


# Maintaining Perioperative Safety in Uncertain Times: COVID-19 Pandemic Response Strategies

1.2  [www.aornjournal.org/content/cme](http://www.aornjournal.org/content/cme)

Santina M. Mazzola, MSN, RN, CNOR, CPPS; Carolyn Grous, MSN, RN, CNOR

## CONTINUING EDUCATION CONTACT HOURS

 indicates that continuing education (CE) contact hours are available for this activity. Earn the CE contact hours by reading this article, reviewing the purpose/goal and objectives, and completing the online Learner Evaluation at <http://www.aornjournal.org/content/cme>. Each applicant who successfully completes this program can immediately print a certificate of completion.

**Event:** #20528

**Session:** #0001

**Fee:** Free for AORN members. For non-member pricing, please visit <http://www.aornjournal.org/content/cme>.

The contact hours for this article expire October 31, 2023. Non-member pricing is subject to change.

## PURPOSE/GOAL

To provide the learner with knowledge of practices to promote patient and staff member safety during the coronavirus disease 2019 (COVID-19) pandemic.

## OBJECTIVES

1. Discuss how the COVID-19 virus can be transmitted and activities that increase transmission risk.
2. Describe strategies to reduce the risk of transmission of the COVID-19 virus in the health care setting.
3. Identify communication and collaboration strategies that can be used to help maintain a safe work environment during a pandemic.

## ACCREDITATION

Association of periOperative Registered Nurses is accredited with distinction as a provider of nursing continuing

professional development by the American Nurses Credentialing Center's Commission on Accreditation.

## APPROVALS

This program meets criteria for CNOR and CRNFA recertification, as well as other CE requirements.

AORN is provider-approved by the California Board of Registered Nursing, Provider Number CEP 13019. Check with your state board of nursing for acceptance of this activity for relicensure.

## CONFLICT-OF-INTEREST DISCLOSURES

Santina M. Mazzola, MSN, RN, CNOR, CPPS, and Carolyn Grous, MSN, RN, CNOR, have no declared affiliations that could be perceived as posing potential conflicts of interest in the publication of this article.

The behavioral objectives for this program were created by Jocelyn Chalquist, BSN, RN, CNOR, clinical editor, with consultation from Susan Bakewell, MS, RN, NPD-BC, director, Perioperative Education. Ms Chalquist and Ms Bakewell have no declared affiliations that could be perceived as posing potential conflicts of interest in the publication of this article.

## SPONSORSHIP OR COMMERCIAL SUPPORT

No sponsorship or commercial support was received for this article.

## DISCLAIMER

AORN recognizes these activities as CE for RNs. This recognition does not imply that AORN or the American Nurses Credentialing Center approves or endorses products mentioned in the activity.



SAFETY FIRST

# Maintaining Perioperative Safety in Uncertain Times: COVID-19 Pandemic Response Strategies



1.2 [www.aornjournal.org/content/cme](http://www.aornjournal.org/content/cme)

Santina M. Mazzola, MSN, RN, CNOR, CPPS; Carolyn Grous, MSN, RN, CNOR

**T**he coronavirus disease 2019 (COVID-19) pandemic has presented health care leaders with the unprecedented challenge of maintaining patient and staff member safety amidst the rapid spread of a novel virus. In March and April 2020, many US state officials issued declarations that prohibited elective surgery in an effort to conserve beds and equipment in anticipation of a surge in patients with COVID-19, and officials continue to modify the declarations.<sup>1</sup> One researcher examined global elective surgery cancellation rates and estimated that approximately 28 million procedures were canceled or postponed worldwide as a result of the COVID-19 pandemic.<sup>2</sup> Despite decreased surgical volumes, many health care personnel still cared for patients (with and without COVID-19) who required emergent surgery.

Perioperative and organizational leaders at the Hospital of the University of Pennsylvania (HUP) were challenged to establish and implement a variety of strategies quickly to help ensure patient and staff member safety during the COVID-19 crisis.

