

Apple moves into medical research

A certain amount of marketing hype is expected when a technology company releases a new product, but when you have a track record like Apple, maker of some of the most popular consumer electronics in history, people pay attention.

So it comes as little surprise that medical researchers are optimistic about ResearchKit, an open-source software platform that Apple claims will make it “easy for researchers and developers to create apps that could revolutionize medical studies, potentially transforming medicine forever.” Although hopeful, researchers still warn that issues related to ethics, privacy and information validity need to be addressed.

According to Apple, hundreds of millions of people are carrying a “powerful medical research tool” in their pockets: an iPhone. The popularity of the device, which is equipped with sensors that can track movement and take measurements, gives researchers the opportunity “to gather new types of data on a scale never available before.”

People can choose the studies they want to join and control how much information they want to provide. Five apps are already using ResearchKit to study asthma, Parkinson disease, diabetes, breast cancer and cardiovascular disease.

MyHeart Counts was developed by researchers at Stanford University in California. Those who join the study will use the app to measure daily activity, fitness and cardiovascular risk. Data on activity can be automatically captured by sensors on iPhones, the Apple Watch or other wearable devices. Participants will also receive reminders to enter other information, such as blood pressure and cholesterol levels.

Apple’s ResearchKit will help reduce “the barriers for enrolling participants into clinical trials, transcending geographical and financial boundaries and providing ample data with strong statistical power,” Dr. Ahmad Zbib, director of digital health and innovation at the Heart and Stroke Foundation, wrote in an email.

“That said, due to infancy, many hurdles need to be addressed before this becomes widely adopted, especially

issues related to privacy, ethical practice, identity confirmation and validity of data.”

The app for diabetes research, called GlucoSuccess, will allow users to participate in a study conducted by Massachusetts General Hospital to increase understanding of how health behaviours influence blood glucose levels. It will record and track information such as activity duration and intensity, diet, blood glucose and body weight.

Canadian researchers should use novel tools such as this to stay at the forefront of diabetes research, Dr. Bruce Perkins, an endocrinologist and clinical scientist at the Lunenfeld–Tanenbaum Research Institute in Toronto, wrote in an email. “As with other online or digital technologies, we need to be aware of any security threats or privacy concerns with our personal data.”

Indeed, some technology commentators warn that ResearchKit could be a “goldmine for hackers” because of vulnerabilities in Apple’s iOS mobile operating system and the recent rise in breaches of personal health information, which may be considered more valuable than financial information on the black market. Others note that health apps are not regulated in the same way as other medical software or devices and may not be subject to existing medical-information privacy laws.

Sage Bionetworks, a not-for-profit research organization in Seattle, Washington, is behind the Sage Bionetworks app for breast cancer research. The app will use sensor data and questionnaires to track symptoms that patients experience after breast cancer treatment, including fatigue, mood changes and sleep disturbances.

“This application has the potential to be extremely useful for the research community and those living with breast cancer,” said Sandra Palmaro, co-CEO of the Canadian Breast Cancer Foundation. “We hope any concerns brought forward regarding privacy and consent with the technology, however, are addressed.” — Roger Collier, *CMAJ*

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