



Atrium Health

Transforming Health Care Delivery with “Design for Impact”

How an Innovative Approach to Business Modeling
Improved Dialysis, Community Care and Stroke Care
in a Nationally Leading Health System

Executive Summary

To better respond to rapidly evolving needs in health care, Atrium Health has adopted an approach to business model innovation called “Design for Impact.” This process revolves around interviewing patients, clinicians and other stakeholders to better understand issues affecting specific areas of health care delivery, and then assessing ideas for potential solutions based on three key principals: feasibility, desirability and viability. This report presents case studies of three areas in which Atrium Health employed the Design for Impact process to transform care delivery: dialysis, community clinics and stroke care. These successes demonstrate how Atrium Health used Design for Impact to deliver patient-centered care that improved health outcomes and patient satisfaction, while also driving cost savings.

Turning Innovation Into a Core Capability

The health care industry is facing a number of challenges, including increased competition, labor shortages and continued pressure from payers to move away from fee-for-service care and towards value-based care. Health systems, therefore, must find new methods of evolving their business models to better respond to these challenges.

Charlotte, North Carolina-based Atrium Health provides care in the Carolinas, Georgia and Alabama and is part of Advocate Health, the third-largest nonprofit health system in the United States. Advocate Health serves nearly 6 million patients in six states and has prioritized innovation in clinical care, consumer experience and value-based care.

Atrium Health formed its “Innovation Engine” in 2013, dedicating innovation teammates and expertise to solving problems in new ways, creating new revenue sources and spreading a culture of innovation throughout the organization. This team developed and harnessed a range of innovation processes and tools and applied them to create and advance services such as virtual behavioral health, memory care and value-based primary care.

In 2020, the Innovation Engine formalized a comprehensive and rigorous process for business model innovation, building upon what it had learned in prior years. Atrium Health began to apply this approach to business model innovation, which revolves around understanding and responding to the needs of all stakeholders in health care, including patients, employees and payers. This approach, “Design for Impact”, starts with a structured understanding of a problem to be solved.

Atrium Health clinicians and executives can use Design for Impact to align around a specific problem they wish to solve, then work together to understand the issue from the perspective of patients, clinicians and caregivers. From there, participants design potential new business models and test their viability. The process is

designed to de-risk new business models before they are implemented.

Atrium Health is adopting Design for Impact as part of a broad, strategic plan to improve the value and quality of health care. It’s important the health system understands what patients need at every stage of the care journey – the treatments they require, but also the social and emotional support they desire – and to improve delivery based on those needs. To that end, efforts are underway to use the Design for Impact process more broadly to transform the delivery of care via new business models.

One key business model innovation that has resulted from the work is Atrium Health’s approach to inpatient dialysis in some of its markets. The work resulted in a new technology partner, a new team for inpatient dialysis and changes in how it will approach the broader dialogue of comprehensive kidney care.

The Design for Impact business modeling process equips teams to assess ideas based on three key principals:

- **Desirability:** Determines whether the potential solution is something stakeholders will want based on several factors, including the value proposition and delivery channels.
- **Feasibility:** Defines the key partners, activities and resources necessary for the organization to be able to deliver the potential solution.
- **Viability:** A deep dive into cost structure and revenue streams, with the goal of determining whether the potential solution will yield a positive return on investment.



Design for Impact is being implemented within Atrium Health through certain projects and the organization’s Impact Academy, as part of its broader leadership development strategy. Atrium Health is affiliated with two innovation districts – the well-established Innovation Quarter, in Winston-Salem, North Carolina – which houses 115 companies and organizations and more than 4,500 workers who are advancing life sciences research and development; and “The Pearl,” which is under construction in Charlotte. The Pearl will be the home of Wake Forest University School of Medicine Charlotte, a second campus of the Advocate Health-affiliated school of medicine opening in 2025. The district is a public-private partnership of Atrium Health, Wexford Science & Technology, the City of Charlotte and Mecklenburg County. Design for Impact will form the backbone of many projects undertaken at The Pearl.

