

# THE UK GUIDE

## GLAUCOMA TREATMENT

Everything you need to  
know about glaucoma



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# Introduction

Chronic glaucoma (also known as open angle glaucoma) is the most common chronic ophthalmological condition, and also one of the most common causes of treatable blindness in the world.

In this guide I'll share what you need to know to understand glaucoma, recognise its symptoms, and identify its different types. I'll also discuss the tests I use to diagnose glaucoma and the conditions under which you may need urgent care.

I'll discuss how I treat glaucoma and what it feels like to be treated. Lastly, I'll share with you several reasons why you may want to consider choosing private care for your glaucoma, and why I believe you will want to consider me as your chosen expert.

If you have glaucoma, my aim is for you to learn what you need to know to take the next step in properly addressing this condition. If I can answer any questions please don't hesitate to contact me at Clinica London on 020 3582 7642.

Best wishes,

**Laura Crawley**

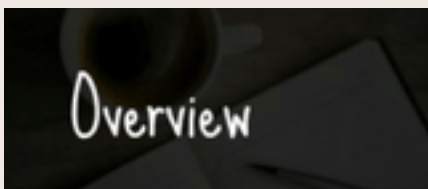
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"This guide was created out of conversations I've had with patients. I've recently sat down and answered similar questions on video so I could share this information online as well as here in written form. I hope you like the conversational and straight forward nature of this guide."



# Glaucoma at a glance

What is it?	<ul style="list-style-type: none"> <li>Glaucoma is a condition where the nerve at the back of the eye becomes damaged over time</li> </ul>
What are the symptoms?	<ul style="list-style-type: none"> <li>The only way for it to be picked up is when you have a pressure test which reads high, or a test of your visual field which shows that part of the vision is missing</li> </ul>
What are different types of glaucoma?	<ul style="list-style-type: none"> <li>Primary open angle glaucoma</li> <li>Secondary glaucoma</li> </ul>
What tests will I have if I have been diagnosed with glaucoma or am under observation as a glaucoma suspect?	<ul style="list-style-type: none"> <li>Vision</li> <li>Eye pressure measurements</li> <li>Phasing</li> <li>Pachymetry</li> <li>Visual Field Tests</li> <li>OCT scans</li> </ul>

**Conditions Treated**

Peripheral vision / High intraocular pressure

**Treatable Areas**

Eyes

**Practitioner**

Doctor

**Downtime**

The patient can normally go back to normal activities the next day after the laser treatment, whereas surgery recovery time takes at least one month.

**Your Specialist****Laura Crawley**

Consultant Ophthalmic Surgeon  
& Glaucoma Specialist

# What is glaucoma?

Glaucoma is a condition where the nerve at the back of the eye – the optic nerve – becomes damaged over time, most often as a result of raised eye pressure. This damage is irreversible. It is still the most common cause of preventable blindness worldwide.

A person with glaucoma does not notice anything unusual in the early stages of the condition, as it affects the outside of the vision first. By the time the person notices a problem with their vision it is often too late. It is important that everyone has their eye pressures tested every two years and annually if there is a family history of glaucoma.





## What are glaucoma symptoms?

Glaucoma in its earliest form is completely asymptomatic, you will not know at all that you have it. The only way for it to be picked up is when you have a pressure test which reads high, or a test of your visual field which shows that part of the vision is missing.

Now a raised eye pressure doesn't always necessarily mean that you have damage to your eye but it is suggestive and it means that you need a consultations with a glaucoma specialist.

A few patients will have the effects of glaucoma without measurable raised eye pressure.

In its very advanced form, glaucoma reduces your vision and it starts usually from the outside of your field of vision. So the peripheral vision is much more affected first and it may be, that if it's been undiagnosed, you'll start to find that you don't notice people coming down the side of you when you're walking on the pavements. You may well notice that particularly in the evening the glare from car headlights gets worse and you will notice that your vision in low light is not quite as good. We don't want you to get to that stage, we want to pick it up early so that we can stop it in its tracks from getting any worse.



*"We want to pick it up early so that we can do something about it. And if something is done the vast majority of people will maintain their vision and their driving vision lifelong."*

So glaucoma does damage the vision over time and that vision can't be brought back. We want to pick it up early so that we can do something about it. And if something is done, the vast majority of people will maintain their vision and their driving vision lifelong.



