AT&T Business

5G & Healthcare

The dawn of 5G technology is here

Are you prepared for change?

Healthcare is poised to experience significant benefits from 5G

Unleash the full potential for your business

5G, the fifth generation of cellular wireless technology, has the potential to offer massive connection power and fast speeds that can help transform how healthcare is delivered. Not only does 5G have the capacity to impact the Internet of Medical Things (IoMT), it will help enable medical innovations using augmented reality, virtual reality, artificial intelligence (AI), remote medical learning, remote patient monitoring, and more.

Because access to near real-time data and the ability to make split-second decisions are critical in healthcare environments, this sector stands to benefit tremendously from 5G and advanced technologies when fully implemented. Better communications will produce efficiencies. Diagnostics should be faster at lightning speeds. Transfers of massive files, images and other content will benefit from low latency. And compute power with 5G will help accelerate benefits exponentially.

The 5G revolution will bring:

| Massive device connectivity	Ultra-low latency	Better capacity & ultra high speeds	Data-driven insights

How will 5G affect healthcare?

The possibilities are endless, but we'll start with 6 ways.

1. Telemedicine

Effective telemedicine requires a network that can support near real-time, high-quality video without slowing down the facility's network. Adding a high-speed 5G network to existing architectures can support near real-time video for video-based medical consultations to improve access to care and quality of care.

While telemedicine is already happening today, 5G will help enable the speed and exponential computing at the edge that will encourage more widespread adoption. Plus, 5G will support the healthcare IT infrastructure as remote clinicians and telemedicine[1] extend the organization's reach beyond the hospital premises. For example, with 5G, language translators can video conference with a patient and doctor at the network edge with low latency.

66% of healthcare providers **have or are developing telehealth programs.**[2]
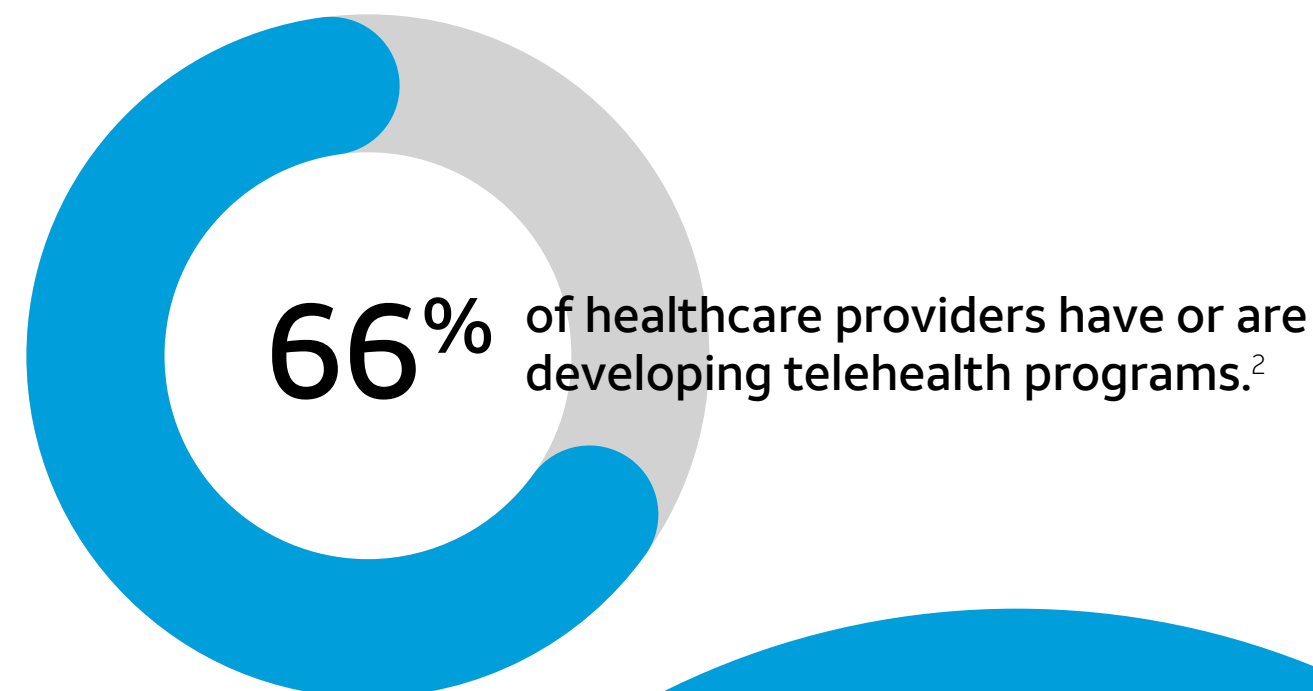
5G and telemedicine will encourage incremental improvements, as monitoring across patient populations can help suggest more efficient business models for healthcare facilities.[3]

