

Novel coronary stent materials reduce heart inflammation risk

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Tiny metal tubes called stents - which keep blood flowing through diseased coronary arteries by slowly releasing medication - have helped to save the lives of millions at risk of heart disease. Once inserted into arteries however, there is a small risk of a life-threatening complication called late stent thrombosis (ST). This occurs when the stent fills with blood clot and disrupts the blood supply.

The main aim of the EU-funded PRESTIGE project, which began in December 2010, has therefore been to develop new strategies to prevent late ST, which kills around 25,000 patients in Europe every year. PRESTIGE began by identifying two key objectives: evaluating new stent designs that might better prevent the condition from occurring, and developing novel imaging technologies to enable early diagnosis.

In addition to the obvious health benefits, these innovations have the potential to provide a significant economic boost to Europe's health industries sector. In 2010 more than 1.2 million stent implantation procedures were conducted in Europe. With an ageing population, demand for this type of operation is set to grow.

This project should also help to encourage cost reductions in European public and [private health insurance](#) systems, by reducing the need for emergency surgery and helping patients with heart conditions to lead longer lives.

A key element of the project has been the development and evaluation

of new stent materials. Drug eluting [stents](#) release medication that can help prevent potentially damaging scar tissue formation, which can occur in the initial months after implantation. However, these stents can occasionally cause an inflammatory reaction, which can lead to ST.

PRESTIGE has pioneered the development of new stent materials and coatings by achieving a better understanding of how stent surfaces interact with [blood cells](#). This has enabled the team to focus on developing possible alternative medical coatings with a lower risk for inflammation after implantation. Tests in patients have been successfully carried out, with encouraging results.

A second approach has been to line stents with a thin layer of special antibodies - proteins produced by the body that identify and tackle foreign objects - which attract healthy cells and anchor them to the surface of the stent. Initial lab tests of these antibody-modified stents have demonstrated a significant decrease in the risk of inflammation, as the body is less like to react negatively to an object containing the body's own healthy cells.

Another key aspect of the project has been the development of new imaging techniques. Partners in the PRESTIGE project have been able to use the Imaging Core Laboratory for Angiographic and Optical Coherence Tomography Analysis at the ISAResearch Centre of the Deutsches Herzzentrum in Munich, Germany. The lab provides state-of-the-art equipment and expertise.

More information: www.prestige-fp7.eu/

Provided by CORDIS

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