

Point of care ultrasound: reply to Andronikou et al., and Gyorgyi et al.,

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Point of Care Ultrasound: ESPR response to letters

Dear Editor

We read with interest the letters of Andronikou et al [1] and Gyorgyi et al., [2] regarding the ESPR Position statement on non-radiologists performed point-of-care ultrasound (NR-POCUS) [3].

We are delighted that our article [3] and associated reviews of practice [4] are generating discussion and debate amongst the wider paediatric radiology community. This discussion is welcome as it demonstrates both the importance of this topic and the wide range of circumstances in which NR-POCUS is being practised or considered. We overwhelmingly agree with the main point made in both recent letters to this journal regarding the major impact to the patient in the face of a limited workforce that NR-POCUS can offer: rapid access to ultrasound services in an underserved population, particularly important in the developing world. ESPR have an active outreach educational program with a specific outreach Taskforce [5] in collaboration with the World Federation of Pediatric Imaging (WFPI), amongst others.

Both Gyorgyi et al., and Andronikou et al agree with our position that a wide range of trained users are currently offering POCUS. We also recognise that much of the literature they cite on “effectiveness” of NR-POCUS recognises improvements in workload efficiency, reducing delays, potential cost efficiencies and consequences for overall health care costs [1].

No-one can be surprised that making something more widely available is a) feasible [6], b) improves “access”, and that c) diagnoses are made. We all recognise that placing an ultrasound probe on a patient and generating images is highly appealing to both practitioner and patient, but does not constitute a diagnostic ultrasound.

We encourage practitioners not to confuse availability with diagnostic accuracy. In their case study of lung ultrasound, only one of the papers put forwards by Andronikou et al., [1] discusses the diagnostic accuracy of POCUS [7]. In that study, 12 of 34 COVID-19 patients had CT performed to compare against lung US. Despite overall agreement (normal / abnormal), each patient had discrepancies between CT and US findings.

These are classic examples of type II error rates: if we search for agreement, we will not find discrepancies. Furthermore, whilst value judgements are by nature subjective, we must be careful not to conclude usefulness from observational studies when “usefulness” has neither been defined nor shown.

Andronikou et al., also recognise that it is the limited experience rather than status of ultrasound practitioners that may generate errors [1]. We could not agree more: clearly many radiologists make errors, but they do so in a regulated environment which highlights rather than hides errors. Part of the reason that radiological ultrasound scans are documented, saved and formally reported in the clinical notes is to create auditable trail, and errors highlighted for future learning e.g. Royal College of Radiologists’ “Radiologists Events and Learning Meetings” standards [8]. Practicing outside of an effective governance structure should be questioned, in the modern era of medical scrutiny and indemnity.

We collectively agree that ultrasound examinations should be performed by trained personnel, and high-quality reporting is performed in a structured governance environment, which is transparent, auditable and leads to further learning. We stand by our original position that all imaging findings should be documented, reproducible and open to external scrutiny, and our objective is to encourage all practitioners to meet these standards, rather than discredit those outside radiology who perform ultrasound. It is naïve to think that any medical practitioner can obtain an ultrasound machine and begin making accurate diagnoses. To quote our Editor, “Ultrasound, regardless of where it is performed and by whom, requires training, practice and expertise to be clinically helpful; and its precision, diagnostic observations, interpretations and clinical efficacy are global” [9]. Putting the probe on the patient is the beginning, but far from the end, of a good ultrasound. We actively encourage all practitioners to come together to ensure patients receive the best possible care, rather than the care that is currently available.

References:

1. Andronikou S, et al., Radiologists should support No-radiologist-performed point-of-care ultrasonography in children: Lung ultrasound as a case study for involvement and collaboration. *Pediatric Radiology* 2021 Submitted PRAD-2-21-00443
2. Gyorgyi Z et al., Letter to Editor regarding the ESPR Ultrasound position statement by van Rijn et al., 2021 PRAD submitted PRAD-D-21-00442
3. van Rijn RR, Stafrace S, Arthurs OJ, et al. (2021) Non-radiologist-performed point-of-care ultrasonography in paediatrics - European Society of Paediatric Radiology position paper. *Pediatr Radiol* 51:161–167. doi: 10.1007/s00247-020-04843-6
4. van Wassenae EA, Daams JG, Benninga MA, Rosendahl K, Koot BGP, Stafrace S, Arthurs OJ, van Rijn RR. Non-radiologist-performed abdominal point-of-care ultrasonography in paediatrics - a scoping review. *Pediatr Radiol*. 2021 Jul;51(8):1386-1399. doi: 10.1007/s00247-021-04997-x.
5. <https://www.espr.org/taskforces/outreach/>
6. Conlon TW, Himebauch AS, Fitzgerald JC, et al. (2015) Implementation of a pediatric critical care focused bedside ultrasound training program in a large academic PICU. *Pediatr Crit Care Med* 16:219–226. doi: 10.1097/PCC.0000000000000340
7. Giorno EPC, De Paulis M, Sameshima YT, et al. (2020) Point-of-care lung ultrasound imaging in pediatric COVID-19. *Ultrasound J* 12:50. doi: 10.1186/s13089-020-00198-z
8. The Royal College of Radiologists. Standards for radiology events and learning meetings. 2020. BFCR20(1). The Royal College of Radiologists 2016. Accessed 28 July 2021 at <https://www.rcr.ac.uk/publication/standards-radiology-events-and-learning-meetings>
9. Olsen ØE (2017) Reply to Andronikou and Sergot: “point-of-care” ultrasound. *Pediatr Radiol* 47:1851–1852. doi: 10.1007/s00247-017-3980-0