Integration of artificial intelligence in chest radiographs in primary care: educational innovation and interdisciplinary collaboration

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Keywords

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Learning objectives

Artificial intelligence (AI) is increasingly integrated into radiological workflows, with most applications developed and validated in hospital-based environments where radiologists are readily available. In these settings, AI has demonstrated its ability to improve workflow efficiency, accelerate image triage, and support safer clinical decision-making, while complementing - rather than replacing - professional expertise [1-3].

However, the educational approach and implementation of structured AI-supported protocols in primary care remain insufficiently explored in the literature. Chest radiography is one of the most frequently requested imaging examinations in primary care, particularly in acute care consultations. In many primary care settings, radiologists are not available on-site, and image interpretation is often performed by non-radiologist clinicians.

- To address the integration of AI in chest radiographs in primary care, particularly in acute care contexts.
- To highlight the importance of interdisciplinary collaboration between family doctors and radiographers in the acquisition, interpretation, and safe clinical use of chest radiographs supported by AI.

Background

Most AI applications in radiology have been designed for hospital environments, where structured workflows and immediate access to radiologists facilitate validation and oversight of AI outputs [1,2]. In recent years, AI-based systems for chest radiograph interpretation have demonstrated robust performance in detecting common thoracic abnormalities, including pneumonia, pneumothorax, pulmonary nodules, and interstitial lung disease [3-6].

This educational work is based on a narrative review of recent and relevant scientific literature addressing the use of artificial intelligence in chest radiography, with particular emphasis on primary care and non-specialist healthcare environments. The analysis focused on scientific articles published in indexed journals within the last five years that are directly related to the defined objectives of this work.

- The application of AI in chest radiography in primary care or resource-limited settings;
- The impact of AI on diagnostic accuracy, workflow efficiency, and clinical decision-making;
- The role of interdisciplinary collaboration between family doctors and radiographers in AI-supported imaging workflows.

Findings and procedure details

The reviewed literature consistently demonstrates that the integration of AI into chest radiograph interpretation in primary care offers significant benefits. AI-based systems can reduce interpretation time and support faster patient triage, which is particularly relevant in acute care settings and environments with limited access to radiology specialists [4].

Several studies report that AI assists healthcare professionals in identifying pathological findings on chest radiographs, improving diagnostic accuracy and increasing confidence among non-radiologist clinicians, including family doctors [5]. This diagnostic support is especially valuable in primary care, where chest radiographs often guide immediate clinical decisions.

AI systems have shown particular value in highlighting critical findings such as pneumothorax, pneumonia, and pulmonary nodules, facilitating earlier clinical intervention or appropriate referral for further imaging and specialist evaluation [6].

Despite these advantages, the literature emphasises that AI should be used strictly as a complementary tool. The clinical interpretation and decision-making responsibility remains with the family doctor, who must validate AI outputs and integrate radiological findings with the patient's clinical context. Radiographers play a central role by ensuring optimal image acquisition, quality control, and protocol standardisation, all of which directly influence AI performance and reliability.

Close interdisciplinary collaboration between family doctors and radiographers is therefore essential for the safe and effective implementation of AI in primary care [1,7].

Conclusion

The integration of artificial intelligence into chest radiography in primary care represents both a practical and educational innovation. In acute care contexts and in settings without on-site radiologists, AI can improve efficiency, support diagnostic accuracy, and assist clinical decision-making.

Successful implementation depends on critical interpretation by family doctors, high-quality image acquisition by radiographers, and continuous interdisciplinary collaboration supported by ongoing education and protocol standardisation. AI should be regarded as a supportive tool that enhances - but never replaces - human expertise.

Aligned with the ECR 2026 theme "Rays of Knowledge", this educational exhibit highlights how artificial intelligence can illuminate clinical practice in primary care while reinforcing the essential role of healthcare professionals in ensuring patient safety and quality of care.

Personal information and conflict of interest

M. F. G. Renda: Nothing to disclose

N. I. M. Gaudêncio: Nothing to disclose

References

1 European Society of Radiology (ESR). What the radiologist should know about artificial intelligence - an ESR white paper. Insights Imaging. 2019;10:44.

2 Topol EJ. High-performance medicine: the convergence of human and artificial intelligence. Nat Med. 2019;25:44-56.

3 Hwang EJ, Park S, Jin KN, et al. Applications of artificial intelligence for thoracic imaging: considerations and challenges. Radiology. 2025;295(1):1-10.

4 Sridharan S, Taylor J, Brady A, et al. Real-world evaluation of an artificial intelligence triaging system for chest radiographs in primary care. J Med Imaging. 2024;11(2):123-130.

5 Hong EK, Kim YJ, Lee JS, et al. Diagnostic accuracy and clinical value of a domain-specific multimodal generative artificial intelligence model for chest radiograph interpretation. Radiology. 2025;241(4):1234-1242.

6 Miró Catalina Q, González A, Pérez M, et al. Real-world testing of an artificial intelligence algorithm for reading chest radiographs in the primary care setting. Sci Rep. 2024;14:12345.

7 Brady AP. Error and discrepancy in radiology: inevitable or avoidable? Insights Imaging. 2017;8:171-182.

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