

Title: GlauOpthal_QA-Glaucoma Ophthalmology Question and Answering System.

Task:

Use the Given dataset of Clinical notes for Glaucoma Disease from

https://github.com/jche253/Glaucoma_Med_Dataset/tree/main/Deidentified_Notes

And the given question and answer pairs for the training data.

No of training questions is 100.

1. Create appropriate embedding. Define the embedding scheme and vector length.
2. Build an LLM model for Q&A on the given dataset.
3. Test data will not be released to the participants.
4. Questions at the test and validation might be rephrased as well.

Question and Answer Pairs:

1.Question:

I take famotidine for acid indigestion and I'm taking drops for [glaucoma](#). I have heard that famotidine may contribute to glaucoma and want to know if this is true.

Answer:

While it is unlikely that famotidine is definitively related to glaucoma, it does fall in the class of antihistamines (H2 Blocker) that may raise the risk of acute angle closure glaucoma [for some people with narrow angles](#).

With glaucoma, each person's risk profile is unique, [so it's best to discuss your medications with your ophthalmologist](#).. They can help determine which of your medications you can safely take and the ones you should avoid.

2.Question:

My [eye drops for glaucoma](#) have darkened the skin around my eyes. As makeup does not help to camouflage it, do you have any recommendations? .

Answer:

Unfortunately, darkening of the eyelid skin is a known side effect of prostaglandin analogues eye drops, which are used to treat glaucoma.

These medications can also cause eyelash growth and can, in some cases, cause the eye to appear somewhat sunken or deep in the eye socket. The only real cure for this condition is to discontinue the medication if it is bothersome and if the cosmetic appearance cannot be improved with various types of makeup to cover the darkening. However, you should discuss this side effect with your ophthalmologist and should not discontinue your medication until you have discussed alternative treatments.

3.Question:

How does using antihistamines affect my [glaucoma](#)?

Answer:

Antihistamines can cause an angle closure glaucoma attack (when fluid is completely blocked from leaving the eye, causing a dangerous rise in pressure) in some patients who have narrow angles. You should check with your ophthalmologist to learn what type of glaucoma you have and whether antihistamine usage could cause this problem.

4.Question:

I think my daughter has an eye bigger than the other. Is this common? I think she has congenital [glaucoma](#) after reading online about it.

Answer:

It is not uncommon for healthy eyes to appear somewhat asymmetric in size. One of the most common reasons for an asymmetric appearance of the eyes is lid position—that is, one eye opens more or less than the other. However, if in fact there is a difference in the size of the eyes—usually as measured by the diameter of the cornea, then this needs careful investigation. To be on the safe side, when there is any question of one eye being bigger than the other, we strongly urge that you consult with an ophthalmologist, who is specially trained in the diagnosis and treatment of diseases of the eye, to determine if this is a true disease state or just a visual illusion.

5.Question:

What can I take for sea sickness if I have [narrow angle glaucoma](#) but have had an iridotomy?

Answer:

The type of medication taken for motion sickness can make your pupils dilate, which can then raise the risk of a sudden increase in [eye pressure](#) (acute angle closure) and possible vision loss. An iridotomy ([a small opening in the iris](#) usually made by a laser) can be done to either bring the eye pressure back down, or to decrease the likelihood of this happening in those who are felt to be at increased risk.

However, having an iridotomy does not completely eliminate the risk which varies from person to person, so it is important to discuss this with your ophthalmologist who can examine your eyes and advise you on whether taking motion sickness medications is safe in your particular situation.

Unfortunately I'm not aware of any other types of medication for motion sickness, and medication alternatives like acupressure wristbands have not been clearly shown to be effective.

6.Question:

Is it safe to take prescription stimulants such as Adderall when you have glaucoma?

Answer:

If you have open angle glaucoma, then stimulants such as Adderall are considered safe. But if you have angle closure (or narrow angle) glaucoma, this type of medication can increase the risk of a sudden increase in eye pressure (acute angle closure) and possible vision loss. The risk of this happening varies from person to person, so you need to discuss this with your ophthalmologist.

An in-person exam will help determine whether taking medications like Adderall is safe for your particular situation.

7.Question:

I am using timolol eye drops and I might have myasthenia gravis—is it safe to use them?

Answer:

Systemic beta blockers are generally not preferred in patients with myasthenia gravis (a disorder that causes muscles to weaken and tire easily). They can cause fatigue but the effect varies and is dependent on the type and dose. No information is available on topical beta blockers (such as timolol eye drops) in myasthenia gravis.

