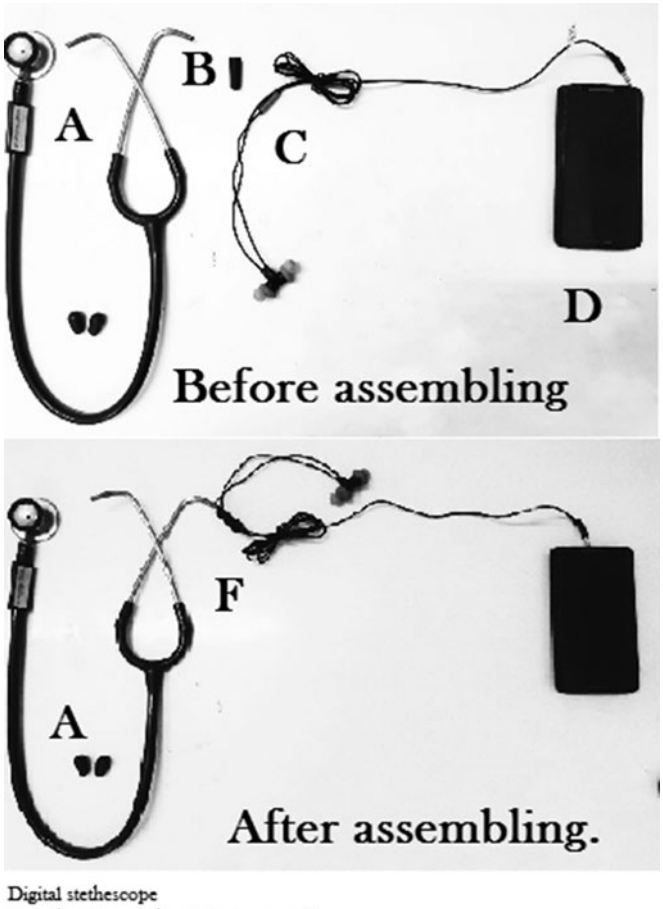
A novel stethoscope in COVID-19 times

We would like to share a novel modification of the existing stethoscope that is widely used and is an indispensable part of patient care. In the era of the ongoing pandemic, the existing stethoscope has a lot of limitations to its use, and we would like to further contribute to the same by elaborating on the limitations and offering a novel solution to the same in a resource-limited setting. First, it is practically impossible to use to the conventional stethoscope in a COVID-19 set-up, where the donned personal protection equipment makes it impossible to use the earpiece and is rather risky as described in a recent study.[1] Second, the digital stethoscopes that are already available in the market[2] are expensive, need expertise and are not easily available in a resource-limited set-up. While the stethoscope remains an indispensable tool in a COVID-19 crisis for diagnosis and assessment of respiratory and cardiac function, we have devised a portable digital stethoscope using easily available things that can record auscultatory sounds without the need for an earpiece, at the same time offering the advantage of recording and reproducing the same. We designed an electronic stethoscope with the help of (1) stethoscope, (2) silicone tubing, (3) earphones with a microphone and 3.5 mm stereo plug and (4) mobile phone with a sound recording function (figure 1). We removed the earpiece of the stethoscope (Microtone, India) and attached a silicone tube of 5 cm length and 6mm inner diameter to the earpiece. We inserted a condenser microphone on the other end of the tube and ensured a proper seal. The 3.5mm stereo plug on the other end of the earphones was connected to the mobile, thus facilitating the recording of the auscultatory sounds. This stethoscope can be used for the clinical assessment of COVID-19-infected patients thus enabling better patient assessment and care. Because it is rightly said, this global pandemic is a war, and small inventions and modification like these can make a big difference!



Digital stethescope
A-Stethescope (with earpiece removed)
B-Silicone tubing (5cm long 6 mm internal diameter)
C-Earphone with microphone and 3.5mm stereo plug
D-mobile phone
F-assembled connection

Figure 1 The digital stethoscope.

Amarjyoti Hazarika,[1] **Prachi Agrawal** [1,2]

[1]Anaesthesia and Intensive Care, Post Graduate Institute of Medical Education and Research, Chandigarh, India

[2]Anaesthesia and Intensive Care, Maulana Azad Medical College, New Delhi, India

Correspondence to Prachi Agrawal, Department of Anaesthesia and Intensive Care, Maulana Azad Medical College and Associated Hospitals, D-1 Government College Quarters, Vad Chowki, Nani Daman, Daman 396210, India; drprachi.ag21@gmail.com

Contributors AH conceived the presented idea and contributed to the design, implementation and supervision of the same. PA performed and developed on the idea and drafted the manuscript with necessary inputs. .

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

To cite Hazarika A, Agrawal P. *Postgrad Med J* 2022;**98**:e138.

Accepted 24 September 2020
Published Online First 21 October 2020

Postgrad Med J 2022;**98**:e138.
doi:10.1136/postgradmedj-2020-138982

ORCID iD
Prachi Agrawal http://orcid.org/0000-0001-5486-6510

REFERENCES

1 Lau Y-F, Wei W, Lau C-P. Are stethoscopes risky in COVID-19? *Postgrad Med J* 2020;96:431.
2 Vasudevan RS, Horiuchi Y, Francesca J, *et al.* Persistent value of the stethoscope in the age of COVID-19. *Am J Med* 2020.