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Radical shift towards value-based radiology

In a correspondence letter published in The Lancet, Prof. Dr. Marc Dewey (Charité–Universitätsmedizin Berlin, Germany) highlights the urgency for the practice of radiology to tackle some important problems.

"The practice of radiology needs to change for three reasons: subjective decisions about tests are a major contributor to the overuse of services, images are often inconsistently obtained and analysed, and radiology reports often include vague descriptions," he writes.

The professor then proceeds to discuss how these problems can be solved with the help of modern technology, especially artificial intelligence. Making this change towards improving the quality of care also requires a huge cultural shift, he points out.

1. Overuse of services: This issue could be overcome with better decision making and use of validated clinical predictions for individual disease probabilities, like those made available through iGUIDE. This method would also help medical students greatly improve their diagnostic decisions.

2. Improving image analysis: The technical integration of artificial intelligence with human analysis has great potential to increase consistency in image analysis and reduce errors. For example, analysis of 4D images of the heart (which encompass 2–3 billion voxels) can be facilitated by automated motion correction and fractal analysis. AI integration would lead to a paradigm shift: the bionic radiologist – similar to Dr. Leonard McCoy in Star Trek, who combines the consistency of automation with human perception. The bionic radiologist would supervise the results generated by machine learning and integrate them with other data.

3. Meaningful radiology reports: Structured reports provide a choice of predefined descriptions, thereby maximising consistency and establishing a clearer link between tests and recommendations. Structured reports generated by a bionic radiologist could avoid missed care opportunities and bridge the gap between evidence-based and personalised treatment recommendations.

This change towards value-based radiology "would ensure that patients' needs become a priority while still reducing costs," Prof. Dewey points out. Moreover, this process would allow the radiologist to become a more active participant in the nuances of patient care, "which automatic systems are not good at — yet," he adds.

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