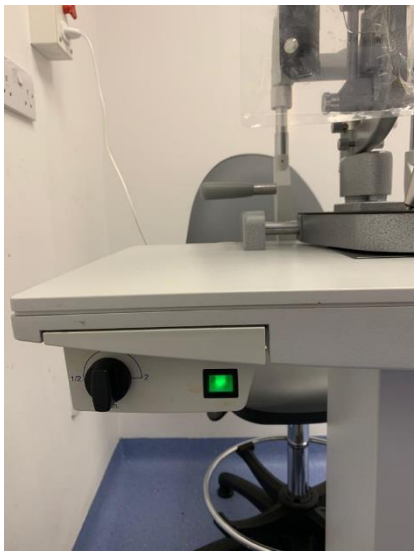
Slit lamp examination in the Emergency department

What is the slit lamp?

A microscope with a swinging light apparatus which allows for in depth eye examination.

Switching on the slit lamp

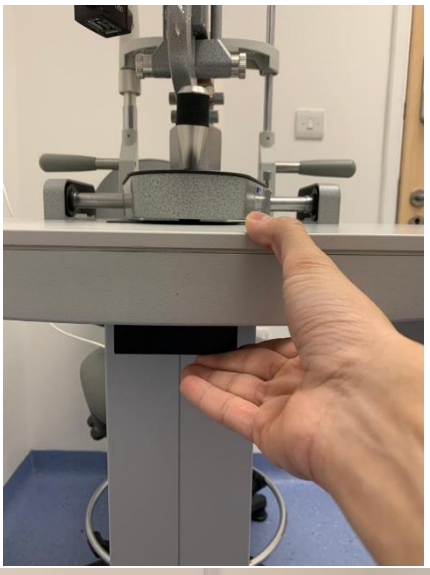
1. Ensure the main plug is switched on in the wall socket
2. Press the green switch on at the lower left of the slit lamp
3. Place the palm of your hand in front of the glass mirror and look for a light source. Seeing one would indicate the slit lamp has been switched on properly

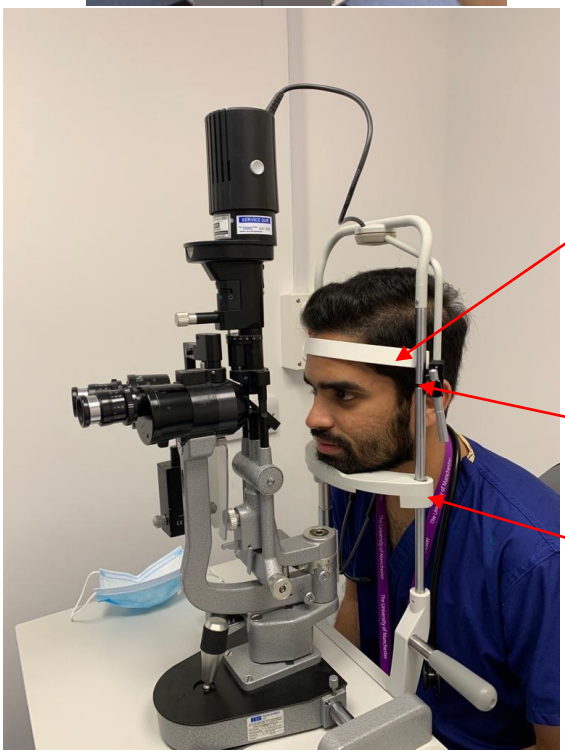


Adjusting yourself and the patient

1. Push the slit lamp close to the patient enough that their chin reaches the chin rest
2. Adjust the height of the table so that the patient is comfortable. This is done by pressing on the lever at the bottom of the slit lamp on your side
3. Finer adjustments to the patient position is then done by using the scroll on the side of the chin rest. Adjust this so the patient is comfortable, and their forehead rests against the bar well. An ideal position is when the corner of the eye of the patient is level with the black mark on the bar

