivalent dosing: hydrocortisone 160 mg daily, methylprednisolone 32 mg daily, or prednisone 40 mg daily, for 10 days or until discharge. Accordingly, all major guidelines currently recommend this practice.

*Systemic corticosteroids should not be used in the absence of severe illness (e.g. for mild or moderate COVID-19).*

**Baricitinib (Janus kinase inhibitor):** Baricitinib has been used in rheumatology to prevent overstimulation of the immune system and inflammation; it is currently recommended for treatment of severe or critical COVID-19. Evidence suggests that the use of baricitinib results in reduced mortality, reductions in mechanical ventilation, and reduced length of hospital stay. It is recommended for use in conjunction with corticosteroids. The oral dose is 4 mg daily for 14 days or until hospital discharge, whichever comes first. Dosage adjustment is needed for patients with leukopenia, renal impairment, or hepatic impairment.

**IL-6 inhibitors:** Agents that interfere with IL-6 signaling pathways, such as tocilizumab or sarilumab, have been investigated in severe COVID-19 because of their potent anti-inflammatory properties. Multiple clinical trials of IL-6 inhibitors have now been published. Results from these trials are heterogeneous with some suggesting benefit and others not, but a recent meta-analysis demonstrated improved survival at 28 days with the use of IL-6 inhibitors when combined with corticosteroids in the treatment of severe COVID-19 pneumonia.

*Multiple authorities now support the use of tocilizumab or sarilumab as an adjunctive treatment to corticosteroids in patients with severe COVID-19 pneumonia.*

**Anticoagulation:** Chemical prophylaxis with heparin or low-molecular weight heparin (LMWH) to prevent venous thromboembolism is recommended for all hospitalized patients (including pregnant women) with COVID-19 in absence of contraindications.<sup>2</sup> Existing guidelines are evolving regarding the usage of high-dose or “therapeutic” (in contrast to “prophylactic”) dosing in patients hospitalized with COVID-19, with current data leaning more toward therapeutic dosing, preferring LMWH for select hospitalized patients even without confirmed evidence of thrombosis. Be sure to stay updated with local guidelines and the changing evidence base, and always consider risk and benefit in using any kind of anticoagulant in patients with underlying bleeding disorders or on additional related medicines.

*If primary health care workers are faced with the challenge of caring for a severely ill patient with COVID-19 but are unable to find an inpatient setting to do so, then they may consider any of these interventions if they are available to them.*

2. National Institutes of Health. Antithrombotic therapy in patients with COVID-19. 2021. Available from: <https://www.covid19treatmentguidelines.nih.gov/therapies/antithrombotic-therapy/>.

## Pediatric patients with severe COVID-19

Severe COVID-19 disease in pediatric patients is rare, but all health care workers should be prepared to identify and stabilize an acutely ill child. Children with signs of severe COVID-19 disease should be transferred to a higher level of care rapidly. Physicians caring for pediatric patients with severe COVID-19 illness should consult with a pediatric specialist (infectious disease, cardiology, intensive care, etc.) if possible.

- Screen for risk factors: Pediatric patients with a history of medical complexity or underlying chronic disease including obesity are at higher risk for severe disease, and therefore closer monitoring of these patients is needed. Non-white children and older children (teenagers) are also at higher risk for complications.
- The fundamental principles of providing care to a severely ill pediatric patient are the same as for an adult: Provide supplemental oxygen for patients with low SpO<sub>2</sub> levels (<94%) or those who are exhibiting signs of increased work of breathing or poor perfusion.
- Also consider IV access and fluid administration for pediatric patients with poor perfusion, and keep a broad differential diagnosis including endemic illnesses, superimposed bacterial infection, hypoglycemia, and other diseases.
- There is still no evidence regarding the efficacy of systemic corticosteroid treatment in children with severe COVID-19. Steroids can be considered in the context of a clinical trial or for patients who have severe COVID-19 requiring high-flow oxygen or noninvasive or invasive mechanical ventilation. Dosing regimens for these patients include:
  - » Dexamethasone (0.15 mg/kg orally or IV, once daily, max dose 6 mg)
  - » Prednisolone (1 mg/kg orally or NG, once daily, max dose 40 mg)
  - » Methylprednisolone (0.8mg/kg IV, once daily, max dose 32 mg).

### Multisystem inflammatory syndrome in children

Multisystem inflammatory syndrome in children (MIS-C) is an infrequent though severe complication of COVID-19 and typically presents two to four weeks after the initial COVID-19 infection in pediatric patients. The WHO case definition and diagnostic criteria for MIS-C is presented in Figure 9.

As always, health care workers should consider their own regional endemic diseases when thinking about differential diagnoses for pediatric patients.

If a pediatric patient presents to the primary health care facility and there is a high suspicion of MIS-C, the patient should be transferred to a higher level of care, preferably an advanced care center with pediatric specialists.

**TABLE 7. WHO CASE DEFINITION FOR MIS-C**

### WHO CASE DEFINITION

#### ALL 6 CRITERIA MUST BE MET

1. Age 0 to 19 years
2. Fever for  $\geq 3$  days
3. Clinical signs of multisystem involvement (at **least 2** of the following)
  - Rash, bilateral nonpurulent conjunctivitis or mucocutaneous inflammation signs (oral, hands, or feet)
  - Hypotension or shock
  - Cardiac dysfunction, pericarditis, valvitis, or coronary abnormalities (including echocardiographic findings or elevated troponin/BNP)
  - Evidence of coagulopathy (prolonged PT or PTT; elevated D-dimer)
  - Acute gastrointestinal symptoms (diarrhea, vomiting, or abdominal pain)
4. Elevated markers of inflammation (eg, ESR, CRP, or procalcitonin)
5. No other obvious microbial cause of inflammation, including bacterial sepsis and staphylococcal/streptococcal toxic shock syndrome
6. Evidence of SARS-CoV-2 infection
  - **Any** of the following:
    - » Positive SARS-CoV-2 RT-PCR
    - » Positive serology
    - » Positive antigen test
    - » Contact with an individual with COVID-19

## Pregnant patients with severe COVID-19

Pregnant patients with severe COVID-19 are at higher risk of adverse pregnancy outcomes as are their fetuses. These patients should be referred to a higher level of care for monitoring and management, preferably at a hospital with surgical obstetric services, obstetric specialists, and an adult intensive care unit (ICU).

Here are some guidelines to stabilize the pregnant patient while waiting for transfer to a higher level of care or when a higher level of care is not available.

- The target SpO<sub>2</sub> level for pregnant patients with severe COVID-19 should remain >92-95%. Target O<sub>2</sub> saturation in pregnant people is higher than in non-pregnant people because of the physiologic changes of pregnancy including increased basal metabolic rate and increased oxygen consumption.
- Proning is less feasible in pregnant patients, although the left lateral position can be an alternative.

- Venous thromboembolism prophylaxis is especially important in pregnant patients given the increased risk of blood clots. See **Section 6** for guidance.
- Pregnant patients who meet criteria for steroid use for COVID-19 and meet criteria for antenatal use of corticosteroids to induce fetal lung maturity should be treated with dexamethasone (6 mg dexamethasone IV every 12 hours for 4 doses, followed by 6 mg daily up to 10 days or until discharge, whichever is shorter).

Check with local guidelines as the recommendations for these patients are evolving as more evidence is gathered. Referral to local obstetric or maternal fetal medicine specialists is recommended for advanced treatment of severe disease.

## Other vulnerable patients

Keep in mind the increased risk of adverse outcomes for patients with underlying health conditions, age > 60, obesity, mental health disorders, disabilities, and the immunocompromised. Be proactive in planning for transfer to higher levels of care, and consider pre-emptive conversations with these patients regarding care planning and advance directives when appropriate.



### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- **OpenCriticalCare.org Guidelines dashboard.** <https://opencriticalcare.org/covid-dashboard/>
- **National Institutes of Health. COVID-19 treatment guidelines: What's new in the guidelines?** <https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/>
- **World Health Organization. Therapeutics and COVID-19: living guideline.** <https://www.who.int/publications/i/item/WHO-2019-nCoV-therapeutics-2021.3>
- **CDC. Pregnant and recently pregnant people: at increased risk for severe illness from COVID-19.** <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnant-people.html>
- **National Institutes of Health. Special considerations in children.** <https://www.covid19treatmentguidelines.nih.gov/special-populations/children/>



# SECTION 7

## SECTION 7:

# Appropriate Medical Use of Oxygen

### PULSE OXIMETRY

A basic pulse oximeter can guide some of the most important decision-making about medical oxygen therapy for COVID-19 patients. Two numerical values are obtained from the pulse oximeter monitor:

- **The oxygen saturation of arterial blood.** Since the oximeter detects the saturation peripherally on a finger, toe, or ear, the result is recorded as the peripheral oxygen saturation described as SpO<sub>2</sub>.
- **The pulse rate** in beats per minute, averaged over 5 to 20 seconds. Some oximeters display a pulse waveform or indicator that illustrates the strength of the pulse being detected. This display indicates the tissues are well perfused. The signal strength and the waveform fall if the circulation becomes inadequate. Please see above section for more detail regarding pulse oximetry.

### OXYGEN DELIVERY DEVICES

Different mechanisms for oxygen delivery provide different quantities of oxygen.

The goal is to choose the right oxygen delivery mechanism for the right patient. The devices listed in Figure 10 can be attached to sources of medical oxygen including cylinders, concentrators, or piped oxygen via oxygen tubing.

- **Nasal cannula**—Can deliver 1–5L O<sub>2</sub>/minute (0.23–0.35 FiO<sub>2</sub>). Can help manage less severe COVID-19 patients.



## IN THIS SECTION

Oxygen is an essential cornerstone of care related to COVID-19 patients. It is important to remember a few basic principles related to the use of medical oxygen. In this section, readers will learn about the appropriate use of medical oxygen by considering the following “rights”:

- **Right patient:** It is important to promote the rational use of oxygen for those patients who need it, as there is some risk associated with giving or using too much oxygen, as well as the possible need to conserve the resource for other patients. Be sure to reserve the use of medical oxygen for those who truly need it.
- **Right amount:** The goal is to deliver the right amount of oxygen to the patient that needs it—as much as needed, but not too much. Use pulse oximetry to titrate the amount of oxygen delivered to reach and maintain a target SpO<sub>2</sub> of 94–98%.
- **Right equipment:** Health care teams should procure the right equipment to guide decisions about who needs oxygen, how they should receive it, and how much they should receive. A pulse oximeter, used either at home or in a clinical setting, is the primary instrument to identify who needs oxygen. There are more precise methods of assessing the need for oxygen therapy (i.e., arterial blood gases [ABGs]) at some health care facilities, but this is an advanced diagnostic more common in hospital settings. In the absence of a pulse oximeter, clinical signs such as increased respiratory rate and work of breathing, combined with cyanosis or other signs of poor perfusion, can identify hypoxic patients.

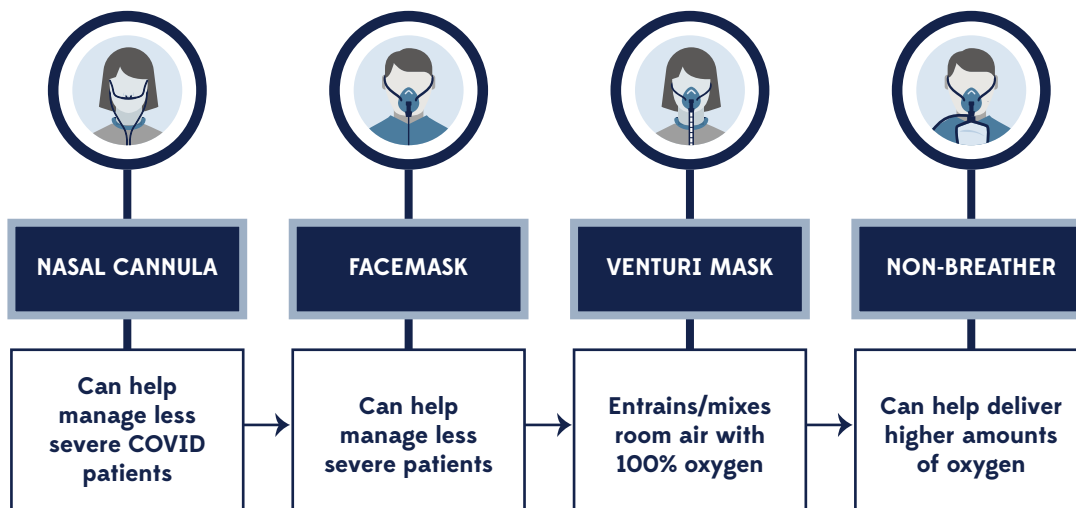
Appropriate monitoring of oxygen therapy and selection of the right delivery device will ensure success in oxygen management.

