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“If we want to move research and clinical care forward, we must also identify our blind spots”

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Q1 You have been at the forefront of precision medicine, digital health, and AI for many years. What initially drew you to this field, and what continues to inspire your work today?

I started out specialising in genetics, and during my research into inherited cardiac diseases, I found that people with the same genetic condition can have very different trajectories. Some become very ill, while others are affected much less. That suggested there must be interactions with lifestyle, other genetic factors, occupation, and many other influences.

That led me from genetics into precision medicine, where you incorporate far more data to fully understand a patient. As doctors, we do not only look at a person's heart. We look at how they walk, how they talk, other organs, and their overall vitality. That is what we were missing from many traditional approaches.

As we gathered more data, the next challenge became how to analyse it. Traditional statistical methods were not always sufficient to extract all the information available, particularly from complex sources such as ECGs and imaging. We know what we know as physicians, but if we want to move research and clinical care forward, we must also identify our blind spots. AI provides the methodology to discover patterns and associations that humans may not be able to see.

AI itself is a broad field, including machine learning, deep learning, generative AI, and agentic AI. My

move into AI was really a natural evolution of my career. Today, AI is also becoming part of everyday life, creating greater attention, investment, and opportunity. Of course, there are also challenges. If a patient receives incorrect advice from an AI system, they will not blame the technology company, they will look to their physician. That is why we need to educate the healthcare workforce and ensure AI is implemented responsibly.

Q2 Has anything presented at the European Society of Cardiology (ESC) Congress 2026 so far surprised or particularly excited you regarding the future of AI in cardiovascular care?

What excites me most is the overall shift that has taken place.

The ESC has been investing in AI for several years, because we believe it is important that cardiology remains a leader in this field. A few years ago, there was very little AI content at meetings, attendance was lower, and discussions were relatively superficial.

Now, AI is everywhere. The conversations are far more mature. Physicians are naturally conservative because healthcare requires us to be risk averse, but we have seen a significant cultural shift. People increasingly recognise that AI is not simply hype. It is here to stay, and we must engage with it thoughtfully.

The biggest change has been this broader mindset shift across the profession.

Q3 As Chair of the ESC AI Gateway, how have you seen attitudes towards AI in clinical practice evolve over the last decade?

Healthcare systems across Europe face shortages of physicians, nurses, and support staff. That creates a clear opportunity for AI.

While it is exciting to showcase robotics and cutting-edge innovations, I believe we should first focus on simpler applications that solve real problems. Administrative tasks, documentation, and repetitive workflows are ideal examples. These are generally low-risk activities that consume a huge amount of HCPs' time.

If AI can help automate those processes, clinicians can spend more time with their patients. That is where we should focus initially. It may not be as glamorous as some of the more futuristic applications, but it can have a major practical impact on both clinician wellbeing and patient care.

Q4 The title of your ESC Congress 2026 fireside chat refers to AI as a "clinical co-pilot." What does that term mean to you, and where should we draw the line between co-pilot and decision-maker?

From both a clinical and regulatory perspective, the physician should remain the decision-maker, both today and for the foreseeable future. There must be a human in the loop.

The co-pilot role is about support. AI can assist with administrative tasks, documentation, guideline recommendations, and helping clinicians navigate complex information quickly.

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For example, the ESC has developed a large language model based on its guidelines. It only draws from guideline-based content, and users can see exactly where information originates. Such tools can help physicians identify appropriate treatments or care pathways, but the clinician must still evaluate the recommendation and make decisions alongside the patient through shared decision-making.

Looking ahead, more advanced AI systems may be able to support tasks such as interpreting normal ECGs or screening investigations, escalating only abnormal findings to clinicians. However, if we want to move toward more advanced clinical decision support, we must first establish trustworthy implementation through research, clinical trials, evaluation frameworks, and ongoing monitoring.

We must ensure that AI addresses a genuine unmet need, demonstrates clear clinical utility, and continues to perform reliably over time. AI is not a standalone solution. It is part of a broader care pathway, and its value depends heavily on how it is implemented.

I am optimistic about AI, but I am equally committed to ensuring it is deployed in a trustworthy way. If we do that successfully, there is a great deal to gain. If we do not, there is also a great deal to lose.

Bias in AI models has become a major concern across healthcare.

How can we ensure that AI systems are equitable and effective for diverse patient populations?

AI is only as good as the data it learns from. The old principle of 'garbage in, garbage out' still applies.

Bias already exists in healthcare and society. If biased data are used to train AI systems, those biases can be amplified across millions of people. That is why transparency is so important.

One initiative we are supporting is the concept of an AI passport, which would clearly describe the populations on which an algorithm was trained and validated. This allows users to understand whether a model is appropriate for their patients.

In our EU-funded AI for Heart Failure project, we included participants from countries such as Tanzania and Peru to improve diversity and assess generalisability across different populations. We must continue investing in data from women, ethnic minorities, and other underrepresented groups, while also validating algorithms across multiple populations.

