



Future of Health

Case Study: Atrium Health



Research collaboration led by

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*Inclusion in this case study does not imply any endorsement of an organization's or company's products or services by the AMA.

Case study introduction

Atrium Health, part of [Advocate Health](#), is an integrated nonprofit health system that operates the Atrium Health Hospital at Home (AH-HaH) program to improve patient outcomes, enhance the patient experience, and reduce hospital costs. This aligns with broader [trends](#) to shift care to the home without a reduction in quality or access. The AH-HaH program demonstrates Atrium Health's broader vision of supporting care at home and the use of digitally enabled modalities.

This case study highlights how this vision is being accomplished through a strategic partnership between a traditional brick-and-mortar health system and a technology company, with a common goal to build and scale a program that enables patients to continue their care and recovery at home. Each organization brings its expertise to the partnership, enabling thoughtful development and implementation of a complex, digitally enabled clinical initiative.

As background, the AH-HaH program was [established](#) early in the COVID-19 pandemic to offset the expected influx of patients at the hospital and enable safe and comfortable care delivery in the home while keeping patients, caregivers, and medical staff as safe as possible. Additional forces driving the implementation of a hospital-at-home program consisted of an aging polychronic patient population, persistent health inequities in the region, and general risks of hospitalization (e.g., falling). At the same time, in 2020, the Centers for Medicare & Medicaid Services (CMS) passed the [Acute Hospital Care at Home Individual Waiver \(AHCaH\)](#), which provided a pathway for select institutions to deliver hospital level care in the home. In 2023, as the AH-HaH program continued to grow, Atrium Health established a partnership with [Best Buy Health](#) to improve its program and co-develop hospital-at-home tools.

Nine of Atrium Health's hospitals have the AHCaH waiver, and patients are served by this program in and around the region of Charlotte, North Carolina. Patients enrolled in the AH-HaH program are treated for a variety of conditions; these include chronic conditions, like congestive heart failure and diabetes, and acute or episodic conditions, like cellulitis and deep vein thrombosis. Once enrolled and transferred from facility to home, patients are provided twice-daily in-person visits from paramedics, daily virtual consultations with their care team, and a patient remote monitoring kit to inform ongoing provision of care. These kits consist of a wearable pulse oximeter, a blood pressure monitor and cuff, and a tablet patients can use to communicate with their care team. In addition to these kits, patients are provided with additional equipment to support their specific needs, such as nebulizers, bedside commodes, or walkers. Data collected from the remote monitoring kits are integrated seamlessly into Atrium Health's electronic health record (EHR).

This program provides an alternative to hospital admission for patients whose conditions can be appropriately monitored at home. The AH-HaH program represents 2% of Atrium Health beds in the Charlotte region. To date, the program has supported over 8,400 patients across 10 counties in the Charlotte region and saved nearly 30,000 bed days since March 2020. Although the AH-HaH program is currently concentrated in North Carolina, Advocate is considering expanding the program to additional regions.

The Atrium Health Hospital at Home program care model

The following figures illustrate the AH-HaH program care model. **Figure 1** illustrates the scope of services provided to patients. **Figure 2** details clinical, patient, and social determinants of health (SDOH) factors for patient eligibility.

FIGURE 1: AH-HaH program scope of services



FIGURE 2: AH-HaH program patient eligibility criteria

Clinical Factors	Patient Factors	SDOH Factors
<ul style="list-style-type: none"> Requires no more than 4 Liters (L) Oxygen (O²) per nasal cannula Respiration <24, Systolic Blood Pressure >90, Oxygen Saturation >92 on no more than 4 L O² or decreasing O² requirement Requires vital signs no more frequently than q6 hrs Not anticipated to need advanced diagnostics or procedure in next 72 hrs Patient condition stable enough for registered nurse virtual monitoring, twice-daily in-home paramedic visits and daily physician virtual visit 	<ul style="list-style-type: none"> Has the ability to comply with monitoring devices and care team interactions or has support in home to do so Able to transfer from bed to bed rest Not confused beyond baseline Understands the plan of care and consents to receive care at home 	<ul style="list-style-type: none"> Working phone Available emergency contact Safe/stable living situation

The Future of Health blueprint for optimizing digitally enabled care

How is the AH-HaH program leveraging the blueprint's Foundational Pillars to achieve digitally enabled care?

