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COMMENTARY

Health Care Leadership in the AI Era: A Seventh Test for the Decade Ahead

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AI poses challenges and opportunities that require qualitative change in the skills of leaders of health care organizations. It remains essential that leaders have expertise in operational excellence and strategy, but now they must add management of "breakthrough innovation" and leadership of the culture change necessary to take full advantage of AI. AI has the potential to help address several of the "problems with no solution" that currently challenge health care. Leaders who can move quickly and effectively will bring their organizations important competitive advantage.

On June 17, 2020, we published an article in *NEJM Catalyst Innovations in Care Delivery* titled "Six Tests for Physicians and Their Leaders for the Decade Ahead."[1] We emphasized the need for health care leaders to put patients first, create super-teams, plunge into competition, reduce costs, embrace innovation, and grasp the evolving nature of leadership itself. Four years later, those six tests still seem important — maybe even more so.

But something else happened in June 2020, just 6 days before our article came out. A company named OpenAI announced the release of GPT-3, the third generation of its generative pretrained transformer model. It was the largest language model to be developed until then, and it offered enhanced performance in natural language understanding and generation over GPT-2 (introduced in February 2019) and GPT-1 (June 2018). The announcement suggested that chatbots and content creation were entering a new era — and that change would be happening fast.

That has turned out to be true. ChatGPT-4 was made available to the public in November 2022, and GPT-4 was released in March 2023. With each update, ChatGPT-4 and other artificial intelligence (AI) and large language models (LLMs) are demonstrating improved comprehension and abilities to deal with complex questions. AI is moving quickly into virtually every aspect of health care that involves thinking, reacting, or communicating.

For leaders of health care organizations, managing the adoption of AI poses new questions and demands new skills beyond those that we appreciated in 2020. AI is more than a set of tools for

operational improvement. AI poses *strategic* choices similar to those made by leaders in the past — e.g., decisions about where it will be implemented first and where it will not. But looking just a little further down the road, we believe that AI will require health care leaders to plunge into *cultural transformation* — which demands skills not prominent in many current chief executive officer (CEO) job descriptions.

How health care leaders decide where, when, and how to adopt AI has emerged as the seventh test for leaders in the decade ahead. Concerns abound regarding AI accuracy, reliability, biases, and confidentiality, and it is tempting to freeze or go slow, avoid unforced errors, and wait to see how others do with AI adoption. Another tempting option is to let AI use bubble up from below — i.e., let innovative frontline clinicians and others be the driving forces.

But AI is shaping up to be qualitatively different from table stakes innovations, like the implementation of electronic health records (EHRs), where everyone has to do it and some fare a bit better and others a bit worse. AI is a leapfrog innovation in two senses of the phrase. Applying the concept widely used in business literature,[2] AI has the ability to enable organizations to leapfrog past traditional methods of doing work — e.g., by using natural language processing and machine learning to extract insights from vast amounts of narrative data, which may have been read (or ignored) by human beings in the past.

But, in another sense of the word "leapfrog," AI is going to enable some organizations to soar past others and create competitive advantage in recruiting personnel. For example, organizations that have adopted ambient AI that allows physicians to skip the most deadening steps in documenting their work have a clear advantage in retaining them. After all, it's not easy to imagine moving from an organization where good first drafts of office visit notes are generated via AI to an organization where one must muster the energy to compose them from scratch.

Competitive differentiation depends on culture change as well as adoption of IT innovations. For example, NYU Langone Health has trained ChatGPT-4 to give feedback to clinicians on the quality of their notes in the medical record on what are called the five Cs — completeness, conciseness, contingency planning, correctness, and clinical assessment and reasoning. The number of clinical notes assessed per month is more than 20,000.[3]

The result: over the last 2 years, the notes have gotten much better. For example, the percentage of notes on the medical service that met standards for clinical assessment and reasoning went from about 75% to more than 90%. While it is impossible to attribute the improvement to this intervention alone, all services receiving ChatGPT-4 feedback on notes had a decrease in length of stay and improvement in the observed–expected mortality ratio. For example, on the medical service, length of stay declined by 19% and mortality declined by 15%. On the surgical service, these declines were 6% and 8%, respectively.

