Medical Xpress

Student creates H2O-Pal to track water intake

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Inspired by dehydration suffered by his mother, Matej Marjanovich, a junior in electrical engineering at Penn State, developed a device and app that help people keep track of how much water they drink each day. Credit: Lauren Ingram

Sophia Anger can't believe the number of reusable water bottles she's gone through in her lifetime—at least 70, she estimates. Anger's not wasteful or absent-minded, she simply has to drink double the daily recommended amount of water to stay healthy.

Since she was a child, Anger, a college student at the University of Wisconsin-River Falls, has suffered from a recessive hereditary disorder called cystinuria, which plagues her with frequent, severe kidney stones. Part of her prescription is to drink more water. So while all those bottles add up, they are necessary to help her stay hydrated and avoid surgery.

"Unluckily for me, my parents both happened to be carriers of the disease, so starting at age 8 when I was diagnosed, I was constantly in and out of the hospital," she said. "My first water bottle was one my mom encouraged me to decorate with stickers and glitter—she would do anything to get me to drink water, but I was a little kid and didn't always take it as seriously as I should have."

After the surgical removal of a golf-ball-sized stone when she was 15, Anger decided to change her life and get healthy.

She found that consistently drinking about 100 ounces of water per day was the only thing that kept the stones at bay. But she still struggled with keeping track of the exact volume of water she was consuming. Trying out new bottles—to find "the one"—became an expensive quest with no real payoff.

That is, up until three months ago, when Anger began using a new product called H2O-Pal created by Matej Marjanovich, a junior studying electrical engineering at Penn State, to help her boost and keep track of her water intake.

Marjanovich, who is from Slovenia, dreamed up H2O-Pal—an app and digital device that attaches to a variety of water bottles and automatically keeps track of how much water a person drinks—after a scary incident involving his mom.

"One day a few summers ago, my mother lost consciousness and was

rushed to the hospital from what turned out to be dehydration," Marjanovich said. "Like many people, she's always on the go and often forgets to drink water, so I tried to find a way to help her to easily track her water intake, but no product existed."

After learning about some of the negative effects of chronic dehydration, including headaches, fatigue and kidney problems, Marjanovich decided to create a solution himself.

The result, H2O-Pal, is an app and wearable device for bottles that measures and tracks how much water a person drinks throughout the day and sends reminders to help people reach their goals.

The hardware (which attaches to the bottom of a bottle) syncs with the accompanying iOS app to calculate a person's daily water need based on his or her activity level, gender, age, height and weight, as well as outside weather conditions like humidity and temperature. The app can also access the iPhone's built-in motion tracker to monitor how active a user is and adjust his or her recommended daily water goal accordingly.

For the past two years, Marjanovich and his brother-turned-business-partner have been developing the product. They released it for sale earlier this summer. Based on initial orders, Marjanovich says he'll have a busy summer fulfilling requests and drumming up even more business from his base in State College.

"Around the time I initially had the idea for H2O-Pal, there were some really applicable technologies coming out that helped make the idea a reality," Marjanovich said. "The combination of apps and hardware, like we're seeing in such products as Fitbit and the Apple Watch, is part of a whole new era of connected objects—it's a rapidly growing market."

Marjanovich used energy-efficient Bluetooth Smart technology to help

the H2O-Pal attachment communicate and send data to the app. He also added a custom energy-efficient weight sensor to gauge the amount of water in a bottle. A person simply has to fill his or her bottle and turn it upside down to sync it with the app.

Marjanovich's hope is that the intuitive user interface and interactive features—reminders, statistics, achievements and a counter for how many total soda calories a person has replaced with water—will help facilitate the process of establishing a healthy, new behavior.

"Having obscure goals isn't attainable, so just knowing how much water you actually need to drink is key to driving real behavior change," he said. "We know that manually calculating water isn't convenient, so H2O-Pal can do it for you by tracking your progress and providing personal data to help push you forward."

Penn State nutrition instructor and registered dietician Shawnee Kelly agrees.

"The research really shows that self monitoring is a big part of making a behavioral change like losing weight or drinking more water," she said. "For a lot of us, we need that reminder—in the form of writing it down or using an app, for example—to see our progress. Because when you get to the point that you're thirsty, you're already a little bit dehydrated."

Despite his initial desire to create a product that could help people, Marjanovich says, at first, he knew very little about starting and operating a business. He enrolled in a cross-college entrepreneurship class and relied on Innoblue, a community of Penn State student entrepreneurs, and the New Leaf Initiative, a collaborative working space in downtown State College, to help him get started.

"If I hadn't come to Penn State, H2O-Pal would not have happened. I

might have had the idea, and I might have taken some initial steps, but I would be way, way behind," he said. "The resources, culture and people at the University are very supportive of student entrepreneurship and have helped me move my idea forward."

Today, Marjanovich has a clear vision for the future of his company and product, which includes an upcoming Android app that will be released later this summer. After graduation, he plans to devote himself full-time to H2O-Pal, which he says makes his mom back in Slovenia very happy. Equipped with her first iPhone, she now uses H2O-Pal every day to stay hydrated.

Though Marjanovich is also drinking more water than ever and feels great (he's constantly testing the app and bottle), his main source of motivation comes from hearing stories about how H2O-Pal is improving the lives of customers like Anger. She reports that since starting to use H2O-Pal three months ago, she hasn't had a kidney stone and has also lost weight.

For her, the benefits have been life changing.

"After so many difficult years, it's nice to finally have something that can keep me motivated and help me track the exact amount of water I'm drinking," she said. "H2O-Pal has really helped me get my health under control—my childhood revolved around my disease, but now my life is all about wellness."

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