



COVID-19: Identification and Prevention



Introduction

The Coronavirus disease 2019 (COVID-19) poses a significant threat to the U.S. health care system. Unfortunately, there have been reported cases of COVID-19 in the U.S. Therefore, it has become essential for health care professionals to possess insight into COVID-19 to best serve patients. This course will review information regarding COVID-19 and COVID-19 prevention to provide health care professionals with the necessary insight to administer safe and effective health care to patients in need.

Section 1: Coronavirus Disease 2019 (COVID-19)

The Coronavirus disease 2019 (COVID-19) is caused by an infectious virus that possesses the potential to lead to serious illness and even death. As a result, those patients potentially infected with the COVID-19 virus may require special attention from health care professionals. With that in mind, this section of the course will provide information regarding COVID-19 and the COVID-19 virus to help health care professionals address patient needs. The information found in this section was derived from materials provided by the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), and the United States Food and Drug Administration (FDA).^{1,2,3}

What is coronavirus disease 2019?

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person.

Health care professionals should note the following:

Coronaviruses are a large family of viruses which may cause illness in animals or humans; in humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Severe Acute Respiratory Syndrome (SARS); COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China.

How is the virus that causes COVID-19 transmitted?

It is currently believed that the virus that causes COVID-19 is transmitted or spread through person-to-person contact (the term person-to-person contact may refer to the transmission of a communicable disease/illness from a host to a healthy person by way of body fluids (e.g., respiratory droplets, blood)). Essentially, an individual may become infected with COVID-19 from others who have the disease.

Health care professionals should note the following:

- COVID-19 may spread between people who are in close contact with one another (within about 6 feet); COVID-19 may spread through respiratory droplets produced when an infected person coughs or sneezes.
- It may be possible for an individual to obtain COVID-19 by touching a surface or an object that has become contaminated with the virus. For example, an individual may become infected with COVID-19 if he or she touches a surface contaminated with the virus and then touches his or her own mouth, nose, and/or eyes.
- Evidence suggests that coronaviruses (including the COVID-19 virus) may persist on surfaces for a few hours or up to several days; the survivability of the COVID-19 virus on surfaces may vary under different conditions (e.g., type of surface, temperature or humidity of the environment in which the surface is in). Health care professionals should disinfect any surfaces or objects that may be infected with the COVID-19 virus.

Can COVID-19 virus spread through the air?

It is believed that the virus that causes COVID-19 is mainly transmitted through contact with respiratory droplets (i.e., evidence suggests that the virus that causes COVID-19 is not primarily transmitted through the air).

Can an asymptomatic individual with COVID-19 spread the disease?

The main way the disease spreads is through respiratory droplets expelled by someone who is coughing (i.e., someone who is showing the symptoms of COVID-19). Therefore, the risk of catching COVID-19 from someone who is asymptomatic or showing no symptoms is low.

Health care professionals should note the following:

- Some individuals with COVID-19 may only experience mild symptoms, especially in the early stages of the disease; it is possible for an individual with mild symptoms to transmit COVID-19 to a healthy individual (i.e., an individual that does not appear or feel "sick" may still transmit COVID-19 to healthy individuals).

What is the incubation period for COVID-19?

The term incubation period may refer to the time period between exposure to an infectious agent and the appearance of the first symptoms. Evidence suggests that the

incubation period for COVID-19 is 1 - 14 days. The average incubation period for COVID-19 is approximately 5 days.

What are the potential symptoms of COVID-19?

The potential symptoms of COVID-19 include the following: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea.

Health care professionals should note the following:

- COVID-19 can range from mild symptoms to severe illness; COVID-19 may lead to death.

How may individuals potential suffering from COVID-19 present?

Individuals potentially suffering from COVID-19 may present in a variety of different states including the ones found below.

Potential Exposure State

Individuals in the potential exposure state may present with reports that they may have been exposed to the COVID-19 virus. Typically, individuals presenting in the potential exposure state will not exhibit symptoms of the COVID-19 virus or appear to be "sick." To help determine if an individual has been exposed to the COVID-19 virus, health care professionals should ask patients the types of questions found below:

- Why do you believe you have been exposed to the COVID-19 virus?
- When do you believe you were exposed to the COVID-19 virus?
- Have you recently traveled?
- Have you recently traveled internationally?
- Where have you recently traveled to?
- When did you recently travel?
- Where you around anyone with COVID-19?
- Where you exposed to the COVID-19 virus?
- Where you around anyone that was recently quarantined due to potential exposure to the COVID-19 virus?

- Do you know anyone with COVID-19?
- Do you know anyone that was exposed to the COVID-19 virus?
- Were you around anyone who has been excessively coughing?
- Have you been coughing?
- Have you recently had a fever?
- Have you been experiencing shortness of breath?
- Do you feel sick?

Mild Symptom State

Individuals in the mild symptom state may not appear "sick." However, they may present with reports of the following symptoms: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea. Individuals presenting in the mild symptom state, once diagnosed with COVID-19, may require health care. If a health care professional is administering care to an individual in the mild symptom state, with confirmed COVID-19, he or she should follow his or her health care organization's policies and procedures regarding COVID-19 or related diseases. Health care professional should note that individuals in the mild symptom state may transmit the COVID-19 virus to healthy individuals, including health care professionals, through person-to-person contact. Health care professionals should also note the following: in order to provide context for diagnosis/health care, health care professionals should attempt to ask patients in the mild symptom state the types of questions found below:

- When do you believe you were exposed to the COVID-19 virus?
- When did you start to experience symptoms?
- When did your symptoms begin?
- How long have you been experiencing symptoms?
- Have you recently traveled?
- Have you recently traveled internationally?
- Where have you recently traveled to?
- When did you recently travel?

- Did you start experiencing symptoms before you traveled?
- Did you start experiencing symptoms after you returned from traveling?
- Have you been in close contact with other individuals?
- Have you been in public locations?
- Have you been in close proximity with other individuals?
- Have you been in close proximity with other individuals for a prolonged period of time?

Severe Illness State

Individuals presenting in the severe illness state will appear to be "sick," and should exhibit symptoms of COVID-19. Individuals presenting in the severe illness state may also be suffering from some of the complications of COVID-19, which include pneumonia in both lungs. Individuals in the severe illness state may require immediate health care, and should be triaged accordingly. Health care professionals should follow their specific health care organization's policies and procedures regarding COVID-19 when administering health care to patients in the severe illness state. Health care professional should note that individuals in the severe illness state may transmit the COVID-19 virus to healthy individuals, including health care professionals, through person-to-person contact. Health care professionals should also note the following: in order to provide context for diagnosis/health care, health care professionals should attempt to ask patients in the severe illness state the types of questions found below:

- When do you believe you were exposed to the COVID-19 virus?
- When did you start to experience symptoms?
- When did your symptoms begin?
- How long have you been experiencing symptoms?
- When did your symptoms become severe?
- What are your current symptoms?
- Have you recently traveled?
- Have you recently traveled internationally?
- Are you currently taking any medications?

- What medications are you currently taking?

How is COVID-19 diagnosed?

The diagnostic process for COVID-19 may involve saliva tests, nasal swabs, and/or throat swabs.

Health care professionals should note the following:

- The CDC recently developed a new laboratory test kit for use in testing patient specimens for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19; the CDC test kit is called the “Centers for Disease Control and Prevention (CDC) 2019-Novel Coronavirus (2019-nCoV) Real-Time Reverse Transcriptase (RT)-PCR Diagnostic Panel;” the CDC’s test kit is intended for use with the Applied Biosystems 7500 Fast DX Real-Time PCR Instrument with SDS 1.4 software; the CDC’s test kit is intended for use by laboratories designated by the CDC as qualified, and in the United States, certified under the Clinical Laboratory Improvement Amendments (CLIA) to perform high complexity tests.
- The diagnostic process for COVID-19 may be in flux, therefore, health care professionals should remain up to date on COVID-19-related information.