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Undoubtedly, many clinicians reading about this innovation are thinking, "I am not sure I want to receive feedback from ChatGPT-4 on the quality of my progress notes — but I would *really* like to work in a place where everyone else did." That's the kind of leapfrog effect AI is starting to have in health care.

Most people have heard the observation that "AI is not going to replace doctors, but doctors who can use AI are going to replace doctors who cannot." The analogous observation for health care organizations is that organizations that implement AI effectively are going to leapfrog over organizations that do not, because they will be able to recruit and retain good people while improving their quality, controlling costs, and controlling chaos.

In the recent past, making leaps into the unknown has not been a core competency for health care leadership. But learning to live with the uncertainty of what happens on the other side will be part of the seventh test in the years ahead. And what will force the leaps is the magnitude of the challenges facing health care today.

Problems with No Solutions

During the early years of the Covid-19 pandemic era, the word "headwinds" was invoked by leaders of health care organizations constantly. In more recent months, it is being replaced by the phrase "problems with no solutions."

These leaders often say that these are the most difficult times that they have seen. They are using onetime measures to get through each budget cycle and worry that long-term answers to their challenges may not exist. Those challenges get bigger every day, as medical progress leads to new tests, new treatments, and new costs.

Consider the disruptive effects of recent innovations in treatments for obesity. The glucagon-like peptide inhibitors are game changers for patients, but physicians have to learn to manage their use, and purchasers have to find the money to pay for them. Other game-changing innovations that will bring even more costs and complexity are just arriving now — like blood tests to screen for cancers, immunotherapies to treat them, genomics to tailor treatments to individual patients, and gene therapy for conditions such as sickle cell anemia.

The responses of health care leaders to the resulting pressures vary. About 16% of hospital CEOs leave their positions every year,[4] many earlier than planned. Some are having retirement forced upon them by their boards, and others are deciding that enough is enough. Many other health care leaders are hunkering down for the long haul — betting that there will be another side to these difficult times, and that disciplined management of their day-to-day work will enable their organizations to reach it. But disciplined management alone is likely not enough to address the problems with no solutions.

One of those problems is the explosion of medical knowledge produced by medical research. The doubling time for medical knowledge was estimated to be 7 years in 1980, but by 2020 it had fallen to 73 days.[5] The result is that physicians are struggling to stay current by skimming summaries, and often do not have the time to attend meetings where they might hear experts put recent advances in perspective. Patients bring up new tests or treatments that they have read about online, and all too often physicians are hearing about them for the first time.

Another problem is the explosion of data relevant to each and every patient. The good news is that EHRs are getting better at capturing clinical information from other organizations, including retail pharmacies and other health care organizations. The bad news is that there is so much of it. Every individual patient has become a big data problem. Physicians click from note to note, and cannot find any that capture the patient's big picture.

A third problem is that patients are changing, medically and socially. The baby boomers are aging and developing chronic diseases, and they are not happy about it. They are seeking and getting a lot of care, and their use of the Internet during the Covid-19 pandemic taught them that they should expect answers to questions posed via emails and portals, and not have to wait 'til their next doctor appointment. In fact, they do not want to wait at all.

A fourth problem is that these greater demands are falling on a workforce plagued by burnout, more committed to work–life balance, and more skeptical of institutional loyalty.[6] Even if clinician burnout could be eliminated, early retirements postponed, and every person leaving health care could be replaced, there still would not be nearly enough caregivers to meet the needs of patients just a few years down the road. Estimates of the shortfalls that lie just ahead in the number of available physicians, nurses, and other types of key personnel are far too large to be closed by keeping people from leaving early.[7]

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A fifth problem is the qualitative increase in cost pressures. Every organization in health care is facing an intensification of the competitive threats reflected in Michael Porter's five forces model.[8] In addition to competition from similar entities, health care organizations today must grapple with the power of consolidated purchasers and consolidated suppliers, and deal with the threat of new entrants (e.g., retail businesses providing health care) and the ability of consumers to meet their needs in other ways.

Too much to know. Too much to do. Too many needs from patients. Too many people needed to meet them. Many health care institutions are completely full but losing money, and the outlook is for the causes of their deficits and challenges in meeting patients' needs to get worse, not better.

Can leaders use AI to take these problems on?

Adding a Dimension to Leadership

In the quieter, simpler times of the 20th century, leaders in many health care organizations were chosen for their ability to keep peace and put out fires. Physicians and others who had good

political skills and had earned the trust of their colleagues could be successful by ensuring that physicians considered hospitals good places to work and by dealing with the occasional crisis.

