From pilots to system value: AI, leadership and collaboration in value-based healthcare

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As AI and robotics transform healthcare, the challenge is shifting from developing new tools to delivering measurable value for patients and health systems. This article explores how Value-Based Healthcare (VBHC) can help turn digital innovation into scalable, system-wide impact

Artificial intelligence (AI) and robotics continue to accelerate transformation across industries, and healthcare stands at a crossroads. The challenge is no longer whether we can develop advanced tools but how we can turn innovation into measurable value for patients and health systems. This aligns directly with the England NHSE 10-Year Plan's emphasis on scaling innovation to deliver measurable improvements to care quality, workforce efficiency, and patient outcomes through technology adoption.

While AI pilots abound across the NHS and global health systems, few have yet translated into sustained, system-wide improvement and often the problem is system-based and not necessarily the technology. To bridge this gap, healthcare leaders must focus on leadership, collaboration, and alignment around outcomes that matter most to patients. This is the essence of Value-Based Healthcare (VBHC) and the key to turning digital potential into equitable, real-world impact.

AI and robotics: From potential to pathway value

AI and robotics now touch nearly every part of healthcare delivery. Predictive models can forecast readmissions or deterioration before they occur; natural language processing (NLP) can extract meaning from thousands of clinical notes; and robotic-assisted surgery is setting new standards for precision, safety, and recovery.

Yet, despite the promise, these technologies often remain confined to pilot projects, which some call "pilot gravity." Innovations succeed locally but fail to scale because governance, incentives, and data standards vary across organisations. The result: fragmented value, limited interoperability, and a growing disconnect between innovation and patient benefit.

VBHC offers the organising principle to change this dynamic. By defining success as better outcomes per pound spent, VBHC enables leaders to connect the purpose of care with the means of delivery. When combined with AI and robotics, it creates a pathway toward more predictive, efficient, and equitable healthcare systems.

The leadership operating system for AI-enabled VBHC

To unlock system-wide value, healthcare must evolve beyond isolated projects to a new leadership operating system (LOS) – a shared set of routines, agreements, and cultural norms that make collaboration repeatable.

Five elements are essential:

1. Outcome alignment at the pathway level. Leaders should agree on three to five patient-centred outcomes—such as function after surgery and time-to-recovery and use these to evaluate AI and robotic solutions.
2. Data collaboratives with guardrails. Shared, privacy-preserving data access across primary, community, and acute care enables models to be trained, validated, and monitored consistently.
3. Work redesign before technology adoption. Redesigning pathways – clarifying who does what, when, and how information flows – ensures AI and robotics remove friction rather than add it. This is about “allocative value” using the technology to optimise pathway efficiency and replace low-value activity.
4. Trust by construction. Embedding clinical safety, transparency, and bias monitoring from the outset ensures that digital systems enhance, rather than undermine, confidence with a human in the loop!
5. Continuous learning loops. Regular review cycles, outcome dashboards, and operational feedback embed improvement as a habit, not a project.

Together, these principles allow leaders to move from innovation to sustained value creation.

A practical example: AI, robotics, and collaboration in orthopaedics

Consider orthopaedic surgery, where robotic-assisted systems and AI-driven planning tools are already reshaping care delivery. In one NHS region, an integrated programme combined AI-based surgical planning software with robotic-assisted knee replacement and remote recovery monitoring.

By aligning the health system and life sciences partners around shared outcomes – pain reduction, functional improvement, and time-to-rehabilitation – the collaboration achieved:

- 20% reduction in variation of surgical precision;
- 25% faster average patient recovery time;
- Improved equity in access across regional sites.

These gains were possible because leaders co-created a shared data infrastructure, embedded transparent governance, and used outcome metrics to inform iterative improvement. The programme now serves as a blueprint for other pathways, demonstrating how AI and robotics, guided by value-based principles, can deliver tangible, system-level benefits and better patient outcomes.

Additional case studies include AI clinical examples in image recognition: radiology to screen/report CT scans, cellular pathology to look for cancer and ophthalmology (retinal images) to look for diabetic eye disease and other pathologies.

Policy and organisational enablers

Realising the promise of AI and robotics in VBHC requires more than technology; it demands strategic policy alignment and investment in human capability.

Policymakers can accelerate progress by:

- Commissioning for outcomes that matter to patients and publishing them transparently;
- Creating national or regional data collaboratives with standardised consent and metadata;
- Requiring service blueprints that map the redesigned flow of care before funding AI or robotic projects;
- Procuring capability, not just code – including integration, safety certification, and continuous monitoring;
- Investing in the “human stack” of clinicians with AI literacy, data scientists with clinical empathy, and improvement leaders who can link technology to value.
- Creating partnerships for value with suppliers and adopting Value-Based Procurement approaches that create shared value from these technologies for patients, providers and industry.

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Building trust and transparency

Trust remains the currency of digital transformation. AI and robotics can only thrive in a system where safety, fairness, and accountability are visible. Maintaining a clinical safety case, publishing model transparency cards, and establishing clear escalation and override mechanisms are no longer optional – they are essential infrastructure for sustained public confidence. Moreover, transparency builds learning. Openly reporting both positive and negative outcomes ensures that the sector evolves collectively rather than in silos.

The leadership imperative

AI will not fix healthcare on its own; leadership systems will. True transformation occurs when leaders set clear outcomes, make collaboration easy, and enable trustworthy data access. When they prioritise redesign over deployment and learning over legacy, technology becomes a silent but powerful engine for value-based care.

In this model, innovation is not an end in itself- it is a mechanism for creating measurable, equitable, and sustainable health value.

The next frontier of VBHC will not be defined by the sophistication of algorithms, but by the strength of leadership collaboration that connects innovation to purpose.

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