Is there a vaccine or medication treatment for COVID-19?

There are no specific vaccine options currently available for COVID-19.

There are no specific medication treatment options currently available for COVID-19. Health care professionals should note that COVID-19 treatment centers around supportive care.

What are the myths surrounding COVID-19?

There are several myths surrounding COVID-19. Some of the more common myths may be found below:

- **Myth: Vaccines against pneumonia can prevent COVID-19** - unfortunately, vaccines against pneumonia, such as pneumococcal vaccine and Haemophilus influenzae type B (Hib) vaccine, do not provide protection against COVID-19.
- **Myth: Antibiotics may be used to prevent COVID-19** - there is no evidence to suggest that antibiotics may be used to prevent COVID-19
- **Myth: Regularly rinsing the nose with saline can prevent COVID-19** - there is no evidence to suggest that regularly rinsing the nose with saline can prevent COVID-19.

- **Myth: *Pets, such as dogs and cats, can transmit the COVID-19 virus*** - there is no evidence to suggest that pets, such as dogs and cats, can transmit the COVID-19 virus.
- **Myth: *Individuals can become infected with the COVID-19 virus via letters and packages*** - research suggests that coronaviruses do not survive long on objects, such as letters or packages.
- **Myth: *Thermal scanners are not effective in detecting COVID-19*** - thermal scanners have been shown to be effective in detecting those individuals with a fever (i.e., individuals with a higher than normal body temperature). A fever is one of the hallmark symptoms of COVID-19.
- **Myth: *Only older adults are affected by the COVID-19*** - individuals of all ages are susceptible to COVID-19. With that said, older adults (individuals 65 years or older) as well as individuals with pre-existing medical conditions (e.g., asthma, diabetes) may be more vulnerable to becoming severely ill with the virus.

What are the responsibilities of health care organizations regarding the COVID-19 virus?

Health care organizations, such as hospitals, may have several responsibilities related to the COVID-19 virus. Some of the more essential COVID-19 virus-related responsibilities may be found below:

- **Health care organizations should take overall responsibility to ensure that all necessary preventive and protective measures are taken to minimize occupational safety and health risks** - health care organizations should take measures to protect the health of their health care professional staff; health care organizations should have policies and procedures, related to the COVID-19 virus or infectious disease outbreaks, in place to help guide health care professionals administering care to patients in need.
- **Health care organizations should provide information, instruction and training on occupational safety and health** - health care organizations should make sure their health care professional staff receives education and training regarding the COVID-19 virus.
- **Health care organizations should provide the appropriate tools necessary to assess, triage, test and treat patients** - it is the responsibility of health care organizations to ensure health care professionals have the necessary equipment to administer health care to patients suffering from COVID-19.

- **Health care organizations should ensure health care professionals adhere to infection prevention and control recommendations and procedures** - it is essential that health care professionals adhere to infection prevention and control recommendations/procedures to help contain COVID-19 outbreaks.
- **Health care organizations should provide appropriate security measures for personal safety** - health care organizations should ensure the personal safety of all employees.
- **Health care organizations should provide channels for COVID-19 virus-related incident reporting** - during the process of administering care to patients suffering from COVID-19, health care professionals may experience incidents that may require further investigation. It is the responsibility of health care organizations to ensure internal channels exist for efficient and effective incident reporting.
- **Maintain appropriate working hours with breaks** - in the face of an COVID-19 virus outbreak, health care professionals may be expected to work extended hours with little to no breaks. It is the responsibility of health care organizations to ensure health care professionals work hours consistent with professional mandates.
- **Allow health care professionals to exercise the right to remove themselves from a work situation that they have reasonable justification to believe presents an imminent and serious danger to their life or health** - if a health care professional believes his or her life is in danger, the health care professional has the right to remove his or herself from any perceived imminent and/or serious danger to life. It is the responsibility of the health care organization to ensure a health care professional can exercise that right without fear of consequences.
- **Provide access to mental health and counseling resources** - the act of providing health care during an outbreak can have psychological effects on health care professionals. Health care organizations should provide some form of access to mental health and counseling for its staff.
- **Acknowledge the right to compensation, rehabilitation and curative services if infected with COVID-19 following exposure in the workplace** - it is possible for a health care professional to become infected with the COVID-19 virus when administering health care to patients with COVID-19. If a health care professional becomes infected with the COVID-19 virus when administering health care, it may be considered to be occupational exposure and any resulting illness may be considered to be an occupational disease. If occupational exposure and illness occurs, it is the responsibility of health care organizations to acknowledge the right compensation, rehabilitation and curative services for any applicable employee.

- **Establish effective communication between management and staff** - effective communication may be essential to the safe and effective administration of health care to patients during a COVID-19-related outbreak. It is the responsibility of health care organizations to ensure effective internal communication channels are in place to foster open communication among management and staff.

What are the responsibilities of health care professionals regarding the COVID-19 virus?

Health care professionals may have several responsibilities related to the COVID-19 virus. Some of the more essential COVID-19 virus-related responsibilities may be found below:

- **Health care professionals should follow their specific health care organization's policies and procedures regarding the COVID-19 virus** - as previously mentioned, health care organizations should have COVID-19 virus and/or infectious disease outbreak-related policies and procedures in place to help guide health care professionals administering care to patients in need. It is the responsibility of health care professionals to follow any related COVID-19 virus organizational policies/procedures. If no such policies/procedures exist, health care professionals may consider developing such policies/procedures.
- **Maintain patient confidentiality** - health care professionals should follow patient confidentiality laws and regulations, such as those outlined in the Health Insurance Portability and Accountability Act of 1996 (HIPAA), when administering health care to patients with COVID-19.
- **Follow established public health reporting procedures for potential/confirmed cases of COVID-19** - it is important that health care professionals follow established public health reporting procedures for potential/confirmed cases of COVID-19 to help contain COVID-19 outbreaks.
- **Adhere to infection prevention and control recommendations and procedures** - it is essential that health care professionals adhere to infection prevention and control recommendations/procedures to help contain COVID-19 outbreaks.
- **Self-monitor for symptoms of COVID-19** - it is possible for health care professionals to become infected with the COVID-19 virus. Therefore, it is vital that health care professionals self-monitor for symptoms of COVID-19. The potential symptoms of COVID-19 include the following: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea.

- **Report potential/confirmed COVID-19** - if health care professionals believe they are infected with the COVID-19 virus or have a confirmed case of COVID-19, they should report any such information to their health care organization(s) of employment.
- **Report any COVID-19 virus-related incidents that warrant investigation** - it is the responsibility of the individual health care professional to report any COVID-19 virus-related incidents that warrant investigation to their health care organization. If incident reporting channels do not exist within their health care organization, health care professionals should consider developing or advocating for such channels.
- **Adequately monitor patients with COVID-19** - COVID-19 may lead to serious illness and even death. Thus, patients diagnosed with COVID-19 should be monitored by health care professionals, when applicable.
- **Immediately report any situation which presents an imminent and serious danger to life or health** - it is paramount that health care professionals immediately report any situation which presents an imminent and serious danger to life or health. Health care professionals may report such incidents to their health care manager/ supervisor.
- **Complete effective health care documentation** - health care documentation may refer to a digital or an analog record detailing the administration of health care to patients. If completed effectively, health care documentation can be used in daily practice by health care professionals to communicate vital patient information to other health care professionals in order to facilitate positive health care outcomes and to decrease the potential for negative health care outcomes, such as adverse events and patient mortalities. Regarding COVID-19, effective health care documentation may be used as a method to review patient cases and to ensure all aspects of an individual patient's health care are noted and evaluated to maximize therapeutic outcomes. Health care professionals should note the following: in order for health care documentation to be considered effective, it must function as a viable form of communication, as well as a means to establish a detailed record of health care administration.
- **Maintain effective communication with managers, supervisors, other health care professionals, and patients** - as previously mentioned, effective communication may be essential to the safe and effective administration of health care to patients during a COVID-19-related outbreak. Health care professionals should work to maintain effective communication with managers, supervisors, other health care professionals, and patients. Health care professionals should note that effective

communication occurs when the intended meaning of messages and/or transmitted information is received by the intended party or parties.