## CAUSES OF SAFETY CONCERNS DURING THE COVID-19 PANDEMIC

In perioperative and other health care environments, the COVID-19 virus can be spread via common respiratory patterns (eg, expiration, coughing, sneezing) and through aerosols created during certain medical procedures—also known as aerosol-generating procedures (AGPs).<sup>3</sup> Activities that create and disperse respiratory

<http://doi.org/10.1002/aorn.13195>  
© AORN, Inc, 2020

aerosols—such as intubation, bronchoscopy, noninvasive ventilation, and surgical procedures involving the aerodigestive tract—are inherent to the OR. Available evidence suggests that patients with COVID-19 experience increased perioperative morbidity and mortality and are at a higher risk of developing acute respiratory distress syndrome, cardiac injury, and kidney failure postoperatively.<sup>4,5</sup> Initially, there was a lack of information on the risk of infection associated with COVID-19 and AGPs, which raised concern among health care workers.

When the number of patients with COVID-19 in the United States began increasing, quantities of personal protective equipment (PPE) began dwindling; further, the recommendations for PPE use during the pandemic evolved and changed frequently. As a result, health care leaders and workers experienced confusion about which recommendations they should follow. In early March 2020, experts from the World Health Organization called on health care supply industries and national governments to increase PPE manufacturing by 40% to meet the rising global demand.<sup>6</sup> However, much of the global PPE supply is manufactured in Asia, particularly in China, where the first outbreak originated.<sup>7</sup>

Increased global demand for PPE (eg, gloves, masks, gowns) resulted in a severe disruption of the supply chain, and health care leaders experienced difficulty acquiring the necessary supplies for their staff members.<sup>6</sup> An online survey of 978 facilities in the United States revealed a critical shortage of PPE in early April 2020.<sup>7</sup> At the time of the survey, personnel from all types of health care facilities reported that most PPE supplies at their facility would be depleted in one or two weeks. Although PPE availability increased as the number of infected patients decreased, the struggle for health care personnel to conserve PPE continues to be a challenge. At HUP, administrators requested that health care leaders and their teams develop protocols to prioritize patient and staff member safety while also conserving the PPE inventory.

## STRATEGIES FOR CONSIDERATION

To address the multifaceted safety concerns associated with the COVID-19 pandemic (eg, ease of spread, lack of a vaccine), HUP leaders reviewed recommendations from national regulatory bodies and recently published peer-reviewed literature. Based on this information, the leaders implemented several different strategies for containing

the virus and protecting the safety and well-being of their patients and staff members.

### PPE Stewardship: Masks and Decontamination Efforts

The HUP leaders consulted the most recent US Centers for Disease Control and Prevention (CDC) and World Health Organization COVID-19 recommendations before deciding to require all employees, patients, and visitors to wear face masks while inside the health care facility. Covering the mouth and nose minimizes the potential for individuals who are infected but may be asymptomatic or presymptomatic to expose others to the virus.<sup>8,9</sup> A systematic review and meta-analysis of 172 observational studies and 44 comparative studies indicated that face masks and respirators reduced the risk of transmission.<sup>10</sup> The HUP personnel distributed face masks at employee and visitor entrances so all individuals could don them before entering the building. Health care personnel caring for patients with COVID-19 or for patients who were undergoing an AGP followed additional PPE guidelines when providing direct patient care.

Physician and perioperative leaders and organizational administrators developed a specific set of guidelines for perioperative services' PPE stewardship that provide a risk stratification of AGP by department and division. The leaders assigned a risk level of high, intermediate, or low to all procedures based on the anticipated amount of aerosol generation. The document outlines guidance for

- the use of N95 respirators during high- and intermediate-risk procedures for patients who did not have a confirmed COVID-19 diagnosis and were not suspected to be infected,
- respiratory protection for health care workers involved in a procedure on a patient with suspected or confirmed COVID-19,
- the conservation of masks and eye protection,
- recommended distancing practices in the OR, and
- room cleaning practices after the procedure.

The leaders directed all perioperative personnel to wear a surgical mask during low-risk AGPs on patients who tested negative for COVID-19, a practice unchanged from the standard process used when preparing the sterile field.<sup>11</sup> The leaders directed all personnel who came into contact

with any patient longer than 10 minutes to wear eye protection (ie, either face shields or goggles) in addition to any prescriptive lenses. When caring for patients who tested negative for COVID-19, perioperative personnel used standard precautions and wore routine surgical attire (eg, scrubs, hair covering), surgical masks, gowns, and gloves when indicated.

