

SOP FOR COVID OPERATION THEATRE

Setting up COVID OT

- 1. Dedicated Operation Theatres. To be labeled “COVID19 Operation Theatre (COVID OT)” and large clear signages should be visible.**
- 2. COVID OTs should be preferably near to COVID ICU/HDU/Isolation ward.**
- 3. There should be preferably three COVID OTs: one for obstetrical surgical procedures, second for general surgery/orthopedics/other surgical procedures and third as reserve operation theatre and for neonatal resuscitation.**
- 4. There should be two defined changing rooms (one each for male and female) with attached wash rooms with bathing facilities.**
- 5. There should be dedicated donning and doffing rooms.**
- 6. Central air conditioning must be turned off. Laminar flow and the functional high efficiency filters are preferable. Stand alone/ air conditioning system can be used.**
- 7. Place all equipments and drugs essential for the anaesthetic management in a tray and avoid handling of the drug trolley during the case.**
- 8. Similarly, the surgical equipments, linen and dressings which are essential should be kept ready on separate trolleys.**
- 9. Extra /stand by equipments, trolleys, consumables should be placed outside the COVID OT.**
- 10. Cover all monitors, machines, cautery with transparent plastic. This plastic covering will be removed and changed after each case.**
- 11. Use disposable breathing circuits, face mask, tracheal tubes, etc.**
- 12. Place two high quality Heat and Moisture Exchanger with Viral Filters (HMEFs). First, between tracheal tube and breathing circuit; and the second between expiratory limb and anaesthesia machine. These HME filters can remove up to 99% of airborne particles 0.3 microns or greater, thus help in preventing contamination of OT atmosphere. Apply the HMEF on tracheal tube itself, if feasible.**
- 13. Aerosol generating procedures (AGP) are tracheal intubation and extubation, suctioning, nebulization, CPAP, BiPAP or high flow nasal oxygen therapy,**

bronchoscopy, etc. Aerosolization is also increased when more than one attempt at intubation is required.

14. The chances of exposure to the virus are maximum during such high aerosol generating procedures. So strict precautions have to be taken by all.

15. On an average 11 PPE Kits are required for a surgical procedure:

- a. Surgeons: 2
- b. Nurse: 1
- c. Anaesthesiologists: 2
- d. Anaesthesia Technician : 1
- e. Pediatrician : 1
- f. OT Master: 1
- g. Bearer: 1
- h. Sweeper: 1
- i. Transfer Team: 1

16. It is difficult to communicate with PPE on. Practice sign language.

17. No bag, purse, mobile phone is allowed inside the OT. If intercom facilities are not available inside the OT, then one mobile phone with transparent plastic covering has to be used for communicating with medical personnel and support staff outside the OT.

18. There should be adequate oxygen reserve. Any oxygen / nitrous oxide cylinder inside the OT should be considered as infected. It should be cleaned with 1% sodium hypochlorite solution before being sent for refilling.

SOP for Conducting Anaesthesia for a Surgical Procedure in COVID OT

- 1. After putting on the OT Clothes, go to scrub room and scrub.**
2. After scrubbing, go to the Donning Room and wear Personal Protective Equipment (PPE).
3. Do mock drills for correct donning and doffing of Personal Protective Equipment (PPE) including cover all gown, N 95/FFP3 face mask, eye shields/ face shields and gloves.
4. All operation theatre staff should wear PPE including anaesthesiologists, surgeons, nurses, technician, bearer, sweeper, etc. PPE included one piece special gown, properly fitted N95/N99 mask, eye shield and double gloves. Wear hospital scrubs outside and protective coveralls inside; wear a medical protective mask, disposable surgical cap, and goggles/face shield; and wear disposable medical latex gloves and boot covers.
5. The suggested sequence for putting on personal protective equipment is as follows: putting on scrubs and hair cover → performing hand hygiene → putting on the mask → putting on inner gloves → putting on the coverall → putting on eye protection (goggles/face shield) → putting on foot protection → putting on the isolation gown → putting on outer gloves.
6. Once all operating team is ready including, surgeon, anaesthesiologists, nurse, bearer, then COVID19 infected patients is wheeled through a separate/isolated corridor to the operation theatre.
7. The patients should be wheeled directly in to the OT. They should not stay in premedication room at all.
8. A surgical mask or N95 mask must be applied to the patient throughout the length of stay in the operating room.
9. Standard routine anaesthesia monitoring to be instituted.
10. Prefer regional anaesthesia, where ever possible.
11. In case supplementary oxygen is needed, the oxygen mask is applied over the surgical mask or N95 mask. Use minimum oxygen flow as possible.
12. For general anaesthesia, pre-oxygenate for five minutes with 100% oxygen. Avoid high flow oxygen to prevent aerosolization.