Section 1: Summary

COVID-19 is a respiratory illness that can spread from person to person. It is believed that the COVID-19 virus is primarily transmitted through respiratory droplets produced when an infected person coughs or sneezes. Evidence suggests that the incubation period for COVID-19 is 1 - 14 days. The potential symptoms of COVID-19 include the following: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea. Individuals potentially suffering from COVID-19 may present in the following states: potential exposure state, mild symptom state, and severe illness state. It is vital that health care professionals identify those individuals potentially suffering from COVID-19. Finally, health care organizations and health care professionals should ensure they meet their responsibilities during a COVID-19 outbreak to foster the safe and effective health care to patients suffering from the disease.

Section 1: Key Concepts

- Coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases, such as SARS.
- COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China.
- It is believed that the virus that causes COVID-19 is transmitted or spread through person-to-person contact; it is also believed that the COVID-19 virus is primarily transmitted through respiratory droplets produced when an infected person coughs or sneezes.
- Evidence suggests that the incubation period for COVID-19 is 1 - 14 days.
- The potential symptoms of COVID-19 include the following: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea.
- Individuals potentially suffering from COVID-19 may present in the following states: potential exposure state, mild symptom state, and severe illness state.
- The diagnostic process for COVID-19 may involve saliva tests, nasal swabs, throat swabs, and/or the use of a CDC test kit; health care professionals should remain up to date on COVID-19-related information.

- Currently, there is no COVID-19 vaccine available; currently there are no specific medication treatment options available for COVID-19.
- Health care organizations' COVID-19 virus-related responsibilities include: take overall responsibility to ensure that all necessary preventive and protective measures are taken to minimize occupational safety and health risks, provide information, instruction and training on occupational safety and health, provide the appropriate tools necessary to assess, triage, test and treat patients, ensure health care professionals adhere to infection prevention and control recommendations and procedures, provide appropriate security measures for personal safety, provide channels for COVID-19 virus-related incident reporting, maintain appropriate working hours with breaks, allow health care professionals to exercise the right to remove themselves from a work situation that they have reasonable justification to believe presents an imminent and serious danger to their life or health, provide access to mental health and counseling resources, acknowledge the right to compensation, rehabilitation and curative services if infected with COVID-19 following exposure in the workplace, and establish effective communication between management and staff.
- Health care professionals' COVID-19 virus-related responsibilities include: follow their specific health care organization's policies and procedures regarding the COVID-19 virus, maintain patient confidentiality, follow established public health reporting procedures for potential/confirmed cases of COVID-19, adhere to infection prevention and control recommendations and procedures, self-monitor for symptoms of COVID-19, report potential/confirmed COVID-19, report any COVID-19 virus-related incidents that warrant investigation, adequately monitor patients with COVID-19, immediately report any situation which presents an imminent and serious danger to life or health, complete effective health care documentation, and maintain effective communication with managers, supervisors, other health care professionals, and patients.

Section 1: Key Terms

Coronavirus disease 2019 (COVID-19) - a respiratory illness that can spread from person to person

Person-to-person contact - the transmission of a communicable disease/illness from a host to a healthy person by way of body fluids (e.g., respiratory droplets, blood)

Incubation period - the time period between exposure to an infectious agent and the appearance of the first symptoms

Older adult - an individual 65 years or older

Health care documentation - a digital or an analog record detailing the administration of health care to patients

Section 1: Personal Reflection Question

How can health care professionals effectively identify an individual with COVID-19?

Section 2: COVID-19 Prevention/Standard Precautions

It is important for health care professionals to possess insight into COVID-19 in order to identify those patients with COVID-19 and to, ultimately, administer safe and effective health care to those patients in need. With that said, health care professionals should also possess insight into how to prevent the transmission of the COVID-19 virus. To help prevent the transmission of the COVID-19 virus, health care professionals should adhere to Standard Precautions. Standard Precautions may refer to the minimum infection prevention measures that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered.¹ Although Standard Precautions represent minimum infection prevention measures, they can be essential to preventing the transmission of the COVID-19 virus. That being the case, this section of the course will review the key elements of Standard Precautions, which include hand hygiene, the use of personal protective equipment (e.g., gloves, gowns, facemasks), respiratory hygiene and cough etiquette, safe injection practices, and the safe handling of potentially contaminated equipment or surfaces in the patient environment.¹ The information found in this section was derived from materials provided by the CDC and the WHO.^{1,2}

Hand Hygiene

Hand hygiene may refer to any action of hand cleansing. Relevant information regarding adequate hand hygiene may be found below:

- Health care professionals may use a variety of different products to carry out adequate hand hygiene including the following: plain soap, antimicrobial (medicated) soap, antiseptic agents, and alcohol-based handrubs.
- Plain soap may refer to detergents that contain no added antimicrobial agents or may contain these solely as preservatives; antimicrobial (medicated) soap may refer to soap (detergent) containing an antiseptic agent at a concentration sufficient to inactivate microorganisms and/or temporarily suppress their growth; the detergent activity of such soaps may also dislodge transient microorganisms or other contaminants from the skin to facilitate their subsequent removal by water; an

antiseptic agent may refer to an antimicrobial substance that inactivates microorganisms or inhibits their growth on living tissues, examples include alcohols, chlorhexidine gluconate (CHG), chlorine derivatives, iodine, chloroxylenol (PCMX), quaternary ammonium compounds and triclosan; an alcohol-based handrub may refer to an alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to inactivate microorganisms and/or temporarily suppress their growth, such preparations may contain one or more types of alcohol, other active ingredients with excipients and humectants.

- The major indications for hand hygiene include the following five key moments in health care administration:
 1. Before patient contact
 2. Before an aseptic procedure or task
 3. After a body fluid exposure risk occurs
 4. After touching a patient
 5. After contact with a patient's surroundings
- Health care professionals should wash their hands with soap and water when they are visibly dirty or visibly soiled with blood or other body fluids or after using the toilet.
- Health care professionals should use an alcohol-based handrub when their hands are not visibly soiled to reduce bacterial counts.
- Health care professionals should engage in hand hygiene if exposure to potential spore-forming pathogens is strongly suspected or proved (handwashing with soap and water is the preferred means).
- Health care professionals should engage in hand hygiene before handling an invasive device for patient care.
- Health care professionals should engage in hand hygiene after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings.
- Health care professionals should engage in hand hygiene if moving from a contaminated body site to another body site during the care of the same patient.
- Health care professionals should engage in hand hygiene after contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of a patient.