4. Finally adjust the height of your seat to make yourself comfortable.





<u>Focusing on the patient's eye with the slit lamp</u>

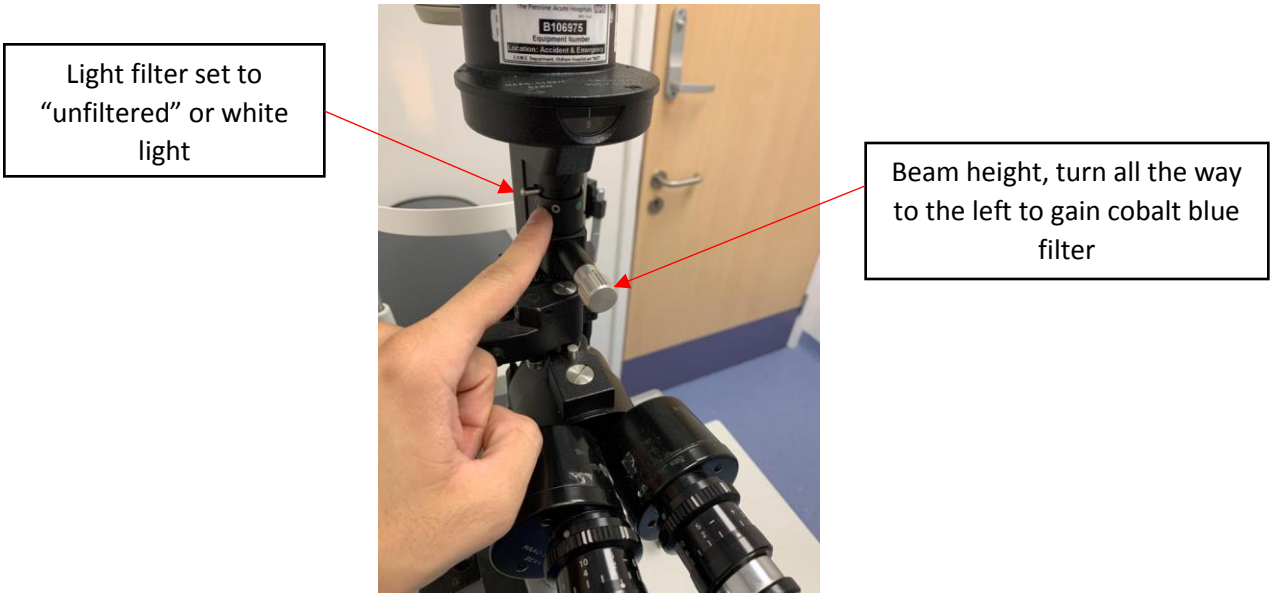
1. Ensure the slit lamp is unlocked on the table and is gliding freely by switching the lock onto the side
2. Using your dominant hand, twist the joystick to adjust the height of the light source.
3. Ensure the readings are set to 0 on the microscope. Look through the eye piece and adjust them to gain binocular vision.
4. Move the whole apparatus forward through one motion to focus on the eye, and toggle the joystick forward or backwards to gain a finer microscopic view of the eye.

Adjusting the intensity and dimensions of the light beam

1. Adjust the width of the beam using the dial at the bottom of the light source
2. Adjust the height of the beam using the dial at the top of the light source. The marker gives you the exact height set so that ulcers or bleeds can be measured accurately.
3. A wider beam would be brighter and may cause more discomfort to the patient. The intensity of beam can be halved by turning the knob at the green main switch to ½.

Light filters

For a comprehensive eye examination in ED, switch the light filter to “Unfiltered” or white light. This is done by flicking the filter toggle to the left.

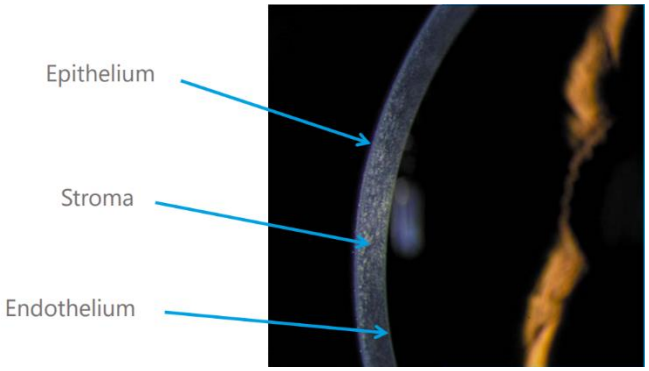


Using the cobalt blue light filter with fluorescine staining is important for the diagnosis of corneal ulcers, abrasions or epithelial defects. This filter is gained by turning the height adjusting dial all the way to the left until the light source turns blue.

<u>Angles and slit light examination</u>

The light source swings freely in the slit lamp. Examining the eye at an angle would ensure that cross sections of the different parts of the eye are seen. This is because while the eyepiece remains straight, the light itself shines at an angle.

