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## MedStar: Mother of invention



*Thomas J. Graham, MD*

### MedStar Health, Cleveland Clinic Innovations prepare to take breathing device to market

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MedStar Health, in collaboration with [Cleveland Clinic](#) Innovations, has signed a deal with InnoVital Systems of Beltsville, Md., to license patent rights for a device that potentially could make it easier for patients with severe lung and neuromuscular diseases to breathe.

The deal is the result of a Healthcare Innovation Alliance between MedStar Health and Cleveland Clinic Innovations – the first of its kind when it was initiated two years ago and now one of six such alliances nationwide.

The Healthcare Innovation Alliance Network is a collaborative relationship where healthcare providers, universities and corporate partners that seek to improve patient care through medical innovations.

The MedStar-Cleveland Clinic Innovations collaboration is one of the first to reach this step toward bringing an invention to market.

“When the Healthcare Innovation Alliance, including MedStar Health was established, the goal was to extend Cleveland Clinic Innovations’ model to assist alliance members in bringing transcendent ideas to the marketplace in order to extend and improve patient life,” Thomas J. Graham, MD, chief innovation officer at Cleveland Clinic and Justice Family Chair in Medical Innovation, said in a news release. “This accomplishment represents the type of activity that we anticipated, and it is gratifying to see these groundbreaking ideas advance toward commercialization.”

The device is called InVent Diaphragm Assist Device. Its inventor is William Krimsky, MD, director of the Center for Interventional Pulmonology at MedStar Franklin Square Medical Center in Baltimore.

Here's how MedStar executives describe the road to invention:

Krimsky knew that a mechanical assist device could be a breakthrough for his patients with seriously impaired lung function. So, he took his idea to MedStar's Inventor Services, part of the MedStar Institute for Innovation that exists to advance the best ideas of MedStar associates. They introduced him to engineers at InnoVital who have numerous inventions for the defense industry. Together, they realized that InnoVital's artificial muscle technology,

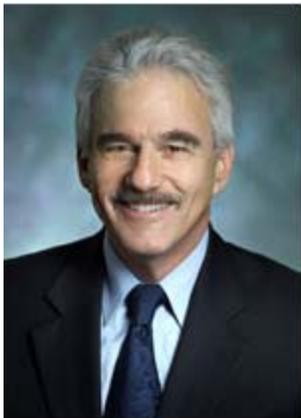


*William Krimsky*

which has been used to control helicopter blades and move a robot's mechanical arms, could be the basis for this new medical device.

The implanted device would mechanically assist the diaphragm, the large muscle that separates the chest from the abdomen and controls breathing. The device, which can be thought of as an implantable ventilator, would supplement natural human physiology by assisting the diaphragm in drawing air into the lungs. It is a pulmonary analogue to ventricular assist devices, which have revolutionized care for patients with heart failure.

Krimsky said the device could greatly improve quality of life for critically ill patients who face impending pulmonary failure. Instead of being placed on a ventilator, they could remain at home and have the ability to go out with family and friends, he said. Candidates for the device include patients with neuromuscular diseases such as amyotrophic lateral sclerosis (Lou Gehrig's disease), muscular dystrophy, interstitial lung disease and chronic obstructive pulmonary disease.



*Mark Smith*

"One of the foundational principles behind the creation of the MedStar Institute for Innovation is that a tremendous amount of creative and intellectual capital exists throughout MedStar Health, Mark S. Smith, MD, director of MedStar Institute for Innovation said in a statement.

"The Healthcare Innovation Alliance that we formed with the Cleveland Clinic enables us to tap into the core of that great energy and unleash it," Smith added. "This important milestone of licensing the rights to the diaphragmatic assist device, an invention which has real potential to substantively improve the lives of innumerable patients, is confirmation that MedStar made the right bet, and that our burgeoning Healthcare Innovation Alliance will advance MedStar Health and the state of patient care."