COVID-19 PERSONAL PROTECTIVE EQUIPMENT (PPE) MINI CURRICULUM (AS OF JUNE 2020)

Created by Dr. Mark Rosenberg, Vice Dean for Education, Medical School, and Dr. Mojca Remskar, M Simulation Medical Director. In-person training to be coordinated with M Simulation. Online module, assessment, and documentation of completion is coordinated by specific schools/colleges/programs.

In the time of the COVID-19 pandemic it is essential for every healthcare provider to have in depth knowledge of infection spread in healthcare facilities, infection control basics, and know where to find guidelines and recommendations applicable to infection control and prevention in the healthcare environment. They also have to be skilled in hand hygiene and PPE use.

This Personal Protective Equipment (PPE) training is a hybrid curriculum with flipped classroom activities (videos, reading materials) and in-person direct observation of correct techniques for donning/ doffing and hand washing. It is appropriate for any health sciences learner.

The PPE used for training will be simulation environment-specific personal protective equipment (not intended for clinical use).

Learners should be aware that the PPE will vary from clinical site to clinical site but basic principles of its use remain the same.

Learning goals and objectives:

Goals:
1. Understand principles of infection control and prevention as related to COVID-19
2. Demonstrate competence in hand hygiene, and donning and doffing skills

Objectives:

A. Knowledge (online materials):
   - Describe infection control and prevention basics with a focus on COVID-19
   - List PPE and how it should be used for prevention of COVID-19
   - Recognize the importance and application of PPE conservation strategies
   - Describe epidemiology, clinical manifestation and infectious risks of COVID-19

B. Skills (in person simulation):
   - Demonstrate proper hand hygiene technique
   - Demonstrate proper use of PPE (gown, gloves, N95, surgical mask, face shield) including donning and doffing. This includes, as applicable, reusing items.
   - Demonstrate proper face shield and stethoscope cleaning procedure
**Course duration/ length:** 2 hours

1. **Prior to in-person simulation (on-line):**
   - Flipped classroom online curriculum - reading materials and videos that learners will be expected to review prior to in-person encounter.
   - Completion of online quiz (provided below) is required.

2. **Simulation event (in person, in simulation center):**
   - Introductions, explanation of the process, review of on-line materials - 15 minutes
   - Learners go to specific stations to practice hand washing, donning and doffing – 45 minutes
   - Wrap-up – 5 minutes

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**Teaching Strategy/ Course Content:**

**Preparation for In-person Simulation:**

**Learner preparation:**
- Learners will watch and read online materials prior to coming to the Simulation Center and complete the self-assessment quiz.
- In the Simulation Center, learners will abide by the Center’s *M Simulation Flexible Operations Plan*. They will be divided into small groups for proper social distancing. Every learner will wear a face mask (cloth) at all times and wash/disinfect hands as instructed by simulation personnel.

**Instructor preparation:**
- M Simulation instructors will have completed hand washing and donning and doffing course provided by the hospital prior to teaching the event.

**Rooms will be equipped with hand sanitizer available at each station (1 instructor per station/table):**
- Rooms with sink to practice hand washing.
- Regular rooms with tables on which PPE can be kept and ability to have learners socially distanced at least 6 feet apart.

**Equipment:**
- Hand Washing station: sink, water, soap, Glo Germ
- Donning and Doffing station: check-list, gowns, gloves, surgical mask, N95 mask, face shield, cleaning of stethoscope

**Simulation stations processes:**

A. In the hand washing station the learners will demonstrate good hand washing technique. Glo germ will be used to visually determine whether the washing technique learner performed was good.
   **Requirement for completion:** To successfully complete the station, no Glo Germ should be left on the hands.

B. In the donning and doffing station, the learners will demonstrate how to don and doff personal protective equipment. Each learner will perform donning and doffing at least three times.
Requirement for completion: To successfully complete the station, learner will perform donning and doffing in compliance with the checklist for correct sequence and number of steps.

On-line Educational Materials (estimated time 2 hours):

<table>
<thead>
<tr>
<th>On-line Educational Materials</th>
<th>Source</th>
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<tbody>
<tr>
<td>Hand hygiene (CDC)</td>
<td><a href="https://www.cdc.gov/handhygiene/training/interactiveEducation/">https://www.cdc.gov/handhygiene/training/interactiveEducation/</a></td>
</tr>
<tr>
<td>Web-based slide set - self assessment questions built in; basic but important</td>
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<tr>
<td>COVID-19 curriculum Module 1 + 6 (Harvard)</td>
<td><a href="https://curriculum.covidstudentresponse.org/">https://curriculum.covidstudentresponse.org/</a></td>
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<tr>
<td>Web-based reading – excellent and comprehensive content that is clearly written:</td>
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<tr>
<td>- Read Module 1, COVID-19 From Bench to Bedside</td>
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<tr>
<td>- Read Module 6, Training for Potential Clinical Roles</td>
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<tr>
<td>Video - 9 minutes; basics of PPE and donning and doffing in COVID-19 era</td>
<td></td>
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<tr>
<td>Web-based reading; most up to date information on COVID-19 prevention and control recommendations. Read the Infection Prevention and Control</td>
<td></td>
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<tr>
<td>Additional materials (optional)</td>
<td>CDC PPE Sequence Infographic: <a href="https://drive.google.com/file/d/1g3C2g4lWSlqUsclbrrW1wLkZ-5J9RjiT1/view">https://drive.google.com/file/d/1g3C2g4lWSlqUsclbrrW1wLkZ-5J9RjiT1/view</a></td>
</tr>
<tr>
<td>M Health video: PPE: universal masking, careful reuse, donning and doffing</td>
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<tr>
<td>Video: Using PPE</td>
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Method of assessment:

