

additional physical barrier as compared with videolaryngoscopy. However, we believe that with proper personal protection equipment, there is minimal additional benefit in terms of droplet protection. Our technique measured droplet spread primarily, and may be less sensitive to fine aerosols. A potential disadvantage of the box is the restriction to movement and adapting to a new way of intubation.<sup>6</sup> In the event that the airway proves to be difficult, the box should be immediately abandoned.

### Declaration of interests

The authors declare that they have no conflicts of interest.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.bja.2020.04.083>.

### References

1. Peng PWH, Ho P-L, Hota SS. Outbreak of a new coronavirus: what anaesthetists should know. *Br J Anaesth* 2020; 124: 497–501
2. Tran K, Cimon K, Severn M, Pessoa-Silva CL, Conly J. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: a systematic review. *PLoS One* 2012; 7, e35797
3. Odor PM, Neun M, Bampoe S, et al. Anaesthesia and COVID-19: infection control. *Br J Anaesth* 2020. <https://doi.org/10.1016/j.bja.2020.03.025>. Adv Access published on April 8
4. Yao W, Wang T, Jiang B, et al. Emergency tracheal intubation in 202 patients with COVID-19 in Wuhan, China: lessons learnt and international expert recommendations. *Br J Anaesth* 2020. <https://doi.org/10.1016/j.bja.2020.03.026>. Adv Access published on April 10
5. Everington K. Taiwanese doctor invents device to protect US doctors against coronavirus 2020. Available from: <https://www.taiwannews.com.tw/en/news/3902435>. [Accessed 30 March 2020]
6. Dalli J, Khan MF, Marsh B, Nolan K, Cahill RA. Evaluating intubation boxes for airway management. *Br J Anaesth* 2020. in press

doi: 10.1016/j.bja.2020.04.062

Advance Access Publication Date: 11 May 2020

© 2020 British Journal of Anaesthesia. Published by Elsevier Ltd. All rights reserved.

## Modified tracheal extubation for patients with COVID-19

Ryan V. W. Endersby\*, Esther C. Y. Ho, Edward Schubert and Adam O. Spencer

Calgary, AB, Canada

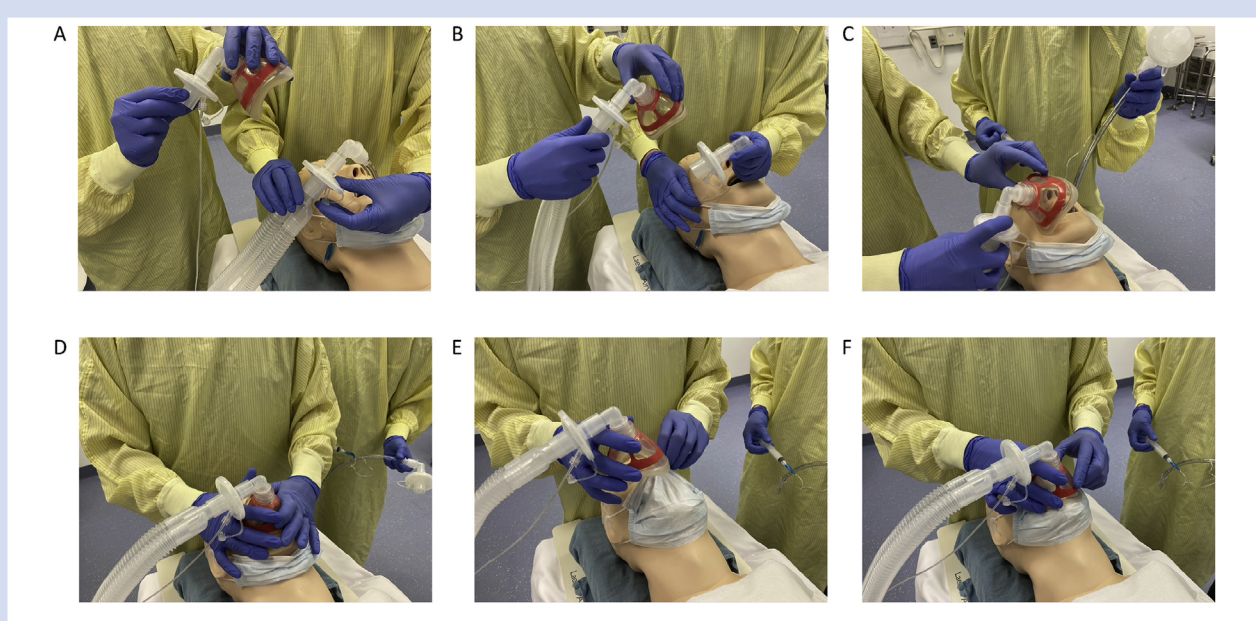
\*Corresponding author. E-mail: [ryan.endersby@gmail.com](mailto:ryan.endersby@gmail.com)

