

# IoT & Healthcare

**The Internet of Medical Things is taking off**

Are you on board?

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# Healthcare is embracing IoT

## Here's why. And why your organization should, too.

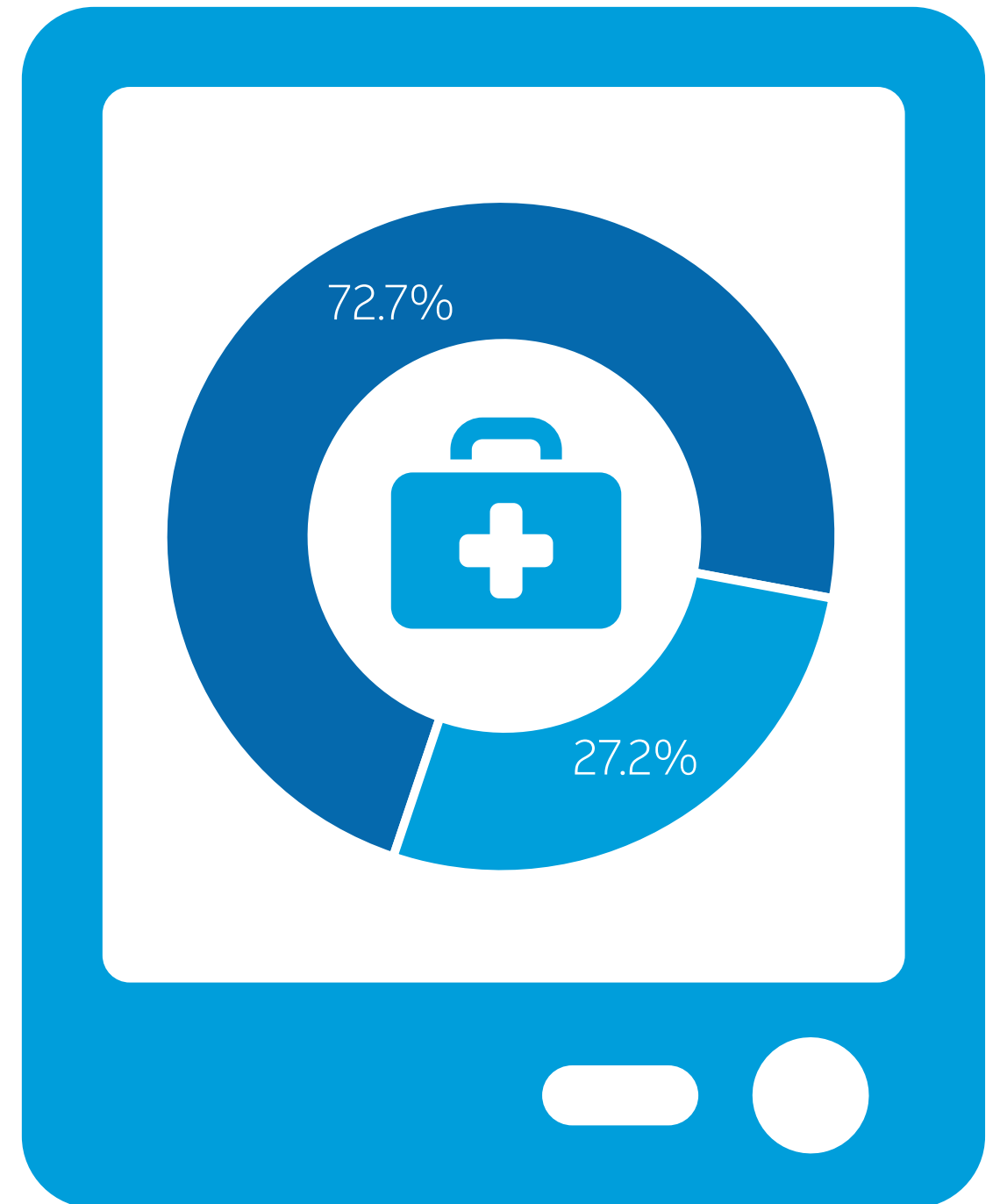
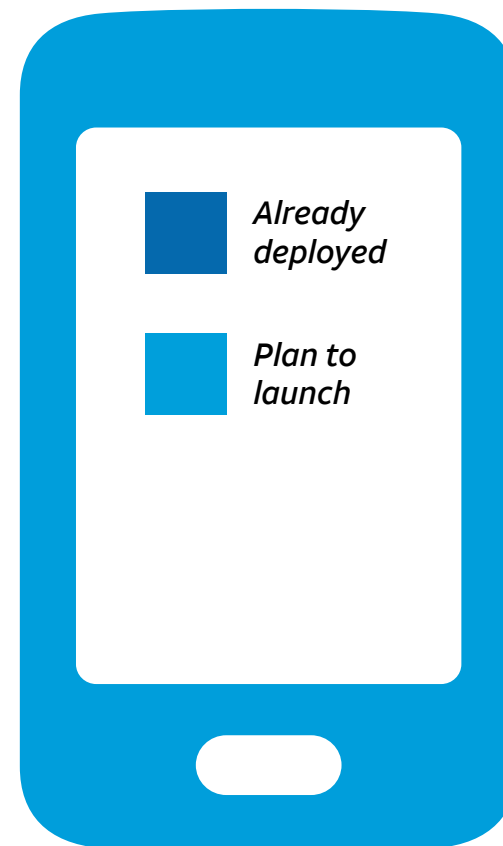
In a world where 2.67 billion things joined the Internet of Things in the past year—bringing the worldwide total to over 20 billion<sup>1</sup>—it's not surprising that more and more of those things are related to healthcare.

