



ANESTHESIA GUIDELINES

For Post ECQ
Elective Surgeries



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Anesthesia Guidelines on Post ECQ Elective Surgery

INTRODUCTION

The COVID-19 pandemic has cost the lives of many Filipinos. It continues to spread throughout the country and it is apparent that there are significant differences in incidence and prevalence in each locality. This pandemic has changed the way we practice anesthesia and posed numerous anesthetic challenges. For the past few weeks, interim guidelines were issued because of our limited knowledge and experience on the virus.

The deferment of elective surgeries during the community quarantine and lockdown in different areas of the country will eventually cause the surge of procedures in the hospital once lifted. Patients demand for surgical and procedural care may be immense. While many are eager to resume regular hospital services, resuming elective procedures will depend on whether the hospital can attend to patients as quickly as possible, conduct necessary tests, without compromising patient safety or staff safety and well-being.

The anesthesia guidelines presented here is in response to the plans of resuming elective surgeries. It heightens precautionary measures and tailors anesthetic practices to patients who are suspect, probable or confirmed for COVID-19 infection.

TIME TO RESUME ELECTIVE SURGERY

The hospital will evaluate the following prior to resumption of elective procedures.

1. Resumption of elective procedures will be determined by the hospital and authorized by government health authorities.
2. It should be compliant with community quarantine and other policies of the national or local government authorities
3. This will be considered only if there is a continuous decline in the rate of new COVID 19 cases.
4. The hospital should be able to provide adequate number of PPE's, anesthetics, medications, anesthesia machines, monitors and ventilators.
5. There should be enough PACU, ICU, and non-ICU beds to accommodate post-op cases.

ANESTHESIOLOGIST SAFETY

The safety of anesthesiologists is of utmost importance due to close patient contact and the need for airway instrumentation. They are at increased risk of exposure and infection for all diagnostic, therapeutic, and surgical procedures from the COVID-19 cases.

Personal Protective Equipment

1. The hospital should be able to provide adequate PPE, including supplies required for potential second wave of COVID-19 cases.
2. Staff training and proper use of PPE should be instituted.
3. Conservation of PPE as well as extended use or re-use of PPE should be practiced.

Hand Hygiene

1. Hand hygiene before and after all patient contact, contact with potentially infectious material, and before putting on and after removing PPE, including gloves.
2. Use alcohol-based hand rub (60-95% alcohol) or washing hands with soap and water.
3. Hospital should ensure that hand hygiene supplies are readily available to all personnel in every care location.

SCHEDULING OF SURGICAL PROCEDURES

Prioritization and scheduling of surgical cases shall be determined by a committee which include the surgeons, anesthesiologists and the nursing staff.

1. There should be enough primary personnel commensurate with increased volume and hours (e.g., surgery, anesthesia, nursing, housekeeping, engineering, sterile processing, etc.).
2. Adjunct personnel should be available (e.g., pathology, radiology, laboratory).
3. Supplies for the planned procedure should be adequate (e.g., anesthesia drugs and equipment, procedure-related medications etc.)



4. Prioritizing procedures of short duration should be done.
5. Prolonged procedures are discouraged but if necessary, careful planning should be done, to include OR team substitution/changes.
6. COVID-19 suspect, probable or confirmed cases should be scheduled last.
7. Ensure adequate availability of PACU beds and intensive care beds and ventilators for the expected postoperative care.

PRE-ANESTHESIA EVALUATION CLINIC

The pre evaluation clinic serves as an area where patients are evaluated before surgery upon which risk assessment and perioperative management decisions can be made.

In addition to the existing guidelines of the pre-anesthesia evaluation clinic, a stringent screening is needed for suspect, probable or confirmed COVID-19 cases because of the high morbidity and mortality of asymptomatic patients who were operated during their incubation period.

1. It should implement social distancing policy for the staff, patients and companions.
2. Only the patient is allowed inside the clinic, unless a companion or guardian is needed.
3. Use of personal protective equipment like surgical mask or N95 and gloves. Other PPE when deemed necessary.
4. A recent history and physical examination within 30 days is necessary for all patients. This will verify that there has been no significant interim change in patient’s health status.
5. Some face-to-face components can be scheduled on day of procedure, particularly for healthier patients.
6. Use of telemedicine for the component of preoperative patient evaluation is encouraged especially for suspect, probable or confirmed COVID-19 cases.
7. Consider testing all patients with RT-PCR prior to their scheduled procedure.
8. Laboratory testing and radiologic procedures should be determined by patient indications and procedure needs. Chest x-ray may be helpful in screening especially in patients with discrepancy between clinical findings and indeterminate RT-PCR or negative in an asymptomatic patient with history of contact with COVID-19. A CT scan maybe requested depending on local resources.