3. Lifebox. Pulse oximetry in the context of COVID-19: self-learning course.2021. Available from: <https://www.lifeboxlearningnetwork.com/course?courseid=pulseoxcovidselflearning>.



- **Face mask**—Also for less severe COVID-19 patients. The maximum oxygen flow is 10L/minute (0.3–0.5 FiO<sub>2</sub>).
- **Venturi Face mask**—This mixes room air with 100% FiO<sub>2</sub>, actual O<sub>2</sub> flow 2–15L/minute (FiO<sub>2</sub> 0.24–0.6).
- **Face mask with reservoir bag (i.e., non-rebreather)**—Can help deliver higher amounts of oxygen to the patient, O<sub>2</sub> flow 10–15L/minute (FiO<sub>2</sub> 0.5–0.85).

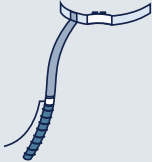




**FIGURE 10.** DEVICES FOR OXYGEN DELIVERY



Oxygen can also be delivered using noninvasive positive pressure airway devices. This works by maintaining positive airway pressure, keeping alveoli open as patients exhale and thereby increasing the alveolar surface area for gas exchange, which improves oxygenation and sometimes improves respiratory mechanics. Continuous positive airway pressure devices provide one continuous level of positive airway pressure. High flow nasal cannula is a nasal cannula device that, when linked with the appropriate machine, is also capable of delivering continuous positive airway pressure. Bi-level positive airway pressure devices deliver an increased level of pressure during inspiration while maintaining a basic level of positive pressure during expiration. **Figure 11** provides examples of the specific devices used to deliver positive airway pressure. Note that the amount of oxygen delivered via these devices can be higher, from 0.21 to 1.0 FiO<sub>2</sub> with sufficient oxygen flow. Delivery devices should be chosen based on comfort and availability, as some patients have difficulty tolerating certain mask options.

4. USAID. Common non-invasive O<sub>2</sub> delivery devices. 2021. Available from: <https://opencriticalcare.org/wp-content/uploads/2021/06/Common-O2-delivery-devices-bwkwqc.pdf>.

**FIGURE 11. POSITIVE PRESSURE OXYGEN DEVICES**

HIGH FLOW NASAL OXYGEN	BIPAP/CPAP			
	 <b>Oronasal</b>	 <b>Nasal</b>	 <b>Full Face</b>	 <b>Helmet</b>
<b>O<sub>2</sub> flow ~10-60 L/min</b>	<b>O<sub>2</sub> flow ~10-80** L/min</b>			
<b>FiO<sub>2</sub> 0.21-1.0*</b>	<b>FiO<sub>2</sub> 0.21-1.0*</b>			

## Who needs oxygen and how much?

Medical oxygen should be reserved for those who need it, generally based on pulseoximetry parameters. Remember, most patients with COVID-19 feel unwell. Many have a cough in addition to some symptom of shortness of breath. However, oxygen should be reserved for patients who need it based on SpO<sub>2</sub> measurement, when available.

Oxygen therapy should be initiated on any patient who has a pulse oximetry reading < 94%. If you are unable to measure a patient's actual oxygen level, and a patient appears to be in respiratory distress with increased work of breathing or other signs of hypoxemia such as cyanosis (blue or darker tint around mouth, fingers, toes), then you should initiate oxygen therapy immediately. Start at 2–4L by nasal cannula, and increase the amount of oxygen delivered per your local guidelines. See Annex 5 for the COVID-19 oxygen escalation algorithms for both adult and pediatric patients.

## Target SpO<sub>2</sub> levels

Increase the amount of medical oxygen delivered (measured in liters per minute) while continuously assessing oxygen saturation by pulse oximetry until SpO<sub>2</sub> remains stable at:

- > 93% SpO<sub>2</sub> for symptomatic patients with moderate or severe disease. After patients are stabilized and symptoms improve, oxygen can be titrated to SpO<sub>2</sub> > 90% (or 92–95% in pregnant women).
- > 90% SpO<sub>2</sub> is the WHO guideline for target O<sub>2</sub> level in non-pregnant adults once stabilized.

Recommendations vary some across expert consensus groups regarding the exact target SpO<sub>2</sub>. Stay up to date with national/MOH guidelines.

The goal is to maintain adequate minimum oxygen levels but avoid over-oxygenation. Some patients, particularly those with chronic lung disease, may be harmed by excess levels of oxygen. Excess oxygen delivery can have harmful effects, most commonly neurologic effects in the acute phase, and pulmonary effects with chronic excess oxygen exposure. Moreover, the extent of hyperoxia can be hard to detect as the pulseoximetry reading will remain 100% while the PaO<sub>2</sub> continues to accumulate (Figure 12.)

Weaning protocols are important counterparts to oxygen escalation algorithms to prevent unintended negative consequences.

Additionally, it is important to conserve oxygen in case more patients who have high oxygen needs arrive.

## Oxygen therapy at home

In some settings, for some patients, oxygen supplementation at home may be a viable option after discharge from a health facility. These patients will require education and teaching regarding the appropriate use of the equipment, in addition to remote monitoring to assure adequate treatment without clinical deterioration. These patients should be monitored on a very frequent basis to assure appropriate use of oxygen and clinical stability. Home oxygen should never be prescribed as an initial management strategy.

## SOURCES OF MEDICAL OXYGEN

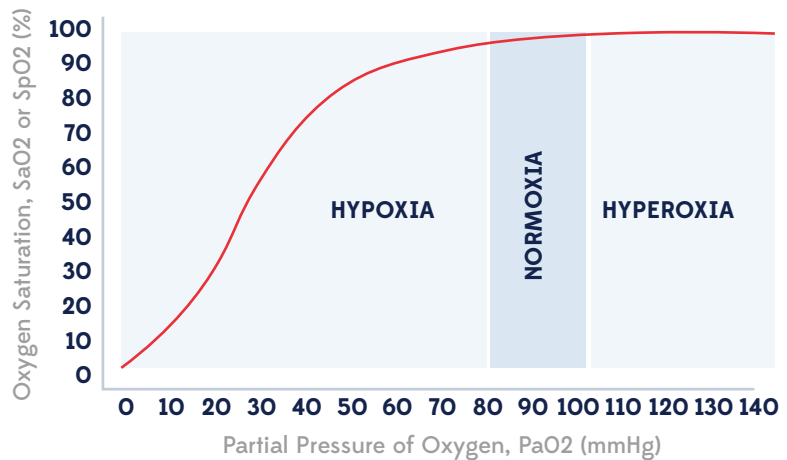
Medical oxygen is available in different ways, depending on the resources available in your area. Each source has pros and cons, and it is important to know your environment. To assess your ability to provide oxygen to a patient who needs it, estimate how much oxygen you have available, and plan for shortage or surge. (See the Oxygen Calculator site listed in additional resources for tools to estimate supply and demand.)

## CYLINDERS VS. CONCENTRATORS

**Cylinders:** An oxygen cylinder is a portable oxygen containment device that does not require electricity but does require a regulator with pressure gauge and a functioning flow meter. The patient also needs a delivery device such as a nasal cannula or face mask. Oxygen cylinders require refilling and can run out. There are different cylinder sizes, as well as tools to help estimate the capacity of cylinders.

5. COVIDProtocols v2.0. Home oxygen care. 2021. Available from: <https://covidprotocols.org/en/chapters/home-and-outpatient-management/#home-oxygen-care-stk6omc9fnru>.

**FIGURE 12. MEASURING OXYGEN SATURATION**



**Concentrator:** An oxygen concentrator works by filtering and concentrating the oxygen in room air, thereby providing a continuous flow of more than 90% concentrated oxygen to the patient. Concentrators require a continuous power source as well as an oxygen delivery device such as a nasal cannula or face mask coupled with oxygen tubing. An oxygen concentrator should not be used if the oxygen concentration falls below 82%. Different brands of concentrators have different output capabilities, so familiarize yourself with the specifications of the device you have. Some oxygen concentrators can be used with a flowmeter stand to split flow and thereby provide oxygen to multiple patients at the same time.

## Oxygen in a health care facility

Piped wall oxygen is available in some facilities. This still requires a flow regulator as well as direct delivery devices. When available, this is a great tool for delivery of high-flow oxygen for several patients, or patients with higher oxygen needs.

### PEDIATRIC PATIENTS

Consider the specific supplies and equipment necessary to provide supplemental oxygen to pediatric patients. The types of devices are the same, but the sizing is different. It can be practical to obtain a pulse oximetry reading on the ear or toe of a child. Keep in mind that there can be issues with accuracy when checking oxygen saturation in sick pediatric patients who are not well perfused.



### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- **Open Critical Care. Oxygen supply & delivery FAQ. “What is the optimal target for oxygen saturation (SpO<sub>2</sub>) in patients with acute hypoxemic respiratory failure?”** <https://opencriticalcare.org/faq/what-is-the-optimal-target-for-oxygen-saturation-spo2-in-patients-with-acute-hypoxemic-respiratory-failure/>
- **Open Critical Care. Resources: oxygen.** <https://opencriticalcare.org/resources/?search=oxygen&sc=resources>
- **The Oxygen Calculator.** <https://oxygencalculator.com>



# SECTION 8

## SECTION 8:

### When and How to Refer Patients to a Higher Level of Care

It is always important for the health care team to have a plan in place for patients who will need a higher level of care. Ideally, teams will have an up-to-date view of local hospital facilities with bed availability as well as other resources, including, but not limited to, oxygen supply in their communities. However, this information is not always available or updated. Primary health care teams should develop clear protocols and procedures for transfers, communicating that plan regularly among clinical staff as well as to patients and families in the event of a necessary transfer.

#### WHEN IS IT TIME TO REFER PATIENTS FOR HOSPITAL CARE?

Assess for these red flag signs to help guide you in your referral process:

- **Low pulse oximetry readings:** If a patient is unable to maintain a pulse oximetry reading of 94% or higher at rest, they need to be transferred to a facility where they can receive medical oxygen and continuous SpO<sub>2</sub> monitoring.
- **Worsening respiratory status (rate of breathing):** If a patient appears to be working harder to breathe, has a measured respiratory rate of > 30 breaths per minute in an adult patient, or sounds dyspneic or short of breath, they need to be evaluated in a facility where they can have their pulse oximetry (SpO<sub>2</sub>) checked and be given medical oxygen if needed.
- **Worsening mental status:** If a patient is confused or giddy, or has a change in their speech, responsiveness, or coordination, then the patient needs in-person evaluation and likely a higher level of care where blood work and imaging services are available.
- **Pregnant patients:** Those with any of the above concerns or worsening symptoms need in-person evaluation and likely a higher level of care. In the case of a pregnant patient, consider the availability of advanced obstetric and neonatal services in case of need for delivery.
- **Pediatric patients:** Those with worsening respiratory symptoms, a decreased level of alertness, or inability to tolerate adequate intake by mouth need in-person evaluation and likely a higher level of care. Consider the availability of pediatric specialists at referral hospitals.



#### IN THIS SECTION

While most people with suspected or confirmed COVID-19 can be managed at the primary care level, some will require evaluation and management at a higher level of care. In this section, readers will:

- Identify the clinical signs and symptoms of potential complications of COVID-19 that should initiate a transfer from the primary care setting to a higher level of care
- Develop a framework for effective destination planning and transportation of a patient requiring a transfer
- Effectively prepare for, communicate about, and execute a safe patient transfer to a higher level of care
- Practice the situation-background-assessment-recommendation (SBAR) tool, and complete some case studies

## Destination planning

Communication is key. Discuss with a receiving health care worker at the transfer facility the rationale for transfer, and confirm that adequate services and supplies are available at the receiving facility.

It is also important to discuss the plan and the rationale for this transfer with the patient and their family (if available) and explain the services available at the receiving facility. It can be scary to hear that a health care provider is recommending hospital management. Taking the time to explain your thought process and show your concern can put patients and families at ease.

Make sure the destination can be reached in an appropriate time frame given the patient's condition, and in the case of a severely or critically ill patient, plan for potential deterioration during transport. Is this a safe option for the patient, given the clinical situation? What type of vehicle is being used? Who is driving? Who is accompanying the patient during the journey? What medical supplies or equipment are available in the vehicle?

