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Researchers develop device to deliver medicine to heart

June 18, 2018 | News

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An international team of researchers has developed a new minimally invasive medical device called Therepi that can be placed directly on diseased heart tissue to continuously deliver required drugs, proteins or stem cells. The team was led by Harvard University, Massachusetts Institute of Technology (MIT) and National University of Ireland (NUI) Galway, among others.

The new implantable tool can be sutured onto tissue and is designed to allow localised, refillable and targeted therapy for the heart. In an in-vivo pre-clinical study, the device is said to have increased heart function for four weeks after a heart attack, following delivery of cardiac regenerative therapy of stem cells over 28 days.

The device was also able to improve drug efficiency, cut down doses and minimise adverse side effects of therapies that are usually delivered systemically. The researchers intend to use the device as a therapy delivery platform in various ongoing studies and will test it as a research tool to gain better insights on localised, replenishable treatment regimens at different pathological sites.

The researchers are working on further optimising the device's design to support delivery of multiple potential therapies. They additionally plan to study a combination of the Therepi device with soft robotic extra-cardiac assistive devices in order to enable a mechanical and therapeutic approach for heart disease.