Identify suspected COVID-19 patients

1. Suspected, probable and confirmed cases should be identified prior to anesthetic assessment.
2. A RT-PCR test is considered in all elective cases. If such testing is not available or time does not permit, evidence-based infection prevention techniques should be considered.
3. Defer the planned elective surgery for patients who are COVID-19 positive.
4. If patient is considered high risk, discuss with surgeons on urgency of operation, and delay if possible.
5. Involve infection control team early in suspected cases.

Identify high-risk procedures

1. Identify procedures in the operating room that are at high risk of aerosol-generation which necessitates airborne precaution.
2. Surgical procedures that may cause aerosol-generation include rigid bronchoscopy, tracheostomy and surgery involving high speed drilling.
3. Apart from intubation and extubation, anesthetic procedures that may cause aerosol-generation include NIV, manual ventilation and awake fiber-optic intubation.

Optimize patients confirmed with COVID-19

1. For patients who are confirmed to have COVID-19, the preoperative assessment should focus on optimizing the patient’s respiratory condition.
2. Assess airway meticulously and formulate airway plan.
3. Determine severity of respiratory compromise.
4. Take note of oxygen requirements, chest x-ray changes, arterial blood gas.
5. Look for organ failure, particularly signs of shock, liver failure, renal failure.

INTRAOPERATIVE MANAGEMENT

General Anesthesia

Modifications in the usual practice of anesthesia are important to minimize aerosol generation and optimize respiratory condition of patients with COVID-19.

Preparation Phase

1. Negative pressure room should be provided for COVID-19 positive patients if available.
2. Minimize the number of staff in the operating room.
3. Keep the door of the operating room closed all the time.
4. Ensure all staffs in the operating room are wearing appropriate PPE according to departmental protocol.
5. Reiterate infectious risk of the patient and the level of precautions required to all members in the operating room.
6. Communicate clearly with other OR personnel on airway plan as talking and hearing through N95 respirators and face shields could be difficult.
7. Bring only the needed medications inside the operating room. It should be pre-aspirated and properly labelled.
8. Prepare video-laryngoscopes with disposable blades to optimize best first attempt.
9. Insert Heat and Moisture Exchange Filter (HMEF) with 0.1–0.2 μm pore size, between the endotracheal tube and the expiratory limb of the breathing circuit.
10. Consider disposable plastic covers for surfaces of monitors, anesthesia machine and airway equipment, as well as use of aerosol box or tent to reduce droplet and contact contamination.

Oxygenation

1. Avoid high-flow pre-oxygenation. Use minimal gas flow possible i.e. less than 6L per min. and ensure good seal with facemask.
2. For escalating pre-oxygenation, a NIPPV with a tight-fitted mask is recommended.
3. Avoid nasal cannula for apneic oxygenation.

Intubation Phase

1. Only the anesthesiologist and an assistant are allowed inside the operating room during intubation.
2. Intubation by experienced practitioner to reduce attempts and time.
3. Use video laryngoscope for indirect tracheal tube placement.
4. Give fentanyl slowly, in small amount if required to reduce coughing.
5. Perform rapid sequence induction to reduce the need for mask-ventilation.

6. Use RSI with the highest recommended dose of an NMBA.
7. Maintain airway patency and ensure onset of paralysis before performing intubation to avoid coughing.
8. Use two-hand grip to optimize seal if mask-ventilation becomes necessary.
9. Ask for assistance with bagging, while utilizing the lowest flow.
10. Give small tidal volumes. Start positive pressure ventilation only after the cuff of the endotracheal tube is inflated.
11. Oral or tracheal suction should be performed with a closed suction system if necessary.
12. Remove outer gloves after intubation if using the double glove technique to reduce operating room contamination
13. Use pre-cut tape to secure endotracheal tube.
14. Confirm tube position by observing bilateral chest rise and capnography, as auscultation may be difficult due to personal protective equipment.
15. Place all used airway equipment into a double zip-locked plastic bag.
16. After induction of anesthesia, wipe down all equipment and surfaces with disinfection wipes that have anti-viral activity.
17. Remove hand gloves.

Rescue Technique

1. SGA placement for unsuccessful intubation only. Immediately attached to closed ventilator circuit for rescue oxygenation to avoid manual bagging.
2. Use HEPA filters whenever PPV is performed.

Maintenance Phase

1. Minimize tube and circuit disconnection.
2. Place the ventilator on standby whenever a circuit disconnection is required, such as tube repositioning.
3. Restart mechanical ventilation only after the circuit has been reconnected/ closed.
4. Employ lung protective mechanical ventilation strategies by maintaining tidal volumes of 5-6mL/kg.



5. Increase respiratory rate to maintain minute ventilation and keep peak airway pressure below 30mmHg.

Pre-Extubation Phase

Assessment prior to extubation is critical, as commonly used rescue strategies are complicated by an increased risk of exposure to healthcare workers.