## Transport

The basics of safe transport include assuring safety of the patient as well as other people involved; this includes accompanying individuals or family members, drivers, and other possible passengers.

Encourage appropriate PPE for all individuals, including those directly involved and those who may incidentally come into contact (**Table 9**).

Different locations will have different means of transport available, such as private car, taxi, public transportation, or an ambulance. In some places, airlift/helicopter transfer or boat/water taxi to go across water is necessary.

If a patient requires stabilization with medical oxygen during the transfer, assure adequate supply, and always have a backup plan. Check to see if you need a replacement tank as a backup.

Confirm adequate fuel supply for the journey and adequate mobile medical oxygen if needed.

Confirm that someone on the journey has a method of communication (e.g., mobile phone, radio) to call for help if needed.

If a patient starts to deteriorate during transport, stabilization options will depend on where you are and the type of transport. Sometimes, repositioning a patient will help with better oxygenation. The transfer team can also call for more support from a health care worker, especially at the higher-level facility where you are headed.

## Handover

Formal handover should be given to the health care worker who will be caring for your patient at the next level. A helpful tool for handover is the SBAR format. SBAR stands for "situation-background-

assessment-recommendation,” and it is a simple framework to condense the most important information about your patient’s situation clearly and simply. It can also be helpful to ask the person receiving your SBAR report to “teach-back,” or repeat, the most critical pieces of information to you, to ensure clear communication and understanding of the plan of care. See [Annex IIB](#) for a template to practice SBAR reports with your team.

**TABLE 8. SBAR REPORTING FOR HEALTH CARE WORKERS**

PART OF REPORT	WHAT DOES IT MEAN?	EXAMPLE
Situation	Introduction of who is making the transfer and where they are located. Report basic patient demographics and brief introduction of current situation.	“Hello, this is the head nurse at the Downtown Health Center. I am preparing to transfer a 65-year-old male to the Regional Hospital due to concerns for severe COVID-19.”
Background	Two to four most important and relevant facts of the patient’s medical condition, including relevant past medical history or comorbid conditions.	“He has a history of insulin-dependent diabetes and controlled hypertension. He developed COVID-19 symptoms about six days ago and had a positive test two days ago. He presented to the clinic today with chest pain, increased SOB, and SpO2 of 92% at rest.”
Assessment	What is the status of the patient and the reason for recommending the transfer?	“He is alert and responsive, resting in Room 3 here in the clinic, but we are concerned about his hypoxia and risk factors for further decline.”
Recommendation	Recommend the next steps in your treatment plan.	“I am recommending he transfer to hospital for supplemental oxygen therapy and monitoring, and that dexamethasone be considered per protocol. His son can drive him. They both have masks and will be arriving in approximately 30 minutes. I have given him a transfer of care summary sheet as well.”
Teach-Back	Ask the person receiving your call to repeat back to you the basic information of the patient, reason for transfer, the recommended treatment plan, and the logistics of the transfer if possible.	



## CASE STUDIES



### PATIENT 1:

A 43-year-old male patient presents to your clinic; he had a positive PCR test for COVID-19 last week. His symptoms have been progressively worsening. He has a medical history of diabetes and HIV, and he has not been taking his medicines as regularly throughout the pandemic. He appears short of breath, with a room air oxygen saturation of 88%, which has come up to 94% on 4L oxygen delivered by nasal cannula. You call the regional referral hospital for COVID-19, and you have reached one of the physicians for the COVID-19 ward to discuss the case.

- What tool can you use to convey the necessary information? (SBAR: situation, background, assessment, recommendation)
- Where would you plan to refer this patient (what is the best place in your community/network)?
- How should he get there (what are your available means of transportation)?



### PATIENT 2:

A 5-year-old female patient has come to the clinic with her mother, reporting a fever for the past five days. She and her family were all diagnosed with COVID-19 last week. She has had fever to 40°C each of the past five days, with a visible rash in her mouth and persistent vomiting. She has been unable to eat or drink without vomiting for the past two days. She is rousable but sleepy. Her glucose level was normal, but her blood pressure is low with signs of decreased capillary refill. You have initiated IV fluids, and you are planning to transfer her to a higher level of pediatric care for evaluation for possible MIS-C.

- What tool can you use to convey the necessary information? (SBAR: situation, background, assessment, recommendation)
- Where would you plan to refer this patient (what is the best place in your community/network)?
- How should she get there (what are your available means of transportation)?



### PATIENT 3:

You have a 27-year-old female patient who is 32 weeks pregnant. She is symptomatic with COVID-19, which has worsened over the past 24 hours, with shortness of breath and chest pain. She has increased work of breathing and an oxygen saturation of 86% on room air. This level comes up to 94% with 2L of oxygen delivered by nasal cannula. She can still feel normal fetal movement and says there is no leakage of fluid. Her legs are swollen and painful on both sides. You decide to call the tertiary care center where advanced obstetric care is available to discuss transfer.

- What tool can you use to convey the necessary information? (SBAR: situation, background, assessment, recommendation)
- Where would you plan to refer this patient (what is the best place in your community/network)?
- How should she get there (what are your available means of transportation)?

All of these patients require stabilization and transfer to a higher level of care. Consider your local setting and resources to plan where you would send these patients and what your team would need to safely complete the transfer.

See **Annex IIB** for the SBAR template and **Annex V** for some possible answers to the cases.



### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- Institute for Healthcare Improvement. SBAR tool: situation-background-assessment-recommendation. <http://www.ihl.org/resources/Pages/Tools/SBARToolkit.aspx>
- World Health Organization. Basic emergency care course. <https://www.who.int/publications/item/basic-emergency-care-approach-to-the-acutely-ill-and-injured>

## Clinical and IPC considerations when arranging transportation

Many people will be able to go to a health care facility on their own, but some may need assistance arranging transportation. Here are some things to keep in mind based on the clinical presentation and epidemiological risk of the patient requiring transfer:

**TABLE 9.** CLINICAL AND IPC CONSIDERATIONS WHEN ARRANGING TRANSPORTATION FOR COVID-19 PATIENTS

	<b>WALKING OR PERSONAL VEHICLE (BICYCLE, MOTORBIKE, CAR)</b>	<b>PUBLIC VEHICLE (TAXI, BUS)</b>	<b>AMBULANCE</b>
Who should use?	<ul style="list-style-type: none"> <li>• The patient is well enough to walk without becoming out of breath, dizzy, or weak.</li> <li>• The patient is speaking in full sentences</li> <li>• The patient has a family member who can accompany or drive them</li> </ul>	<ul style="list-style-type: none"> <li>• The patient is too sick to walk or does not have a personal vehicle</li> <li>• There is no other option for transportation, and the patient is stable enough to endure the journey</li> </ul>	<ul style="list-style-type: none"> <li>• The patient is very sick, weak, cannot walk well, or is having severe shortness of breath; they may be presenting to emergency care/hospital if this is the case.</li> <li>• OR there is no other option for transportation to a health center.</li> </ul>
Special considerations	<ul style="list-style-type: none"> <li>• Do not recommend independent transportation for patients showing signs of severe illness, especially if there is a long distance to travel.</li> </ul>	<ul style="list-style-type: none"> <li>• Buses can be crowded, and it can be difficult to maintain distance. Taxis can be costly and may refuse to start or complete a journey if the patient is very sick or cannot pay.</li> </ul>	<ul style="list-style-type: none"> <li>• There may be a long wait for ambulances. Ambulances may be costly. They may have delays in heavy traffic. The level of care depends on the supplies and staff available.</li> </ul>
IPC Precautions	<ul style="list-style-type: none"> <li>• All members of the group—especially the patient—should wear a mask at all times. Keep windows open in a car if possible. Wash hands and bring supplies to clean shared surfaces on a bike, motorbike, or car.</li> </ul>	<ul style="list-style-type: none"> <li>• The patient and accompanying group members should be masked at all times and ensure that hands are cleaned or sanitized regularly. Consider abandoning plans for buses or taxi vans if many people are unmasked or unable to maintain physical distancing.</li> <li>• Also, assure that taxi or bus drivers are masked; keep windows open when possible.</li> </ul>	<ul style="list-style-type: none"> <li>• The patient and all accompanying members should remain masked at all times.</li> <li>• Ambulance driver and staff also should be masked at a minimum and may consider higher levels of PPE (eye protection, gloves, gown) if available.</li> </ul>



# SECTION 9

## SECTION 9:

# Discharge Planning and Follow-Up Care: Returning to the Community after Hospitalization for COVID-19

The experience of being hospitalized with moderate, severe, or critical COVID-19 can be very difficult. Patients can suffer from the physical effects of COVID-19 for a long time after leaving the hospital, with symptoms such as prolonged shortness of breath, sore throat, or hoarseness if they required a breathing tube; pain or skin discoloration from multiple injections or venipuncture; and weakness from muscle atrophy while sick in bed. They can suffer psychological or emotional effects from fear of death, the isolation of being a patient treated by health workers in PPE, loneliness from not seeing families, and guilt over the effect of their illness on others.

All health care workers must prepare patients to return safely to their community. Some thoughtful discharge planning can help patients have what they need to return home, check that their families are prepared to care for them, and check that community health care providers are aware the patient was hospitalized.

## Discharge planning with the interdisciplinary health care team

Ideally, health care workers in the hospital will communicate with a patient's primary health care team as part of the discharge process. This communication can allow for individualized planning for a safe return home. If possible, a patient's primary health care team will check in on them within the first few days of return home to see that things are going well.

Hospital teams, including physicians, nurses, social workers, and community partners, should check that the health care teams who will continue the care of the patient in the community are aware of the course of hospitalization, of any complications or discharge instructions, and that any therapeutics (like medical oxygen or medication) that need to be continued are accessible in the community.

The hospital discharge team and the primary care/community-based team should consider the following areas of the patient's life to inform a successful discharge plan:

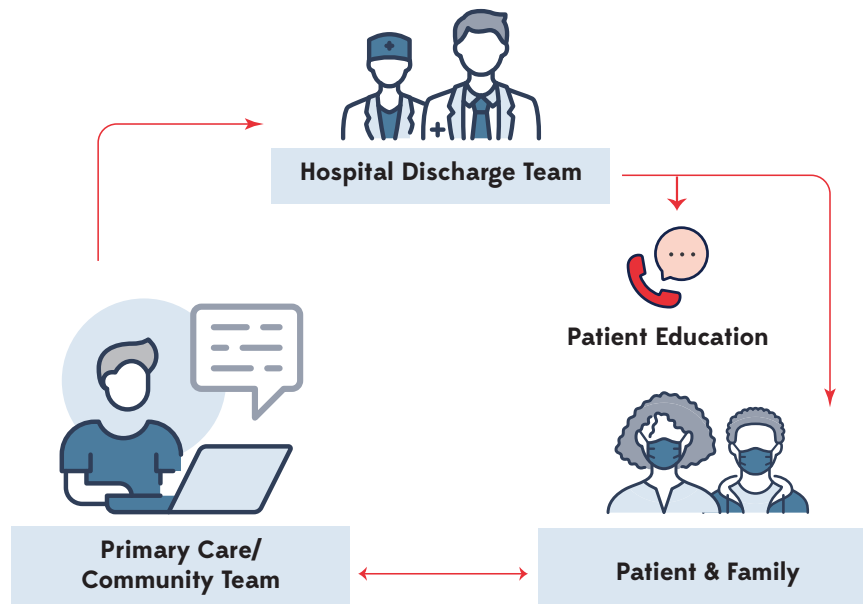


## IN THIS SECTION

### Readers will learn to:

- Explain why discharge planning is important for the patient's health and well-being
- Understand how interdisciplinary teams should collaborate for effective discharge planning for COVID-19 patients
- Optimize the use of community resources, like CHWs, to promote a safe and effective discharge

**FIGURE 13.** DISCHARGE CARE COORDINATION WITH THE INTERDISCIPLINARY TEAM



**Assess the patient's home environment.** Are there barriers to electricity, clean water, sanitation, food, heating, or clean air? Is the patient able to isolate, or are there many people at home? Does the patient live alone, and if so, is the patient able to meet his or her own daily needs (cooking meals, bathing, toileting)? If not, does the patient have anyone nearby to care for him or her?

Is the patient still in their isolation period? If so, do they understand how to isolate at home?