The American Medical Association's ["Closing the Digital Health Disconnect: A Blueprint for Optimizing Digitally Enabled Care"](#) report provides a blueprint to address the digital health disconnect and achieve optimized digitally enabled care. **Table 1** highlights how Atrium Health provides digitally enabled care to patients in their homes through the AH-HaH program.

TABLE 1: The Future of Health foundational pillars

THE FUTURE OF HEALTH FOUNDATIONAL PILLARS	THE AH-HAH PROGRAM
Build for patients, physicians and clinicians	<p>The AH-HaH program was built to seamlessly enable clinical care and patient monitoring in the home setting under the guidance of a multidisciplinary care team consisting of paramedics, clinicians, and nurses, while allowing patients to be in the comfort of their own homes with 24/7 access to hospital staff.</p> <p>Eligibility of patients is assessed on a case-by-case basis and determined by staff assessment of clinical, patient, and SDOH factors (Figure 2). Patients enrolled in the program are transferred home from the hospital or emergency department and greeted by a paramedic to conduct the enrollment process, set up the patient monitoring kit, and educate the patient and their caretaker on the program and tools. Data collected from the wearable devices are synced to the Current Health dashboard and Atrium's EHR, which alert the care team when patients need intervention. The care team utilizes data to track a patient's condition and adherence to their care plan.</p> <p>This model provides an opportunity for a patient's caretaker to collaborate with the care team while avoiding the challenges associated with having a loved one stay in the hospital for periods of time. Additional support services, such as pharmacy, specialty consults, and social work, are integrated into the AH-HaH program to address patients' needs.</p>

**THE FUTURE
OF HEALTH
FOUNDATIONAL
PILLARS**

THE AH-HAH PROGRAM

Design with an equity lens

The AH-HaH program aligns with Atrium Health's mission of "health and hope for all" and incorporates a health equity lens into its design. Paramedics are trained to assess patients' medical and nonmedical needs—such as food insecurity and unsafe housing—during home visits. Once these needs are identified, paramedics engage with Atrium Health staff to connect patients with appropriate resources. For example, Atrium Health partners with community organizations to address issues that make the home unsafe (e.g., by installing shower hand bars) and with food organizations (e.g., Loaves & Fishes) to provide patients with fresh food as needed.

Atrium Health recognizes barriers to health including literacy, medication management, food insecurity, and transportation issues. Atrium Health seeks to address these barriers through thorough risk assessment and connection to needed support and resources.

Appropriate patients are enrolled into the AH-HaH program regardless of their ability pay. In a scenario where the AH-HaH program isn't covered, Atrium Health would bill for allowable services, like physician virtual visit and labs, as appropriate.

Recenter care around the patient-physician relationship

The multidisciplinary care team is able to remotely monitor and support the patient and ensure that the physician has the information needed to make clinical decisions and care for the patient. As discussed above, care includes:

- Twice-daily visits to the patient's home conducted by a paramedic
- Daily virtual meetings with the multidisciplinary care team, including a physician, nurse, and paramedic
- Remote patient monitoring kit to collect and track patient data
- 24/7 access to virtual nurses and monitoring
- 24/7 technology support
- Access to additional integrated support services, including care management, pharmacy, therapy (e.g., respiratory, physical, occupational, and speech therapy), behavioral health, and specialty consults (e.g., cardiology)

Atrium Health designed this program to ensure patients and physicians and other qualified health care professionals are able to effectively communicate and collaborate to provide care outside a hospital setting and recenter care around patient and physician needs.

Improve and adopt payment models that incentivize high-value care

Atrium Health is reimbursed for the AH-HaH program through the [CMS Acute Hospital Care at Home initiative](#) (extended through December 31, 2024) for traditional Medicare patients, and North Carolina Medicaid (with a [recent decision](#) to cover this program under the existing diagnosis-related group (DRG) methodology starting November 1, 2023, through the end of 2024).

Coverage by commercial payers is inconsistent. Atrium Health continues to be involved in supporting the development of hospital-at-home reimbursement models, given the success of the program at its organization.

**THE FUTURE
OF HEALTH
FOUNDATIONAL
PILLARS**

THE AH-HAH PROGRAM

**Create
technologies
and policies
that reduce
fragmentation**

Remote clinical data are seamlessly transferred to Atrium Health clinicians as described above. This ensures the patient, paramedic, and remote care team have access to the same information.

