



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

COVID-19 outbreak: less stethoscope, more ultrasound

In their Correspondence in *The Lancet Respiratory Medicine*, Jonathan Cheung and colleagues stressed the need to ensure staff safety in the airway management of patients with 2019 novel coronavirus disease (COVID-19).¹ This safety should be guaranteed from the patient's first assessment. In fact, maintaining the safety of the doctor, who meets many people during his daily activity, avoids the spread of the disease to other patients and the possible creation of new epidemic outbreaks. However, patients with fever and respiratory symptoms do still need to be seen. The standard method involves doing an objective examination and carrying out any radiological tests, such as chest radiography or chest CT. This means the use of tools such as a stethoscope and radiological devices, with the possibility of contamination of the medical devices and nosocomial spreading of the virus; eventually, this can cause the contagion of health-care workers (from doctor to nurse to radiology technicians) and already hospitalised patients who have a higher risk of developing severe COVID-19.

During such a diffusive outbreak there is still the need to guarantee both the patients' rights to be evaluated according to the highest standards of care and, at the same time, the health-care workers' safety. Therefore, it is important that the minimum number of health-care workers and medical devices be exposed to suspected or confirmed cases of COVID-19. In this regard, in 2016, Copetti highlighted how lung ultrasound could have several advantages compared with the use of the stethoscope, to the extent that it could be replaced.² His famous

article entitled "Is lung ultrasound the stethoscope of the new millennium? Definitely yes" was visionary in 2016 and now, in this historical period, very pertinent.

In our opinion, the use of ultrasound is now essential in the safe management of the COVID-19 outbreaks, since it can allow the concomitant execution of clinical examination and lung imaging at the bedside by the same doctor. In order to minimise the use of medical devices and health-care professionals, we introduced a specific procedure for the evaluation of children with suspected COVID-19, based on the use of lung ultrasound by one paediatrician and another assistant, wearing the standard personal protections as per WHO indications.³ The paediatrician prepares the ultrasound pocket device, which comprises a wireless probe and a tablet. The probe and tablet are placed in two separate single-use plastic covers (figure). No other medical devices are used. When the two operators enter the isolation room, the paediatrician uses the probe and does the lung ultrasound, the assistant holds the tablet and freezes and stores the images, touching neither the patient nor the surrounding materials. The stethoscope is not used because it is more difficult to have specific covers and there is a higher probability to mistakenly touch either the ocular or oral mucosa with it. Lung auscultation is therefore substituted by lung visualisation with the ultrasound. After the procedure, in a dedicated area, the operators easily remove the probe and tablet from the covers, simply letting them slip onto clean towels, where the devices are further sterilised.

During a COVID-19 outbreak, it is important to minimise the health care-patient interactions to only the necessary procedures. There are

several studies showing the accuracy of lung ultrasound in detecting lung pathologies, from bacterial and viral pneumonia to acute respiratory distress syndrome⁴ and its non-inferiority to chest x-ray and clinical examination.^{2,4} Therefore, we believe that such a procedure could reduce health-care workers' risk of exposure and also patient movement from the consultation room to the radiology room. Considering the contagiousness of the virus and the need to reduce nosocomial outbreaks, we strongly suggest promotion of lung ultrasound in this setting.

We declare no competing interests.

Danilo Buonsenso, *Davide Pata, Antonio Chiaretti
davide.pata01@gmail.com

Institute of Pediatrics, Department of Woman and Child Health (DB, AC) and Department of Public Health (DB, AC), Fondazione Policlinico Universitario A Gemelli IRCCS, Rome, Italy; Institute of Paediatrics, Department of Woman and Child Health (DP, AC) and Department of Public Health (DP, AC), Catholic University of the Sacred Heart, Rome, Italy

- 1 Cheung JCH, Ho LT, Cheng JV, Cham EYK, Lam KN. Staff safety during emergency airway management for COVID-19 in Hong Kong. *Lancet Respir Med* 2020; **8**: e19.
- 2 Copetti R. Is lung ultrasound the stethoscope of the new millennium? Definitely yes! *Acta Med Acad* 2016; **45**: 80–81.
- 3 WHO. Medical devices. Personal protective equipment. https://www.who.int/medical_devices/meddev_ppe/en/ (accessed March 6, 2020).
- 4 Lichtenstein DA, Malbrain MLNG. Lung ultrasound in the critically ill (LUCI): a translational discipline. *Anaesthesiol Intensive Ther* 2017; **49**: 430–36.

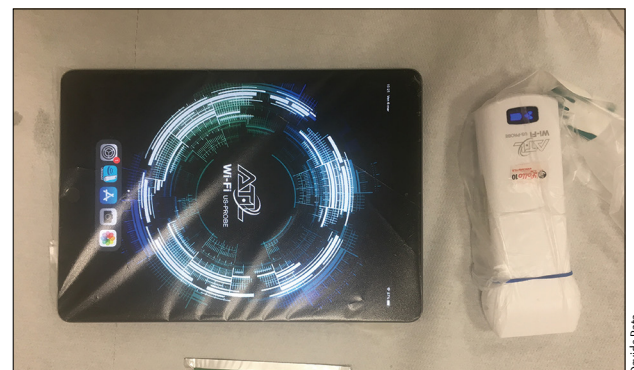


Figure: The ultrasound pocket device



Published Online
 March 20, 2020
[https://doi.org/10.1016/S2213-2600\(20\)30120-X](https://doi.org/10.1016/S2213-2600(20)30120-X)