**Assess the patient's medical requirements immediately after discharge.** Many patients can continue to use medical oxygen therapy at home. Does the patient have a safe place to use oxygen? Can they carry or move their own oxygen supplies? Do they have a pulse oximeter? Do they know how to use the equipment?

**Were any new medications started in the hospital?** Hospital teams should check that there is a clear plan for the patient to continue to access medication started in the hospital.

- Physicians should check that the reason for starting or stopping medication during the patient's hospital stay is clear in the notes or clearly communicated to the patient.
- Nurses are often responsible for discharge instructions and should check that the patient or their family understand the reason for the medication, how to take it, how long to take it, and possible side effects.
- Pharmacists can help explain medication information and explain how patients can continue to get the medication once they get home.

There should be a clear plan to connect unvaccinated patients and unvaccinated household members with COVID-19 vaccination soon after discharge.

## Follow-up by CHWs or other community support resources

CHWs can follow up with patients coming out of the hospital virtually or in person. Not all patients coming out of the hospital need a visit with their primary health care provider, though many may need to want to have a medical appointment.

CHWs can help connect patients to primary care after they come home from the hospital for any of the following reasons:

- The patient seems to be doing worse instead of getting better
- The patient doesn't know if they need to continue therapeutics
- The patient had organ damage while hospitalized and may need follow-up care with a specialist (cardiology, pulmonology, nephrology) but doesn't know how to get there
- The patient is having concerning signs or symptoms weeks or months after coming home from the hospital; see the next section, "Care for the patient with Post COVID-19 conditions" to learn more about these prolonged symptoms.
- The patient is having mood or mental health concerns—feeling depressed, anxious, or not sleeping well
- The patient doesn't have necessities at home to care for themselves or their family members; families may need assistance with food, clean water and sanitation materials, and utilities like electricity, transportation, and mobile phone/communication.

CHWs can and should connect patients to COVID-19 vaccination services upon discharge. As long as a patient is out of their isolation period and generally in improved health, they can receive a COVID-19 vaccine. *If they received monoclonal antibody therapy during the course of their hospitalization, they should wait 90 days to receive a vaccine.*



### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- U.S. Department of Health & Human Services. **Discharge planning and care coordination during the pandemic.** <https://www.phe.gov/emergency/events/COVID19/atrisk/discharge-planning/Pages/default.aspx>
- Shapiro A, O'Toole N, Tinling-Solages D, McGarvey T, Tretola M, Dunphey P. **Re-envisioning discharge planning and expanding post-acute care capacity during a pandemic.** *NEJM Catalyst*; 2020. <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0216>



# SECTION 10



## SECTION 10:

### Care for Patients with Post-COVID-19 Conditions

We are still learning about how infection with SARS-CoV-2 affects different people in different ways. Many people have experienced long-term symptoms that are thought to be caused by cases of COVID-19, even if the initial infection was mild or moderate. WHO has released a working definition for “post-COVID-19 conditions” that can range from severe multi-organ dysfunction to prolonged yet mild symptoms.

The Centers for Disease Control and Prevention have identified the following as key points regarding post-COVID-19 conditions:



## IN THIS SECTION

### Readers will learn to:

- Explain why discharge planning is important for the patient’s health and well-being
- Understand how interdisciplinary teams should collaborate for effective discharge planning for COVID-19 patients
- Optimize the use of community resources, like CHWs, to promote a safe and effective discharge

“**Post COVID-19 condition occurs in individuals with a history of probable or confirmed SARS CoV-2 infection, usually 3 months from the onset of COVID-19 with symptoms and that last for at least 2 months and cannot be explained by an alternative diagnosis. Common symptoms include fatigue, shortness of breath, cognitive dysfunction but also others and generally have an impact on everyday functioning. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time.**” <sup>6</sup>

World Health Organization

- The term “Post-COVID Conditions” is an umbrella term for the wide range of physical and mental health consequences experienced by some patients that are present four or more weeks after SARS-CoV-2 infection, including by patients who had initial mild or asymptomatic acute infection.
- Based on current information, many post-COVID conditions can be managed by primary care providers, with the incorporation of patient-centered approaches to optimize the quality of life and function in affected patients.

7. World Health Organization. A clinical case definition of post COVID-19 consensus by a Delphi consensus. 2021. Available from: [https://www.who.int/publications/i/item/WHO-2019-nCoV-Post\\_COVID-19\\_condition-Clinical\\_case\\_definition-2021.1](https://www.who.int/publications/i/item/WHO-2019-nCoV-Post_COVID-19_condition-Clinical_case_definition-2021.1)

- Objective laboratory or imaging findings should not be used as the only measure or assessment of a patient's well-being; lack of laboratory or imaging abnormalities does not invalidate the existence, severity, or importance of a patient's symptoms or conditions.
- Health care professionals and patients are encouraged to set achievable goals through shared decision-making and to approach treatment by focusing on specific symptoms (e.g., headache) or conditions (e.g., dysautonomia); a comprehensive management plan focused on improving physical, mental, and social well-being may be helpful for some patients.
- Understanding of post-COVID conditions remains incomplete, and guidance for health care professionals will likely change over time as the evidence evolves.

The research is rapidly evolving, and several large studies are underway to understand the pathophysiology of these conditions and the true scope of their impact. It is estimated that 20–50% of people with a history of COVID-19 infection have post-COVID-19 conditions that affect their health and quality of life.

Health care workers in all settings must be familiar with how COVID-19 can affect their patients and when or how they might present for care, but due to the prolonged nature of these symptoms, it is likely that patients with post-COVID-19 conditions will approach their community-based or primary care health team with these concerns. Here are some current differentiations of common post-COVID-19 conditions, with guidance for assessment and recommendations for management:

## Post-acute COVID syndrome

**Post-acute COVID syndrome** describes the cluster of symptoms more commonly found in individuals with severe or critical COVID-19 that required extensive critical care, often involving mechanical ventilation. Many of these patients have long-term respiratory symptoms or supplemental oxygen requirements, and some have long-term organ damage to their hearts, kidneys, or nervous system that can lead to multisystemic symptoms. Patients may also experience prolonged cognitive symptoms or have psychological effects from the traumatic experience of being so critically ill.

Hospital teams should assess functional status at the time of step-down or discharge, including targeted system assessment. Involve cardiology, nephrology, pulmonology, or neurology specialists as indicated at the time of step-down from ICU.

When a patient is stable for discharge, the hospital team should strive for comprehensive care coordination, with a plan for close follow-up at the primary care level.

Nurses are often responsible for discharge teaching and should counsel patients and their family members about the typical course of recovery after severe COVID-19, as well as signs of post-acute COVID-19 syndrome.

If there are mental health, social work, community support, or chaplain services available, they should be incorporated into the discharge plan of care to provide additional psychosocial support for all patients, especially those at risk of post-acute COVID-19 syndrome.

## Long COVID-19 and post COVID-19 conditions in primary care

The overwhelming majority of patients experiencing post-COVID-19 conditions will seek care in the community. CHWs and primary care providers should be aware of common presentations of post-COVID-19 conditions and assess for history of COVID-19 infection at every visit for patients reporting any of the following symptoms:

- Fatigue or post-exertional malaise (severe fatigue after mild to moderate activity)
- Persistent cough or shortness of breath, especially with exertion
- Headaches, body aches, joint pain
- Neurological symptoms, like tingling or numbness in the extremities
- Hair loss
- Palpitations, tachycardia
- Abdominal pain, GI symptoms, changes in menstrual pattern
- Cognitive or mood changes (“brain fog,” depression or anxiety, new sleep troubles)

The evidence suggests there is usually no need for lab tests or imaging for these symptoms. If there are signs of more severe organ dysfunction, like new pulmonary hypertension, congestive heart failure, kidney injury, stroke or TIA, or severe psychiatric symptoms, health care providers should work up the targeted secondary differential diagnoses as indicated and should seek specialist consultation as soon as possible.

However, even if lab work or imaging are indicated and return as “normal,” or even if the patient’s initial COVID-19 infection was mild, these symptoms can significantly affect a patient’s quality of life and ability to work or perform daily caregiving duties.

### **Treatment for post-COVID-19 conditions should be:**

**Patient-centered:** Validate the lived experience of your patient. Listen to what is most disruptive or concerning. Try to involve the family, community, and faith-based or mental health support whenever possible.

**Symptom or system focused:** In general, treat a symptom the way you would normally treat that symptom in a person without a history of COVID-19.

- For prolonged respiratory symptoms, like cough or shortness of breath, the most effective treatment so far seems to be breathing exercises that work to build lung capacity and then endurance.
- Some people report albuterol or corticosteroid inhalers help their symptoms, but these may not be effective for everyone.

7. Johns Hopkins Medicine. Bouncing back from COVID-19: your guide to restoring movement. 2022. Available from: [https://www.hopkinsmedicine.org/physical\\_medicine\\_rehabilitation/coronavirus-rehabilitation/\\_files/impact-of-covid-patient-recovery.pdf](https://www.hopkinsmedicine.org/physical_medicine_rehabilitation/coronavirus-rehabilitation/_files/impact-of-covid-patient-recovery.pdf)

**Multidisciplinary:** Every individual patient is different, and health care teams should work together to leverage all available modalities that may best help the patients' case.

- Some patients may seek medical care for symptoms that may be best cared for by other members of your team, including but not limited to mental health providers, social workers, community support organizations, and faith leaders.
- Other symptoms like fatigue, weakness, or sleep trouble may be difficult to treat and are usually relieved by helping the patient build healthy coping skills as they navigate their recovery.

The work on post-COVID-19 conditions is evolving rapidly. Consult your local government's guidelines, and consider checking other reputable resources regularly for updates, new findings, and recommendations for best practices when assessing and managing post-COVID-19 conditions.



## EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- **Centers for Disease Control and Prevention. Evaluating and caring for patients with post-COVID conditions.** <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-index.html>
- **COVIDProtocols.org. Post-COVID care.** <https://covidprotocols.org/en/chapters/post-covid-care/>
- **Johns Hopkins Physical Medicine & Rehabilitation. COVID-19 rehabilitation resources.** [https://www.hopkinsmedicine.org/physical\\_medicine\\_rehabilitation/coronavirus-rehabilitation/](https://www.hopkinsmedicine.org/physical_medicine_rehabilitation/coronavirus-rehabilitation/)



# SECTION 11

## SECTION 11: Maintaining and Strengthening Essential Primary Care Services

In this section, readers should incorporate learning from all previous sections to start thinking about how the COVID-19 pandemic has affected other essential health services. By the end of this section—and the end of this COVID-19 Care Pathways guide—all users will be able to:

- Understand how the COVID-19 pandemic has affected primary health care and explain why it is important to strengthen and protect essential health services
- Demonstrate knowledge of how the COVID-19 pandemic has affected HIV, tuberculosis (TB), maternal and child health, family planning, mental health, chronic disease, and routine immunization services
- Envision opportunities to improve the delivery of COVID-19 care as well as other essential health services in their own clinical setting
- Identify resources for ongoing learning about innovative approaches to provide uninterrupted primary health care in the context of the COVID-19 pandemic from health care teams around the globe

### Why is this important?

Primary health care is the backbone of the health care system. The COVID-19 pandemic, for many complex reasons, caused a disruption in routine essential health services that has had profound effects on the health and well-being of communities. The impact of this disruption is yet to be fully realized, but there are clear lessons emerging from the global COVID-19 crisis.

- Triumphant advances in critical medicine, novel therapeutics, and effective vaccinations have turned the tide of this crisis by significantly reducing the risk of severe illness and death. However, as the pandemic continues and COVID-19 becomes an endemic illness, the primary health care system will continue to serve as the “frontline” for mild to moderate COVID-19 care. Primary health



### IN THIS SECTION

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care systems must be intelligently engineered for strength, flexibility, and endurance so that integrated COVID-19 care (i.e., education, IPC, testing/surveillance, clinical case management, and immunization) supports rather than strains the uninterrupted delivery of essential health services.

- The pandemic has been a living example of the importance of surge planning for health care systems. It will be crucial to evaluate the many lessons learned from effective (and less effective) surge planning experiences across the globe to inform and prepare for future surge crises.
- The imperative of isolation and quarantine to control the spread of COVID-19 has demanded rapid innovation for delivering health care services from a “safe distance” to reach people in their homes and communities. Health care leaders should continue these efforts to expand community-based care programs and improve digital access tools, systems, and training to support comprehensive health care service delivery in the place where health is experienced: *in the homes and communities of the patients themselves*.
- The ecosystem of health care service delivery is complex, and there is strength in supporting a diverse landscape of resources that meet the dynamic needs of a diverse population. The health care system should integrate partnerships between the public and private sector, advancement in digital applications, retail providers, and community-driven approaches, into the “roadmap” so that all patients know where to go to access the health care service they need.