To further reduce fragmentation, paramedics are responsible for documenting patient health information collected during their clinical visits directly into the EHR to ensure visibility to the entire care team.

To ensure data can be collected remotely from patient monitoring devices, regardless of the patient's access to Wi-Fi, devices are connected to a data-enabled router and Bluetooth to ensure interoperability.

**Scale evidence-
based models
quickly**

The AH-HaH program operates in nine facilities across the Greater Charlotte area and has served over 8,400 patients to date.

Advocate Health is considering expansion of the program beyond the Charlotte region.

Framework for measuring the value of digitally enabled care

AMA's "Return on Health: Moving Beyond Dollars and Cents in Realizing the Value of Virtual Care" report offers a framework to illustrate the various ways in which virtual care programs may increase the overall "return on health" by generating a positive impact for patients, clinicians, payers, and society going forward. **Table 2** includes five environmental variables that can affect the value generated by any virtual care program and highlights similar features of the AH-HaH program. **Table 3** includes six value streams that define the ways in which virtual care models can generate value and provides examples of how Atrium Health's model drives value in a measurable way.

TABLE 2: Return on Health—Environmental variables

ENVIRONMENTAL VARIABLES	
Type of practice	At-home, acute inpatient hospital-level care.
Payment arrangement	Traditional Medicare, select Medicare Advantage plans, North Carolina Medicaid, and select commercial payers.
SDOH of patient population	Broad. Patients must meet specific SDOH criteria for treatment at home.
Clinical use case	Broad. Patients must qualify for a hospital inpatient stay and meet specific criteria for treatment at home. Clinical use cases include: COVID-19, chronic cardiac conditions, chronic obstructive pulmonary disease, pneumonia, asthma, infections, and other medical and postoperative conditions.
Virtual care modality	Remote patient monitoring; virtual visits.

TABLE 3: Evidence of impact across the Return on Health value streams

VALUE STREAM	EVIDENCE OF PROGRAM IMPACT
Clinical outcomes, quality and safety	Rate of readmissions. According to Atrium Health data, the readmissions observed-to-expected (O/E) ratio is less than 1 among patients enrolled in the AH-HaH program, signifying that the hospital has fewer readmission than expected given the case mix. Clinical outcomes are equivalent or better than patients treated in the brick and mortar setting.
Access to care	Saved bed days. The AH-HaH program has saved nearly 30,000 bed days since program inception. This enables Atrium Health to deliver care to more patients by freeing up inpatient beds for patients who need them.
Patient, family and caregiver experience	Patient satisfaction. An NRC Health survey found AH-HaH program patients rank their experience approximately 13% higher than patients in the brick and mortar setting.
Clinician experience	Clinician satisfaction. The AH-HaH program care team values this collaborative care model and its potential to combat challenges the healthcare workforce is universally experiencing, such as clinician burnout and workforce shortages. In addition, technologies utilized within the AH-HaH program have foster better communication and flow of patient care among clinicians. A former resident at Atrium Health, Dr. Elizabeth Harlan, shared her experience during a hospital-at-home rotation in April 2022: “As a new physician in this space, I feel very connected to the team-based approach that seems to make Hospital at Home so successful. Nursing, mobile medicine, pharmacy, social work—all were equally present and the nature of the technology has allowed for better communication and flow of care between the interdisciplinary team members. This provides wraparound care for the patient with a true safety net of resources, with proven benefits. This all helped make the experience very invigorating and impactful for me. Thank you for allowing me to experience it and continue my passion for the sacred home visit.”
Financial and operational impact	Return on investment. Atrium Health shared that the AH-HaH program costs 20% less than delivering the same care in the brick-and-mortar setting, while easing inpatient capacity constraints. Specifically, a study of the AH-HaH program during the COVID-19 pandemic showed how the program provided the health system with additional inpatient capacity.
Health equity	The AH-HaH program reaches a diverse population. A retrospective study using electronic medical record data at Atrium Health suggested that the hospital-at-home program leveraged telemedicine to reach a diverse population and advance access to care during the COVID-19 pandemic. This specifically impacted Black and Hispanic populations that had higher incidences of COVID-19 and higher rates of hospitalization and in-hospital mortality compared to non-Hispanic White populations.

