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CARE DELIVERY TRANSFORMATION FRAMEWORK

# Technology-enabled Care

Technology touches virtually every part of the health care system, and new technologies are revolutionizing how hospitals provide care. This brief takes a closer look into technology-enabled care. It explores key trends, innovations and learnings, and provides considerations for how hospitals can adopt technology that helps them advance their care delivery strategies.

Technology-enabled care refers to digital tools that can strengthen health care delivery. It describes the way health care services, data and information can improve when digital devices and software are embedded into hospitals and health systems' workflows.[1]

Both providers and patients can benefit when technology is integrated responsibly and intentionally into care models. Technological advances can help ensure people are getting the right care in the right place at the right time, ultimately improving outcomes and patient experience.

As digital innovations in the health care space are constantly advancing, technology-enabled care will influence the evolution of care delivery. It includes, but is not limited to, artificial intelligence, virtual care, wearables, automation, predictive analytics, sensors, speech recognition, robotics and more.

This brief will focus on three subjects where technology will continue to directly impact how care is delivered:

- **Ambient Artificial Intelligence (AI)**
- **Patient Monitoring**
- **Telepresence**

Hospitals and health systems across the United States are transforming care delivery to better meet the needs of patients and communities throughout their lifespans.

Through the Care Delivery Transformation Framework, the American Hospital Association (AHA) is supporting hospitals and health systems as they explore strategies to improve care for their patients and communities. The framework represents how components of the health care ecosystem facilitate the development and implementation of innovative care delivery models in three core areas: clinical settings, community settings and linking care to community.

**Learn more at www.aha.org/CDT.**

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# Ambient Artificial Intelligence

Ambient AI works in the background while clinicians focus on patient care. It integrates into an environment and can reduce the administrative burden that may interfere with doctors' ability to deliver care.[2]

Ambient AI can support clinicians by serving as a listening tool and scribe. While the patient and provider converse, the AI listens and takes detailed notes that can be automatically uploaded to the electronic health record (EHR). By reducing the documentation burden during patient visits, ambient AI can encourage face-to-face communication and strengthen the connection between the clinician and patient. It can also automatically share notes, helping to improve communication across provider teams.[3]

Studies have shown that this type of AI can improve the experience for both clinicians and patients. Sutter Health recently showcased results in a published study that launched in April 2024 and involved 100 clinicians. After a 30-day period of using ambient AI, the study found a significant decrease in time spent on notes, a reduction in mental demand and overall improvement in work satisfaction for clinicians. Patients stated they received more focused attention from their providers.[4]

**AHA RESOURCE**

**Case Study: Ambient AI Technology at Cleveland Clinic: Reducing Physician Burnout and Enhancing Patient Care**

AI voice-enabled solutions are reducing physician burnout, enhancing patient interactions and transforming workflows across health care. In this conversation, Cleveland Clinic's Eric Boose, M.D., family medicine physician and associate chief medical information officer, and Rohit Chandra, Ph.D., executive vice president and chief digital officer, discuss the Clinic's initial pilot of ambient listening technology, lessons learned from implementation and what's on the horizon for AI in health care.

> " Within two weeks [of ambient listening tech implementation] we have about 1,500 [physicians] trained and almost a thousand using it already. We're getting feedback that it is life changing. I love this product. I don't know how I survived without it. — **ERIC BOOSE, M.D.** "

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# Patient Monitoring

Hospitals are increasingly using new technologies to better monitor patients' vital signs. Centralized and remote monitoring systems make the manual review of patients' monitors easier and allow for swift responses to changes in medical status.

Centralized data monitoring refers to digital tools that support monitoring in the hospital setting. There are two different approaches to centralized monitoring.

A **central monitoring system** provides an overview of multiple patients' monitors in one visual — such as a screen in a nurses' station. It allows providers to view multiple patients at once and respond promptly versus responding when an alarm goes off.

A **central monitoring unit** is a physical location, sometimes offsite, where patient data is analyzed and reviewed by trained technicians who monitor, interpret and alert onsite staff.

Many hospitals are beginning to adopt a centralized data monitoring model. In this approach, trained technicians perform continuous monitoring — adding an extra layer of observation. It contributes to a more rapid response in emergencies. It also can shift the burden of manual monitoring away from floor staff, allowing them to focus on critical tasks and potentially reduce burnout or alarm fatigue.[5,6]

In the 13 months after **Tampa General Hospital** launched its patient monitoring command center, the hospital **saved $40 million** due to improvements such as a **25% decrease in emergency room diversion** and a reduction in average patient stays — effectively **increasing capacity by the equivalent of 30 additional beds**.[8]

**AHA RESOURCE**

**Expanding Telehealth Services and Access for Successful Maternal Care**

Sanford Health Bemidji in Minnesota discusses how remote patient monitoring expanded their maternal care capabilities to reach rural families in the state.