Welcome to the Internet of Medical Things (IoMT). According to a recent IDC study, 72.7% of healthcare providers have deployed IoT, while 27.2% say they plan to launch in the next 12 to 24 months.<sup>2</sup>

Based on that study, this e-book surveys IoMT usage, its dramatic future potential, and the reasons why your organization may need to be a part of that future.

<sup>1</sup> Statista, Internet of Things connected devices installed base worldwide from 2015 to 2025, <https://www.statista.com/statistics/471264/iot-number-of-connected-devices-worldwide/> 2018

<sup>2</sup> IDC, IDC Survey: Top IoT Use cases in Healthcare, September, 2017, pg. 7



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# Everyone knows what IoT is

## Healthcare is discovering whole new ways to use it

As IoT becomes a familiar concept, we can forget how amazing it really is. Simply put, IoT can “turn almost any object into a source of information about that object.”<sup>3</sup>

In the IoMT, that “object” can be a heart monitor, a medication, a wheelchair, a doctor, or even a patient. In the last case, a continuous stream of patient-generated data (PGD) tells clinicians far more than a series of intermittent office visits ever could.<sup>4</sup>

At a higher level, monitoring across entire patient populations can lead to the identification of higher-risk individuals, as well as suggest more efficient business and staffing models for healthcare facilities.<sup>5</sup>



<sup>3</sup> Deloitte University Press, No appointment necessary: How the IoT and patient-generated data can unlock health care value, 2015, pg. 4