## Connecting to comprehensive care

The COVID-19 pandemic is estimated to have disrupted or reversed 10 or more years of progressive work on some of the world’s most pressing health issues. Any time a patient presents to care, even with symptoms of COVID-19, health care teams should strive to treat the whole patient, not just the potential COVID-19 diagnosis.

While we still have much to learn about this novel virus, the scientific community has come far since early 2020. With effective IPC measures, adequate PPE supplies, promising therapeutic advances, and safe and effective vaccinations, we can no longer let the fear of COVID-19 impede the mandate of health care workers to care for patients. Additionally, health care teams should strive to engage with cadres of community-based health workers who are remunerated, trained, authorized, and empowered to provide routine health services and education. These integrated, community-based teams would be poised to inform and provide surge support when non-routine events occur (e.g., epidemics, natural disasters).

This section aims to help interdisciplinary primary health care teams envision a system where COVID-19 care and routine primary health care can safely coexist so as not to compromise access to essential health services.

## HIV, TB, AND OTHER INFECTIOUS DISEASES

Public health measures to contain the pandemic are adversely affecting TB care in many countries, especially where there are high burdens of COVID-19 and TB. According to WHO,

☞ ...if this situation is left unchecked, modelling predicts that such disruptions in TB detection and treatment could significantly increase mortality from the disease, reversing global progress in reducing TB deaths by 5–8 years, and result in an additional 6.3 million TB cases globally between 2020 and 2025. ☞<sup>8</sup>

A similar trend is occurring in HIV surveillance, with multiple studies showing a decrease in screening and a decrease in new cases (or positivity rate) over the course of the COVID-19 pandemic.

Primary health care teams should continue screening for HIV and TB during COVID-19 testing visits when able, or as part of standard protocol. In many situations, HIV and TB may be on the list of differential diagnoses when evaluating a person with possible COVID-19 symptoms (*Remember: not every cough is COVID!*).

Facilities with standard screening protocols for HIV and TB should evaluate if or how new COVID-19 workflows may reduce routine screening and strive to redesign these workflows to reduce barriers.

Health care teams should also strive to connect with community resources that engage closely with populations at risk for HIV and TB to improve linkages to screening, counseling, and care.

## CHRONIC AND NONCOMMUNICABLE DISEASES

People with chronic diseases like diabetes and obesity are known to be at higher risk for complications related to COVID-19 infection, but the true impact of the global pandemic on noncommunicable and chronic disease management has yet to be fully measured. Prior to the pandemic, the global burden of noncommunicable diseases like cardiovascular disease, diabetes, obesity, cancer, and respiratory diseases was the leading cause of death and disability globally. To promote health and prevent complications, people with chronic diseases often require regular visits with health care teams and daily medications. The pandemic has created multiple barriers to chronic disease management, and health care teams should work together to develop approaches to re-establish chronic disease patients into routine care, linking with community resources whenever possible. Some examples of initiatives may include:

- Develop a follow-up protocol for patients requiring chronic disease management or cancer screening, even if the patient is only presenting for acute COVID-19 care. A COVID-19 check-in call from a nurse or CHW is an opportunity to schedule them for routine services, such as hypertension management or a cervical cancer screening appointment.

<sup>8</sup> World Health Organization. Programmatic innovations to address challenges in tuberculosis prevention and care during the COVID-19 pandemic. 2021. Available from: <https://www.who.int/publications/i/item/programmatic-innovations-to-address-challenges-in-tuberculosis-prevention-and-care-during-the-covid-19-pandemic>.

<sup>9</sup> World Health Organization. The impact of the COVID-19 pandemic on noncommunicable disease resources and services: results of a rapid assessment. 2020. Available from: <https://apps.who.int/iris/handle/10665/334136>.



- Optimize telehealth for chronic disease patients who may feel afraid to come to the facility because of the potential for exposure to COVID-19.
- Connect with CHW programs for community-based education initiatives on the importance of preventative services (like cancer screenings) and where to get them.
- Work with CHW programs or visiting nurse programs, if available, for in-person visits for blood pressure or diabetes checks.
- Leverage relationships with private sector entities, like retail pharmacies, who may offer home delivery for medications or direct linkages back to clinical services when needed.

## REPRODUCTIVE HEALTH, MATERNAL HEALTH, AND FAMILY PLANNING

While access to and uptake of reproductive health services has decreased during the pandemic, the need for these services has not changed. The pandemic has led to multiple societal shifts that made it harder for women to access reproductive health services. UNFPA estimates the pandemic disrupted family planning for about 12 million women with a consequence of nearly 1.4 million unintended pregnancies during 2020 across 115 low- and middle-income countries.<sup>10</sup> This has had ripple effects for maternal and infant health outcomes and will have untold effects on the economic health of families for generations to come.

Health care teams should work with local governments and community resources to develop protocols for uninterrupted family planning and pregnancy care services, utilizing telehealth and CHW programs when able. Heavily promote the information about how and where to access these services, even if patients are sick or in quarantine.

## MENTAL HEALTH, WELL-BEING, AND SUBSTANCE USE

There is no doubt that the pandemic has taken a toll on mental health—for some people more than others. Primary care is often the first point of contact for mental health care, and ideally, mental health should be incorporated into every assessment and plan during a patient encounter. Consider some of the following strategies to reduce barriers to mental health care in the community.<sup>11</sup> :

- Incorporate mental health screening into COVID-19-related outreach care as much as possible.
- Consider training all health care facility staff in psychological first aid or providing additional education on common mental health and substance use disorders in the community.
- Connect with local mental health and counseling services for easy referrals for patients who need additional support.
- Mental health services are easily rendered virtually! Consider optimizing telehealth services for initial screening, follow-up care, or ongoing support.
- Heavily promote and maintain routine childhood immunization services; where possible, consider integrating COVID-19 immunization resources with routine childhood immunization programs.

Recognize that health care workers have suffered the brunt of the COVID-19 pandemic in a way that many other people in the community have not. Consider implementing a mental health, wellness,

10. United Nations Population Fund. Impact of COVID-19 on family planning: what we know one year into the pandemic. 2021. Available from: [https://www.unfpa.org/sites/default/files/resource-pdf/COVID\\_Impact\\_FP\\_V5.pdf](https://www.unfpa.org/sites/default/files/resource-pdf/COVID_Impact_FP_V5.pdf)

11. World Health Organization. Mental health & COVID-19. Available from: <https://www.who.int/teams/mental-health-and-substance-use/mental-health-and-covid-19>

and burnout screening at your health care facility and working with administrators or managers to understand causes of burnout and to try to support health care facility staff as much as possible.

## ROUTINE CHILDHOOD IMMUNIZATIONS

The global effort in the past few decades to administer routine childhood immunizations against diseases such as polio, measles, diphtheria, tetanus, and pertussis has had one of the most profoundly positive impacts on population health to date. However, the COVID-19 pandemic interrupted many basic essential health services, including routine childhood immunization programs. According to UNICEF, 23 million children missed out on basic childhood vaccines through routine health services in 2020, the highest number since 2009 and 3.7 million more than in 2019. With everything the global scientific community has learned about how to protect people from COVID-19, essential health services like routine childhood immunizations should continue without interruption. Health care workers should emphasize the safety measures in place to protect children and families in health facilities to assuage fear of contracting COVID-19 at the facility. Community organizations should consider innovative approaches for outreach to identify and immunize children at risk for missed vaccines. Public health leaders should work to restore interrupted services wherever possible. Novel programs that combine education and promotion of the COVID-19 vaccine for the eligible population with routine childhood immunizations for young people may increase uptake for both. Immunization saves lives and connects children and families to their health systems; all efforts should be made to protect, restore, and promote routine childhood immunizations, even in the context of COVID-19.

Primary health care systems are already the “front line” for patients with chronic illnesses, limited resources, and socioeconomic barriers to health and health care. This reality is critical in the face of the global COVID-19 pandemic, which has exposed the inequities in health care systems that far too often leave vulnerable populations off the pathway to health and well-being. Understanding the networks of health care service delivery in your community can help your health care team to envision, design, and fortify the roadmap that will get your patient the right care at the right time and place—even in the context of COVID-19.



### EXPAND YOUR KNOWLEDGE WITH KEY REFERENCES:

- **PHCPI. Primary health care and COVID-19: supporting strong PHC during the pandemic.** <https://improvingphc.org/covid-19>.
- **World Bank. Walking the talk: reimaging primary health care after COVID-19.** <https://openknowledge.worldbank.org/handle/10986/35842>.

## “Make your own roadmap”: a guide for developing your own care pathway to help your community navigate COVID-19

This document is intended to help health care workers at any level of the health care system understand how to get patients the right care in the right place at the right time. However, every community is different, and every health system has its own policies and way of organizing the care, so making your map or care pathway can help everyone better understand where they need to go (and when) to get the care they need.

### WHAT IS A CARE PATHWAY?

A care pathway is a roadmap that shows what resources are available and clearly explains how and when people should access those resources.

Here are some tips for getting started:

### WHO IS MAKING THE MAP AND WHY?

Just like when you access care, the first step is to figure out where you are on this map and how you fit in to your community's care pathway.

- Who are you, and what is your role on this pathway?
- Who else is on your team?
- What other perspectives would be valuable to understand the experiences of individuals who have to navigate this pathway?
- Who are the key stakeholders at all steps of this map? Who are the key beneficiaries of the resources on this map?

Another activity that may help health care teams inform their community's care pathway is a roles and responsibilities matrix. You can understand more about everyone's role in a health care system to best inform your pathways. Try filling out the Table 10 on the following page with your team.

### WHO IS THE MAP INTENDED TO GUIDE?

Is the map meant to guide patients or community members to care services? Or is it to help CHWs and health care workers better assist people to access key services? Would developing a care pathway be used for training? For handing out to the community or posting online? Or simply as a tool to help community care workers make informed decisions about when and where their community members need to go for services?

Think about your target audience and beneficiaries as you plan and design your map.

**TABLE 10.** ROLES AND RESPONSIBILITIES ACROSS THE HEALTH SYSTEM

	HEALTH POLICYMAKERS	PUBLIC HOSPITALS	PRIMARY HEALTH CARE PROVIDERS	CHWS	PRIVATE HEALTH SECTOR PROVIDERS	CIVIL SOCIETY ORGANIZATIONS	PATIENTS AND FAMILIES
Roles:	Ex} Adopt and endorse national guidelines						
Responsibilities:							
Examples in your community:							
Comments?							

## HOW ARE YOU ENSURING THAT YOU ARE NOT LEAVING ANYONE OFF THE PATHWAY?

Communities are made up of many types of people. Some people have a harder time getting on the pathway to care for many reasons. Thus, it is very important to gather perspectives from a diverse group of people who can share their experiences of finding and navigating the care pathway. There may be barriers to care that are unknown to you.

### STEPS TO CREATING YOUR OWN CARE PATHWAY:

It is most effective (and fun) to work as a group to develop your pathway. Assemble your team, and put yourselves in the shoes of a typical patient.

1. Identify the drivers, or inciting incidents, that make a patient decide to engage with the health care system.
2. Work with your health care team to identify all the places the patient might go to engage with the health care system for COVID-19-related concerns. Ask your team to identify where patients may go if they are in search of:
  - » Social support, like assistance with food, housing, and utilities, if unable to work due to COVID-19?
  - » Information about COVID-19 in general?
  - » COVID-19 testing?
  - » Medical care for mild or moderate symptoms? Medical care for severe or worsening symptoms?
  - » COVID-19 vaccination?
  - » Medical care or routine essential health care for a health issue other than COVID-19, but the patient may have COVID-19 symptoms or a recent exposure and may not know how to get the care for the health issue they're concerned about.
  - » Think about common barriers to care you see among your patients, your communities, or even those you've experienced yourself. Start to incorporate those existing barriers into your map to understand how you can guide your patients around them.



#### TIP

Prepare a list of resources in the community where patients can access different types of services; include names, contact information, websites, or social media handles. Keep it up to date, provide copies to all members of the health care team, and check that all staff know when and how to refer to this list when a patient needs specific services!