## Are there different types of glaucoma?

Glaucoma is divided into different subtypes. The thing that they all have in common is that the optic nerve is damaged.

### Primary Open Angle Glaucoma (POAG)

The commonest type of glaucoma is Primary Open Angle Glaucoma (POAG). The IOP may be higher than normal (normal range 10-21 mmHg) but not always. The patient has no symptoms and it is discovered when the eye pressures are checked and found to be high or when the optician looks at the back of the eye and suspects that the optic nerve looks damaged in a particular pattern.



## Acute Angle Closure Glaucoma (AACG)

In some patients the drainage channels that filter the aqueous within the eye are too small. As we all get older we develop cataracts and the evolving cataract can push against the drainage channels and make them smaller and narrower still. In some cases they can be blocked off altogether and the IOP rises acutely causing acute glaucoma, called acute angle closure glaucoma (AACG). This is an ophthalmic emergency and urgent eye pressure reduction is required otherwise the vision will be lost forever. Some patients with long-sighted eyes (see well far but not near) are more at risk of AACG and may have recurrent small spikes of angle closure and raised pressure, which are termed sub-acute, but must be recognised as they can evolve into the full blown acute form.

It is important that the drainage angles are examined correctly when you see a glaucoma specialist.

## Secondary glaucoma

This is less common than POAG. In POAG we don't yet know why the drainage channels stopped working. In secondary glaucomas there is an obvious reason for the rise in IOP:

### 1. Trauma

**2. Rubeosis:** Abnormal blood vessels grow inside the eye due to diabetes, blocked veins or arteries inside the eye, or poor blood supply in the carotid arteries in the neck. Rubeotic glaucoma is

aggressive and almost always requires multiple surgical procedures.

- 3. Pseudoexfoliation:** Also known as PXF, this is seen as white powdery deposits on the lens, iris and drainage channels inside the eye. It can be associated with very high IOP and glaucoma that progresses very quickly. Early treatment and close follow up are essential.
- 4. Pigmentary Glaucoma:** Occurs when the iris rubs against the human lens that lies close behind it. This 'rubbing' dislodges the pigment that gives our eyes their colour. The pigment then clogs up the drainage channels leading to raised IOP and glaucoma. It particularly affects younger short-sighted people. Pigment shedding can often increase significantly during exercise.
- 5. Previous eye surgery:** If the surgery involved silicone oil, this can increase the risk of glaucoma.
- 6. Inflammation:** Patients who have chronic and repetitive inflammation in their eyes can develop glaucoma. This may be due to inflammatory related scarring of the drainage channels themselves or may be a response to the steroid drops that are necessary to treat inflammation.

In all cases of glaucoma, an individualised treatment plan is necessary and is based on good clinical evidence.



## What tests will I have if I have been diagnosed with glaucoma or am under observation as a glaucoma suspect?

### Vision

Your vision will be measured at each visit. This is important even if it is normal. You must always bring your distance glasses with you to appointments. The pinhole that is used when testing vision corrects for any error in the glasses prescription and gives us the best idea of the visual potential even if you have cataracts.

## Eye pressure measurements

Also known as IOP - intra ocular pressure, this can be measured in a variety of ways. Opticians commonly use an air puff test known as 'pulsair' or non-contact tonometry. This is a reasonable screening test but often overestimates IOP.

In the clinic the IOP may first be checked with a screening test called iCare. This is more accurate than the air puff test and if this measurement is very high you will see the doctor straight away.

The gold standard IOP measurement is called 'Goldman applanation tonometry' (GAT). It is very accurate and painless. An anaesthetic drop coloured with an orange dye is applied to both eyes. A blue light is used to light up the front of your eye. The pressure measurer is brought very close to the front of your eye and the doctor will hold your eyelashes out of the way to take the measurement.

### Phasing

It may be necessary to repeat this gold standard IOP measurement at different times of



*"It may be necessary to repeat this gold standard IOP measurement at different times of the day as the IOP rises and falls throughout the day."*

the day as the IOP rises and falls throughout the day. This is called phasing and can be done as an out-patient. The IOP is measured every 2 hours from 8 AM to 6 PM. The IOP is usually lower in the evening and overnight so it is unusual to keep someone in hospital to

measure their IOP throughout the night. Phasing is designed to find these high peaks so that treatment can be adjusted. If a glaucoma patient has a very high IOP at 10 AM yet always comes to a consultation in the afternoon we may never record that very high IOP. Phasing is usually done in patients who appear to have glaucoma yet their IOP has never been measured to be high or in patients whose glaucoma is getting worse despite having taken good measured for IOP at the clinic.

