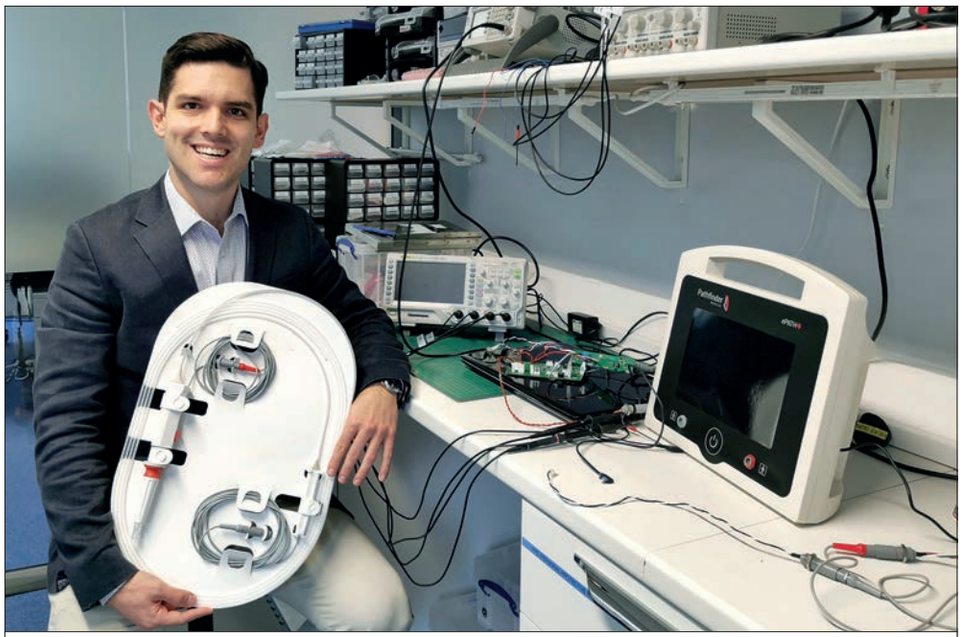
REDUCING SURGERIES FOR DIALYSIS PATIENTS

Pathfinder Medical has invented a minimally invasive catheter guidance technology that will improve clinical outcomes for patients across the globe.



Sorin Popa holding up Pathfinder Medical's regulatory approved ePATH catheter kit

Over 3.5 million people worldwide have kidney conditions that require their blood to be routinely artificially filtered. This haemodialysis treatment means that their circulatory system needs to be regularly connected to a dialysis machine. To enable this, patients currently undergo a surgical procedure to prepare their vessels by forming a fistula, which is a connection between an artery and a vein in their arm. Pathfinder Medical's electronic catheter guidance technology enables clinicians to connect these blood vessels in a much less invasive way.

Sorin Popa, Founder and CEO, studied electrical engineering before doing a master's in bioengineering at Imperial College London. During this master's, he learned of an unmet clinical need for a more reliable method for patients with kidney failure to receive dialysis. The technical challenge was how to safely enable clinicians to connect blood vessels together in a more reliable way and without requiring open surgery. Sorin applied his electrical engineering background and research experience to develop a completely new method based on electric field guidance that enables clinicians to precisely position catheters within blood vessels and connect them to form a fistula. This is a safe way for patients to receive haemodialysis and the same technology can also be used to bypass peripheral arterial blockages.

The ePATH procedure replaces the current surgical option to access the vascular system, which has a more than 50% failure rate and is carried out by creating a dissection near the wrist. The ePATH's electronic guidance system enables a clinician to cross between vessels that are quite far apart without open surgery. The catheter system can be used to connect blood vessels using a small covered tube known as a 'stent graft'. It can also be used to bypass blocked vessels for those with peripheral arterial disease, which affects over 200 million patients globally.

Current vascular access options for dialysis patients often block up, requiring repeated costly repair operations (costing $4.6 billion a year in the US). The ePATH procedure improves outcomes for patients by reducing stress, discomfort and the risk of vascular access problems. It also reduces costs for healthcare providers by improving the reliability of the access site and reducing the likelihood of costly repeat procedures.

In just five years, Pathfinder Medical has gone from a prototype to receiving CE Mark regulatory approval and gaining UK and US patents on the technology. The device has been clinically tested and has further clinical trials with the NHS planned.

Sorin won the Royal Academy of Engineering's ERA Foundation Award, becoming a member of the Enterprise Hub, a network for engineering entrepreneurs from across the UK. He recently won the Sir George Macfarlane Medal, presented to the overall winner of the RAEng Engineers Trust Young Engineer of the Year awards. It is awarded to a young engineer demonstrating excellence in the early stage of their career.