Strategies for supporting respiration after extubation, such as noninvasive ventilation and high-flow nasal oxygen, are relatively contraindicated because of their ability to aerosolize SARS-CoV.

1. All non-essential staff should exit the room before extubation. Only the anesthesiologist and an assistant stay in the room.
2. Limit the need for subsequent staff interactions with:
 - a) Prophylactic anti-emetics.
 - b) Adequate analgesia and consider the use of regional anesthesia.
 - c) Perform oropharyngeal suction with vigilance, as this may generate aerosols.
 - d) Antitussive drugs, such as remifentanyl, lidocaine, and dexmedetomidine, reduce the risk of coughing and minimize agitation on extubation.

Extubation Phase

1. Ensure a smooth emergence and minimize coughing.
2. Consider the use of aerosol box or tent to reduce droplet and contact contamination.
3. There should be no positive airway pressure during extubation. The ventilator should be off with no gas flow.
4. Consider attempting to extubate at end-expiration.
5. The mask over the tube extubation technique is recommended. The mask should have a Heat and Moisture Exchange Filter (HMEF) with 0.1–0.2 μm pore size to avoid direct exposure to droplets or aerosols produced by extubation or associated coughing.
6. Unless used to rescue an airway, supraglottic airway device should be avoided because of the risk of exposure to infective secretions, and manipulation of a supraglottic airway may trigger coughing or laryngospasm.

Post-extubation

1. Place a surgical mask on the patient once the anesthetic face mask is no longer required.
2. Supplemental oxygen can be delivered under a surgical mask via a nasal cannula.
3. Doffing should only occur once the patient has been handed over to another staff member.
4. Airborne precautions of the rooms for a variable period after an aerosol-generating procedure, depending on air changes per hour (ACH).

Regional Anesthesia and Peripheral Nerve Blocks

The use of regional anesthesia is not contraindicated and should be considered whenever surgery is planned for a suspect or confirmed COVID-19 patient or any patient who poses an infection risk.

Regional anesthesia reduces exposure to patients' respiratory secretions and the risk of perioperative viral transmission to healthcare workers and other patients.

Preparation Phase

1. The patient should be reviewed, blocked, and recovered inside the OR where the surgery will be performed to limit contamination to a single location.
2. The number of personnel within the OR should be kept to a minimum.
3. Only necessary equipment and drugs required should be brought into the OR to prevent contamination and wasting resources.
4. To prevent contamination of the ultrasound machine but still be able to obtain satisfactory images, the ultrasound machine's screen and controls should be protected with a single-use plastic cover.
5. Use of N95 respirator or PAPR (powered air-purifying respirator) is at the discretion of the anesthesiologist as regional anesthesia is not an aerosol-generating procedure. The physical encumbrance of the PAPR affects the performance of the anesthesiologist.



Procedural Phase

1. Sedation should be used with caution in COVID-19 patients as they may have co-existing respiratory compromise from COVID-19 pneumonia.
2. Supplemental oxygen can be delivered under a surgical mask via a nasal cannula using a low flow.
3. Oxygenation and ventilation should be closely monitored if the patient is sedated.
4. Carbon dioxide (CO₂) monitoring should be done with a CO₂ sampling line and a HEPA filter to prevent contamination of the monitor.
5. Thorough testing for block success should be done before proceeding with surgery to minimize the need for conversion to GA.
6. Rapid sequence intubation should be followed if intraoperative conversion to GA is required.
7. Use a pencil-point spinal needle for spinal anesthesia. It may reduce the risk of introducing viral material into the CNS, as there is less tissue coring compared with cutting tip spinal needles.
8. Caution should be exercised when attempting to reduce the duration of the spinal anesthetic by using short-acting spinal anesthetics or reducing the dose of the spinal anesthetic agent as conversion to GA is least desirable.
9. Rule out thrombocytopenia as there is preliminary evidence to suggest that it might occur in patients with severe COVID-19 disease.
10. The routine asepsis technique should be followed. If available, sterile paper drapes should be used instead of plastic ones because virus particles are viable longer on plastic than paper drapes.
11. Do not allow the CSF to drip freely after lumbar puncture as the virus has been isolated from cerebrospinal fluid (CSF) in patients who suffered from COVID-19 encephalitis.

12. No dose adjustment of spinal anesthesia or adjuvant opioids. A change to the epidural infusion regimen may be needed to reduce the need for additional top-up doses that require frequent patient contact.
13. Be prepared with the strategies to deal with hypotension following neuraxial procedures.
14. A negative pressure room should be provided to COVID-19 positive patients if available.
15. Disposal of consumables used after the procedure should be carefully done to avoid any risk of transmission.

