

# Epidemic prevention and control in the operating room during the COVID-19 pandemic

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Dear Editor

The COVID-19 pandemic has led to critical challenges for health-care systems, with over 40 million infected patients worldwide at 19 October 2020<sup>1</sup>. China has reached a relatively stable stage of the pandemic, with mostly sporadic cases of domestic infection after a tough struggle during the spring of 2020, but in several countries there is an increasing caseload. The fight against COVID-19 has become routine work across the world, implicating that the measures of regular epidemic prevention and control will determine final success. One major concern is safety in the operating room. Here, the virus can spread in multiple ways, mainly through contaminated surfaces or aerosols. Improper prevention strategies might cause nosocomial infection or cluster outbreaks. Therefore, active and effective measures of regular epidemic prevention and control of the operating room need to be prioritized<sup>2–4</sup>.

A total of 11 457 elective and 1352 emergency operations were performed from July to September, 2020 in Peking Union Medical College Hospital, with no cases of COVID-19 infection occurring. Here, we want to share our experience of the measures we introduced to achieve effective epidemic control.

All patients need to be screened for COVID-19. Patients planned for elective or emergency surgery (albeit not in an acute condition) are screened within 7 days before surgery. The screen includes a nucleic acid test for SARS-CoV-2, estimation of serum immunoglobulin (Ig) M and IgG, complete blood count, and CT of the chest. Patients also have to report their travel information using mobile phone quick response (QR) codes (showing potential exposure in an epidemic area), provide a quick health response code, and report any history of potential exposure to COVID-19.

Special entry criteria to the operating room were introduced. First, all medical staff need to report their travel information using mobile phone QR codes every week, and measure body temperature before entering the operating room. Hand sanitization, special clothing for the operating room (including gowns, shoes and working caps) and surgical masks are required. Second, patients need to pass the above COVID-19 screening test and

wear a surgical mask. Third, non-surgical personnel (such as technical or scientific personnel) can enter only after obtaining special permission, and they have to show a negative result on a SARS-CoV-2 nucleic acid test. Fourth, operating rooms are forbidden to family members or support workers<sup>5</sup>.

Special considerations apply when operating on emergency patients with fever. If the patient has a negative result on COVID-19 screening, the operation is conducted in an isolated operating room with laminar air. All surgical team members and the patient have to wear N95 surgical masks. When the patient has to take off the mask, such as during intubation, the anaesthetist wears a protective face shield or goggles, and places negative-pressure drainage equipment near the patient's oral cavity. Moreover, two breathing filters are installed at the proximal and distal end of the threaded tube circuit for the anaesthesia machine<sup>6,7</sup>.

Arrangements have also been put in place for emergency surgery on patients who are confirmed or suspected of having COVID-19 infection. These patients are transported in an safe enclosed manner. Medical staff wear disposable isolation clothes, N95 masks, work caps, protective face shields, goggles, gloves, and shoe covers. The operation is conducted in an isolated room with negative pressure. After surgery, the medical staff immediately take a shower in a designated bathroom<sup>6</sup>.

Finally, hand hygiene, environment cleaning, and aerosol control is important<sup>2,5</sup>. By implementing the above preventive measures, we have avoided the occurrence of nosocomial COVID-19 infection. Strict measurements need to be put in place as in the WHO Charter: 'Health Worker Safety: A Priority for Patient Safety'<sup>8</sup>.

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