

# m-Health and Sheridan: Heart diagnostic system that remotely detects cardiac arrhythmia



If you had problems with your heart, you would want the best technology available to provide an accurate diagnosis based on the most reliable information. Who wouldn't? Based in Burlington, m-Health Solutions understands the urgency and seriousness surrounding heart troubles and recently developed an advanced heart diagnostic system that remotely detects cardiac arrhythmia.

Cardiac arrhythmia is a group of conditions that involve abnormal electrical activity in the heart – it may beat too fast, too slow, or irregularly. Affecting approximately one million Canadians, some cardiac arrhythmia conditions are nothing more than a nuisance. Others can be life-threatening. That's why an accurate diagnosis is so important.

To assess cardiac arrhythmia, doctors often ask patients to wear a recorder – it's a small electronic device worn around the neck or on a belt that records the heart's electrical activity.

When the patient feels an irregular rhythm, they just push a button and a recording of the heart's activity is sent to a cardiac centre through a specially modified BlackBerry. But that only tells doctors part of the story. In addition to heart rhythm data, knowing a patient's physical symptoms and what they were doing at the time also play a crucial role in diagnosis.

And that was m-Health's challenge – developing a tool to collect and send such personal information to its cardiac centre, in addition to the heart reading.

Working with Sheridan College and the Federal Economic Development Agency for Southern Ontario (FedDev Ontario) Applied Research and Commercialization (ARC) Initiative, m-Health made the connection it needed through a specialized BlackBerry application designed to work with an ELR to relay the personal information doctors need. The ARC initiative matches small- to medium-sized companies with Sheridan faculty and students to conduct applied research, development and innovation activities that

help companies become more productive, competitive and create jobs. (Funding of up to \$50,000 is matched by 33% in cash or in-kind contribution by the participating company.)

"We're a small company with a small technology department that just didn't have the skill set to develop this application," said m-Health Solutions CEO Sandy Schwenger. "The students took our vision for this application and made it work. They were fantastic."

Developed by two students, (one of whom has since been hired full-time), patients can choose from easy-to-follow menus and select different physical symptoms (dizziness, light-headedness, pressure), as well as what they were doing in terms of exertion and activity level. This information is perfectly aligned with the heart activity reading, which is then sent to m-Health's cardiac centre for analysis by cardiologists.

It's a giant leap compared to the current non-mobile system with patients having to be driven to a hospital to have their monitor information downloaded when a problem arises. They are also required to keep a hand-written diary describing their symptoms which is difficult to align with heart readings, making this system inaccurate and unreliable.

With rigorous testing underway, Sandy hopes to commercialize m-Health's technology in 2012. Paul Bonenfant, a professor in Sheridan's Faculty of Applied Science and Technology who oversaw the students' work, is also using this project's success to quicken the pulses of his current students.

"Working with m-Health gave me a chance to roll up my sleeves and get up-to-date on the latest technologies and industry trends," said Paul.

"I can incorporate what was learned here into the academic curriculum. I discuss these projects with my first-year students and they can't get enough. I'm always asked how they can participate."

*"Working with Sheridan allows visionaries to move things forward. As a smaller company with limited resources, you often have to pick and choose what you do. Sheridan allowed me not to have to make that choice."*

Sandy Schwenger, CEO, m-Health Solutions