## Pachymetry

Pachymetry measures the thickness of the window of the eye, the cornea. It is measured in all new patients at their first appointment and does not need to be repeated unless the patient has problems with the cornea. We are all of differing height and shoe size and the cornea comes in different widths or thicknesses. The average cornea measures 550 microns. If your cornea is thinner or thicker than this it does not make any difference to your vision or to you but it does influence how the IOP is interpreted.

The puff of air has to overcome the extra thickness of the cornea before it reads the true pressure in the eye hence the reading is falsely high.

The gold standard test (GAT) reduces this measurement error significantly. When you come to our clinic and we find out that your corneas are thicker than average - this is taken into account. If the IOP is normal and there are no signs of glaucoma we can discharge you



back to the care of your optometrist but all further IOP should be measured with GAT and not air puff otherwise you will keep being referred back erroneously each time you have an eye test.

Conversely, if the cornea is thinner than average (<510 microns) the true IOP is higher than that measured by the gold standard test. This is especially true of Afro-Caribbean patients and your glaucoma treatment will be altered appropriately.

## Visual Field Tests

Visual field tests, also known as HVF- Humphrey Visual Field testing, are an important part of glaucoma care. They test how well you can see in the periphery of your vision. This is the part of your vision that is first affected by glaucoma. You will not generally notice loss of the outside part of your vision especially if it only affects one eye, as the other eye can compensate for this. However as glaucoma gets worse the more central parts of the vision are affected so by the time you notice it, the glaucoma is very advanced and this vision loss is not reversible.

Visual field testing is designed to find the level of brightness of a spot that you can only just see. Patients often find the test frustrating as there are times when you are not sure whether you have seen the spot or not but this is how the test is designed. Try to relax and only press the button when you actually see a light spot. You cannot 'fail' this test, it gives personalised information about your peripheral vision and your doctor will be able to show and discuss the results with

you. There is a learning curve in doing this test and often the first few tests are not as accurate as subsequent tests. It is important to bear this in mind and not become anxious in doing this test.

## OCT scans

Optical Coherence Tomography (OCT) is a test that scans the nerve at the back of the eye using light waves. It is quick and easy to do and you usually do not have to have dilating drops to get a good scan. The picture generated does more than a colour photograph as it analyses the size and thickness of the fibres that make up the optic nerve and displays these measurements in a colour coded map. This digital record of the structure of the nerve makes it easier to look for changes in the nerve over time, suggesting that the glaucoma is getting worse. It means that changes can be picked up early and treatment adjusted. You will have this test each time you come for a consultation.



## If I am diagnosed with glaucoma, do I need urgent care?

With glaucoma diagnosis there are two main types. The commonest type is the open-angle glaucoma for which you would have no symptoms. If your optician measures your pressure to be 30 or higher, you really need to be seen the same day or the day after. If your measured pressure is between 25 and 29, then we have a couple of weeks to make an appointment which suits you. If the pressure is less than that, an appointment within a few weeks is absolutely fine.

The second type is acute glaucoma or angle-closure glaucoma. This is when the pressure rises very dramatically over a period of hours and you will feel dreadful. You will have the worst headache you've

ever had, your eye will be red, the vision will be very blurred and you may even feel sick and want to vomit. If you have any of those symptoms, you must be seen straight away (within an hour or two), because the time to treatment then is critical. The higher and longer the pressure, the more damaged is the nerve at the back of the eye. This type of glaucoma is not as common as the open-angle type, but it is really important that if you do have a headache, red eye, you're feeling sick and your vision is blurred that you seek treatment that day. With prompt treatment we can save your vision.



## How does glaucoma treatment work?

Chronic glaucoma treatment depends mainly on the degree of the condition.

The first step of the treatment is conservative. We use different eye drops to decrease the intraocular pressure. There are many different types of drops and different combinations that can be tried.