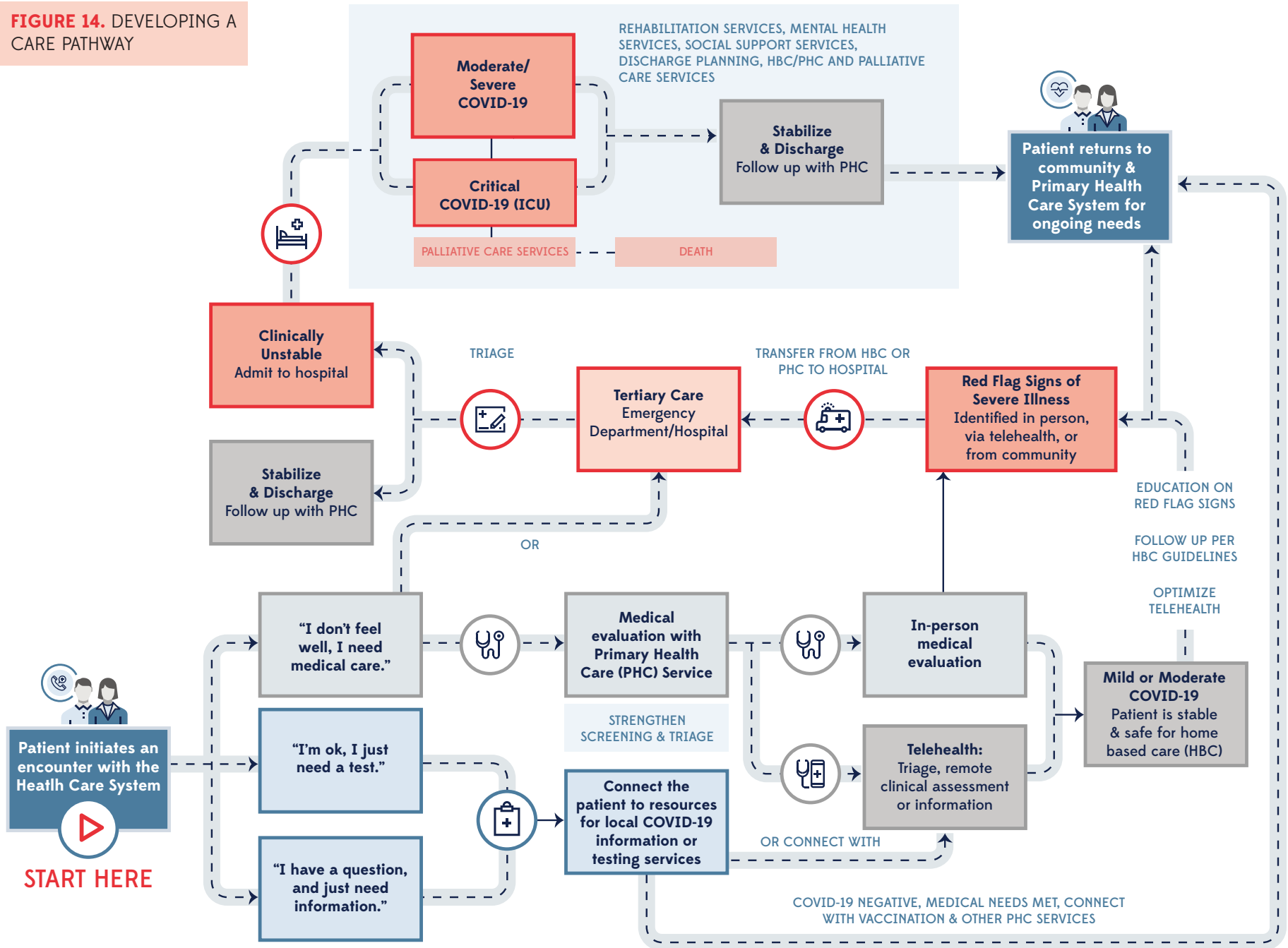
### 3. Now, start to connect the dots:

- » What ways might the patient be able to get what they really need?
- » How might the patient mistakenly end up in the wrong place for the service they seek? What are barriers that keep patients from getting what they need?
- » How might the pathway work differently for women? For children? For older people? For the disabled? For people who don't speak the main language? For people who don't have transportation? For people who don't have a mobile phone? For people who live in rural areas? For people with mental or physical disabilities? For LGBTQIA+ individuals? For ethnic or racial minorities? For the poor and uninsured? For migrants or people without a permanent home?
- » How might the pathway change if someone doesn't have money to pay for the recommended steps? Where might they go for care?
- » What other places may people go when they feel unwell that are not within the formal health care sector? (This may include retail pharmacies, traditional or spiritual healers, and borrowing medications from friends.) How might that affect their journey to health and health care?

Creating your own pathway can confirm and update the resources available and put them in a central place so there is “no wrong door” when a patient reaches out to seek care. However, instead of only providing a list of resources, pathways can explain how the resources can get the patient from where they are to where they want or need to be to access the right care in the right place at the right time.

A pathway can also provide valuable insight into the lived experience of the communities you serve and help your team develop more effective care delivery models, develop new protocols to reduce or address the most common barriers to care, and even affect health care policy at the facility, regional, or national level. You never know where the path will take you!

**FIGURE 14.** DEVELOPING A CARE PATHWAY





# ANNEXES

## Supplemental Material



## I. EXAMPLE COVID-19 SCREENING TOOL AT A HEALTH FACILITY

This is a sample template only. Consult your local or facility guidelines for policies, procedures, or protocols in the event of a positive screening

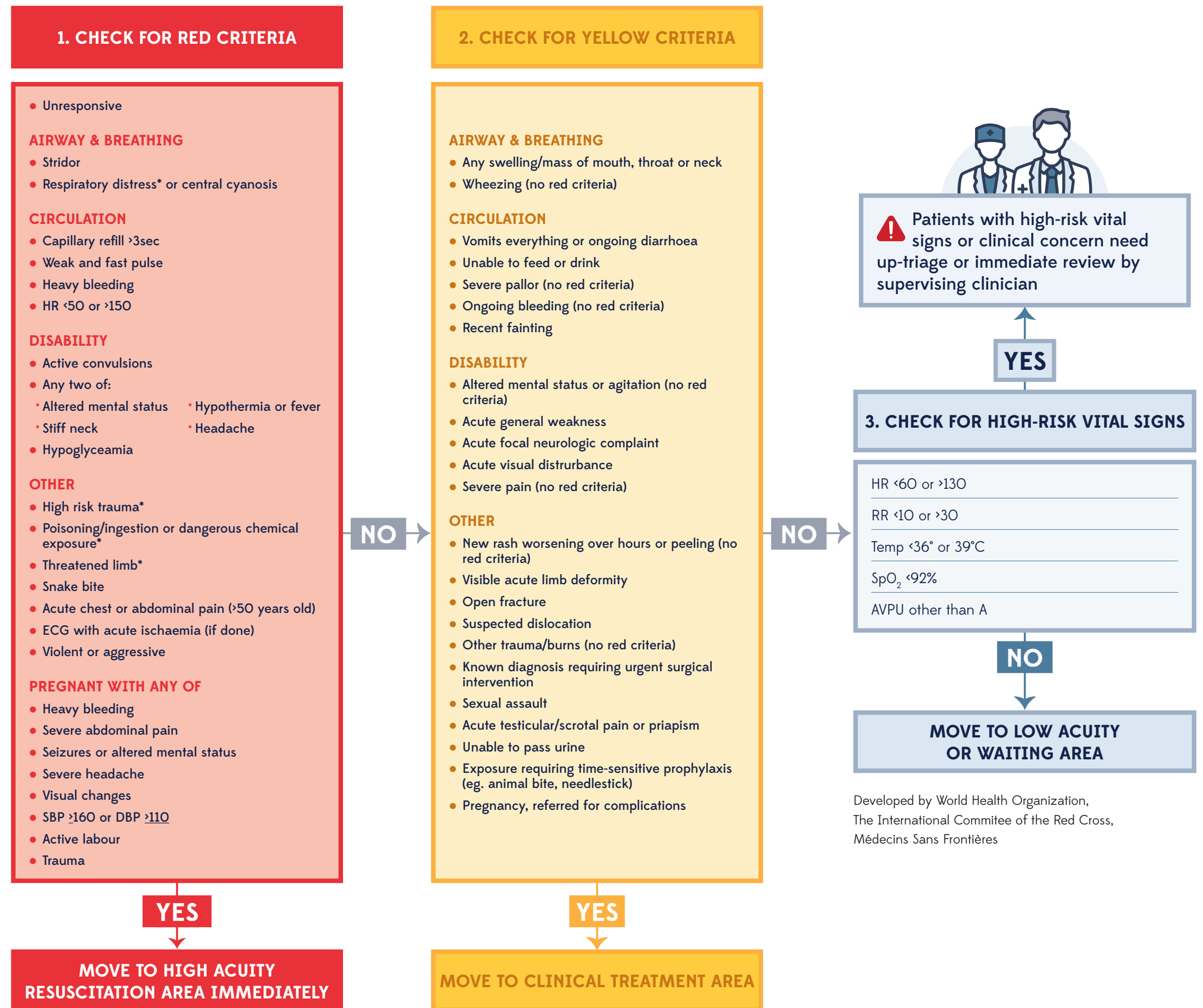
<b>PATIENTS SHOULD BE SCREENED:</b> <ul style="list-style-type: none"> <li>▪ At the time of scheduling appointment</li> <li>▪ During appointment confirmation</li> <li>▪ Patients and all persons entering the health facility should be screened upon entry</li> <li>▪ Patients should be screened again at the time of clinical service delivery</li> </ul>		
SCREENING QUESTIONS	ANSWERED <b>YES</b>	ANSWERED <b>NO</b> TO ALL
<b>1. Have you had any of the following COVID-19 symptoms start in the last 10 days?</b> <ul style="list-style-type: none"> <li>▪ Cough</li> <li>▪ Shortness of breath</li> <li>▪ Fever/chills</li> <li>▪ Sore throat</li> <li>▪ New loss of taste or smell</li> <li>▪ Congestion/runny nose</li> </ul> <b>2. Have you had direct contact with a confirmed or suspected case of COVID-19 in the last 14 days?</b> <b>3. Have you had a positive COVID-19 test in the last 14 days?</b>	<b>Scheduling Appointment</b> <u>What to Do</u> Follow your facility's protocol Consider offering information for testing if not available at your facility	<b>Scheduling Appointment</b> <u>What to Do</u> Schedule in-person or telehealth depending on patient preference Add screening question responses in the appointment notes
	<b>Appointment Confirmation</b> <u>What to Do</u> Follow your facility's protocol Consider offering information for testing if not available at your facility	<b>Appointment Confirmation</b> <u>What to Do</u> Proceed with confirming the appointment
	<b>The Time of Service</b> <u>What to Do</u> Follow your facility's protocol Don appropriate PPE	<b>The Time of Service</b> <u>What to Do</u> Complete check-in

## II. TRIAGE ALGORITHMS

The Interagency Integrated Triage Tool is a novel triage tool developed in a collaboration among WHO, International Committee of the Red Cross (ICRC), and Médecins Sans Frontières to provide an integrated set of protocols for routine triage of adults and children. It was developed before COVID, so it does not include specific attention to or criteria for triaging a COVID patient, but it does provide an adaptable framework for differentiation between sick and non-sick patients.