The leaders instructed the staff members to wear N95 respirators during

- all procedures involving patients who tested positive for COVID-19 and
- intermediate- or high-risk AGPs involving patients who tested negative for COVID-19.

The leaders also recommended that staff members wear a full face shield when wearing an N95 respirator to protect their eyes and the respirator from contamination. A core group of perioperative staff members distributed PPE in a centralized location in the surgical department. The leaders instructed the staff members to label their respirator with their name and the date they received it.

In accordance with Centers for Disease Control and Prevention crisis standards,<sup>12</sup> materials service partners used ultraviolet germicidal irradiation (UVGI) to decontaminate N95 respirators that staff members wore during AGPs on patients who tested negative for COVID-19 as long as the respirators were not soiled or damaged. Available research findings show that UVGI is a promising disinfection method for N95 respirators because it has minimal effect on fit<sup>13</sup> or filtration<sup>14</sup> performance. In addition, researchers found that when studying respirators soiled with an influenza virus, UVGI reduced contamination.<sup>15</sup> Because disinfection efficacy when UVGI depends on dose and UVGI lamps from different manufacturers may provide differing intensities, degradation of the respirators can occur.<sup>12</sup> The HUP leaders decided respirators could be disinfected with UVGI five times before discarding. Staff members could collect their disinfected N95 respirator two hours after dropping them off in one of the ORs that served as the UVGI processing area. Any N95 respirator that became moist, visibly soiled, damaged, or worn during care of a patient with COVID-19 could not be decontaminated with UVGI.

In accordance with the US Food and Drug Administration's COVID-19 emergency use authorization related to decontaminating compatible N95 respirators,<sup>16</sup> the instrument

processing department staff members used hydrogen peroxide gas plasma sterilizers to decontaminate N95 respirators worn during the treatment of patients with suspected or confirmed COVID-19. The staff members inspected the N95 respirators for damage or soil before sterilization and returned the respirators to perioperative personnel in sterilization pouches. The HUP leaders decided respirators that were not soiled or damaged could be decontaminated with hydrogen peroxide gas plasma two times before discarding. These conservation practices helped maintain an adequate supply of N95 respirators.

## Mass Temperature Screenings

The CDC considers a fever as a measured temperature of 100° F (38° C) or higher.<sup>17</sup> Patients infected with COVID-19 may experience this symptom 2 to 14 days after viral exposure.<sup>18</sup> Although a fever may be intermittent or absent in patients infected with COVID-19, the CDC considers febrile health care workers potentially infectious and suggests they self-isolate and contact their physician for medical evaluation and testing.<sup>19</sup> Based on available recommendations,<sup>19,20</sup> the HUP leaders encouraged employees to self-monitor for symptoms of COVID-19 and to remain at home if they felt ill.

Although evidence supporting the efficacy of mass temperature-screening programs is limited,<sup>21,22</sup> HUP leaders initiated daily temperature screenings for all employees, patients, and visitors who entered the facility to help identify individuals who may exhibit symptoms of the virus. As a result of the decrease in elective surgeries because of the pandemic, more than 50 perioperative RNs were available to work at the employee and visitor entrance temperature-screening stations. Leaders scheduled nurses to staff the screening stations based on the time of day, day of the week, and anticipated number of individuals who would be entering the building. Employees had limited access to the hospital and were only allowed entry after successfully completing the temperature-screening process.

## Required COVID-19 Testing

Statistics indicate that many individuals infected with COVID-19 are asymptomatic, yet may still be capable of shedding and spreading the virus.<sup>23</sup> The HUP leaders thought it was important to implement universal preprocedure testing to establish isolation practices, guide the use of PPE, and consider it as a factor when determining if

patients were appropriate candidates for surgery. In April 2020, it became important for perioperative leaders to identify asymptomatic patients infected with COVID-19 to prevent inadvertent disease transmission when elective surgeries resumed. The leaders assessed the available guidance from national organizations,<sup>24,25</sup> and in mid-April, they implemented required preprocedure COVID-19 testing for patients 24 hours before surgery. The testing continues as of July 2020 and patients can visit one of several locations for the test; if a patient is unable to undergo testing the day before his or her scheduled procedure, facility staff members perform a rapid test when the patient arrives at the hospital. If the test results are positive, the patient's provider considers the nature and urgency of the procedure before determining whether to proceed.

