Satisfying Your Customers

Holistic Care Goes Digital

Reimagining and transforming patient care and experience.

Sanjeev Sah, Valerie McKinnis, MD, and Nancy Yates, RN

When Centura Health began designing its "hospital of the future," the journey was fueled by the belief that by advancing whole person care, people flourish.

That thinking helped to spur a unique opportunity to create a cutting-edge facility with high impact technological innovations to fully realize the promise of the quadruple aim: improve population health, enhance the patient experience, increase care team well-being, and reduce costs. Thus, Centura's new smart health facility was born. Opening this summer, the 72-bed acute care hospital will serve Colorado Springs, Colo., and the northern El Paso County area.

Throughout the design process, enthusiastic cross-functional teams fostered a culture of innovation and collaboration,

These six goals served as guideposts for the facility:

- Redefine Experience: Address the needs, expectations and preferences of patients.

- Transform Care: Achieve better health outcomes for patients.

- Enhance Clinical Efficiency: Digitally enable and streamline the use of resources, processes and practices.

- Enhance Operational Efficiency: Ensure improved effectiveness, speed and performance.

- Improve Clinician Satisfaction: Offer well-being support and professional fulfillment to clinicians.

- Become Equitable and Sustainable: Provide fair, just and inclusive care.

Hospital of the Future Design
Human-centered design principles were adopted and deployed. We prioritized the unique needs, preferences and experiences of our patients, caregivers and clinicians to improve the patient experience, drive better outcomes and create a culture of continuous improvement. Our interdisciplinary team, jointly led by clinical and technical leaders, partnered with external experts to evaluate cutting-edge technologies and incorporate trends shaping the future of healthcare such as artificial intelligence and automation, and remote patient monitoring.

These principles included keeping patients and clinicians at the center of care, understanding their motivations and behaviors, connecting their experiences with outcomes and caring with convenience.

Re-Imagined Journeys and Workflows
Innovative and integrated solutions (described below) were designed to digitally transform journeys for patients, clinicians and caregivers to enhance accessibility, communications, coordination and efficiency throughout the healthcare continuum.

With a core spirit of innovation and collaboration, our multidisciplinary team embraced the concept of "the art of the possible," thinking beyond current limitations and envisioning what is achievable and feasible in healthcare innovation. This cross-functional team of innovators facilitated the development of detailed future-state process maps, prioritized a list of innovation features and added significant momentum to the design process, profoundly impacting the way we will serve our patients and support our clinicians for years to come. Front-line clinicians, operational and clinical leaders,

and patients all provided significant input as we defined all that our new facility could be.

Transformed Care, Elevated Experience
Energized with the bold mindset of innovation, the cross-functional team worked to identify capabilities and design future-state workflows for four critical innovation technologies: real-time location systems, telehealth, patient devices and applications, and provider devices and applications. For example, real-time location systems in the facility enable a clinician entering a patient room to see on his or her tablet pertinent information about personnel needed to work with that patient. It also helps locate and ensure that the right equipment is available and ready in the OR for surgical cases. It even assists with patient tracking over the course of the day.

Workflow design also took into account infrastructure and application dependencies, operational processes and training, and adoption considerations. As the team designed these workflows, it held regular workstream meetings and conducted a series of focus-group workshops that included clinical and operational leaders as well as patients. These forums allowed for in-depth discussions, and the forging of ideas into tangible features that are ready to be developed.

Virtual care, continuous patient monitoring, interoperability, artificial intelligence and automation were identified early on as essential to meaningful innovation. Leveraging integrated solutions, our team re-imagined digitally transformed workflows to enable a care delivery ecosystem that elevates the patient experience, promotes high-quality care and streamlines health system operations.

Clinical and Operational Efficiency
Digital transformation of healthcare operations requires effective utilization of resources, processes and systems to enable clinical and operational efficiency. By optimizing patient care delivery, enhancing patient outcomes and streamlining operations, meaningful digital transformation increases the quality and efficiency of clinical services while decreasing waste, errors and costs.

For example, extensive use of our real-time location system in the hospital can promote staff safety and enhance patient care by delivering the right resource to the right person in the right location at the right time. Automation of things as relatively simple as locating IV pumps or knowing a patient's location in the hospital saves clinicians precious minutes, while at the same time decreasing errors, improving patient safety and enhancing the experience of both patients and clinicians. Smart spaces, devices and

Key Capabilities, Digital Innovations

With significant input from front-line clinicians, operational and clinical leaders and patients, we identified key capabilities and digital innovations that define our hospital of the future.

Capabilities

- Facilitates effective, efficient and clear communication between providers and patients.
- Enables timely access to healthcare services.
- Provides relevant and understandable information and education.
- Enables seamless coordination and continuity of care.
- Creates an environment for physical comfort and emotional support.
- Fosters patient engagement and enables shared decision making.
- Guides patient follow-up and post-care support.
- Focuses on patient safety and quality.

Digital Innovations

- Smart spaces, devices and apps for patients, clinicians and caregivers.
- Personalized care, patient engagement and experience.
- Seamless and integrated telehealth.
- Clinical and operational efficiency.

applications enable clinicians to provide the most efficient and optimized care.

Conceptual Architecture and Innovation Lab

For prioritized innovations and technology solutions, it was important to design and document a high-level representation, defining the structure, components and interactions of technology systems and applications, as well as the encompassing system components, data flows and integrations, interactions and interfaces, and security and privacy. This representation served as a roadmap for understanding and implementing these innovations effectively.

When opening a new facility, troubleshooting occurs after going live. Since many of the innovations and solutions we incorporated were being attempted for the first time, there was a need to explore, develop and test everything. This need gave birth to a technology innovation lab, a dedicated space that included a mock patient room and a nurse's station where we could experiment. This facilitated research, development, prototyping and testing. Clinical and operational leaders, as well as front-line end-users, visited the lab and gave valuable feedback about innovations in progress. The lab has been essential for testing complex integrations in a near-live environment while informing scalability considerations.

Lessons Learned

We learned that successfully designing, building and implementing a hospital of the future required close alignment between operational and clinical leaders, construction program managers, supply chain, biomedical engineering, information technology and external partners. Beyond appropriately involving these groups in design decisions and related dependencies, it was essential for them to have accountability for change management for the entire project, ideally sitting outside of IT, to prevent siloed decision-making and ineffective communication.

Because a hospital-of-the-future build involves so many vendors and complex integrations, we found it helpful to bring key suppliers and stakeholders together early in the design process to collaborate and innovate novel solutions. We also learned that

ongoing patient and patient advocate involvement throughout the entire process was vital to ensure innovations would be user-friendly and improve the patient and caregiver experience. Bringing all contributors along for the entire process helped instill a shared vision and purpose that generated a collective accountability that the entire team had to get it right.

Being able to realize the quadruple aim through the design and build of this innovative facility, has been the most profound professional experience of our careers. We believe that this facility will help Centura Health extend whole-person care to our communities that is high quality, elevates the patient experience, creates operational efficiencies and improves the lives of our care team members.

Sanjeev Sah (sanjeevsah@centura.org) is vice president/chief information security officer, Centura Health, Centennial, Colo., and an ACHE Member. Valerie McKinnis, MD (valeriemckinnis@centura.org), is vice president/chief medical informatics officer, Centura Health, Centennial, Colo. Nancy Yates, RN (nancyyates@centura.org), is vice president/chief nursing informatics officer, Centura Health Centennial, Colo.

Editor's note: To see how Centura Health's state-of-the-art hospital performs with real-world examples, look to a future issue Healthcare Executive for a follow up to this column.