“Design for Impact moves innovation from the realm of specialized teams to a core capability of the health system, providing a rigor of language, tools and methods around business-model innovation that’s driven by the progress we’re trying to make,” said Todd Dunn, vice president of enterprise innovation at Charlotte-based Advocate Health, of which Atrium Health is a part.

The following case studies demonstrate how Atrium Health deployed the Design for Impact process to evaluate business models in three areas of the health system: dialysis, community clinics and stroke care. While Design for Impact did not yield a complete transformation of care in every case, it did help the teams involved define problems, assess potential solutions and

implement changes that benefited patients, while at the same time providing a strong return on investment for the health system as a whole.

Patients Offer Insights to Improve Community Health

In 2020, leaders of Atrium Health’s community clinics were looking for new ways to improve care delivery in the greater Charlotte area. Half of patients served by these clinics are uninsured or covered by Medicaid, and the community experiences high rates of diabetes, hypertension, mental health disorders and substance abuse. The health system has a goal of improving treatment compliance rates and reducing unnecessary emergency-room visits, in hopes of improving patients’ overall health and reducing health care costs in the long run.

To get there, they embarked on the Design for Impact process with an initial goal of understanding why many patients were only visiting the community clinics to be treated for acute conditions, and to better understand the pain points that were preventing them from complying with treatment plans, wellness checkups and other regimens that were important for keeping them healthy.

The Design for Impact process started with interviews of patients, community members, Atrium Health clinicians and employees. In an effort to collect feedback from a wide variety of



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– Dr. Brian Kersten
Senior Medical Director,
Emerging Care Model
Division of Atrium Health

sources, the Innovation Engine team traveled throughout Charlotte, interviewing people at bus stops, community centers and other gathering places.

The interviews revealed a range of obstacles that were keeping patients away from community clinics. Some issues were known, including a lack of transportation that prevented many patients from easily accessing health care. The interviews also uncovered a deep-seated lack of trust in large health care institutions and a widespread feeling that systems don't understand patients' personal challenges. Many were fearful of attempts to collect for prior medical services delivered and refused to answer phone calls from a hospital or medical office.

To break through the wall of distrust and meet patients where they were, Atrium Health's community clinics decided to employ community health workers who would be embedded in clinics and would travel out to patients who could most benefit from contact with a clinician in between regular office visits. Atrium Health refers to the model as "inside out," because the community health workers are rooted in the community clinics, but they're tasked with traveling to patients and strategizing with them so they can better manage chronic health issues.

During the Design for Impact process, Atrium Health's community health leaders discovered a model for delivering health care in underserved communities that was developed by the University of Pennsylvania. The model, called IMPACT, was designed to address health inequity and social determinants of health and had a proven track record: In a series of randomized controlled trials among adult Medicaid patients in high-poverty regions, the program produced \$2,500 in Medicaid cost savings, per patient, in the first year, along with improvements in mental health and reductions in the amount of days patients spent in the hospital.¹

Atrium Health used IMPACT's template to train its first cohort of five community health workers, who were employed at four Atrium Health community clinics. The community health workers spend about half of their time in the clinic and the other half visiting patients in their homes.

