U of U Health Researchers Hope Fitness Tracker Data will Help Catch Post-Op Complications

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When Austen Slade, MD, started training for triathlons during medical school, the complexity of activity trackers and watches impressed him. If they could break down athletic performance, he realized they could also be a window into someone’s health.

“I wanted to find a way to bring them into the clinical space,” said Slade, now a urology resident with University of Utah Health.

Collaborating with Brock O’Neil, MD, a urologic oncologist at the University of Utah School of Medicine, the doctors obtained 20 Garmin vivosmart activity trackers with Imagine Perfect Care dollars.

Since July 16, 2017 patients have worn the trackers for the first 30 days after their cystectomy, the surgical removal of the bladder after invasive bladder cancers. Those patients typically have one of the highest hospital readmission rates — up to 40 percent. As many as 80 percent experience complications including urinary tract and surgical site infections. That frequency made them an obvious group to study.

The trackers can measure heart rate, steps, sleep, and overall movement. Changes in heart rate and movement can be an early indicator of infection and dehydration, in some cases before the patient is aware of any problem. Ultimately, the information could help doctors care for patients before larger problems surface.

“We don’t want to wait until minor setbacks turn into major complications” Slade said.

The individual’s overall health could benefit and health care costs could be reduced by preventing readmission through early intervention.

For now, the goal of the pilot study, which will continue until March, is to see how compliant patients are with wearing them. That has generally been successful. Patients, whose average age is over 60, are wearing and using them properly at least 75 percent of the time. They are not asked to change their normal behavior or exercise schedule.

Overall, patients — who are aware of the high potential for complications — have been enthusiastic.

“They think it’s really interesting, that it’s a really good idea,” O’Neil said.

Although they can see some information such as heart rate and steps taken, the patients do not need to pair the tracker with a smart phone. However, they are asked to exchange the tracker after 10 days for a new one because the device can only store up to 10 days of data.
One patient in the pilot group fell at home while several others faced infections after discharge. The doctors — who have yet to review the data — are curious to see whether they will be able to see links on the trackers to the patients’ health. If not, one possibility would be to try and design a tracker specifically geared toward medical needs.

Few medical studies have been completed with health trackers, explained O’Neil, despite doctors’ interest.

“Anything we do in patients is slow with regulatory requirements,” he said.

He believes medical trackers are likely to be integrated into healthcare in the near future. They could be the key to alerting nurses and doctors before larger issues arrive.

“The way I see it going is data being tracked and algorithms being built that identify problems,” O’Neil said. “Some combination of signals will alert us to a patient in trouble before they know it.”

In the future, the Utah doctors may do a more in-depth multi-institutional trial involving hundreds of patients at multiple hospitals and academic centers. That would increase the number of patients studied, because University Hospital performs about 50 cystectomies per year.

Alternately, researchers could expand the population to include patients with high complication rates such as those with colorectal and thoracic surgeries.

“The future is heading toward at home monitoring and integration of that information into the medical record,” Slade said. “We’re trying to get a head start of making sense of all that information.”

By Julia Lyon