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Generalist medical AI reimbursement challenges and opportunities

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Generalist AI systems in healthcare can handle multiple complex clinical tasks, unlike narrow AI tools that perform isolated functions. However, current payment systems struggle to capture the value of these integrated capabilities. We examine potential solutions, including value-based and tiered structures, balancing innovation, equitable access, continuous performance evaluation, and cost-effectiveness to realize generalist AI's transformative potential.

It is increasingly recognized that healthcare is at a transformative juncture, as artificial intelligence evolves from narrow, single-task tools to sophisticated generalist systems capable of handling multiple and complex clinical tasks and workflows. This transformation presents unprecedented opportunities for improving patient care but challenges our existing frameworks for technology reimbursement. As highlighted in a recent *npj Digital Medicine* article on generalist AI in radiology (GRAI), the development of effective reimbursement mechanisms will be crucial for the successful integration of these systems[1]. In this News & Views article, we examine how payment frameworks may evolve to support these AI technologies' effective deployment and integration in clinical care, ultimately shaping their overall impact on the future of healthcare delivery.

Generalist AI: from narrow to multifunctional tools

The emergence of generalist AI marks a fundamental shift in medical technology. Unlike traditional narrow AI systems designed for specific tasks, generalist AI is characterized by the ability to handle a variety of tasks with minimal or no reliance on specialized training or specially labeled data designed for each specific task[2]. These systems can seamlessly handle diverse clinical responsibilities while providing transparent reasoning for their recommendations.

Traditional narrow AI systems perform well at isolated tasks - detecting intracranial hemorrhage in head CTs, flagging lung nodules in chest X-rays, or identifying diabetic retinopathy in fundus photographs[3]. In contrast, early research on generalist AI systems explores their potential to analyze an entire chest CT holistically: simultaneously detecting pulmonary emboli, characterizing lung nodules, identifying coronary calcification, assessing bone density, flagging incidental findings, and generating a comprehensive, actionable clinician note[4].

This shift has broad implications for healthcare delivery. Generalist AI systems are bridging critical gaps in care delivery by reducing cognitive load on healthcare providers, minimizing handoffs between specialized systems, and streamlining complex clinical workflows[2].

However, just as the Health Information Technology for Economic and Clinical Health Act (HITECH Act) in the United States provided necessary financial incentives and penalties for widespread electronic medical record system adoption[5], similar comprehensive policy initiatives may accelerate the integration of these transformative generalist AI systems into standard clinical practice.

Challenges in reimbursement for generalist AI

Healthcare payment systems have typically been structured around discrete, clearly definable medical services and episodes of care[6]. While the following discussion primarily focuses on the United States healthcare system, many of the underlying challenges and considerations may apply to other health systems (Fig. 1).

A physician performs a specific procedure, orders a particular test, or provides a defined consultation - each with its own billing code or associated payment structure[6]. But generalist AI fundamentally challenges this paradigm. While narrow AI tools like automated diabetic retinopathy screening have clear, single-purpose functions that may fit neatly into existing billing codes, generalist AI may defy more simplistic categorization.

For example, a narrow AI tool might excel at measuring tumor size in breast cancer imaging - a discrete task with a clear billing pathway. In contrast, a generalist AI system may simultaneously analyze the mammogram, correlate it with pathology slides, integrate genomic test results, and synthesize clinical trial data to recommend personalized treatment strategies. This has potential to create a fundamental reimbursement challenge: current frameworks might struggle to capture the value of systems that not only perform multiple discrete tasks but generate novel insights through their interaction. The current framework might attempt to value each task individually, but this misses both the efficiency gains and benefits that come from multi-step integrated analysis[1]. Generalist AI systems can address tasks beyond their initial training, making it challenging to establish payment structures that reflect their expanding and dynamic capabilities. This is further complicated by difficulties in determining appropriate compensation for physician oversight and interaction as these systems span assistive to autonomous roles, and by fundamental challenges in characterizing software costs under current practice expense methodologies[7].

An additional issue in the reimbursement of AI systems is that, as these technologies become increasingly agentic (autonomous), they perform tasks traditionally undertaken or overseen by providers. At present, this issue is mitigated by the necessity of human oversight for most AI applications, allowing reimbursement to remain tied to physician effort and workload and supervision or reasoning. However, as AI systems approach greater autonomy, the development of novel payment models may be required that consider not only the value of the AI's contribution but also the evolving role of physicians[7].