1 Deloitte University Press, *"No appointment necessary, How the IoT and patient-generated data can unlock healthcare value,"* 2015, page 9.
2 *"The Path to 5G for Health Care"*, IEEE, Krishna Rao, 2018.
3 *The Connected Patient: How Technology is Advancing Telehealth*, HiMMS Media and AT&T, August 2018

2. Remote patient monitoring

Hand-in-hand with telemedicine is remote patient monitoring, including administering and adjusting medication based on collecting and analyzing near real-time data. By using IoT devices, healthcare providers can remotely monitor vitals, track medications, and transfer current data to help staff make faster, more informed decisions.

5G will enable better connections on mobile devices, increase data transfer capacity utilizing wider bandwidth, support larger blocks of data transference, and help enable healthcare workers to give improved live and near real-time remote care.

Today, remote monitoring is largely limited by the capacity of the network to handle data; 5G will enable more reliable connections to facilitate the data transfers workers need to make quick healthcare decisions remotely for more patients. This will have an impact in healthcare in ways like unobtrusive monitoring, assisted living for people with chronic conditions, active aging, and more.

Wearables
**are predicted to
decrease hospital costs**

16% *over the next 5 years.*[5]

88%of providers say they are
researching, piloting, planning, or already
remotely monitoring patients with IoMT devices.[4]

4 HIMSS Media and AT&T: The Connected Patient: How Technology is Advancing Telehealth
5 Anthem, *"Top 4 trends in health care technology, 2017."*

3. Augmented and virtual reality

5G will eventually open a vista of opportunity to use augmented reality (AR) and virtual reality (VR) to care for patients and to train clinicians.

For example, AT&T is collaborating with VITAS® Healthcare to study the effects of 5G-enabled AR/VR on hospice patients. The goal of the study is to reduce pain and/or anxiety for certain hospice patients by providing calm, distracting content via 5G-enabled AR/VR.[6]

Meanwhile, 5G-powered AR/VR has the potential to help enable doctors, nurses, interns, and staff to more aptly visualize procedures in an engaging, learning-by-doing practice that will enhance their education.

Imagine that!

More than 55,000 people watched a

Virtual Reality

livestream of a cancer surgery

according to <u>Medical Realities</u>.

6 *AT&T and VITAS Healthcare Launch Virtual Reality Study for Hospice Patients*

4. Data analysis

5G will help enable a greater exchange of highly secure data needed for improved analysis. Data in healthcare has the potential to be harnessed to lower operational costs and to improve efficiencies.

Predictive analytics, prescriptive analytics, and AI data are now being used to perform key functions like determining diagnoses and deciding treatment plans for patients.[7] For all these, data transfer speeds play a huge role. 5G is expected to feature ultra-low latency.[8] This will allow multi-access edge computing to process data faster, at the edge of the network.

5G will support the connection of smartphones and mobile apps, cloud services, devices, sensors, machines, and systems that can be used to power big data analytics.

With the help of 5G, data can be distributed at multiple points of care. This will help enable innovations in early remote diagnoses, remote surgeries, smart hospitalization logistics, intervention planning, greater transparencies, and improved patient engagement.

