



## Commentary

## Could lung ultrasound be used instead of auscultation?



The covid-19 era poses significant and unprecedented challenges for re-organisation of care, redistribution of resources and rationing of services [1,2]. A review of patients' clinical characteristics showed a high prevalence of respiratory symptoms and respiratory failure which require full assessment [3]. However, the role for auscultation is not proven and may be a very risky strategy as the risk of cross infection with taking a stethoscope from a patient to the next is very tangible [4,5]. A recent editorial in the African Journal of Emergency medicine suggested Severity Scoring Tool for low resourced settings and mentioned auscultation [6].

The stethoscope and auscultation have limited usefulness in the assessment of respiratory failure. Crackles on auscultation have a sensitivity of 19–67% and a specificity of 36–96%, with a positive likelihood ratio of 2.3 and a negative likelihood ratio of 0.8 [7]. Thus, their use in ruling pneumonia in or out is limited as their presence or absence only slightly changes the initial diagnosis (poor inter observer reliability, 72% agreement, kappa value 0.41) [7]. One might argue on the value of detecting wheeze on auscultation. The Centers for Disease Control and Prevention (CDC) does not mention wheeze as a symptom of Covid-19 [8]. Furthermore, Xu et al. did not describe wheeze as a finding in 62 patients with Covid-19 [9] and as such wheeze does not seem to be present in such patients.

Hence, in the current pandemic, is there a role for other diagnostic or investigative modalities such as lung ultrasound?

Lung ultrasonography in acute respiratory failure has been described for over a decade. A 2008 single centre study of bedside lung ultrasound examination protocol showed an accuracy of 90.5% in diagnosing the cause of acute respiratory failure in critically ill patients. The methods were standardised and reproducible [8]. This has been since incorporated in consensus guidelines [10]. As such, it has been debated as to whether lung ultrasound can have a role to play in the diagnostic pathway for Covid-19. Point of care ultrasound machines can be small, portable and cleaned in between patients [11,12]. Huang et al. performed lung ultrasound on 19 non-critical Covid-19 patients and found them to have specific characteristics (large number of B lines, subpleural pulmonary consolidation and poor blood flow) which were mainly visible in the posterior and inferior areas [13]. Ultrasound missed lesions that were completely intrapulmonary and apical and some of the analysis is only in abstract form. Care must be applied to the analysis of this as this is a pre-print, and not peer-reviewed. Peng et al. found similar findings using a similar 12 zone method but the article lacks details about the clinical characteristics of the patients [14]. Poggiali et al. found strong correlation between similar ultrasound findings and strong correlation between ultrasound and CT scan findings [15].

Soldati et al. propose a standard process for the use of lung ultrasound for COVID-19 patients but so far there have been no studies looking at patient outcomes [16]. Newly designed guidance from the Association of Chartered Physiotherapists in Respiratory Care are

laudable and eventual data gathered from the application of lung ultrasound will be crucial [17].

Whilst lung ultrasound has been shown to demonstrate specific characteristics in Covid-19, there is no current evidence for lung ultrasound changing management and affecting patient outcomes. The vast majority of physicians are not trained at lung ultrasound and that might prove a significant barrier for widespread use [11]. Perhaps lung ultrasound may have a role to play in triage of suspected Covid-19 patients in resource limited settings but again this has not been studied or reported. There is also the question of the patients' expectations to be physically examined that has been studied by Iida et al. [18]. As such, leaving the stethoscope behind in the Covid-19 era will signal a significant paradigm shift.

## Author's contribution

The author contributed as follows to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content: AA contributed 100%. The author approved the version to be published and agreed to be accountable for all aspects of the work.

## Declaration of competing interest

The author declare no conflict of interest.

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