If you take beta blockers to manage your glaucoma, it's important to apply pressure on the inner eyelids near the nose (called punctal occlusion) for 5 minutes after inserting the drops to reduce absorption into the rest of the body.

If you notice that using the drops causes fatigue or worsens your symptoms, then consult your ophthalmologist who may recommend stopping the drops to see if the symptoms go away. You can then restart the beta blockers and see if symptoms worsen again. If you determine that beta blocker drops do, in fact, worsen your myasthenia gravis symptoms or cause fatigue you may then ask your ophthalmologist to choose different options for your glaucoma treatment

8.Question:

With a history of two traumatic injuries to my eye, could my pseudoexfoliation be a result of that trauma?

Answer:

Pseudoexfoliation syndrome (or PXF, when small flakes of protein build up inside the eye) was first described over 50 years ago, but the cause still remains unknown.

PXF can raise pressure inside the eye (intraocular pressure, or IOP) and lead to glaucoma. There may be multiple reasons behind the risk for PXF. But there is no evidence we have now that trauma causes the condition.

If you have pseudoexfoliation syndrome, see your ophthalmologist regularly to check for signs of glaucoma, which can cause vision loss without treatment.

9.Question:

Can a corneal implant correct normal pressure glaucoma?

Answer:

[Corneal transplant surgery](#) (which I assume you mean by "implant") is done for a variety of reasons; unfortunately, [glaucoma](#) is not one of them. In fact, a possible complication of corneal transplants is increased [eye pressure](#). As a result, some people with glaucoma may have more problems with their glaucoma or their transplants following surgery. Cornea and glaucoma specialists know to monitor for these problems, and both are typically involved in the management of such complicated cases.

10.Question:

Is anesthesia used for combined cataract and glaucoma surgery?

Answer:

[The majority of cataract surgery](#) is done these days with some combination of topical anesthesia (numbing eye drops or gel) and intravenous sedation. [If inserting a glaucoma stent at the same time](#), some ophthalmologists may also perform an injection around the eye that helps with numbing and temporarily prevents eye movement, however this is up to the individual surgeon.

11.Question:

Can supplements help glaucoma?

Answer:

There is no strong evidence at this time that either vitamin or non-vitamin supplements can help [glaucoma](#), however this is an area of ongoing research. [A healthy, nutrient-rich diet can lower your risk for certain eye diseases, however](#). It is important to talk to your ophthalmologist and/or primary care provider about the possible risks before taking any supplement.

12.Question:

Is it safe to wear mascara after a [trabeculectomy](#) two months ago? If so, what is a safe way to remove makeup/mascara around the eye?

Answer:

It is generally safe to wear eye makeup two months after surgery, but to decrease risk of contamination please purchase new makeup. Avoid getting makeup or makeup remover in your eyes. Your surgeon may want you to be even more cautious, so please discuss this question with your surgeon.

13.Question:

Can I have LASIK if I am a [glaucoma suspect](#)?

Answer:

Given otherwise healthy eyes this should not be a problem. Modern-day LASIK does not raise [eye pressure](#) much and it only does so for 15 to 20 seconds at most.

14.Question:

Does glaucoma always occur in both eyes?

Answer:

[The most common type of glaucoma \(open-angle glaucoma\)](#) often occurs in both eyes but not always. Often it is worse in one eye. Some types of glaucoma result from other disease—like [uveitis](#), or from injury—and these can occur in one eye.

15.Question:

My partner who has Alzheimer's and does not want to take her glaucoma drops twice a day. Can you combine two medications to lessen the aggravation of putting the drops in morning and night?

Answer:

[Some glaucoma drops are available in a combined form](#), however most of these are not available as generics. Some accredited compounding pharmacies offer combined forms of two or even three different drops for easier dosing. There is also a newer drug that is implanted in the eye, effectively taking the place of an eye drop for at least a few months. [Finally, there are a variety of procedures](#) that can lower the [eye pressure](#) and reduce, or sometimes even eliminate, the need for drops. All of these options have their relative advantages and disadvantages. I would recommend discussing this issue further with your partner's ophthalmologist.

16.Question:

Can Cosopt and/or Azarga eye drops cause eye floaters or affect the vitreous inside the eye?

Answer:

[Cosopt and Azarga](#) are used to lower [intraocular eye pressure \(IOP\)](#) and do not cause [floaters](#). They act on special receptors within the eye to lower eye pressure and do not have any effect on the [vitreous gel](#).

17.Question:

When I do visual field testing, it causes neck pain due to an old injury. Is there a shorter version or a different test which would be less painful?

