



How Wearables Enhance Perioperative Patient Engagement for Patients and Providers

Good surgical outcomes depend on good patient engagement both pre- and post-operation. But faced with competing demands for high-touch patient engagement and their already heavy workload, healthcare providers need to lean on wearable technology to support outcomes.

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Patient engagement is important pre- and post-surgery

In a healthcare industry increasingly embracing value-based payment models, outcomes are of utmost importance. For surgical patients, ensuring a smooth path to recovery and avoiding hospital readmission and emergency department (ED) visits along the way is key to optimal reimbursement—and avoiding costly penalties.

Reducing hospital readmission is often easier said than done. According to 2021 [data](#) from the Kaiser Family Foundation, more than 1,200 hospitals have faced penalties for preventable hospital readmissions every year for the last ten years since the launch of the Hospital Readmissions Reduction Program (HRRP). The average hospital fine in 2018 due to HRRP was \$217,000, [according to](#) the Medicare Payment Advisory Commission (MedPAC).

Achieving optimal surgical outcomes that don't result in hospital readmission goes beyond the operating room. Perioperative care, a holistic approach to surgical care that connects the pre-, intra- and post-operative stages, can help guide patients along a care journey that will meet their lifestyle goals and promote good health outcomes.

Healthcare providers delivering perioperative care need to practice proactive patient engagement before the surgery, delivering patient education about what kind of preparation is required for the procedure. That preparation can be as simple as drinking only clear liquids up until two hours before the operation, or as complex as hitting a step or weight loss goal to ensure fitness for the surgery, [per](#) London's National Institute for Health and Care Excellence.

Patient engagement needs to continue after the surgery. Providers should collect patient-reported outcomes (PROs) to assess a patient's progress after the procedure, with some [data](#) indicating that using PRO data can help flag post-operative problems and course correct to meet patient care goals.

In a study of post-operative PRO collection in New Zealand, researchers were able to identify issues in 40 percent of patients and ultimately yielded better quality of life scores for those from whom they collected PROs.

Coaching patients in rehabilitative activities, like promoting safe physical activity, is also crucial.

Although widely recognized as best practice, this approach to patient engagement can be clunky and onerous for both the patient and provider. Utilizing health IT solutions like remote wearables and smartwatches may help supplement provider-led patient engagement and simplify the pre- and post-operative period for patients.



Challenges to perioperative patient engagement

Health is heavily influenced by what happens outside the four walls of the clinic and the hospital, and despite best efforts, it can be difficult for patients to balance their wellness goals with the competing priorities of everyday life.

Patients, and often their family and caregivers, need more support from their providers in behavior change. Regular nudges and encouragement can be helpful for patients working to achieve a certain behavior change or health metric before surgery.

But from the provider perspective, that high-touch patient engagement is often unattainable. It's not as though providers do not want to support their patients, but many face time constraints that keep them from continuous patient communication and engagement pre-surgery.

Patient engagement isn't that simple after surgery, either. Hospitals and health systems want to track patient outcomes after a procedure, and typically they do this through patient-reported outcomes surveys conducted by a nurse or other member of the care team over the phone or email.

That surveying can be effective in the first few weeks after surgery, but as the patient recovers, responses to those patient outcomes surveys can be harder to get.

Wearable technology can be helpful here. Clinicians can use the tools to passively collect patient-generated health data and guide care trajectories, while patients can use them to support their healthy behavior change and provide some level of continuous patient engagement.



Using wearables to engage the patient pre- and post-op

Wearable technologies, particularly consumer-grade smartwatches, have the potential to support patients in healthy behavior change and care management.

“Consumer wearables such as Fitbit, give patients the ability to track behavior change easily,” according to Karen Romans, LICSW, Strategic Partner Clinical Lead for Fitbit Enterprise.

“And at the same time, the device serves to be that health companion for the patient, where it can nudge them, share powerful insights, and celebrate with them.”

Wearable tools have proven themselves helpful in patient self-management. A [study](#) in the UK found that using wearables as part of “pre-hab,” or the behavior change required before some surgeries, helped improve fitness levels. Patients who had access to a wearable fitness tracker had higher activity levels than those receiving usual care, putting those patients in a better position before their procedures.

These technologies have also had good outcomes post-surgery. One wearable-enabled post-surgical patient engagement [program](#) in India used Fitbits to monitor some vital signs and send nudges to patients to take their medications and follow their physiotherapy recommendations.

Those nudges were effective, with program participants demonstrating good medication adherence and adherence to their exercise and recovery schedules, both of which were important to long-term surgical outcomes.

Organization leaders should be judicious about how they deploy wearable patient engagement programs, though. For one thing, hospitals and health systems need to make sure they're selecting the right wearable technology to fuel the program.

Understanding the patient population's demographics and digital health literacy levels will be important, as both of these factors may determine which wearable vendor is most easily integrated into patients' lifestyles.

On the other hand, it will still be important to be somewhat device-agnostic. Health-care is still largely in a bring-your-own-device world, and even if a hospital's wearable program is partnered with Fitbit, patients might still come in with their own smart-watches from another technology vendor. The best programs will be flexible.

It's also important to provide adequate patient engagement about not only how to use wearable tools, but also why they are important. Even though it's a consumer device, not a medical-grade device, clinicians need to approach the patient education piece like they would for something like a remote blood pressure cuff. Some organizations are scaling that education process with an orientation video and are taking advantage of provider testimony to fuel patient adoption.

This wraparound patient interaction—not just handing over a wearable device pre-surgery—is key to making technology a foundational part of the patient experience.



