Dstl research behind trial of new blood test to predict sepsis

Clinicians at Portsmouth's Queen Alexandra Hospital are leading medical trials of a blood test that could help to save thousands of UK lives a year by predicting sepsis days before patients show any symptoms.

The test, originally researched over 10 years at the Defence Science and Technology Laboratory (Dstl), is now being developed by government spin-out company Presymptom Health which believes it could save billions of pounds globally and improve clinical outcomes for sepsis patients.

In August 2021, Presymptom Health received additional funding from Ploughshare Innovations and the UK Innovation and Science Seed Fund, which will enable the company to complete clinical trials at 2 more hospitals in the UK and advance the product towards registration and launch.

Sepsis is the immune system's overreaction to an infection or injury and is associated with life-threatening organ dysfunction. Worldwide, an estimated 49 million people a year contract sepsis, while in the UK almost 2 million patients admitted to hospital each year are thought to be at risk of developing the condition.

Presymptom Health believes the technology can predict whether a patient will develop sepsis around 3 days before symptoms appear, enabling clinicians to treat them much sooner and manage them more effectively.

Professor Dame Angela McLean, Chief Scientific Adviser for MOD, said:

> The announcement today is a great step forward in finding potential new ways to tackle sepsis, which causes up to 48,000 deaths and significant life-changing effects in nearly 80,000 people in the UK every year. The seminal work led by Dstl, now taken forward by Presymptom Health, has the potential to provide the technology capable of detecting sepsis early, enabling more rapid treatment, and saving lives.

The trials are being led by Dr Paul Schmidt and his team at Portsmouth Hospitals University NHS Trust, with 2 other sites anticipated to go live during the summer. Up to 600 patients admitted to hospital with respiratory tract infections will be given the option to participate in the trial.

The promising technology has received £200,000 in funding from Ploughshare Innovations, which takes research created by world-leading government laboratories, such as Dstl, and commercialises it to deliver societal impact.

Iain Miller, CEO at Presymptom Health, said:

> This test may represent a significant step in the prediction of sepsis.
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> A substantial investment from Ploughshare Innovations has enabled us to rapidly develop this test to get to the clinical trial stage. We are very grateful for their backing, and for the support of the clinicians at Portsmouth Hospitals University NHS Trust. We are confident that this trial will confirm our test's ability to provide vital and life-saving results when they are most needed.

Hetti Barkworth-Nanton, CEO at Ploughshare Innovations, said:

> This is a tremendously exciting technology that could save lives and provide a valuable tool for use in future disease control. It is unusual for Ploughshare to make R&D investments in its spin-out companies, but the potential impact of Presymptom Health's work is so great that we saw a huge value in accelerating its development so that these trials could happen.
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> I am immensely proud of the achievements Ploughshare makes in getting government innovations such as this to market, and of how our work benefits society as a whole.

Dr Roman Lukaszewski, the lead Dstl scientist behind the innovation, said:

> It is incredible to see this test, which we had originally begun to develop to help Service personnel survive injury and infection on the front line, is now being used for the wider UK population, including those fighting COVID-19.

Anoop Chauhan, executive director of research at Portsmouth Hospitals University NHS Trust, said:

> I am delighted that PHU are leading on this exciting, innovative and vital research using state of the art pioneering technology.
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> We are incredibly grateful for the support and involvement of our patients in research to help with the fight against COVID and sepsis. This research will be vital in identifying sepsis quickly and early in order to help save many more lives.

The initial trials will last approximately 12 months and will include samples taken from patients alongside samples collected in a Dstl biobank. The data collected will be independently assessed and used to refine and validate the test, which may be available for broader NHS use within 2 years. If successful, this test could also identify sepsis arising from other infections before symptoms appear, which could potentially include future

waves of COVID-19 and other pandemics.