At the same time, AI has enormous potential to improve equity globally. In regions where access to specialists is limited, AI can assist with ECG interpretation, imaging, and access to health information. It

can help spread expertise beyond large academic centres.

In many parts of the world, AI may actually reduce healthcare disparities by making high-quality clinical knowledge more widely accessible.

Q5 Is there a potential for heavy reliance on AI in resource-constrained regions to actually widen healthcare inequalities?

I understand that concern, but I think there are ways to avoid it.

Many people around the world already have access to smartphones. Modern mobile devices can run smaller AI models locally through edge computing, reducing the need for continuous internet access or large amounts of computing power.

AI can also help overcome barriers related to language and health literacy. Patients could

interact with AI avatars in their preferred language and receive explanations matched to their level of understanding.

We know many patients leave consultations and later struggle to recall or explain what was discussed. AI tools could provide accessible follow-up information and answer questions in ways that are personalised and available 24 hours a day.

The opportunity is significant, particularly in prevention, education, and patient engagement.

Q6 How receptive are patients to AI avatars?

We recently conducted a patient and public involvement workshop, although the findings are not yet published.

Participants were generally very receptive. They appreciated having the ability to ask questions and

receive additional explanations. At the same time, they did not want to lose the human element. People still value the human connection, particularly when making decisions about their health.

I see AI avatars as a supplement rather than a replacement. They could help explain discharge information, treatments, and diagnoses in a more accessible way while maintaining the important role of healthcare professionals.

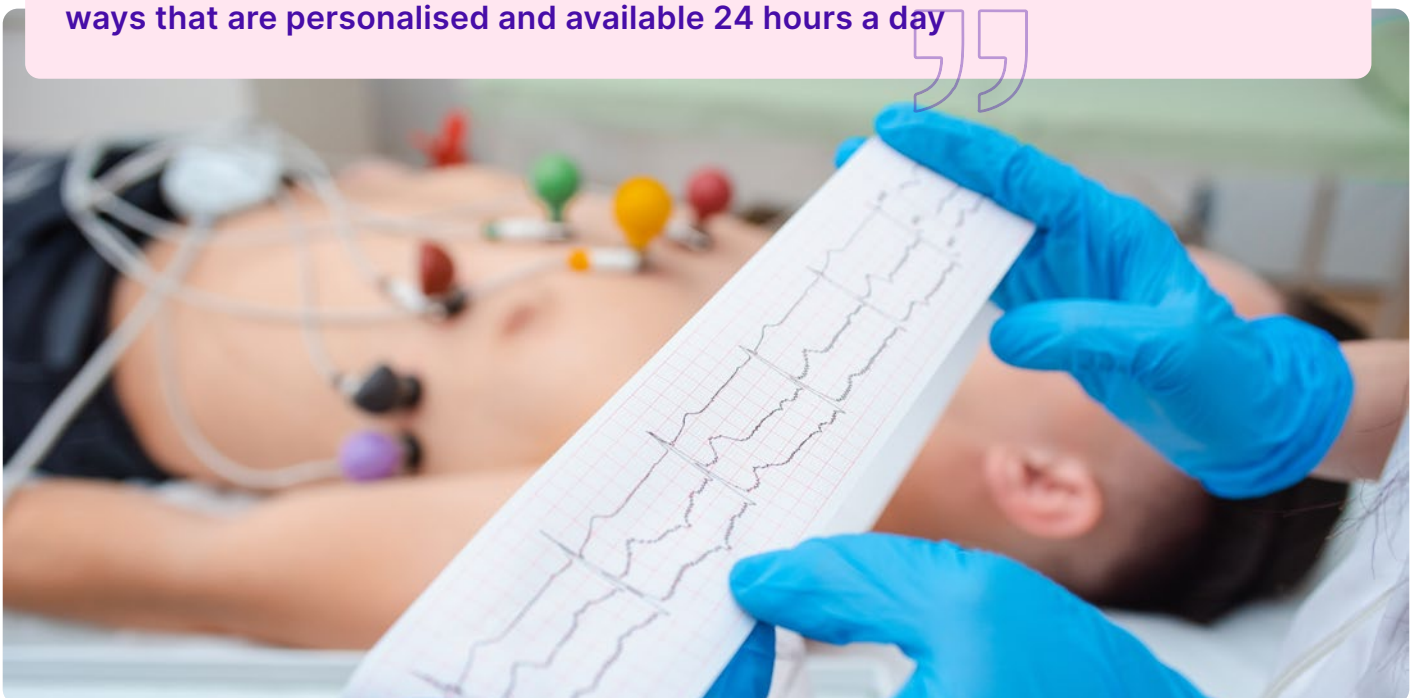
Q7 As AI becomes increasingly integrated into healthcare systems, who should ultimately be accountable when an AI-supported decision leads to patient harm?

We already have experience handling accountability frameworks through pharmaceuticals and medical devices, so this is not entirely new.

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What is different is that we must now work with a new group of technology developers and companies. That requires strong dialogue between regulators, industry, HCPs, professional societies, and patient organisations.