For instance, an angle of 45 degrees is needed to examine the cross sections of the cornea:

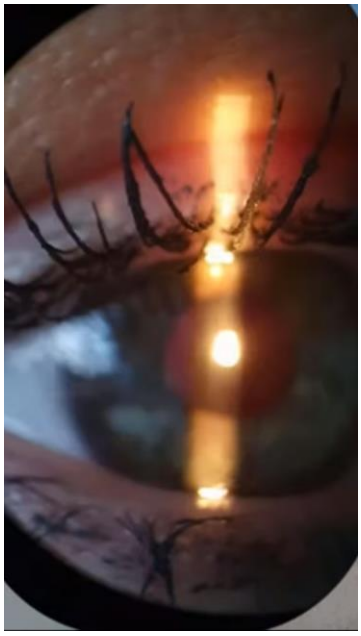


Cross sections of the cornea, seen with light angled at 45°

Stepwise approach to examining the eye

It is recommended that the eye is examined in the following order:

Eyelids and eyelashes- straight light, adequate width and height of beam, white light

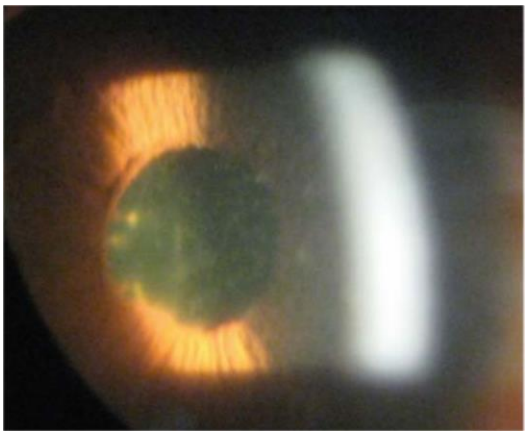


Adjust the beam intensity, height and width as such to examine the lids, lashes, conjunctiva and sclera

Conjunctiva and sclera- straight light, adequate width and height of beam, white light

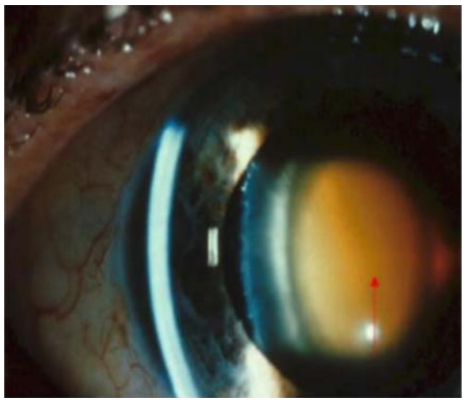
Cornea- angle light to 45 degrees, reduce height of beam and scan from side to side. Higher beam intensity may be needed.

Anterior chamber- small beam needed with high magnification, achieved by toggling the high magnification lever. Light must be at an angle. Flares or cells may be seen which may indicate inflammation in scleritis, or hemorrhage secondary to injuries.



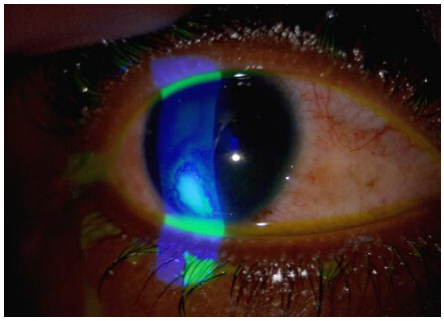
Flares seen in the anterior chamber in a case of scleritis. Note the shortened beam height, with the light at an angle

Iris and lens- switch back to an adequate beam length and width. Angle the light slightly and adjust the joystick forwards and backwards to focus on the iris, and then the lens. Yellow deposits on the lens signify cataract



Cataract seen on the lens

<u>Examining the eye with fluorescine stain and cobalt blue light</u>



1. Instill fluorescine 1% into the affected eye. Warn the patient that it may stain their vision orange for 5 minutes, and stings.
2. Dim the light in the room.
3. Switch on the cobalt blue filter by turning the height adjustment scroll all the way to the left until it clicks. The beam will shine blue. Adjust the width as needed.
4. Scan the anterior surface of the eye for any abrasions or ulcers by looking for uptake of the stain.

Drops you will use in the eye room

Lidocaine	Local anesthetic before removing foreign bodies
Tetracaine	Local anesthetic, shorter acting than lidocaine but stings more
Tropicamide	Anticholinergic used to dilate the pupil
Cyclopentolate	Dilates the pupil, commonly given to relieve photophobia