Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Response from the authors: Advanced ventilation strategies in patients with Fontan-type circulation

We thank the authors for their response to our article "Clinical update on COVID-19 for the emergency clinician: Airway and resuscitation" [1]. In the authors' letter, they describe the case of a young man with several cardiac surgeries for a ventricular septal defect, pulmonary artery stenosis, and transposition of the great vessels admitted for COVID-19. He underwent gradual escalation of respiratory care, with hemodynamic compromise following endotracheal intubation. He was ultimately placed on extracorporeal membrane oxygenation (ECMO). This case highlights an important population in which deviation from the classic methods of airway management and ventilation strategies for most COVID-19 patients may differ. Several clues in the description suggest this atypical physiology in the patient, including complex cardiac surgical history and clubbing of the fingers and toes. Knowledge of the patient's baseline oxygen saturation, which is typically below normal levels, and information from a point-of-care echocardiogram prior to intubation can assist in determining the stage of cardiac repair and current anatomic structure [2-5].

Evidence regarding adult patients with congenital heart disease (ACHD) is limited in the context of the COVID-19 pandemic. Therapeutic decisions for these patients, including oxygenation targets, endotracheal intubation, and ECMO, should be done collaboratively within an interdisciplinary team if possible [5].

Importantly, we advocate for monitoring additional measures of resuscitation beyond oxygen saturation alone, including patient symptoms, respiratory rate, and respiratory effort. Patients with COVID-19 may present with hypoxemia but no increased work of breathing [1]. Respiratory management can start with nasal cannula, followed by facemask, Venturi mask, high flow nasal cannula, and bilevel positive airway pressure or continuous positive airway pressure ventilation. Rather than solely targeting oxygen saturation, assessing patient comfort and work of breathing is important, and we believe targeting an oxygen saturation ≥ 90% is reasonable [1]. In patients with complex physiology, other measures including mean pulmonary venous wedge pressure, pulmonary vascular resistance, arterial oxygen saturation, and partial pressure of oxygen can be utilized [2-5]. We applaud the authors for bringing awareness to nuances in managing this specialized population.

CRediT authorship contribution statement

Summer Chavez: Validation, Writing – original draft, Writing – review & editing. **William J. Brady:** Supervision, Validation, Writing – review & editing. **Michael Gottlieb:** Validation, Writing – original draft, Writing – review & editing. **Brandon M. Carius:** Supervision, Visualization, Writing – review & editing. **Stephen Y. Liang:** Supervision, Validation, Visualization, Writing – review & editing. **Alex Koyfman:** Supervision, Validation, Visualization. **Brit Long:** Conceptualization, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

None.

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