

## Correspondence

# Practical considerations in the anaesthetic management of patients during a COVID-19 epidemic

We read with interest the excellent Association guidelines [1] for the anaesthetic management of patients during a COVID-19 outbreak. We concur with these guidelines, which are not dissimilar to our hospital's protocols since Singapore reported its first case of COVID-19 on 23 January 2020.

To date, there have been 226 confirmed cases in Singapore with no deaths reported [2]. We are preparing for many more when community transmission becomes widespread and every patient presenting for surgery becomes a potential asymptomatic infected case. We would like to highlight additional anaesthetic considerations in this COVID-19 pandemic. Our discussion is limited to patients not known to be COVID infected.

Ensuring pathogen-free air in the operating theatre; as the median incubation period for COVID-19 from publicly reported cases is estimated to be 5.1 days (95%CI, 4.5–5.8 days), with 97.5% displaying symptoms within 11.5 days [3], asymptomatic infected patients presenting for surgery in standard operating theatres without negative pressure capability is a real possibility and added precautionary measures are needed.

The mode of transmission of COVID-19 is likely via droplets from direct contact or indirectly through fomites. As airway manipulation is considered to be aerosol generating, besides minimising the number of non-essential personnel in the operating theatre and donning appropriate personal protective equipment, we propose an added safety measure of observing guidelines [4] related to the operating theatre's air changes per hour for the removal of 99% of airborne contaminants.

In our operating theatre, at 15–20 air changes per hour, it takes 14–18 min to ensure clean operating theatre air for the next patient and staff who wear a surgical mask. However, these time estimates are based on an empty, uncluttered room [4] and each hospital's Infection Prevention and Control Department should give guidance.

We should also refrain from inducing anaesthesia in induction rooms where the air changes per hour is usually lower than the main operating theatre. Moreover, when the operating theatre doors open prematurely, the air changes per hour are affected while allowing potentially contaminated air out [5].

We have also observed several limitations to normal anaesthetic practice. The wearing of a powered air-purifying respirator is cumbersome and awkward and may not be applied in a hurry. We found that having a mirror while donning and doffing is useful, in lieu of a buddy.

As good clinical outcome is premised on sound communication and teamwork, a team briefing before the start of a case is crucial, as communication is limited when using N95 masks and powered air-purifying respirators due to muffling. Having marker pens and paper readily available during a case is useful, if verbal communication falters. Moreover, movement of staff between operating theatres should be severely curtailed in order to avoid cross-contamination. The ability to obtain table attachments or other paraphernalia can be burdensome, hence prior planning and communication is key.

The routine act of lung auscultation can also be challenging with powered air-purifying respirator use, thus assessing chest expansion and capnography is imperative.

All airway devices should be removed in the operating theatre and not in the recovery area. In addition, adequate time is needed for thorough cleaning and air changes per hour to occur. This further alters the volume of elective surgical cases that can be performed in a day.

Importantly, we need to recognise that our healthcare colleagues may experience fear, anxiety and confusion during these stressful times and all this needs to be addressed.

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