



Correspondence

SARS-CoV-2 infection control measures for the anesthesiology department: experience from the Sichuan Provincial People's Hospital, China


To the editor,

At the end of 2019, an outbreak of pneumonia caused by the novel coronavirus (SARS-CoV-2) infection occurred in Wuhan, China, and gradually spread to the world [1]. Sichuan Provincial People's Hospital is the largest provincial hospital in Sichuan Province. This hospital has a large anesthesia department which includes more than three hundreds staffs and participates in surgical cooperation for various types of operations, in addition to emergency intubations. It has immediately revised their anesthesia and surgical cooperation procedures and taken specific measures for the prevention and control of infection.

We set up the "COVID-19" emergency response team and conduct SARS-CoV-2 knowledge training and an online assessment. All the staff are investigated for their health and epidemiology. Also, surgery is limited to critical patients and emergency operations, and the patients are required to undergo a chest CT, nucleic acid testing. Operations on suspected and confirmed patients with SARS-CoV-2 are fixed in an operating room with an independent purification unit and located in a relatively independent space. In addition, we define the level of protection for different types of surgery and formulate disinfection measures. Anesthesia and surgery for a normal patient requires second-level protection, and for patients suspected or confirmed with SARS-CoV-2 requires third-level protection (Table 1) [2,3].

All the protocols were approved by the ethics committee of Sichuan Provincial People's Hospital and patients' informed consent was obtained. For patients with suspected and confirmed SARS-CoV-2 infec-

tions, a special route should be taken to transfer patients into the operating room. Only the equipment needed for the specific operation shall be placed in the operating room. The patient should wear mask entering the operation room. Attempt to choose disposable surgical supplies. And the personnel participating in the operation shall not leave the operating room until the operation has been completed. For general anesthesia, try to use a disposable intubation apparatus and closed sputum suction tube. A disposable filter should be placed between the tracheal tube, the respiratory circuit, and the anesthesia machine. Rapid induction should be adopted. Tracheal intubation should be completed quickly using a video laryngoscope. The maintenance of anesthesia should be performed through intravenous. The fresh air flow rate of the anesthesia machine is higher than the ventilation rate per minute. After the surgery, suctioning [1–4] and extubate under deep anesthesia when respiratory recovery is stable. The connection between the endotracheal tube and the end filter and the threaded tube shall be retained during the extubation. After extubation, the patient should have a mask placed on him again. During the operation, the use of electrosurgical equipment should require the use of suction devices to minimize aerosol diffusion. All disposable medical waste should be disposed in the red double-layered medical waste garbage bags that are fastened tightly and labeled with SARS-CoV-2, and the garbage bags should be sterilized. At the end of the operation, the anesthesia machine shall be routinely used for disinfection, ultraviolet rays and hydrogen peroxide should be used to fully sterilize these areas [4]. The medical personnel involved in this operation and anesthesia shall be kept under medical observation for at least 14 days.

For emergency endotracheal intubation protection outside the operating room for patients with suspected or confirmed SARS-CoV-2, the intubator shall enter the isolation ward after strict third-level protection with the intubation apparatus. The patient inhales oxygen through the mask with high flow. When the drugs work and patient's breathing has disappeared completely, the trachea tube is inserted into the trachea. Disposable intubation items should all be discarded in designated garbage bags.

All the measures that we do for the prevention and control of infection is our hope to minimize infections caused by SARS-CoV-2 in the hospital.

Acknowledgements

No funding sources.

Table 1
Second-level and third-level protection.

Project	Second-level protection	Third-level protection
Washing clothes		✓
Overalls	✓	
Disposable working cap	✓	✓
Surgical masks	✓	
N95 respirator		✓
Disposable surgical gloves (wear 2 layers)	✓	✓
Isolation gown		✓
Impermeable operating gown	✓	
Goggles/mask	✓	✓
Disposable shoe cover	✓ (layer 1)	✓ (layer 2)

References

- [1] Zhao S, Lin Q, Ran J, Musa SS, Yang G, Wang W, et al. Preliminary estimation of the basic reproduction number of novel coronavirus (2019-nCoV) in China, from 2019 to 2020: a data-driven analysis in the early phase of the outbreak. *Int J Infect Dis* 2020;92:214–7. <https://doi.org/10.1016/j.ijid.2020.01.050>.
- [2] Chinese Society of Anesthesiology. Practice for anesthesia and operating room care of patients suspected of being infected with a novel coronavirus. 2020.
- [3] Quality Control and Improvement of Anesthesia Expert Group in Beijing. Expert consensus/recommendations on the prevention and control of novel coronavirus pneumonia by the Department of Anesthesiology. 2020.
- [4] National Health Commission of the People's Republic of China. Technical guidelines for the prevention and control of novel coronavirus infections in medical of institutions. 2020.

Min Xie^{a,1}, Jian Xin Huang^{a,1}, Pan Pan Chen^b, Xin Chuan Wei^a,
Xiang Kui Li^a, Ping Zhang^a, Li Na Yang^c, Qin Zhou^{a,*}

^a Department of Anesthesiology, Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital, Chengdu 610072, China

^b School of Medicine, University of Electronic Science and Technology of China, Chengdu 610000, China

^c Center of Anesthesia and Operation, Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital, Chengdu 610072, China

E-mail address: 278523276@qq.com (Q. Zhou).

* Corresponding author.

¹ Min Xie and Jian Xin Huang contributed equally and share first authorship.