

CORONAVIRUS DISEASE 2019 (COVID-19): HEALTHCARE WORKERS IN ACUTE CARE SETTINGS: TRIAGE

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Question

What is the best available evidence regarding effective approaches to preventing workplace transmission of severe acute respiratory syndrome coronavirus 2 among healthcare workers during triage for COVID-19 in acute care settings?

Clinical Bottom Line

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that causes coronavirus disease 2019 (COVID-19). It predominantly spreads from person to person through contact and respiratory droplets.^{1,2,3,4,5,6,7,8} However, modes of transmission can include: close contact (within one meter of an infected person who has respiratory symptoms [eg coughing or sneezing]); droplet (> 5-10 µm in diameter that are expelled when an infected person coughs, sneezes, talks or sings); airborne (predominantly during medical procedures that generate aerosols); fomite (contaminated object or surface); fecal-oral; blood borne; mother-to-child; and animal-to-human transmission.¹ Infection with SARS-CoV-2 primarily causes respiratory illness ranging from mild disease to severe disease and death; however, some people infected with the virus never develop symptoms.^{1,2,3,4,5,6,7,8} Healthcare workers are at high risk of COVID-19 infection; they have more frequent exposure to COVID-19 cases and may therefore also contribute to the spread of SARS-CoV-2 in acute care settings.^{1,2,3,4,5,6,7,8}

- A quasi-experimental study investigated the extent to which a hospital environment may be contaminated during an outbreak of COVID-19, and identified the highest areas of contamination, and the most frequently contaminated objects.
 - Samples were collected during an outbreak; dacron swabs across functional zones, hospital equipment and medical supplies (eg finger clips of pulse oximetry, electrocardiogram monitors, oxygen cylinders, etc.) and healthcare worker's used personal protective equipment (PPE). These were compared to control samples from areas without COVID-19 patient activity (eg administrative and parking areas). Testing was undertaken using reverse transcription polymerase chain reaction (RT-PCR). Contamination ranged from 31.9% in intensive care units (ICU) specializing in novel coronavirus pneumonia (NCP) patient care, through to 5.5% in general wards.
 - Rates for obstetric isolation wards, other isolation wards for NCP patients, outpatient lobby, emergency department, preparation areas, obstetric ward, clinical laboratory, and CT examination room were 28.1%, 19.6%, 16.7%, 12.5%, 12.2%, 12.1% and 11.5% respectively. Positivity for SARS-CoV-2 was 13.9% for commonly used hospital objects and medical equipment, and of the samples collected from used PPE (hand sanitizer dispensers, gloves, and eye protector/face shield), 12.9% were positive for SARS-CoV-2; highest among hand sanitizer dispensers (20.3%) and 5.4% and 1.7% of gloves and eye protection or face shields tested positive, respectively.
 - Authors emphasized the need to ensure adequate environmental cleaning, strengthen infection

prevention and control (IPC) training, and improve IPC precautions among healthcare workers during a COVID-19 outbreak.¹ (Level 2)

- An observational study evaluated the benefits and feasibility of having a double triage and telemedicine protocol for suggested COVID-19 cases in an emergency department (ED), to minimize risk of exposure among healthcare workers.
 - The protocol involved (1) streaming patient flow using double triage, and (2) evaluating suspected COVID-19 patients using telemedicine (video interview). Triage 1 was set up outside the entrance of the ED to screen patients based on their likelihood of posing a risk of COVID-19 transmission (e.g. patients' history of travel, occupation, contact, and cluster); triage 2 was undertaken using the Taiwan Triage and Acuity Scale (TTAS), a computerized system classifying patients in descending order of acuity from Level I (resuscitation) and Level II (emergent) to Level V (non-urgent).
 - The triage area consisted of an isolated and well-ventilated space and healthcare workers were instructed to use appropriate PPE (N95 face mask, waterproof gown, non-disposable face shield, hair cap, shoe sleeves and two layers of gloves) while in the clinic.
 - Compared to the conventional group (usual ED care due to low risk – Level V TTAS – consisting of face-to-face interview) healthcare workers undertaking testing of high-risk patients after a video interview spent a significantly shorter time with the patient (12.2 minutes compared to 8.9 minutes, respectively), effectively providing a protective effect to the healthcare workers.
 - Authors concluded that implementing a double triage and telemedicine protocol in the ED during a COVID-19 pandemic has high potential to improve infection control among healthcare workers by decreasing the risk of contracting the coronavirus.² (Level 3)
- Two literature reviews identified risks to healthcare workers regarding the potential spread of COVID-19,^{3,4} one specifically focused on reviewing the epidemiology of aerosol versus droplet transmission of SARS-CoV-2 in healthcare workers.⁴ The following recommendations were made:^{3,4} (Level 5)
 - A systematic, comprehensive approach to diagnosis, triage and treatment should be taken, incorporating an emergency pre-check as the first step in healthcare settings.³
 - Consideration should be given to infected healthcare workers further transmitting COVID-19 if PPE is not worn correctly or adherence to hand hygiene is low.⁴
 - Social distancing of greater than or equal to 2 meters may not always be enough to prevent droplet infections in a setting with uncontrolled coughing, sneezing and turbulent air flow such as in hospitals.⁴
 - Healthcare workers should receive standardized IPC training and refresher training.³
 - Healthcare workers should practice donning and doffing of PPE.³
 - Healthcare workers should demonstrate competency (through testing and assessment) regarding donning and doffing of PPE.³
 - Healthcare workers should consistently adhere to standard precautions.³
 - Healthcare workers should wear correct PPE (e.g. medical/surgical masks or N95 respirators, depending on exposure risk, disposable isolation gowns, disposable examination gloves, goggles or face shield, and shoe covers).^{3,4}
 - First line screening should involve obtaining a temperature, asking about epidemiological history, and triaging according to predetermined symptoms.³
 - Those suspected of COVID-19 should be isolated and reported immediately.³
- Guidelines updated specifically to cover COVID-19 recommend the following safety measures during the triage of suspected or confirmed cases:^{5,6,7,8} (Level 5)

