

VIEWPOINT

Surgery in a Time of Uncertainty

A Need for Universal Respiratory Precautions in the Operating Room

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Much has been learned about coronavirus disease 2019 (COVID-19) in the past 4 months, but still much remains unknown. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is well characterized but how widely it has spread throughout the population is not known, nor is it known why some individuals who are infected with the virus do not develop symptoms, whereas other individuals develop serious COVID-19 disease with a high mortality rate. COVID-19 has had a devastating effect on the world, bringing normal activities and the economy to a near halt.

Routinely scheduled surgery was abruptly stopped virtually everywhere in the US with the arrival of SARS-CoV-2. Important questions remain about how and when routine surgical procedures should be resumed and how that can be done safely. Protecting operating room (OR) staff from contracting SARS-CoV-2 is of paramount importance and many questions remain about how to best achieve that goal. This Viewpoint discusses expanding the use of standard

Adopting universal OR respiratory precautions should reduce the risk for OR staff to develop COVID-19 and might facilitate an earlier resumption of elective surgery.

precautions that assume any body fluid might be infectious and includes the use of gloves, masks, and gowns that are currently used to protect staff against blood-borne infections by implementing a policy of universal respiratory precautions in the OR environment to protect staff against possible COVID-19 infection.¹ Universal OR respiratory protection would include respirators used along with conventional face masks and eye protection worn by health care personnel during all patient interactions.

Patients Having Elective Surgery

Implementing a policy of universal respiratory precautions reinforces and highlights the need to identify individuals with acute COVID-19 infection, as well as those who may have been previously infected, who will undergo surgery and requires an adequate supply of personal protective equipment (PPE). Preoperative testing for SARS-CoV-2 infections should be performed. If patients have evidence of COVID-19 infection, surgery should be deferred if possible because the risk of poor patient outcomes and the risk of

spread to health care workers is substantial. Patients who are not tested or test negative for acute infection should be assumed to potentially be infected with SARS-CoV-2. Tests for acute infection are variable, with sensitivity as low as 60% when nasal or 31% when pharyngeal swabs are used.² In addition, some asymptomatic patients can shed SARS-CoV-2 and can potentially transmit the disease to others.³ Given the uncertainties of testing, the high prevalence of the disease in some regions, and that asymptomatic patients may be shedding virus, it should be assumed that the virus is present in every patient entering the OR. Until more is known, to reduce the risk of exposure for health care personnel, universal OR respiratory precautions would provide a better, more effective approach than current standard practices.

In addition to detecting potential acute disease, there is now emphasis on antibody testing to determine if individuals have had COVID-19 and recovered. Although these tests may detect an antibody response to a possible virus infection, it is not known yet if the measured antibodies can effectively prevent infection. Thus, even if patients or health care personnel have serology tests suggestive that they have recovered from COVID-19, there is no assurance that they cannot become reinfected with SARS-CoV-2. Until the value of serology tests is established, all health care personnel should follow recommendations for the use of appropriate PPE to avoid COVID-19 infection irrespective of serology results.

Rationale for Universal Respiratory Precautions

COVID-19 is primarily a respiratory disease. Transmission through droplets and aerosolization seem most prevalent; therefore, strategies should address these 2 modes of transmission. Respiratory droplets can be projected in turbulent clouds that may travel distances as far as 25 feet from a patient and the turbulent cloud may ensure a moist environment facilitating survival of the virus particles for unknown periods.⁴ Consistent with this observation is the finding of SARS-CoV-2 on PPE and air ducts of rooms housing patients with COVID-19 and possible transmission via an air-conditioning system.^{5,6} OR personnel should assume that the chance of SARS-CoV-2 acquisition is highest during close contact with the patient and during procedures that generate fine aerosols.⁷ However, because SARS-CoV-2 can be found in body fluids,² OR personnel should take care to avoid exposure to

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the virus from aerosolization that occurs during surgery from electrocautery and venting of insufflation gases. Adherence to universal OR respiratory precautions should effectively minimize the risk for OR personnel becoming exposed to SARS-CoV-2 from patients.

Implementing Universal OR Respiratory Precautions

The future course of COVID-19 is unknown. Currently, some regions have very little disease and adopting additional protective mechanisms against COVID-19 beyond what is currently used might not be necessary. However, COVID-19 spreads through a community for weeks before patients develop symptoms. Even if there is little disease now, there is no assurance this will be the case in the future. Conceivably, OR personnel could be unwittingly exposed to COVID-19 when asymptomatic patients are shedding virus before a community learns that COVID-19 is present.

The additional use of PPE, specifically N95 respirators, could limit implementation of universal OR respiratory precautions. These respirators should become more widely available as production and supplies increase, and a recent report indicates that N95 respirators can be reprocessed.^{8,9}

Conclusions

Scheduled surgery has stopped in much of the US because of COVID-19. Because some patients whose surgical procedures are delayed may develop urgent clinical problems or progressive disease, finding a way to resume surgery is a high priority. Potential exposure of OR personnel to SARS-CoV-2 is one reason surgery has been shut down. Adopting universal OR respiratory precautions should reduce the risk for OR staff to develop COVID-19 and might facilitate an earlier resumption of elective surgery.

OR staff performing invasive procedures are often asked to potentially risk exposure to numerous communicable diseases. To date, most of these have been blood-borne related and the staff members are protected by adopting the appropriate standard precautions against these pathogens. In this unprecedented time of the COVID-19 pandemic, understanding of disease characteristics and transmission dynamics of SARS-CoV-2 is just beginning. Facilities should consider adoption of a universal precaution protocol for respiratory infections in the OR because it offers a path to mitigate the risk of exposure to SARS-CoV-2 and protect the most important resource in health care: physicians, surgeons, nurses, and other health care personnel.

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