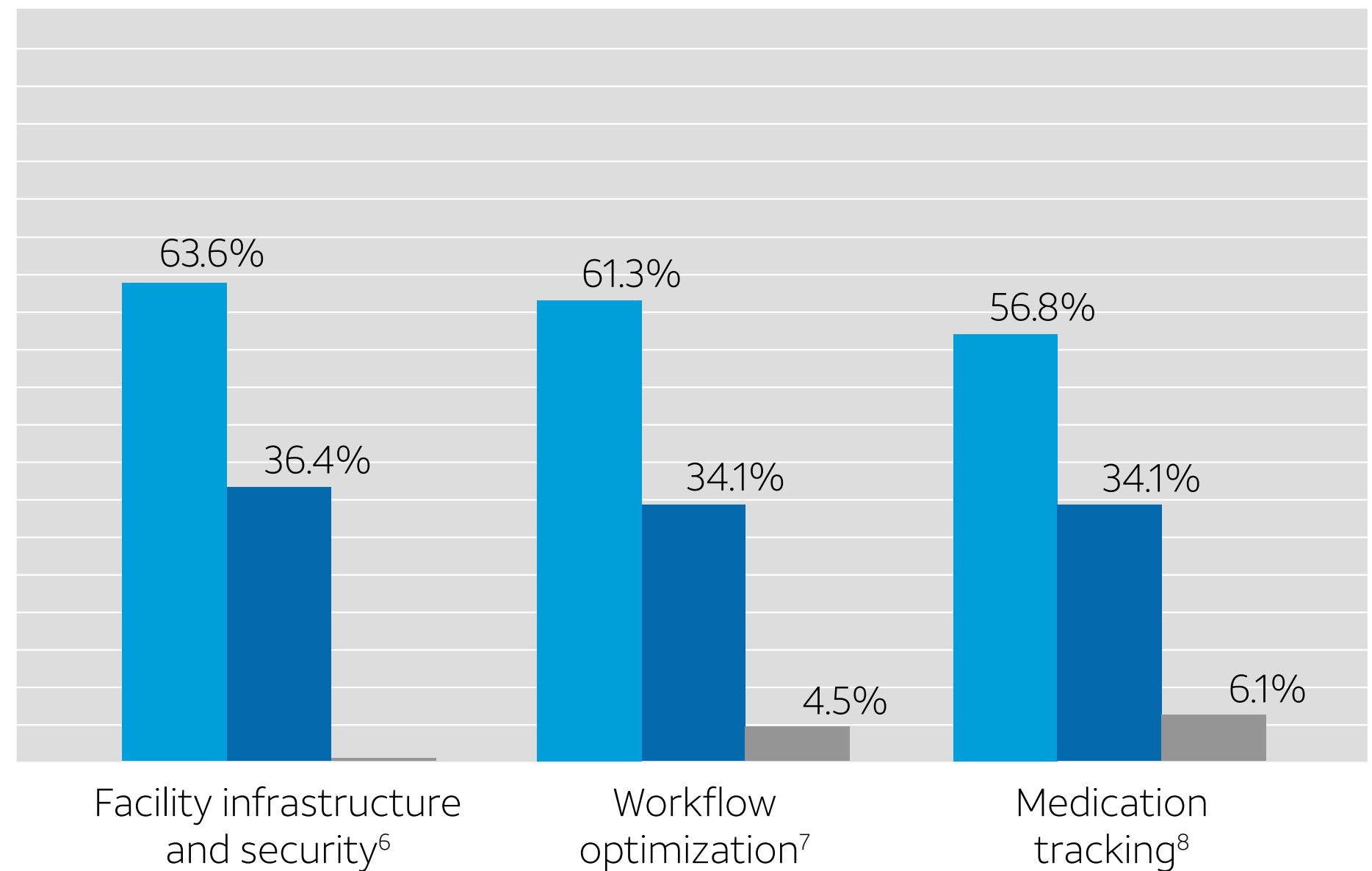
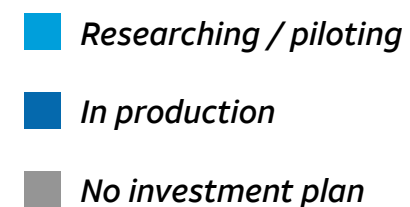
<sup>4</sup> Deloitte, pg. 2   <sup>5</sup> Deloitte, pg. 8

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# Where IoMT is used most, and why

Currently, the vast majority of IoMT is deployed on the operational side of healthcare. Facility security, workflow optimization, and medication tracking lead the way.

Given the maturity of IoT sensor technology related to security, these findings make perfect sense. But IoMT will have a far greater impact on the clinical side. And that impact is beginning to be felt even as you read this.



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# Where IoMT will be used next

“Within five years, the majority of clinically relevant data... will be collected outside of clinical settings.”<sup>9</sup>

Even as operational applications predominate, more and more clinical applications are on the horizon. For example, though a mere 11.4% of respondents remotely monitor patients to reduce readmission rates, 77.2% say they’re considering, researching, piloting, or implementing such programs.<sup>10</sup>

That kind of patient-generated data can have a huge impact in three key areas, saving thousands of lives and billions of dollars:

**Monitoring**  
chronic conditions



**Lowering**  
hospital readmissions



**Improving**  
medication adherence

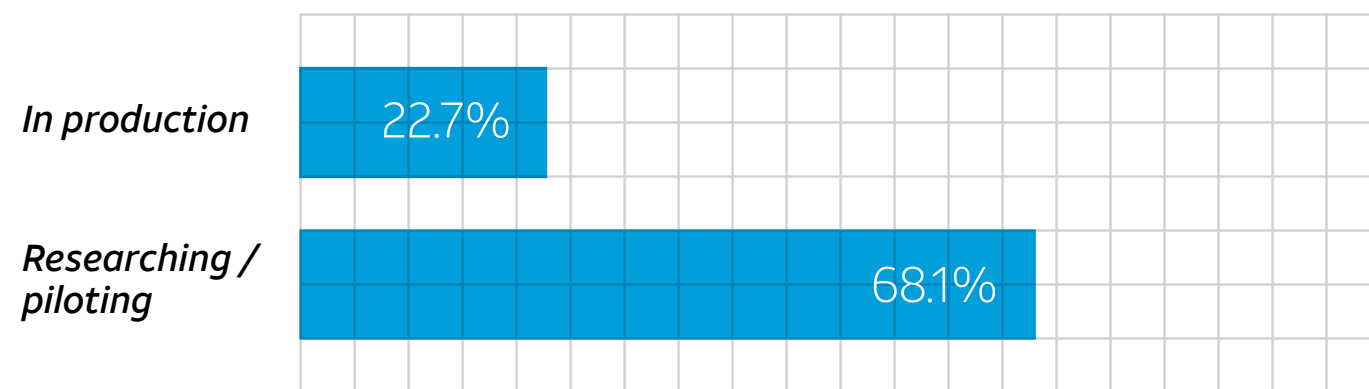


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# Chronic conditions require a constant data flow

