

Precautionary Measures for Emergency Surgery During COVID-19 Pandemic

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This PCS Advisory, dated March 22, 2020, focuses on recommendations for emergency surgery performed on COVID (+) patients and those at risk of having COVID 19 infection. A PCS Advisory dated March 14, 2020 recommended to cancel or minimize all elective and urgent operations during this time of community quarantine and lockdown. However, it is inevitable that life-saving emergency surgeries will need to be performed. As the surgeon leader, it is your responsibility to protect and ensure the safety of all the members of the team and to assure high quality surgery.

1. During this rapid spread of the COVID 19 pandemic, it is prudent to assume all patients for surgery are COVID-19 infected unless proven otherwise. Hence, appropriate PPE should be worn when inside the Operating Room and strictly by all members of the surgical team.
2. A comprehensive COVID-19 infection control workflow must be practiced. Surgeons must ensure that there is proper planning, preparation, simulation, execution, and continuous evaluation of these workflows. These containment measures are imperative to optimize quality of care, while reducing the risk of viral transmission to operating room personnel and patients.
3. Operating Room Management
 - a. Safety and protection of all health care workers is of primary importance:
 - Enforce a comprehensive program for the use of proper personal protective equipment (PPEs) such as N95 masks, face shields, isolation gown and PAPR. This should include training on proper donning and doffing of PPEs, inspecting PPEs for any damage and proper disposal.
 - Training, use and maintenance of powered air-purifying respirator (PAPR) for those who will engage in aerosol-generating procedures is strictly recommended.
 - b. An operating room with negative pressure environment is ideal to reduce spreading the virus beyond the OR.
 - c. Preferably the operating rooms have their own ventilation system with an integrated high-efficiency particulate air (HEPA) filter. If possible, designate an operating room with its own contained access and a COVID-designated surgical team for patients confirmed to have COVID-19 to reduce in-hospital transmission.
 - d. Limit the number of staff involved in the surgery. Movement of staff in and out of the OR should also be restricted. Secure all doors to the OR during surgery to minimize traffic and flow of contaminated air.
 - e. Design new workflows for the designated COVID-19 OR focusing on
 - Coordinated path during conduction of patient from wards to OR, to recovery room then back to room or ICU to clear the route and avoid contact with non-OR personnel and other patients during transport
 - Coordination of staff
 - Movement of surgical and anesthetic equipment
 - Infection prevention practices
 - Decontamination following the procedure
 - Simulation of these workflows, particularly the donning and doffing of PPEs

- a. Establish daily quality assurance routines, such as inspection and cleaning of anesthetic machines and powered air-purifying respirator (PAPR) sets.
- b. Use a dedicated anesthesia machine for COVID-19 cases. An additional heat and moisture exchanger (HME) filter should be placed on the expiratory limb of the circuit. Both HME filters and the soda lime are changed after each case.
- c. Regional anesthesia is preferred over general anesthesia. If general anesthesia is necessary, use a video laryngoscope to increase the chances of successful 1st time intubation and avoid repeated airway instrumentation.
- d. Open surgery is preferred over laparoscopy, which has been shown to increase viral aerosolization in other viral outbreaks.⁸
- e. Minimize use of electrocautery and other energy devices that increase virus aerosolization. The hazards of aerosol diffusion for surgeons and other members of the surgical team should be strictly addressed.⁸
- f. The recommended proper PPE must be worn by the whole operating team (surgeons, anesthesiologists, nurses, technicians, orderlies, security, etc...) during the procedure, and when conducting the patient between hospital units.
- g. PAPR must be worn throughout airway procedures. If no PAPR is available, improvised "aerosol box"/plastic barriers should be used.⁷
- h. Increase the turnover time between cases to provide ample time for patient conduction, and decontamination of all surfaces, screens, keyboard, cables, monitors and anesthesia machines using ammonium chloride disinfectant wipes. Additional disinfectants include sodium hypochlorite 1000ppm, H₂O₂ vaporizers or ultraviolet-C irradiation.⁵
- i. After the procedure
 - Personnel exiting the OR discard their used gowns and gloves in the ante room and perform hand hygiene
 - PAPR, N95 and goggles are removed outside the ante room.
 - Single-use equipment are preferred and disposed in well-marked biohazard bags. All unused consumables/drugs should be discarded.
 - The staff should shower and change into a clean set of scrubs before resuming regular duties.²
 - Names of all participating staff members are recorded to facilitate contact tracing

A surgeon who wore the recommended adequate and proper PPE while attending to a COVID-19 positive patient is not considered a PUM. Quarantine at this point is not routinely recommended.⁶

References

1. Ti LK, Ang LS, Foong TW, et al. What we do when a COVID-19 patient needs an operation: operating room preparation and guidance. *Can J Anesth/J Can Anesth* (2020). <https://doi.org/10.1007/s12630-020-01617-4>
2. Wong J, Goh QY, Tan Z, et al. Preparing for a COVID-19 pandemic: a review of operating room outbreak response measures in a large tertiary hospital in Singapore. *Can J Anesth/J Can Anesth* (2020). <https://doi.org/10.1007/s12630-020-01620-9>
3. COVID 19: Recommendations for management of elective surgical procedures. American College of Surgeons. [facs.org online March 13, 2020.](https://www.facs.org/online/March13,2020)
4. Teh, C. PAHPBS Recommendations in time of COVID-19 pandemic. March 21, 2020. PAHPBS Facebook site.
5. Handbook of COVID-19 Prevention and Treatment, The First Affiliated, Zhejiang University School of Medicine. Compiled According to Clinical Experience. Prof. Tingbo Liang, editor
6. Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with Coronavirus Disease (COVID-19), CDC, March 7, 2020.
7. Coronavirus/Taiwanese doctor creates cheap protective device amid virus crisis. FOCUS TAIWAN CNA English News: Taiwan, March 22, 2020.
8. Zeng MH, Bono L, Fingerhut A. Minimally invasive surgery and the novel coronavirus outbreak: lessons learned in China and Italy. *Ann Surg* (2020). [LWW Journals-Walters Kluwer. https://journals.lww.com](https://journals.lww.com)