Answer:

There are shorter test versions that can be performed on some [visual field machines](#), however in certain situations the longer test versions may be necessary. In either case, good positioning is important: you should be seated comfortably with your back straight and at the appropriate height for the test bowl, meaning you should not have to slump to reach the chin rest or stretch to reach the forehead rest. You should discuss this problem with your eye care provider.

18.Question:

My prescription eye drops for glaucoma are making my eyes red. What OTC drops can help?

Answer:

[Some glaucoma eye drops](#) can cause redness and other side effects. In some cases, the redness improves with time. Some people find that using [over-the-counter \(OTC\) artificial tears](#) or a cool compress is helpful. If the redness is particularly bothersome then it may be better to switch to a preservative-free version of the same eye drop if one is available, or to a different type of eye drop altogether.

Either way, it is important to continue using your glaucoma eye drop(s) as instructed and discuss any side effects with your ophthalmologist. If appropriate, your doctor can help fine-tune a treatment plan best for your situation.

19.Question:

Is it safe to use a SAD light therapy lamp for insomnia with [glaucoma](#), fibromyalgia and chronic fatigue syndrome? It's been suggested as part of "Sleep Restriction Therapy" for insomnia where avoiding sleep is more likely to induce sleep.

Answer:

I cannot comment on the effectiveness of lights for seasonal affective disorder (SAD) or insomnia. But I do not think it is unsafe to use these treatments, and if you feel they are helpful for your condition it is likely safe to use.

20.Question:

Is there any way to lower eye pressure using home remedies?

Answer:

Eating a healthy diet can maintain your overall health and may be good for your eye health as well. Regular exercise has been shown to reduce the eye pressure in some individuals with open angle glaucoma. Many herbal remedies are advertised for glaucoma but none have been proven effective in treating this potentially blinding disease. Herbal supplements should never be used in place of proven therapies that are prescribed by your doctor. You should always discuss any of these types of treatments with your ophthalmologist before trying them.

21.Question:

What is eye pressure?

Answer:

The eye is a closed ball filled with clear jelly (vitreous humor) in the back behind the lens and clear fluid (aqueous humor) in the front, between the iris and the cornea. Aqueous humor is created just behind the iris and is in continuous circulation throughout the front part of the eye before it drains out just in front of the iris where it meets the cornea. This fluid helps keep the eye "inflated" just like air inside a balloon.

We can measure pressure of the eye just like you can gauge how full a balloon is by poking the balloon with your finger. The less air or pressure in the balloon, the easier it will be to poke and conversely, the more air or pressure in the balloon, the stiffer the balloon will be and the harder it will be to poke it. We measure pressure in the eye the same way; by gently touching the cornea with special instruments to see how hard it is to "poke." The unit of measurement is millimeters of mercury, or mmHg.

Pressure in the human eye, known as intraocular pressure, varies throughout the day with "normal" pressure being anywhere between 10 and 21 mmHg. Glaucoma is an eye disease in which the optic nerve is damaged by the pressure inside the eye. In most cases, the damaging pressure is greater than 21 mmHg, but there are some patients who can have damage at lower pressures (known as normotensive glaucoma).

Conversely, there are some people who can tolerate higher-than-normal pressures without having optic nerve damage. These people are said to have "ocular hypertension". Eye pressure can vary with the thickness of the cornea—this is also measured when trying to interpret the significance of an eye pressure—reading in any one patient.

In addition to high pressure, risk factors for glaucoma include African or Hispanic ancestry, having diabetes and having a family member with glaucoma. Glaucoma does not typically cause pain and many cases of glaucoma go undiagnosed. Checking eye pressure is an important part of a comprehensive eye exam and one good reason to get regular check-ups by your ophthalmologist or eye care provider.

22.Question:

I read that drinking large amounts of water quickly raises [eye pressure](#). As massive fluid intake is required before a colonoscopy, would this be dangerous for someone with [glaucoma](#) and is there an alternative option?

Answer:

This is an interesting question as the water test was an older way to assess [glaucoma risk](#). Glaucoma specialists would measure a patient's eye pressure (intraocular pressure or IOP) before drinking a gallon of water, and then recheck the pressure soon after. The fluid intake served as a stress test on the outflow system in the eye and was predictive of who was likely to develop glaucoma. Now, of course, there are more pleasant ways to test glaucoma risk.

The preparation for a colonoscopy also involves drinking lots of fluid, but the colonoscopy prep is a laxative. Because this fluid is designed to clean you out, it should not have the same effect on your eye pressure as water. The bigger concern is dehydration.

23.Question:

I've recently been diagnosed with pigment dispersion syndrome and [ocular hypertension](#). Is it still safe for me to get LASIK?