Of our nation's total healthcare spending, 75 to 85% goes to treat chronic conditions.<sup>12</sup> Which is why 22.7% of IDC's respondents have remote monitoring devices for those conditions in place, while 68.1% are either in the piloting or researching phase.

## IoMT: monitoring chronic conditions



From remote glucometers to fall detection devices, patient-generated data enables attentive clinical care in-home. In the process, emergency room visits and long hospital stays can be reduced—cutting costs and improving your productivity.<sup>13</sup>

“Remote patient monitoring is expected to save up to \$36 billion globally over the next five years.”<sup>11</sup>



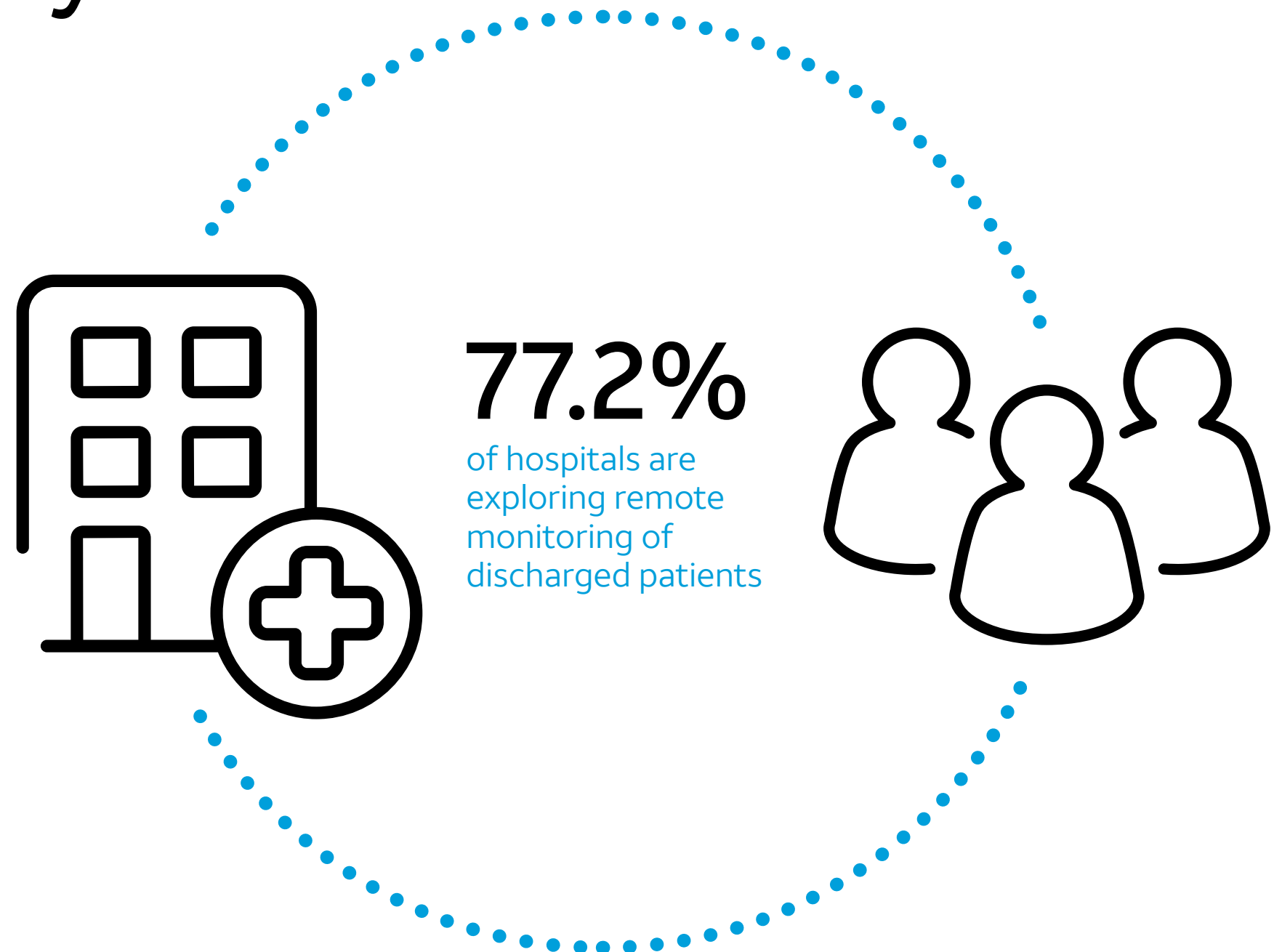
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# Keeping patients out of hospitals is healthier for everyone