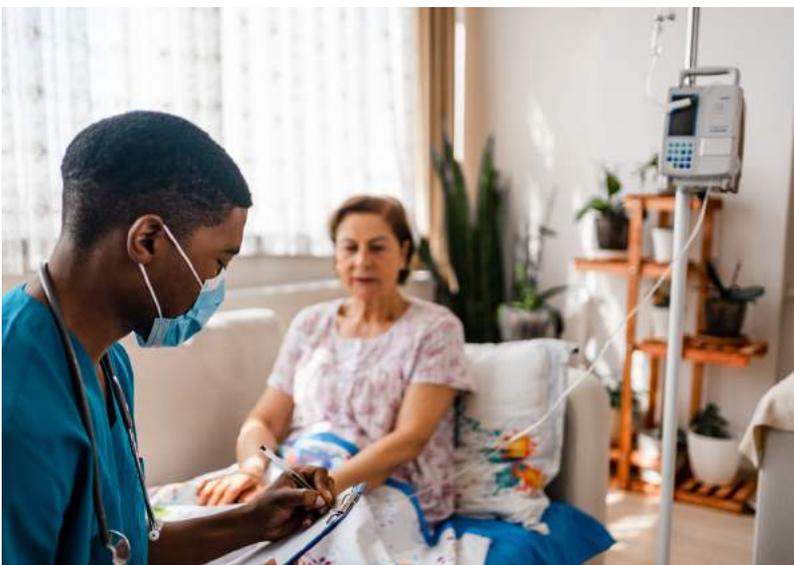


“Without Design for Impact, we would have made assumptions as clinicians, but we wouldn’t have included input from the patients,” said Dr. Brian Kersten, senior medical director for the emerging care model division of Atrium Health. “This forced us, appropriately, to take a step back and involve the patients, so we could look at this through the right lens.”

Community health workers help reduce barriers to care, including preventative services. In addition to providing clinical care, community health workers help connect patients to local agencies to address other critical factors in health and well-being, such as housing and food security.

Based on pilot programs in two Atrium Health community clinics in the Charlotte area – Biddle Point and Myers Park – Atrium Health believes employing community health workers will improve the health of people in underserved communities, while also helping focus financial resources on prevention and health promotion, rather than avoidable and largely uncompensated emergency room and inpatient care. In 2022, the clinics reported a 34% reduction in emergency department visits and 37% reduction in inpatient stays.

Atrium Health is using its experience in the first four clinics to develop a strategy to expand the community health worker program across the southeast, with a plan to focus on clinics in rural communities and other areas with a high population of traditionally underserved patients.



Bringing Dialysis In-House to Improve Accessibility

For more than 10 years, Atrium Health’s greater Charlotte market acute care facilities had been outsourcing dialysis services to a third-party provider, which maintained all of the equipment and employed specially trained nurses to operate it. In Macon, Georgia, Atrium Health Navicent managed inpatient dialysis in-house, but encountered challenges delivering the service with outdated technology.

In 2022, members of the Innovation Engine team collaborated with key leaders regarding the many struggles with the health system’s existing dialysis business model. Using the Design for Impact process, the team partnered with frontline teammates, administrators and executive leaders to dive into the struggles and opportunities in how dialysis was managed, using the feedback to innovate and develop workable solutions.

The interviews and observations identified several problems. The dialysis equipment was large and cumbersome, making it difficult to transport around hospitals, and the process required a dedicated water supply. Nephrology nurses had to undergo several months of dialysis training and often had to work overtime to enter information into electronic health records, resulting in low job satisfaction rates: One Atrium Health vendor providing acute care inpatient dialysis suffered a 400% nurse turnover at a single location within a two-year time period.

Atrium Health used the Design for Impact process to assess alternatives to dialysis delivery, with the goal of implementing a model that offered staffing flexibility and that reduced the burdens placed on nurses. They went into the process with a potential solution in mind: to bring dialysis in-house with a next-generation delivery technology that’s small enough to fit on a standard hospital cart and can be operated with water from any sink.

To determine the feasibility, desirability and viability of bringing dialysis in-house for the Charlotte market, the Design for Impact

participants modeled the effects of such barriers as the time and costs required to retrain nurses and to integrate the technology into Atrium Health's existing electronic health records system. The modeling indicated there would be a positive return on investment from cost savings, revenue and margin growth, improved nursing retention and higher rates of patient satisfaction. They also predicted that transforming dialysis services would help expedite the diagnosis of chronic kidney disease, lowering the risk of acute kidney injury in patients and helping shorten hospital stays.