Answer:

Neither [pigment dispersion syndrome](#) or ocular hypertension should have any effect on having successful [LASIK surgery](#). But both should be evaluated by your eye surgeon before you have LASIK.

24.Question:

Can antihistamine use change open-angle glaucoma to narrow-angle glaucoma? Or are you one type or the other from the outset?

Answer:

[Open-angle glaucoma](#) and [narrow-angle glaucoma](#) usually occur independent of the other. But a patient with open-angle glaucoma who is developing a cataract can sometimes end up with a [narrow angle](#). This happens as the [cloudy lens \(cataract\)](#) grows larger and [pushes the iris](#) up over the [drainage channel \(where fluid leaves the eye\)](#). Some patients also can have a rare reaction to certain medications such as topiramate that can temporarily convert an open angle to a narrow or closed angle.

Antihistamines can sometimes cause angle closure in patients who already have a narrow angle, but cannot convert an open angle into a closed angle.

25.Question:

What drops do you recommend to relieve the sting of glaucoma eye drops?

Answer:

We usually recommend using a [lubricant eye drop \(standard, not gel which would be too thick\)](#) 10 to 15 minutes before using your [glaucoma](#) drops. This may relieve the stinging sensation, which is often due to [dry eye](#). Cold is also an effective anesthetic (pain killer). So consider keeping the lubricant eye drops in the refrigerator for additional relief from the temporary stinging, burning and itching.

26.Question:

I have [open-angle glaucoma](#). Can I safely take Imodium occasionally to control my IBS?

Answer:

It is safe. Imodium should not affect your open-angle glaucoma at all.

27.Question:

I'm at risk for glaucoma and my doctor considers me a "glaucoma suspect." Can I still get my yearly exam during this COVID pandemic?

Answer:

A person is a glaucoma suspect when they have risk factors for glaucoma, like high intraocular pressure (IOP).

At this point in the pandemic, our office asks that patients postpone routine in-office visits for this type of annual monitoring/maintenance. In this time of social distancing, for your protection and the protection of our more vulnerable patients who must come in for urgent visits, we are aggressively trying to limit patient flow through our offices. The best thing to do is call your ophthalmologist who can provide guidance for you.

28.Question:

Can swelling of the [cornea](#) from [Fuchs's dystrophy](#) cause an increase in [eye pressure](#) severe enough to cause damage to the eye like [glaucoma](#) does?

Answer:

Patients with Fuchs' dystrophy can develop corneal swelling due to cells in the cornea not working effectively. These patients can have an erroneous reading of their intraocular pressure when checked because a swollen [cornea](#) is spongier and reads lower than the true pressure. But even if the true pressure is higher than the measured pressure, Fuchs' dystrophy does not cause glaucoma.

A recent study has shown patients with Fuchs' dystrophy have a higher risk of developing glaucoma likely due to some anatomic similarities underlying both conditions, but one condition does not cause the other.

29.Question:

My wife has chronic cough caused by her [glaucoma eye drops](#). She stopped taking the drops for a couple weeks, and also switched drops three times, but each time the coughing returns. She had one laser surgery that didn't work. What else can she do?

Answer:

At this point, it sounds like conservative measures have been exhausted. Ask your ophthalmologist about the different surgical alternatives that may help manage your wife's [glaucoma](#).

30.Question:

Is cataract surgery recommended on a patient with high IOP due to [glaucoma](#)?

Answer:

As a general rule, we try to lower [intraocular pressure \(IOP\)](#) before [cataract surgery](#) with medication and laser surgery. If we are unable to control eye pressure, a patient is better served with either a standalone glaucoma surgery or a [combined cataract and glaucoma surgery](#). While it is true that cataract surgery can modestly lower pressure in some patients, uncontrolled IOP requires a more targeted glaucoma procedure than cataract surgery alone.

31.Question:

Does increased IOP cause the eyeball to feel hardened? If so, is a person able to tell if their IOP is high by how firm or soft their eyeball feels?

Answer:

The [eye pressure](#) typically must be very high for the eye to feel "hard." Touching (palpating) the eyeball through the eyelid is called a "tactile" pressure and is not a very accurate way of determining eye pressure. You should never directly touch the surface of your eyeball because this can cause injury and infection. Most patients and physicians are not able to accurately determine the eye pressure by touching (palpating) the eye, so it always is best to see your ophthalmologist regularly [to have your eye pressure accurately measured](#).

32. Question:

Are lubricating eye drops safe for people diagnosed with [glaucoma](#) and using Lantanoprost?