POSTOPERATIVE MANAGEMENT

1. Avoid transferring confirmed cases to the post-anesthetic care unit. Patients will be monitored inside the operating room or in a designated isolation room.
2. A negative pressure room should be provided to COVID-19 positive patients if available.
3. Consider applying a surgical mask to all other awake and stable patients in the post anesthesia care unit. The distance between patient beds should be at least 6 feet.
4. Avoid giving high flow oxygen, NIPPV, or nebulized medications.
5. No watchers inside the post-anesthesia care unit except for pediatric cases.
6. Clean and disinfect high-touch surfaces on the anesthesia machine and anesthesia work area with an approved hospital disinfectant.
7. Allow time for aerosols in the operating room or isolation room to be washed out, the time required depends on the air changes per hour (ACH) of the specific location.

OB ANESTHESIA SPECIAL CONSIDERATIONS

The following are general recommendations for the management of suspect, probable, or confirmed cases of COVID-19 patients.



Pre- operative Evaluation

1. All elective procedures should be evaluated in the pre-operative clinic.
2. Follow all the guidelines of the pre-anesthesia evaluation clinic.
3. Patients should be phoned the night before to screen for symptoms consistent with COVID-19 infection.
4. Because of the high prevalence of COVID-19 infection in the population, PCR testing is recommended for all pregnant patients admitted for labor and vaginal delivery.
5. For purposes of clinical management and PPE use, women may, therefore, be categorized as follows (1) COVID-19 negative, (2) suspect/ probable, and (3) positive for COVID-19 testing. This information should be made available to all health care providers and updated at all times, as it may change during the course of labor.
6. A multidisciplinary team of anesthesiologists, obstetricians, labor and delivery nurses, neonatologists, critical care experts, infectious disease and infection control experts, employee health services, environmental health services, and telemedicine services should create and implement protocols to support the management of patients with COVID-19 infection in the setting of a Labor and Delivery Unit.

Management

1. Resource allocation within the Labor and Delivery Unit, as well as other units (including Intensive Care Unit), should be proactively addressed.
2. It is imperative to establish a back-up team to care for patients without COVID-19 infection due to the time-intensive tasks of donning/doffing PPE, transporting the patient, providing anesthetic care, and performing surgery in patients with active COVID-19 infection.

3. A designated operating room within the Labor and Delivery Unit should be prepared at all times and sanitized after each use.
4. Admit patients in isolation rooms, preferably a negative pressure room, and limit the number of care providers to the strict minimum.
5. Patients and support people should wear a face mask at all times.
6. All healthcare providers should implement droplet and contact precautions with eye protection upon entering the delivery room (gown, gloves, surgical mask, face shield).
7. Donning and doffing take time. Avoid emergency situations by anticipating needs.
 - a) Early epidural analgesia may reduce the need for general anesthesia for emergent cesarean delivery.
 - b) A COVID-19 diagnosis itself is not considered a contraindication for neuraxial anesthesia.
 - c) Encourage proactive communication with obstetricians and nurses. For respiratory distress, intubate early using appropriate PPE.
 - d) Avoiding urgent cesarean delivery is essential to reduce the risk for general anesthesia and provider exposure during uncontrolled transfers to the operating room. Therefore, ongoing assessment of both maternal and fetal status is a key to balance risks of prolonged labor versus cesarean delivery
 - e) Assign the most experienced anesthesia provider whenever possible for procedures such as neuraxial blocks and intubation.
 - f) Minimize the number of personnel in the delivery or operating room.



8. Before entering the operating room, regardless of the type of anesthesia:
 - a) The Anesthesiologist and assistant should implement droplet and contact precautions with eye protection. The risk of an aerosol-generating medical procedure should be evaluated for consideration of airborne PPE precautions.
 - b) Use donning and doffing checklists and trained observers.
 - c) Double glove for all procedures and replace the outer layer of gloves after intubation.
9. If GA is indicated, follow the modified guidelines to minimize aerosol generation and optimize the respiratory condition of patients with COVID-19. If deemed necessary and not avoidable, provision of general anesthesia should follow general recommendations for intubation and extubation in the setting of COVID-19 infected patients
10. Antiemetics should be administered to prevent vomiting in patients undergoing cesarean delivery. Some studies suggest avoiding the use of dexamethasone for PONV prophylaxis due to potential risks in COVID infection.
11. Post-operatively, there is inconclusive evidence to suggest that the use of NSAIDs is harmful in COVID positive patients so NSAIDs may be used if necessary.

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Disclaimer: This guideline is based on our current concept of COVID-19 and we expect future revisions as we continue to understand the disease. Clinical judgment should therefore be exercised. Anesthesiologists should continue to follow updates on Anesthesia from Centers for Disease Control and Prevention (CDC), World Federation of Societies of Anesthesiologists (WFSA) and other reputable anesthesia organizations.

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