What Will the Radiologist Actually Do in 2036?

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Radiology is entering a period of profound transformation. Imaging volumes continue to rise, examinations are becoming increasingly complex, and healthcare systems face persistent workforce shortages. At the same time, artificial intelligence (AI) is rapidly advancing across nearly every aspect of imaging practice. As a result, the question is no longer whether AI will influence radiology, but how it will reshape what radiologists actually do.

The future of radiology is often framed as a contest between human experts and machines. This perspective is misleading. While AI is likely to automate many technical and repetitive tasks currently performed by radiologists, it is also creating opportunities for the profession to evolve in new and potentially more influential directions. By 2036, radiologists are unlikely to spend their days doing exactly what they do today. Ideally, their role may shift from image interpretation alone toward information integration, clinical consultation, quantitative analysis, and oversight of intelligent systems.

From Image Reader to Information Integrator

For much of its history, radiology has focused on detecting and characterizing abnormalities visible on medical images. AI systems are becoming increasingly capable of performing many of these functions. Automated detection, segmentation, measurement, triage, and report generation are likely to become a routine part of clinical workflows.

However, radiology involves much more than recognizing patterns. Imaging findings must be interpreted in the context of the patient's history, symptoms, laboratory data, prior examinations, and treatment objectives. The significance of an imaging observation often depends on factors that extend beyond the image itself.

As machine performance improves, the radiologist's value may increasingly lie in integrating information rather than merely identifying abnormalities. Future radiologists may serve as translators between large volumes of data and actionable clinical decisions. Their expertise will

rest not only on what is visible on images but also on understanding what those findings mean for patient management.

The AI-Augmented Workflow

AI is unlikely to transform only image interpretation. Instead, it may influence every stage of the imaging process.

Before an examination, intelligent systems may assist with scheduling, protocol selection, patient preparation, and appropriateness assessment. During image acquisition, AI may improve image quality while reducing scan times and radiation exposure. After acquisition, algorithms may prioritize urgent studies, retrieve relevant prior examinations, perform measurements automatically, and generate structured report drafts.

Radiologists will increasingly work within AI-augmented workflows in which many routine processes occur automatically. Rather than replacing physicians, these technologies may reduce administrative burdens and repetitive tasks, allowing radiologists to focus on higher-level activities that require judgment, communication, and clinical insight.

The central challenge will no longer be producing information but deciding how best to use it.

Measuring Everything and Deciding What Matters

One of the most important developments in radiology may be the transition from qualitative interpretation to quantitative imaging.

Advances in image analysis are making it possible to automatically measure organ volumes, body composition, tissue characteristics, disease burden, and a growing range of imaging biomarkers. Radiomics and machine learning may reveal patterns associated with disease progression, treatment response, or future clinical outcomes.

Consequently, future imaging examinations may generate vast amounts of quantitative information. The limiting factor will not be the availability of measurements but their interpretation and clinical relevance.

Radiologists may increasingly serve as experts in transforming quantitative data into meaningful clinical knowledge. Their role will involve determining which measurements matter, which findings are actionable, and how imaging-derived biomarkers should influence patient care. This shift could move radiology beyond diagnosis toward prognosis, risk assessment, and personalized medicine.

Opportunistic Imaging and Preventive Care

Medical images often contain far more information than is currently extracted during routine reporting.

A CT examination obtained for one indication may simultaneously provide insights into bone density, cardiovascular risk, body composition, liver health, and other clinically relevant biomarkers. By 2036, AI systems may automatically analyze these features and identify patients at risk for future disease.

This concept, often referred to as opportunistic imaging, has the potential to expand radiology's role in preventive medicine. Rather than focusing exclusively on diagnosing existing disease, radiologists may help identify health risks before symptoms develop. Imaging could increasingly contribute to population health, screening, and early intervention strategies.

In this future, radiologists may not only detect disease but also help prevent it.

Consultants in Clinical Decision-Making

As AI assumes greater responsibility for image analysis, the importance of communication and consultation may grow.

Clinicians are unlikely to need less support in a data-rich healthcare environment. On the contrary, increasing volumes of information may create a greater need for specialists capable of synthesizing evidence and providing clear recommendations.

Radiologists may become more involved in multidisciplinary conferences, treatment planning, diagnostic strategy, and direct communication with clinicians and patients. Their contribution

may be judged less by reporting volume and more by the value they provide in guiding medical decisions.

This evolution would reinforce radiology's position as a clinical specialty rather than merely a diagnostic service.

Supervising Intelligent Systems

The widespread adoption of AI may create entirely new responsibilities for radiologists.

Algorithms require validation, monitoring, and quality assurance. Their performance may change over time because of shifts in patient populations, imaging protocols, equipment, or clinical practice. Biases and unexpected errors can emerge after deployment and may not be immediately apparent.

Radiologists will likely play an important role in overseeing these systems, ensuring that they remain safe, accurate, equitable, and clinically useful. Responsibilities may include performance monitoring, regulatory compliance, governance, implementation strategies, and the management of AI-related risks.

Future radiologists may therefore supervise intelligent systems in much the same way they currently oversee imaging equipment and quality programs.

Human Judgment in an Automated Era

Despite remarkable progress in AI, medicine remains a field characterized by uncertainty.

Clinical decisions often require balancing competing risks, interpreting incomplete information, and considering individual patient circumstances. Many imaging findings remain ambiguous, and management decisions frequently depend on context rather than pattern recognition alone.

While AI may become exceptionally skilled at generating information, determining how that information should influence patient care will remain a fundamentally human responsibility. The ability to manage uncertainty, exercise judgment, and communicate recommendations may become even more valuable as automation increases.

In this sense, the future radiologist may be defined less by technical interpretation and more by intellectual leadership.

Conclusion

By 2036, radiologists will almost certainly spend less time performing routine image interpretation than they do today. AI is likely to automate many repetitive aspects of imaging practice while expanding access to quantitative information and advanced decision-support tools.

Yet this transformation does not imply obsolescence. Rather, it offers an opportunity for radiologists to evolve into information integrators, clinical consultants, experts in quantitative imaging, stewards of opportunistic imaging, and supervisors of intelligent systems.

Ultimately, the future of radiology will depend less on what AI can do and more on how radiologists choose to respond to it. The radiologist of 2036 may be defined not by what technology replaces, but by the new forms of value that technology enables.