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## A Low-Cost 3D-Printed Stethoscope Holder During the COVID-19 Pandemic



To the Editor:

We read with interest the article by Vasudevan et al<sup>1</sup> titled “Persistent Value of the Stethoscope in the Age of COVID-19.” The stethoscope remains an important tool for patient assessment during the COVID-19 pandemic. Stethoscope hygiene is all the more important during this crisis situation. Stethoscope hygiene comprises storage, handling, and sterilization—of which storage can be easily modified by external means. Handling and sterilization require behavioral changes, which is challenging.<sup>2</sup>

Storage of stethoscopes involves one of the following: placing it around one’s neck, hanging it on a wall hook or over a drip stand, or placing it haphazardly on any flat surface. When hung on a wall hook, a contaminated stethoscope may repeatedly come in contact with the wall. When folded onto itself, the contaminated diaphragm comes in contact with the earpiece. Having to untangle a stethoscope prior to putting on the earpiece is a process many physicians would be familiar with. Existing innovations to improve stethoscope hygiene can be costly. Examples include portable ultraviolet C-emitting devices for disinfection<sup>3</sup> and wireless stethoscopes.<sup>4</sup> Such devices may not be feasible in resource-poor regions where the pandemic is still rampant.

We propose a low-cost 3D-printed stethoscope holder (Figure) to tackle this issue. The main advantages include:

1. Ergonomic design to increase user compliance
2. Minimal contact during removal and placement of the stethoscope by holding the ear tube
3. Adequate projection to prevent contact between wall and stethoscope
4. Avoidance of contact between diaphragm and ear piece
5. Single contact point between stethoscope holder and stethoscope

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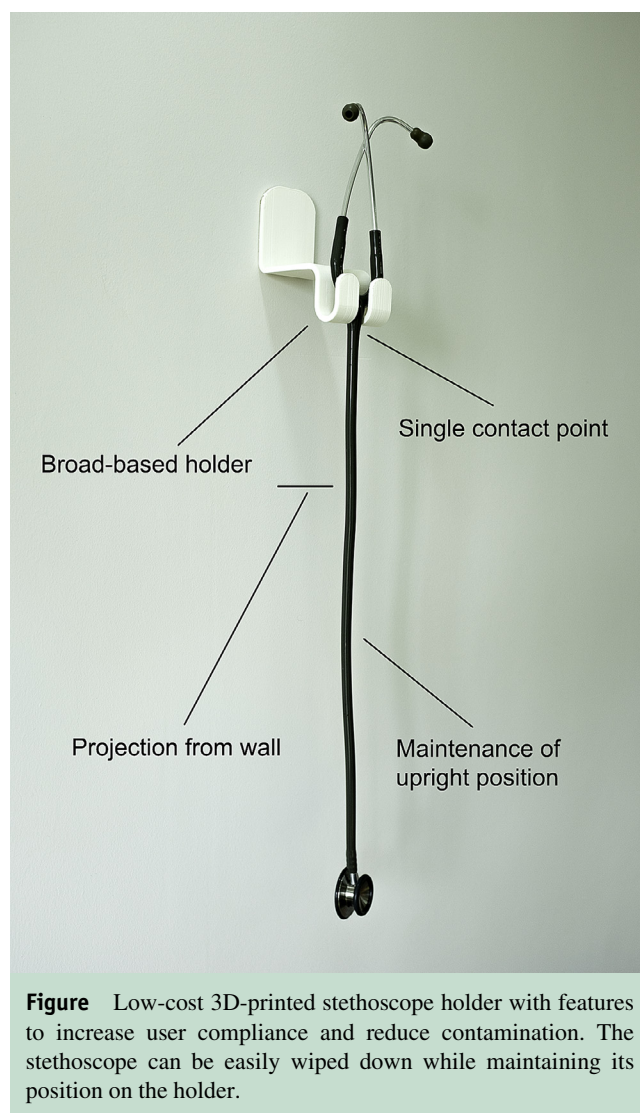
**Authorship:** All authors had access to the data and a role in writing the manuscript.

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6. Stable broad-based holder that allows the stethoscope to be wiped down on the holder itself

The design of this stethoscope holder will be made available online as a Standard Tessellation Language (STL) file (<https://www.thingiverse.com/thing:4901219>), which can be downloaded and 3D-printed easily from any part of the world. Simple adhesives are used to secure the holder onto the wall. We hope that this device serves as an inspiration for more simple and low-cost innovations to be developed, which can be shared freely to help curb the spread of the virus.



**Figure** Low-cost 3D-printed stethoscope holder with features to increase user compliance and reduce contamination. The stethoscope can be easily wiped down while maintaining its position on the holder.

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