

# After trauma, new technologies may target who needs help

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Psychologist Matthew Price is developing technology to monitor the mental health status of trauma patients after they leave the hospital. Credit: Andy Duback

When a patient lands in the ER with a life-threatening injury, perhaps requiring surgery and an in-patient stay, the medical team treats the crisis at hand, repairs the damage, stops the bleeding, resets the bones. But with a hospital discharge can come a cascade of new concerns,

emotional as well as physical. When can I work again? Will I ever walk?

Sending trauma victims home without follow-up could come with a long-term cost, according to Matthew Price, assistant professor of psychology and expert on anxiety issues including post-traumatic stress disorder (PTSD). "I think for many individuals who have a life-altering experience, lots of things are chaotic," he says, "and their [mental health](#) declines substantially over a gradual period of time and never quite recovers."

Price also knows that monitoring is tricky with a population already overwhelmed with appointments and medications and, quite likely, pain. So the self-described "tech-nerd" has been researching the efficacy of using technology-based tools to create a user-friendly way to track the wellbeing of trauma patients.

Price and his team began with a simple study to test compliance, sending automated text messages to patients recruited from a Level I Trauma Center to evaluate PTSD symptoms. They texted once a day for 15 days, asking participants to text back, answering basic questions evaluating their mental health. Follow-up surveys were done after one month and again after three months. Results of this feasibility pilot study are forthcoming in the journal *General Hospital Psychiatry*.

At this stage, the goal was to evaluate response rates and to get a sense of how people felt about the interactions, results that encourage Price. "We found that most people were overwhelmingly excited," he says. "In some cases it was the only support people were having around [mental health issues](#) and just knowing someone out there sent a message was comforting."

Feedback from the surveys indicated that many people would have liked more engagement, such as a return text response, a notice reminding

them when they were getting to their last daily text and even an option to continue. The next step, says Price, is to do a larger study with a control group—and ideally to make a treatment referral when indicated. Not everyone will need it, but for those who do, it's a critical period. "We don't want to lose them," Price says.

## **It's complex**

Not content with mere texting, among the many things that drew Price to UVM (this is his first academic year here) was the opportunity to tap into the technological expertise within the College of Engineering and Mathematical Sciences, as well as the university's alliance with Fletcher Allen Healthcare, which gives him access to [trauma patients](#). He's already been in conversation with Kalev Freeman, assistant professor of surgery, about pursuing the next-stage study with Freeman's group of undergraduate researchers.

Across campus, Price is teaming with Christian Skalka, associate professor of [computer science](#), to develop a convenient app for post-trauma patient self-assessment, along with software allowing doctors to better understand and analyze collected data. "Mobile apps and data analysis techniques are areas in which the Computer Science Department has particular strength," says Skalka. "This is an exciting opportunity for myself and my students to explore socially and scientifically important applications of our work—and contribute to the broader UVM research community.

But even as Price is working with Skalka and a team of computer science students to perfect a new app, he's also exploring how another discipline might further his work. Just as UVM complex systems scientists have helped uncover predictors of obesity via crowdsourcing techniques, Price surmises that the crowd might have insight into the kinds of questions to ask patients recovering from severe physical

trauma. Employing this complex systems approach could minimize Price's own research bias as a PTSD expert, he says, and open up the field to finding an even broader array of disability and distress that people might be suffering. "I love the idea of that bottom up place and having it be more organic," he says. "Getting more input from the patients is pretty powerful."

**More information:** Matthew Price, Kenneth J. Ruggiero, Pamela L. Ferguson, Sachin K. Patel, Frank Treiber, Deborah Couillard, Samir M. Fahkry, "A feasibility pilot study on the use of text messages to track PTSD symptoms after a traumatic injury," *General Hospital Psychiatry*, Available online 11 February 2014, ISSN 0163-8343, [dx.doi.org/10.1016/j.genhosppsy.2014.02.004](https://doi.org/10.1016/j.genhosppsy.2014.02.004).

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