Answer:

Yes, [lubricating drops](#) are completely safe for those with glaucoma and those using Lantanoprost, but there are two things to keep in mind. First, as always with over-the-counter lubricating drops with preservatives, you want to limit your usage to 4-6 times per day, since the preservative itself can begin to irritate the eye. And second, your

usage of lubricating drops and glaucoma medications should be separated by at least five minutes, in order to avoid diluting or washing out the glaucoma medication.

33Question:

Should patients with severe [glaucoma](#) allow their eyes to be dilated during exam? Are there risks?

Answer:

For patients with severe peripheral vision loss due to open angle [glaucoma](#), there is usually little risk from [being dilated for an exam](#). Some patients with open angle glaucoma will have a pressure spike (high intraocular pressure) after dilation, so your ophthalmologist should occasionally check your [eye pressure](#) after you have been dilated to see if your eye pressure rises. Patients who are found to “spike” with dilation can be given pressure lowering drops before dilation to prevent the spike. This is particularly important for patients who require frequent dilation, such as those seeing a retina specialist for [macular degeneration](#) or [diabetic retinopathy](#).

Dilation is more risky in patients who have a narrow angle, where the [iris \(colored part of the eye\)](#) is very close to the [cornea \(clear window at the front of the eye\)](#). Dilating drops can raise pressure in these patients by closing off the [drainage angle](#) of the eye. If your narrow angle poses such a risk, your [ophthalmologist](#) will usually perform a laser peripheral iridotomy, which makes a microscopic hole in the iris so the pressure will not go up when the eye is dilated. [Cataract surgery](#) also “cures” this condition. In summary, your ophthalmologist will know whether your eye is safe to be dilated after the initial exam.

34.Question:

I am tentatively scheduled for a [laser trabeculoplasty procedure](#) on both eyes because of minor damage due to [glaucoma](#). I am a 74-year-old man, with spasmodic tortacolis. Will my uncontrollable head tremors increase the chances of an unsuccessful outcome? In your opinion is it even a good idea for me to proceed with this eye surgery, or would eye drops be a better option for me?

Answer:

As long as head positioning in the slit lamp is possible, I don't think spasmodic tortacolis should be an issue. If you are uncomfortable, the procedure can be safely paused for a few minutes. If you do experience some spasms in your neck muscles, a bit of gentle support from behind usually provides superb stabilization and safety. And because you

may have difficulty tilting your head to apply medication, laser trabeculoplasty may even be more effective than drops.

35.Question:

Does an ophthalmologist perform the same tests for glaucoma and myasthenia gravis?

Answer:

There is no overlap in testing for [glaucoma](#) and [myasthenia gravis](#). Glaucoma is a disease related to intraocular pressure and the ensuing damage to the [optic nerve](#) in the back of the eye. Myasthenia gravis is a disease that can affect the muscles controlling the eyes and eyelid movement. These are different diseases that require different testing.

36.Question:

What are the risks involved in having a cornea transplant for a person who has had extensive glaucoma surgery in past years?

Answer:

[Glaucoma](#) and previous glaucoma surgery increases risk for [corneal transplantation](#) for a number of reasons. History of glaucoma surgery can increase the rate of transplant failure of up to 50 percent and one of the top causes of transplant failure is uncontrolled intraocular eye pressure.

First, any hardware in the front of the eye, such as glaucoma valves (tiny implants that help treat glaucoma), can damage the corneal [endothelium](#) (innermost layer of the [cornea, the front clear window of the eye](#)) with each blink of the eye if they are positioned close to the cornea. Even if the valves are not closely placed to the back of the cornea, the flow of the fluid inside the eye is altered and that can also produce damage and cause the transplant to fail. Having hardware in the eye also may make partial thickness corneal transplantation (DSAEK or DMEK) challenging to perform and cause the graft (the normal tissue that replaces the diseased cornea) to not attach to the rest of the cornea.

In addition, corneal transplantation makes glaucoma much more difficult to control. Corneal transplant patients are often on a high dose of topical steroids which can increase eye pressure. After transplant surgery, there is a substantial amount of

inflammation and scarring of the fluid drainage canals tissue inside of the eye which can alter the eye's natural ability to regulate eye pressure.

Even though glaucoma and glaucoma surgery increases risk for corneal transplantation, often patients need treatment for both of these conditions as the only way to rehabilitate vision.

37.Question:

Can you tell me what treatment is recommended for pseudoexfoliation [glaucoma](#)? Is there anything a patient can do to help the situation?