With the Affordable Care Act penalizing hospitals for every patient readmitted within 30 days of treatment,<sup>14</sup> the clinical use of IoMT couldn't have come at a better time.

Remote monitoring devices—and the constant PGD they provide—can support patient care after discharge, identify those patients most at risk for readmission, and help clinicians intervene before readmission becomes necessary.<sup>15</sup>

With outcomes like those in view, it's little wonder that 77.2% of respondents are exploring the use of remote monitoring after discharge.<sup>16</sup>



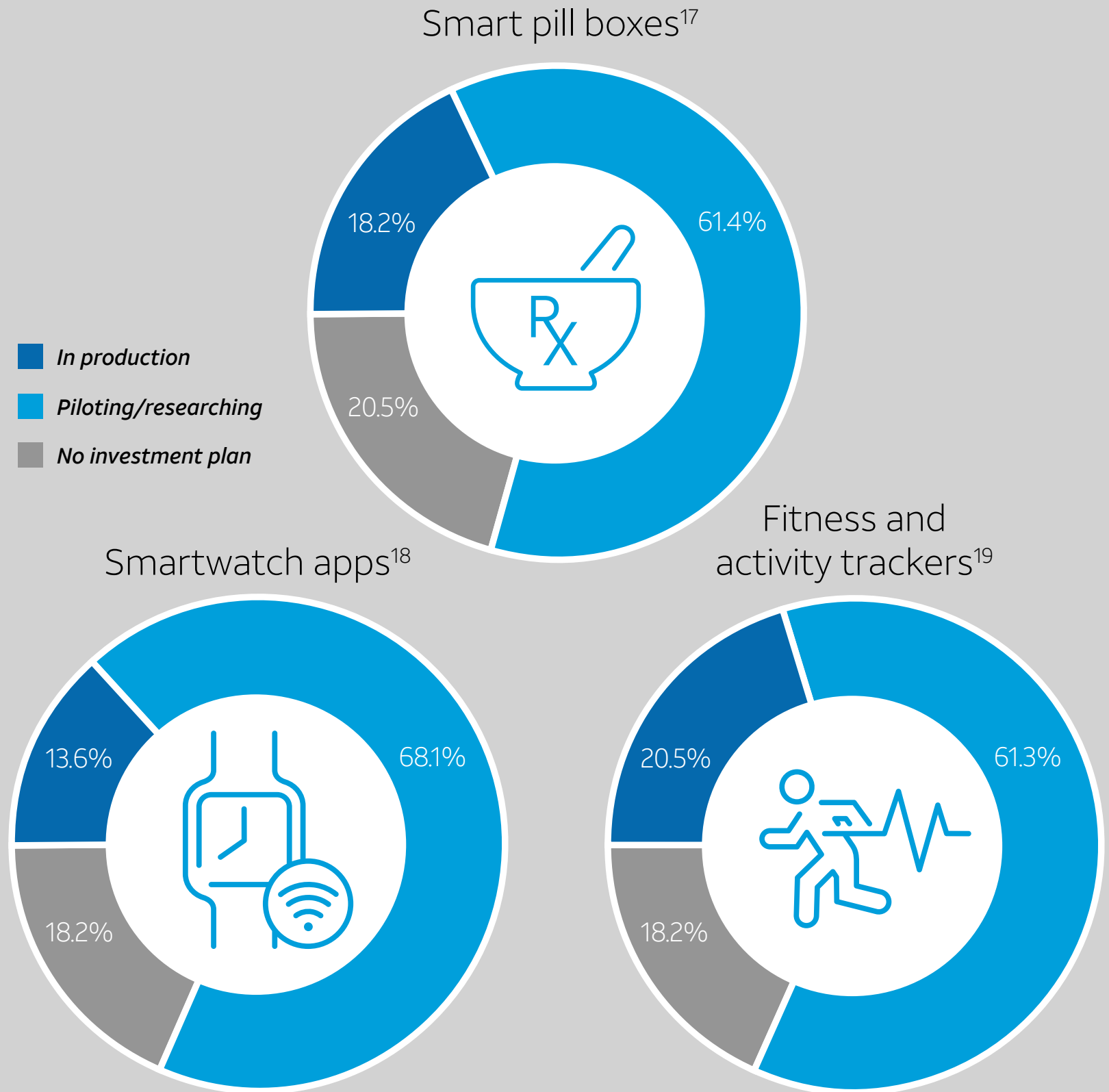
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# Imagine making medication non-adherence a non-issue

