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Redefining Strategic Planning for Modern Healthcare

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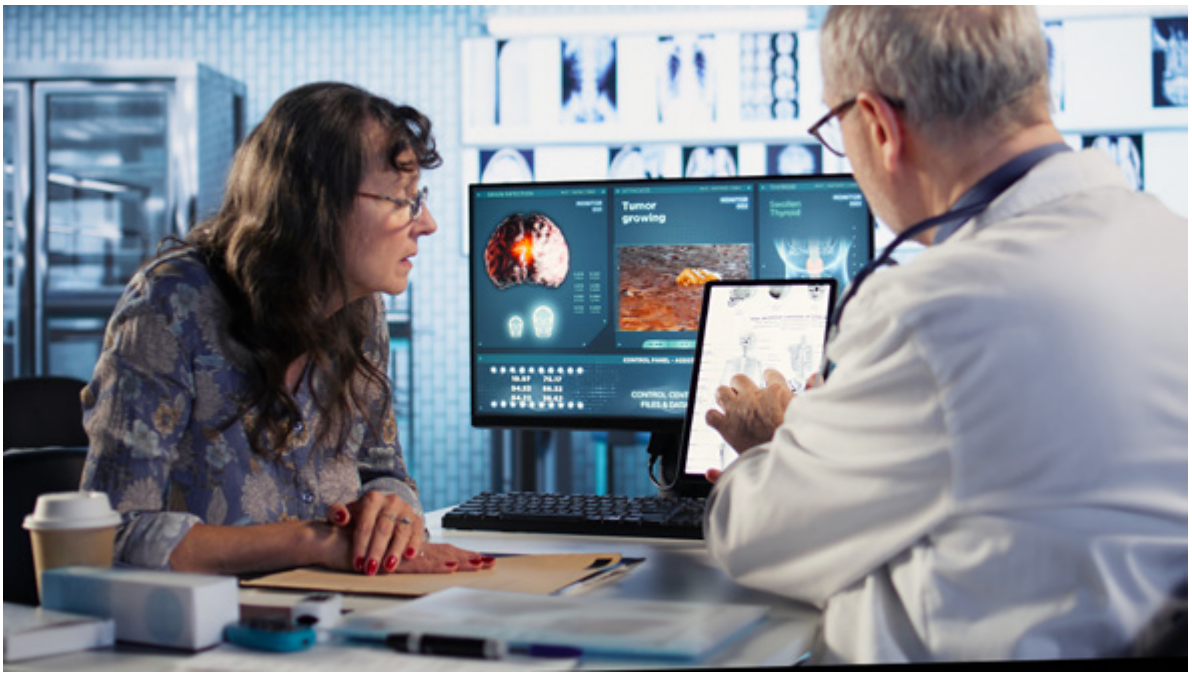

How AI Is Shaping the Future of Diagnostic Accuracy in Real-World Care

AI is transforming diagnostics by identifying subtle patterns, streamlining workflows, and accelerating time to diagnosis. This piece will explore how AI supports earlier and more accurate decision-making, the importance of clinical integration, and key considerations around trust, usability, and responsible deployment in real-world care settings.

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Artificial intelligence (AI) has become one of the most closely watched developments in healthcare. By surfacing subtle patterns and providing immediate feedback, it can deliver clearer, faster insights that strengthen clinical decision-making and patient outcomes.

Nowhere is this impact more critical than in diagnostics. Many conditions are still missed or identified too late, contributing to unnecessary costs and preventable harm. AI offers a way to narrow these gaps by embedding predictive and diagnostic capabilities into tools clinicians already use every day. The aim is to reinforce medical judgment, helping physicians make

the right call earlier with greater confidence.

Realising this value requires more than technological breakthroughs. For AI to be trusted and adopted, it must integrate seamlessly into clinical workflows, be supported by rigorous evidence, and demonstrate value across varied clinical environments. Only then can it move from an experimental technology to a standard part of patient care.

The Challenge of Diagnostic Accuracy

Despite progress in imaging, lab testing, and clinical guidelines, and diagnostic errors remain among the most persistent challenges in medicine. In primary care, time constraints, incomplete histories, and overlapping symptoms contribute to missed or delayed diagnoses. In speciality care, the sheer volume and complexity of data—from imaging studies, lab panels, and patient records—can overwhelm even experienced providers.

These challenges have consequences. In cardiology, delayed detection of conditions such as heart failure can mean the difference between effective management and irreversible disease progression. Across oncology, neurology, and other specialties, the stakes are similarly high. As population's age and the burden of chronic disease grows, the demand for timely, more precise diagnoses will only intensify.

Why ECGs Demonstrate the Power of AI

Electrocardiograms (ECGs) provide a compelling case study for AI in diagnostics. They are simple, inexpensive, and ubiquitous, and are performed more than 200 million times annually in the United States alone. Yet, the richness of ECG data has historically been underutilized.

A human clinician can interpret rhythm disturbances or overt abnormalities, but an AI model can analyze tens of thousands of data points per recording, detecting patterns invisible to the human eye. For example, studies have shown that AI can flag signs of reduced ejection fraction, a marker of heart failure, even when the ECG appears normal to a trained cardiologist.

This capability transforms the ECG from a routine test into a powerful diagnostic tool. Instead of requiring multiple specialized exams, radiation exposure, or lengthy scheduling, AI-augmented ECGs can provide immediate insights in outpatient settings, such as primary care offices or rural clinics. This helps clinicians identify at-risk patients earlier, streamline referrals, and initiate treatment sooner.

