News and Perspectives

Transformation Versus Innovation in Digital Health Care and the Future of Clinical AI

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Abstract

Digital innovation is frequently presented as the key to transforming health care. In this *News and Perspectives* article, JMIR Correspondent and academic physician Boon-How Chew reports on the distinction between and the direction of transformation and innovation, reflecting on the future of clinical AI and what lasting change in health care ultimately requires.

Key Takeaways:

- Transformation and innovation are distinct, directionally related, and often confused. Conflating the two leads to institutions celebrating cosmetic change as progress.
- The digital era has lowered technical barriers but raised cultural demands; institutions remain prolific producers of transformation plans but struggle to convert these documents into reality.
- Understanding what genuinely drives transformation and innovation is a prerequisite for clinicians, administrators, and institutions to adopt and scale safe, effective clinical AI.

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Walk into almost any hospital, health ministry, or medical faculty today, and we are likely to find the walls papered with the same vocabulary: *transformation*, *innovation*, *disruption*, *digital*. These words appear in strategic plans, annual reports, and conference themes, with reassuring regularity. What appears far less regularly is clarity about what they actually mean.

Transformation, properly understood, is a fundamental and sustained change in how an institution operates, delivers value, and defines its own purpose. It is not the adoption of a new software platform, the rebranding of an existing service, or the incremental improvement of a workflow that was already functional. Transformation happens when the underlying logic of an organization—its culture, its power structures, its measures of success—shifts in ways that become increasingly difficult to reverse when the next leadership team arrives, though culture always remains vulnerable to regression when an empowered, data-informed, and collaborative learning ecosystem has not been cultivated in the organization. A hospital that moves from measuring success by bed occupancy to measuring it by patient health outcomes has transformed. One that installs a new electronic health record while measuring the same things in the same ways has not.

Innovation is equally misunderstood. In clinical settings, the word is often generously applied to anything new—a revised triage form, a digital appointment reminder, a newly scheduled weekend ward round. True innovation, which can often be disruptive, requires at least two conditions that most incremental improvements do not meet: novelty (the solution did not previously exist in this form) and sustained value creation (the solution durably improves outcomes, not just processes). By this standard, a great deal of what health care calls *innovation* is actually *optimization*—valuable, necessary, but categorically different. The distinction matters because organizations that believe they are innovating when they are optimizing may never build the conditions, risk tolerance, or cultural infrastructure that real innovation requires.

How Transformation and Innovation Relate

Transformation and innovation are related but not synonymous, and their relationship is directional. Transformation typically precedes innovation at scale. An institution that has not fundamentally changed its culture, its governance, and its relationship with failure cannot sustain innovation beyond chance occurrence or isolated individual acts of courage. Conversely, innovations that are genuine, repeated, and spread across an organization are both evidence of and fuel for ongoing transformation. They are not a sequence to complete but a cycle to maintain.

This relationship has specific implications for health care. Clinical environments are deeply hierarchical. Seniority often determines whose ideas are heard, whose concerns are acted on, and whose failures are attributed as such. These dynamics, while functional in emergency decision-making, are in tension with the conditions innovation requires: the freedom

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to propose ideas that may fail, to question established practices without professional consequence, and to learn from errors rather than conceal them. Transformation, in a clinical institution, means differentiating contexts: building psychological safety for improvement and learning while preserving clear authority structures where patient safety demands them.

What the Digital Era Has Actually Changed

Technical access is no longer the primary binding constraint on digital transformation in health care; institutional readiness is key. Decades ago, barriers were substantially technological—limited computing infrastructure, no interoperable data standards, no real-time decision support. Today, a small clinic in a low-income country can access cloud computing, open-source decision support, and AI-assisted diagnostics at a fraction of what leading hospitals paid for inferior capabilities 2 decades ago, though access and the capacity to maintain, update, and contextualize technology sustainably remain distinct challenges, particularly where skilled technical labor is scarce.

What has not necessarily become easier is the human work. A health system that implements an AI-powered diagnostic tool on top of a culture where clinicians are penalized for admitting uncertainty has not leveraged AI; it has effectively weaponized it. The tool is likely to be used defensively, blamed when wrong, and quietly circumvented when inconvenient.

Clinical AI has introduced an unprecedented dimension to both transformation and innovation: the capacity to automate not just physical or administrative tasks but also cognitive ones. AI can now draft clinical notes, analyze imaging, predict deterioration, and surface drug interactions, with growing evidence of performance comparable to or exceeding that of human clinicians working alone in specific tasks. This does not necessarily make clinicians obsolete; if anything, it makes the specifically human dimensions of clinical work—empathy, ethical judgment, relational trust, and contextual wisdom—more clinically and socially valuable, not less, provided reimbursement and governance models evolve to recognize and reward clinicians accordingly. Realizing this requires institutions to redesign roles, retrain staff, and redefine what good performance means in an AI-augmented environment, including through real-world validation. Those that do not are likely to find that AI amplifies their existing dysfunctions as readily as it amplifies others' strengths.

The Documentation Trap: Performing Transformation Without Achieving It

Health care institutions are world-class producers of transformation documentation—strategic plans, digital road maps, innovation frameworks, and quality improvement initiatives generated in extraordinary volume. Yet, the organizational literature repeatedly suggests that documentary productivity has a paradoxically weak relationship with transformation outcomes. Organizations investing heavily in steering committees, working groups, and pilot programs frequently emerge with refined documents and unchanged practices.

This is not mere cynicism; it is a pattern observed across public sector and health care organizations, though direct causal evidence remains limited. Documentation creates the experience of progress without the institutional risk that real transformation demands: an innovation strategy is visible, measurable, and defensible, whereas changing incentive structures that punish near-miss reporting requires absorbing political cost. This is further compounded by regulatory, accreditation, and funding obligations—factors that drive documentation volume and that leaders may have little power to reduce. Where discretion exists, the preferred path is understandably real transformation, resulting in what researchers term *institutional isomorphism*—organizations converging in stated strategy while diverging in actual capability.

Clinical AI faces the same institutional test observed with electronic health records and telehealth, where technology has been noted to underperform when the surrounding institution has not changed. In both cases, the etiology was structural and cultural: poor workflow integration and misalignment with clinical norms and professional boundaries—the factors that ultimately determine whether technology is used with intelligence and integrity at scale. Clinical AI appears likely to demand even greater institutional readiness than its predecessors, given the depth of the cognitive and relational functions it touches.

Why This Matters and What Comes Next

For the clinicians and health care professionals reading this, the stakes are not abstract.

The institution you work in is either building the conditions for genuine transformation and innovation or producing the documentation of those things while the underlying reality remains largely unchanged. Transformation provides the essential foundation for innovation by elevating the cultural and workforce realignment.

Digital health is inescapably political. Systemic transformation requires reforming governance to prevent innovation theater and ensure clinical AI is actually safe, effective, and sustainable to scale.

Keywords: digital transformation; innovation; health systems; digital health; institutional change; leadership; clinical AI; artificial intelligence

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