Leadership got more complex toward the end of the last century, as medical advances meant that *real* expertise could make *real* differences in patients' outcomes and costs began to climb. The U.S. Balanced Budget Act of 1997 created genuine pressure to control costs for patients covered by Medicare and Medicaid. At first, providers sought higher payments from commercial insurers to make up for shortfalls on their Medicare/Medicaid populations, but these insurers and the employers they represented began to push back against provider demands.

As a result, over the last 25 years, health care leaders have had to develop genuine expertise in two distinct skill sets:[9]

1. Operational excellence — i.e., *doing* a good job at what one does. It is managing to achieve continuous improvement in quality, safety, and efficiency.
2. Strategy — i.e., making *choices* about what the organization does as well as what it decides not to do.

One reflection of this change is the increase in the number of physician leaders who have gone through Doctor of Medicine/Master of Business Administration programs. Real management skills require real training.

But the problems with no solutions era demands more than operational excellence and strategic planning. Leaders are finding that budget discipline is not enough. Not making errors is not enough. Making choices about what the organization is going to do is not enough.

If AI is going to contribute to responses to these challenges, leaders are going to have to do more than find the financial capital for information technology. They are going to have to lead their organizations through transformation. This is something different from business as usual. There is a new innovation–strategy interface at which they must give their most focused attention and do their best work.

Leapfrog Innovation

Leapfrog innovation is a term used in business to describe breakthroughs that go beyond incremental improvements, often bypassing whole phases of progress achieved through operational excellence. The term is most frequently used in reference to developing countries, where, for example, many nations are moving directly to solar and wind energy and skipping the development of power grids based upon fossil fuels, or moving directly to financial transaction systems mediated by mobile phones rather traditional banking systems.

In health care, for example, leapfrog innovations can bypass the problem of limited access to in-person care because of clinician shortages, geographic distance, or financial issues. Such innovations include using telemedicine in rural settings, virtual group visits, AI-powered bots to answer patients' questions, and technologies for monitoring patients' physiological statuses.

As shown during the Covid-19 pandemic, such innovations can get traction quickly when traditional models of care are simply impossible.

An example that is spreading rapidly was described in a February 2024 article in *NEJM Catalyst Innovations on Care Delivery* about ambient AI scribes.[9] Authors from The Permanente Medical Group (TPMG) related the testing and then rollout of technology that applies machine learning to conversations during patient–clinician encounters, and produces progress notes. In the traditional business sense of a leapfrog innovation, this technology bypasses the traditional approaches of clinicians finding the time to write their notes, making dictation software available, and the development of macros.

This particular example is striking because of its speed and impact. TPMG initiated a 2-week pilot of ambient AI on August 14, 2023, with 47 physician test users. Based on that pilot, TPMG arranged licenses for its 10,000 physicians and staff across diverse specialties. They assessed its impact between October 16 and December 24, 2023, and published their findings in *NEJM Catalyst Innovations on Care Delivery* on February 21, 2024. Clinicians saved about 5 minutes doing documentation during visits and spent less time in the EHR outside the workday (7 a.m. to 7 p.m.).

The total interval during which this technology was tested, spread, assessed, and described was 191 days. It seems likely that organizations that take years to discuss whether to embrace this use of AI will be at a competitive disadvantage when it comes to recruiting young physicians to replace their older ones. More nimble organizations will leapfrog past them.

Even though home run applications of AI are still few in number, there is increasing evidence that AI really does have the potential to make a dent in some of these problems with no solutions. AI/LLMs can improve communication to make patient-centered care a high-reliability function. It can reduce the costs of administrative transactions while accelerating them. It can improve safety and quality by anticipating problems before they have even occurred.

Being faster to realize those benefits will be an enormously important source of competitive differentiation for organizations with stronger leadership — and being slower will doom organizations to playing perpetual catch-up. But speed in decision-making is not the only important leadership skill that will be essential to realizing the potential of AI.

Core Competencies for Leaders

This new game of leapfrog demands change in leaders' approach to how they work with their people and how their people work with each other. Much of AI's potential lies in improving interactions between people (e.g., between patients and their caregivers, or among colleagues providing care). That potential cannot be realized unless people work with the AI and each other the way they are supposed to — and with high reliability.

