

# Improvements in technology help manage asthma

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Inhalers count puffs. Peak-flow meters are read digitally. Nebulizers have shrunk to half their old size.

In the past few years, [asthma patients](#) have seen technology make the disease more manageable. Companies now are unveiling devices that track inhaler usage with GPS, measure wheezing, compile data on smartphone-mobile apps and share interactive online content.

With the [Centers for Disease Control and Prevention](#) pricing asthma at \$56 billion a year in hospitalizations, [doctor visits](#) and loss of productivity, technology plans to target the nation's 25 million asthmatics. Cutting-edge devices and [mobile apps](#) may attract adults, while animation and content may help children and their families better identify triggers, symptoms and behaviors.

"People who have a lot of symptoms of asthma sometimes are not aware of it. It's really important to see if your symptoms are escalating and you have to use your inhaler more," said Dr. Teal Hallstrand, [pulmonologist](#) and professor at the University of Washington. "Things that will help people recognize their symptoms have increased will be helpful."

In 2006, Dr. David Van Sickle attached snap-on [GPS sensors](#) over the top of inhalers for a study at the University of Wisconsin-Madison. GPS records the location and time an inhaler is used and Bluetooth sends data to a [remote server](#).

So if a person strolls under a blossoming tree and uses an inhaler, GPS gives a location and time marker, signaling pollen may have triggered a respiratory reaction - and the person should avoid that route.

"Our goal is to build technology and tools to do a better job of managing asthma but with less effort," said Van Sickle, now CEO of Asthmapolis, a Madison, Wis.-based company that also released a mobile app for iPhones and Android smartphones.

Syncing the [sensor data](#) and sending text-message reminders to take medicine are some of the features. The company recently partnered with Synapse Product Development in Seattle to create more asthma-related products.

Last year, the VA Puget Sound Health Care System in Seattle tested the prescribed Asthmapolis sensor on three patients with chronic obstructive pulmonary disease, or COPD. Because the average age of the patients was 65, doctors thought the easy-to-use sensor forwarding them data on inhaler use would help both parties.

"I think what's exciting for me is that there are other ways to monitor symptoms at home," said Dr. Vincent Fan, physician and study investigator. "Patients used to write in journals at home, and that's a lot for patients to do. This tells us what's happening with the medication in real time."

Commonly confused with asthma, COPD leads to difficulty breathing and branches into chronic bronchitis or emphysema. With COPD, Fan said, patients can be bombarded by symptoms at a given time, but doctors won't know the source of the problem. The VA plans to expand the study to 40 patients.

While Asthmapolis uses GPS, iSonea uses sensory technology to

measure breathing vibrations with sound. The WheezoMeter, also available with a prescription, records the breathing rhythm once pressed against the throat and analyzes it to give a percentage for wheezing. When wheezing, it's easy to miss the point where it escalates into an asthma attack.

In June, iSonea went the mobile app route with AsthmaSense, which alerts the user when the risk of an asthma attack increases and lets them log medicine use.

"If the market isn't ready for you, then the technology will not adapt to the market," CEO Mike Thomas said. "This smartphone tsunami is enabling our algorithms, our technologies, our devices to reach millions of people."

Mobile-health apps may reach 142 million downloads by 2016, U.K.-based Juniper Research forecast last year.

Learn360, an interactive website for grades K-12, wanted to take kids out the hospital and keep them in the classroom.

"We discovered over 85 percent of patients can bring their asthma under control," said Ed Murphy, vice president of business development. "So then we started to target asthma."

Learn360Asthma.com helps kids understand triggers and symptoms and reaches thousands of schools.

Health Nuts Media provided its animated series, "Huff and Puff: An Asthma Tale," to the website. The story of the Big Bad Wolf developing asthma reaches kids at hospitals, doctor offices and now schools.

"If we load them up on statistics and tell them what to do, it doesn't get

through to them," CEO Tim Jones said. "But if we reach them on an emotional level, then they remember that story." The company is now devising a mobile app with animated features like games and action plans for asthmatics.

Children often cannot efficiently manage their asthma, so parents play a significant role. This led to doctors at Seattle Children's shifting the focus from child to parent.

In 2008, the hospital and the Child Health Institute at the University of Washington created an online study. Every month, parents received an email message to complete questions about their child's asthma. Using personalized accounts, the website reminded parents to give kids their controller medicines and made them more aware of their symptoms.

"The virtual technology seemed to be an obvious solution to the problem," said Dr. Dimitri Christakis, pediatrician and study investigator. "There's very little data on health websites, so we wanted to test if they could help."

A \$2.5 million grant from the National Institutes of Health funded the website for 600 families until it ran out last January. About 77 percent of the families found the website so helpful, Christakis said, that some said health-insurance plans should offer convenient technology as a tool to help manage [asthma](#).

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