Non-adherence costs anywhere between \$100 to \$289 billion every year, causing nearly 125,000 deaths and 10% of all hospitalizations.<sup>17</sup>

Smart pill boxes that remind discharged patients to take their medicine are currently utilized by 18.2% of respondents, with 61.4% in the piloting or research phase.

Smartwatch apps go even farther, reminding patients to exercise or keep doctor appointments. Among their many other uses, activity trackers chart patients' ambulatory abilities after surgery.





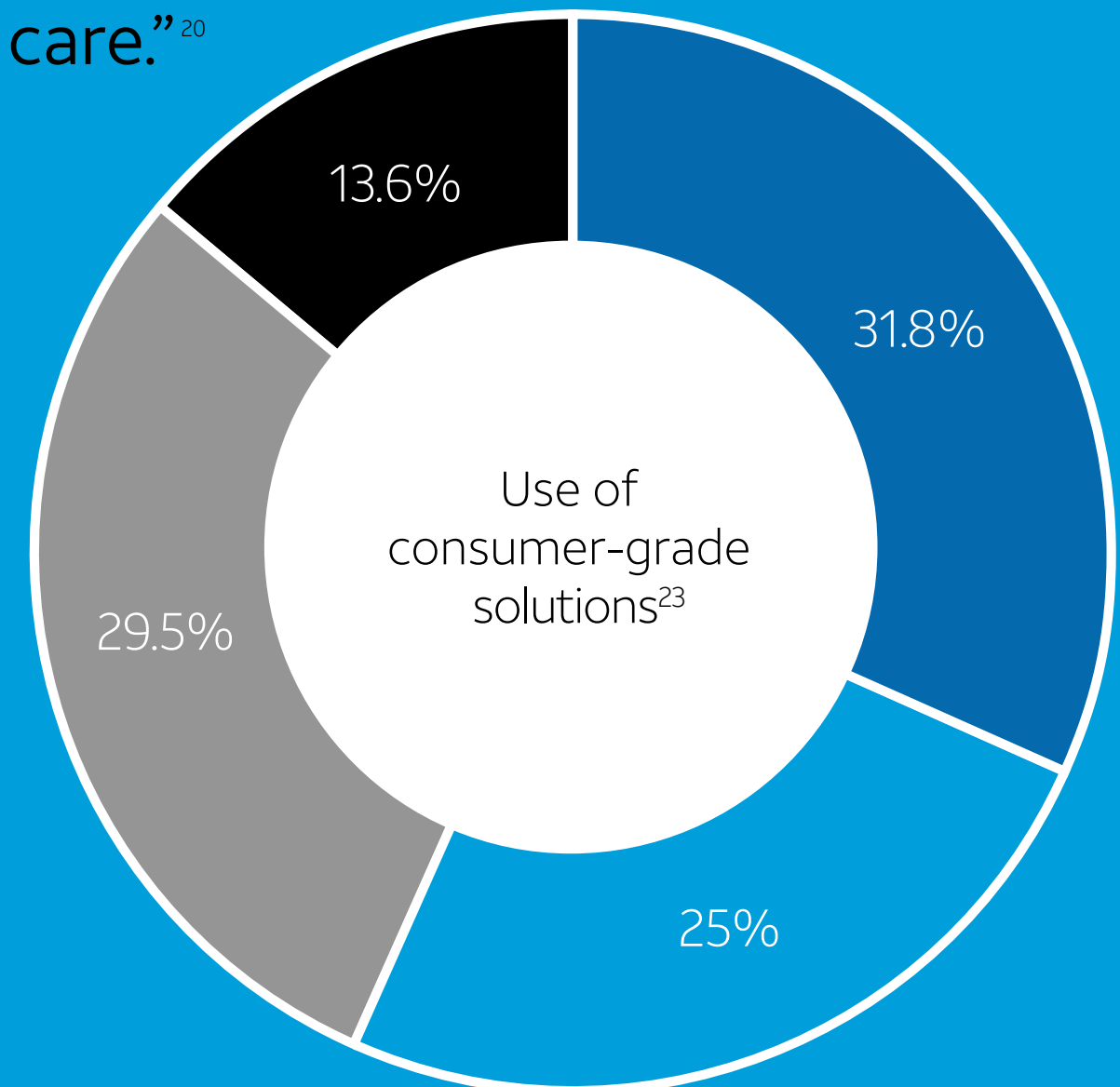
# So, what's holding you back?