- Health care professionals should engage in hand hygiene after removing sterile or non-sterile gloves.
- Health care professionals should engage in hand hygiene before handling medications (hand hygiene in the previous case may include the use an alcohol-based handrub or handwashing with either a plain or antimicrobial soap and water).
- Health care professionals should engage in hand hygiene before preparing food (hand hygiene in the previous case may include the use an alcohol-based handrub or handwashing with either a plain or antimicrobial soap and water).
- When engaging in hand hygiene, health care professionals should remember the following note: soap and an alcohol-based handrub should not be used concomitantly.
- Health care professionals should follow the steps in the following procedure when washing their hands with soap and water to optimize hand hygiene results. The duration of the entire handwashing procedure should last between 40 - 60 seconds.

Hand Hygiene Procedure with Soap and Water

1. The health care professional should wet his or her hands with water.
2. The health care professional should apply enough soap to cover all hand surfaces.
3. The health care professional should rub his or her hands palm to palm.
4. The health care professional should rub the right palm over the left dorsum with interlaced fingers and vice versa.
5. The health care professional should rub his or her hands palm to palm with fingers interlaced.
6. The health care professional should rub the backs of fingers to opposing palms with fingers interlocked.
7. The health care professional should engage in rotational rubbing of the left thumb clasped in the right palm and vice versa.
8. The health care professional should engage in rotational rubbing, backwards and forwards with clasped fingers of the right hand in the left palm and vice versa.
9. The health care professional should then rinse his or her hands with water.

10. The health care professional should then dry his or her hands thoroughly with a single use towel.
 11. Finally, the health care professional should use a towel to turn off the faucet.
- Health care professionals should follow the steps in the following procedure when using an alcohol-based formulation to optimize hand hygiene results. The duration of the entire procedure should last between 20 - 30 seconds. When using an alcohol-based formulation health care professionals should note the following: alcohol-based handrubs with optimal antimicrobial efficacy usually contain 75% to 85% ethanol, isopropanol, or n-propanol, or a combination of the aforementioned products.

Hand Hygiene Procedure with an Alcohol-Based Formulation

1. The health care professional should first apply a palmful of alcohol-based product in a cupped hand, making sure to cover all surfaces.
 2. The health care professional should then rub his or her hands palm to palm.
 3. The health care professional should rub the right palm over the left dorsum with interlaced fingers and vice versa.
 4. The health care professional should rub his or her hands palm to palm with fingers interlaced.
 5. The health care professional should rub the backs of his or her fingers to opposing palms with fingers interlocked.
 6. The health care professional should engage in the rotational rubbing of the left thumb clasped in the right palm and vice versa.
 7. The health care professional should engage in rotational rubbing, backwards and forwards with clasped fingers of the right hand in the left palm and vice versa.
 8. Finally, health care professionals should note that their hands are safe once they are dry.
- Health care professionals should follow the steps in the following procedure when using an alcohol-based formulation to optimize surgical hand hygiene results.

Surgical Hand Preparation Procedure with an Alcohol-Based Handrub Formulation

Before beginning the procedure health care professionals should note the following:

- The hand rubbing procedure for surgical hand preparation should be performed on clean dry hands.
 - Health care professionals should handwash with soap and water on arrival to an operating theatre and after having donned theatre clothing (cap/hat/bonnet and mask).
 - If any residual talc or biological fluids are present when gloves are removed following the operation, handwash with soap and water.
1. Health care professionals should put approximately 5ml (3 doses) of alcohol-based handrub in the palm of their left hand, using the elbow of their other arm to operate the dispenser.
 2. Health care professionals should dip the fingertips of their right hand in the handrub to decontaminate under the nails (5 seconds).
 3. Health care professionals should spread the handrub on the right forearm up to the elbow, ensuring that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10 - 15 seconds).
 4. Health care professionals should put approximately 5ml (3 doses) of alcohol-based handrub in the palm of their right hand, using the elbow of their other arm to operate the dispenser.
 5. Health care professionals should dip the fingertips of their left hand in the handrub to decontaminate under the nails (5 seconds).
 6. Health care professionals should spread the handrub on the left forearm up to the elbow, ensuring that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10 - 15 seconds).
 7. Health care professionals should put approximately 5ml (3 doses) of alcohol-based handrub in the palm of their left hand and rub both hands at the same time up to the wrists, following all of the next steps (20 - 30 seconds).

8. Cover the whole surface of the hands up to the wrist with alcohol-based handrub, rubbing palm against palm with a rotating movement.
9. Rub the back of the left hand, including the wrist, moving the right palm back and forth, and vice-versa.
10. Rub palm against palm back and forth with fingers interlinked.
11. Rub the back of the fingers by holding them in the palm of the other hand with a sideways back and forth movement.
12. Rub the thumb of the left hand by rotating it in the clasped palm of the right hand and vice versa.
13. When the hands are dry, sterile surgical clothing and gloves can be donned.
14. Health care professionals should repeat the above procedure (average 60 seconds) the number of times that adds up to the total duration recommended by the alcohol-based handrub manufacturer's instructions. This could be two or even three times.

Personal Protective Equipment

Personal protective equipment (PPE) may refer to equipment designed to protect, shield and minimize exposure to hazards that may cause serious injury, illness and/or disease. Essentially, donning PPE can prevent the spread of infectious materials and agents to patients/health care professionals. PPE can include a variety of different types of equipment such as: gowns, masks, goggles, face shields, respirators and, of course, gloves. Specific information regarding individual pieces of PPE may be found below.

Gown

Background information - The gown may be one of the most recognizable pieces of PPE. The purpose of a gown is to protect an individual's torso and arms from potential contamination. Gowns are typically clean or sterile and often resistant to fluids.

Donning PPE - When putting on a gown, a health care professional should make sure the gown completely covers his or her torso from the neck to the knees. The gown should also completely cover a health care professional's arms and wrists. Additionally, a gown should be wrapped around the back and fastened at the back of the neck and waist.

Removing PPE - To effectively remove a gown, a health care professional should unfasten the gown's ties and pull the gown away from the neck and shoulders. When the gown is removed from the body, it should be rolled or folded and placed in the appropriate waste container. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Mask

Background information - The mask is another very recognizable piece of PPE. The purpose of a mask is to protect a health care professional's face from potentially infectious materials.

Donning PPE - When putting on a mask, a health care professional should make sure the mask completely covers his or her mouth and nose. A health care professional should also ensure a mask fits snugly to the face and below the chin. Often masks can be secured to the head and neck via separate ties.

Removing PPE - To effectively remove a mask, a health care professional should untie the bottom ties, if applicable, followed by the upper ties. The mask should then be pulled off and discarded in the appropriate waste container. A health care professional should not touch a contaminated mask. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Goggles

Background information - Goggles are typically worn with a mask. The purpose of goggles is to protect the eyes from potentially infectious materials.

Donning PPE - When putting on goggles, a health care professional should make sure the goggles fit snugly around the eyes. If a health care professional wears personal prescription lenses, the goggles should fit snugly around his or her personal prescription lenses. Furthermore, goggles should be properly adjusted on the face to maximize vision and protection.

Removing PPE - To effectively remove goggles from the face, a health care professional should take off the goggles from the back by lifting the goggle's band and pulling them forward. If the goggles are not reusable they should be placed in the appropriate waste container. A health care professional should not touch contaminated goggles. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Face Shields

Background information - A face shield can be worn in place of goggles. The purpose of a face shield is to protect the eyes, nose, and mouth from potentially infectious materials.

Donning PPE - When putting on a face shield, health care professionals should make sure the face shield covers the forehead, extends below the chin, and wraps around the side of the face.

