TEST

Slit-lamp exam

A slit-lamp exam uses a bright microscope to inspect the eye in detail.

WHAT IT MEASURES
Magnified appearance of the eye's surface and internal structures

SAMPLE
None; direct eye examination

FASTING NEEDED?
No

HOW LONG IT TAKES
About 5 to 15 minutes; longer with pupil dilation

RESULTS IN
Immediate; added test timing varies by laboratory or imaging service

USED FOR
Screening, diagnosis, and monitoring of eye conditions

MAIN LIMITATION
Findings depend on visibility, pupil dilation, and examiner technique

Overview

A slit-lamp exam is a close examination of your eye using a microscope and a narrow beam of bright light. The instrument combines high magnification with adjustable lighting. This lets an eye care professional inspect structures that are difficult to see with an ordinary light.

The exam can show the eyelids, eyelashes, white of the eye, clear front window of the eye called the cornea, iris, lens, and the fluid-filled space behind the cornea. With pupil-dilating drops and an additional lens, it can also help examine the vitreous gel and retina at the back of the eye.

A slit-lamp exam does not produce one number or a simple positive or negative result. Findings are based on what is visible, where it is located, and how it fits with your symptoms and other tests.

Eye pressure measurement, photography, and scans may be performed during the same appointment. These are related tests rather than part of every slit-lamp exam.

Why the test is ordered

A slit-lamp exam may be included in a routine eye examination. It may also be used to investigate symptoms or monitor a known eye condition.

Reasons for having the exam include:

Fluorescein dye may be added to the eye. Under blue light, this dye highlights damage to the corneal surface and shows how tears spread across the eye. It can also help identify a leaking wound after an injury or surgery.

- Eye redness, pain, itching, discharge, or light sensitivity
- Blurred vision or another change in eyesight
- An eye injury or possible foreign object
- Contact lens problems
- Suspected infection or inflammation
- Monitoring cataracts, glaucoma, corneal disease, or previous eye surgery
- Looking for medicine-related changes in the eyes
- Checking whether an eye condition is improving after treatment

Who should have the test

You may be offered a slit-lamp exam during a comprehensive eye examination or when you have eye symptoms. How often you need an eye examination depends on your age, vision, medical history, family history, medicines, and previous findings.

People with diabetes or other conditions that can affect the retina may need a dilated retinal examination. A slit-lamp exam without dilation does not replace that examination.

Some symptoms need urgent assessment rather than a routine appointment. Seek urgent eye care for sudden vision loss, new flashes or many floaters, a curtain-like shadow across your sight, severe eye pain, or a painful red eye with nausea. A chemical splash, penetrating injury, or object embedded in the eye needs emergency care. Flush a chemical exposure immediately with clean water and do not wait for a scheduled slit-lamp exam.

How to prepare

You do not need to fast. You can usually eat, drink coffee, take your regular medicines, and

exercise as normal.

Bring your glasses and a contact lens case. You may be asked to remove contact lenses so the cornea and tear film can be examined accurately. Avoid putting lenses back in until advised, especially if fluorescein dye or numbing drops were used.

Tell the eye care professional about your medicines, allergies, pregnancy status, previous eye surgery, glaucoma, and reactions to eye drops. Do not stop a prescribed medicine unless the clinician who manages it tells you to.

If your pupils may be dilated, bring sunglasses. Dilation can blur near vision and increase sensitivity to light for several hours. Arrange help with travel if you are unsure whether you will be able to drive safely afterward.

What happens during the test

You sit facing the slit lamp and rest your chin and forehead against supports. Keeping your head still helps the examiner focus on small structures.

You will be asked to look straight ahead or in different directions. A thin beam of light moves across the eye while the examiner changes its width, angle, brightness, and magnification. The light can feel bright, but the examination should not be painful.

The examiner may gently move an eyelid to see underneath it. If a surface injury is suspected, fluorescein dye may be placed in your tears using a drop or a moistened paper strip.

Drops may be used to widen your pupils. These usually take time to work, so dilation can extend the appointment. A handheld lens may then be placed close to your eye to view deeper structures.

If eye pressure is checked with a device that briefly touches the cornea, numbing drops are normally used first. This pressure test is called applanation tonometry and is not required for every slit-lamp examination.

Understanding your results

The examiner can usually discuss the visible findings immediately. Results may describe the location, size, shape, colour, depth, or severity of a change.

A report may mention:

A finding does not always identify its cause. Similar appearances can result from injury, infection, inflammation, ageing, surgery, medicines, or other conditions. Symptoms, medical

history, vision testing, eye pressure, scans, photographs, or laboratory tests may be needed for interpretation.

There is no universal laboratory reference range for this visual examination. In general, test ranges and interpretation can vary by laboratory, age, sex, pregnancy status, medicines, and clinical context. For a slit-lamp exam, age, medicines, prior surgery, symptoms, and the examination method are usually most relevant.