## Procedure Prioritization and Modified Workflows

Another strategy to facilitate decision making and identify patients who will undergo medically necessary, time-sensitive procedures was the implementation of a scoring system that systematically integrated an individual patient's risks with risk factors unique to the COVID-19 pandemic (eg, limited resources, high transmission risk) to aid in the decision to proceed with or postpone procedures.<sup>26</sup> To justify proceeding with a procedure despite any capacity and resource constraints, the surgeons at HUP assign each patient scheduled for surgery a medically necessary, time-sensitive procedure score. This system is a useful conceptual framework for leaders to analyze and prioritize clinical needs in the context of the unique limitations imposed by the COVID-19 pandemic.

Perioperative leaders designated a specific OR for surgical patients who tested positive for COVID-19 or who were expected to have the disease. The leaders worked with the facilities department staff members to build a negative-pressure anteroom with a scrub sink located immediately adjacent to the OR entry. Perioperative staff members maintained an adequate stock of predetermined essential equipment and supplies. The charge nurse generated an e-mail and a text message alert to notify individuals across a variety of disciplines, including nursing, surgery, anesthesia, instrument processing, and pharmacy, when scheduling a procedure in the designated OR.

Perioperative leaders limited the individuals involved in the procedure to essential personnel only and assigned an

observer to assist with the donning and doffing of PPE, monitor hand hygiene compliance and use of clean gloves, and obtain additional supplies. The leaders also assigned an additional staff member to remain outside the OR and function as a runner to obtain any needed equipment or supplies outside the immediate area.<sup>27</sup> An infection control subject matter expert also was available outside the OR to assist with donning and doffing of PPE and to act as the team leader. Because clinicians may be more likely to infect themselves when removing PPE than when directly caring for a contagious patient, using a buddy system to monitor the donning and doffing of PPE ensures staff members use proper technique and helps them avoid self-contamination.<sup>28</sup>

The perioperative team members participated in a huddle before every procedure to discuss the surgical and anesthesia plans and review the proper PPE for the procedure. A pharmacy staff member prepared a medication box that contained disposable anesthesia supplies and the anticipated required medications. An anesthesia professional was available outside the room at all times to obtain additional medications needed throughout the procedure. At the end of the procedure, the OR remained empty for one hour after patient transport to allow for a full air exchange before staff members began postprocedure cleaning. In general, standard perioperative instrument handling and decontamination practices did not change.

## Mental Health Support

The stress of responding to the challenges of COVID-19, both on the front lines and behind the scenes, can negatively affect the mental health of health care personnel. In a mental health survey of health care workers in China, a large proportion of the 1,230 respondents reported that they experienced symptoms of depression (634 [50.4%]), anxiety (560 [44.6%]), insomnia (427 [34.0%]), and distress (899 [71.5%]).<sup>29</sup> These results also indicated that the most severe mental health symptoms occurred in women; nurses; workers on the front line; and workers in Wuhan, China.<sup>29</sup> Providing psychological support during such a crisis is an important part of maintaining employees' safety and well-being. The HUP leaders recognized the significance of providing mental health support during this difficult time; they created an online resource platform for clinicians, faculty members, and staff members to help them maintain their physical

and mental health, access basic needs (eg, food), care for their families, and connect with colleagues experiencing similar situations. Some resources can assist individual employees and their families with personalizing their coping and support strategies.

The HUP team members found that temperature screenings, objective prioritization of procedures, and modified workflows helped maintain safety for patients and personnel and still allowed the team to provide high-quality care. As new information became available, leaders used the most up-to-date, evidence-based information to create flexible and effective guidelines that addressed the patient care challenges that staff members were experiencing.

