News story: Miniature pump for failing heart to be trialled with 50 patients

Calon Cardio-Technology is preparing the UK's first artificial heart pump for a 50-patient clinical trial in 2018.

The pioneering medical technology spin-out from Swansea University, based in the Institute of Life Science 2, has developed a miniaturised ventricular assist device (VAD) to be implanted directly into the left ventricle of a failing heart. This follows support from Finance Wales and Innovate UK.

Dramatic impact on the quality of life

Up to 60,000 new cases of advanced chronic heart failure are diagnosed every year in the UK, and 40% of those diagnosed die within 12 months.

Calon Cardio's MiniVAD assists the weakened heart rather than replacing it. It could have a dramatic impact on quality of life for a significant number of patients.

It can slow or stall heart failure progression and prolong the life of patients waiting for a heart transplant. The MiniVAD is driven by an embedded electric motor and is powered by a battery pack worn by the user.

Smaller, lighter and more cost-effective

Existing VADs on the market are expensive, require extensive surgery for implantation and have been known to cause complications by damaging proteins and cells in the blood.

The MiniVAD addresses these problems with a smaller, lighter pump that requires less invasive surgery and causes less damage to the blood by allowing it to flow more gently. This also means it is more cost effective.

Innovate UK awarded Calon Cardio and Swansea University a Biomedical Catalyst grant of £1.66 million in 2013, to gather the necessary performance and safety data before applying to begin human clinical studies.

Substantial benefits to patients

Stuart McConchie, Chief Executive of Calon Cardio, said it was the most-advanced pump of its kind, adding:

> This is for a very sick group of people and there are millions of them in the world, and hundreds of thousands in the UK.
>
> It is the first British pump to be built for this purpose: to treat blood which is flowing through the pump extremely gently and to

minimise damage to the blood.

Patients don’t have return to hospital for correction of adverse events related to blood handing, so the absolute cost benefit becomes substantial.