“Patients are eager to share their data with providers and wearables provide a convenient way to do so for both the patient and provider,” Romans said. “At Fitbit Enterprise, our goal is to combine powerful user-generated data with evidence-based behavior change tools to not only impact health outcomes, but also bring greater satisfaction into the healthcare experience.”

Using wearable data to guide clinician workflows

Using wearables for perioperative patient engagement doesn't just benefit the patient; the provider, too, can gain insight into patient recovery and tailor treatment accordingly.

After all, time constraints serve as a serious barrier for providers engaging patients in pre-operative behavior change and post-operative rehabilitation. Clinicians don't always have time to message a patient to check on progress toward a pre-operative wellbeing goal.

"If the provider has the right data integration, then they can see that engagement seamlessly," Romans said. "It doesn't require provider time to check in and see how patients are progressing."

Access to those patient insights can equip a provider or care team member to engage a patient in that behavior change or adjust a rehabilitation exercise.

[Data](#) published in the Annals of Thoracic Surgery found that use of a wearable technology post-operatively within the hospital helped clinicians with discharge planning.



The study, which used wearables to track mobility for patients receiving thoracic surgery, found that individuals with the highest levels of early mobility also had the shortest hospital length of stay. Clinicians can use this data for discharge planning and resource allocation in addition to traditional predictive models, the researchers said.

But it's not just resource planning; [data](#) has found that using wearables post-operatively can reduce the risk of 30- and 60-day hospital readmission, a key clinical outcome in many value-based care models.

The study authors used Fitbit devices to track step counts for patients undergoing surgery for metastatic peritoneal cancer.

They found that those with higher step counts had a lower risk for hospital readmission at both the 30- and 60-day thresholds.

"Care teams are understandably focused on reduction of both ED visits and readmissions, in addition to overall complication reduction," Romans said. "Fitbit devices provide both a way to help patients stay engaged overall with their care plan, in addition to providing insights into health and wellness behaviors that are largely either invisible or dependent on self-report."

But healthcare is in a data-heavy era, and wearable data runs the risk of overwhelming already burdened providers. Supporting perioperative patient engagement with wearables isn't just about getting providers data, but also about getting them data in a way that is actionable.

That might mean something different based on the surgery or which care team member—nurse, advanced practice provider, doctor, or even medical assistant—is viewing the information.

"How do you share actionable insights from the data in a way that doesn't harm the provider's efficiency?" Romans posited.

"Every institution is in a different state of readiness to do this, but having the insights as close to the point of care as possible is important. Some of our partners do look at Fitbit data in a separate dashboard, but a major aim of ours is ensuring that data becomes part of the medical record."

Building an evidence base to support ROI, reimbursement

Like any healthcare model, remote patient engagement and use of wearables require either reimbursement, alternate funding sources, or cost avoidance or reduction models. To get there, a proven return on investment (ROI) is critical. But because use of wearable tools is still evolving, there is a growing need for providers and technology experts to partner together to continue to grow the evidence base and demonstrate impact at scale.

Some data have indicated that consumer-grade wearable devices can be a cost-effective way to improve outcomes. The Annals of Thoracic Surgery study authors, for example, suggested that using consumer devices like a Fitbit was useful because it was inexpensive and easy to implement.

And when hospitals and health systems can dodge costly penalties for hospital or ED admissions, wearables could be worth the investment.

“Motivations for leveraging wearables within surgical use cases can range from cost avoidance and performance measurement to increased patient satisfaction and retention,” Romans stated. “That’s how some organizations justify the ROI.”

Other organizations are in different phases of measuring ROI at a more granular level. Hospitals and health systems might look at cost savings per patient or overall patient retention and loyalty to the health system.

Beginning pilot programs and doing institutional review board (IRB) research is also contributing to the evidence base. From there, organizations might have more leverage to negotiate payer reimbursement for a perioperative wearable program, although the industry is still working on that.

Ultimately, building this evidence base and using it to prove ROI will require industry collaboration and flexibility. Providers can use the success of their peers to make the case for wearable patient engagement programs in their own organizations.

The next step will be ensuring equitable patient access to wearable technology. A lot of organizations are relying on a bring-your-own-device model, or else providing a wearable tool before or after surgery.

“We’re really focused on how we grow our health impact,” she said. “How do we reach patients who don’t have the financial means or don’t even have the time to prioritize walking into a retail store to buy a device and wouldn’t know where to start with it? That’s why these partnerships are so valuable. So we need to be patient while also challenging ourselves, in a good way, to drive more innovation and data integration, and reimbursement.”

Conclusion

Patient engagement is essential to helping patients hit their pre- and post-operative wellbeing and recovery goals. But in a landscape where patients need support from providers strapped for time, hospitals and health systems will need to turn to technology for support.

Implementing wearables and smartwatches can both help walk the patient through the behavior change and rehabilitation needed before and after their surgery, and provide clinicians with the insights necessary to support patient care.

“It’s all about how we strengthen the patient-provider relationship, not replace it,” Romans advised. “And we hope that by sharing data and engaging patients in between visits, when the patient and the provider do connect, it can be a much more meaningful conversation because they already have context. And that’s what it is, is context about someone’s daily lifestyle and behaviors that may or may not be impacted by a surgery.”

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About Fitbit Enterprise

Fitbit Enterprise

Fitbit Enterprise, now part of Google, works with payers, partners and employers to empower people to live healthier lives. Fitbit’s personalized health and wellbeing experience easily integrates into a wide variety of health interventions and wellbeing programs - including embedded health plan benefits, condition management point solutions, research studies and corporate wellness programs - and helps to extend and enhance their impact by driving higher participation levels, increasing physical activity, and helping to improve weight loss and diabetes outcomes.