COVID-19 Overview and Infection Prevention and Control Priorities in Non-US Healthcare Settings

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Purpose & Scope of this document

This overview was created for healthcare workers in non-US healthcare settings and non-US national government officials working on the COVID-19 response.

The information in this document draws from CDC and WHO guidance documents and Infection Prevention and Control (IPC) priorities for the response to COVID-19 in healthcare settings and includes information that can be used in non-US contexts.

Coronavirus Background

Coronaviruses are a large family of viruses that can cause illness in animals or humans. In humans there are several known coronaviruses that cause respiratory infections. These coronaviruses range from the common cold to more severe diseases such as SARS, MERS, and COVID-19.

Training Slides

This slide deck is a reference for content on this page and can be used for training.

Coronavirus Disease 2019

Emergence

Coronavirus disease 2019 (COVID-19) was identified in Wuhan, China in December 2019. COVID-19 is caused by the virus SARS-CoV-2 which is a new virus in humans causing respiratory illness which can be spread from person-to-person. Early in the outbreak, many patients were reported to have a link to a large seafood and live animal market, however, later cases with no link to the market confirmed person-to-person transmission of the disease. Additionally, travel-related exportation of cases has occurred.

Transmission

The primary transmission of COVID-19 is from person-to-person through respiratory droplets. These droplets are released when someone with COVID-19 sneezes or coughs. COVID-19 can also be spread when you are in close contact with someone who is sick (e.g., shaking hands or talking). A physical distance of at least 1 meter (3 ft) between persons is suggested by the World Health Organization (WHO) to avoid infection, although some WHO member states have recommended maintaining greater distances whenever possible. Respiratory droplets can land on objects or surfaces around the person when they cough or talk, and people can then become infected with COVID-19 from touching these objects or surfaces and then touching their eyes, nose or mouth. Recent data suggests that there can be transmission of COVID-19 through droplets of those with mild symptoms or those who do not feel ill[1].

Symptoms

A wide range of symptoms for COVID-19 have been reported[2]. These include:

- Fever
- Cough
- Shortness of breath or difficulty breathing
- Headache
- Nasal congestion
- Muscle pain
- Sore throat
- Loss of smell or taste
- Diarrhea may be present in some patients

The estimated incubation period is between 2 and 14 days with a median of 5 days. It is important to note that some people become infected and do not develop any symptoms or feel unwell.

Illness Severity – China (through February 11, 2020)[3]

Despite the important concerns about case fatality rates, most COVID-19 illnesses are – and we expect will continue to be – mild, and most patients will recover spontaneously with some supportive care, especially children and middle-aged adults. An analysis of all cases diagnosed in China as of February 11, 2020 is described below with a total of 44,672 confirmed cases.
Mild (non-pneumonia and mild pneumonia cases) represented 80.9% of confirmed patients with COVID-19 in China

- **NOTE:** These cases included a large spectrum of illnesses including but not limited to patients having fevers, cough, chest pain, nausea, body pain, etc. It is important to note that the notation of "mild" illness does not allude to cold-like symptoms. Patients in this category experienced a wide range of illness severity that did not meet the severe or critical categories assigned within the study.

Severe (dyspnea, respiratory frequency ≥ 30/min, blood O_2 sat ≤93%, PaO2/FiO2 ratio <300, lung infiltrates >50% within 24–48 hours) represented 13.8% of confirmed patients with COVID-19 in China.

Critical (respiratory failure, septic shock, and/or multiple organ, dysfunction or failure, death) represented 4.7% of confirmed patients with COVID-19 in China. Critical cases reported 1,023 (49%) deaths among the 2,087 critically ill patients.

COVID-19: People at Higher Risk for Severe Illness

It is important to note that COVID-19 is a new disease, therefore there is limited information regarding risk factors for severe disease. In some cases, people who get COVID-19 can become seriously ill and develop difficulty breathing. These severe complications can lead to death. The older population (> 50 years of age) as well as those with underlying medical conditions such as those who are immunocompromised, have serious heart problems, or chronic lung disease are more likely to develop serious illness. As more data becomes available, additional risk factors for severe COVID-19 may be identified.

COVID-19 Prevention and Treatment

COVID-19: Everyday Preventative Actions

There are a number of ways to prevent the spread of COVID-19 infection. These include:

- Avoid touching your eyes, nose and mouth
- Avoid close contact with people who are sick
    - Remember that some people without symptoms can still spread the virus
- Stay at home when you are sick
- Cover your cough or sneeze with a tissue, then dispose of it properly
- Clean and disinfect frequently touched objects and surfaces
- Wash your hands often with soap and water or use alcohol-based hand rub with at least 60% alcohol[4]
    - Hand washing should be done for at least 40-60 seconds based on WHO's recommendations

COVID-19: Treatment

Currently, care for patients with COVID-19 is primarily supportive. Care is given to patients to help relieve symptoms and manage respiratory, and other organ, failure. There are currently no specific antiviral treatments licensed for COVID-19, however many treatments are under investigation. Remdesivir, which is also an investigational drug, received FDA emergency use authorization for treatment of hospitalized patients. Finally, no vaccine is currently available.

IPC for COVID-19

What is IPC?