5G will allow multi-access edge computing to process data faster, at the edge of the network.
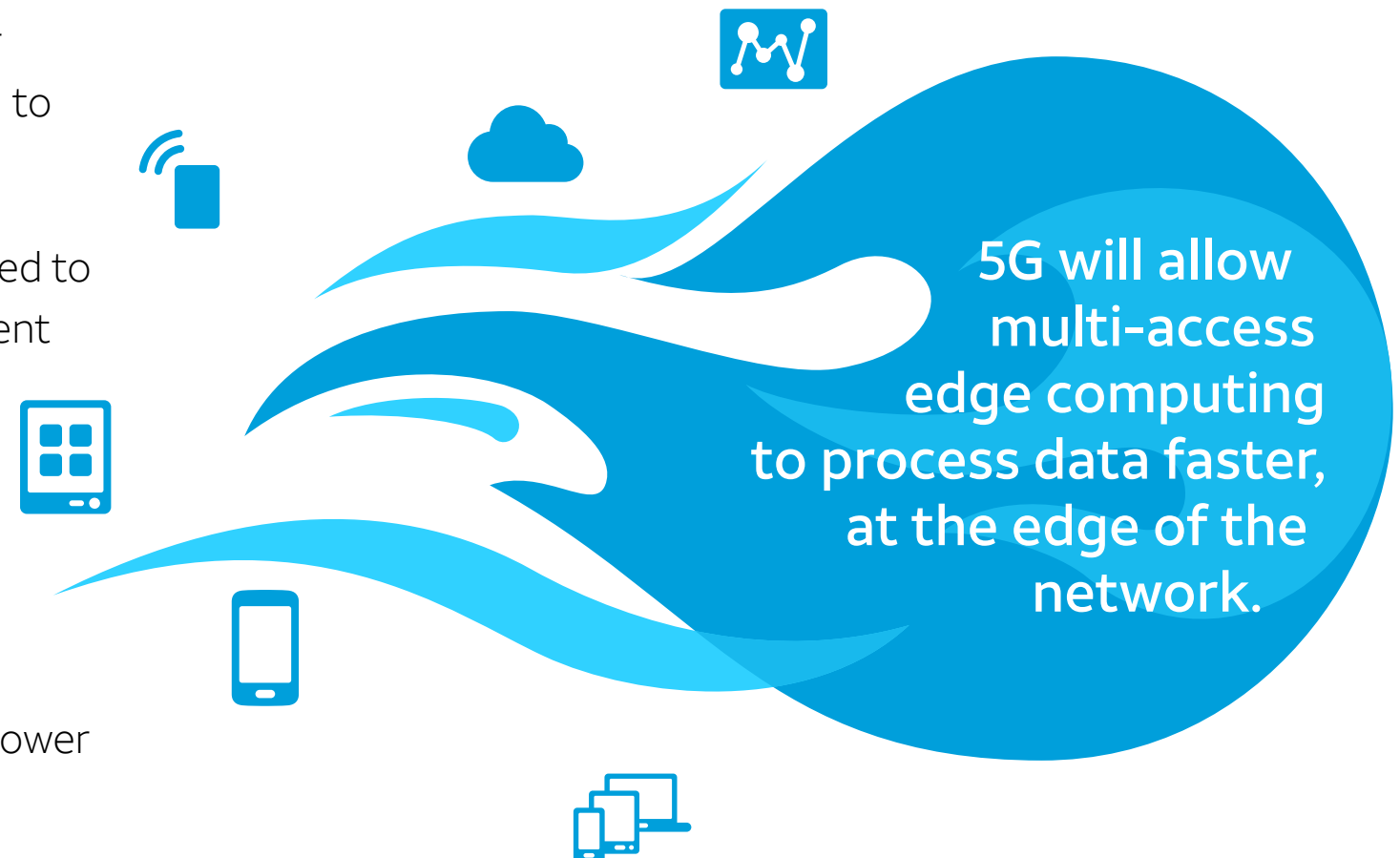
7 Global 5G: *"5G for Health,"* the 5G Infrastructure Public Private Partnership, 2018
**8** Healthcare IT News, *"The Journey to 5G,"* March 2, 2018

5. Decentralizing the healthcare model

5G will further accelerate the industry trend toward providing care "closer to the patient" and outside the hospital setting through urgent care centers, walk-in clinics, outpatient surgery centers, and home healthcare settings.

Advances in medicine, technology, the rising costs of healthcare, consumerism, and more have encouraged the proliferation of freestanding and/or satellite centers. 5G will support this decentralized healthcare ecosystem by helping to make operations more reliable and accessible.

5G has the capacity to enhance live-stream video conferencing with low latency, provide even faster remote access to electronic health records, improve online and live remote consultations, enable more efficient data transfers through mobile apps, and even help support remote procedures and robotic surgeries. It will also enable healthcare workers to collaborate across the miles more efficiently.