Professional societies can establish evidence standards and determine what level of evidence is required before technologies are incorporated into clinical guidelines.

Ultimately, however, there must be a person responsible. In my view, that responsibility currently rests with the clinician who is directly caring for the patient. That said, the rules around accountability still require further clarification, and we need better frameworks for evaluating AI throughout its lifecycle.

Q8 What role should professional societies such as the ESC play in guiding the safe and responsible adoption of AI technologies?

The ESC should become the normative authority for AI implementation in cardiovascular medicine.

That includes developing standards, defining disease classifications in ways that are AI-ready, creating evidence frameworks, educating the workforce, providing benchmarking resources, supporting implementation studies, and developing practical toolkits for clinicians.

We are also working on initiatives such as libraries of standardised disease definitions and codes, guidance documents for regulators, and mechanisms for sharing real-world implementation experiences.



Our goal is to help ensure that AI is adopted consistently, safely, and effectively across cardiovascular care.

Q9 Where do you see tools like ESC Chat evolving in the future?

ESC Chat is an important first step. It provides a large language model grounded in ESC guidelines.

I would like to see patient-facing versions in the future, allowing members of the public to ask cardiology-related questions and receive trustworthy, guideline-based information.

The next stage could involve avatars that adapt explanations according to language, education level, and local context. Eventually, these tools may integrate with electronic health records and broader health data ecosystems to provide more personalised support.

The key challenge is maintaining trustworthiness and ensuring that guidance remains evidence-based.

Q10 Are there particular examples of AI implementation in cardiovascular medicine that demonstrate best practice?

AI has already been successfully integrated into many imaging workflows, including MRI, echocardiography, and ECG interpretation.

Tools that automate image segmentation and analysis save considerable amounts of clinician time and have become established parts of clinical practice.

Another promising area is ambient listening technology, which can automatically document consultations and reduce administrative workload. Given the significant burden of documentation on healthcare professionals, I believe this is an area where AI can have a substantial positive impact.

For now, I believe we should continue focusing on these practical, lower-risk applications, while further evaluating more complex use cases.

Q11 What is your response to those who ask, "Will AI take cardiologists' jobs?"

Our jobs will change, but I do not think cardiologists will disappear.

The future will likely involve more collaborative and multidisciplinary ways of working, including clinicians, data scientists, patients, and AI systems.

Many routine tasks and normal investigations may become automated, particularly within prevention and screening. However, acute care, complex cases, and nuanced clinical decision-making will continue to require human expertise.

Given ongoing workforce shortages and growing healthcare demands, AI should be viewed as a tool that helps us maintain and improve care rather than replace HCPs.

Q12 What advice would you give young cardiologists entering this AI-driven era?

They should educate themselves about AI and digital technologies. If those topics are not available through their formal training, they should seek opportunities independently.

Digital literacy needs to become a core clinical competency. Clinicians do not necessarily need to become programmers, but they do need to understand how data, standards, algorithms, and AI systems work.

Just as doctors are trained to evaluate clinical trials, they must learn to evaluate AI evidence, understand limitations, and assess algorithm performance. That knowledge will become

increasingly important throughout their careers.

I expect medical education and technology education to become much more closely integrated in the future.

Q13 What is the single most important principle healthcare leaders should remember as AI moves from innovation to implementation?

I think the most important principle is to start with the unmet clinical need rather than the technology itself. Too often, discussions around AI begin with what the technology can do, when the real question should be: what problem are we trying to solve for patients, clinicians, or healthcare systems? If AI is not addressing a genuine need or improving outcomes, efficiency, or access to care, then its implementation becomes difficult to justify.

Equally important is ensuring that any AI tool is implemented in a trustworthy way. Healthcare leaders need to know how an algorithm was developed, which patient populations it was trained on, whether it has been properly validated, and whether it continues to perform safely once deployed in real-world clinical settings. Validation cannot be a one-time exercise; AI systems

We must define the problems we want to solve, determine how we will solve them, and establish how success will be measured

require ongoing evaluation to ensure they remain accurate and appropriate over time.

Finally, we must protect the trust that patients place in healthcare. AI has enormous potential, but if it is introduced too quickly, applied to the wrong problems, or used without sufficient evidence and oversight, it risks undermining confidence in both the technology and the HCPs using it. Leaders should therefore remain optimistic about AI's opportunities while being rigorous and critical in its evaluation and implementation. The goal is not simply to adopt AI, but to deploy it in a way that genuinely benefits patients and strengthens healthcare delivery.

Q14 Do you have any final thoughts you would like to share with EMJ's audience?

I am very positive about AI's future, but we need to take back control of how it is implemented. We should not simply follow technology trends. Instead, we must define the problems we want to solve, determine how we will solve them, and establish how success will be measured.

We also need to look beyond historically wealthier healthcare systems and recognise the opportunities AI offers globally. If implemented responsibly, AI has the potential to improve access, quality, and efficiency of care around the world.