

How to use an ophthalmoscope

When we asked for tips on practical medical skills, many readers sent us guidance on using an ophthalmoscope. Here is a selection and amalgamation of five readers' collected wisdom—from senior house officer to consultant ophthalmologist

The ophthalmoscope seems a simple tool. But in reality, "fundi NAD" written in the notes often means "not actually discerned." The ophthalmoscope is not difficult to use but it requires some practice. Try to get in the habit of using it in every neurological examination—you'll soon get the hang of it.

Prepare your equipment

Does it work?

Check that the ophthalmoscope actually works—the batteries may be flat or it may not have been charged. Some ophthalmoscopes have a small cover over their aperture which, if closed, may lead you to think that it is not working.

How does it work?

There are different types of ophthalmoscope, and it always pays (with the lights still on) to familiarise yourself with the various dials and levers. When switched on, the emitted light should be:

- Bright—turn it to maximum
- White—ignore all other colours
- Circular—again, ignore all the slits and crosses; turn the dial until you get a round circle.

Many people find it confusing to have to think about their own glasses and the patient's glasses. Don't worry about this—set all the numbers on the ophthalmoscope to "0." Ask the patient to remove his or her glasses—you can keep your own on or remove them as you prefer. Contact lenses do not need to be removed.

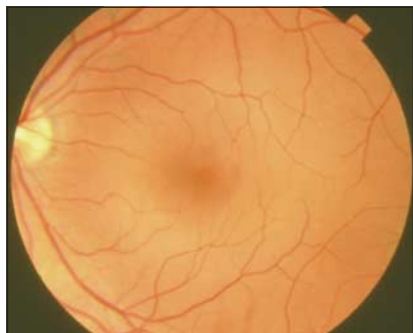
Room lighting

Switch the room lights off or dim them, but don't make the room too dark.

Prepare your patient

Dazzling examination

Explain what you are going to do to the patient. Warn the patient that the bright light can temporarily dazzle them.



Normal retina

Position

Position the patient so that he or she is comfortable but sitting up (if possible).

To dilate or not to dilate?

Pupil dilatation (with one drop tropicamide 1% in each eye and wait for 15 minutes) is useful to acquaint yourself with the normal fundus but may not always be possible, especially in neurology patients or those with a head injury.



Direct ophthalmoscopy

Even with dilatation, only about a third of the fundus is visible with a direct ophthalmoscope. Fortunately, the area most visible is the posterior pole (including the disc and the macula), where you should be able to see the ocular findings of many systemic diseases such as hypertension and diabetes

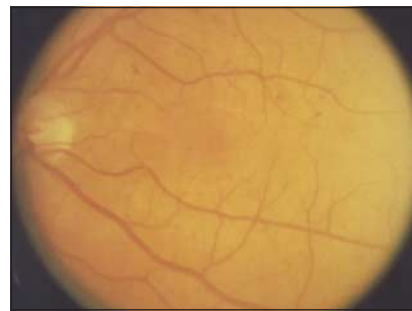
Where the patient should look

It is important to get your patient to fixate on a **precise** area (for example, the corner of the room or curtain rail). If you are too vague about this they will move their eyes. Instruct the patient to look at this spot no matter what—even if you get in the way. This spot should be located so that they are looking **slightly** away from you when they are examined—that is, to the left when you examine the right eye and vice versa.

Get your own position right

Eye to eye

It is best to examine the patient's left eye with your own left eye and right eye with your own right eye—this takes practice. Try to keep your other eye open. Certainly, in an examination, such as for membership of the Royal College of Physicians (MRCP) part 2, you shouldn't close your other eye while examining the retina.



Background retinopathy

Place your hand on the patient's forehead so that your fingers are splayed but your thumb is on the upper lid. This is important as you will use your thumb to hold the patient's lid open and also the joint of your flexed thumb is **exactly** where **your** forehead needs to end up.

What am I looking for?

Red reflex

Media opacities obscure the red reflex (corneal scars, cataract and vitreous haemorrhage, and asteroid hyalosis).

Optic disc

Look for optic disc size, colour (pallor, congestion), cup disc ratio, margins, haemorrhages, new vessels, collaterals. Pale and clearly demarcated disc: optic atrophy. Pathological cupping: glaucoma. New vessels on the disc: proliferative diabetic retinopathy is the most common cause. Yellow-grey disc with blurred margins \pm haemorrhages: papilloedema—bilateral.

Vessels

Start at the disc and follow the vessels out to look for hypertensive and arteriosclerotic changes. Look as far as the mid-periphery for scars (inflammatory, laser), haemorrhages, exudates, pigment (white, black), and pigmented lesions. Examine arteries, veins (slightly thicker), and perivascular fundus. A-V nipping is seen in hypertension.

Look also for: microaneurysms, blot haemorrhages, hard exudates—background diabetic retinopathy; cotton wool spots (fluffy white patches), vessel changes such as venous beading, and venous loops are preproliferative changes; lashes of new vessels.

Macula

You will find the macula temporal to the disc. The foveal reflex is seen better with a green (red-free) filter and is at two disc diameters away from the disc and 1.5 degrees below the horizontal (your whole field of view is 8 degrees). A circinate ring of hard exudates, haemorrhage (dot, blot, or flame), or pigment deposition are the most common things you will see.