**Keywords:** aerosol-generating procedure; airway management; COVID-19; coronavirus; extubation; tracheal intubation

Editor—We read with interest the article by D’Silva and colleagues<sup>1</sup> in the *British Journal of Anaesthesia*. They describe an extubation technique for patients with coronavirus disease 2019 (COVID-19) using two airway filters, with one attached to the tracheal tube and another attached to the facemask. We agree with the concept of using two airway filters for tracheal extubation and believe it is one of the safest ways currently described in the literature. However, we propose three modifications that we use at our institution when extubating patients with COVID-19 that improve upon the technique of D’Silva and colleagues.

Before extubation we recommend disconnecting the gas sampling line and moving it to the new filter attached to the facemask. This will allow for detection of end-tidal CO<sub>2</sub> immediately after extubation. As the gas sampling line port is

downstream from the filter, the port can either be left open or sealed with the plug that either comes attached with the existing filter or with the plug from the new filter. Second, instead of stacking the airway filters on top of each other we recommend discarding both the tracheal tube and its filter upon extubation. This results in the standard facemask, filter, and circuit setup that we find to be both less awkward and less likely to disconnect inadvertently compared with the double airway filter setup proposed by D’Silva and colleagues. Furthermore, using one filter will reduce the overall dead space of the circuit, which could be an important factor in paediatric cases. Finally, we recommend using a surgical mask with elastic ear loops attached to the patients’ ears and under their chin before removal of the facemask so that it can be quickly positioned into place after facemask removal. Oxygen



**Fig. 1.** Extubating COVID 19 Patients is a SNAPP. A – S – Sampling line attached to new filter. B – N – New filter is attached to circuit. C – A – Airway is removed. D – P – Place oxygen mask on patient. E and F – P – Pull surgical mask up and reapply oxygen mask.

can then be applied either with nasal prongs as D'Silva and colleagues describe or with a simple oxygen facemask on top of the surgical mask. We have summarized these steps in [Figure 1](#). We thank D'Silva and colleagues for their article, and hope that our suggestions further improve upon the safety of their extubation technique for COVID-19 patients.

### Declaration of interest

The authors declare that they have no conflicts of interest.

### Reference

1. D'Silva DF, McCulloch TJ, Lim JS, Smith SS, Carayannis D. Extubation of patients with COVID-19. *Br J Anaesth Advance Access* 2020; 125: e192–5

doi: 10.1016/j.bja.2020.04.062

Advance Access Publication Date: 24 April 2020

© 2020 British Journal of Anaesthesia. Published by Elsevier Ltd. All rights reserved.

## Extubation of patients with COVID-19

David F. D'Silva<sup>1,2,3,4,\*</sup>, Timothy J. McCulloch<sup>1,5</sup>, Jessica S. Lim<sup>1,2</sup>, Sanchia S. Smith<sup>1,6</sup> and Daniel Carayannis<sup>1</sup>

<sup>1</sup>Department of Anaesthetics, Royal Prince Alfred Hospital, Camperdown, Australia, <sup>2</sup>Department of Anaesthetics, Concord Repatriation Hospital, Concord, Australia, <sup>3</sup>Department of Anaesthetics, Prince of Wales Hospital, Randwick, Australia, <sup>4</sup>Faculty of Medicine, University of New South Wales, Kensington, Australia, <sup>5</sup>Faculty of Medicine, University of Sydney, Camperdown, Australia and <sup>6</sup>Department of Anaesthetics, Canterbury Hospital, Campsie, Australia

\*Corresponding author. E-mail: [David.dsilva@health.nsw.gov.au](mailto:David.dsilva@health.nsw.gov.au)

**Keywords:** aerosol generating procedure; airway management; coronavirus; COVID-19; mechanical ventilation; tracheal extubation