

Answer to the editor's letter

Resposta à carta do editor

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In their Letter to the Editor, "Care and principles in chest drainage models during the pandemic by Covid-19", the authors discuss the topic of chest drainage in patients suspected or diagnosed with Covid-19. Indications of the procedure in patients with the disease are pneumothorax in about 1% and pleural effusion in 5%^{1,2}.

As described in the Letter to the Editor, the authors report that in our technical note "Safety model for performing chest drainage in the Covid-19 pandemic"³ we propose that the underwater circuit be 5 cm. Probably, our explanation may have led to a misinterpretation, because what we described in the technical note was a 5 cm total water column in a 2000 mL bottle, that is, putting 500 mL of saline to represent an underwater circuit of 2cm, thus maintaining pleuro-pulmonary homeostasis and adequate respiratory dynamics.

The Letter to the Editor also states that to adapt the filter with the vent of the bottle we put a connection with a diameter smaller than the vent, promoting additional resistance. However, when measuring the diameter of the vent of the collecting flask we obtain 7 mm and the number 7 orotracheal tube connector used in our article also has an internal diameter of 7 mm, proving that there is no type of air resistance because the diameters are the same. However, larger orotracheal tube connectors can be used.

In addition, the literature recommends drains between 8 and 20 Fr for primary or secondary pneumothorax⁴. For example, the outside diameter of a 20 Fr drain is 4.5 mm⁵, smaller than the vent and the connection orotracheal tube, used in our technical note.

The adaptation of the use of the filter in drain flasks was studied and validated as a safe and effective method by Akhtar et al.⁶, who, to demonstrate the reduction in aerosol emission from the bottle, added 1g of fluorescein to 500 mL of water in the bottle. standard underwater seal drainage. The pleural drain was connec-

ted to the environment with a flow rate of 5L/min. A black card was placed 3 cm above the opening of the bottle and photographed under UV light after 2 hours. The experiment was repeated without and with the filter attached, and the photographs taken demonstrate emissions and aerosol droplets from the drain bottle when the filter is not used. According to the study photographs, the filter played an important droplet containment method⁶.

According to the HEPA filter manuals, the replacement suggestion varies depending on the manufacturer. While Draeger⁷ suggests changing every 24 hours, Newmed⁸ indicates a useful life of 800 hours. AMIB requests the exchange within 48 hours⁹. In the study by Thomachot et al.¹⁰, the bacteriological filter properties of the heat and humidity exchanger filters (FTCU) used by patients for 24 hours were compared to the prolonged use for 96 hours. There was no significant difference, with the FTCU membrane facing the sterile ventilator side during the two periods. Subsequently, the use was observed for seven days, and the rates of ventilation associated pneumonia and mortality were also similar between the groups¹¹ known as the HME (Heat and Moisture Exchanger) or FTCU in Portuguese. Respiratory filters are defined by the American Society of Testing and Materials as passive humidifiers, however HME filters are grouped into three major categories. HEPA filters belong to the category of hydrophobic filters¹². Even though we know that the humidity generated by a mechanical fan is much higher than that of an air leak and the impossibility of measuring it, we chose to change the circuit as another way of protection.

As our technical note was written in early April, submitted on 04/11/20 and accepted for publication on 04/14/20, at the beginning of the pandemic, there was not enough time to research all the variables and possible errors, being one of the major limitations of our study. Over time and better knowledge of the disease, we

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changed our protocol. Today, we try to change the filter every 72 hours, evaluating the connection daily and, in the event of any adversity, we perform the immediate change. Another limitation was in relation to the exchange due to the price of the filter. This is currently around R\$ 100 reais and the way to charge the material was

unusual. Also, the large amount of use in ICUs during the pandemic can restrict the use in drains.

Thus, not all questions are still elucidated and our article tried to be one more measure for the protection of health professionals involved in the operation and in the maintenance and verification of the drain.

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