ENABLING THE FUTURE
OF PATIENT-DRIVEN HEALTH
WITH INTEROPERABILITY

Interconnectivity and the Internet of Things (IoT) – the network of wireless devices that provide real-time data to other devices, systems, and users – are changing the management of chronic disease and patient care. Although the healthcare IoT market is experiencing significant growth, healthcare and technology experts haven't even begun to scratch the surface of the potential of these life-changing devices.

John Sharp, Senior Manager at Personal Connected Health Alliance, points to numerous devices that patients already use in their daily lives, such as smartwatches, tablets, smart TVs, and smart thermostats. Consumers also regularly use personal assistants such as Alexa or Siri for medication reminders, diabetes support, or meditation exercises. This interconnective technology is becoming increasingly pervasive, according to Sharp, and consumer awareness of how these devices can help improve people's health is growing.

Devices such as intelligent glucose monitors, wireless scales, and blood pressure monitors provide physicians and nurses with real-time data and valuable patient information that is autonomously transmitted via wireless connectivity.

Bill Reeves, Vice President of Product and Customer Marketing with KORE, which supports IoT deployments across a number of industries, said the IoT space within healthcare is rapidly expanding and is expected to grow to $158 billion by 2022.[1] Paired with this exponential growth and potential for improved patient care is the need for reliable, secure cellular networks and technology support to ensure that data transfer is seamless among devices, patients, and healthcare providers.

Managing chronic conditions

The ability to monitor patients with chronic health problems through an IoT-enabled device or monitor can be enormously beneficial to both healthcare provider and patient. Patients with diseases such as diabetes, asthma, chronic obstructive pulmonary disease (COPD), or sleep apnea can provide valuable data to their healthcare team through devices while they're home living independently. Their physician can then present their data in a user-friendly dashboard format at their next visit.

Sharp pointed out that some hospitals are now providing congestive heart failure patients with a wireless scale and blood pressure monitor when they are discharged. If that patient is readmitted within 30 days, Medicare will not pay for the readmission, so hospitals are motivated to closely monitor these patients and ensure they stay out of the emergency room. Weight gain is a sign of fluid retention and deterioration in these patients, so if the nurse notices the patient is gaining weight he or she will have that patient come into the office to be seen.

Some patients with asthma use digital inhalers which track variables such as how many times a day the patient used it, the patient's location, and the level of pollution in the air. Usage of a digital inhaler provides better control of a patient's asthma and can reduce care costs by $930 annually.

Visiting nurses and community health workers who work with BehaveCare, a service provider to Medicare recipients in Rhode Island, bring tablets on their visits and connect the patient with their care provider through video. During this video consult the provider and the patient can share medical information. Medicare recently added new CPT codes that support this type of care for remote patient monitoring which will take effect January 1, 2019.

Smart devices can also be used to track a home health caregiver's location and provide the patient with an estimated arrival time. Caregivers can also access cloud-based patient records regardless of where they are working.

Aging in place

Approximately 10,000 people turn 65 each day, creating a "silver tsunami," of seniors who have or may have health problems that need to be monitored. Along with this growing population of seniors is an increase in smart devices that help them live independently in their own homes.

For example, ride-sharing apps such as Lyft and Uber can provide transportation when a senior may have to give up driving due to eye sight or other issues. Nutrition tracking and online grocery delivery services can help seniors continue to eat healthy. Technology within a senior's home can provide peace of mind to loved ones. A sensor-based software application that uses six wireless motion sensors in the patient's home monitors the patient's movement, meal consumption and when he or she leaves home. This data can be streamed to family members and even healthcare professionals who may provide care in the home.

Technology around fall prevention is also being developed, according to Sharp. For seniors with dementia, there are devices that can track the senior's location, in case they get lost or wander away from home.

Challenges and opportunities with healthcare IoT deployment

While the potential of devices to monitor patients' health remotely, manage chronic diseases, and help aging patients live independent lives is tremendous, the challenges of deploying and supporting these programs and devices can be intimidating to both healthcare provider and patient. Reeves said it is often a lack of internal expertise and resources that causes problems when providers deploy these powerful devices. "Because there's such a focus on the actual goal of the device, a lot of times people forget about all the technology and the complexities of the technology behind the scenes," he said.

Reeves compared the deployment of smart health devices to an iceberg. The improvement in patient care is above the water line and is obviously what most providers focus on. However, very few people focus on the operational necessities, such as the devices arriving on time to the right patient, the set up of the devices, and the degree to which the devices and systems are user friendly. "The complexities of IoT are below the waterline and can be quite intimidating," he said.

Most of these devices depend on a reliable home wireless network, but what happens when a patient does not have Wi-Fi in their home? If the technology relies on cellular service, is there coverage in the desired healthcare IoT deployment region? In some rural and urban areas, coverage can be spotty at best. Reeves pointed out that KORE is "carrier agnostic," meaning that healthcare IoT providers can select the carrier network (or carrier networks) that is best suited for their patient's geographic and technology requirements. "Because of our IoT knowledge and experience, we can concentrate on the technology, while [the provider can] concentrate... on how you can improve the patient's quality of life," said Reeves.

"As more and more people try to bring their healthcare out of a healthcare space and into their home with this type of continuous monitoring, we are able to get in front of any issues that might crop up."

BILL REEVES

Providers also need to ensure their patients receive training in how to work all aspects of the connected healthcare system they're going home with. If patients bring home a remote blood pressure monitor, they need to not only know how to use the IoT technology correctly, but they also need to know how to take their blood pressure and use the blood pressure cuff correctly.

If there are problems with the technology or the connection, it's crucial that patients have a help desk they can call that is staffed 24/7 with knowledgeable professionals who know the population they are serving. The tech support professionals need to understand that patients may be elderly, chronically ill, or not that tech-savvy when they are helping them with their devices. Sharp noted that video calls may be helpful between patients and tech support to help pinpoint and solve any tech problems that arise.

Reeves said it's an exciting time to be on the frontlines of healthcare IoT. "As more and more people try to bring their healthcare out of a healthcare space and into their home with this type of continuous monitoring, we are able to get in front of any issues that might crop up," he said. "With the elderly population or the disabled population, those are all great advances and will help people improve the quality of their lives."

[1] https://cloudblogs.microsoft.com/industry-blog/industry/health/the-rise-of-connected-healthcare-with-iot

KORE

About KORE:
KORE Wireless Group ("KORE") is a pioneer, leader, and trusted advisor delivering transformative business performance. We empower organizations of all sizes to improve operational and business results by simplifying the complexity of IoT. Our deep IoT knowledge and experience, global reach, purpose-built solutions, and deployment agility accelerate and materially impact our customers' business outcomes.