Hospital

Walk-in clinics

Urgent care centers

Outpatient surgery centers

Home healthcare settings
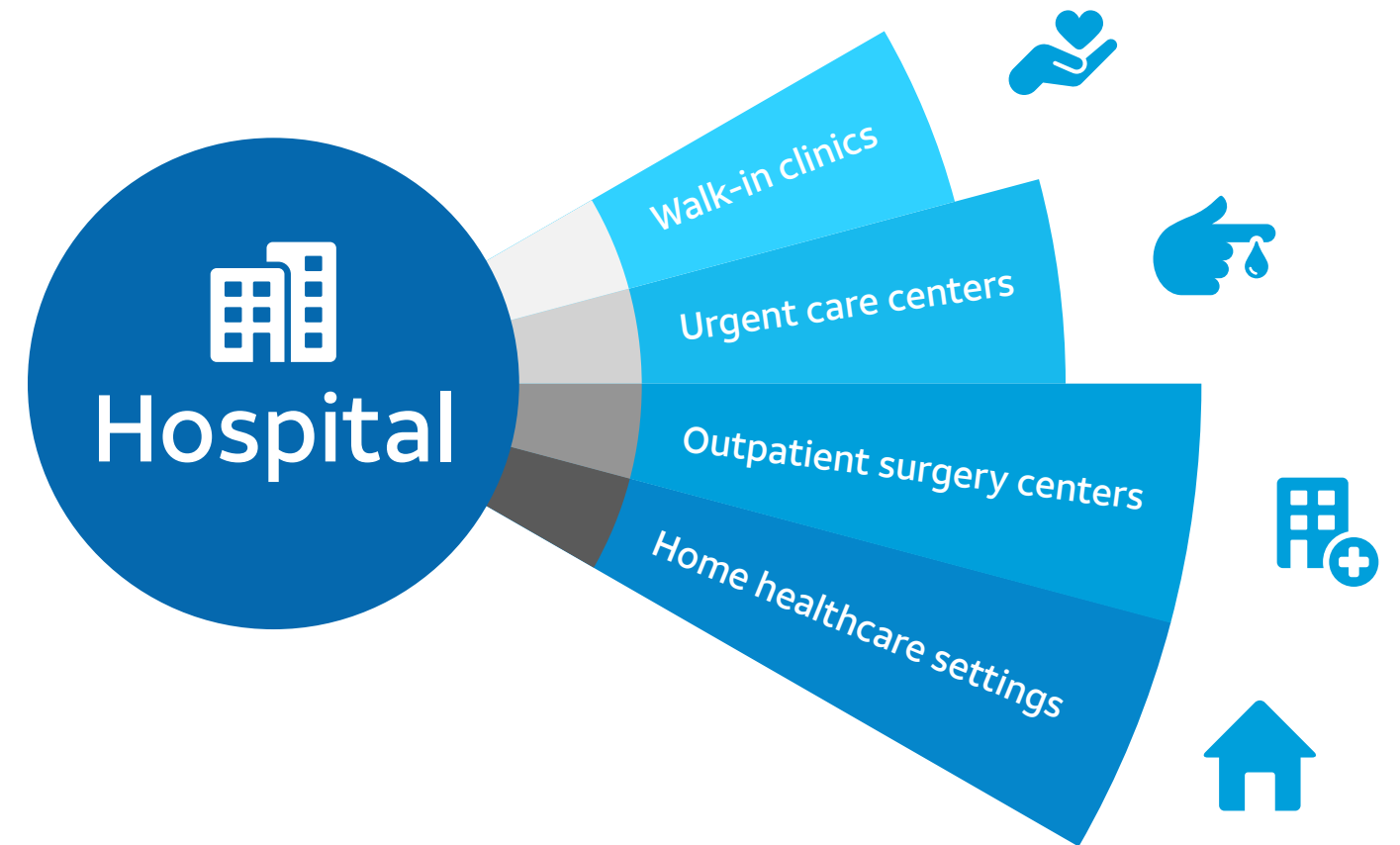
6. Large file transfers

5G may be able to help improve a hospital's ability to transfer large image files. When a network is low on bandwidth, the transmission can take a long time to send or not go through successfully at all. The network can stall, a patient will wait longer for treatment, and providers are only able to see a few patients in the same amount of time. 5G has the capacity to enable faster transfers of huge medical images, with exceptional network performance.

