



# Our patients have spoken: keep radiologists in the centre of AI imaging ecosystems

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In *European Radiology*, Ongena and colleagues [1] have developed a standardised questionnaire to evaluate the patient perspective on the implementation of artificial intelligence in radiology. In doing so, the authors have endeavoured to address an important blind spot in AI research, namely a need to assess the impact of new technologies in their social, cultural and political milieu [2].

Using exploratory factor analysis on patient feedback, the authors identified five variables reflecting patient concerns in radiology AI—(1) trust and accountability, (2) understanding of acquisition procedure and interpretation, (3) human communication, (4) efficiency and (5) being informed of AI utilisation for their radiological diagnosis. To paraphrase the results factoring scores for each variable, patients want accurate and fast results they can understand and believe, whilst being provided opportunities when being given their results to clarify their queries and doubts, as well as receive emotional support. These are fair expectations, and whilst not completely achievable at present, should remain aspirational for AI developers and radiologists alike.

Ongena et al. [1] found that patients are moderately negative when it comes to their trust in AI taking over diagnostic interpretations tasks of the radiologist with regard to accuracy, communication and confidentiality. This bodes well for AI

systems which are designed to be human-computer augmentative “centaur” systems, and it is imperative to effectively leverage the respective strengths of both machine intelligence and human ingenuity [3]. Medicine is, and continues to be, a “high touch” profession, and it has been shown that good patient–doctor communication and empathy are more important to patient satisfaction than medical outcome [4]. Radiology AI solutions often fail to reflect the true complexities of clinical practice, which are compounded by multiple data sources and their temporal variances [5, 6]. Quite apart from ambiguity of scientific evidence, there are persistent public suspicions of AI arising from the intrinsic mystery of the AI black box [7, 8]. Whilst professionals struggle to explain results from an AI algorithm, expectations of public trust should be realistic and patient.

The paper found a patient preference for AI to look at all parts of the body, and for AI to do more opportunistic imaging and predictive analysis. Perhaps patients have drawn parallels with our day-to-day lives, where annual certification inspection for vehicle roadworthiness is commonplace, so we may see the development of routine AI screening whole-body scans. Whole-body MRI (WB-MRI) is already recommended in international guidelines for the assessment of several cancer-prone syndromes [9] and it is not much of a stretch of imagination that it may come to pass in healthcare as emphasis left-shifts towards preserving the health span, rather than treating disease. Furthermore, state-of-the-art liquid biopsies which promise to detect cancer in the early stage by the isolation of circulating tumor cells and tumor DNA [10] provide a rich source of genomic and proteomic data which can be combined to augment multimodal AI screening for cancer. Whilst this is not an endorsement of this strategy as a management plan for public health—mainly due to the enormous cost inefficiencies—should the cost and availability of this technology improve above a threshold of feasibility, it remains an attractive proposition.

Lastly, the study reveals that educational level of attainment plays a role in how patients perceive AI technology.

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This flies in the face of conventional wisdom that age, or the lack thereof, is the main determinant of the receptiveness of a generation to new technologies. Despite the fact that younger generations were born as digital natives, it cannot be assumed that an implicit trust has been created between them and AI machines.

Similarly, cultural factors are likely to play a large role in the acceptance of AI technology amongst patients, and is an avenue for future research. It has been shown that the Japanese people are more comfortable with robots when compared with their American counterparts, in part due to the Japanese Shinto practice which embraces animism [11].

All said, the life of the artificially intelligent imaging ecosystem is in its infancy. Given the magnitude of its presence in the field of radiology in this new 4th industrial age, its societal impact needs to be widely reassessed once the technology is more mature. Nonetheless, asking the right questions of our patients, is the proper place to start.

"If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask, for once I know the proper question, I could solve the problem in less than five minutes." - Ascribed to Albert Einstein (1879–1955), Nobel Laureate Theoretical Physicist

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### Methodology

- Not applicable

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