La radiologia medica (2025) 130:1311–1312
https://doi.org/10.1007/s11547-025-02070-3

EDITORIAL

From invisible to indispensable: the radiologist's great challenge

Nicoletta Gandolfo[1]

Received: 10 July 2025 / Accepted: 16 July 2025 / Published online: 29 August 2025

For decades, radiologists have been perceived as technicians, a specialized image interpreters somewhat detached from direct patient contact. Today, our discipline has undergone profound evolution, and the role of the radiologist has transformed: we have become integral clinicians, actively involved in the decision-making process, leading increasingly complex and personalized diagnostic and therapeutic pathways [1].

In a context where technological innovation advances at an exponential pace and medicine moves toward greater precision, radiology establishes itself as a vital nexus for early diagnosis, prognostic assessment, image-guided therapy, and personalized follow-up.

This new role demands transversal skills: technical and diagnostic expertise alone are no longer sufficient. It requires a comprehensive understanding of the patient, the ability to interpret images within the clinical setting, to discuss complex cases in multidisciplinary boards, and to contribute to selecting the most appropriate therapeutic strategies. Consequently, the radiologist becomes a clinical mediator—a bridge figure linking imaging to care, technology to patient-centered medicine [2].

Therefore, our role today extends far beyond image acquisition: we are guardians of prescribing appropriateness, a value recognized at regulatory levels through the Italian Ministerial Decree of December 9, 2015 [3], and the more recent DM 77/2022 [4], which redefines territorial healthcare. Our function in clinical guidance is fundamental in reducing unnecessary or harmful examinations, improving the quality of diagnostic-therapeutic pathways, and contributing to the sustainability of the National Health Service (NHS).

Educating colleagues and the public on the conscious use of diagnostic imaging is a mission that concerns us deeply. It is not only a professional duty but an ethical responsibility to be among the protagonists and custodians of quality and safety for patients, professionals, and working environments, especially as medicine increasingly incorporates digital tools supported by Artificial Intelligence (AI).

The growing use of advanced technologies, such as molecular imaging, radiogenomics, and radiomics, opens new horizons toward personalized and predictive medicine. Through big data analysis and integration with AI algorithms, radiologists can identify patterns invisible to the human eye, anticipate therapeutic responses, predict disease progression, and guide preventive strategies. This approach moves beyond simple morphological descriptions toward functional and biological assessments of pathologies.

AI today represents a valuable partner for radiologists [5, 6]. It is not an autonomous diagnostic tool but a support for standardizing protocols, enhancing image quality, risk stratification, and developing personalized care pathways. AI reduces variability, increases productivity, and enhances the clinical value of radiology, all while maintaining human judgment and physician responsibility at the core.

The Italian Society of Medical and Interventional Radiology (SIRM) actively promotes a conscious and regulated use of AI through training, guidelines, and intersocietal scientific collaborations, recognizing that modern radiology permeates nearly every medical specialty.

Radiomics, for example, allows for the quantitative analysis of imaging patterns and their correlation with predictive genomic markers in oncology, increasingly establishing itself as a cornerstone of precision oncologic radiology [7]. In emergency pathologies—be it neuroimaging, abdominal, or cardiothoracic-vascular—real-time imaging guides therapeutic decisions, integrating AI solutions for automatic detection of vascular occlusions and mismatches.

Moreover, radiology is not solely diagnostic; in many cases, it also encompasses therapy, whose efficacy is now well-supported by scientific evidence and international guidelines. Image-guided interventions—such as ablations, targeted biopsies, drainage of collections, embolizations of vascular or tumoral lesions—offer less invasive alternatives

✉ Nicoletta Gandolfo
Nicoletta.Gandolfo@asl3.liguria.it

[1] Department of Radiology, Villa Scassi Hospital ASL3, Genoa, Italy

to traditional surgery, with fewer complications, shorter recovery times, and improved outcomes in specific clinical contexts. These procedures exemplify how radiology has become a full-fledged therapeutic discipline, actively contributing to clinical patient management.

Special attention must also be given to the humanization of diagnostic imaging. Patient contact—often overlooked in the past—must now be recovered and valued: informing, listening, and explaining the benefits and limitations of examinations are integral parts of our responsibility. Narrative medicine, empathetic communication, and understanding of vulnerabilities—whether physical, cognitive, or cultural—are fundamental tools for radiologists committed to being protagonists rather than mere executors.

The radiological focus on the patient is increasingly tailored according to age, gender, and related conditions or implications—such as pediatric, geriatric, pregnancy, or lactation contexts—developing best practices that optimize the use of various imaging techniques, minimize ionizing radiation doses, and ensure selective, targeted use of MRI and contrast agents.

The radiologist is therefore called to exercise clinical and cultural leadership. Active participation in developing diagnostic pathways, contributions to interdisciplinary training, promotion of scientific literacy among the population, and engagement with policymakers are essential to ensure an equitable, transparent, evidence-based healthcare system.

In summary, today—and even more so in the future—the radiologist is no longer a behind-the-screen technician but a central figure in modern medicine: a clinician, innovator, communicator, and leader. Transitioning from invisible to indispensable is not just a role transformation but an identity shift that calls every radiologist toward new awareness and responsibility regarding patients, colleagues, and society at large.

Being a radiologist today means not only being able to read images but also understanding health needs, social dynamics, and the transformations of contemporary medicine.

From invisible to indispensable: this is the challenge.

And it is also our greatest responsibility.

Acknowledgements We used the generative AI tool ChatGPT by OpenAI for language editing only.

Funding The author has not disclosed any funding.

Declarations

Conflict of interest The author is Scientific Editorial Board Member of "La radiologia medica". She has not taken part in the review or selection process of this article.

Ethics approval Sine this is an Editorial, no ethical approval was obtained.

References

1. Boland GW (2009) Visibility of radiologists: helping to secure your future. AJR Am J Roentgenol 192(5):1373–1374. https://doi.org/10.2214/AJR.08.1824
2. European Society of Radiology (ESR) (2020) The identity and role of the radiologist in 2020: a survey among ESR full radiologist members. Insights Imaging. https://doi.org/10.1186/s13244-020-00945-9
3. Italian Ministry of Health (2015) Prescriptive Appropriateness Decree, DM (Ministerial Decree) December 9, 2015. Official Gazette no. 65, March 18, 2016
4. Italian Ministry of Health (2022) Ministerial Decree 77/2022. Official Gazette No. 144, June 22, 2022
5. Karantanas AH, Efremidis S (2022) The concept of the invisible radiologist in the era of artificial intelligence. Eur J Radiol. https://doi.org/10.1016/j.ejrad.2021.110147
6. Langlotz CP (2019) Will artificial intelligence replace radiologists? Radiol Artif Intell 1(3):e190058. https://doi.org/10.1148/ryai.2019190058
7. Gillies RJ, Kinahan PE, Hricak H (2016) Radiomics: images are more than pictures, they are data. Radiology 278(2):563–577. https://doi.org/10.1148/radiol.2015151169