Answer:

Similar to other types of glaucoma, the goal with pseudoexfoliation glaucoma (when flaky dandruff-like deposits inside the eye block fluid from leaving the eye, causing pressure to rise) is to reduce eye pressure to prevent additional damage to the optic nerve.

Typically, we first try topical eye drops to reduce eye pressure. Patients with pseudoexfoliation glaucoma that is mild to moderate also tend to respond particularly well to selective laser trabeculoplasty, which is a low-risk, in-office procedure.

There are also some minimally invasive glaucoma surgery options for mild to moderate pseudoexfoliation glaucoma, such as iStent, trabectome, or endoscopic cyclophotocoagulation. If the glaucoma is more advanced or the patient needs significant eye pressure lowering, more traditional glaucoma surgery such as trabeculectomy or aqueous shunt implant is recommended.

The best thing a patient with pseudoexfoliation glaucoma can do is to live a generally healthy lifestyle with good diet and exercise, be diligent about following their ophthalmologist's instructions for using medications, and returning for regular follow-up with their ophthalmologist so any changes in the glaucoma or eye pressure can be noted right away.

Finally, it is important to note that some patients with pseudoexfoliation also have narrow angles (when the colored part of your eye is pushed too far forward), which can put you at risk for angle closure attacks of elevated eye pressure. Everyone with pseudoexfoliation should be evaluated by their ophthalmologist for narrow angle.

38.Question:

Can I take benzodiazepines (sedatives) if I suffer from glaucoma?

Answer:

Benzodiazepines can dilate the pupil, so it is conceivable that they could cause problems in a patient with narrow-angle glaucoma. For patients with open-angle glaucoma, the use of benzodiazepines should not present a problem. Please check with your ophthalmologist if you are unsure what type of glaucoma you have.

39.Question:

Is it safe for a person who takes eye drops for glaucoma to use nasal sprays such as Nasacort?

Answer:

Nasacort is a steroid and it is certainly possible to have steroid-associated intraocular pressure elevations from nasal steroids. Fortunately, most patients will not have an associated pressure rise. However, whenever a nasal steroid is introduced in a patient with glaucoma, or at higher risk for developing glaucoma, monitoring by an ophthalmologist is warranted.

40.Question:

Does pigment dispersion syndrome cause any other problems aside from glaucoma?

Answer:

Pigment dispersion syndrome (when tiny bits of pigment peel off from the iris and raise pressure inside the eye) is associated with moderate nearsightedness, but it has not been shown to cause any other conditions.

41.Question:

I've had nummular keratitis for three years and am wondering how long it persists. I can't stop prednisolone because it recurs. I'm a steroid responder and now I have cataract as well. What other options do I have?

Answer:

Nummular [keratitis](#) describes a pattern of corneal [inflammation](#) that is usually caused by a virus like varicella zoster, which causes chicken pox/[shingles](#), or adenovirus, which causes [conjunctivitis \(pink eye\)](#).

The treatment is steroid eye drops, but occasionally it can be difficult to taper them off without the inflammation coming back. Sometimes this is due to the steroids being tapered too early or too quickly. In these cases, I prefer not to start the steroid taper until a few weeks after I feel the inflammation is completely resolved. With each recurrence, I also extend the steroid a bit longer, sometimes waiting a few weeks before tapering to the next step.

Once someone is down to one steroid drop a day, I may further taper the steroid to every other day, every third day, or every week. If a patient is taking a strong steroid such as difluprenate, I always switch to a weaker strength steroid before stopping. If all of these strategies do not work, I have also tried another anti-inflammatory drop cyclosporin off-label with occasional success.

However, even if you need to stay on steroids for successful treatment, that is okay. Inflammation control is always the first priority. Steroids can cause the [eye pressure](#) to go up and can also cause [cataracts](#). But elevated eye pressure can be treated, and cataracts can be removed, but inadequately controlled inflammation can lead to more significant consequences.

42.Question:

I have Raynaud's (when blood circulation to hands/feet is intermittently interrupted) and take amlodipine but only in the winter. Since Raynaud's and glaucoma are both caused by disorders of the capillaries, would taking the amlodipine year-round also help my glaucoma? Also, is there a higher risk of glaucoma for people who have Raynaud's?

Answer:

Raynaud's syndrome affects one's peripheral circulation and some think that this could affect the blood flow to your [optic nerve](#). The subject of blood flow is an active area of investigation, but some studies suggest that Raynaud's is associated with glaucoma, and in particular, with a type of [glaucoma \(called normal tension glaucoma\)](#) where the [pressures remain in the normal range](#).