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– Chris Bowe
Senior Vice President
& Chief Operating Officer,
Atrium Health, Greater
Charlotte Market

In 2022, the new machines were purchased for three Atrium Health hospitals for use in inpatient dialysis: Atrium Health Navicent The Medical Center, in Macon, Georgia, and Atrium Health Cleveland and Atrium Health Pineville, both near Charlotte, North Carolina. Atrium Health projected the change would produce a five-year positive impact on cash flow of \$6 million or more. In 2023, Atrium Health brought inpatient dialysis in-house at its remaining Charlotte market acute care facilities, projecting an additional five-year positive impact on cash flow of \$5.3 million.

The new technology is empowering more flexibility in dialysis delivery, as well. The system is so straightforward that experienced dialysis nurses can complete their training in four hours.

Nurses who are new to dialysis can learn it in a week, making it feasible for Atrium Health to train nurses from other units to administer the treatment. This is a significant benefit to patients, as if a patient is admitted to the emergency room in need of dialysis, the treatment can be easily brought to their bedside.

“Our old model of care had us transporting patients for dialysis from their inpatient unit through the hospital, up the elevator to the dialysis unit,” said Chris Bowe, senior vice president and chief operating officer of Atrium Health's greater Charlotte market. “With this model, we're able to deliver the care to the bedside, making it a great opportunity, from a patient-centered perspective. In addition, it has improved nurse satisfaction, stabilized staffing challenges and had a positive environmental impact by lowering wastage of water and plastic products.”

“Ultimately, care models are continuing to shift more towards value-based, rather than fee-for-service,” added Bowe. “Care with convenience, such as hospital-level care delivered in the home, is reshaping how care is delivered. Being able to make necessary treatments, like dialysis, more portable will allow health systems to deliver it in the home, improving the patient experience and, potentially, lowering the cost of care delivery.

While Atrium Health was rolling out the new dialysis technology to its inpatient facilities, it was simultaneously assessing the possibility of offering in-home dialysis using the same technology. The Design for Impact team conducted interviews with patients and caregivers so they could better understand the pain points and potential gains from being able to offer in-home treatment. The interviews revealed a strong desire among patients to set their own treatment schedules, undergo dialysis in the privacy of their own homes and maintain normal work schedules. Atrium Health is laying plans to start testing in-home dialysis with the new technology at some point in 2023.

Assessing Options for Improving Stroke Care

In 2020, senior leaders at Atrium Health Neurosciences Institute, in Charlotte, set out to transform care delivery to stroke patients after they are discharged from the hospital. Their goal was to improve outcomes for patients and to reduce the risk of complications, which typically affect 85% of stroke survivors. Industry data indicated that 20% of stroke patients suffer a second stroke and hospital readmission within the first year of discharge, with 13% of readmissions happening in the first month.

Despite making significant improvements in acute stroke care at Atrium Health, leaders at the Neurosciences Institute believed an enhanced focus on post-acute care would improve outcomes and patient experience.

The Innovation Engine collaborated with the Neurosciences Institute team, planning a 10-week Design for Impact process centered around discovering how stroke patients experience post-acute care and why they struggle to make significant gains, and then assessing potential solutions to help Atrium Health fill gaps in its capabilities. The effort aligned with Atrium Health's overall mission to create a better system of health focused on care transformation, consumer and market centricity, social impact and health equity.

The Design for Impact process started with a one-week bootcamp, during which Neurosciences Institute leaders identified key assumptions they had about stroke patients and their care journeys. Participants also created a preliminary business model "canvas," which laid out the questions they would need to answer about the value proposition, cost structure, revenue streams, partners and patients for each potential solution.

The first step of Design for Impact was to interview more than 10 patients and caregivers, as well as key members of the Atrium Health stroke care team. The patients spanned various ages, stages of post-acute care and levels of

Teaching Design for Impact

In the fall of 2022, Atrium Health launched Impact Academy, a 12-week training course that teaches the Design for Impact process to teams within the health system that have specific problems they need to solve. The course is designed to equip participants with insights and experience in business modeling that they can use to advance solutions to their specific issues.

