

By continuing to use this site you consent to the use of cookies on your device as described in our [cookie policy](#) unless you have disabled them. You can change your [cookie settings](#) at any time but parts of our site will not function correctly without them.

[Sign In](#)[Subscribe](#)

Special Report: **FT Health: Eyecare**

Eye sheds light on our broader state of health

Regular screening has an important part to play as a tool in preventive care



© Getty

OCTOBER 12, 2016 by: **Sarah Murray**

Eyes may well be windows to the soul, though it turns out that they tell us plenty about our bodies, too.

The eye affords early indications of the onset of conditions such as diabetes and cardiovascular disease. Some experts argue for more regular eye examinations as a tool in preventive healthcare.

The advantage of the eye in diagnosing disease is, simply, that it is open to view. Assessing blood vessels or nerve fibres elsewhere in the body would require an invasive procedure.

“There are very few places where you can directly observe blood vessels because we’re covered in a skin,” says Christopher Owen, professor of epidemiology at the [Population Health Research Institute \(http://www.sgul.ac.uk/research/population-health\)](http://www.sgul.ac.uk/research/population-health) at St George’s, University of London. “You can do it in the fingernails but it’s

not as easy as taking a picture of the back of the eye.”

The technology is rapidly improving. For example, digital retinal cameras developed by Japanese company Canon, that eliminate the need for bright lights and dilating eye drops, have increased in sensor resolution from 3 megapixels in 2003 to 20 megapixels today. “That allows the doctor to zoom up on that image,” says Tom Russo, regional sales manager in Canon’s US healthcare division.

Canon has developed software filters that clean up the retinal images of cataract sufferers and elderly people whose eye lenses commonly become yellower as they age. “The technology has evolved for decades and it’s only going to get better,” says Mr Russo.

Being able to obtain clear and detailed images of blood vessels or nerve fibres creates the potential for faster, more convenient non-invasive health tests that yield insights into the development of a wide range of diseases.

Prof Owen and his University of London team are looking at how the shape and size of retinal vessels may relate to heart disease and diabetes. Using software that the institute developed, the team is analysing thousands of images from participants in [UK Biobank \(https://www.ukbiobank.ac.uk/\)](https://www.ukbiobank.ac.uk/), a research charity that has recruited 500,000 volunteers for a project that aims to improve the prevention, diagnosis and treatment of serious illnesses.

A high street optometrist could get an image of your eye sent off for analysis

With UK Biobank data, the university is exploring whether changes observed in retinal vessels are occurring before the onset of disease, allowing early detection and chances for prevention. “Those retinal eye vessels are part of the vessels of the body,”

Prof Owen notes. “If we can look at those directly, it might give us clues as to what’s happening to vessels elsewhere in the body — that’s why it’s considered a potential marker of systemic disease.”

Eye scans might be used to detect early stages of Alzheimer’s. Researchers at Moorfields Eye Hospital and the UCL Institute of Ophthalmology in London have found a link between thinning of the retinal nerve and poor cognitive ability, a sign of early stages of this form of dementia.

Beyond the retina, other eye abnormalities can indicate the start of life-threatening illness, says Kausik Ray, professor of public health at Imperial College School of Public Health in London. Drooping eyelids could indicate a neuromuscular disorder in someone whose only symptom is fatigue. “It might be a subtle sign, but the only

thing you see,” he says.

An eyeball turned in slightly towards the nose might, he adds, indicate a brain tumour, which stretches the nerve connecting to it. Double vision possibly indicates a brain tumour, which causes increased intracranial pressure.

Optometrists could play a key role. “You could go to a high street optometrist, get an image of your eye sent off for analysis or preferably analysed there and then,” says Prof Owen. In combination with data such as body mass index, blood pressure and age “we could better discern those likely to develop disease.”

The barrier to going to an optometrist for broader advice is not cost or absence of technology but lack of knowledge of what is available. “Most people go to these places because their glasses are broken or they’re having difficulty seeing,” Prof Owen adds. “We need to raise awareness among the general public.”

Eye tests as a routine preventive screen might not just save lives, but also huge sums of money for health services by catching diseases before they have progressed. “That’s what we should be thinking about,” says Prof Ray. “Otherwise it’s a missed opportunity.”

Print a single copy of this article for personal use. Contact us if you wish to print more to distribute to others. © The Financial Times Ltd.

Why scientists give science a bad name



BY **BP**

Building appreciation for the role science skills have in multiple jobs could boost the take up of STEM subjects. See more...