I would, however, be very cautious about using the amlodipine for your glaucoma. This too has been studied, and not only are there no clear benefits to using amlodipine, there are situations where lowering one's [blood pressure](#) can limit the blood flow to the optic nerve and cause progressive glaucoma. Be sure to talk with your doctor before altering the prescribed usage of amlodipine or any other medication.

43.Question:

Does caffeine affect [glaucoma](#), and should I limit my intake?

Answer:

There may be a small effect of increased [intraocular pressure](#) with caffeine consumption. However, there is no evidence that this effect is clinically significant. I would say go ahead and enjoy your coffee, tea or energy drink—always with an “eye” toward reasonable moderation, as in all things.

44.Question:

Does cannabidiol oil lower or raise eye pressure? I have read both. If I am taking Lumigan for [glaucoma](#) already, will CBD oil hurt or help me? I want to take CBD for stress and anxiety, but not at the expense of my eyes.

Answer:

UPDATE: A study released in late 2018 shows [CBD may raise intraocular pressure and make glaucoma worse](#). The original answer continues, below.

Oct. 23, 2017:

[We've known since the 1970s that smoking marijuana lowers intraocular pressure](#). The effect is relatively short-acting and not as potent as other FDA-approved pressure-lowering medications. Most of the studies since that time have focused on the cannabinoid, Δ -9-tetrahydrocannabinol (Delta-9-THC), which does lower intraocular pressure, but is the main psychoactive constituent of cannabis. Cannabidiol (CBD) oil has been less rigorously studied, and most of that data is in animal models.

So, the best answer I can give you is that it is hard to say. I have not read anything to suggest that CBD oil will alter the effectiveness of Lumigan, but I don't think it is unreasonable to try it. If you do find that the CBD oil is useful for stress and anxiety, then I would carefully follow you for several months to determine if usage is accompanied by deleterious effects on your intraocular pressure (or otherwise).

45.Question:

I am a registered nurse and aromatherapist. A client has asked me if there are essential oils used to treat [glaucoma \(hers is chronic narrow-angle\)](#). I wanted to tell her that essential oils can't treat this type of underlying disease— isn't that correct?

Answer:

I don't know of any data supporting the use of essential oils to treat glaucoma. Please urge your client to see an ophthalmologist to treat their glaucoma.

46.Question:

I have glaucoma only in my left eye—my right eye is perfect. Two days ago, I accidentally put my glaucoma medication, Dorzox, in my right eye—is that OK?

Answer:

It should be no problem at all. It isn't an oversight you'd like to have happen regularly, but a single dose to the unaffected eye shouldn't cause any issues.

47.Question:

I am experiencing severe dizziness after being changed to Combigan eye drops twice a day. Is this a side effect of this medication?

Answer:

This can be a side effect of either or both of the components of Combigan. Please let the prescribing ophthalmologist know of your symptoms. He or she may consider replacing Combigan with an alternate treatment.

48.Question:

I am a registered nurse and aromatherapist. A client has asked me if there are essential oils used to treat glaucoma (hers is chronic narrow-angle). I wanted to tell her that essential oils can't treat this type of underlying disease— isn't that correct?

Answer:

I don't know of any data supporting the use of essential oils to treat glaucoma. Please urge your client to see an ophthalmologist to treat their glaucoma.

49.Question:

Can cataract surgery be a successful treatment for early-stage narrow angle glaucoma instead of iridotomy? If pressure in both eyes are high normal, could the thinner lens improve fluid outflow?

Answer:

Cataract surgery will deepen the anterior chamber and usually relieve the narrow angle issues. This thinner lens has nothing to do with outflow, but if the removal of the cataract

reopens the trabecular meshwork for outflow, the pressure should improve. Sometimes there are permanent changes to outflow that still may require medication and/or surgery.

50.Question:

If I have been told I have [pigment dispersion syndrome](#), can wearing [contacts](#) cause this to progress or add to the problem?

Answer:

Pigment dispersion happens when increased amounts of pigment (the material that gives the eye's iris its color) circulate abnormally in other parts of the eye. This is usually harmless but occasionally associated with elevated internal eye pressure and blurry vision after vigorous exercise. Most people who have this issue are [myopic \(nearsighted\)](#) and contact lenses are often used to correct the vision with good success. There is no relationship between wearing contact lenses and any aspect of pigment dispersion, so you may wear contact lenses in this condition without worry.

51.Question:

Will [cataract surgery](#) reduce IOP for narrow angle [glaucoma](#) patients?

