

## MedStar helps Beltsville firm commercialize invention

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A hospital physician hatched the idea. His health system found potential partners. Private-sector engineers identified a solution, and now a Beltsville-based technology company is developing a first-of-its-kind device that could make it easier for people with severe lung and neuromuscular disorders to breathe.

InnoVital Systems Inc., which develops technology for the defense and health care sectors, recently signed a licensing agreement with Columbia-based MedStar Health establishing exclusive rights to use the jointly owned intellectual property for the InVent Diaphragm Assist Device. The device, which a surgeon can implant inside a patient — someone suffering from chronic obstructive pulmonary disease, for example — uses artificial muscle to help the diaphragm draw air into the lungs.

Though the first version of the device is still about three years away from hitting the market, and perhaps eight years from reaching its full potential audience, InnoVital's CEO, Gregory Hiemenz, estimated the device could generate up to \$4 billion in the U.S. and \$10 billion worldwide.

"Basically people would be on a mechanical ventilator for their entire lives if they don't get our system," Hiemenz said.

The idea was conceived by Dr. William Krinsky, director of the Center for Interventional Pulmonology at MedStar Franklin Square Medical Center in Baltimore. Krinsky took the concept to MedStar's Institute for Innovation (MI2) — a division created to help the health system's 30,000 employees turn their ideas into inventions — and the Inventor Services department introduced him to engineers at InnoVital, who had used the artificial muscle to design flaps on helicopter blades to control their movement.

### Help from Cleveland Clinic

Connecting the dots between Krinsky, the Institute for Innovation and the engineers at InnoVital was made easier by a partnership between MedStar and Cleveland Clinic Innovations, the commercialization arm of the prestigious Cleveland Clinic, an academic medical center in Ohio.

Through that partnership, called the HealthCare Innovation Alliance, MedStar receives resources and guidance from CCI about how to go about bringing its health care professionals' ideas to market. Even though MI2 existed before the alliance — it was created in 2009 — MedStar realized early on that commercializing medical inventions was too difficult a task to take on alone, said Dr. Mark Smith, the institute's director.

"Commercialization requires a lot of technical infrastructure and expertise," Smith said. "MedStar didn't have any of it. We had the idea ... but a good idea is simply not enough. We knew that the fastest way of getting our ideas out there was to partner with someone who had done it and been very successful at it, and Cleveland Clinic Innovations was just that."

MedStar was the first entity to join the alliance, which aims to help corporations, universities and health care providers work together to produce medical innovations. In the two years since, five others have signed on.

MedStar's deal with InnoVital is precisely the kind of teamwork the HealthCare Innovation Alliance was designed to bring about, and several people said they expect that collaborative approach to become increasingly common when developing and commercializing new products for the health care and medical fields.

The industry is realizing that when more people with different areas of expertise are involved, from brainstorming to bringing an idea to fruition, the final product will likely be more valuable to its target market, Hiemenz said.

"Lots of times, manufacturers will come out with devices that doctors don't really want or see a need for," Hiemenz said. "With this [device], it's really something that is pulled right out of doctors' needs."

### **Evolution in progress**

Smith noted several other factors that are spurring heightened levels of collaboration. For one, he said, information technology tools are making social interaction in professional settings easier. Additionally, "resources are getting tighter, and one of the evolutionary responses to that is collaboration and cooperation," Smith said.

"Collaboration ... allows each group to do what it does best and get the benefit of what some other group does better," he said. "It's one plus one equals three."

Smith said even though MedStar is a community health system at its core, officials also emphasize advancing patient care through research. And Hiemenz said although some major academic medical centers "have been spinning out companies" for some time, physicians at community hospitals are, in some ways, better suited to recognize unmet clinical needs and propose solutions.

"Research institutions spend 50 percent of their time with patients and 50 percent of their time with rats, whereas physicians in community health systems have much stronger patient interactions on a daily basis," Hiemenz said. "So they just 'get it' a little more. The more pain and suffering you see, the more you think, 'How can we fix this?'"

This kind of arrangement is beneficial to all parties — including the patients, several people said. Under the agreement, MedStar will receive royalty payments from sales of the device (which will be shared with Krinsky, the inventor), while InnoVital also receives increased visibility and the benefit of being associated with a major medical system, Hiemenz said.

InnoVital Systems, which has two units — InnoVital Health and InnoVital Defense — is still in its infancy. The company spun off from another Beltsville firm, Techno-Sciences Inc. to pursue health-related product development, but for now, the defense unit supports the health unit financially, Hiemenz said.

The company is currently raising funds from investors to support continued development of the InVent Diaphragm Assist Device and other products, and Hiemenz said he's confident in its growth prospects.

"You make progress when it works out for everybody, including the patients if this [device] is successful," Smith said. "That's how things move forward."