## TAKEAWAYS FOR PERIOPERATIVE NURSES

Adaptability, critical thinking, and resilience can help perioperative nurses thrive, especially during a pandemic. The perioperative setting is a dynamic and evolving work environment that requires nurses to process new information on a daily basis, and the pandemic intensified these requirements. It is important for perioperative nurses to be active participants in the decision-making process for developing or modifying workflows and identifying opportunities and barriers. Perioperative nurses' foundational knowledge of aseptic technique gives them a unique advantage to care for patients infected with COVID-19 because many of the complex donning and doffing protocols are already inherent to their practice. It also is critical for perioperative nurses to use their voices and speak up if they have a question or concern because reaching out for help, asking questions, and communicating are key elements for creating a safe environment for both patients and health care providers.

## TAKEAWAYS FOR LEADERS AND EDUCATORS

Although the effects of the pandemic have created competing priorities, the goal of maintaining patient and staff member safety remains at the forefront. Facility leaders should include perioperative nurses as leaders in implementing infection control measures when possible. It is critical for perioperative leaders to collaborate with interdisciplinary colleagues in their departments and throughout their organizations. Strategic partnerships between surgical services, infection control,

occupational medicine, and the administrative leadership team can help to bridge the gap between clinical care and environmental safety. Open and honest communication between leaders and frontline staff members is crucial to maintain a safe work environment using the most up-to-date information.

As the information about COVID-19 increases and evolves, leaders must continue to create and modify applicable policies and procedures. Staff members may find frequent e-mail updates helpful; however, in-person communication in the form of huddles or departmental rounding provides an opportunity for the frontline staff members to ask questions and offer feedback. Virtual town-hall style meetings afford the opportunity for leaders to answer questions or provide updates in a streamlined manner. Although some information may become redundant, to help maintain staff members' morale, it is important for leaders to continue to share that information and to be available to answer impromptu questions and address concerns. Leaders also should reiterate that the situation is fluid and emphasize the importance of being flexible.

At HUP, leaders implemented a variety of interventions throughout the organization to maintain patient and employee safety. These leaders believe that strategies such as diligent PPE use, temperature monitoring, and staff member education with town hall discussions helped to contribute to lower rates of infection transmission in their facility.

## REFERENCES

1. COVID-19: executive orders by state on dental, medical, and surgical procedures. American College of Surgeons. <https://www.facs.org/covid-19/legislative-regulatory/executive-orders>. Updated June 8, 2020. Accessed July 6, 2020.
2. COVIDSurg Collaborative. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans [published online ahead of print May 12, 2020]. *Br J Surg*. <https://doi.org/10.1002/bjs.11746>.
3. Judson SD, Munster VJ. Nosocomial transmission of emerging viruses via aerosol-generating medical procedures. *Viruses*. 2019;11(10):940. <https://doi.org/10.3390/v11100940>.

