The Next Big Step: Highlighting the Most Relevant Data Points for Patient Care

How do you see developments in health technology enhancing the way patients and physicians interact?

We know from our work with physicians that they appreciate the accurate data our heart health devices provide. Most people don’t take their blood pressure often enough. And many people with hypertension are completely unaware of their condition, putting them at higher risk of health problems.

When doctors take blood pressure readings in their offices, they can be artificially elevated due to stress (“white coat syndrome”) and only provide a snapshot in time of that patient’s condition. By regularly monitoring, storing, tracking, and sharing data via at-home devices and apps, patients can provide their doctors with much more thorough information to inform their care. At the same time, advances in technology are making it possible to capture even more points of measurement: exercise, quality of sleep, electrocardiogram (ECG), and more. And devices are becoming increasingly accurate.

As we gather and deliver volumes of accurate health data, the challenge is going to be how to triage that data so that physicians aren’t overwhelmed. As I see it, the next big step in healthcare technology is going to be how to sort and highlight the most relevant data points for patient care. That’s evident now in the growing conversation on artificial intelligence in health technology.

What have been the most exciting recent developments in heart health and wellness technology?

In heart health, at-home technology continues to be more accurate, convenient, and connected than ever before. Omron has successfully developed the first-ever wearable blood pressure monitor—the HeartGuide. The HeartGuide uses oscillometric measurement, which still is the only Food and Drug Administration (FDA)-recognized standard for accurate, automated blood pressure measurement. With patented technologies, we have successfully miniaturized the components, including cuff, pumps, and valves, to fit in the form of a wristwatch. The device is attractive and discreet and encourages more regular monitoring—anytime, anywhere. In addition to blood pressure, HeartGuide measures daily activity, heart rate, and sleep quality, all of which are factors in heart health. That’s another exciting development in heart health: the ability to measure more data points.

Within the next year, Omron also will introduce a new device that provides accurate blood pressure and ECG measurements at home. That’s a particularly exciting development for the approximately six million Americans who have atrial fibrillation and are at a much higher risk of stroke. Both new Omron devices sync with our Omron Connect app, allowing users to store, track, and share data with their physicians. Doctors now have access to a more complete picture of patients’ heart health and accurate data across a range of time, allowing them to improve treatment and outcomes. We’re excited by early research showing that people who monitor using at-home devices and share their data with their doctors are better able to manage their hypertension.

In pain management, the concern about the opioid epidemic and overuse of pain drugs has spurred the advancement of drug-free pain relief technology. Transcutaneous electrical nerve stimulation (TENS) was used by physical therapists for years. However, at-home technologies now bring relief to people suffering from chronic and acute pain. Our latest TENS device, the Avail, takes the technology to a whole new level. It’s completely wireless and controlled by a smartphone app, allowing freedom of movement during treatment. It’s a dual-channel system with two pads, allowing customizable pain treatment for two different areas at one time.
In what ways can technology help make healthcare less reactive and more proactive?
The way our healthcare system is evolving, patients are taking an increasingly active role in their care. Generally speaking, people are more conscious of the preventive measures they can take to promote their well being, such as eating better, exercising regularly, and cutting down on unhealthy habits. Technology is empowering that effort. Through wearables and apps that measure calories burned and consumed, body mass scales, cholesterol and glucose monitoring tools, and, of course, blood pressure devices, we are better informed and equipped to manage our health risks before they develop into chronic conditions or catastrophic health events.

What developments do you see occurring that will improve patient self-monitoring, particularly for cardiovascular illnesses?
Devices for self-monitoring are becoming more portable, convenient, and discreet, which encourages more regular monitoring. The new Omron HeartGuide will be the first-ever clinically validated wearable blood pressure monitor on the market and can even be programmed to take blood pressure readings overnight. The Kardia Band, which was developed by our partner AliveCor, has been cleared by FDA and can be used with the Apple Watch to measure ECG. This “always-on” approach is one major development that will help people manage cardiovascular illnesses and risk factors more effectively. We expect that we’ll continue to see advancements in the type and number of health data points that can be measured by at-home or wearable technologies. And although the flow of data increases, we’ll have new tools for how to store, track, and share those data.

