

Safe, simple eye test may help save lives by preventing stroke

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A simple eye test may someday offer an effective way to identify patients who are at high risk for stroke, say researchers at the University of Zurich. They showed that a test called ocular pulse amplitude (OPA) can reliably detect carotid artery stenosis (CAS), a condition that clogs or blocks the arteries that feed the front part of the brain. It's a known risk factor for stroke. The OPA test could be performed by ophthalmologists – physicians who treat eye diseases – during routine exams. The study, which is published in the June issue of *Ophthalmology*, the journal of the American Academy of Ophthalmology, confirmed that patients who had the lowest OPA scores also had the most seriously blocked arteries.

Each year, approximately 795,000 Americans suffer a new or recurrent [stroke](#), and more than 137,000 of these people die as a result. People with severe CAS are much more likely to suffer stroke. Physicians would like to catch and treat CAS before that can happen, but because CAS has no symptoms and an efficient test is not currently available, the disease often goes undetected.

The Swiss research team used a device called the dynamic contour tonometer to check the OPA of 67 patients who were assumed to have CAS. The OPA score is calculated by finding the difference between the two pressure levels that occur inside the eye during the two phases of the heartbeat – the systolic and diastolic. The tonometer measures the two pressure levels, then instantly computes the patient's OPA score. When blood flow to the eye is blocked by CAS, there is not much difference

between the two pressure levels, so the OPA score is low. The study confirmed that patients with the lowest OPA scores also had the most seriously blocked arteries. The researchers used ultrasound exams to corroborate that each study participant had CAS and to detail the severity of his or her blockage.

"Our results show that ocular pulse [amplitude](#) is a reliable, safe screening test for carotid artery [stenosis](#)," said lead researcher Pascal Bruno Knecht, M.D. "We recommend further study to confirm the value of using OPA to detect and assess the severity of CAS and to define its use in stroke prevention."

A research review performed for the U.S Preventive Services Task Force indicated that if an efficient screening test for CAS were available, the incidence of stroke and fatalities due to stroke could be substantially reduced. The review stated that the test should be able to detect clinically significant CAS, defined as 60 percent to 99 percent blockage of the carotid [arteries](#). Some high-tech tests, such as magnetic resonance angiography and color duplex ultrasound, already meet this standard, but they are expensive and not widely available. Their primary use is in diagnosing patients who already have symptoms of stroke.

It could be efficient to perform the OPA test during a standard eye exam, if the ophthalmologist is already using the dynamic contour tonometer to screen for glaucoma. This type of tonometer is not widely used in the United States, although it is in Europe.

The researchers say that other than CAS, very few diseases could cause low OPA scores, and that an ophthalmologist could easily rule out these other diseases during an eye exam.

Provided by American Academy of Ophthalmology

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