General Anesthesia Recommendations for Electroconvulsive Therapy During the Coronavirus Disease 2019 Pandemic

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Background: Coronavirus disease 2019 is an infectious viral disease first identified in December 2019 in Wuhan, China, and very rapidly spread globally resulting in a pandemic. Common symptoms include fever, cough, and shortness of breath. Although the majority of patients recover, there are still a significant number of patients who progress to respiratory failure, multiorgan failure, and death. The virus is mainly spread during close contact and by small droplets produced by coughing, sneezing, or talking. Because of the highly contagious element and easy spread in a communal living arrangement that exists within an inpatient psychiatric hospitals, the following guidelines were established to improve patient and staff safety while still maintaining efficiency and capability to provide this needed treatment to a subgroup of patients.

Objective: The objective of this study was to devise a safe and efficient methodology to deliver potential lifesaving electroconvulsive therapy to inpatients during the coronavirus disease 2019 pandemic.

Key Words: electroconvulsive therapy, , COVID-19, , infection prevention and control, , personal protective equipment

(J ECT 2020;00: 00–00)

During the coronavirus disease 2019 (COVID-19), pandemic elective surgical cases have been canceled in many institutions to conserve personal protective equipment (PPE) and prevent spread of the virus. It is essential for the medical community to have a full understanding and deep appreciation for the distinctive role of electroconvulsive therapy (ECT) and its colossal value of restoring function and maintaining quality of life. Electroconvulsive therapy is lifesaving for many patients with psychosis and/or major depression.^{1,2} During this pandemic, it will be necessary for the ECT practitioner, with guidance from professional associations and in collaboration with their available healthcare resources, to develop guidelines focusing on determining the necessity to perform ECT in the safest manner.² Early guidance from the Anesthesia Patient Safety Foundation and other sources regarding airway management in COVID-19–positive patients has recommended rapid sequence intubation and avoidance of mask ventilation to reduce the risk of droplet spread and aerosolization of virus.³ Given the penetrance of COVID-19

in the New York metropolitan area, the Weill Cornell Medicine NewYork-Presbyterian Hospital Anesthesiology and Psychiatry departments collaborated to develop guidelines to ensure that the patients who were in urgent need of ECT were provided that care while minimizing exposure to the staff and potential spread of disease to other ECT patients.

The psychiatry department established a review process to confirm that each patient had an urgent need for ECT. The department of anesthesiology decided against repeated intubation and extubation or insertion and removal of supraglottic devices for ECT treatment because these procedures could potentially result in a greater risk of aerosolization than low tidal volume mask ventilation. The dental and oral surgery infection control literature recommends reducing nasopharyngeal viral burden with povidone-iodine nasal swabs and either 1.0% to 1.5% peroxide or 0.2% povidone mouth rinse, because of the susceptibility of severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) to oxidizing agents.^{4,5} Chlorhexidine is not as effective.⁶ Based on this literature, a multifaceted program was developed, the highlights of which are illustrated in Figure 1.

Before ECT treatment, each patient is screened for symptoms of COVID-19. Povidone-iodine nasal swabs and hydrogen peroxide oral rinsing are performed and have been added to the preprocedure orders on the inpatient unit. A surgical mask is placed on each patient, and the patient performs hand hygiene before leaving the inpatient unit. In the preprocedural area, a maximum of 2 patients are allowed, each separated by 6 ft, and each accompanied by a mental health worker. The preprocedure checklist (Fig. 2) is reconfirmed before each treatment. In the procedure room, all personnel are required to wear PPE including an N-95 respirator mask, surgical mask with face shield, welders-type face shield, isolation gown, and double gloves. Personal protective equipment has been donned under observation by another provider, and an N-95 self-fit test is confirmed. Each patient is asked to insert the bite block into their mouth, and an anesthesia mask with a high-efficiency particulate air (HEPA) filter at the immediate mask outlet is applied and held in place with a head strap. The patient is then preoxygenated while an anesthesia provider inserts a peripheral intravenous (IV). Jackson-Rees circuit is used for oxygen delivery because of the ease of spontaneous ventilation compared with an Ambu bag. The lowest possible inflow of oxygen is selected, typically 2 to 4 L/min. After induction of anesthesia and application of electrical stimulus, positive pressure ventilation is administered at the anesthesiologist's discretion with one practitioner ensuring good seal of the facemask and the other provider delivering low tidal volume ventilation as needed to maintain adequate saturation. Upon return of spontaneous ventilation, the circuit, anesthesia mask, and bite block are removed and placed in a biohazard bag to be discarded. A surgical mask is then placed back on the patient. Doffing of protective gown and gloves and hand hygiene is performed with direct observation. The provider's N-95 mask and surgical mask with face shield remain in place for

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Received for publication April 12, 2020; accepted May 13, 2020.

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The authors have no conflicts of interest or financial disclosures to report.

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DOI: 10.1097/YCT.0000000000000705

FIGURE 1. Protocol for ECT during COVID-19 pandemic.

the day, whereas the welder type face shield is cleaned with sanitizing wipe after each patient. As the patient is transported to the post-anesthesia care unit (PACU) by the anesthesiologist and the psychiatrist, the procedure room is decontaminated by a dedicated team. All staff wear full PPE. Supplemental oxygen is administered via nasal cannula under the surgical facemask only if necessary to maintain O_2 saturation above 90%. Upon patient discharge to the floor, the room is decontaminated.