- Where possible, initial screening of individuals should be undertaken at screening stations outside of the facility.⁸
- Suspected COVID-19 cases should be identified as soon as possible, tested, and isolated in appropriate facilities. Separate areas of the hospital should be made available for assessment and management.^{5,6}
- Standard precautions should always be used, regardless of known COVID-19 status. These include: hand hygiene; cough etiquette; risk assessment to determine PPE (mask, gown, apron, gloves, and eye protection) requirements, if any; correct use of PPE and environmental cleaning.^{6,7,8}
- Points of entry to the facility should be limited. Visitors should be restricted from entering the facility.⁸
- Physical distancing, contact (a distance of at least 1.5 meters) and droplet precautions should be used by healthcare workers who are caring for suspected or confirmed COVID-19 patients. If possible, a physical barrier (e.g. glass or a plastic panel) can be used to avoid direct contact and keep a distance.^{5,6,7}
- A point-of-care risk assessment should be undertaken to assess likelihood of infection. Assessment should be based on latest information and definitions and should include: taking temperature (fever is either measured temperature greater than or equal to 100.0 degrees Fahrenheit [38 degrees Celsius] or subjective fever); documenting absence of symptoms consistent with COVID-19; and asking about self-quarantine due to exposure to SARS-CoV-2 infection).^{5,8}
- Healthcare workers in contact with a possible or confirmed COVID-19 case should wear a respirator tested for fitting, eye protection (i.e. visor or goggles), gloves and a long-sleeved gown. In case of respirator shortage, the use of medical masks and/or prolonged use of respirators, decontamination and reuse of respirators, may be considered in agreement with IPC and/or occupational safety and health (OSH) experts at facility level. If wearing a medical mask, it should be worn continuously by healthcare workers working in all clinical areas, during all routine activities, throughout the entire shift.^{5,6,7,8}
- Airborne precautions should be used by healthcare workers caring for suspected or confirmed COVID-19 patients when aerosol generating procedures are performed.^{6,7}
- Healthcare workers collecting diagnostic respiratory samples (e.g. nasopharyngeal swabs that may provoke coughing and/or sneezing and therefore lead to the production of aerosols) should wear a respirator, eye protection, gloves and gown. A medical mask can be used in place of a respirator in the event of shortage of respirators and for drive-through or outdoor testing facilities.⁵
- Healthcare workers should be made aware of the current COVID-19 epidemiological situation. Information should include: known risk factors of infection; clinical symptoms and signs; recommended IPC measures; procedures for reporting; and procedures for transferring patients.^{5,7}
- Triage may be provided by telephone or telemedicine (or other online services), if available.^{5,8}
- Healthcare workers should remove their respirator or facemask, perform hand hygiene, and put on their cloth face covering when leaving the facility at the end of their shift.⁸
- Healthcare workers should be adequately trained in how to select appropriate PPE and how to properly don, use, and doff PPE in a manner to prevent self-contamination.⁸

Characteristics Of The Evidence

This evidence summary is based on a structured search of the literature and selected evidence-based health care databases. The evidence in this summary comes from:

- A quasi-experimental study involving 626 hospital environmental surface swab samples.¹
- A retrospective observational study involving 198 patients.²

- Literature review and expert opinion.^{3,4}
- Clinical practice guidelines.^{5,6,7,8}

Best Practice Recommendations

- Evidence supports the provision of appropriate PPE and handwashing facilities at the triage station. This may include masks and gowns for healthcare workers, and a handwashing station for use by healthcare workers, patients and visitors. (Grade B)
- Suspected COVID-19 cases should be identified as soon as possible, tested, and isolated in appropriate facilities. (Grade B)
- Competency training and assessment for healthcare workers in assessment, donning, use and doffing of personal protective equipment (PPE) may be recommended. (Grade B)
- Provision of information relating to the current COVID-19 situation may include: known risk factors of infection; clinical symptoms and signs; recommended IPC measures; procedures for reporting; and procedures for transferring patients. (Grade B)
- Consideration may be given to improving standardized IPC precautions (e.g. hand hygiene, cough etiquette, risk assessment to determine PPE [mask, gown, apron, gloves, and eye protection] requirements, correct use of PPE, and environmental cleaning), among healthcare workers during a COVID-19 outbreak. (Grade B)
- Provision of standardized IPC training to all healthcare workers may be considered. (Grade B)
- The use of telephone, telemedicine, or other online services may be used in conjunction with face-to-face triage assessment. (Grade B)
- Consideration may be given to including the following in a point-of-care risk assessments: taking temperature, documenting symptoms (or absence of), and asking about self-quarantine. (Grade B)
- Local advice should be followed for social distancing rules that apply to healthcare workers, patients and visitors during triage. (Grade B)

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Archived Publications

1. JBI-ES-1303-1 (Published at 11 April 2021)
2. JBI-ES-1303-2 (Published at 12 October 2021)
3. JBI-ES-1303-3 (Published at 12 October 2021)

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For details on the method for development see Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach. Worldviews Evid Based Nurs. 2015;12(3):131-8.

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