

Airway Management in COVID-19: In the Den of the Beast

To the Editor

We read with great interest the editorial by Dr Orser.¹ We thank her for highlighting some critical concepts for clinicians dealing with the current coronavirus disease 2019 (COVID-19) crisis and congratulate her for the clarity and conciseness in delivering an important message. We would like to support her principles further with some considerations for clinicians.

The first point is that COVID-19 appears to have a different clinical and epidemiological profile than severe acute respiratory syndrome (SARS). Despite being from similar coronavirus families, and the case fatality rate of SARS appears higher, the R_0 of the SARS coronavirus 2 (SARS-CoV-2) that causes COVID-19 is greater. This results in a greater spread and a higher raw number of deaths.² In Italy, the case fatality rate has been high, with 16,654 deaths out of 136,110 positive cases as of April 9, 2020, with health care professionals being at highest risk for infection, accounting for around 10% of positive cases (Istituto Superiore di Sanità; <https://www.epicentro.iss.it/coronavirus/sars-cov-2-sorveglianza-dati>).

The transmissibility of SARS-CoV-2 might have been underestimated by many. In Italy, there is a high rate of health care worker-related infection leading to self-isolation, hospitalization, and critical care admission, with its consequences on health care delivery and the well-being of the workforce. One of the key concerns with the SARS-CoV-2 virus is that the modality for transmission remains uncertain, as “airborne diffusion cannot be ruled out at this stage.”³ Compounding this uncertainty is the potential for the virus to variably survive on different surfaces and a lack of vaccine or specific treatment.² There are some suggestions that the virus should be treated on bio-safety level 4,⁴ which is obviously not feasible in pandemic settings.

However, we advocate maximizing the level of personal protective equipment (PPE) during aerosol-generating procedures (AGPs), such as tracheal intubation and noninvasive ventilation and high-flow nasal oxygen use.² The use of N95 respirators, which offers a similar degree of protection as filtering face

piece (FFP)2 respirators,² with some data suggesting that they are in fact equivalent to surgical facemasks.⁵ Recommendations in Italy² and the United Kingdom⁶ are for the use of FFP3 or N99 masks, which is different from North American recommendations. Ideally, powered air-purifying respirators (PAPRs) should be used.^{2,4} Additionally, we advocate the use of goggles, a visor/face shield, double (or triple) gloving, and ideally a full body suit.

We completely agree with Dr Orser’s¹ recommendations for training in PPE donning and doffing, harnessing teamwork, and leadership by the most expert airway manager. Further, we also highlight the importance of planning (communication in PPE could be particularly challenging) and of hemodynamic optimization, if time is available. We strongly advocate for the conduct of rapid sequence intubation with full-dose neuromuscular blockade to minimize the risk of coughing and the use of videolaryngoscopy, possibly with separate screen, as well as using a preloaded bougie or stylet as routine adjunct to maximize first-pass success.²

Any AGP should be avoided, ideally including mask ventilation. Unfortunately, hypoxemia is a hallmark of COVID-19 patients requiring tracheal intubation, and patients do not tolerate the cessation of oxygen supplementation or apnea well. Conventional preoxygenation might be difficult and relatively ineffective; thus, we usually discontinue already ongoing noninvasive ventilation or continuous positive airway pressure (CPAP), turning the ventilator off and slowly removing facemask starting from the inferior edge (toward the patient’s feet) to depressurize the circuit before proceeding with tracheal intubation. Should ventilation be needed, we advocate that it should be gently provided with Mapleson C (Waters; Covidien, Miranda, Italy) circuit with a double



Figure. Mapleson C (Waters) circuit with a double filter setting to prevent aerosolization during facemask ventilation of COVID-19 patients. COVID-19 indicates Coronavirus Disease 2019.

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filter setting (Figure). Despite the time-critical nature of airway management in critically ill patients with COVID-19, we recommend a rapid airway assessment be performed allowing for early planning of airway management to avoid unexpected deterioration and clinical decision making.²

Overall, we applaud Dr Orser's¹ recommendations, and also wish to highlight that health care providers should be protected to maximum available level, while still taking account of ongoing global PPE shortage.² Prioritization of clinicians involved in high-risk AGPs is crucial for the sustainability in delivering health care during this pandemic. We need to be well prepared to enter the den of the beast.

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