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Why do artificial-intelligence based chest radiograph applications ignore the lateral view?

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A chest radiograph in a 50-year-old patient who presented with fever and cough confirmed a small consolidation in the left lower lobe (fig. 1A, B). An artificial-intelligence based chest radiograph algorithm that only analyzes the posteroanterior (PA) view (Lunit INSIGHT CXR) did not detect the patient's small retrocardiac left lower lobe opacity (fig. 1C), but the thoracic radiologist detected the small consolidation on the lateral projection. A follow-up chest radiograph performed 4 weeks following the administration of antibiotics demonstrated complete resolution of the left lower lobe opacity (fig 1D, E). Many deep learning-based models developed for the analysis of chest radiographs ignore the lateral view and exclusively assess the PA projection.^{1,2} By ignoring the lateral view, which among other things better assesses the retrosternal and retrocardiac spaces, these algorithms are not taking full advantage of all the data provided by a chest radiograph.³ Moreover, since the radiation dose from a lateral view is substantially higher than that of a PA projection (the lateral radiograph accounts approximately for 75% of the effective radiation dose of a 2-view chest radiograph), we could then ask whether it is ethical to unnecessarily radiate a patient if a deep learning-based model is only going to analyze "half" of the information provided by a chest X-ray. This case emphasizes the need for deep learning-based algorithms to also take into account the information provided by the lateral view of chest radiographs.⁴

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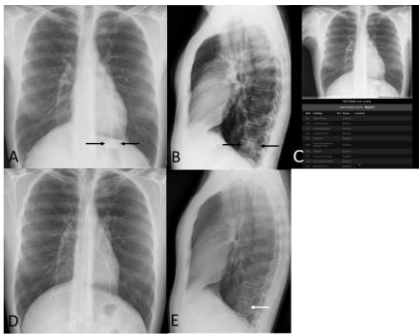
Artificial intelligence involvement: The author declares that he has not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

References

1. Ahn JS, Ebrahimian S, McDermott S, Lee S, Naccarato L, Di Capua JF, et al. Association of Artificial Intelligence-Aided Chest Radiograph Interpretation With Reader Performance and Efficiency. *JAMA Netw Open*. 2022;5:e2229289. doi: 10.1001/jamanetworkopen.2022.29289.
2. Schalekamp S, van Leeuwen K, Calli E, Murphy K, Rutten M, Geurts B, et al. Performance of AI to exclude normal chest radiographs to reduce radiologists' workload. *Eur Radiol*. 2024;34:7255-63.
3. Raof S, Feigin D, Sung A, Raof S, Irugulpati L, Rosenow EC 3rd. Interpretation of plain chest roentgenogram. *Chest*. 2012;141:545-58.
4. Mallio CA, Quattrocchi CC, Beomonte Zobel B, Parizel PM. Artificial intelligence, chest radiographs, and radiology trainees: a powerful combination to enhance the future of radiologists? *Quant Imaging Med Surg*. 2021;11:2204-7.

Figure legend

Figure 1. A and B) Posteroanterior (A) and lateral (B) views of a chest radiograph show a small consolidation in the left lower lobe (arrows). Note that the opacity is best visualized on the lateral view, projected over the 12th thoracic vertebral body (arrows). C) Image capture from a deep-learning based algorithm that can detect up to 10 imaging findings on the posteroanterior chest radiograph does not detect any abnormal finding. D and E) Posteroanterior (D) and lateral (E) views of a follow-up chest radiograph performed 4 weeks later show a complete resolution of the left lower lobe opacity. Note the normal attenuation of the 12th thoracic vertebral body (arrow).



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