Removing PPE - To effectively remove a face shield, a health care professional should take off the face shield from the back by lifting the face shield's band and pulling it forward. If the face shield is not reusable, it should be placed in the appropriate waste container. A health care professional should not touch a contaminated face shield. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Respirator

Background information - The purpose of a respirator is to protect a health care professional from hazardous and/or infectious aerosols. There are many types of respirators available to health care professionals including: particulate respirators, half-face elastomeric respirators, full-face elastomeric respirators, and powered air purifying respirators. The most common type of respirators used by health care professionals are particulate respirators. When selecting a specific type of respirator, health care professionals should consider the type of exposure risk associated with patient care. A "fit test" may be required to determine the appropriate size respirator needed for each individual health care professional. Health care professionals may also require training regarding how and when to use a respirator.

Donning PPE - When putting on a respirator, a health care professional should make sure the respirator completely covers his or her mouth and nose. Health care professionals should also ensure the respirator fits snug to the face and below the chin. Additionally, a health care professional should be sure the respirator is properly sealed.

Removing PPE - To effectively remove a respirator, a health care professional should untie the bottom ties, if applicable, followed by the upper ties. The respirator should then be pulled off and discarded in the appropriate waste container. A health care professional should not touch a contaminated respirator. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Gloves

Background information - Gloves are often the most common piece of PPE used by health care professionals. The two main reasons why health care professionals should wear gloves include the following - to reduce the risk of contamination of health care professionals' hands with blood and other body fluids and to reduce the risk of germ dissemination to the environment and/or transmission from the health care worker to the patient and vice versa, as well as from one patient to another. When wearing gloves, health care professionals should avoid touch contamination. Touch contamination may refer to touching one's self and/or other surfaces such as tables, light switches, and doors while wearing gloves. Touch contamination may lead to contamination and/or the passing of potentially infectious materials. Health care professionals should also remember to change their gloves as they administer care to different patients, i.e., a new patient means a new pair of gloves.

Donning PPE - When putting on a pair of gloves, a health care professional should make sure the gloves extend to cover the wrists of isolation gowns, if applicable. Gloves are often the last piece of PPE donned when putting on required PPE. When donning gloves, health care professionals should adhere to the following steps:

1. Health care professionals should note the following - when an indication for hand hygiene precedes contact that also requires glove usage, hand rubbing with an alcohol-based handrub or hand washing with soap and water should be performed before donning gloves.
2. Take out a glove from its original box.
3. Health care professionals should be sure to touch only a restricted surface of a glove corresponding to the wrist (at the top edge of the cuff).
4. Don the first glove.
5. Take the second glove with the bare hand and be sure to touch only a restricted surface of a glove corresponding to the wrist (at the top edge of the cuff).
6. Health care professionals should note the following - to avoid touching the skin of the forearm with the gloved hand, turn the external surface of the glove to be donned on the folded fingers of the gloved hand, thus permitting to glove the second hand (don the second glove).

7. Health care professionals should note the following - once both hands are gloved, hands should not touch anything else that is not defined by indications and conditions for gloved use.

Removing PPE - To effectively remove a pair of gloves, a health care professional should use one gloved hand to grasp the palm area of the other gloved hand. Once the health care professional has a firm grip on the palm of one gloved hand, the health care professional should then peel off the first glove. After removing the first glove, the health care professional should then hold that glove in one hand. Using his or her fingers, the health care professional should slide the fingers off his or her ungloved hand under the remaining glove at the wrist and peel off the second glove right over the first glove. Both gloves should then be placed in the appropriate waste container.

If health care professionals are wearing a gown with gloves, they may also remove their gloves when they are removing their gowns. To do so, health care professionals should peel off each glove as they roll or fold their gowns before disposal. Both the gloves and the gown should then be discarded in the appropriate waste container. When removing a pair of gloves with a gown, health care professionals should ensure they do not touch the gloves or the gown with their bare hands. Health care professionals should wash their hands or use an alcohol-based hand sanitizer after removing all PPE.

Respiratory Hygiene and Cough Etiquette

Respiratory hygiene may refer to prevention measures that may be used to prevent the transmission of infectious agents/respiratory diseases and/or illnesses. Cough etiquette may refer to prevention techniques that may be used to prevent the transmission of infectious respiratory droplets produced when infected individuals cough or sneeze. Relevant information regarding adequate respiratory hygiene and cough etiquette may be found below:

- Health care professionals should note/document any individuals presenting with symptoms of a respiratory infection.
- The following supplies should be readily available to both health care professionals and patients: facemasks, tissues, no-touch waste receptacles for disposing of used tissues, and dispensers of alcohol-based handrubs.
- Patients suspected of a respiratory infection should be instructed/encouraged to don a facemask (e.g., procedure or surgical mask) upon entry into a health care facility.

- Health care professionals should provide facemasks to all individuals (including individuals accompanying patients) who are coughing and/or have symptoms of a respiratory infection.
- Upon entry to a health care facility/at the time of patient registration, health care professionals should work to screen patients and accompanying persons for symptoms of respiratory infection.
- Patients identified with respiratory symptoms should be placed in a private room as soon as possible, when applicable.
- Health care professionals with a respiratory infection should avoid direct patient contact, when applicable.
- Health care professionals should regularly review information on local respiratory virus activity provided by the health department and CDC to determine if their health care facility will need to implement enhanced screening for respiratory symptoms.
- All individuals with signs and symptoms of a respiratory infection (including health care professionals) should be instructed to: cover the mouth and nose with a tissue when coughing or sneezing; dispose of the used tissue in the nearest waste receptacle; perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

Safe Injection Practices

Safe injection practices may refer to the proper use and handling of supplies for administering injections and infusions (e.g., syringes, needles, fingerstick devices, intravenous tubing, medication vials, and parenteral solutions). Safe injection practices are intended to prevent the transmission of infectious diseases between one patient and another, or between a patient and a health care professional during preparation and administration of parenteral medications. Relevant information regarding safe injection practices may be found below:

- Whenever possible, health care professionals should use commercially manufactured or pharmacy-prepared prefilled syringes (e.g., saline and heparin).
- Health care professionals should avoid unwrapping syringes prior to the time of use.
- Health care professionals should never administer medications from the same syringe to multiple patients.

- Health care professionals should not administer medications from single-dose or single-use vials, ampoules, or bags or bottles of intravenous solution to more than one patient.
- Cleanse the access diaphragms of medication vials with 70% alcohol and allow the alcohol to dry before inserting a device into the vial.
- Health care professionals should dispose of used syringes and needles at the point of use in a sharps container that is closable, puncture-resistant, and leak-proof.
- Health care professionals should use single-use, disposable fingerstick devices (e.g., lancets) to obtain samples for checking a patient's blood glucose, PT/INR, etc. and dispose of them after each use.
- Health care professionals should be sure to adhere to federal and state requirements for protection of health care professionals from exposure to bloodborne pathogens.

Safe Handling of Potentially Contaminated Equipment or Surfaces in the Patient Environment

The safe handling of potentially contaminated equipment or surfaces in the patient environment may help prevent the transmission of infectious agents found on surfaces and/or objects. Relevant information regarding the safe handling of potentially contaminated equipment or surfaces in the patient environment may be found below:

- Wear appropriate PPE, when applicable.
- Handle equipment and or objects soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other health care professionals, patients, and/or the environment.
- Prevent skin and mucous membrane exposures and contamination of clothing, when applicable.
- Use adequate procedures for the routine cleaning and disinfection of environmental and other frequently touched surfaces, when applicable.
- Clean the countertops and surfaces where medication preparation occurs at least daily and when visibly soiled.
- Ensure potentially contaminated items are not placed in or near a medication preparation area.

