Your phone is talking behind your back ⬜ to your doctors

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Your phone knows everything about you - how much you walk, talk and what level of Candy Crush you're stuck on - but soon it could be spilling secrets to your doctor.

More and more physicians are prescribing apps that help track their patients' illnesses through information collected by their smartphones.

"(The trend) just seems to be exploding," said Seth S. Martin, a Pollin cardiovascular prevention fellow at Johns Hopkins Hospital in Baltimore. "With the widespread use now of smartphones, it's a really exciting opportunity to help people live healthier lives."

Apps like Ginger.io and those developed by the Center for Behavioral Intervention Technologies (CBITs) at Northwestern University collect [data](#) through smartphones and web activity and relay that information to healthcare providers - without the patient needing to lift a finger. This, they argue, enriches the healthcare process by integrating technology and [primary care](#).

This is most apparent with the app Ginger.io, which is currently invite only - it's being tested in larger hospital systems before it expands to the public - and deals with a small number of specific diseases like diabetes and ulcerative colitis.

According to their website, Ginger.io "works in the background to collect data about your movement, call, and texting patterns. Once the

application has gathered enough data to understand your behavior patterns, we will provide you with health insights and alerts."

These alerts range from condition-specific health tips to insights into the patient's own health patterns.

"It forms an automated diary of your life," said Anmol Madan, co-founder and CEO of Ginger.io. "The idea is to provide support to patients and families."

By collecting two forms of data - nicknamed passive and active - Ginger.io attempts to paint as full of a picture as possible from the data collected by a person's phone. The app asks patients to fill out condition-specific surveys about their symptoms and well-being (this is active data) while also collecting information from the sensors in the phone regarding calling and texting patterns as well location data (this is passive data.)

This data is then sent to a patient's primary care physician. They use the collected data to monitor a patient's day-to-day behavior, flare-ups and unusual patterns in communication - are you making longer calls? Maybe not moving around as much as normal?

This allows for faster and more accurate intervention should a health condition head south.

Similar to Ginger.io, CBITs works to develop apps for smartphones, websites, text messages and even virtual reality.

"There's so many things that technology makes available to us," said Jennifer Duffecy, associate director of intervention development at CBITs.

Many of the apps in development at CBITs involve mental health - especially making sure people with mental illnesses stay on their medication. One described by Duffecy dealt specifically with antidepressants.

Patients often feel no immediate effects when starting an SSRI - a common anti-depressant that changes the balance of serotonin levels in the brain - and stop taking it.

The app from CBITs tracks whether or not the patient took their medication - adding an accountability aspect - while also tracking any side-effects felt by the patient.

While their focus is mainly on mental health, Duffecy said, other research has looked at apps for insomnia, chronic pain, cancer survivorship and various transplants.

CBITs is also developing an app specifically to monitor and improve veterans' ability to cope with stress. The app is specifically tailored to veterans with serious mental illnesses who seek care in community-based mental health agencies.

"The most effective way to use (health tracking apps) is to integrate these systems with others - linking information in real time with feedback that is designed by the patient's physician or a specialist. But doing this in a very reputable and patient friendly manner," Martin said.

Martin and colleagues at Johns Hopkins University plan to begin a study later this year that uses smartphone apps and bluetooth data to monitor patients.

However, in the deluge of health-tracking apps available, few have undergone any moderation to ensure the validity and reliability of the

science behind the app, Martin said. Few studies have been conducted that analyzed the effectiveness of apps like Ginger.io that employ total integration of technology and primary care.

"Hopefully the clinic of the future will be very much app-based," Martin said. "There will be some optimal combination of app-based, home based care with actual face-to-face clinic visits. (But) right now it's way, way too early to make any definitive statements."

Most important, Duffacy noted, is the need to ensure that people who download any health related apps actually integrate the technology into their everyday life.

"Apps only work if people use them," Duffacy said.

PROFESSOR COMBATS OBESITY WITH BETTER MATH

A Northwestern University professor is taking a stab at making activity recording apps on smartphones more accurate - by employing more sophisticated math.

Apps like Moves or Argus that track exercise and movement are more popular than ever, but don't capture data all that accurately in certain situations.

Most movement-tracking apps lose a bit of accuracy when the smartphone is carried in a bag or a pocket. Konrad Kording, an associate professor at Northwestern University, and colleagues have developed a more accurate algorithm for activity recording apps.

The algorithm allows apps to predict the location of a smartphone throughout the day - be it on a belt, in a bag, or in your hand - which increases the accuracy of health tracking apps.

"We wanted to see how well activity recognition could tolerate what people did in their everyday life," Kording said. While the algorithm wouldn't be integrated in current app technology in the immediate future, it should help improve the accuracy of these health monitoring apps.

Kording's research is a part of the Center for Behavioral Intervention Technologies (CBITs) at Northwestern University. Opened in 2011, researchers at CBITs work to develop apps for a variety of tech platforms, including smartphones, websites, text messages, even virtual reality.

While a more accurate app may aid in the fight against inactivity and obesity, it is just a small step.

Despite the state's efforts to curb rising obesity rates, Maryland adults continue to get heavier - 24.9 percent of adults were obese in 2006, while 27.9 percent were obese in 2010. However, Maryland's obesity rate has yet to hit the nationwide 35.7 percent, according to the Centers for Disease Control.

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