“...the health care industry often must wait for effective regulation before taking advantage of advances in technologies that might be applied toward patient care.”<sup>20</sup>

Clinical applications present privacy issues. Providers can resist changing care practices. And while Medicare and Medicaid now reimburse for remote patient monitoring<sup>21</sup>—a huge stimulant to IoMT growth—the biggest hurdle may be the failure of government regulation to keep pace with innovation. For manufacturers and healthcare providers, one solution is to create devices for consumer, rather than exclusively clinical, use.<sup>22</sup>

Smartwatch apps and fitness trackers are good examples of consumer-grade technology that can work in the clinic or the home. It's a direction that the overwhelming majority of IDC respondents have taken. And at Texas Medical Center, AT&T is helping take the idea even further.

- *In production*
- *Piloting*
- *Researching*
- *No investment plan*



<sup>20</sup> Deloitte, pg. 16   <sup>21</sup> Advisory.com, Big payment changes for remote patient monitoring and telehealth: What you need to know, December 20, 2017   <sup>22</sup> Deloitte, pg. 16   <sup>23</sup> IDC, pg. 24

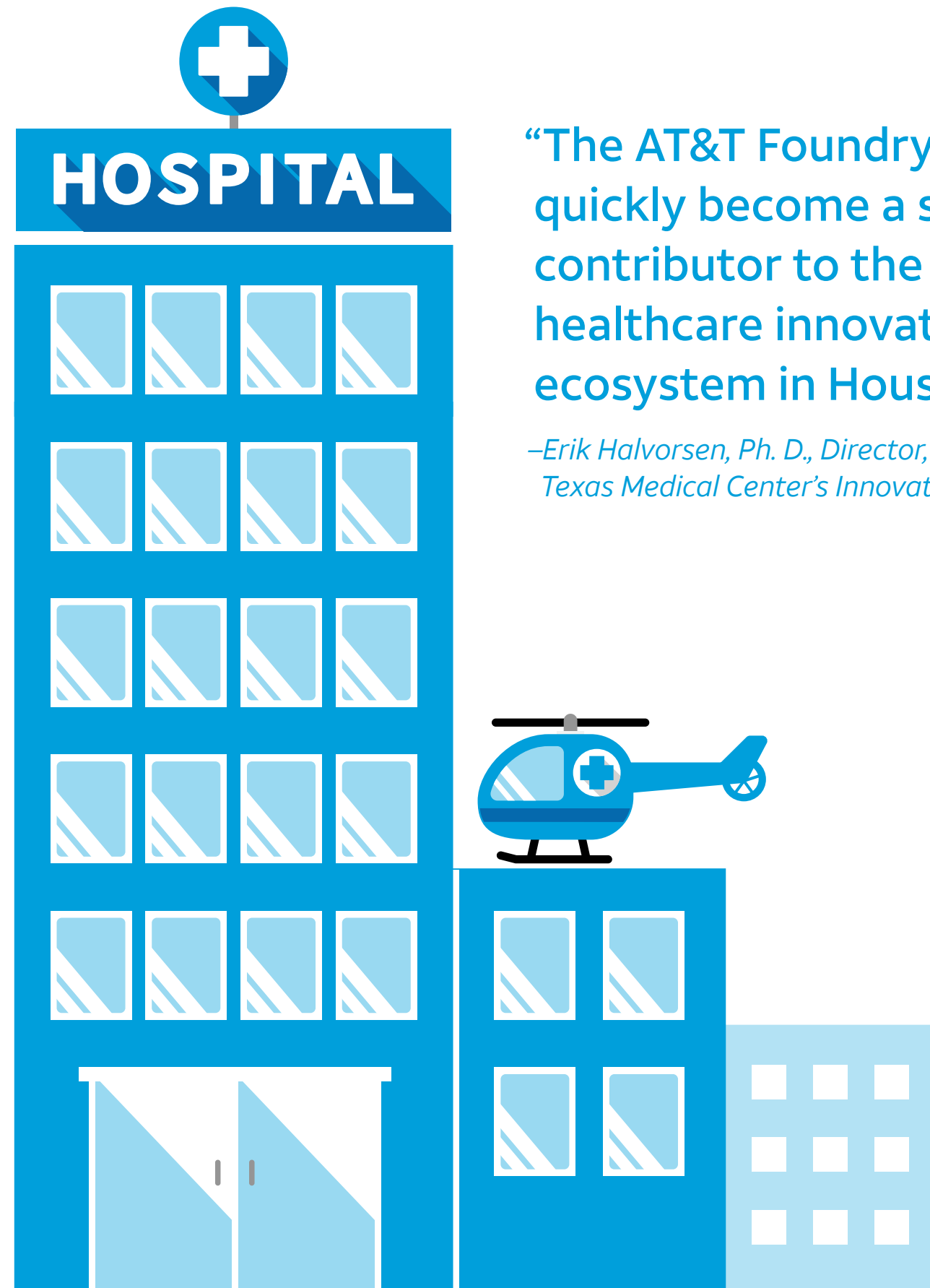
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# Prototyping the future