1. Assessment Quiz covering online topics – access to be given by instructor
2. PPE learning Assessment:
   - Assessment for learning quiz (online done before the session)
   - Hand washing station: Black light detection of Glo Germ at completion of washing (Kirkpatrick 2-3)
   - Donning and doffing station: Check-list (Kirkpatrick 2-3)

PPE Curriculum Assessment - Questions

Section 1 - PPE

1. Which of the following personal protective equipment should be used when caring for a suspected or positive Covid-19 patient?
   - A. N95 respirator
   - B. Gown
   - C. Face shield
   - D. Gloves
   - E. All of the above

2. Which of the following can be used to treat a N95 mask to allow for its reuse?
A. Autoclaving  
B. UV light  
C. Washing with hot water  
D. Alcohol disinfectant  
E. None of the above

3. What is the difference between an N95 respirator and a surgical facemask?  
   A. N95 respirator needs to be fit tested for each user to ensure a tight fit  
   B. A surgical mask filters at least 95% of small and large particles from the air protecting users from airborne viruses  
   C. N95 fits loosely to the face and protects users only from large airborne droplets  
   D. Fit testing is required for a surgical mask  
   E. A surgical mask should be discarded after each non-COVID-19 patient contact

4. Which of the following is TRUE about use of face shields and face protection?  
   A. The exterior of the face shield is always considered contaminated.  
   B. The interior surface is never considered contaminated if it is worn over a mask or respirator that has been reused.  
   C. Prescription glasses provide adequate eye protection eliminating the need for a face shield.  
   D. The face shield should be discarded after a single use.  
   E. The exterior of the face shield can be cleaned with bleach wipes, or Sani-Cloth, or similar cleaners.

5. Which of the following are actions you should take to be mindfully hygienic?  
   A. Leave jewelry at home  
   B. Keep all essential items in a designated bag (hospital badge, stethoscope, hand sanitizer)  
   C. Disinfect all the surfaces that you will come into contact with  
   D. Avoid shaking hands or anything that breaks social distancing rules  
   E. All of the above

6. When should you wash or sanitize your hands?  
   A. Before and after donning/removing any PPE  
   B. After blowing your nose, coughing or sneezing  
   C. Before and after eating  
   D. After examining a patient  
   E. All of the above

7. Which of the following strategies have been used by hospitals to reduce the risk of transmission of the SARS-CoV-2 virus, the virus that causes COVID-19?  
   A. Requiring all personnel entering the facility to wear a facemask  
   B. Limiting patient visitors  
   C. Providing adequate alcohol-based hand sanitizers for all personnel  
   D. Adherence to respiratory hygiene and cough etiquette  
   E. All of the above
Section 2 - Covid-19

8. Which of the following is true regarding COVID-19 transmission?
   A. The virus responsible for COVID-19 cannot survive on various surfaces
   B. Person-to-person transmission least commonly happens during close exposure to a person infected with the virus that causes COVID-19
   C. You can only contact COVID-19 from those with typical symptoms
   D. Source control by having a COVID-19 infected person wear a facemask may reduce the risk of transmission

9. Which of the following is TRUE regarding symptoms of COVID-19?
   A. Symptoms appear 3 weeks after exposure to the SARS-CoV-2 virus
   B. The most common symptoms of COVID-19 are fever, cough, and fatigue
   C. Anosmia (complete loss of smell) does not occur with COVID-19
   D. Vomiting is a common symptom of COVID-19
   E. Most patients with COVID-19 are afebrile

10. Which of the following is TRUE about the SARS-CoV-2 virus?
    A. SARS-CoV-2 virus is a single-stranded RNA virus
    B. The SARS-CoV-2 virus binds to the angiotensin-converting enzyme-2 (ACE-2) to facilitate entry into host cells
    C. Bats are the natural reservoir of the SARS-CoV-2 virus
    D. Coronaviruses have club-shaped trimeric surface spike glycoproteins that give the virions the appearance of a crown
    E. All of the above

11. Which of the following is TRUE regarding testing for the SARS-CoV-2 virus?
    A. False negative tests for SARS-CoV-2 PCR occur in less than 1% of cases
    B. The gold standard to detect active COVID-19 infection is immunoassay for antibodies against the SARS-CoV-2 virus
    C. The rise in IgG levels against SARS-CoV-2 after infection takes an average of 8 weeks
    D. IgG antibody against SARS-CoV-2 provide lifelong immunity against the virus
    E. The gold standard to detect COVID-19 infection is RT-PCR of respiratory specimens for the SARS-CoV-2 virus

12. Which of the following is true regarding laboratory/imaging abnormalities in patients with active COVID-19 infection?
    A. The most common lab abnormality is neutrophilia
    B. An elevated platelet count is common and contributes to clotting abnormalities
    C. Inflammatory markers are elevated
    D. Chest CT is normal in asymptomatic patients
    E. Inflammatory markers are not predictive of patient outcome
Resources (optional reading):

2. Berklan, J.M.: *Analysis: PPE costs increase over 1,000% during COVID-19 crisis*
3. CDC: *Public Health Guidance for Community-Related Exposure*
4. CDC: *Strategies to Optimize the Supply of PPE and Equipment*
6. Gawande, A. *Amid the Coronavirus Crisis, a Regimen for Re-entry*
11. MDH: *Situation Update for COVID-19*
15. Park, A., Wearing Face Masks and Social Distancing Actually Work to Contain COVID-19, According to a New Study
16. Park, A: *Nearly Half of Coronavirus Spread May Be Traced to People Without Any Symptoms*
19. Tufekci, Zeynep et al., *The Real Reason to Wear a Mask*
23. WHO Clarifies Asymptomatic Transmission statement – June 10th 2020