# The ACE study: *A plain language summary of the results*

## Why we did this study

Inside the eye, fluid drains out through a channel called the **drainage angle**. In some people this angle is narrow or blocked ("angle closure"). This can raise the pressure in the eye and lead to a type of glaucoma that can cause permanent sight loss. Caught early, it can be treated with laser or cataract surgery.

The test used to diagnose angle closure is **gonioscopy**. A specialist eye doctor places an anaesthetic eye drop and a special lens on the front of the eye to look directly at the angle. It works well, but it needs an expert, takes time and involves touching the eye.

Two quicker tests don't touch the eye at all:

- **Light beam test (LACD)** – a thin beam of light from a microscope is shone at the edge of the eye to judge how deep the front of the eye is.
- **Eye scan (AS-OCT)** – a camera takes a detailed cross-section picture of the front of the eye.

These tests are already widely used, but we didn't know how accurate they are. The ACE study set out to find out.

## What we did

Between April 2023 and August 2024, **641 adults** referred by their optometrist with a possible narrow angle took part at **20 NHS hospitals** across the UK. On the same day, each person had all three tests: the light beam test, the eye scan and gonioscopy. The people reading each test did not know the results of the others. We then compared the two quick tests with gonioscopy.

Full results were available for **600 people (1,184 eyes)**. Two in three were women, the average age was 61, and most were of White ethnicity. Gonioscopy found angle closure in just over half of the eyes (55%).

## What we found

- **When the tests were set strictly, they missed many people.** The light beam test picked up only about 1 in 4 eyes with angle closure; the eye scan picked up about 1 in 2.
- **When the tests were set to be more cautious, they missed fewer people, but raised many false alarms.** The light beam test could pick up over 9 in 10 eyes with angle closure, but then wrongly flagged about 7 in 10 eyes with healthy, open angles. The eye scan could pick up about 85 in 100, but wrongly flagged around 6 in 10 healthy eyes.
- Results were similar in men and women and across ethnic groups.
- No one came to any harm from taking part.

## What this means

Neither quick test is accurate enough to **replace** gonioscopy by a specialist. However, both could be useful as a **first step**: used in a cautious way, they could help decide who needs to be seen by a specialist for a full gonioscopy check, for example in community or screening settings.

Gonioscopy itself is not perfect, and the eye scan may sometimes show things gonioscopy misses. We plan to follow up the people in this study to see which test best predicts who goes on to develop problems. We will also report separately on the value for money of the different tests.

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