4. Aminian A, Safari S, Razeghian-Jahromi A, Ghorbani M, Delaney CP. COVID-19 outbreak and surgical practice: unexpected fatality in perioperative period. *Ann Surg.* 2020;272(1):e27-e29. <https://doi.org/10.1097/SLA.0000000000003925>.
5. Lei S, Jiang F, Su W, et al. Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection. *EClinicalMedicine.* 2020;21:100331. <https://doi.org/10.1016/j.eclinm.2020.100331>.
6. Chaib F. Shortage of personal protective equipment endangering health workers worldwide [news release]. Geneva, Switzerland: World Health Organization; March 3, 2020. <https://www.who.int/news-room/detail/03-03-2020-shortage-of-personal-protective-equipment-endangering-health-workers-worldwide>. Accessed August 27, 2020.
7. Schlanger Z. Begging for thermometers, body bags, and gowns: U.S. health care workers are dangerously ill-equipped to fight COVID-19. *Time.* <https://time.com/5823983/coronavirus-ppe-shortage/>. Published April 20, 2020. Accessed June 24, 2020.
8. Interim infection prevention and control recommendations for healthcare personnel during the coronavirus disease 2019 (COVID-19) pandemic. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html>. Updated June 19, 2020. Accessed June 24, 2020.
9. Advice on the use of masks in the context of COVID-19. Interim guidance. World Health Organization. [https://apps.who.int/iris/bitstream/handle/10665/332293/WHO-2019-nCov-IPC\\_Masks-2020.4-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/332293/WHO-2019-nCov-IPC_Masks-2020.4-eng.pdf). Published April 6, 2020. Updated June 5, 2020. Accessed June 24, 2020.
10. Chu DK, Akl EA, Duda S, Solo K, Yaacoub S, Schünemann HJ; COVID-19 Systematic Urgent Review Group Effort (SURGE) study authors. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *Lancet.* 2020;395(10242):1973-1987.
11. Guideline for sterile technique. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2020:917-958.
12. Coronavirus disease 2019 (COVID-19). Decontamination and reuse of filtering facepiece respirators. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/archived-decontamination-reuse-respirators.html>. Updated April 30, 2020. Accessed August 27, 2020.
13. Heimbuch BK, Harnish D. *Research to Mitigate a Shortage of Respiratory Protection Devices During Public Health Emergencies.* Panama City, FL: Applied Research Associates, Engineering and Science Division; 2019. [http://www.ara.com/sites/default/files/MitigateShortageofRespiratoryProtectionDevices\\_3.pdf](http://www.ara.com/sites/default/files/MitigateShortageofRespiratoryProtectionDevices_3.pdf). Accessed June 26, 2020.
14. Fisher EM, Shaffer RE. A method to determine the available UV-C dose for the decontamination of filtering facepiece respirators. *J Appl Microbiol.* 2011;110(1):287-295.
15. Mills D, Harnish DA, Lawrence C, Sandoval-Powers M, Heimbuch BK. Ultraviolet germicidal irradiation of influenza-contaminated N95 filtering facepiece respirators. *Am J Infect Control.* 2018;46(7):e49-e55. <https://doi.org/10.1016/j.ajic.2018.02.018>.
16. Hinton DM. Advanced Sterilization Products (ASP) STERRAD Sterilization System [letter]. US Food and Drug Administration. <https://www.fda.gov/media/136884/download>. Published June 9, 2020. Accessed August 3, 2020.
17. Definitions of symptoms for reportable illnesses. Centers for Disease Control and Prevention. <https://www.cdc.gov/quarantine/air/reporting-deaths-illness/definitions-symptoms-reportable-illnesses.html>. Reviewed June 30, 2017. Accessed July 6, 2020.
18. Symptoms of coronavirus. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/about/symptoms.html>. Updated May 13, 2020. Accessed July 6, 2020.
19. Interim U.S. guidance for risk assessment and work restrictions for healthcare personnel with potential exposure to COVID-19. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assessment-hcp.html>. Updated June 18, 2020. Accessed July 6, 2020.
20. *Contact Tracing: Public Health Management of Persons, Including Healthcare Workers, Having Had Contact with COVID-19 Cases in the European Union – Second Update.* Stockholm, Sweden: European

- Centre for Disease Prevention and Control; 2020. [https://www.ecdc.europa.eu/sites/default/files/documents/Contact-tracing-Public-health-management-persons-including-healthcare-workers-having-had-contact-with-COVID-19-cases-in-the-European-Union-second-update\\_0.pdf](https://www.ecdc.europa.eu/sites/default/files/documents/Contact-tracing-Public-health-management-persons-including-healthcare-workers-having-had-contact-with-COVID-19-cases-in-the-European-Union-second-update_0.pdf). Accessed June 26, 2020.
21. CADTH Rapid Response Service. *Non-Contact Thermometers for Detecting Fever: A Review of Clinical Effectiveness*. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health; 2014. <https://www.cadth.ca/sites/default/files/pdf/htis/nov-2014/RC0610%20Non-contact%20Thermometers%20Final.pdf>.
  22. Hogan DE, Shipman S, Smith K. Simple infrared thermometry in fever detection: consideration in mass fever screening. *Am J Disaster Med*. 2015;10(1):69-74.
  23. Day M. Covid-19: four fifths of cases are asymptomatic, China figures indicate. *BMJ*. 2020;369:m1375. <https://doi.org/10.1136/bmj.m1375>.
  24. American College of Surgeons, American Society of Anesthesiologists, AORN, American Hospital Association. *Joint Statement: Roadmap for Resuming Elective Surgery After COVID-19 Pandemic*. Chicago, IL: American College of Surgeons; 2020. [https://www.facs.org/-/media/files/covid19/joint\\_statement\\_resuming\\_elective\\_surgery\\_after\\_covid19.ashx](https://www.facs.org/-/media/files/covid19/joint_statement_resuming_elective_surgery_after_covid19.ashx). Accessed June 26, 2020.
  25. American Society of Anesthesiologists, Anesthesia Patient Safety Foundation. *ASA/APSF Statement on Perioperative Testing for the COVID-19 Virus*. Schaumburg, IL: American Society of Anesthesiologists; 2020. <https://www.asahq.org/-/media/files/spotlight/asa-and-apsf-statement-on-perioperative-testing-for-the-covid-19-virus-june-3.pdf>. Accessed July 6, 2020.
  26. Prachand VN, Milner R, Angelos P, et al. Medically necessary, time-sensitive procedures: scoring system to ethically and efficiently manage resource scarcity and provider risk during the COVID-19 pandemic. *J Am Coll Surg*. 2020;231(2):281-288.
  27. Ti LK, Ang LS, Foong TW, Ng BSW. What we do when a COVID-19 patient needs an operation: operating room preparation and guidance [letter to the editor]. *Can J Anaesth*. 2020;67(6):756-758.
  28. Moore D, Gamage B, Bryce E, et al. Protecting health care workers from SARS and other respiratory pathogens: organizational and individual factors that affect adherence to infection control guidelines. *Am J Infect Control*. 2005;33(2):88-96.
  29. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. <https://doi.org/10.1001/jamanetworkopen.2020.3976>.



