News Release

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Eye imaging software could aid disease diagnosis, study suggests

Imaging technology that scans blood vessels in the eye could be used to help diagnose a wide range of diseases, a study suggests.

Software designed to assess the health of vessels in the retina could help scientists spot the early signs of heart disease, diabetes and dementia, researchers say.

Changes to the retina are often a sign of sickness elsewhere in the body. The software – known as VAMPIRE – allows scientists to analyse the shape of blood vessels in thousands of images at a time and can identify known indicators of disease, the team says.

VAMPIRE – which stands for Vessel Assessment and Measurement Platform for Images of the REtina – was developed jointly by scientists at the Universities of Edinburgh and Dundee.

Researchers claim the software could save significant amounts of time by largely automating the process of looking for retinal abnormalities in large data sets.

The team was the first to use a software tool to analyse images from more than 2,500 people who had retinal scans collected for UK Biobank, a long-term national health study. VAMPIRE proved effective at analysing images, though researchers say a larger trial is required to determine if it is the best way of utilising UK Biobank's 80,000-strong retinal dataset.

UK Biobank was established by the Wellcome Trust, Medical Research Council, Department of Health, Scottish Government and the Northwest Regional Development Agency.

The study, published in the journal *PLOS ONE*, was supported by the Leverhulme Trust and the Edinburgh and Lothians Health Foundation Eye Research Fund.

Dr Tom MacGillivray, of the University of Edinburgh's Clinical Research Imaging Centre, who led the study, said: "This is the first step towards analysing all the retinal images held in the UK Biobank and to contribute valuable information about the health and condition of small blood vessels. Our work will hopefully accelerate research into the causes and treatments of chronic illnesses that affect millions of people in the UK."

Professor Emanuele Trucco, of the University of Dundee's School of Computing, said: "The ultimate aim is to develop a practical software tool supporting efficient and accurate

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measurement and analysis of large collections of retinal images. The potential for research and clinical impact is huge."

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