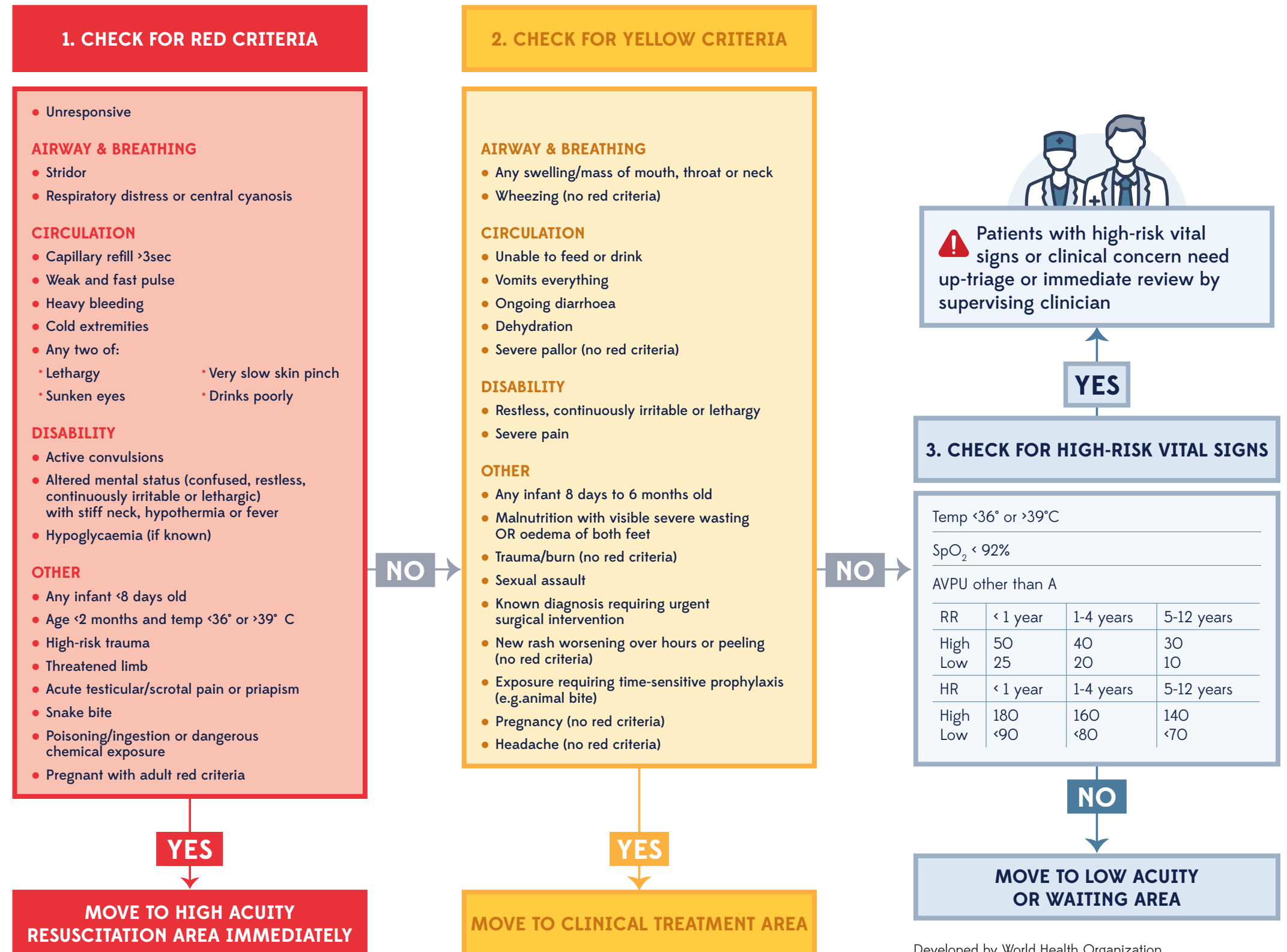
### Interagency Integrated Triage Tool

Interagency Integrated Triage Tool:  $\geq 12$  years



# Interagency Integrated Triage Tool

Interagency Integrated Triage Tool: <12 years



Developed by World Health Organization, The International Committee of the Red Cross, Médecins Sans Frontières

## HIGH-RISK TRAUMA CRITERIA

GENERAL TRAUMA	ROAD TRAFFIC
Fall from twice person's height	High speed motor vehicle crash
All penetrating trauma (only exclude distal to elbow/knee if bleeding controlled)	Pedestrian or cyclist hit by vehicle
Crush injury	Other person in same vehicle died at scene
Polytrauma (injuries in multiple body areas)	Motor vehicle crash without a seatbelt
Patient with bleeding disorder or on anticoagulation	Trapped or thrown from vehicle (including motorcycle)
Pregnant	

### MAJOR BURNS

The below criteria refer to partial or full thickness burns  
Greater than 15% body surface area

Inhalation injury

Circumferential or involving face or neck

Any burn in age <2 or age >70

### THREATENED LIMB

A patient presenting with a limb that is:

- Pulseless OR
- Painful and one of the following: pale, weak, numb, or massive swelling after trauma

## OTHER HIGH-RISK CRITERIA

### SIGNS OF RESPIRATORY DISTRESS

ADULT	CHILD
Very fast or slow breathing	Very fast breathing
Inability to talk or walk unaided	Inability to talk, eat or breastfeed
Confused, sleepy or agitated	Nasal flaring, grunting
Accessory muscle use (neck, intercostal, abdominal)	Accessory muscle use (e.g., head nodding, chest indrawing)

### INGESTION/EXPOSURE

Use of clinical signs alone may not identify all those who need time-dependent intervention. Patients with high risk ingestion or exposure should initially be up-trailed to Red for early clinical assessment

## III. PROVIDER COMMUNICATION TOOLS

### A. Interfacility transfer checklist

This is an example from [OpenCriticalCare.org](https://www.opencriticalcare.org), which can be accessed for review and download [here](#):

#### TRANSFER INITIATION

- Confirm patient has indication for higher level of care and is appropriate for transfer
- Choose a potential transfer facility based on anticipated needs of the patients. If present, utilize state or regional coordination command centers (if available) to assist with selection of optimal transfer facility
- Verify patient's needs match the available services at the destination facility
- Verify the receiving facility has capacity and agrees to accept the patient. If they cannot accept the patient, contact an alternate receiving facility until an accepting facility can be located

#### PATIENT PREPARATION PRIOR TO TRANSPORT TEAM ARRIVAL

- Obtain Informed consent. Review risks and benefits of transfer with the patient, family and accepting facility. If a patient or family declines to be transferred, an informed refusal should be documented in the medical record
- Consider that the family may not be able to be with the patient after transfer, including for end of life care. Discuss with the family and patient and ensure they can communicate prior to transfer, if possible.
- Communicate directly with an appropriate provider at the receiving facility prior to departure to describe the patient's condition, care to date, and anticipated needs at the receiving facility.
- Ensure that patient and family are aware of reasons, plan, and destination for transport
- Record the family contact information in the medical records that will accompany the patient
- Secure patient valuables for transport (whenever possible, leave with family)
- If intubation is planned (see discussion under "Whether to Intubate Prior to Transfer"). Consider whether the patient is in the prone position, if time allows, turn them supine for a period that exceeds transport time, accounting for additional time to prepare for transfer, delays due to traffic or weather, and time to settle at receiving facility
- Consider intubating the patient well in advance of the planned transport, particularly if a patient is on high flow nasal oxygen, noninvasive positive pressure ventilation, or high flows of oxygen delivered by face mask

## PATIENT PREPARATION PRIOR TO TRANSPORT TEAM ARRIVAL, CONTINUED

- Provide patients that are not intubated or receiving noninvasive positive pressure ventilation with a surgical mask to wear over their mouth and nose to protect transport staff if there is a suspected or confirmed respiratory infection
- Secure IV access & consider second IV or backup supply; consider central venous catheter, especially if receiving vasoactive medication. Must consider risk/benefit and potential impact of delaying transfer
- If intubated, ensure endotracheal tube is adequately secured, and depth is noted
- If intubated, ensure transport team is capable of administering and titrating sedation and/or neuromuscular blockade en route. If transport team not available, consider sending staff from transferring facility who can titrate medications. If intubated, consider neuromuscular blockade (and increased or appropriate sedation) during transport, ideally with bolus dosing before departure and repeat dosing en route as needed to achieve optimal ventilator synchrony. Ensure adequate paralysis with train-of-four prior to transport (see further guidance here)
- Repeat assessment for clinical stability immediately prior to transfer

## COORDINATION WITH TRANSPORT TEAM FOR SAFE DEPARTURE

- Ensure the destination facility can be reached in time given patient condition and available transport supplies (e.g. supplemental oxygen, vasopressors, portable suction if needed for chest tube thoracostomy drainage).
- Consider possible barriers to safe transfer (e.g. road closures and weather conditions both current and in the near future)
- If the patient requires mechanical ventilation, perform a trial on the transport ventilator that will be used in transit
- Include a brief record (including name, date of birth, clinical presentation and all interventions) to accompany the patient. Include copies of all imaging studies. Documentation should both communicate all needed clinical elements and comply with all local regulations.
- Ensure PPE for staff including backup masks and eye/face shield as needed in case of soilage or failure. If the patient transport compartment is continuous with the driver compartment, ensure the driver has appropriate PPE as well.
- Ensure continuous monitoring (preferable) or at least sphygmomanometer and pulse oximeter for frequent vital sign checks
- Check airway equipment and suction prior to departure and stethoscope
- Ensure adequate oxygen (with significant reserve) is available (estimate oxygen needs and supply prior to transport)
- Ensure a bag valve mask (BVM) is available, ideally with an HME filter to protect transport staff

## COORDINATION WITH TRANSPORT TEAM FOR SAFE DEPARTURE

- Supply necessary medications: Bring ample medications and fluids. Consider giving important medication doses such as antibiotics early/before departure if they would be due during transport or just after arrival
- Ensure intubated patients have adequate sedation and analgesia for the duration of transport
- Check that there is adequate fuel for transport
- Confirm transport team are trained and familiar with all transport equipment including oxygen delivery devices, transport ventilator, suction, vasopressors delivery pumps, and monitors
- Ensure that telephone or radio is available with transport team and working (with sufficient battery and airtime)

## POST TRANSPORT FOLLOW-UP

- Ensure follow-up contact with patient family to provide transfer facility contact info and patient room number

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### DISCLAIMER

This document is intended to be educational in nature and is not a substitute for clinical decision-making based on the medical condition presented. It is the responsibility of the user to ensure all information contained herein is current and accurate by using published references. The determination of how best to use these tools must be made by local providers trained to make such decisions, in accordance with local policy and individualized to the patient's needs.

## B. SBAR COMMUNICATION TEMPLATE

There are many tools available to guide SBAR communication technique for health care teams. This version comes from the Institute for Health Improvement, and is available for download [here](#):

*Institute for Healthcare Improvement · [ihi.org](http://ihi.org) | This SBAR tool was developed by Kaiser Permanente. Please feel free to use and reproduce these materials in the spirit of patient safety, and please retain this header in the spirit of recognition.*

<b>S</b>	<p><b>Situation:</b> What is the situation you are calling about?</p> <ul style="list-style-type: none"> <li>• Identify self, unit, patient, room number</li> <li>• Briefly state the problem, what is it, when it happened or started, and how severe</li> </ul>	
<b>B</b>	<p><b>Background:</b> Pertinent background information related to the situation could include the following:</p> <ul style="list-style-type: none"> <li>• The admitting diagnosis and date of admission</li> <li>• List of current medications, allergies, IV fluids, and labs</li> <li>• Most recent vital signs</li> <li>• Lab results: provide the date and time test was done and results of previous tests for comparison</li> <li>• Other clinical information</li> <li>• Code status</li> </ul>	
<b>A</b>	<p><b>Assessment:</b> What is your assessment of the patient or situation?</p>	
<b>R</b>	<p><b>Recommendation:</b> What is the nurse's recommendation or what does he/she want? Examples:</p> <ul style="list-style-type: none"> <li>• Notification that patient has been admitted</li> <li>• Patient needs to be seen now</li> <li>• Order change</li> </ul>	



## ANNEX IV: ESSENTIAL SUPPLIES FOR COVID-19 RESPONSE IN PRIMARY CARE

This is an example excerpt from the WHO COVID-19 essential supplies forecasting tool (COVID-ESFT). A complete and interactive version of this tool is available [here](#):

Consult your local guidelines for similar resources that can help management inventory and calculate burn rate of essential supplies.

There are similar tools available [here](#) that can also assist facilities with surge planning for health care staffing, medical oxygen and other critical consumables.

Example only: This is not an exhaustive list and should not be used to procure or manage supplies.