In most organizations, achieving that type of high reliability represents major culture change. To lead that change, health care leaders need a diverse set of skills. These skills enable leaders to harness AI's potential while ensuring patient safety, compliance, and efficient integration into health care practices.

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First, they need basic understanding of AI and familiarity with how commonly used applications work. They should put in the time to learn the nuts and bolts, and observe firsthand frontline caregivers as they use AI applications. They should make themselves use ChatGPT-4 (not just watch someone do it), use dictation software, and try bots. They will get a sense for the errors that these tools can make, but also the potential they offer. These experiences will help them convey authenticity when they discuss AI with their colleagues — as well as help them do their jobs.

Second, they have to plan the integration of AI technologies into the overall organizational strategy. There is going to be plenty of bubble-up energy for AI, from innovative people at the front lines of care delivery or administration with ideas for what would be great to try. That bubble-up energy must be balanced with top-down strategic prioritization, in which the most important focuses for the organization are used to make decisions about which initiatives are supported.

Our take is that the priorities that dominated our six tests article in 2020 are still the right ones: to enhance the patient-centeredness of care, reduce costs, and take teamwork to new levels. If AI initiatives cannot be directly tied to one of these three goals, leaders should think hard before prioritizing them. Yes, some great things might emerge from fishing around in vast data lakes... but in the meantime, there are problems to be solved.

Third, leaders need to take their skills in change management to new levels. They should recognize that these skills go beyond those required for operational excellence or strategic planning. Change management requires effectiveness in articulating a clear vision that conveys why transformation is needed, understanding of the nature of trust and trustworthiness, and the ability to engage middle and frontline management in the work of culture change.

Fourth, leaders need to grasp regulatory requirements, ethical issues, and other types of risks associated with AI, and they need to create a governance structure that is responsive to these. They should not let these concerns paralyze them, but they and their audit committees must take ownership of them.

Pitfalls to Avoid

One question is how innovative organizations will be in their testing of AI tools. A second is how long the effective tools will take to spread and for their use to become norms. The faster that AI tools become used with high reliability, the more quickly their use can be improved. For that reason, resistance to change among late adopters is an important pitfall for leaders to manage.

If going too slow is a risk, is going too fast also dangerous? The speed with which AI is evolving and being adopted is unprecedented. Because it is based upon software that (at least thus far) usually

does not require new hardware investment, adoption lags are minimal. Traditional peer-reviewed research models will often be too slow to be useful in evaluating AI tools, because the intervention studied will often be out of date by the time a paper is published. For these reasons, leaders should be ready to move quickly and make course corrections rapidly as well.

Another source of discomfort is concern that use of AI will lead to workers losing their jobs. AI is often used initially to perform low-level routine tasks, but other business sectors are already finding that the need for knowledge workers decreases with AI. For example, if 50%–80% of what a clinician does can be addressed through the use of AI, then how quickly will organizations discover that they need fewer of those clinicians?

As challenging as these implications may be, AI is the logical way to deal with the information overload that flows from medical progress. It has the potential to improve quality and safety. It can address the health care cost crisis by decreasing the numbers of personnel needed. In short, leaders should assert that AI is not the answer to health care's problems by itself, yet it is an essential part of the answer.

Conclusion

Everyone is excited about AI, but they are terrified of it, too. Leaders have to recognize those fears, and lead their organizations past them. The work begins by acknowledging the importance of AI, recognizing its strategic importance for their organization, and asserting that leadership is going to do more than let it happen. Leaders must show that they are really going to lead this transformation, and are going to be transparent in their thinking and decision-making as they do so. They are going to invest in AI and lead the cultural change needed to support its rapid adoption, its high-reliability use, and its continuous improvement.

Leaders can apply lessons learned from other major changes, such as movement to EHRs. They can ask for outside help to assess their current state. They can organize multidisciplinary councils to oversee decision-making and implementation. They can identify some low-hanging fruit, but also create teams organized around the strategic challenges of patient-centeredness, cost reduction, and teamwork enhancement.

The opportunity is here; there is good reason to project optimism. Leaders are going to need to be able to bring colleagues along in using it fully. And the organizations that can achieve highly reliable use of AI fastest will have a sustainable competitive advantage.

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