Infection prevention and control (IPC) is the practice of preventing or stopping the spread of infections during healthcare delivery in facilities like hospitals, outpatient clinics, dialysis centers, long-term care facilities or traditional practitioners. IPC is a critical part of health system strengthening and must be a priority to protect patients and healthcare workers. **In the context of COVID-19, the IPC goal is to support the maintenance of essential healthcare services by containing and preventing COVID-19 transmission within healthcare facilities to keep patients and healthcare workers healthy and safe.**

COVID-19: IPC Priorities

1. Rapid identification of suspect cases

    a. Screening/Triage at initial healthcare facility encounter and rapid implementation of source control
    b. Limiting the entry of healthcare workers and/or visitors with suspected or confirmed COVID-19
2. Immediate isolation and referral for testing
    a. Cohort patients with suspected or confirmed COVID-19 separately
    b. Discontinue isolation for those clinically improved who are negative by PCR
3. Safe clinical management
    a. Immediate identification of inpatients and HCWs with suspected COVID-19
4. Adherence to IPC practices
    a. Appropriate PPE use

More detailed information regarding the IPC priorities for non-US healthcare settings can be found in the Strategic Priority IPC Activities for Containment and Prevention document.

Standard and Transmission-based Precautions

Standard Precautions are a set of practices that apply to the care of all patients in all healthcare settings at all times. Standard precautions remain the cornerstone of infection prevention. Application of these precautions depends on the nature of the health worker personnel-patient interaction and the anticipated exposure to a known infectious agent. Standard precautions include:

- Hand hygiene
- Personal protective equipment (PPE)
- Reparatory hygiene and cough etiquette
- Cleaning and disinfection of devices and environmental surfaces
- Safe injection practices
- Medication storage and handling

Transmission based precautions are a set of practices specific for patients with known or suspected infectious agents that require additional control measures to prevent transmission. These precautions are used in addition to standard precautions.

COVID-19: Transmission Based Precautions:

Current WHO guidance for healthcare workers caring for suspected or confirmed COVID-19 patients recommends the use of contact and droplet precautions, in addition to standard precautions (unless an aerosol generated procedure is being performed, in which case airborne precautions are needed)[5]. Disposable or dedicated patient care equipment (e.g., stethoscopes, blood pressure cuffs) should be used; however, if equipment needs to be shared among patients, then it should be cleaned and disinfected between use for each patient (ethyl alcohol of at least 70%).

Additionally, adequately ventilated single rooms or wards are suggested. For general ward rooms with natural ventilation, adequate ventilation for COVID-19 patients is considered to be 60 L/s per patient. When single rooms are not available, suspected COVID-19 patients should be grouped together with beds at least 1 meter apart based on WHO's recommendation, although some member states have recommended maintaining greater distances whenever possible

Additionally, healthcare facilities can also consider cohorting healthcare workers to care for patients with COVID-19 and restrict the number of visitors allowed in the facility.

Transportation of patients with COVID-19 should be avoided unless medically necessary. If it is medically necessary to transport a patient, place a mask on the suspected or confirmed COVID-19 patient. Healthcare workers should also wear the appropriate PPE when transporting patients.

Restricting the number of visitors allowed in the facility and rooms is also suggested.

COVID-19: PPE

Contact and droplet precaution PPE are recommended for healthcare workers before entering the room of suspected or confirmed COVID-19 patients. Healthcare workers should be trained on the correct use of PPE, including how to put on and remove PPE. Extended use and re-use of certain PPE items such as masks and gowns can be considered when supply is short. Additional guidance can be found here. Healthcare workers should:

- Use a medical mask (i.e., at least a surgical/medical mask)
- Wear eye protection (goggles) or facial protection (face shield)
- Wear a clean, non-sterile, long-sleeve gown
- Use gloves

There is a higher risk of self-contamination when removing PPE. Instructions for putting on and removing PPE can be found here .

Aerosol Generating Procedures:

Include[6]:

- Endotracheal intubation
- Bronchoscopy
- Non-invasive ventilation
- Tracheostomy
- Manual ventilation before intubation
- Cardiopulmonary resuscitation

For healthcare workers performing any of the following aerosol generating procedures on patients with COVID-19, it is recommended that a fitted respirator mask (N95 respirators, FFP2 or equivalent) is used as opposed to surgical/medical masks. In addition to wearing a fitted respirator mask, healthcare workers should also wear appropriate PPE including gloves, a gown and eye protection.

Infection Prevention and Control Resources for COVID-19 in non-US Healthcare Settings:

Strategic Priority IPC Activities for Containment and Prevention

- https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/ipc-healthcare-facilities-non-us.html

Triage SOP

- https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html

Identification of Healthcare Workers and Inpatients with Suspected COVID-19

- https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/guidance-identify-hcw-patients.html

Management of Visitors to Healthcare Facilities

- https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/hcf-visitors.html

Interim Operational Considerations for Public Health Management of Healthcare Workers Exposed to or Infected with COVID-19

- https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/public-health-management-hcw-exposed.html

References

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[2] WHO. Clinical management of severe acute respiratory infection when COVID-19 is suspected. 13 March 2020. https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected

[3] The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) – China 2020. *CCDCweekly*. 17 February 2020. 10.46234/ccdcw2020.03210.46234/ccdcw2020.032 10.46234/ccdcw2020.032 10.46234/ccdcw2020.032

[4] WHO. Guide to local production: WHO-recommended handrub formulations. April 2020. https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf

[5] WHO. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. 19 March 2020. https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125

[6] WHO. Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages. 6 April 2020. https://apps.who.int/iris/bitstream/handle/10665/331695/WHO-2019-nCov-IPC_PPE_use-2020.3-eng.pdf

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Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases