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Digital Orientation of Health Systems Post-COVID-19

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While the COVID-19 pandemic magnified key healthcare challenges including cost, quality, and delivery in the United States, it also exposed unique solutions to these challenges, particularly in the world of digital health. Innovative technologies have helped researchers track and model viral spread, as well as monitor and analyze various data crucial to governmental public health decisions. Several technologies also improved the experience of frontline healthcare professionals, including the broad use of electronic medical records (EMRs). However, unlike other industries that rely on digital records, few health systems have leveraged EMR to shape future decisions and strategies in healthcare. The possibility exists for health systems to create value through digital technology, but this approach has not been widely pursued.

A team of researchers at the University of Colorado Denver—Jiban Khuntia, Ph.D., Rulon Stacey, Ph.D., and Xue Ning, Ph.D.—recently published a study that explores the steps heath systems could take to advance digital orientation beyond the COVID-19 pandemic.[1] They provide recommendations so that "technology and strategy align together to drive proper digital transformation and ultimately provide a competitive advantage."[2]

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1   Jiban Khuntia, Rulon Stacey, and Xue Ning, *Digital Orientation of Health Systems in the Post-COVID-19 "New Normal" in the United States: Cross-sectional Survey*, Journal of Medical Internet Research, August 16, 2021.

2   *Ibid.*, p. 1.

The Study

This study is part of a project undertaken by the Health Administration Research Consortium (HARC) at the Business School of the University of Colorado Denver. The project, HARC's Inaugural Health Systems Climate Study, aimed to collect and present the insights of many health system executives. To accomplish this, a survey questionnaire was distributed to 624 health systems and ultimately produced 135 usable responses. The data in these responses were cross-referenced with secondary data from the Agency for Healthcare Research and Quality Hospital Compendium. This combined dataset informed the study.

Khuntia and his team explored three primary questions:
1. What are the digital orientations of health systems in the post-COVID-19 new normal?
2. How can such orientations be measured and compared across health systems to provide a systemic evaluation across the United States?
3. What are the factors that may influence the digital orientations of health systems?

To evaluate these questions, the research team undertook a comprehensive assessment of digital orientations in health systems in the form of a literature review. They examined four types of digital orientations, which were defined as follows:

1. **Analytics and intelligence-oriented digital technologies (AODT)**: "Technologies that support the existing functions of an organization on a day-to-day basis."[3] These technologies encompass EMRs, as well as the corresponding tools that exist to mine and analyze the data EMRs provide.
2. **Customer-oriented digital technologies (CODT)**: Technologies that involve direct customer access and support the delivery of customer services. These include mobile tools as well as tools that integrate social media platforms.
3. **Growth and innovation-oriented digital technologies (GODT)**: An emerging set of tools that help reimagine various business functions. The key goal of this orientation is innovation and adaptation of business functions and processes and it aims to "extend innovations across partnering businesses to change the value chain."[4] These technologies include tools that support the shift from fee-based models to value-based models.
4. **Futuristic and experimental digital technologies (FEDT)**: Technologies with the potential to change practice and delivery of care. These include but are not limited to robotics, wearables, tracking devices, AI, and machine learning.

The definition and assessment of these four orientations is the first step in better understanding the digital sphere of the industry and essential in informing future directions and decisions in digital healthcare. As such, the study aimed to explore and assess the differences between each one. This study is unique in its emphasis on digital orientation in health systems with different characteristics, such as size,

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➜ **Action Steps for Boards:**

● Understand the four types of digital orientations and determine where you fall within those orientations.
● Have meaningful discussions, led by senior leaders, regarding how you can progress from technologies that support existing functions to technologies that support innovation and value to the patient.
● Intentionally find organizations that are on the cutting edge of digital transformation and specifically explore what you can do to mirror that progress in your organization's strategic plan.

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3   *Ibid.*, p. 2.
4   *Ibid.*, p. 3.

region, ownership status, teaching status, revenue, number of physicians, hospitals, and other factors. Because of the comprehensive nature of this study, it may provide strategic implications for health systems post-pandemic, and guide strategy on a national level.

The primary dependent variables used in this analysis were the four digital orientations listed above. Independent variables included the various demographic characteristics mentioned (e.g., size, revenue, and ownership). Ordered logit regression was used to estimate the relationships of the four digital orientations to the specific hospital characteristics.

Key Findings

1. Smaller health systems are more likely to adopt AODT and CODT. These health systems may be constrained by:
   - Complexities of digital technologies required to adopt technologies such as artificial intelligence and robotics.
   - Insufficient research and development teams.
   - Independent IT departments.
2. Non-teaching health systems focus more on AODT and CODT.
   - Teaching hospitals are likely to focus on FEDT compared to non-teaching hospitals.
3. Health systems with lower uncompensated care burdens are likely to choose AODT or CODT.
   - A low uncompensated care burden corresponds with higher revenue, which suggests a lower tendency toward future-oriented technologies, as those health systems are satisfied with revenue from traditional avenues.
4. Health systems in the Midwest and the South tend toward GODT and FEDT.
   - Systems located in the Midwest and South have been slower to embrace records-based technologies in comparison with systems in the Northeast.
   - These systems may be compensating for this lost time by looking to GODT and FEDT for a competitive advantage.
5. Health systems with low revenue are more likely to adopt GODT and FEDT.
   - Counterintuitively, low-revenue leaders are looking to pursue futuristic technologies to support their system's digital transformation.
   - Leaders believe these technologies support efficiency and cost efficacy.
6. Non-investor-owned health systems are more likely to adopt GODT and FEDT.

- Investor-owned hospitals may be more likely to have allocated resources toward state-of-the-art digital technologies and see further investment as diminishing returns.
- Alternatively, investor-owned systems may be averse to the risks inherent in investing in GODT or FEDT since quarterly earnings do not tend to be driven by digital investment.
- Non-investor-owned health systems could leverage their adoption of GODT and FEDT to gain a competitive edge given investor-owned health systems' aversion to these orientations.

There are several important policy implications derived from the findings above. First, the authors note that small-sized and low-revenue health systems will need financial incentives to successfully adopt digital technologies. The adoption and utilization of these technologies is often financially risky and has failed before in several systems. The authors recommend that policymakers use an incentive-based approach to guide health system success. It is also essential that the approach to adopting digital technologies is system-wide and coordinated from the top down—in other words, top-level officials must drive health systems toward a greater digital orientation using system-wide implementation criteria. This will allow the market to shape secondary concerns, such as training opportunities. Additionally, this unified approach would empower CEOs to implement digital technology plans and programs without fear of employee resistance or other impediments.

→ Discussion Questions:

1. How do we drive our organization toward a greater digital orientation using system-wide implementation criteria?
2. What are the factors that promote or inhibit digital transformation in our organization?
3. How do we ensure that while pursuing a digital transformation to benefit our patients we do *not* allow quality of care to deteriorate or cost of care to escalate?
4. How do we incorporate digital transformation into our organization as a way to support, but not replace, the strategic plan?
5. How do board members engage elected officials to help them know of the meaningful help digital technology will have for patients and the need for public policy enhancement in this area?.

Limitations

- While revenues were captured in this study, digital expenditures were not able to be recorded.
- Potential barriers to adopting FEDT, such as security concerns, were not within the scope of this study. Future studies may focus on how these barriers and orientations are aligned.
- This study focused on how objective factors influence digital orientations; future studies may consider subjective factors such as leadership support and more.
- Although this study emphasized the importance of GODT and FEDT, the authors acknowledge that analytical and customer-oriented technologies play a significant role in improving quality and cost.

Conclusion

It is clear that the COVID-19 pandemic reshaped the acceptance of virtual technology. During the pandemic, more healthcare was provided virtually than ever before, which benefited both patients and providers. Nearly all health systems adopted customer-oriented technologies that allowed their providers to deliver virtual or remote care, and from here, some systems adopted further capabilities. This study found that smaller-sized, non-teaching, and low-burdened health systems tend to adopt analytics and customer-oriented digital technologies. Meanwhile, health systems in the Midwest and South, along with low-revenue and non-investor-owned health systems, are more likely to adopt futuristic and growth-oriented digital technologies. Regardless of the complex reasons behind these disparities, the COVID-19 pandemic proved a valuable disruptor for the adoption of digital technologies in healthcare. Going forward, the authors recommend that national health officials develop a policy blueprint for digital transformation in the healthcare sector. Without this, health systems will struggle to thrive in the post-pandemic new normal.

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Governance and Healthcare Innovation:
An Intentional Focus on Transformational Change
By **Daniel Wolf**, Co-Founder and CEO, *Dewar Sloan*

Healthcare innovation has many forms and facets. Hospital and health system boards are wading through the range of technical, operating, and strategic challenges that are shaped by innovation. Disruptions in the sector and the investment capital required to keep pace in this era of healthcare transformation are clearly on the forefront of governance attention and action.

Getting organized for a more digital world of healthcare, with complex incentives and value-shaping connections is complicated. And progress on healthcare transformation depends on innovation. Population health, standards of care, cost/value, access integrity, and quality—by every measure—require different approaches to healthcare innovation.

Framing the right conversation on healthcare innovation is an emerging board agenda subject. The conversation needs the right starting place and mindset, and it needs to make sense for the organization. A working framework for putting things in context is reflected in the five vectors of healthcare innovation:

1. **Process-level innovation**: Spans advanced methods, pathways, value streams, resources, and new structures for enhancing the patient experience, cost/value dynamics, risk management, and standards of care.
2. **Service line innovation**: Reflects in the coordination and integration of primary care and advanced care. Much of the focus on service line innovation is geared to chronic disease management and complex clinical care protocols.
3. **Network model innovation**: Often emerges from the dynamics of benefit plan management, insurance platforms, and incentive programs. The combined force of incentives, access, quality, and service markers shapes cost/value.
4. **Science/tech innovation**: Influences every area of healthcare, from conception to care at the end of life. Data systems, automation, materials and devices, procedure substitution, service standards, and protocols play here.
5. **Business model innovation**: Reflects shifts in service access, resource alternatives, and alternate care delivery. These often involve revenue stream disruption and resource concentration in local and regional markets.

These five vectors of healthcare innovation feed into a complex horizon for planning and decision making. They provide context for board and executive focus on strategy and investment, collaboration, competitive strategy, and the intentional transformation of healthcare norms.

Boards are becoming more engaged in the focus on innovation in several areas:

- **Board members and leaders are duty-bound to understand the landscape of healthcare challenges and solutions** in general. That means awareness and insight on issues related to cost/value, quality, and care experience, access, and impact. Healthcare innovation presents options for change in these areas and many more. Dealing with healthcare transformation starts with perspective, and that includes assumptions about the broad impact of innovation that could reshape 15 to 20 percent of total healthcare spending and investment. That deserves attention.
- **Innovation in different forms and vectors has broad implications for strategic priorities.** Healthcare integration and coordination is enabled thorough investment options and choices. Governance work in strategic planning, risk management, decision making, and problem solving requires more time on task with options and choices in the healthcare innovation arena.
- **Board members are coming to appreciate the consequences of healthcare innovation.** How will more innovation impact the organization? How will options be scored, invested, managed, and valued? How will a healthcare innovation culture be generated and sustained? How will different paths for

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➜ Key Board Takeaways

- **Board conversations on innovation need more structure, focus, and coherence** in order to guide strategic and operating decisions, investment, and risk management.
- **Healthcare innovation in different forms should emerge as a core competence of hospitals and health systems** because it takes place at the intersections of access, cost/value, quality, population health, outcomes, and resource management.
- **Consider the engagement of an innovation committee or program team to tackle the why, what, and how** of the organization's strategic approach to healthcare innovation.

innovation be connected, blended, and advanced, both in the near term and long term? How will choices and conflicts be navigated by management and governance?

Building the Right Conversation

Today, the healthcare innovation story is captured in a wide range of board and executive conversations. However, these conversations are often isolated and dispersed. They may not share a practical and coherent picture of healthcare innovation strategy, shape logical and connected foundations for investment, capture the strategic offense and defense of healthcare innovation or the revenue and resource challenges, and balance the work to be done in program development, execution, and adaptation.

This suggests that boards and executives need new conversations on healthcare innovation. Our HeCEM 2020 research on healthcare organizations and innovation[1] shapes some of the key questions to consider and provides guidance for board engagement that leads to smart options. Boards should ask questions that:

1. Guide conversations on what makes sense for the hospital or health system. What is the right approach for an academic medical center, a regional health system, a community medical center, a subsidiary hospital, a critical access hospital, or a specialty clinic? What approaches for innovation will balance the intentions of stakeholders? What investment approach will help match near-term and long-term goals? Getting the scope and scale of innovation efforts in balance with individual hospitals and health systems starts with a check on purpose, vision, and mission. A key issue for smaller organizations is the translation of innovations to their circumstances and conditions. The key issue for larger, more complex organizations is managing the portfolio of innovation projects. The common challenge is finding the innovation agenda that adds value and reduces risks.

2. Shape the conversation on resources, programs, and systems that enable the work across the different vectors of healthcare innovation. What core resources are required? What kind of talent will match the intentions of the organization? What kind of collaboration makes sense relative to resource development, risk

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1   This research was conducted by the HeCEM Group of Dewar Sloan with hospital and health system-based innovation centers across the United States. The publication with this research, *Healthcare Innovation Challenges and Horizons*, will be published in 2022.

management, economic investment, and operating excellence? How can healthcare innovation drive competitive advantage, healthcare experience, economic performance, and corporate stewardship? Again, scope and scale are important here. For some organizations, collaboration across systems and partnerships makes sense. For others, working with a more concentrated specific focus makes sense—along service lines or science lines. More often than not, sound structures follow clear strategy, so there is a checkpoint that demands board attention.

3. Define hospital and health system capacity for moving forward. Who would staff the efforts and programs for healthcare innovation? What kind of time and energy is required? Where is the expertise and thought leadership that will help forge programs and results? What constraints and obstacles will need to be addressed? Does the organization have the culture and structure that will enable the incubation, acceleration, translation, and integration of an ongoing and adaptive healthcare innovation program? The leadership of healthcare innovation draws from the talents and interactions of people with different expertise, mindsets, and experience. For most organizations, the right kind of culture for innovation is one that blends together curiosity, order and arrangement, and integrative efforts—focused on what social scientists call collective impact.

These are strategic and operating questions that shape the roadmap for healthcare innovation, the commitments required, and the leadership needed to succeed and sustain. This is a critical conversation about the mission of the hospital or health system, the challenges that matter most to stakeholders, and the board's picture of near-term and long-term objectives.

Big technology, big commerce, and big ecosystem forces pose as disruptors to the healthcare sector. What we have seen over the last few years is more work by these groups in collaboration with one another. These efforts often connect conventional providers and stakeholder models with better information, processes, standards, and platforms, enabled by different partnerships.

Healthcare innovation has always been a collaborative journey, matching patients, hospitals and health systems, providers, investors, and suppliers with actions that transform programs and *collective impact*. Across a $4 trillion healthcare sector, there are many options and many blueprints for growth, performance, and change. Boards have choices to make. Choices about healthcare innovation in general, and

choices that guide program and platform investments, power strategic collaboration, and prepare stakeholders for change that matters.

Board Leadership and Focus

The powers and responsibilities of boards today tend to focus on compliance, quality, access, operating, and service themes. While some boards cover clinical and service line integration themes, fewer focus on discovery and innovation. With the challenges of COVID-19 and broader pressures for healthcare transformation, more focus has shifted to the need for innovation—across the different vectors. While healthcare organizations are navigating under great stress, the gates are open for serious movement on all five vectors of healthcare innovation listed above.

Boards and executives must bring attention to the greater prospects for healthcare innovation. For many organizations, innovation activity already exists in dispersed forms and settings, influenced by clinical programs, service standards, access platforms, and operating systems. Leadership can interact on these opportunities with renewed focus on real change and impact.

Another dimension of leadership requires a look at the *outside-in* and the *inside-out* aspects of healthcare innovation. So many opportunities for innovation emerge at the intersections of the five vectors described above. Incentives from CMS exist at these intersections. Alphabet, Amazon, Apple, and a host of others percolate across these intersections. Suppliers and contractors join clinicians and managers at many of these intersections. Collaboration and program design support are part of the new competence of healthcare innovation. Boards and executives share the responsibility for advancing both innovation mindset and readiness.

The next decade stands to become the most consequential period for healthcare innovation in more than a century. Boards and the organizations they serve have the obligation to move forward with a more focused strategic agenda for healthcare innovation.

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Care Model Transformation as a Strategy for the Strained Healthcare Workforce

By **Jonathan L. Gleason**, Executive Vice President, Chief Clinical Officer, James D and Mary Jo Danella Chief Quality Officer, *Jefferson Health*, **Stephen K. Klasko, M.D., M.B.A.,** President, *Thomas Jefferson University*, CEO, *Jefferson Health*, and **Michael Hoad, M.A.,** Vice President for Enterprise Communications, *Thomas Jefferson University and Jefferson Health*

In September, 38,000 people left the healthcare workforce, according to the U.S. Bureau of Labor Statistics.[1] This dramatic shift in our workforce means we need the urgent redesign of care models and workflows. Yes, this is critical. In fact, this pressure is felt primarily in acute care settings. We are seeing the impact through national declines in patient experience and important measures of patient safety. For example, central line-associated bloodstream infections and falls with injury have significantly increased.

But we have also learned a great deal in the past two years. Many of the lessons that we learned during the early days of the COVID-19 pandemic will help guide how we meet our urgent need to transform care delivery models during the "turnover tsunami" and the "great resignation."