Beyond clinical value, this approach has significant cost implications. Using a low-cost tool such as the ECG to guide which patients truly need advanced, invasive, or radiation-exposing confirmatory tests helps avoid unnecessary utilisation. At the population level, this lowers the overall cost of diagnosis while also driving savings by identifying disease earlier, when treatment is less intensive and less expensive.

Integrating AI into the Clinical Workflow

The success of AI in diagnostics depends on its ability to work within the natural rhythm of clinical care. A solution that requires physicians to step out of their normal process to access a separate system or manually upload data is unlikely to gain widespread adoption. The more friction there is, the more likely it is that even the most advanced tools will go unused.

Integration must be invisible. AI should surface insights within the systems clinicians are already using, whether that is an EHR, a diagnostic imaging viewer, or a laboratory-reporting interface. It should feel less like adding another step and more like enhancing an existing one. This approach not only improves adoption but also helps preserve trust. Clinicians remain in control of the decision-making process, with AI serving as a guide, not a replacement.

Equally important is speed and simplicity. Clinicians appreciate getting an output in seconds, which stands in contrast to the time it takes to gather multiple fragmented data points for traditional risk calculators. When something useful is that quick and straightforward, it is far more likely to be adopted into routine care.

Building Trust

Accuracy in diagnostics is not enough. AI must also be accessible, scalable, and most importantly, trusted.

For any new medical technology, credibility depends on evidence, and AI is no exception. AI solutions must undergo rigorous validation in diverse patient populations, across multiple care settings, and over extended time periods. This is essential not only for regulatory clearance but also for clinician confidence. It is not enough to demonstrate that an algorithm performs well in a retrospective dataset. We must show that it can improve outcomes when deployed in real-world settings, that it can reduce variability in care, and that it can be applied equitably across different demographic groups. Without this, AI risks becoming another promising technology that fails to leap from early adoption to standard practice.

Transparency is just as critical. Too often, AI is viewed as a "black box," producing results without clarity on how they are generated. Clinicians must be able to understand what the algorithm is analysing, where the data comes from, and how conclusions are reached. With clarity and evidence, AI can become ▶

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more than a technical achievement; it can be a reliable partner in clinical decision-making, one that strengthens the relationship between physician and patient.

Addressing Equity and Access

One of the most powerful aspects of AI is its potential to democratize access to high-quality diagnostics. In many parts of the world, access to specialist expertise is limited. Primary care providers often face the difficult task of managing complex cases without the benefit of timely specialist input. AI can help close this gap by embedding expert-level diagnostic capabilities directly into primary care tools.

However, this promise will only be realised if AI solutions are developed with equity in mind. Algorithms trained predominantly on data from well-resourced, urban populations may not perform as well in underserved or rural settings. This is why representative data is critical, not only to ensure fairness but also to maximise the clinical utility of AI for all patients.

From Prediction to Prevention

AI is beginning to change how medicine approaches disease, moving the focus from reacting to illness toward anticipating it. By detecting subtle changes in clinical data, this technology can highlight risks long before symptoms appear, giving physicians a window of opportunity to act earlier.

In cardiology, ECG-based algorithms have shown the ability to detect signals of heart failure years before conventional testing would detect them. Similar models are being developed in oncology to predict recurrence, or in nephrology to flag early kidney decline. These applications illustrate how prediction can inform care strategies across multiple specialties.

Most importantly, AI's ability to mine vast datasets for predictive signals has the potential to change the trajectory of many diseases. Earlier detection reduces the need for hospitalisations, intensive therapies, and late-stage interventions, helping health systems manage resources more effectively. Conditions that would have been diagnosed only at advanced stages can now be addressed proactively, turning potential crises into opportunities for timely intervention and shifting care toward prevention at scale.

The Path to Adoption

AI that works in the clinic, not just in the lab, is the AI that will define the future of diagnostics. However, long-lasting adoption depends on how well new tools fit into existing

roles, responsibilities, and systems of care. Some specialists express concern that shifting diagnostic capabilities upstream to primary care could reduce referrals. In practice, however, earlier detection often expands the need for speciality involvement, allowing experts to intervene at stages when treatment is most effective.

Health systems are also cautious, and rightly so. Any technology that informs clinical decisions must meet rigorous standards for safety, privacy, and effectiveness. Clear regulatory frameworks help balance innovation with patient protection, while ongoing validation ensures tools remain reliable across clinical settings. Transparency about how algorithms are developed, trained, and updated is equally important in building confidence among clinicians and patients.

Operational readiness is another determinant of success. Even the most intuitive solutions require training and change management to ensure they are applied consistently and appropriately. Supporting clinicians with the resources to integrate AI smoothly into their routines is essential. When regulatory, clinical, and operational requirements align, AI has the potential to move from early adoption to a lasting role in modern diagnostics

Looking Ahead

AI in diagnostics is beginning to move from promise to practice. The real measure of progress will be whether it can demonstrate consistent value across health systems, support clinicians without adding complexity, and reach patients in every setting where care is delivered.

If those conditions are met, AI will not change the role of physicians but strengthen it. By surfacing signals that would otherwise go undetected, it can help clinicians make decisions earlier, intervene more effectively, and manage disease before it advances. For health systems, this means more efficient use of resources; for patients, it means more years lived in better health.

True innovation is measured by its ability to improve patient outcomes at scale. With evidence, transparency, and thoughtful integration, AI can help create a healthcare model that is proactive rather than reactive, improving outcomes at both the individual and population level. ■

References are available at www.europeanhhm.com

AUTHOR BIO

Simos Kedikoglou is President and Chief Operating Officer at Anumana, an AI-driven health technology company pioneering ECG AI solutions for the early detection of heart failure. With extensive experience in medical device commercialization, healthcare strategy, and global operations, he leads Anumana's growth and strategic partnerships.