



Steps to Innovation: *Moving ideas faster*

- 1. Core curriculum:** 50 teaching modules incorporate expert instructors from the university and community. Sixteen modules are on the art and science of innovation; others include law, finance, ethics.
- 2. Exploring opportunity:** Visits to clinical settings across the hospital included conversations with all people involved to identify surgical processes that could be changed. This is where the specific ideas started to flow – totaling in the hundreds.
- 3. Search for solutions:** The opportunities were pared to the seven best via ongoing voting; the team recently cut that to two.
- 4. Creating the innovation:** The specific steps get mapped out, including prototyping a product.
- 5. Commercialization:** Exploring options with the Office of Technology Transfer.

A NEW ORDER

Experts come together to collaborate, evaluate and create new medical devices

BY PAULA GARDNER

Medical innovations are transforming health care, and a new effort at the University of Michigan won't leave how that happens to chance.

Because, said Dr. James Geiger, the best medical technology needs more than creative genius behind it. There's collaboration among stakeholders, so it's useful. There's evaluation, so it's meaningful. And there's trial and error, so it's perfected.

Those are the goals of the University of Michigan Medical Innovation Center, which Geiger co-founded two years ago and is midway through its first year in the Ann Arbor-based medical system.

"We're creating a new generation of entrepreneurs around medical innovation," Geiger said.

The MIC awarded five fellowships to form the core team that works with Geiger. But the nature of innovation and Geiger's vision expands the participants: Experts from across the University – and not just in the health system – enthusiastically responded to the unique call to help the fellows drive innovation.

Geiger and his advisers devised 50 teaching modules, with assistance from faculty in biomedical and health-related research and education, in addition to entrepreneurial activities across all U-M campuses and the community. Even forming those connections is new at the university, where various departments may never need to interact.

"We try to think of any possible connection and include as many people as we can to create a big web across the university," said Brenda Jones, managing director.

That web includes building databases and using social networking to break institutional barriers to communication.

The fellows are charged with identifying opportunities that can be developed into new devices that improve an aspect of surgery. To do that, they're changing how they think and exploring all aspects of surgery – from watching 12-hour procedures to interviewing everyone associated with how it happens. Then they bring their observations into brainstorming sessions and follow the path to innovation laid out by Geiger and his U-M associates.

In the works: Searching for a better idea: Catheter securement.

The problem: Every patient who comes into the hospital needs to have some kind of catheter, which is secured using extensive amounts of tape or sutures then tape.

Problems: discomfort, lack of hygiene; can be pulled out or cause blistering; every change requires a new procedure.

Innovating: the team is seeking alternative ways that don't use sutures or tape.

The fellows – who include an MBA, an engineer and medical researchers – know their work may change health care delivery. And on a business front, they're learning that by systematizing innovation, the path to commercialization for new products should be shortened.

"We're giving them a sense of what it's like to work in a startup company," Jones said.

The MIC team spends a lot of time in the hospitals, but also has an office at Domino's Farms, northeast of town, where every aspect of interior design fosters communication.

Geiger envisions it becoming a hub for community-wide innovation as the MIC program grows along with its reputation in the university system.

"I want to be the one common place where people come together around health innovation," he said.

The excitement the team feels about the open-ended potential is tangible, Geiger said. That contrasts with how some scientists can feel like everything important has already been discovered.

But, he says, then you realize: People are still doing workarounds. As a surgeon, Geiger says he'll do the same thing over and over, without seeing the potential to ask "why?"

The fellows, he said, "ask those types of questions that allow them to see some of the amazing opportunities that exist."

Endless interviews with clinicians drove the fellows' early months, and many in the

hospital "(reacted) with confusion at first," said fellow Elyse Kemmerer, a neuroscientist. "No one we've met has instantly grasped who we are or what we're doing."

But then the focus on innovation connected.

"Then they can't stop talking about how the health system works," she said. "Everyone is full of ideas of how to make the health system work better."

She continues: "There are all of these untapped ideas sitting dormant."

It's the business element that attracted fellow Alexander Kim to the program. He worked in corporate settings for 11 years after earning an MBA at the University of Chicago.

"I really like the concept of translating the ideas into the marketplace," he said.

Another benefit is bringing an entrepreneurial spirit to the academic setting.

By the end of the fellowship year on June 30, Kim hopes that the team will have found the basis of a new surgical device that ultimately helps many people and attracts investors.

"Then there's a good chance that some of us would stick around and start up a company," he said.

But that also can't be the driver of the effort, the program stresses. The focus is the innovation, not forcing the result.

"It doesn't help to come up with a great invention that no one is ever going to use," Jones said. "... That's a big mistake that we make in academia."

Geiger is building university support for the program. Ultimately, he thinks it could be funded through an endowment, but he expects funding to continue, based on the enthusiasm it's generating and expected results it's moving toward.

Directing the fellows affects how he works, too.

"I'm energized by having them around the institution and watching the other clinicians interact with them," Geiger said.

That connection represents the endless power of the program and what it can mean to U-M and to Michigan, he said.

"There are a lot of latent inventors out there," Geiger said. "And we're going to find them on our campus." ■