During the pandemic, health systems rapidly transformed their care models due to uncertainty about how to safely deliver in-person care. The biggest example: the dramatic rise of virtual care across all of healthcare. This article examines the structure of Jefferson Health's virtual management of COVID-19 patients to derive learnings for maximizing clinician staff time and reducing frustration for healthcare teams and patients alike.

Managing COVID-19 Patients Virtually

At Jefferson Health, our JeffConnect platform rose from 25 visits per day to more than 1,000 visits per day in a matter of weeks in the Spring of 2020. Today, virtual visits represent as much as 20 percent of our ambulatory visits. The virtual care model is complementary to physical ambulatory locations, and often serves as

1   U.S. Bureau of Labor Statistics, "The Employment Situation—September 2021."

a triage for ambulatory care to determine if an office practice, urgent care, or emergency room are the next best step in the care of the patient.

Further, during the pandemic, Jefferson Health developed an almost entirely virtual care model for managing ambulatory COVID-19 patients. This model extended from the onset of symptoms to the full resolution of symptoms, and all steps in between.

Our COVID-19 patient's journey began by interacting with a "bot" on our COVID-19 Web site. This virtual assessment was designed to be conversational and would lead to a recommendation about whether a test should be scheduled or a virtual visit. If the assessment recommended a virtual visit, then the patient was connected to the JeffConnect telehealth platform. If the telehealth visit resulted in the recommendation for a COVID-19 test, then the test would be scheduled virtually, and the patient would go through one of our many drive-up testing locations. Test results would be managed digitally.

If the JeffConnect appointment determined that a physical exam was needed, then the patient would be sent to the emergency department or urgent care, and the JeffConnect team would usher her or him through that process. If the patient was determined to be a good candidate for outpatient management, then they were issued a remote monitor for oxygen saturation and they were signed up for a text-based bot that would check in on the patient daily. The patient might be asked,

"Julie, how are you feeling this morning?" They would then enter into a conversation with our "bot," and they may wind up back on the phone with JeffConnect if their responses indicated that they needed to be evaluated.

Jefferson Health had a team of six nurses that were managing 1,200 patients at a time using this technology. The team also used this technology to check in throughout the day with patients who had been admitted and were recovering at home.

One of the most significant learnings from our efficient, high-touch, low-staffing approach was that patients enjoyed interacting with our technology. Our patients knew that they were interacting with a "bot," but we had requests from patients to continue on the platform, even after they no longer needed the program. We learned that people are comfortable interacting with machines, and some of them value the interaction intrinsically.

Extending Virtual Care beyond the Pandemic

Jefferson Health's high-touch digital approach was primarily motivated by the safety needs during the pre-vaccine pandemic, but the extraordinary efficiency of this approach has significant value with the current staffing challenges that we face in healthcare.

Jefferson Health is now extending that approach to our management of patients with congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD). These virtual extenders of care may be able to extend the careers of nurses and physicians that aren't interested in working in acute care environments. This helps because healthcare jobs outside of hospitals actually increased by 28,000 during September 2020.

This is a moment for opportunistic transformation in healthcare, where we must innovate to provide higher volumes of care with a smaller workforce. We cannot ask our amazing clinicians to do more because they are suffering from fatigue, burnout, and an increasing workload due to staffing shortages. This is the time where human-machine teaming must mature quickly for the benefit of our precious workforce and our deserving communities.

It is becoming mission-critical for health systems to be able to deliver services that are not billable in fee-for-service arrangements. Telehealth visits and digital tools have very little support in traditional payment models. This is one reason why

Jefferson Health has recently completed its acquisition of the large Medicaid and Medicare Advantage HealthPartners Plan. This opportunity will allow for the full alignment of technology, clinicians, and the health needs of the community.

Value-based care might be one of the most important strategies to support the workforce and the community over the coming years. Health systems that do not have a model that supports the use of technology to partner in care provision will likely struggle to transform the care model to provide the high-quality, safe care that is needed during the current staffing crisis.

There is too much anxiety, frustration, and wasted time in the delivery of healthcare today. It is driving clinicians into different roles, many outside of acute care. To combat this frustration, machines must become our allies, our extenders, our partners in providing the extension of care outside the walls of hospitals and into our patients' homes.

Furthermore, using technology to shift the locus of healthcare to the home quickly democratizes healthcare delivery—it forces consideration of family dynamics, neighborhood support, and other social determinants of health. The result will be better care for patients and a greater sense of efficacy for providers, which may indeed help encourage clinicians to find reward in acute care.

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