Interpretation of pediatric chest radiographs by non-radiologist clinicians in Botswana

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A manuscript by Fawole et al. [1] in this issue of *Pediatric Radiology* is important because the authors examine a frequent problem seen in low- to medium-income countries: the scarcity of trained radiologists to provide adequate care. As a consequence, most of the chest radiographs and other imaging studies in these pediatric populations are interpreted by clinicians. As mentioned by the authors, pneumonia is the leading cause of death in children younger than 5 years, and the great majority of deaths occur in low- to medium-income countries; chest radiographs are the primary modality used in identifying pneumonia [2]. The authors listed the limitations encountered in these countries and how, although clinicians can reliably diagnose the disease on chest radiographs, agreement is highest among radiologists. Therefore, educational approaches to improve clinicians' competence in interpreting imaging studies are welcome while we await an increase in the number of trained specialists.

A strong point of the manuscript [1] is that the authors used World Health Organization (WHO)-defined benchmark data for the diagnosis of pneumonia in their primary objective of chest radiograph interpretation by clinicians in order to then evaluate an educational intervention [3]. This consisted in the development and assessment of this training to improve chest radiograph interpretation among medical students and non-radiologist clinicians. The results indicated improvement in diagnostic skills, albeit not at the level of a trained specialist. It is also possible that this could be a transitory achievement, and the authors pointed to the need for regular training to sustain the gains. It should also be considered that the physicians participating in the study were relatively early in their

careers; a seasoned clinician would have sharpened examination skills and might have been able to better diagnose pneumonia in pediatric patients.

In the evaluation of pneumonia, other diagnostic tools can also be considered. In recent years, ultrasonography of the chest has been suggested as an easier way for clinicians to diagnose pneumonia; its use is mentioned [1], but it was not the aim of the manuscript to evaluate its use and effectiveness [4]. Adequate training is an essential condition.

The use of digital platforms is a palliative solution — pediatricians are connected with pediatric radiologists who offer a second opinion on their difficult cases, but this has its own set of limitations. Teleradiology is a useful tool, particularly at sites where no radiologists are available. Images must be scanned and submitted to a central server for distribution among volunteer readers. For example, the World Federation of Pediatric Imaging (WFPI) has established a successful connection among pediatricians in several countries, including South Africa and Mozambique, as part of its outreach program [5]. Other partnerships also exist, sponsored by different institutions.

The true solution for the paucity of radiologists in low- to medium-income countries is an increase in the number of trained personnel, but this requires allocation of resources and time. There are encouraging initiatives in Africa, such as the establishment of a pediatric radiology fellowship in Addis Ababa, Ethiopia, in partnership with the Children's Hospital of Philadelphia, aimed at preparing specialists in loco [6]. Another example is the WFPI's 3-month fellowships, which are available for diagnostic radiologists wishing to improve their skills in the interpreting pediatric imaging studies at several sites worldwide [7].

In summary, Fawole et al.'s [1] manuscript calls attention to a major problem and proposes one way to improve medical care in low- to medium-income countries — an educational initiative. More dedicated work and funding are needed if there is a real commitment to improve the health of children worldwide.

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Compliance with ethical standards

Conflicts of interest None

References

1. Fawole OA, Kelly MS, Steenhoff AP et al (2020) Interpretation of pediatric chest radiographs by non-radiologist clinicians in Botswana using World Health Organization criteria for endpoint pneumonia. *Pediatr Radiol*. <https://doi.org/10.1007/s00247-020-04625-0>
2. Walker CLF, Rudan I, Liu L et al (2013) Global burden of childhood pneumonia and diarrhea. *Lancet* 381:1405–1416
3. Cherian T, Mulholland EK, Carlin JB et al (2005) Standardized interpretation of paediatric chest radiographs for the diagnosis of pneumonia in epidemiological studies. *Bull World Health Organ* 83:353–359
4. Pereda MA, Chavez MA, Hooper-Miele CC et al (2015) Lung ultrasound for diagnosis of pneumonia in children: a meta-analysis. *Pediatrics* 135:714–722
5. Dehay A, Silva CT, Darge K et al (2016) Saving the starfish: World Federation of Pediatric Imaging (WFPI) development, work to date, and membership feedback on international outreach. *Pediatr Radiol* 46:452–461
6. Darge K, Gorfu Y, Jaramillo D (2014) Ethiopia: who to educate, how to educate and what to teach. *Pediatr Radiol* 44:642
7. World Federation of Pediatric Imaging (2020) WFPI fellowships/observerships. WFPI web page. wfpiweb.org/Fellowships.aspx. Accessed 30 Jan 2020

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