**Santina M. Mazzola**, MSN, RN, CNOR, certified professional in patient safety (CPPS), is a nurse manager of perioperative nursing at the Hospital of the University of Pennsylvania, Philadelphia. Ms Mazzola has no declared affiliation that could be perceived as posing a potential conflict of interest in the publication of this article.



**Carolyn Grous**, MSN, RN, CNOR, is the director of perioperative services compliance at the Hospital of the University of Pennsylvania, Philadelphia. Ms Grous has no declared affiliation that could be perceived as posing a potential conflict of interest in the publication of this article.



## Continuing Education

# Maintaining Perioperative Safety in Uncertain Times: COVID-19 Pandemic Response Strategies

1.2  [www.aornjournal.org/content/cme](http://www.aornjournal.org/content/cme)

**T**his evaluation is used to determine the extent to which this continuing education program met your learning needs. The evaluation is printed here for your convenience. To receive continuing education credit, you must complete the online Learner Evaluation at <http://www.aornjournal.org/content/cme>. Rate the items as described below.

## PURPOSE/GOAL

To provide the learner with knowledge of practices to promote patient and staff member safety during the coronavirus disease 2019 (COVID-19) pandemic.

## OBJECTIVES

To what extent were the following objectives of this continuing education program achieved?

1. Discuss how the COVID-19 virus can be transmitted and activities that increase transmission risk.  
*Low 1. 2. 3. 4. 5. High*
2. Describe strategies to reduce the risk of transmission of the COVID-19 virus in the health care setting.  
*Low 1. 2. 3. 4. 5. High*
3. Identify communication and collaboration strategies that can be used to help maintain a safe work environment during a pandemic.  
*Low 1. 2. 3. 4. 5. High*

## CONTENT

4. To what extent did this article increase your knowledge of the subject matter?  
*Low 1. 2. 3. 4. 5. High*

5. To what extent were your individual objectives met?

*Low 1. 2. 3. 4. 5. High*

6. Will you be able to use the information from this article in your work setting?

1. Yes      2. No

7. Will you change your practice as a result of reading this article? (If yes, answer question #7A. If no, answer question #7B.)

- 7A. How will you change your practice? (*Select all that apply.*)

1. I will provide education to my team regarding why change is needed.
2. I will work with management to change/implement a policy and procedure.
3. I will plan an informational meeting with physicians to seek their input and acceptance of the need for change.
4. I will implement change and evaluate the effect of the change at regular intervals until the change is incorporated as best practice.
5. Other: \_\_\_\_\_

- 7B. If you will not change your practice as a result of reading this article, why not? (*Select all that apply.*)

1. The content of the article is not relevant to my practice.
2. I do not have enough time to teach others about the purpose of the needed change.
3. I do not have management support to make a change.
4. Other: \_\_\_\_\_