If the medical glaucoma treatment is not enough to keep the disease under control, some patients can benefit from a laser treatment (selective laser trabeculoplasty or SLT) which is done as an out-patient in the clinic.



If the disease is progressing despite the medical treatments (not all the patients are suitable for laser), the last step is surgical treatment. The operations are varied; the surgeon will decide the best technique for each patient.

An ophthalmic surgeon can perform an operation called a trabeculectomy. Here, they make a small trap door in one of the layers of the eye to drain off higher pressure fluid. A surgeon commonly treats acute glaucoma by making a small laser hole in the iris to allow the fluid of the eye to drain fully.



## Does glaucoma treatment hurt?

Glaucoma eye drops can cause some discomfort at first. But this feeling will normally last only a couple of seconds.

During all laser surgeries the eyes will be numbed. This means that no or only very little pain will occur.

Surgery normally brings a mild discomfort. If there is a real pain the surgeon should be contacted directly. Inflammation might occur for 1 – 2 months after the surgery. Some medicine is usually applied during this period.



## Why should I pay for private treatment?

In my NHS practice we offer the full range of treatments to patients who consult there, whether medical or surgical treatment. What I can offer you here privately is a lot more flexibility in terms of when you can have your first assessment and tests and follow ups. Specifically, I can offer you more flexibility in terms of when you have your glaucoma surgery. So we can book out surgery very, very quickly and a lot of people, when they know that surgery is recommended, they would really like to have it done promptly.

And so having private surgery offers you that. It also means that, if you're traveling from far away, we can look after you very very well in

London. We can make sure that you have a really good experience in terms of your pre operative care at Clinica London, at the surgery itself and also post-operative care.

So it's not just about the operation itself but it's about the whole package. And having it done privately here means that it will fit in with when you're available perhaps much more easily than if you were to opt for the NHS. There are also lots of people in London - we're a cosmopolitan city - and certainly in the UK, who may be not eligible for treatment under the NHS.



*"We can offer you first-class surgery here."*

We can offer you first-class surgery here. So I don't want you to think that you have to accept something

less because you aren't able to access NHS care. We can offer you the full package here as well. And it's important that people remember, that not everybody is entitled to NHS care.



## Why should you choose me to treat glaucoma?

I work at Clinica London seeing private patients here and we have fantastic instruments and technology here that really does provide high-quality assessment for the glaucoma patients. I'm also very lucky that my NHS practice is at Imperial College in London which is a very well respected unit and we see glaucoma patients from all over the country, providing me with a very strong experience in glaucoma care. And that includes very, very straightforward glaucoma which I hope that most my patients have. But for those people who have a very complex disease and are running out of options, then I have the expertise to bring to you through my breadth of experience, in order to discuss the best option for you as an individual.



At Clinica London we can offer very flexible appointments and we make sure that you get all your investigations and tests in a timely fashion. The technicians and nurses here at Clinica London are excellent and I have a lot of experience in reading the tests because not only do we want to look after the patients who have glaucoma, but we also want to make sure that if your pressure reading is a little above normal, but you have no damage we don't want you to start treatment for a condition that you really don't need treatment for.

And you need good experience, which I can bring, to say "you don't need treatment and I'm not worried about you, which is very reassuring for patients rather than committing you" to multiple appointments, when actually don't need them. So I'm very proactive about saying if I need to worry about your eye condition.

I find with patients these days that I'd really like to involve you in the decision-making.

I am very flexible and I'm happy to see you and spend as long as you need in choosing the right option for your treatment.

## Final words

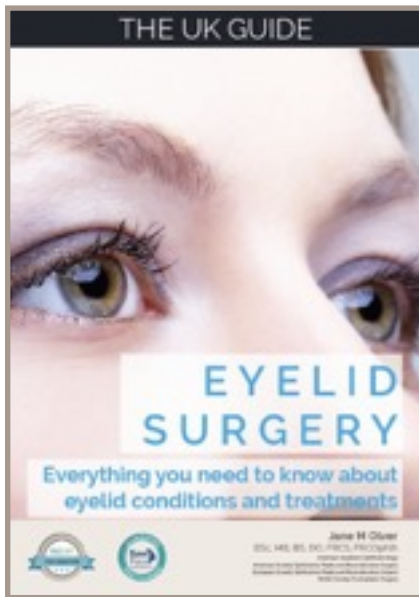
I'm very lucky to have lots of testimonials from patients and colleagues. They like coming to see me and I feel very reassured that patients keep coming back - this means you must be doing something right!

