New project to develop surgical technologies for COVID-19 receives €2.4 million funding

Reviewed by Emily Henderson, B.Sc. Oct 30 2020

Irish medical tech firm Palliare leads EU H2020 research project with UCD using innovative optical technology for new safer surgery solution.

An R&D project to develop new technology to protect surgeons and patients from COVID-19 has received €2.4 million funding from the European Commission.

The rapid 18-month consortium project, PORSAV, is being led by Irish medical technology firm Palliare, in collaboration with University College Dublin (UCD), as well as Polish medical device manufacturer SteriPack and leading French institution for surgical training IRCAD, and project managed by Pintail Ltd.

UCD Digital Surgery, led by Professor Ronan Cahill and joined by Dr Kevin Nolan from UCD School of Mechanical and Materials Engineering, is leading academic partner on the project funded under Horizon 2020. UCD Digital Surgery is based at Mater Misericordiae University Hospital, Dublin, and is part of UCD Centre for Precision Surgery.

The UCD team will examine the nature and extent of unintended gas leaks during surgical and non-surgical procedures such as keyhole surgery, endoscopy and intubation - where the aerosolization of body fluids poses a high risk to healthcare staff.

In general, the problem arises when small amounts of gas used during surgical procedures leak, spreading aerosols that can contain viral particles, endangering surgeons and depositing the virus on operating room surfaces.

The goal of Palliare and the PORSAV consortium is to develop two novel medical devices to manage and filter such leaks at source, and enable the mass production and distribution of the devices to surgical teams and Covid-19 care teams worldwide.

The work applies learning from UCD's airflow-in-surgery research and will

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benefit from the foundations laid in data sharing and digital analytics between UCD and the Mater Hospital through the Digital Surgery Unit.

Palliare's devices includes a vacuum ring called LeakTrap™ which captures stray air leaks that occur around the edge of the keyhole surgery tube or the incision, and pipes potentially infectious air away for correct disposal.

And a similar device called the EndoTrap™ which protects gastroenterologists performing endoscopies from the breath, coughing or sneezing of their patients. The PORSAV project will produce thousands of LeakTraps and EndoTraps to be used in operating rooms around the world.

Leveraging Dr Kevin Nolan's optical expertise, the UCD team will develop portable, innovative imaging technology for the operating room, to accurately characterize and measure the potentially hazardous invisible gas leaks. They will then carry out clinical trials in conjunction with the Mater Hospital to test Palliare's new devices in real time.

Projects partners Professor Bernard Dallemagne and Professor Silvana Perretta will direct a second trial at IRCAD in France and will use the new technology and information to train surgeons around the world on how to reduce the risks of COVID-19 in the operating room.

SteriPack will mass-produce the disposable tubing in Poland, while the vacuum technology is manufactured by Palliare in Galway, Ireland. Pintail Ltd will provide project management and administrative support.

Palliare co-founder, John O'Dea said: "For several months after the pandemic started, surgical procedures stopped due to concerns around risks to hospital staff from aerosolized virus.

We are delighted to have assembled such an outstanding multi-disciplinary team and are grateful to the European Commission for the support to conduct this research and development project aiming to make surgery safer during this and future pandemics. Surgery cannot stop!

"Our experience in Med Tech innovation has always been that the progress of any significant medical device hinges on the collaboration of passionate clinicians and passionate engineers.

Palliare has found such a passion for clinical innovation in surgery and for active publication in Professor Ronan Cahill at UCD and Professors Perretta and Dallemagne at IRCAD in Strasbourg. We are excited about moving forward in researching and trialing new surgical devices with these innovative physicians."

> *"It's fantastic that a real, tangible solution to the fundamental problem we have characterised can now be delivered via the very talented engineering and commercial team John O'Dea leads at Palliare, as well as with the other consortium partners, IRCAD and Steripak."*
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> *Ronan Cahill, Professor and Consultant Colorectal Cancer Surgeon, UCD Research and Innovation*

"The team at UCD have worked intensely in this space, with Dr Kevin Nolan in a central role. Alongside our surgical insights and expertise, this produced some really remarkable work at a time of great societal difficulty.

This project confirms the Mater Hospital as a leading applied clinical research partner for surgical practice advances - both the background work and the next iterative phases could really only be done at this exceptional surgical facility.

The award is another great endorsement of our unique capabilities in cross-sectoral innovation for better surgery."

Beyond Covid, the research will also improve safety and efficiency in anesthesia, in critical care intubation and other invasive procedures - including offering a supplementary solution to the chronic problem of surgical smoke inhalation by surgeons and nurses. In addition, it has applications outside of medicine for managing gas leaks in other contexts.

Source:

UCD Research and Innovation