At UCHealth, hospitals are using AI and remote monitoring to address sepsis-related deterioration. The Virtual Health Center has professionals using 1,000 cameras, four predictive tools and algorithms to continuously monitor patients while working with onsite doctors and nurses across dozens of hospitals.

"Virtual monitoring for sepsis is a game changer for our patients," said Noreen Bernard, chief nursing officer at UCHealth Parkview in Pueblo, Colo. "By utilizing this advanced technology, we can detect sepsis earlier and respond more swiftly, saving lives and improving patient outcomes."[7]

Remote patient monitoring (RPM) uses smart devices to monitor patients' medical conditions outside the hospital. These devices can improve diagnosis, treatment decisions and timely medical attention, empowering patients to manage their care. Common devices include bluetooth enabled blood pressure and heart rate monitors, blood glucose meters, smart inhalers, smart scales, apnea monitors and maternity care monitors.[9] These devices are designed to alert providers when a patient's condition changes.

Additional benefits of RPM include cost-effectiveness, streamlined workflows and better clinical decision-making, leading to decreased hospitalizations and readmissions and improved patient satisfaction. In fact, many RPM devices use AI, as the devices record data in the background and wait for a trigger to send an alert or recommendation.

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# Telepresence

Telepresence "creates a sense of being physically present in a different location, facilitating interactions that mimic direct, in-person experiences."[10] It uses advanced audio/visual systems, interactive elements and even robotics to make the interaction feel more physical.

Provider-to-provider or provider-to-patient video consultations using high-quality video and audio can provide inpatient and outpatient services from far distances — saving time and money and increasing patient satisfaction and timely medical attention. Telepresence can be used to expand access to specialty and high-quality care for rural or smaller hospitals that are able to connect with tertiary or academic hospitals.[11,12] By facilitating connections with remote specialists, telepresence can reduce patient transfers and supplement clinical staffing.[12]

Another technological advance that is gaining traction is the use of medical telepresence robots. The robots, which clinicians can control remotely, feature:

- High-definition cameras.
- Two-way microphones.
- Movement controls.
- Touchscreens or displays for patient engagement.
- On some occasions, medical tools like stethoscopes or diagnostic devices.

These robots can be used within inpatient units and for monitoring patients at home, leading to better accessibility, efficiency and potential cost savings.

UConn John Dempsey Hospital uses robots for "telesitters." Faced with rising costs from individual room sitters and committed to increasing patient safety in aging populations, the team turned to technology. The robot allows one staff member to monitor several patients at once and communicate with them in multiple languages if needed. Staff can also use the robot to trigger any necessary alarms. Through visuals and sounds, these robots create genuine connection between patients and the offsite nursing assistants with bedside training who are monitoring them. Meanwhile, onsite staff can focus on other duties.[13] Jennifer Hansen, the manager of the float pool, says this makes a real difference. "I believe a key reason for our success is that our behind-the-scenes team members are trained nursing assistants. They bring not only technical skills but also the ability to communicate effectively and assess situations with a professional eye. That kind of background has made a real difference — it's something you wouldn't necessarily get from someone without that clinical experience."

**AHA RESOURCE**

**Case Study: Dartmouth Health Connected Care and Center for Telehealth**

Dartmouth Health's Connected Care and Center for Telehealth in New Hampshire, established in 2012, has grown into one of the most comprehensive telehealth programs in the region, delivering 24/7 acute-care services for more than 40 hospitals — many of them critical access facilities outside the Dartmouth Health system.



Anna Humennyj, R.N., associate director of nursing operations (left), and Jennifer Hansen, manager of the float pool, demonstrate robot "telesitters" at UConn John Dempsey Hospital, Farmington, Conn.

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# Implementation Considerations

The Care Delivery Transformation Framework incorporates several operational infrastructure elements and foundational principles that, when strategically aligned, can help support the implementation of transformational care delivery strategies. Below are some overarching strategic considerations to keep in mind when implementing new technology-enabled care tactics.

## Workforce

- **Stakeholder engagement:** Involve key stakeholder groups in the process from conception to implementation to post-implementation.