Further information

- www.opt.indiana.edu/riley/HomePage/Direct_Oscope/Text_Direct_Oscopt.html
- www.academy.org.uk/lectures/eperjesi3.htm
- www.eyes.arizona.edu/FundOph.htm
- www.mrcophth.com

Begin at arm's length

Begin at arm's length by shining the ophthalmoscope light into the patient's pupil (you will then see the red reflex). Follow this reflex until your forehead rests on your thumb—you should immediately see the optic disc. It will probably be out of focus so, without moving your head, turn the lens dial either way—if the disc becomes clearer keep turning. If it becomes more blurred, turn the dial the other way.

To look at the macula, ask the patient to look directly into the ophthalmoscope light. The ophthalmoscope can also be used for examining the anterior part of the eye by turning the lens dial to ~ +10.

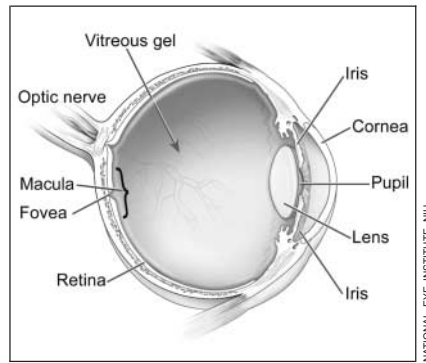
What am I looking for?

Follow a routine: red reflex, anterior segment, disc, vessels, and lastly macula (see box). In an exam, once you have found an abnormality, keep looking for a second one.

When examining the vascular arcades, ask the patient to look in the appropriate direction to extend your field of view. The red-free (don't call it "green") filter is useful for enhancing the appearance of blood vessels and haemorrhages by making blood show up black.

Record your findings

Record any abnormalities in a diagram, using the disc diameter as a reference measure. Remember, the image is not inverted, so you can draw it as you see it. Seek expert advice if needed.



Macula and fovea diagram

Common mistake

The biggest mistake doctors make when using the ophthalmoscope is not getting near enough to the patient. Don't be shy. Make sure you are very close to the patient, almost cheek to cheek, and that you maintain this throughout the examination. The closer you get, the wider your field of view.

If you dilate the patient's pupils remember that he or she should not drive for at least one or two hours after dilatation, and longer if they feel their vision has not returned to normal.

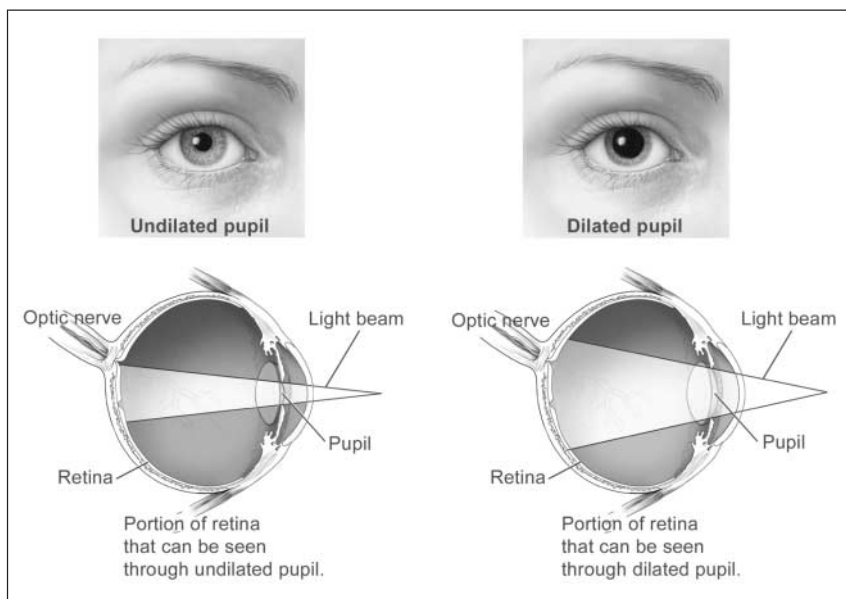
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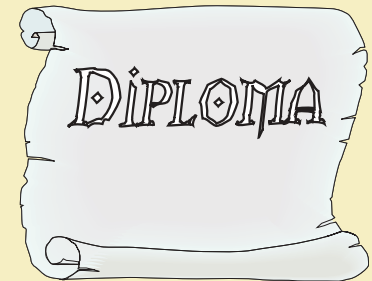
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Effect of dilating pupil

Tips on...

Writing for the new Diplomatosis column



If you needed proof of doctors' love for diploma courses, you need only to flick through a few pages of *BMJ Careers*. You can take a diploma in anything from clinical risk management and tropical medicine to clinical oncology or dermatological science. But how do you choose which is the one for you? Our new regular column should help. We want it to be a practical guide to medical diplomas, and we're calling it Diplomatosis.

This can work only with your help. So if you have taken a diploma recently—whether you were inspired or utterly underwhelmed—we'd love to hear from you. Just answer the questions according to the template below and email it to us. If we publish your entry, we'll pay you £75. We will use as many submissions as we can, building up a useful database of different diplomas and your individual experiences.

Diploma: Full title and acronym (for example, diploma of child health, DCH)

Who's it for? (maximum two sentences)

When did you do it? (year and stage of career)

Why did you do it?

How much effort did it entail? (preparing, revision, courses)

Is there an exam? (and if so, what's the fee?) (describe basic format and pass rate)

Did you go on a course? (and if so, what's the fee?) (name of course, format, and briefly say what was good about it and what could be better)

Top tip: (the key information you wish you'd known before you started)

Contact for further information: (institution, address, website URL, telephone number)

Was it worth it? (Describe the pros and cons and how it's changed your practice or helped your career in no more than 100 words)

Your name, job title and address

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