Faster image transfer will make patient care more efficient, and hospitals will potentially be able to see more patients in the same amount of time.
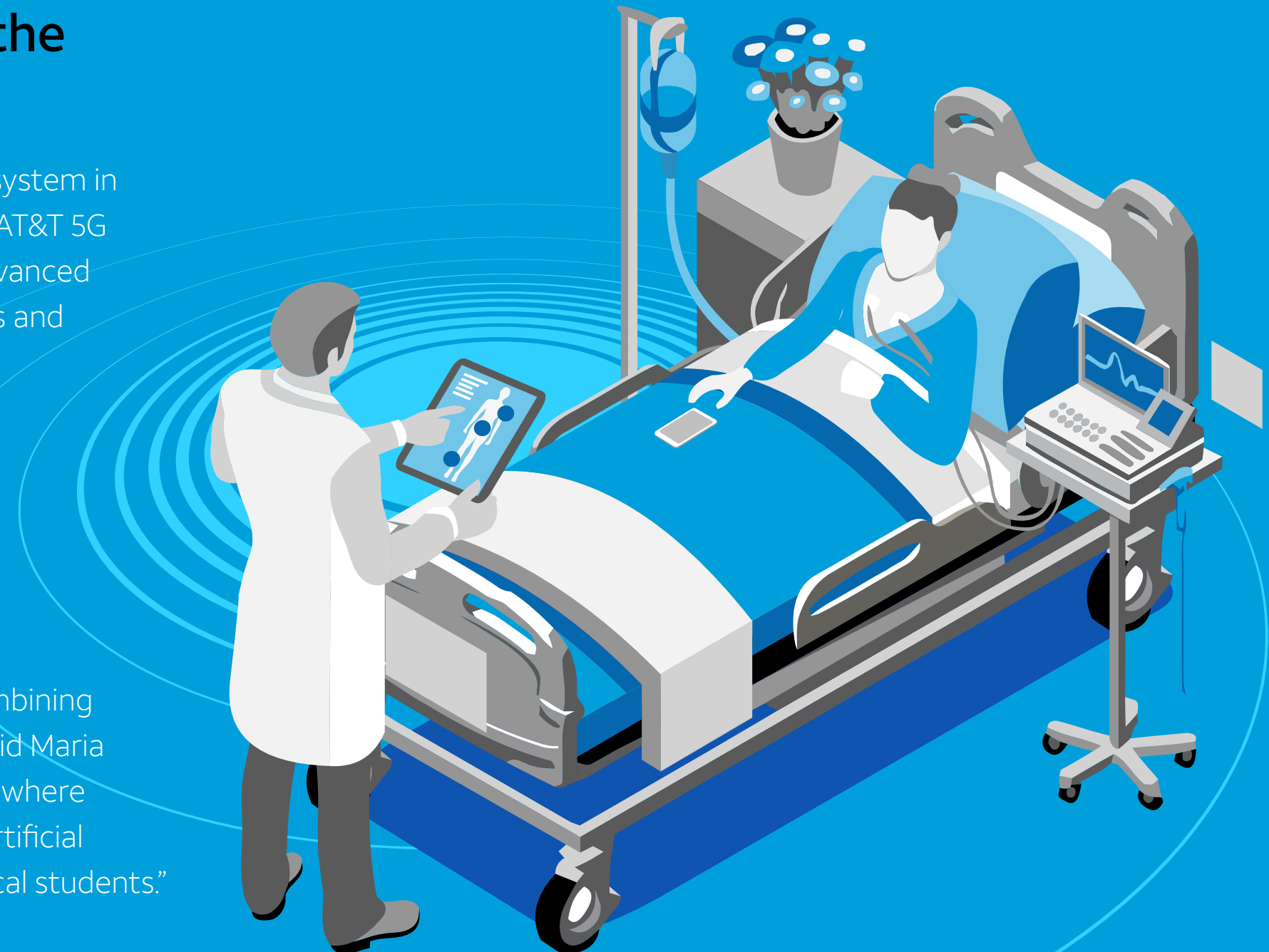
The future is here

AT&T and Rush are working to create the 5G hospital of the future

AT&T and Rush University System for Health, an academic health system in Chicago, are testing various use cases in Rush hospitals using the AT&T 5G network, AT&T Multi-Access Edge Computing (MEC), and other advanced network-related technologies to create better hospital operations and improve patient and staff experiences.[9]

The use cases may explore:
- Technology-driven patient therapies
- Service robotics using AI
- Transmission of large imaging files
- Hospital energy efficiency and management[9]

"AT&T believes the healthcare industry can be transformed by combining 5G speeds and latency with our advanced network capabilities," said Maria Lensing, VP Global Healthcare Solutions, AT&T. "Imagine a hospital where rooms are intelligently scheduled, patient care is enhanced with artificial intelligence, and augmented reality is used in the training of medical students."

Preparing for 5G

What does your healthcare organization need to do to prepare for and take advantage of 5G?

1 **Look for opportunities in your organization** for enhancing patient care and improving operations that could be realized through 5G technology.

2 **Identify the key players and departments** that would participate in initial projects. Consider how collaboration between these players can provide efficiencies and integrations.

3 **Find a partner who is leading the way in 5G.** AT&T services and solutions are already primed for companies to succeed.

AT&T offers an edge-to-edge approach to network solutions. Visit att.com/healthcare. As a leader in technology, media, and telecommunications, we are uniquely positioned to transform your digital capabilities through 5G innovations and Edge-to-Edge Intelligence℠.

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