Jim Thirlow of Microvisk with the new hand-held monitor

Here comes the FUTURE

Margaret Henry meets Jim Thurlow, chief operating officer of Microvisk, a firm which is preparing to launch a ground-breaking medical device

A device that started out as the legs of a nano-robot could soon be used by millions of patients around the world to calculate the correct dose for their Warfarin medication if the ambitious plans of chief operating officer, Jim Thurlow, and his team at Microvisk Technologies are realised.

Founded in 2004, Microvisk, an innovative medical device company with Oxfordshire roots, has developed a unique handheld device which monitors the blood clotting status of patients.

Last month, the company moved its sensor research facility to Oxford as it prepares for launch of its product in early 2015.

The Microvisk device incorporates a disposable strip that uses embedded sensors with tiny multi-layered paddles on the strip's surface to measure the clotting speed of blood from a drop taken by a finger prick.

A memory chip ensures the device is calibrated to provide the highest levels of accuracy and the results are displayed on a hand held reader.

Mr Thurlow said: "Our device uses the world's first medical diagnostic strip,
or 'SmartStrip', to be based on a Micro-Electro-Mechanical System (MEMS) with an on-board memory chip and was originally created as a movement system for nano-robots at Cardiff University.

"The technology was then developed at Science &Technologies Facilities Council's Rutherford Appleton Laboratory (RAL) for use in medical applications including blood coagulation testing.

"We built a manufacturing facility in North Wales but have always retained our strong links with RAL and our investors include STFC Innovations.

"Now it is great to have our own research facility in Oxford," Mr Thurlow added.

Seven million people in the western world take Warfarin as an anti-clotting treatment and the US Food and Drug Administration (FDA) estimates more than one million new patients start taking the drug every year.

Currently, patients must attend their doctor's surgery or hospital clinic for regular blood tests to ensure they receive the correct dose.

Warfarin is affected by food and exercise and if the dose is too low there is a risk of blood clots forming which can result in a stroke or heart attack, while too high a dose can lead to a life-threatening bleed.

Mr Thurlow said: "Our device is a first in the blood clotting diagnostic world as a system that is robust and simple to use at home.

"Previously, these devices were designed for use by doctors and nurses but we designed ours with the aim that patients should be able to use it at home to produce an immediate result, which will do away with the inconvenience of attending blood testing appointments and waiting days for results.

"It also requires less blood than other systems, which means less pain for the user."

The other devices use optical analysis or measure chemical reactions, requiring a patient to provide more blood and can produce a less accurate and less robust result.

Microvisk expects to complete clinical trials of its device during March and will then be able to apply for regulatory approvals in Europe and the US.

As well as refining the device, the Microvisk team is gearing up for manufacturing and another advantage of using MEMS technology is that high volumes can be manufactured at low cost.

The plan is that the device will first be launched for professional use in Europe and subsequently extended to home use.

Mr Thurlow explained: "The device needs to be in use by a doctor or nurse in a professional environment initially so that patients gain faith in it.

"Then, just as happened with blood glucose testing and blood pressure monitoring, we expect patients to want the device for home use. As well as the significant convenience factor, it is estimated home testing could save the NHS millions of pounds every year."

The company continues to enjoy strong support from its investors including Rainbow Seed Fund and Oxford Technology Enterprise Capital Fund.

Dr Matthew Frohn, a director at Longwall Venture Partners, which manages the Enterprise Capital Fund, said: "Millions of people have to take Warfarin for life and it's crucial that they manage their medication dosage.

"Microvisk has created a device which makes it easy for them to do just that at home and it will revolutionise the blood testing market. We are delighted the team is making excellent progress as they gear up for launch next year."

Microvisk has grown to 30 staff and Mr Thurlow says it is exciting to work in a multi-disciplinary team of scientists from biochemistry and electronic manufacturing backgrounds.

"What unites us all is that we are committed to bringing our novel device to market so that patients can benefit from more convenient and accurate testing," he said.

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