The course evolved from an Innovation Engine training program called "Catalyst" that focused on human-centered design, which is the process of understanding the needs of patients and other key stakeholders in health care and then designing solutions to meet those needs. The Impact Academy combines human-centered design with business model innovation.

In partnership with human resources leadership, the program provides tools and practical experience needed to lead teams through business model innovation. Much of the training focuses on gaining an in-depth understanding of the "customers," who could include patients, payers, caregivers and/or Atrium Health employees, depending on the circumstances.

"We give them homework that includes customer interviews and observations," said Elizabeth Watson, a manager in the Innovation Engine and one of the facilitators of the program. "It's a little scary, at first, for them – even people who work with customers every day may be uncomfortable asking questions – so the practice is really beneficial."

In addition to classes and homework, the participants have innovation coaching groups and executive-level sponsors to support them as they guide their teams through the Design for Impact process. By the end of the training, participants have a solution in mind and a plan for testing it to determine feasibility, desirability and viability with their team.

In 2023, the team will launch a cohort with diversity, equity and inclusion leaders as part of the ELEVATE Diversity Acceleration Track. This program will pair business model innovation content with a robust leadership coaching and sponsorship model for high potential leaders from underrepresented groups. The Innovation Engine is also working on expanding the reach of Impact Academy through additional cohorts and online learning modules.

"What differentiates Impact Academy from other training is we're pairing business model innovation with the reality of getting things done in a large health care system," Watson said.

complexity. The Design for Impact team used the information gathered during the interviews to create “personas” – composite patient profiles that illustrated the post-acute stroke journey.

One of the personas, “Charles,” was 58 and single when he underwent surgery to treat a subarachnoid hemorrhage. After spending two weeks in the intensive care unit at Atrium Health Carolinas Medical Center, he returned home, where he got some support from his brother and a handful of friends. But he still struggled with insomnia, headaches, lack of mobility and weakness and he worried about his ability to return to work. A multi-disciplinary team created journey maps for Charles and each of the personas, identifying three key “moments that matter” that may take a patient off-track and brainstormed potential solutions to alleviate such setbacks.

Prior to the Design for Impact project, the Neurosciences Institute leadership team was considering partnering with a startup that provides outpatient stroke-care services for one year following the acute episode. Through the Design for Impact business modeling and assessment process, the Atrium Health neurosciences team determined that this partnership would not be financially viable to implement, due to the cost of outsourcing post-stroke care, including fees that would need to be paid to key partners.

The partnership evaluation and Design for Impact process sparked ideas for organic improvements in post-acute stroke care at Atrium Health. The collaborative discovery work with the stroke program’s operational team, which was focused on patient needs, helped secure support from Atrium Health leadership and providers to deploy additional in-house resources towards helping patients be successful when they get home.

For example, Atrium Health re-evaluated the role of nurse navigators, training them to increase their focus on stroke patients during their time in the hospital. The nurse navigator team was also restructured to include two stroke navigators, who focus on supporting patients after they return home. Atrium Health also strengthened its efforts to get more patients into outpatient stroke clinics after their hospital stay and it built a module into its electronic health records system to help nurse navigators communicate with inpatient and outpatient providers. These initiatives have contributed to reduced hospital readmissions and an increase in the volume of patients seen at outpatient stroke clinics.

“Design for Impact helped us make the right decisions,” said Jay Gerhart, vice president of innovation at Atrium Health. “It allowed us to be good financial stewards and not make changes that would be unsustainable for our overall mission. We were able to take what we learned and put it into a care-transformation playbook.”

Conclusion

The Innovation Engine team, through its Design for Impact system, provides an innovation blueprint that health care leaders can use to determine the feasibility, desirability and viability of potential new products and services.

At Atrium Health, this approach to innovation has united executives and clinicians around the mission of developing patient-centered solutions by including input from patients and caregivers in the Design for Impact process. Applying this process in community care, dialysis and stroke care has proven to be a smart investment of staff and resources that improves patient satisfaction and outcomes.

References

¹ University of Pennsylvania. IMPaCT. <https://chw.upenn.edu/about/>.