

# Helping older adults stay safe and independent

August 18 2022, by Zach Winn

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WalkWise uses a device that attaches to walkers to help family members and health care organizations monitor the movement of patients and loved. Credit: Courtesy of WalkWise

Smartwatches and Fitbits are great for tracking movement, but they

weren't designed for the type of people for whom collecting movement data is arguably most important: older adults who use mobility aids like walkers.

For such adults, a change in activity could signal a life-threatening problem: Falls are a leading cause of injury-based death for [older adults](#) in the U.S. Decreased mobility could also signal problems like heart failure, depression, or cognitive decline.

Now WalkWise is helping older adults stay safe and active with a device that attaches to their walker or rollator. Data captured from the device can go to loved ones, physical therapists, or [health care providers](#) to help keep adults safe while they remain independent and at home.

"By tracking the walker, we get a really good picture of what their days look like, how much they're sitting down, the distances they're moving, and if there were any changes," WalkWise founder and CEO Peter Chamberlain says. "It's also crucially important to understand if there are times when the mobility aid is not being used appropriately and someone is putting themselves at greater risk of falling."

By allowing [family members](#) and others to receive notifications when daily walking goals are met, WalkWise is also encouraging older adults to stay active—an important way to maintain health and avoid the kinds of problems that can lead to hospitalization.

"It actually creates a positive experience around the walker because with all of these devices, people tend to gamify it," Chamberlain says.

WalkWise started as an invention to help Chamberlain's own family before it evolved into a tool for health care organizations and insurers to help people stay out of hospitals and nursing homes. Today WalkWise has contracts in 12 states across the U.S. and has aided the move to home

health care caused by the COVID-19 pandemic and subsequent staffing shortages.

The progress is more than Chamberlain could have imagined when he was tinkering with a prototype for his family in MIT's MakerWorkshop as a graduate student.

## **Problems worth solving**

While pursuing his master's degree in mechanical engineering at MIT, Chamberlain was involved in a lot more than just his coursework. In one of his first weeks on campus in 2014, he met classmates who were starting the MIT Water Innovation Prize (WIP), a startup competition for students commercializing water-related innovations. Chamberlain went on to join the founding team and help raise early money for WIP, which is currently in its eighth year and has awarded more than \$275,000 in prizes to student teams.

Chamberlain was also involved in the 2015 MIT Hyperloop team, which won SpaceX's design competition and built the first hyperloop prototype.

"Those two things really empowered me to think of myself as an entrepreneur," Chamberlain says. "I realized I can start something from scratch with a good group of people and do something nobody's done before."

Chamberlain made use of that mindset after a number of personal incidents showed him the limitations of technology for elderly adults.

First his wife's grandmother, who lives on a farm by herself, had a bad fall when she wasn't using her walker and was stuck on the floor until a gardener found her there. Then, one of Chamberlain's biological grandmothers had a fall while alone in her home and was forced to crawl

to the nightstand to call his aunt living next door. Chamberlain also watched his aunts struggle to keep up with the [daily activities](#) of his other grandmother, who had Alzheimer's disease and was in a senior living facility at the time.

"I thought, 'What's the simplest thing I can design that will be used by my grandparents?'" Chamberlain recalls. "Because too much on the market was either a wearable solution, which was not going to work, and a lot of complicated smart home technology—motion sensors that people think look like cameras, sensors under the bed and the couch seats—it all just seemed too cumbersome. We just wanted to make sure my grandma was okay."

Chamberlain used MIT's Nuts and Bolts of Entrepreneurship course taught over the Independent Activities Period (IAP) to get more familiar with the process of starting a company and received seed funding from MIT's Sandbox Innovation Fund. His first prototypes were designed in MIT's MakerWorkshop in 2016. In 2019, WalkWise participated in the first cohort of the Techstars UnitedHealthcare accelerator program.

Today WalkWise's device attaches to the front wheel of the walker and runs for about a year on AAA batteries so users don't have to remember to charge it. It uses an accelerometer to record movement and detect if the walker has tipped over, transmitting info through Bluetooth low energy (BLE) protocols to a cellular gateway users plug in to the wall.

"It doesn't use Wi-Fi," Chamberlain explains. "We work with a lot of low-income seniors who may not have Wi-Fi networks or don't know their Wi-Fi passwords even if they have it. Ultimately, we try to be the simplest, most discreet system out there for seniors using mobility aids."

WalkWise's analytics dashboard is customizable, so a family could get notifications every time a daily walking goal is met (as Chamberlain gets

for his own grandmother) or an organization can monitor movement on a group of patients and only get notifications when something might be wrong.

"We have [physical therapists](#) who log in two to three times a day to make sure their patients are doing well, then we have users that never log in but get really important notifications through our system that indicates a patient may need help," Chamberlain says.

## Improving home health

With staffing shortages common across the [health care industry](#), WalkWise has allowed nurses to keep more patients under their supervision safe. In one skilled nursing facility, at least two falls were detected in the first two weeks of installation after WalkWise sent messages to staff members that walkers had tipped over. These same notifications have helped community-based care organizations ensure that patients were not left injured on the floor overnight after a fall.

In another instance, a physician noticed a dramatic decline in activity from one of their patients through WalkWise and dispatched a nurse practitioner to the patient's home. The nurse diagnosed the patient with acute congestive [heart failure](#), she was prescribed medication, and the physician was able to monitor her recovery—all without a visit to the hospital.

"Right now, the state of the art for many [health care organizations](#) is driving around to people's houses or calling them and asking questions that are difficult to respond to accurately," Chamberlain says. "We let you view actionable data for many patients at once, flagging anything out of the ordinary, so it helps prioritize your care delivery and be very effective with the time and people you have. I think remote monitoring is a big part of the solution to the persistent staffing shortages faced by

the senior care industry."

Moving forward, WalkWise will be deploying variations of its device for wheelchairs and canes. Chamberlain also says he's excited to build machine-learning models that help identify additional health problems.

"The next evolution is making the system even smarter so we can provide suggestions to the [health care](#) providers and families about appropriate next steps," Chamberlain says.

The largest benefit of WalkWise might come not from the falls it detects but the falls it helps prevent. Chamberlain says most organizations using WalkWise report reductions in fall rates, and two customers that have quantified their results have seen fall rate reductions of around 40 percent.

"It's creating a more positive experience around the mobility aid, but it's also allowing the care providers to have that conversation with someone who isn't using their mobility aid," Chamberlain says. "If someone wasn't taking the medication prescribed to them, that would be an issue. It's the same thing with walkers. We want to prevent these dangerous situations."

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Provided by Massachusetts Institute of Technology

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