Houston's Texas Medical Center is the world's largest, embracing 21 hospitals, 58 organizations, and TMC's own Innovation Institute. Co-located within the Institute, you'll find the AT&T Foundry for Connected Health.

Since opening in June of 2016, the Foundry has interacted with over 340 healthcare companies, assisting them with prototyping and testing new concepts, and exploring ways that emerging AT&T technologies can address healthcare needs. In this agile, collaborative environment we're building relationships with contributors throughout the healthcare ecosystem. And out of those relationships, we're seeing some very exciting, innovative solutions emerge.

<sup>24</sup> AT&T, Pushing Boundaries at the Connected Health AT&T Foundry, April 27, 2017  
[http://about.att.com/innovationblog/connected\\_health\\_foun](http://about.att.com/innovationblog/connected_health_foun)



“The AT&T Foundry has quickly become a strong contributor to the vibrant healthcare innovation ecosystem in Houston.”<sup>24</sup>

–Erik Halvorsen, Ph. D., Director,  
Texas Medical Center's Innovation Institute

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# How AT&T helps innovation happen: Aira



Aira empowers the blind and those with low vision to experience their world more independently than ever before. With the push of a button, an Aira “explorer” connects with a live agent who answers questions and provides guidance through their surroundings.

And that’s not the only promising path forward. With the recent development of Chloe, Aira’s artificial intelligence assistant, explorers can sort mail or read prescriptions without the need for a live agent.

“We’re providing information to a blind person, and that is where AT&T comes into play big time.”

–Suman Kanuganti, CEO, Aira



“Aira’s solution is a great example of how IoT is empowering consumers and can help improve the lives of its users.”

–Jessica Autrey, Business Development Lead,  
AT&T Foundry for Connected Health

Learn more about [Aira](#)

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# How AT&T helps innovation happen: CADence™



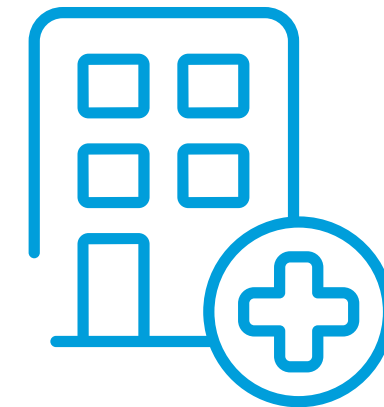
Every year, around 10.5 million Americans experience chest pain. But stress tests require special facilities, cost billions of dollars, and aren't always accurate.

CADence is an FDA-approved, handheld device equipped with advanced analytics that listen to your heart for the telltale sounds of cardiovascular disease. A CADence scan takes about 20 seconds. Sent in a highly secure manner to the cloud, the results can be in a clinician's hands in as little as seven minutes. All at a very low per-test cost.

CADence is a trademark of AUM Cardiovascular.

“CADence is able to use AT&T’s wireless connectivity worldwide to predict and prevent coronary disease.”

*–Maria Lensing, VP Healthcare Solutions, AT&T Business*



“Without AT&T, our product, CADence, would not be where it is today.”

*–Dr. Marie Johnson, Founder/CEO, AUM Cardiovascular*

Learn more about [CADence](#)

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# How AT&T can make innovation happen for you

The IoMT is about innovating patient care.

It's about enhancing security, optimizing your processes, and gaining insights that can help you solve complex challenges.

And it's about harnessing the data that empowers you to make near real-time decisions, giving you a competitive edge.

That's what AT&T is about, too.

We're creating a more connected world—a network of networks—that addresses a broad range of customer needs. Whether you're considered IoMT or are in the midst of deployment, we have the resources and expertise to facilitate that process—and produce the levels of patient care and business efficiency you've just been reading about.

**Visit [att.com/healthcare](http://att.com/healthcare)**

