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# USE OF A MODIFIED SYSTEM FOR MANUAL VENTILATION OF THE PATIENT FOR IN-HOSPITAL AND EXTRA HOSPITAL TRANSPORT TO AVOID AEROSOLIZING SPREAD OF DROPLETS DURING COVID-19 OUTBREAK

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GLOSSARY OF TERMS: Coronavirus Disease 2019 (COVID-19)

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Editor – We read with great interest the open mind of Abd-Elsayed Alaa and Karri Jay[1], which highlights the fact that health care workers, continue to be at particular risk for the shortage of personal protective equipment. In our experience, this does not just happen in the poorest countries.

In Italy, as of April 16, 2020, there are 16,650 healthy workers infected by COVID-19. To date 127 doctors have died as documented Italian Higher Institute of Health. Our Italian experience, as described by Mirco Nacoti and colleagues, suggests that hospitals become a major source of COVID-19 carriers as they are populated by infected patients who transmit the virus to uninfected patients and health care workers when medication, mechanical ventilators, and personal protective equipment are not available.[2] Asymptomatic or pre-symptomatic healthcare workers also become vectors.

We report our experience and illustrate our idea that has allowed us to create, using the available material, a safety device aimed at minimizing the spread of droplets for in-hospital and extra-hospital transfers of COVID-19 patients. On March 31 a patient with COVID-19 and intestinal ischemia presented to the San Salvatore Academy Hospital, L'Aquila,Italy. After surgery he was transferred to the COVID Intensive Care Unit located in a pavilion outside the hospital. The problem arose from the lack of a portable ventilator. During the transfer we provided manual ventilation using the DAR® reservoir bag. We added a high-efficiency particulate air filter, but felt it was more effective to place the filter on the expiratory exit of the DAR® reservoir bag and not between the latter and the endotracheal tube as was described by Mei Fong Liew.[3] We used a filter called "DAR™ Adult Electrostatic Filter" that provided antibacterial and antiviral filtering $\geq$ 99,999 %.[4] In this way we were able to position a surgical mask on the filter, which avoid a possible spread of droplets and was psychologically more comfortable to the health care worker by minimizing his contact with the flow of air leaving the reservoir bag (Fig 1). We feel the presence of the surgical mask over the filter provides extra safety. Clearly, there is a need for scientific data on the reduction of aerosolization during the transport of manual ventilating patient brought about by our craft device; our perception, however, is encouraged by literature data showing that any kind device, even homemade ones, would be better than no protection in reducing aerosol exposure.[5]

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**FIGURE LEGENDS:**

FIGURE 1 A-B: ⁎ filter on the expiratory exit of the DAR® reservoir bag. ° Surgical mask fixed on the filter with hemmed bandage.

Figure 1