Fig. 1 | Overview of generalist AI in medicine. Example core functions and applications of generalist medical AI systems across clinical care, research, administration, and patient engagement domains.

Rethinking reimbursement models: toward a future framework

There is demand to explore new payment frameworks that can capture both the comprehensive capabilities and dynamic nature of generalist AI systems.

Value-based reimbursement models might offer one path forward, moving beyond the limitations of traditional fee-for-service approaches. A generalist AI system managing chronic conditions like diabetes could coordinate comprehensive care by monitoring continuous glucose data, adjusting medication recommendations, analyzing routine labs, and scheduling follow-up care. Rather than billing for each interaction, reimbursement would align with meaningful outcomes such as reduced hospitalizations or improved A1C levels. This approach is particularly well-suited for generalist AI systems whose functions can't be appropriately divided into discrete services and whose value derives from their comprehensive, integrated capabilities[8].

Existing care coordination reimbursement codes in part exemplify the healthcare system's progression toward value-based payment models, potentially offering a framework for integrating multi-capable AI systems[9]. In oncology care, generalist AI might simultaneously perform triage, detection, diagnosis, and report generation for a single case. Similar to how current care coordination codes bundle multiple services under a single payment for chronic disease management, comprehensive AI coordination codes that capture the full scope of AI's multi-modal analysis and care recommendations. For example, an AI-enabled cancer care coordination billing code, potentially scaled by levels of service or technology provided, could cover the AI system's integrated analysis across imaging, pathology, and genomics, rather than requiring separate codes for each component. This approach may better reflect the value of AI's comprehensive analysis while simplifying billing processes[8].

Drawing from the AMA's AI taxonomy, another generalist AI reimbursement framework could scale reimbursement based on the level of AI involvement in clinical care[10]. Payment structures could reflect the progression from assistive functions (like flagging abnormalities for radiologist review), to augmentative capabilities (providing prognostic insights), to autonomous operations (generating complete reports with minimal oversight). This tiered approach would align payment with the increasing sophistication and autonomy of AI systems while providing clear pathways for valuing new capabilities as they emerge.

Broader implications and ethical considerations

As new reimbursement models are designed, ensuring equitable access and robust oversight to advance the use of quality AI tools becomes paramount.

Equitable access and patient-centered implementation. The emergence of generalist AI systems presents both opportunities and challenges for achieving equitable healthcare access. While larger health systems with substantial resources can invest in multiple specialized and narrow AI tools from several vendors, financial constraints may prevent smaller or resourced-limited healthcare organizations from acquiring such diverse AI portfolios, potentially creating disparities in their clinical capabilities[11]. Generalist AI systems, through their capacity to handle multiple tasks via a single platform, thus present an opportunity to redistribute technological capabilities more evenly across healthcare settings. However, achieving this equitable distribution may be further facilitated by payment frameworks that address both overconcentration of AI capabilities in well-resourced institutions and underutilization in resource-limited settings. Strategic policy interventions, such as targeted government subsidies similar to electronic health record adoption programs, may facilitate more equitable distribution of these technologies, and on an individual level, reduce healthcare disparities[12].

Quality standards and oversight. Reimbursement frameworks will require mechanisms to ensure both ongoing oversight and predictable pricing stability. Unlike traditional medical devices, generalist AI systems require continuous evaluation across diverse populations and clinical scenarios, necessitating regular assessment of performance, outcomes, and cost-effectiveness. Reimbursement frameworks should incentivize systems that demonstrably improve care quality while minimizing excessive costs. Similarly, oversight mechanisms must balance innovation with accountability, ensuring that reimbursement adapts to ever-changing capabilities of the underlying technologies while preventing excessive costs and a misallocation of resources.

Conclusion

The advent of generalist AI in medicine presents both an unprecedented opportunity and a complex challenge for some healthcare reimbursement systems. Success will require collaborative effort among policymakers, clinicians, and AI developers to create frameworks that promote innovation while ensuring equitable access. As health systems navigate this transition, goals must be calibrated to develop reimbursement models that recognize the transformative potential of generalist AI while maintaining the highest standards of patient care and system sustainability.

Data availability

No datasets were generated or analysed during the current study.

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Author contributions

A.M. developed the concept and wrote the first draft and amended the final version. D.P. provided oversight in drafting and editing of the manuscript. All authors read and approved the final manuscript.

Competing interests

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Additional information

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