Customer Stories:
Bodyport

AT&T Business

Smart scales

with AT&T LTE-M connectivity offer patients new "weighs" to detect heart disease



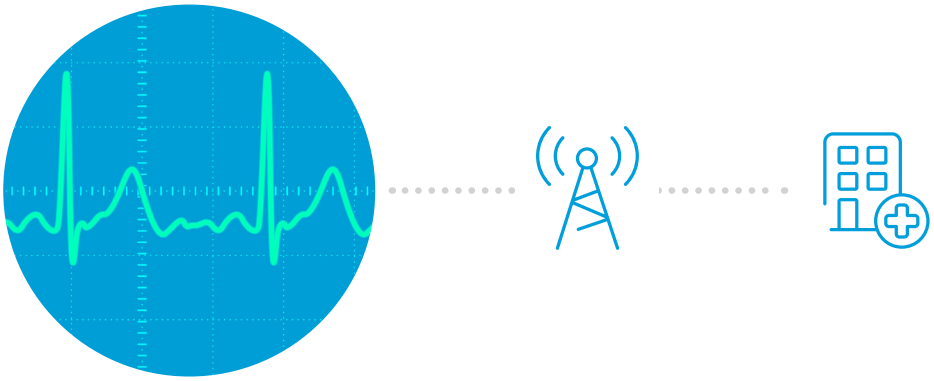
- **Business needs** - Bodyport works to save lives and improve healthcare by delivering advanced monitoring and data collection capabilities to patients at home.
- **Networking solution** - The AT&T LTE-M cellular network enables Bodyport to shift medical care from hospital to home with a smart scale that transmits patients' cardiovascular data to remote care teams.
- **Business value** - Daily tracking offers a long-term understanding of each user's health and predicted risk, facilitating earlier interventions that may help keep patients healthy and out of the hospital. Providing care at home has the potential to decrease costs and make life easier for patients.
- **Industry focus** - Medical technology
- **Size** - Start-up

About Bodyport, Inc.

Bodyport designed a device that can detect early signs of cardiovascular disease. The company's proprietary sensor technology is incorporated into a bathroom scale form factor, transforming cardiac monitoring into a simple daily step. In less than 20 seconds, Bodyport extracts cardiac data that enables earlier intervention by care teams.

The situation

Entrepreneurs Corey Centen and Sarah Smith launched another successful medical venture before developing the technology that's at the heart of Bodyport. The biomedical engineers believed they could significantly improve the health of cardiac patients by making it easy for them to take daily heart function measurements. To begin testing their smart sensor technology, they needed a highly secure, highly reliable way to transmit patients' cardiac data to healthcare teams.



Solution

The highly secure AT&T LTE-M cellular network enables Bodyport smart devices to transmit multiple cardiovascular function biomarkers from patients' homes to a remote care team to enable clinicians to determine in near-real time patients' risk and status.

Cardiac technology at the heart of early intervention

Bodyport is a med tech pioneer that set out to change healthcare by bringing medical-grade products to the home. It's the second enterprise launched by Corey Centen and Sarah Smith, but the first to address the earliest stages of health problems.

Centen and Smith's first innovation, which they developed as part of a final year university engineering project, was a device that helped administer chest compressions to a person in cardiac arrest. "That product was used in what were possibly the last seconds of a person's life," Centen said. "We started to think about how to use technologies and diagnostic tools much earlier in the disease process when they can have a much bigger impact."

The entrepreneurs looked for something that people do at home on a regular basis that they could use to collect the necessary data. Recognizing that controlling weight is an important part of maintaining heart health, they devised a way to add smart sensors to a bathroom scale. Bodyport, the device they developed, measures not only weight but cardiac signals in just 20 seconds. The device looks like a regular scale but uses integrated cell connectivity to deliver clinical-grade biomarkers to patients' care teams.

The concept is simple but powerful. "Bodyport is really a platform to bring health care monitoring into the home. It's a portal that derives information, metrics and parameters relevant to picking up the early signs of disease and drives actions that can keep individuals healthier and out of the hospital," Centen said.

Bodyport shifts the locus of care from the hospital to home, and moves medical care from reactive to predictive. "This is a significant differentiator, because cardiovascular disease is largely preventable," he said. "The earlier you can pick up the signs, the simpler the treatment is."

Healthy and at home

Bodyport derives biomarkers and metrics that represent the electrical and mechanical functions of the heart to create a comprehensive overall picture of heart health. The device determines fluid status and

blood flow performance, and extracts data indicative of cardiovascular function and health.

"The really powerful thing about the scale form factor is that it allows us to leverage individuals' daily habit of weighing themselves," Centen said. "This enables us to build a baseline over time with metrics and biomarkers we can use to assess a patient's health." The ability to collect longitudinal data is unique to Bodyport's system, he added. "It's something you can't do with devices that are in hospitals or in clinics."

