CORRESPONDENCE

In reply: Clear plastic drapes for aerosol-generating medical procedures in COVID-19 patients: questions still remain

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To the Editor,

We thank Endersby *et al.*, for their interest in our work.^{1,2} Human coughs release complex mixtures with particles of varying size and composition.³ Currently, there are no experimental models that accurately replicate the particle composition of human coughs. In our model, Glo GermTM (Glo Germ Company; Moab, UT, USA) was used to represent the behaviour of droplets and not aerosols. It is important to note that nuanced differences exist between aerosolization, aerosol exposure, aerosol transmission, and droplets. Aerosolization is the process of converting a physical substance into the form of particles small and light enough to be carried on the air as aerosols.

Endersby *et al.*, raise key questions on the release of aerosols during the removal of the three drapes.^{1,2} Nevertheless, it appears Endersby *et al.* are assuming that a significant number of aerosols exist under the transparent plastic drapes following extubation. Aerosols, their behaviour, and their persistence are influenced by multiple variables such as temperature, humidity, and condensation, and they have a temporal component.³ Data are required to ascertain if aerosols would persist under plastic drapes following extubation.

Our group has since created a modification of the transparent plastic barrier for use during airway surgery and intubation.⁴ This enhanced design includes the use of

double suction. We showed double suction was effective in removing smoke (a far from perfect human aerosol model) from under the modified transparent drapes. Nevertheless, we caution that the over-use of suction may collapse the plastic barrier. In addition, we have still yet to understand whether sustained suction may re-aerosolize particles. When suction devices are used, they should include the appropriate filters. Barrier techniques are adjuncts and should not replace the use of appropriate personal protective equipment (PPE), including during the process of barrier removal. Where PPE shortages may persist, well researched and validated barrier techniques may enhance provider safety. We posit that the risk posed by the free release of aerosols and droplets into the environment during a cough may be higher compared with the use of the three-drape that allows containment and safe removal of fomites, as shown in our work.² We do caution that there is no validated human cough model, and many experimental designs will include the use of materials such as smoke, Glo GermTM, fluorescein, tonic water containing quinine, as fluorescing surrogates for human cough constituents.⁵ The results of these experiments need to be interpreted with the inherent limitations of these models and experimental conditions. In addition, the use of barriers should not compromise safe airway management. In the meantime, we encourage clinicians and scientists to continue iterative improvements on the simple clear plastic barrier by asking, testing and using sound methodology, and sharing their findings.

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