- Puncture-resistant, leak-proof sharps containers should be located in every patient-care area (e.g., exam room).
- All sharps should be disposed of in the designated sharps container; health care professionals should not bend, recap, or break used syringe needles before discarding them into the container.
- Handle and treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, in accordance with organizational and state/federal regulations.

Section 2: Summary

To help prevent the transmission of the COVID-19 virus, health care professionals should adhere to Standard Precautions. The key elements of Standard Precautions include: hand hygiene, the use of personal protective equipment (e.g., gloves, gowns, facemasks), respiratory hygiene and cough etiquette, safe injection practices, and the safe handling of potentially contaminated equipment or surfaces in the patient environment. A failure to adhere to any of the aforementioned key elements of Standard Precautions may lead to the transmission of the COVID-19 virus and other infectious agents to health care professionals and patients.

Section 2: Key Concepts

- To help prevent the transmission of the COVID-19 virus, health care professionals should adhere to Standard Precautions.
- The key elements of Standard Precautions include: hand hygiene, the use of personal protective equipment (e.g., gloves, gowns, facemasks), respiratory hygiene and cough etiquette, safe injection practices, and the safe handling of potentially contaminated equipment or surfaces in the patient environment.
- Health care professionals should be familiar with the adequate application of the key elements of Standard Precautions.

Section 2: Key Terms

Standard Precautions - the minimum infection prevention measures that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered

Hand hygiene - any action of hand cleansing

Plain soap - detergents that contain no added antimicrobial agents or may contain these solely as preservatives

Antimicrobial (medicated) soap - soap (detergent) containing an antiseptic agent at a concentration sufficient to inactivate microorganisms and/or temporarily suppress their growth; the detergent activity of such soaps may also dislodge transient microorganisms or other contaminants from the skin to facilitate their subsequent removal by water

Antiseptic agent - an antimicrobial substance that inactivates microorganisms or inhibits their growth on living tissues; examples include alcohols, chlorhexidine gluconate (CHG), chlorine derivatives, iodine, chloroxylenol (PCMX), quaternary ammonium compounds and triclosan

Alcohol-based handrub - an alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to inactivate microorganisms and/or temporarily suppress their growth; such preparations may contain one or more types of alcohol, other active ingredients with excipients and humectants

Personal protective equipment (PPE) - equipment designed to protect, shield and minimize exposure to hazards that may cause serious injury, illness and/or disease

Touch contamination - touching one's self and/or other surfaces such as tables, light switches, and doors while wearing gloves

Respiratory hygiene - prevention measures that may be used to prevent the transmission of infectious agents/respiratory diseases and/or illnesses

Cough etiquette - prevention techniques that may be used to prevent the transmission of infectious respiratory droplets produced when infected individuals cough or sneeze

Safe injection practices - the proper use and handling of supplies for administering injections and infusions (e.g., syringes, needles, fingerstick devices, intravenous tubing, medication vials, and parenteral solutions)

Section 2: Personal Reflection Question

How can health care professionals use the key elements of Standard Precautions to help prevent the transmission of the COVID-19 virus?

Section 3: COVID-19 Prevention/Transmission-Based Precautions

In addition to Standard Precautions, health care professionals should also adhere to Transmission-Based Precautions to help prevent the transmission of the COVID-19 virus. Transmission-Based Precautions may refer to prevention measures that apply to patients who may be infected or colonized with certain infectious agents for which additional precautions are needed to prevent infection transmission.¹ This section of the course will review the key elements of Transmission-Based Precautions, which include: contact precautions, droplet precautions, and airborne precautions.¹ The information found in this section was derived from materials provided by the CDC and the WHO.^{1,2}

Contact Precautions

Contact precautions may refer to prevention measures that apply to patients with known or suspected infections that represent an increased risk for contact transmission. Relevant information regarding the application of contact precautions may be found below:

- Health care professionals should work to identify patients who may require contact precautions; health care professionals should remain alert for any patient arriving to a health care facility with symptoms of an active infection (regarding COVID-19, health care professionals should be on alert for patients with the following symptoms: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea); patients with symptoms of an active infection should be placed in a private room until it is determined if contact precautions are indeed necessary; signs indicating patients are on contact precautions may be posted outside patient rooms.
- Health care professionals should perform adequate hand hygiene before touching a patient and prior to donning gloves.
- Wear appropriate PPE, when applicable; health care professionals should don PPE including gloves and gown; health care professionals should wear a gown and gloves for all interactions that may involve contact with a patient and/or a patient's environment; health care professionals should don PPE upon patient room entry and should properly discard PPE before exiting the patient room to contain pathogens.
- Limit transport and movement of patients outside of their room to medically-necessary purposes; When patient transport or movement is necessary, health care

professionals should cover or contain the infected or colonized areas of the patient's body; health care professionals should remove and dispose of contaminated PPE and perform hand hygiene prior to transporting patients on contact precautions; health care professionals should be sure to don clean PPE to handle a patient at the transport location.

- Perform hand hygiene after the removal of PPE; health care professionals should use soap and water when their hands are visibly soiled (e.g., blood, body fluids).
- Use disposable or dedicated patient-care equipment on patients on contact precautions; if common use of equipment for multiple patients is unavoidable, health care professionals should clean and disinfect such equipment before use on another patient.
- Prioritize the cleaning and the disinfection of patients' rooms on contact precautions; health care professionals should ensure rooms are frequently cleaned and disinfected (e.g., at least daily or prior to use by another patient if outpatient setting); when cleaning/disinfecting, health care professionals should focus on frequently-touched surfaces and equipment in the immediate vicinity of a patient.

Droplet Precautions

- Droplet precautions may refer to prevention measures that apply to patients known or suspected to be infected with pathogens transmitted by respiratory droplets that are generated by a patient who is coughing, sneezing, or talking. Relevant information regarding the application of droplet precautions may be found below.
- Health care professionals should work to identify patients who may require droplet precautions; signs indicating patients require droplet precautions may be posted outside patient rooms.
- Health care professionals should perform adequate hand hygiene before touching a patient and prior to donning gloves.
- Wear appropriate PPE, when applicable; health care professionals should don a mask upon entry into a patient room or patient space; if substantial spraying of respiratory fluids is anticipated, gloves and gown as well as goggles (or face shield in place of goggles) should be worn.
- Ensure appropriate patient placement; patients who require droplet precautions should be placed in a single room when possible.

- Instruct patients to wear facemasks when exiting their rooms, avoid coming into close contact with other patients, and practice respiratory hygiene and cough etiquette; health care professionals may consider placing a facemask on a patient.
- Limit the transport and movement of patients outside of their rooms to medically-necessary purposes; if patient transport or movement outside of patients' rooms is necessary, instruct patients to wear a mask and follow respiratory hygiene/cough etiquette.
- Perform hand hygiene after the removal of PPE.
- Perform hand hygiene before and after touching a patient and after contact with respiratory secretions and contaminated objects/materials; health care professional should use soap and water when hands are visibly soiled (e.g., blood, body fluids).
- Prioritize the cleaning and the disinfection of patients' rooms.

Airborne Precautions

- Airborne precautions may refer to prevention measures that apply to patients known or suspected to be infected with pathogens transmitted by the airborne route. Relevant information regarding the application of airborne precautions may be found below.
- Health care professionals should work to identify patients who require airborne precautions; if possible, health care professionals should instruct patients who require airborne precautions to enter a health care facility through an entrance that is separate from the main entrance; signs indicating patients require airborne precautions may be posted outside patient rooms.
- Health care professionals should perform adequate hand hygiene before touching a patient and prior to donning gloves.
- Wear appropriate PPE, when applicable; if substantial spraying of respiratory fluids is anticipated, gloves and gown as well as goggles or face shield should be worn.
- Health care professionals should provide facemasks to patients who require airborne precautions.
- Ensure appropriate patient placement in an airborne infection isolation room (AIIR); if a health care facility does not have an AIIR, health care professionals should instruct patients to wear a facemask and place them in a private room with the door closed until the patient is either transferred to a facility with an AIIR or returned home.