Several challenges have been encountered in implementing this ECT process. These challenges include the availability of PPE and the need to wear an N95 mask covered by a surgical mask for the duration of the treatment day. In addition, because securing HEPA filters for mask ventilation has been problematic, high-quality heat and moisture exchanger (HME)s have been used in place of HEPA filters when necessary. Facility changes necessary to adapt existing practice have included creating appropriate donning and doffing areas, and visual educational guides have been placed throughout the ECT suite for health care providers to reference. Whereas anesthesia for ECT had been performed by a single anesthesiologist in the past, the donning and doffing of PPE in addition to the necessity of ensuring complete mask fit if positive pressure ventilation is used require 2 anesthesia providers to be available at all times. To maximize adherence to our practice changes and establish familiarity with the unique aspects of each patient, the decision was to use same team of anesthesia providers for ECT during the pandemic. This practice, while ensuring continuity, has been stressful for the clinical team, which provides anesthetic care multiple times a week to a population of patients with a very high potential penetrance of COVID-19. In fact, a few of our patients have developed COVID-19 symptoms and tested positive during their treatment. To this date, our treatment team remains asymptomatic. Although all psychiatric inpatients are required to wear masks at all times and practice social distancing, the structure of

communal living on the inpatient unit remains a concern for spread. The current policy now provides for all patients to be tested on admission, and all ECT patients are tested weekly for surveillance.

These recommendations can easily be applied to the outpatient community setting for ECT. With the increasing availability of rapid COVID-19 testing, patients can be screened within 24 to 48 hours before their procedures. This extra layer of safety can help prevent the spread of virus within a facility. In addition, N-95 masks can be covered with a surgical mask, enabling the use of the N-95 mask for an entire day or even up to a week if it is also protected with the welder type face shield. Developing a team-oriented approach for practicing and observing donning and doffing PPE, maintaining social distance as much as possible between both staff and patients, and being deliberate about decontaminating areas with appropriate quaternary ammonium/isopropyl alcohol/hydrogen peroxide wipes are feasible in the outpatient setting and incorporate low-cost steps to ensure the safe performance of ECT during the COVID-19 pandemic. With respect to airway management of the patient during general anesthesia for ECT, we prefer the Jackson-Rees circuit over the bag-mask ventilation. The Jackson-Rees circuit in general is less expensive than the bag-mask ventilation, and in addition, it allows better control of the pressure that is transmitted to the patient's respiratory tract. The most challenging aspect of the airway management in the outpatient setting, with respect to our recommendations, is the provision of a second anesthesia clinician to ensure a tight mask fit to minimize and avoid droplet or aerosol transmission of the virus. To this end, it would be reasonable and acceptable for the anesthesiologist to train a second clinical provider in the ECT suite, such as an registered nurse (RN), physician assistant (PA), nurse practitioner (NP), and the psychiatrist, to assist with securing a tight mask fit.

Pre ECT Checklist

Patient Name/Date of Birth/ MR Number

DATE: _____ TIME: _____ UNIT: _____

VITAL SIGNS

B/P lying	
B/P standing	
Pulse lying	
Pulse standing	
Respiration lying	
Respiration standing	
Temperature	
O₂ Saturation	

SYMPTOM CHECK: Patient report or evidence of-

Symptom Check	Yes (Provide Details)	No
Cough		
Sore Throat		
Headache		
Shortness of Breath		
Myalgia		
Anosmia		
Other symptoms (describe)		

COMPLETE AND CHECK OFF THE FOLLOWING:Povidone Iodine Nasal Swab** to each nostril: ☐Hydrogen peroxide mouth rinse*: ☐Surgical mask put on patient: ☐Patient performed hand hygiene: ☐

FIGURE 2. Pre-ECT checklist.

IF ANY SYMPTOMS PRESENT AND/OR VITAL SIGNS NOT WITHIN NORMAL LIMITS PROVIDE
HAND-OFF TO THE ECT NURSE

Name of ECT Nurse to which hand-off provided: _____ RN

Name of RN providing hand-off: _____ RN

Above information to be documented in the patients EMR in the Psychiatric Nursing Progress Note and the Vital Signs Flowsheet

Hydrogen Peroxide mouth rinse instructions

1. Start with a 3% concentration of hydrogen peroxide. Next, combine one part hydrogen peroxide with two parts water. Your final mix will have a concentration of 1% hydrogen peroxide.
2. Tilt your head back and take a small mouthful of your hydrogen peroxide and water mix. Gargle and swish the mixture around in your mouth for 60 seconds. (You can use a timer or count silently in your head to 60 while gargling.)
3. Gently, spit the solution out after gargling. Do not gargle the mixture for more than 90 seconds. DO NOT SWALLOW

Clean nostrils (including tip) with tissues prior to application

Insert swab into one nostril and rotate for 30 seconds, or at least 3 times around slowly, covering all surfaces. Discard swab.

Repeat with 2nd swab in other nostril

Do NOT blow nose if solution drips.
Gently wipe with a tissue.

www.ucihealth.org/ accessed March 20, 2020

FIGURE 2. (Continued).

Future decisions regarding the need for and frequency of surveillance testing of inpatients as well as determining at what time COVID-19–positive patients may return to the ECT suite to continue their treatment will be reached via collaboration among the departments of anesthesiology, psychiatry, and infection prevention and control.

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