13. Instruct the patient not to cough.
14. The choice of induction drugs is dictated by haemodynamic considerations. Midazolam with etomidate or propofol, depending upon patient's haemodynamic condition, can be used for induction. Fentanyl is recommended for analgesia. If no contraindications are present, succinylcholine 1 mg/kg should be administered for tracheal intubation.
15. Tracheal intubation should be done by experienced anaesthesiologists. Limit the number of anaesthesia team personnel (maximum three) inside the OT. Second clinician with PPE can be available outside the OT for immediate assistance.
16. Rapid sequence induction and tracheal intubation (with cricoid pressure) to be done in the first attempt. Ensure adequate neuromuscular blockade to avoid bucking that can increase aerosolization.
17. Avoid manual ventilation to prevent aerosolization of virus from airways. If manual ventilation is required, apply small tidal volumes. Use both hands to hold the mask and gentle ventilation is done by the second anaesthesiologist.
18. Immediately inflate the tracheal tube cuff before starting ventilation to prevent aerosolization. Immediately clamp the tracheal tube. Apply the HMEF on tracheal tube itself, if feasible.
19. Use Intubation box (made up of acrylic / plastic sheet), if available and feasible.
20. Use plastic transparent sheets to cover the patient completely. Tracheal Intubation can be done by placing hands under the clear transparent plastic sheet, thus minimizing exposure to aerosolized virus.
21. Avoid awake fiberoptic intubation whenever possible. Nebulization with local anesthetic will aerosolize the virus.
22. **Video laryngoscope is preferred for tracheal intubation to increase the distance between the patient's airway and that of the anaesthesiologist who performs the intubation. It also improve intubation success rate and avoids multiple attempts at tracheal intubation.**
23. Resheath the laryngoscope blade immediately post intubation with the outer glove worn by the operator. Dip in hypochloride
24. Use low gas flows and closed circuits. Limit the ventilatory disconnections and, if needed, do at end expiratory phase.

- 25.** A closed airway suction system, if available, is preferable to decrease viral aerosol production. If it is not available, the suction should be done by minimum members of the team.
- 26.** Supraglottic airway devices should be used only in ‘cannot ventilate’ situations. This will avoid manual bagging and provide rescue oxygenation.
- 27.** Prophylactic administration of antiemetic drug is preferred to reduce the risk of vomiting and viral spread. Vomiting is usually accompanied by coughing, which increases aerosolization.
- 28.** Tracheal extubation should be done on table, as far as possible. Immediately place the surgical mask /N 95 mask over the patient after tracheal extubation.
- 29.** The patient is then transferred to the isolation ward. If tracheal extubation is not feasible, then shift the patient to designated Intensive Care Unit (ICU).
- 30.** During transfer, the team should wear proper PPE outside the operating room. The patient should be covered with one disposable operating sheet and then transferred through a dedicated lobby and elevator. The patient must wear a surgical mask or N95 mask during transfer.
- 31.** If the patient is kept intubated, a single patient use Ambu bag with HME viral filter attached must be used during transfer. Do not use a ventilator during transfer.
- 32.** Go to the designated Doffing Room and remove the protective equipment. After removing the protective equipment, avoid touching your hair or face before washing hands.
- 33.** Go the change room, discard OT clothes. All staff has to take shower before leaving the OT and resuming their regular duties.
- 34.** Discard breathing circuit, mask, tracheal tube, HME filters, gas sampling line and soda lime after every patient. Water trap to be changed if it becomes potentially contaminated. All surgical linen and dressings, markers, etc are to be discarded.
- 35.** All unused items on the drug tray and airway trolley should be assumed to be contaminated and discarded.
- 36.** Seal all used airway equipment in a double zip-locked plastic bag. It must then be removed for decontamination and disinfection.
- 37.** Before starting the decontamination, the staff has to remove outer hand gloves.

38. The histo-pathological specimens are kept in tight fit plastic boxes which are then sealed in plastic bags. The plastic bags are then wiped clean before sending for sampling.
39. A minimum of one hour is planned between cases to allow OT staff to send the patient back to the ward, conduct through decontamination of all surfaces, screens, keyboard, cables, monitors and anaesthesia machine with 2 to 3% hydrogen peroxide spray disinfection (through vaporized hydrogen peroxide generator (VHPG), 1% sodium hypochlorite solution, or 70% alcohol wiping of solid surfaces of the equipment and floor. All floors and walls to be cleaned with 1% sodium hypochlorite solution.
40. The metallic equipments to be kept in 1% sodium hypochlorite solution for half an hour. They are then washed and wiped clean. They are subsequently put in instrument boxes and covered with plastic bags.
41. All the equipments sent to CSSD should be covered by plastic bags which are clearly labeled. All such equipments should be sterilized in a dedicated area and should not be mixed with OT equipments from non-COVID areas of the hospital. It is preferable to have an autoclave machine/CSSD near the COVID OT.
42. The surfaces of passage ways and the elevator should also be cleaned.
43. In resource limited settings, where adequate personal protective equipments are not available, it is imperative to refer the patient to a centre with such facilities.

Resources

1. Malhotra N, Joshi M, Datta R, Bajwa SJ, Mehdiratta L. Indian Society of Anaesthesiologists (ISA National) Advisory and Position Statement regarding COVID-19. Indian J Anaesth 2020;64:259-63.
2. <https://www.mohfw.gov.in>
3. <https://www.asahq.org/about-asa/governance-and-committees/asa-committees/committee-on-occupational-health/coronavirus>
4. <https://www.apsf.org/news-updates/perioperative-considerations-for-the-2019-novel-coronavirus-covid-19/>
5. <https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html>
6. <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>
7. <https://www.anesthesia.utoronto.ca/news/coronavirus-and-safety-precautions>
8. <https://www.wfsahq.org/resources/coronavirus>
9. [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)