- Restrict susceptible health care professionals from entering the room of patients who require airborne precautions.
- Limit transport and movement of patients outside of the room to medically-necessary purposes; if transport or movement outside an AIIR is necessary, health care professionals should instruct patients to wear a surgical mask, if possible, and observe respiratory hygiene/cough etiquette.
- Perform hand hygiene before and after touching a patient and after contact with respiratory secretions and/or body fluids and contaminated objects/materials; health care professionals should use soap and water when hands are visibly soiled (e.g., blood, body fluids).
- Once a patient leaves, a room it should remain vacant for generally one hour before anyone enters, when applicable.
- Immunize susceptible individuals as soon as possible following unprotected contact with vaccine-preventable infections. Health care professionals should note that a vaccine for COVID-19 is not currently available.

Section 3: Summary

In addition to Standard Precautions, health care professionals should also adhere to Transmission-Based Precautions to help prevent the transmission of the COVID-19 virus. The key elements of Transmission-Based Precautions include: contact precautions, droplet precautions, and airborne precautions. A failure to adhere to any of the aforementioned key elements of Transmission-Based Precautions, in conjunction with the key elements of Standard Precautions, may lead to the transmission of the COVID-19 virus and other infectious agents to health care professionals and patients.

Section 3: Key Concepts

- To help prevent the transmission of the COVID-19 virus, health care professionals should adhere to Transmission-Based Precautions; Transmission-Based Precautions should be used in conjunction with Standard Precautions.
- The key elements of Transmission-Based Precautions include: contact precautions, droplet precautions, and airborne precautions.
- Health care professionals should be familiar with the adequate application of the key elements of Transmission-Based Precautions.

- Health care professionals should work to identify those patients who may require contact, droplet, and/or airborne precautions; signs indicating a patient in on or requires contact, droplet, and/or airborne precautions may be posted outside patients' rooms.

Section 3: Key Terms

Transmission-Based Precautions - prevention measures that apply to patients who may be infected or colonized with certain infectious agents for which additional precautions are needed to prevent infection transmission

Contact precautions - prevention measures that apply to patients with known or suspected infections that represent an increased risk for contact transmission

Droplet precautions - prevention measures that apply to patients known or suspected to be infected with pathogens transmitted by respiratory droplets that are generated by a patient who is coughing, sneezing, or talking

Airborne precautions - prevention measures that apply to patients known or suspected to be infected with pathogens transmitted by the airborne route

Section 3: Personal Reflection Question

How can health care professionals use the key elements of Transmission-Based Precautions to help prevent the transmission of the COVID-19 virus?

Case Study: COVID-19

A COVID-19-related case study is presented below to review the concepts found in this course. A case study review will follow the case study. The case study review includes the types of questions health care professionals should ask themselves when considering COVID-19, the COVID-19 virus, and how they relate to the administration of health care. Additionally, reflection questions will be posed, within the case study review, to encourage further internal debate and consideration regarding the presented case study and COVID-19. The information found within the case study and case study review was derived from materials provided by the CDC, the WHO, and the FDA.^{1,2,3}

Case Study

A 32-year-old male patient presents to a health care facility. The patient is brought to an examination room, and the examination room door is left open. Upon examination, the patient reports the following symptoms: fever, coughing, and shortness of breath. The patient also reports that he was recently traveling, and began experiencing the

aforementioned symptoms four days after he returned. A health care professional observes the patient coughing throughout the examination without attempting to cover his mouth. To confirm the presence of a potential fever, the same health care professional takes the patient's temperature. The health care professional does not engage in hand hygiene before touching the patient or taking his temperature. Additionally, the health care professional does not don PPE. However, the health care professional does observe the patient's temperature is elevated. The health care professional documents the patient's elevated temperature, and leaves the patient's examination room with the door open. The patient is eventually admitted into the health care facility.

Case Study Review

What patient details may be relevant to the possible presence of COVID-19?

The following patient details may be relevant to the possible presence of COVID-19: the patient presents to a health care facility, the patient is brought to an examination room, and the examination room door is left open, upon examination the patient reports the following symptoms: fever, coughing, and shortness of breath, the patient reports that he was recently traveling, the patient reports he began experiencing the aforementioned symptoms four days after he returned from traveling, a health care professional observes the patient coughing throughout the examination without attempting to cover his mouth, the health care profession does not engage in hand hygiene before touching the patient or taking his temperature, the health care professional does not don PPE, the health care professional documents the patient's elevated temperature, and the health care professional leaves the patient's examination room with the door open.

Are there any other patient details that may be relevant to the possible presence of COVID-19; if so, what are they?

How are each of the aforementioned patient details relevant to the possible presence of COVID-19?

Each of the previously highlighted patient details may be potentially relevant to the possible presence of COVID-19. The potential relevance of each patient detail may be found below:

The patient presents to a health care facility - the previous patient detail is relevant because it may represent a breach in Transmission-Based Precautions. During situations such as an COVID-19 outbreak, health care professionals should work to

identify patients who may require contact and/or other Transmission-Based Precautions; health care professionals should remain alert for any patient arriving to a health care facility with symptoms of an active infection (regarding COVID-19, health care professionals should be on alert for patients with the following symptoms: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea); patients with symptoms of an active infection should be placed in a private room until it is determined if contact or other Transmission-Based Precautions are necessary. Based on the information provided in the case study, it does not appear that health care professionals were on alert to identify patients exhibiting COVID-19 symptoms. Health care professionals should remain vigilant during a COVID-19 outbreak to help identify any patients that may be infected with the COVID-19 virus. Identifying patients exhibiting symptoms of COVID-19 may help prevent the transmission of the COVID-19 virus and contain outbreaks.

The patient is brought to an examination room, and the examination room door is left open - the previous patient detail is relevant because it may represent a breach in Transmission-Based Precautions. During situations such as an COVID-19 outbreak, health care professionals should ensure appropriate patient placement in, either, an AIIR or private room with the door closed, when applicable; if a health care facility does not have an AIIR, health care professionals should instruct patients to wear a facemask and place them in a private room with the door closed until the patient is either transferred to a facility with an AIIR or returned home.

Upon examination the patient reports the following symptoms: fever, coughing, and shortness of breath - the previous patient detail is relevant because the patient's symptoms are consistent with symptoms of COVID-19.

The patient reports he was recently traveling - the previous patient detail is relevant because it may provide context for patient diagnosis. The previous patient detail may also be relevant because it could help health care professionals understand where the patient was potentially exposed to the COVID-19 virus. If patients present with symptoms of COVID-19, health care professionals should attempt to ask those patients the types of questions found below:

- When do you believe you were exposed to the COVID-19 virus?
- When did you start to experience symptoms?
- When did your symptoms begin?
- How long have you been experiencing symptoms?
- Have you recently traveled?

- Have you recently traveled internationally?
- Where have you recently traveled to?
- When did you recently travel?
- Did you start experiencing symptoms before you traveled?
- Did you start experiencing symptoms after you returned from traveling?
- Have you been in close contact with other individuals?
- Have you been in public locations?
- Have you been in close proximity with other individuals?
- Have you been in close proximity with other individuals for a prolonged period of time?