A clinical dashboard flags any deviation from each patient's individualized health baseline, which helps care teams assess patients' overall health status. "We can look at relative changes in an individual's baseline and pull out much earlier signs of disease. Our algorithms are trained to detect very subtle changes in these metrics to alert a provider, a physician, or even the patient that something is changing," he said.

Providing this feedback could enable the care team to change a therapy or drug or possibly recommend lifestyle management to keep patients out of the hospital.



Impressive infrastructure, deep healthcare experience

As Bodyport prepared to launch clinical trials of its smart scale, it began looking for the best way to transmit data from its devices to medical care teams. "We had a number of options, including Wi-Fi, Bluetooth and cellular connectivity," Centen said.

The decision was driven by a desire to make it as easy as possible for patients to use the smart scale. "Wi-Fi entails some setup work, which can be difficult," Centen said. "And Bluetooth requires a cell phone. We decided that cellular technology would be the best choice."

After researching the options, Bodyport chose AT&T LTE-M, a technology built to support the explosive growth of Internet of Things (IoT) devices. "The network has a very low power consumption for a cellular technology, which enables a long battery life in our devices," he noted. LTE-M also has wide indoor penetration, which meant that the scales could connect easily even when they were tucked away deep in an interior bathroom.

While several providers offer this connectivity, Centen said, "We started with AT&T because they were one of the pioneers in rolling out LTE-M. They have an impressive infrastructure and their healthcare team has been fabulous. They've been wonderful providers to us as a startup health technology company."

Centen said Bodyport was able to take advantage of the depth and breadth of the AT&T presence.

"Our relationship with AT&T allowed us to plug into the network, the infrastructure, the security, the connectivity, the professional services, and the AT&T cloud ecosystem," he said.

Comfort, emotional security, and savings

Bodyport has deployed its devices with very specific populations to study the system's ability to predict the onset of disease, identifying patients who might be at highest risk of requiring hospitalization. "Right now we have devices going home with heart failure patients who have been discharged from the hospital," he said. "Fully 25 percent of these patients are typically readmitted within 30 days. We're looking at our system's ability to drastically reduce those readmission numbers."

Centen sees substantial benefits for patients. "Probably the biggest is that patients will not need to go into the hospital nearly as much as they otherwise would have, since a lot of the aspects of healthcare monitoring can now be conducted from the comfort of their home," he said. This helps all patients, but especially those in rural areas who must travel great distances to see their providers. He said, "Preventing re-hospitalization has a massive impact on the quality of life of the patient."

Though patients may not have to go to the hospital as often, Bodyport's solution usually brings about more interactions with the care team than they otherwise would have had. "That brings comfort and security to the patient, knowing that the provider has real insight into their current status," he said.

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Corey Centen, Founder & CEO, Bodyport, Inc.

Forward-thinking insurance providers including Medicare recognize the value of telehealth and remote care, and many have created incentives for providers to adopt technologies such as Bodyport's. "There are incentives just from the reimbursement side, if you're thinking about the economics," Centen said. "But equally important is avoiding the cost of readmissions for people with heart failure."

Researchers have found the costs associated with hospitalization for patients with heart failure to be substantial and compounded by high readmission rates.[1] "It's an extremely expensive burden on the healthcare system, so much so that Medicare penalizes hospitals for excessive re-admissions," Centen said. "Any ability to reduce readmission saves hospitals and provider payers significant amounts of money."

A significant game changer for healthcare

Bodyport is completing validation studies, aiming for clearance from the U.S. Food and Drug Administration (FDA) and a full-scale product launch within the next

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5436769/

year. “Right now we’re very focused on heart failure and hypertension, but we definitely plan to extend beyond those patient populations,” he said. “We see significant opportunities to intervene in any chronic disease, from diabetes to hypertension to COPD.”

While the current model works directly with patient care teams and providers, Centen expects that the company will also market directly to consumers. “We think it’s really important to have that interaction facilitated by a care team. However, the devices are very affordable, and long-term we’re absolutely moving toward a model in which consumers will be able to purchase the devices directly.”

Bodyport officials appreciate the support and assistance AT&T has provided with rate plans, SIM cards, and everything else it needed to get its devices into hospitals and home trials quickly. “AT&T has been tremendous in terms of holding our hand and helping us through the process every step of the way. And their experience in the remote monitoring and healthcare spaces and knowledge of what does and doesn’t work have been wonderful,” Centen said.

The security and integrity of its data is key to the success of Bodyport’s model. “Having a trusted network gives us confidence as a small company that the data we’re sending is highly protected. It also gives confidence to the large partners that we’re working with. Customers and providers are all familiar and very comfortable with the AT&T network.”

Centen said he relies on the expertise of AT&T as the company evolves from diagnosis and monitoring to predicting and preventing. “We’re working to predict the onset of disease much earlier to drive therapeutic intervention based on the data coming from Bodyport,” he said. “We think it will be a significant game changer for healthcare as it transitions into the home environment. It’s been wonderful for us to have a provider like AT&T.”

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Corey Centen, Founder & CEO, Bodyport, Inc.

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