  - **Clinicians:** The end-users of the product should be consulted throughout the process to ensure buy-in and to provide feedback.
  - **Information technology:** The chief technology officer, or similar position, and the IT team should be trusted to lead technology-based projects.
  - **Data engineers:** This team ensures that data are clean and organized to feed new technological products and algorithms.
  - **Leadership:** Involving key leadership members early, including C-suite and board members, will foster trust and support to ensure resources are secured and the change is viewed positively.
  - **Legal/compliance:** Legal team members will be critical to assess risk and ensure contract terms address liability.
  - **Finance:** This team should be trusted to evaluate financials, as some technology-based services have billing associated with them.

- **Workflow changes:** Select a platform that will integrate with your current systems' set-up, ensure comprehensive training is provided and listen to those who use the technology daily for feedback to create a continuous learning environment.

## Policies and Procedures

- **Patient data security and privacy:** Reduce risk to data security by consulting an expert in cybersecurity. Appointing a data governance officer can help ensure policies around responsible data collection and protecting patient data are implemented.
- **Investment:** Ensure adequate financial and human resources are allocated so that set-up and maintenance can be done correctly and sustainably.
- **Infrastructure:** Build new technology platforms atop a strong digital foundation.
- **Technical support:** Set up 24/7 technical support and select a vendor that has a record of strong user experience to reduce technical challenges and maximize the value of the tool.

## Accessible

- **Accessibility:** Consider how a new technology venture will be used and accessed by different hospitals, clinics, clinicians and patient populations. Unintended disparate outcomes are possible without technology being deployed responsibly.

## Person-centered

- **Human touch:** Technology should enhance human connections in health care. Human review and oversight should always be accounted for.
- **Patient involvement:** Involve patients in the planning process and continue to solicit feedback on the technologies they are using. If the technology is patient-facing, like RPM, consider what education and support is needed, and ensure all patients have the digital infrastructure needed to use the program.

## Leadership and Governance

- **Trust:** Implementing technology, particularly AI, requires a framework that is ethical, transparent and compliant with organizational policies around data collection and patient privacy. Foster trust in new technology by using the correct procedures, getting leadership/stakeholder buy-in and managing risk.

These considerations can be accelerators of transformative change. Having a C-suite and stakeholders who embody a positive change mindset can go a long way to influence willingness to accept change throughout the hospital or health system. Structure implementation and training plans to encourage engagement from providers and patients. A seamless integration into an existing EHR can provide a level of efficiency.

# Conclusion

Technology is evolving at an unprecedented pace, and hospitals and health systems are using the opportunity to transform care delivery. When thoughtfully implemented, digital innovation can enhance quality, expand access, strengthen the workforce experience and elevate patient satisfaction. While stepping into new technology domains may feel overwhelming, the right strategy, infrastructure and partnerships make meaningful progress achievable. By embracing innovation with intention and collaboration, hospitals can reimagine the care experience, prevent avoidable hospitalizations and adverse outcomes and advance a healthier future for the communities they serve.

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# AHA Resources

Explore additional AHA resources that focus on technology in health care:

## Care Delivery Transformation Framework

- **Infographic:** See how transformational care delivery models are linked across clinical and community settings.
- **Discussion Guide:** Foster conversations with hospital leaders and their teams to identify opportunities to transform care delivery.
- **Issue Brief:** Dig deeper into the framework.

## Advancing Health Podcast: Bridging Distances with AI and Telemedicine

Sanford Health, America's largest rural health system, is revolutionizing care delivery with telemedicine and AI. In this conversation, Dave Newman, M.D., vice president and chief medical officer for virtual care at Sanford Health, discusses how innovative virtual care models and AI-powered solutions are breaking down barriers, improving patient outcomes and enhancing provider efficiency.

## Leadership Dialogue Series: The Future Is Here — Artificial Intelligence and Its Role in Health Care

AI in health care isn't an innovation for the distant future; it's already here. But how will it develop across all sectors of the health care field? In this Leadership Dialogue conversation, Amy Perry, president and CEO of Banner Health, discusses how AI and other technologies can relieve caregivers of tedious and time-consuming aspects of their jobs and help organize critical data for caregivers, patients and research.

## AI and the Health Care Workforce

This report offers guidance for hospital and health system leaders to successfully integrate AI technologies into their workforce and workflows.

## Focusing on Patient Safety With Steve Diaz, M.D., of MaineGeneral Health

A discussion of how AI can help improve care management, personalize treatment plans, support administrative tasks and more.

## Board support crucial to telehealth success

In this AHA Trustee Services blog, learn how board support is important to tackle challenges including implementing new technology, regulations and patient needs in rural hospitals.

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# Endnotes

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