In January, Omron announced that our connected blood pressure devices now sync with the interactive Amazon Alexa. Those who use an Omron connected device with the app can ask Alexa to connect with and open their app; locate and read back their latest blood pressure reading; calculate their average reading over a day, week, or month; and compare readings across different dates and times of day. The technology also alerts users of high readings and provides them with guidelines and tips to ensure accurate blood pressure measurements. We believe that healthcare devices integrated to the connected home and other developments, such as coaching apps, will continue to advance and help encourage regular monitoring, behavior change, and heart health awareness.

What are some of the new ways in which technology will move outside of hospital walls and into patients’ homes? What are the potential benefits of these changes?
To me, the key question isn’t so much about new ways technology will move outside of hospital walls—it already has. It’s really a question of how we leverage these existing technologies and optimize them for best outcomes. We’ve already seen the advent of telehealth (i.e., technology-enabled communication between patient and physician outside of traditional office or hospital visits) and telemonitoring via devices or remote patient monitoring for chronic diseases such as cardiovascular disease and diabetes. The key is better implementing these types of technologies to create fewer visits to emergency departments and hospitals, lower healthcare costs, and more satisfied (and healthier) patients. In my opinion, we have not yet maximized the benefit of the available technologies.

What are some of the ways in which augmented reality (AR) will benefit technology and the professionals who use it? And how close are we to seeing these AR applications have a real-world impact?
There have been interesting studies on the use of both AR and virtual reality (VR) for a number of different conditions. These technologies already have shown promise for treating cognitive impairment, dementia, depression and other mood disorders, and posttraumatic stress. AR also is now being tested as a teaching tool for medical students; the University of Tokyo has been working with a VR heart simulator created by Fujitsu.¹
Most interesting to Omron is the potential for AR and VR to assist in pain management. As a manufacturer of TENS devices, we recognize the growing demand for safe, effective, drug-free pain relief. Perhaps a combination of TENS and AR could become breakthrough technology. The potential for these types of partnerships is one of the most exciting aspects of the health technology business.

What’s one under-the-radar health-related technology that’s poised to take off in the near future?
Accurate blood pressure monitoring, anytime and anywhere, via a wearable device. Although there has been a lot of buzz in the healthcare community about the growing use and potential of sensors in wearable devices, they are not FDA-cleared medical devices, and they don’t yet reach a level of accuracy that is required to be clinically validated. We have successfully miniaturized FDA-cleared technology for blood pressure monitoring to fit in a watch—right now. And the device is expected to be on the market this year.

As technology continues to offer more decision-support benefits for patients and clinicians, what risks do they pose?
Is there a “dark side” to big data and relying on data for decisions?
While calling it a “dark side” is perhaps hyperbolic, there is such a thing as too much of a good thing. The sudden influx of enormous amounts of data enabled by new technologies can create its own problem. It’s extremely difficult to take in, let alone evaluate, all of the data out there. You could easily miss something vital because there’s so much information to be parsed. Therefore, as we continue to develop devices, apps, and systems, it’s critically important that we find ways to present the data that are of value versus burying those data in an avalanche of readings. Too much information tends to dissuade people from using it. So, while I don’t see a “dark side” in relying on data for decisions, the sheer volume of information is an issue. Data analytics and artificial intelligence need to catch up to the volume of data and more efficiently make decisions about what is useful.

In what ways do you foresee technology changing the current landscape of health professional occupations? Will new occupations emerge and/or will certain occupations become obsolete?
As technology continues to advance, more data science-related occupations will emerge in healthcare. Right now, there is a very small population of data scientists in the United States—and even fewer of them work in healthcare. I believe that in the not-too-distant future, we will see medical data scientists who are specially trained to review, interpret, and learn from the enormous volume of healthcare data being generated. That field is going to explode. As technology advances and healthcare (like many fields) becomes more automated, I suspect that some of the more manual healthcare processes, such as certain lab tests or functions like counting, observing, and monitoring, will require less human capital.

What other areas are you focused on currently with your work at Omron?
One area of continued interest for Omron is the regulatory industry and FDA. We have always viewed the FDA as a friend and partner in helping to get safe and effective technologies to market. We’re encouraged by the FDA’s progress in making new technologies available and the revision to its process for medical device and software clearances. Another area we continue to monitor carefully is the national conversation about drug-free pain relief. As government, healthcare providers, and citizens work together to try to address the opioid epidemic, Omron continues to invest in technological innovation to try to bring more safe, effective alternatives for pain relief to market.

Reference