- Eyelid or eyelash changes
- Redness or swelling of the conjunctiva, the thin surface covering
- Corneal scratches, ulcers, scars, swelling, or deposits
- Inflammatory cells in the fluid behind the cornea
- Changes in the iris or lens, including cataract
- Abnormalities in the vitreous or retina when these are visible

What affects the results

Several factors can change what is visible without anything being wrong with the equipment.

Contact lenses can alter the tear film and temporarily affect the corneal surface. Recent lens wear may also cause pressure marks, swelling, or staining. Removing the lenses immediately before the exam does not always reverse these changes at once.

Eye ointment, thick drops, makeup, mucus, and a dry or unstable tear film can blur the view or create surface debris. Fluorescein dye helps reveal some problems but can temporarily stain tears and may interfere with contact lenses.

Small pupils limit the view of the lens, vitreous, and retina. Pupil-dilating medicines improve this view, although cataracts, corneal scars, bleeding, or other cloudy structures can still block it.

Blinking, eye movement, difficulty keeping the head still, or discomfort from bright light can make subtle findings harder to assess. Young children and people unable to use the chin rest may need a handheld instrument or another examination method.

Age, previous eye surgery, injury, and medicines can change the normal appearance of the eye. Some medicines affect pupil size, tear production, or how the pupil responds to dilating drops. Pregnancy does not usually prevent the examination itself, but it may influence decisions about optional eye drops.

Timing matters. An intermittent problem may not be visible when the eye is examined, and a

surface injury can change quickly as it heals.

Accuracy and limitations

A slit lamp provides a detailed real-time view, but there is no single figure for how often it is right or wrong. Accuracy differs by the condition being sought, the structures examined, whether the pupil is dilated, image quality, and the examiner's experience.

The test can miss disease outside the visible area. Without dilation or special lenses, it gives a limited view of the retina. Clouding from a dense cataract, corneal scar, or bleeding can hide deeper structures. Very early, small, peripheral, or intermittent changes may also be missed.

Normal variations, reflections, tear-film debris, and changes from previous surgery can sometimes appear abnormal. Repeating the examination, comparing older records, or using another test may show that a suspected finding is not disease.

Optical coherence tomography may be better for detailed cross-sectional images of the retina or optic nerve. Visual-field testing checks side vision. Corneal topography measures corneal shape, while ultrasound can examine deeper structures when clouding blocks the view. These tests add different information rather than making the slit-lamp exam unnecessary.

Risks and complications

The slit-lamp examination itself is non-invasive and has very little risk. Bright light may cause brief discomfort or an afterimage.

Eye drops can sting temporarily. Dilating drops commonly cause blurred near vision and light sensitivity for several hours. Allergic or body-wide reactions are uncommon.

In people with a susceptible drainage angle, dilation can rarely trigger a sudden rise in eye pressure. Seek urgent care after dilation if you develop severe eye pain, marked redness, worsening blurred vision, rainbow-like halos, headache, nausea, or vomiting.

Tests that touch the cornea can occasionally cause a small scratch or irritation. Properly cleaned equipment and single-use materials reduce infection risk.

What happens next

If the examination is routine and no concerning change is seen, you may only need your usual eye-care follow-up. A normal exam does not rule out every cause of vision symptoms, so

persistent or changing symptoms may still need review.

If an abnormality is found, the next step depends on its appearance and your symptoms. You may need photographs, an eye scan, pressure measurement, a dilated retinal examination, laboratory testing, treatment, or referral to an ophthalmologist.

Ask when you should expect any added test results and what symptoms should prompt earlier care. Do not wait for routine follow-up if you develop sudden vision loss, severe pain, a major injury, or rapidly worsening symptoms.

Common questions

Can I drink coffee before a slit-lamp exam?

Yes. Coffee does not usually affect the view of the eye, and fasting is not required. If other tests are planned, follow the instructions for those tests.

Does the time of day matter?

Usually not. However, dryness, contact lens wear, and intermittent symptoms may change during the day. Tell the examiner when your symptoms are usually worst.

Can I exercise beforehand?

Yes. Ordinary exercise does not usually affect the examination. Protect the eye and seek advice first if you recently had eye surgery or an injury.

Can I wear contact lenses to the appointment?

You can wear them unless instructed otherwise, but you will probably need to remove them. Bring your lens case and glasses. Recent wear may affect the corneal surface.

Can I drive afterward?

You may be able to drive after an examination without dilation. If your pupils are dilated, blurred near vision and glare can make driving unsafe until the effects wear off.

Will the slit-lamp exam hurt?

It should not hurt. The light may feel bright, and drops may sting briefly. Tell the examiner if you have pain or cannot keep the eye open comfortably.

Sources

- MedlinePlus Medical Encyclopedia: Slit-lamp exam , US National Library of Medicine

- Merck Manual Professional Edition: Slit-Lamp Examination , Merck & Co.
- National Eye Institute: Dilated Eye Exam , US National Institutes of Health
- American Academy of Ophthalmology: What Is a Slit Lamp? , American Academy of Ophthalmology
- DailyMed: Tropicamide ophthalmic solution prescribing information , US National Library of Medicine