Good care is not only about clinical excellence, but also about spending time, discussing the options, making sure that patients really understand what's wrong with their eyes - because if it was me, I would want to know. That's why I try to give patients as much information as possible, so that they understand why we are giving them the treatment that we give to make it easy for people.

My glaucoma surgery complication rates are very low, lower than an average glaucoma surgeon. I also train junior glaucoma surgeons, so I have plenty of experience with plenty of surgeries. The aftercare is really important, so I believe very much that we support our patients all the way through.

If you would like to discuss your particular eye concerns please call us on 020 3582 7642 to make an appointment. We'll explore the best treatment options for your eyes so you can get back to doing what you love.

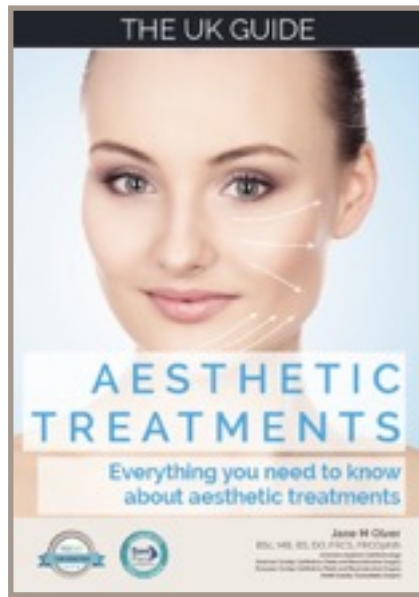
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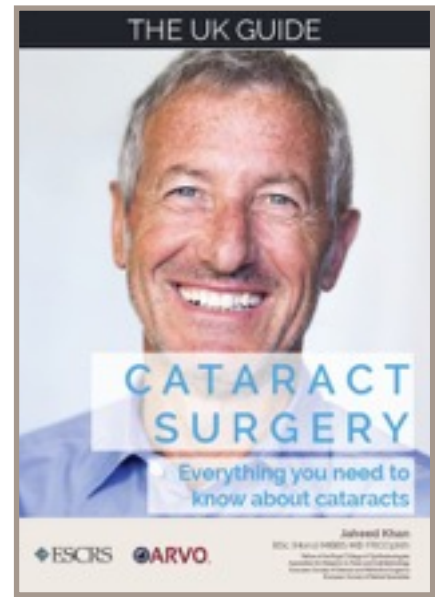
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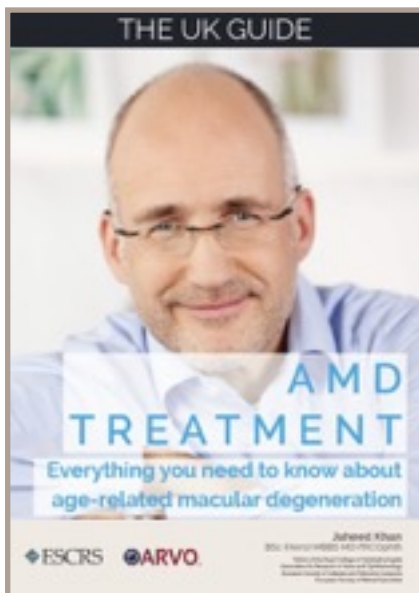
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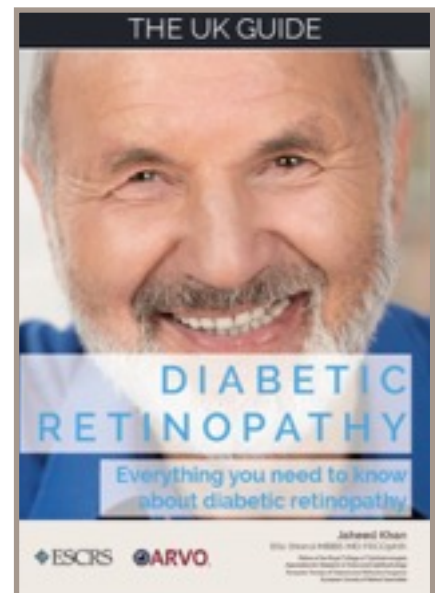
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