The patient reports he began experiencing the aforementioned symptoms four days after he returned from traveling - the previous patient detail is relevant because it may provide context for patient diagnosis. Essentially, the previous patient detail may provide insight into a potential incubation period. Health care professionals should note the following: evidence suggests that the incubation period for COVID-19 is 1 - 14 days; the average incubation period for COVID-19 is approximately 5 days.

A health care professional observes the patient coughing throughout the examination without attempting to cover his mouth - the previous patient detail is relevant because it may represent a symptom of COVID-19 (e.g., coughing). The previous patient detail may also be relevant because it may represent a breach in Standard Precautions/Transmission-Based Precautions. When considering the application of Standard Precautions/Transmission-Based Precautions, health care professionals should note the following: patients suspected of a respiratory infection should be instructed/encouraged to don a facemask (e.g., procedure or surgical mask) upon entry into a health care facility; all individuals with signs and symptoms of a respiratory infection (including health care professionals) should be instructed to: cover the mouth and nose with a tissue when coughing or sneezing, dispose of the used tissue in the nearest waste receptacle, and to perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

The health care professional does not engage in hand hygiene before touching the patient or taking his temperature - the previous patient detail is relevant because it may represent a breach in Standard Precautions/Transmission-Based

Precautions. When considering the application of Standard Precautions/Transmission-Based Precautions, health care professionals should note the following: the major indications for hand hygiene include the following five key moments in health care administration: before patient contact, before an aseptic procedure or task, after a body fluid exposure risk occurs, after touching a patient, after contact with a patient's surroundings; health care professionals should wash their hands with soap and water when they are visibly dirty or visibly soiled with blood or other body fluids or after using the toilet; health care professionals should use an alcohol-based handrub when their hands are not visibly soiled to reduce bacterial counts.

The health care professional does not don PPE - the previous patient detail is relevant because it may represent a breach in Standard Precautions/Transmission-Based Precautions. When considering the application of Standard Precautions/Transmission-Based Precautions, health care professionals should note the following: health care professionals should don PPE, when applicable, including gloves and gown; health care professionals should wear a gown and gloves for all interactions that may involve contact with a patient and/or a patient's environment; health care professionals should don PPE upon patient room entry and should properly discard PPE before exiting the patient room to contain pathogens; health care professionals should don a mask upon entry into a patient room or patient space; if substantial spraying of respiratory fluids is anticipated, gloves and gown as well as goggles (or face shield in place of goggles) should be worn.

The health care professional documents the patient's elevated temperature - health care documentation regarding COVID-19 is essential to the safe and effective administration of health care to patients infected with the COVID-19 virus. Health care professionals should note that it is their professional responsibility to complete effective health care documentation. If completed effectively, health care documentation can be used in daily practice by health care professionals to communicate vital patient information to other health care professionals in order to facilitate positive health care outcomes and to decrease the potential for negative health care outcomes, such as adverse events and patient mortalities. Regarding COVID-19, effective health care documentation may be used as a method to review patient cases and to ensure all aspects of an individual patient's health care are noted and evaluated to maximize therapeutic outcomes. Health care professionals should note the following: in order for health care documentation to be considered effective, it must function as a viable form of communication, as well as a means to establish a detailed record of health care administration.

The health care professional leaves the patient's examination room with the door open - the previous patient detail is relevant because it may represent a breach

in Transmission-Based Precautions. During situations such as an COVID-19 outbreak, health care professionals should ensure appropriate patient placement in, either, an AIIR or private room with the door closed, when applicable; if a health care facility does not have an AIIR, health care professionals should instruct patients to wear a facemask and place them in a private room with the door closed until the patient is either transferred to a facility with an AIIR or returned home.

What other ways, if any, are the patient details relevant to the possible presence of COVID-19?

Is it possible the patient in the case study has COVID-19?

Based on the information found in the case study, it does appear possible that the patient may have COVID-19.

How can a health care professional potentially gather additional patient information to help confirm the possible presence of COVID-19?

How may a health care professional address any patient questions and concerns regarding COVID-19?

There are a variety of strategies that may be used, by a health care professional, to address patient questions and concerns regarding COVID-19, including the ones found below:

Remain professional - remaining professional is often essential to addressing patient's questions and concerns. Remaining professional can help set a tone for a patient discussion that can help foster effective communication and ensure the adequate transmission and receipt of vital information.

Remain calm and composed - a potential COVID-19 diagnosis may be difficult for some patients to handle - thus, they may react in a dramatic manner when presented with COVID-19-related information. With that in mind, it is important for health care professionals to remain calm and composed in situations where patients react dramatically to COVID-19-related information. Much like with remaining professional, remaining calm and composed can help foster effective communication and ensure the adequate transmission and receipt of vital information. Furthermore, remaining calm and composed may help deescalate any volatile situations that may arise.

Clearly answer questions - many questions may arise in a patient discussion regarding COVID-19. It is important health care professionals clearly answer questions that may develop in an COVID-19 discussion to help avoid confusion among patients.

Provide COVID-19-related educational information - patients may not be familiar with COVID-19. Thus, health care professionals should consider providing patients COVID-19-related educational information to help address any questions and concerns that may arise. Health care professionals should note the following when providing COVID-19-related educational information: it is important not to overwhelm a patient with COVID-19-related educational information. Going through the COVID-19 diagnostic process may be overwhelming in and of itself. Thus, health care professionals should not further overwhelm patients with copious amounts of information. Health care professionals should observe patients to ascertain their response to COVID-19 -related educational information and provide subsequent information accordingly.

Answer questions centered around COVID-19 myths - some patients may initially ask questions regarding COVID-19 myths. Therefore, it may be appropriate, in some cases, for health care professionals to address any myths surrounding COVID-19 in order to provide additional patient education regarding COVID-19 and the COVID-19 virus.

Outline COVID-19 treatment options - some patients may initially ask questions regarding COVID-19 treatment options. Therefore, it may be appropriate, in some cases, for health care professionals to outline COVID-19 treatment options. Health care professionals should note the following: COVID-19 treatment centers around supportive care.

Outline the use of Standard Precautions/Transmission-Based Precautions - due to the infectious nature of COVID-19, it is paramount that health care professionals adhere to Standard Precautions/Transmission-Based Precautions. Thus, it may be advantageous to provide patients with information regarding Standard Precautions/Transmission-Based Precautions to help address any questions and concerns that may arise, especially in cases where a patient is instructed to cover the mouth and nose with a tissue when coughing or sneezing, dispose of used tissues in the nearest waste receptacle, perform adequate hand hygiene after contact with respiratory secretions and contaminated objects/materials, wear a facemask, and/or enter an AIIR/private room with the door closed.

What other strategies may be used to address patients' questions and concerns regarding COVID-19?

Conclusion

COVID-19 is a respiratory illness that can spread from person to person. It is believed that the COVID-19 virus is primarily transmitted through respiratory droplets produced when an infected person coughs or sneezes. Evidence suggests that the incubation period for COVID-19 is 1 - 14 days. The potential symptoms of COVID-19 include the following: fever, cough, shortness of breath, tiredness, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea. Individuals potentially suffering from COVID-19 may present in the following states: potential exposure state, mild symptom state, and severe illness state. To prevent the transmission of the COVID-19, health care professionals should adhere to Standard Precautions as well as Transmission-Based Precautions. Finally, the COVID-19 virus possesses a significant threat to the health care system - therefore it is vital that health care professionals identify those individuals potentially suffering from COVID-19 and work to prevent the transmission of the COVID-19 virus at all times in order to prevent and/or contain any such outbreaks.

References

1. www.cdc.gov
2. www.who.int
3. www.fda.gov





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