

Health Technologies

Business Opportunities — Technologies

Optimal design of drug-eluting stents

Background

Drug-eluting stents (DES) have significantly reduced rates of restenosis compared to their bare metal counterparts and are now increasingly the treatment of choice for percutaneous coronary revascularisations. Despite this, they are not suitable for all cases and anti-platelet therapy can still be required for extended periods. There is thus a need to develop enhanced DES and significant research budgets in academe and industry are now dedicated to this challenge.

Technology

A key aspect of successful DES design is optimisation of the drug release profile – release too little drug and there will be no beneficial effect, but release too much and there may be damaging toxic effects. Despite this, there is a paucity of experimental and computational models that can help inform the design of DES. In the CODE-S project we are developing a comprehensive 3D model of drug release from coronary stents and the subsequent uptake into arterial tissue. The project addresses some of the key issues related to drug-eluting stents such as the optimal stent design and choice of compound, the characterisation of the release of the drug from the stent, as well as the complex kinetics of drug transport through the tissue.

Key Benefits

- Reduced product development costs
- Accelerated development and delivery of better devices for disease treatment
- Reduced animal testing
- Enhanced treatment strategies guided by enhanced understanding of device performance

Licensing and Development

We have previously developed a family of analytical and numerical models of drug-release from coronary stents and have now secured significant UK Engineering and Physical Sciences Research Council support to develop this model to enable fully optimised stent design (EP/J007242/1). We welcome contact from organisations interested in developing, licensing or exploiting this technology.

Contact us

If you would like to know more about our work and how we might work together, then you can check our website (www.strath.ac.uk/code) or contact us directly (christopher.mccormick@strath.ac.uk).