CATEGORY	GROUPING	ITEM	UNIT	REUSABLE
IPC	Hygiene	Chlorine, HTH 70%	Kg	No
IPC	Hygiene	Alcohol-based hand rub	Lt	No
IPC	Hygiene	Liquid soap	Lt	No
IPC	Hygiene	Bio-hazardous bag	Each	No

IPC	PPE	Gown, protective	Each	No
IPC	PPE	Gum boots	Pair	Yes
IPC	PPE	Gloves, surgical	Pair	No
IPC	PPE	Goggles, protective	Each	Yes
IPC	PPE	Face shield	Each	No
IPC	PPE	Respirator	Each	No
IPC	PPE	Mask, medical / surgical for health worker	Each	No
IPC	PPE	Mask, medical / surgical for patient	Each	No

Testing	Diagnostics	Triple packaging boxes	Unit	Yes
Testing	Diagnostics	Swab and Viral transport medium	Unit	No
Testing	Diagnostics	Test kit - manual PCR (complete kit)	96T/kit	No
Testing	Diagnostics	Test kits - high-throughput PCR (complete kit)	1T/kit	No
Testing	Diagnostics	For near patient PCR machine - RT-PCR cartridge	1T/kit	No
Testing	Diagnostics	Antigen Rapid Diagnostic Tests	25T/kit	No
Testing	Diagnostics	Thermocyclers for RT-PCR	Each	Yes
Testing	Diagnostics	Near patient PCR machine, 2 modules instrument	Each	Yes
Testing	Diagnostics	Near patient PCR machine, 4 modules instrument	Each	Yes

Case management - biomedical equipment	Monitoring	Infrared thermometer	Each	Yes
Case management - biomedical equipment	Monitoring	Pulse oximeter	Each	Yes
Case management - biomedical equipment	Monitoring	Patient monitor, multiparametric with ECG, with accessories	Each	Yes
Case management - biomedical equipment	Monitoring	Patient monitor, multiparametric without ECG, with accessories	Each	Yes
Case management - biomedical equipment	Oxygen therapy	Oxygen source (i.e., concentrator, cylinder, or pipe supply)	Each	Yes

# ANNEX V: COVID-19 OXYGEN ESCALATION ALGORITHM



A medical mask should be placed over nasal cannula

or HFNO for patients suspected or confirmed highly infectious respiratory illness (e.g., COVID-19)



- Start oxygen at 1-5 L/min
- Use nasal prongs
- Assess response

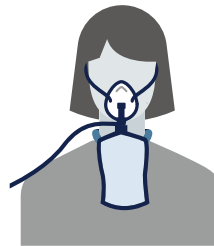
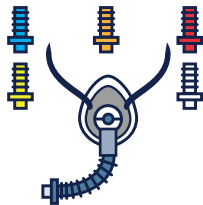
↓ If continued distress or SpO<sub>2</sub> <90% (<94% if emergency signs; <92%-95% if pregnant)

- Consider air entrainment mask if hypoxemic respiratory drive (e.g., known hypercarbia in COPD)
- Titrate oxygen 2-15 L/min by color



- Use face mask
- Increase oxygen to 5-10 L/min
- Assess response

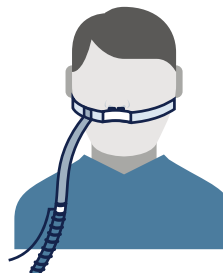
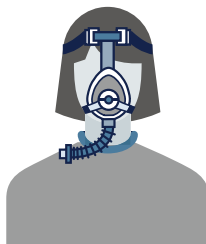
↓ If continued distress or SpO<sub>2</sub> <90% (<94% if emergency signs; <92%-95% if pregnant)



- Use face mask with reservoir
- Start oxygen at 10-15 L/min & titrate to ensure bag inflates

↓ If continued distress or SpO<sub>2</sub> <90% (<94% if emergency signs; <92%-95% if pregnant)

Heated humidification systems should be used with HFNO and BIPAP/CPAP



- Continue to try to find a higher level of care and consider one of the following if available and adequate O<sub>2</sub> supply:

**HFNO:** 30+60 LPM (may also adjust FiO<sub>2</sub>)  
**CPAP:** 10-15 cmH<sub>2</sub>O

**BIPAP:** PS (P) 5-15/PEEP (EPAP) 5-15

The following resources also have several tools to reference medical oxygen management for COVID-19 patients:

- OpenCriticalCare.org Respiratory Care Pocket Reference Card
- OpenCriticalCare.org Adult Oxygen Escalation Algorithm
- National Institutes of Health (NIH) COVID-19 Treatment Guidelines Oxygenation and Ventilation: <https://www.covid19treatmentguidelines.nih.gov/management/critical-care/oxygenation-and-ventilation/>
- CovidProtocols.org Oxygen Care

## ANNEX VI: CASE STUDY ANSWERS

### SECTION 4 CASE STUDIES

1. **Patient 1:** Alma is a 68-year-old female with a history of hypertension, obesity, and probably COPD, though doesn't use any inhalers.

Differential diagnoses: COVID-19, other viral infection, pneumonia, congestive heart failure exacerbation, COPD exacerbation, deep vein thrombosis and/or pulmonary embolism, acute kidney injury/renal failure

**Plan of care:** Complete a thorough physical exam, with particular focus on a cardiovascular exam. Assess for adventitious lung sounds (wheezing, crackles, rales/rhonchi) and abnormal heart sounds. Collect a COVID-19 swab. Consider initiating management for CHF and/or COPD exacerbation with very close (<24 hour) follow-up if she appears stable enough. If your clinical judgement dictates that Alma needs emergency management, consider referring to a local hospital that can manage her conditions.

**IPC considerations?** Alma should be examined in-person though in a section of the health facility designed for suspected COVID-19 patients. Full PPE (gown, gloves, N95 respirator, face shield or goggles) should be worn by all staff during her exam. Alma should wear a mask at all times. Staff should perform hand hygiene before and after donning and doffing PPE. The exam room should be decontaminated per facility protocol.

**Care coordination:** Consider using telehealth for a very close follow-up visit the next morning. Counsel on isolation/quarantine precautions per your local guideline until the COVID-19 test returns. If you decide to transfer her to a local hospital, prepare a transfer checklist/document, and use your SBAR tool to communicate with the receiving facility. Plan to follow up with your patient in a few days if she is referred to a hospital. Assess for barriers to accessing medication like inhalers.

2. **Patient 2:** Ravi is a 55-year-old male with a history of insulin-dependent diabetes and hyperlipidemia and had an acute myocardial infarction five years ago.

**Differential diagnoses:** Strong suspicion of COVID-19, and this patient is considered high risk for deterioration. His blood glucose is elevated, which may signal a complication of diabetes or a reaction to a systemic infection. While there may be other differential diagnoses (e.g., non-COVID-19 pneumonia, sepsis, a cardiopulmonary problem), this case is most likely COVID-19 with signs of hypoxia.

**Plan of care:** This patient is sick! Initial steps of management include oxygen administration in addition to a full physical exam. Obtain an EKG if available to look for evidence of an acute myocardial infarction, arrhythmia, or other cardiac disease. Focus on the cardiopulmonary examination to inform your clinical management, such as fluid administration (Does the patient have evidence of fluid overload such as rales or jugular venous distention?). Establish an IV for fluid administration if he continues to have low blood pressure and signs of poor perfusion. Collect a COVID-19 test.

**IPC considerations?** Ravi should be examined in-person though in a section of the health facility designed for suspected COVID-19 patients. Full PPE (gown, gloves, N95 respirator, face shield or goggles) should be worn by all staff during his exam. Ravi should wear a mask at all times. Staff should perform hand hygiene before and after donning and doffing PPE. The exam room should be decontaminated per facility protocol. If Ravi is going to be traveling via ambulance, check that drivers have appropriate PPE and are aware of the possible diagnosis.

**Care coordination:** Use the interfacility transfer checklist and the SBAR tool to prepare your transfer to the accepting facility. Counsel the family on the rationale for the transfer and on your strong suspicion of COVID-19. Counsel on isolation and quarantine for the family, and plan to follow up with the patient and his family when he is discharged. Promote COVID-19 vaccinations if the patient or his family are unvaccinated

3. **Patient 3:** Jaime is a 9-year-old male who lives in a small home near the river with his parents, aunt, four siblings, and three cousins

**Differential diagnoses:** COVID-19, RSV, other mild viral infection, asthma, allergic rhinitis

**Plan of care:** Getting a thorough history is key in this case. The prolonged nature of Jaime's symptoms, with similar symptoms with his siblings, and environmental triggers of asthma point to a likely diagnosis of asthma or allergies. However, it's important to rule out COVID-19 given a possible (though low-risk) exposure. Children often have mild symptoms of COVID-19, so it's important to check. Also, Jaime could have asthma and COVID-19. Both should be managed appropriately. Collect a COVID-19 swab, and consider initiating management with bronchodilators in the exam room. Plan close follow-up.

**IPC considerations?** Even though there is low suspicion of COVID-19, anyone who has symptoms should be approached as though they may have COVID-19. You should use full PPE (gown, gloves, N95 respirator, face shield or goggles).

Care coordination: Counsel the family on isolation and quarantine guidelines while the COVID-19 result is pending, but reassure them of your low suspicion of COVID-19. Emphasize the importance of childhood immunizations for Jaime and his siblings and the importance of the family members getting vaccinated against COVID-19. Focus on asthma education and management. Plan close follow-up after his COVID-19 test results are back for ongoing asthma management. Consider scheduling the siblings for similar evaluations. Consider connecting with a social worker or community health worker team to assess the home environment, and ask about barriers to accessing medicines, food, or electricity.

## CASE STUDIES

1. **Patient 1:** A 43-year-old male patient presents to your clinic; he had a positive PCR test for COVID-19 last week. His symptoms have been progressively worsening

- What tool can you use to convey the necessary information?
  - » Situation: My name is \_\_\_ I am calling from \_\_\_ regarding a COVID-19 patient who needs transfer for admission.
  - » Background: This patient is a 43-year-old male with worsening COVID19, now with an oxygen requirement. He was diagnosed with COVID last week and has had progressive symptoms. On arrival to the clinic this morning his oxygen saturation was 88%. His oxygen level has improved to 94% with nasal cannula oxygen. Here are his most recent vital signs: \_\_\_\_\_ and his code status: \_\_\_\_\_.
  - » Assessment: This COVID-positive patient now is hypoxic; his oxygen level has now stabilized on nasal cannula oxygen, and he requires transfer.
  - » Recommendation: He will need continued oxygen support and monitoring, as well as steroids, in addition to evaluation for other medications and observation.
- Where would you plan to refer this patient (what is the best place in your community/network)?
  - » What is the most appropriate hospital? What tools are available to you to determine bed and oxygen availability? Is there a technological tool or app that could be useful to you?
- How should he get there (what are your available means of transportation)?

This patient should be transported with oxygen support. What is the best way to do this in your setting? Please be aware of IPC considerations.

2. **Patient 2:** A 5-year-old female patient has come to the clinic with her mother, reporting a fever for the past five days. She and her family were all diagnosed with COVID-19 last week.

- What tool can you use to convey the necessary information?

- » Situation: My name is \_\_\_ and I am calling from \_\_\_ regarding a pediatric COVID-19 patient who needs transfer for admission.
- » Background: This patient is a 5-year-old female who was diagnosed last week with COVID. She has now had a high fever for 5 consecutive days, with decreased oral intake. Here at the clinic she is somnolent but rousable, but does have a low blood pressure and signs of decreased perfusion with a delayed capillary refill time. We have initiated IV fluids, and her glucose level was normal. Here are her most recent vital signs: \_\_\_\_.
- » Assessment: This 5-year-old COVID patient is dehydrated and requires evaluation by pediatric specialists and hospital admission.
- » Recommendation: This patient specifically should be evaluated for possible MIS-C.
- Where would you plan to refer this patient (what is the best place in your community/network)?
  - » What is the most appropriate hospital? Where is the best location for pediatric patients with the most experience in diagnosis and management of MIS-C?
- How should she get there (what are your available means of transportation)?
  - » The patient already has an IV and ideally should be monitored during transport for deterioration. What is the best way to do this in your setting? Please consider IPC precautions.

**3. Patient 3:** You have a 27-year-old female patient who is 32 weeks pregnant. She is symptomatic with COVID-19, worsening over the past 24 hours, with shortness of breath and chest pain.

- What tool can you use to convey the necessary information? (SBAR: situation, background, assessment, recommendation)
  - » Situation: My name is \_\_\_ and I am calling from \_\_\_ regarding a pregnant COVID-19 patient who needs transfer for admission.
  - » Background: This patient is a 27-year-old G3P2, 32 weeks with no significant past medical history and no complications during routine antenatal care so far. She's here with confirmed COVID-19, worsening in the last 24 hours with some new chest pain.
  - » Assessment: She is stable with normal fetal movement and no sign of obstetric complications, but with some lower oxygen saturations.
  - » Recommendation: Please prepare to receive her for oxygen and stabilization, as well as fetal monitoring.
- Where would you plan to refer this patient (what is the best place in your community/network)? The nearest hospital that has obstetrical services (including surgery) and ideally a dedicated team of obstetricians and ICU capabilities.
- How should he get there (what are your available means of transportation)?

If the hospital is nearby, consider transfer with a friend or relative if your clinical judgement allows. Consider ambulance transfer if available, depending on the status of the patient.

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