Answer:

If there is high pressure prior to surgery, this often must be taken care of prior to cataract surgery. In most cases the high pressure of narrow angle glaucoma is related to the aging and increasing size of your cataract, which is the lens of your eye that has gotten cloudier. Once the lens or cataract is removed, the front chamber of the eye should no longer be narrow. Many patients with this issue have better pressures after cataract surgery and may get off drops they were taking for the pressure caused by the crowded front chamber of the eye.

52.Question:

I have [pigment dispersion syndrome \(or PDS, when pigment cells detach from the iris and float inside the eye\)](#) and was told that I'm not a good candidate for [LASIK](#). Do I have any other options or will I be stuck in glasses/contacts forever?

Answer:

Pigment dispersion should not be a problem with LASIK, but there is a higher incidence of [glaucoma](#) in such patients. If that is the concern, [PRK \(photorefractive keratotomy, another type of refractive surgery\)](#) may be the solution, as it puts no extra pressure on the eye.

53.Question:

Would salt in my diet increase my eye pressure?

Answer:

Only indirectly. High salt intake will increase your blood pressure. Since the aqueous humor that determines intraocular pressure empties into the blood vessels, it is possible for temporary increases in blood pressure to also increase your eye pressure.

54.Question:

My husband has [glaucoma](#) and is developing [cataracts](#). He's had iridotomies performed to help control the glaucoma about 15 years ago. Will this interfere with the [cataract surgery](#)?

Answer:

The iridotomies themselves do not interfere with cataract surgery.

55.Question:

Can injectable testosterone elevate [eye pressure](#)?

Answer:

Although there are no known published reports in the peer reviewed journals of elevated IOP associated with testosterone injections, this potential side effect has been listed in the FDA's prescribing information for testosterone.

The American Academy of Ophthalmology recommends that anyone who has not had a [complete baseline exam](#) by 40 years of age should do so, or if there are any new signs or symptoms they should obtain an exam as soon as possible. Initiation of testosterone treatment further reinforces the need to obtain a timely baseline ophthalmic examination by an ophthalmologist.

56.Question:

As a glaucoma patient, is it possible to undergo cataract surgery?

Answer:

While [glaucoma](#) can present at any age, the most common forms of glaucoma are associated with aging. Likewise, [cataract](#), which is a clouding of the eye's natural lens, is most often associated with aging. Therefore, many patients who have glaucoma will develop cataracts and benefit from cataract surgery.

A patient may decide to undergo [cataract surgery](#) when the cataract interferes with their vision and begins affecting normal daily activities. This is different for everyone depending upon what they do daily and there is no set point where a cataract becomes "ripe" and ready for surgery.

Therefore, not only is it possible for a glaucoma patient to need and undergo cataract surgery, it is quite common for this to occur. In the overwhelming majority of cases,

cataract surgery will improve the vision substantially. However, as with any surgery there are risks inherent to cataract surgery and some of these risks may be increased if you have glaucoma. It is important to discuss these risks and the benefits of the surgery with your ophthalmologist.

57.Question:

I have a higher than normal [optic disc C/D ratio](#) (a measurement of the optic disc in the back of the eye that helps ophthalmologists assess glaucoma risks and development). Would having [LASIK](#) or [SMILE](#) (refractive surgery to reduce dependence on glasses) possibly make it difficult for an ophthalmologist to detect [glaucoma](#) in my eyes in the future?

Answer:

If you do not have glaucoma at this time, there really should be no increased risk to the surgery itself. There are established methods for calculating [eye pressure](#) after LASIK surgery. However, glaucoma today is mostly diagnosed with visual field testing and imaging of the nerve fiber layer of the back of the eye which are unchanged by these refractive surgery procedures.

58.Question:

Can I use brimodine and azopt eyedrops after my eyes are dilated?

Answer:

There should be no problem using your [glaucoma](#) drops after your eyes are dilated.

59.Question:

Is it safe to have blepharoplasty if you have narrow angles? Intraocular pressures are low.

Answer:

Yes. [Narrow angle glaucoma](#), or glaucoma in general, is not a contraindication to [blepharoplasty surgery](#).

60.Question:

My [optometrist referred me to an ophthalmologist](#) who I'll be seeing in three months. She wanted me to be [checked for glaucoma](#). She said she didn't think I had it yet, but was approaching the margins of normal "range" and should be seen earlier rather than later, which seems like good sense to me. But I am an avid practitioner of yoga. Some people say you shouldn't do any kinds of inversions if you have glaucoma. Is it OK to keep practicing normally for the three months until I see the doctor?

Answer:

No. Inverted yoga positions in a person with glaucoma can cause your intraocular pressure to go up, and this higher intraocular pressure can cause permanent and irreversible loss of vision. Inversions are any position where your head is below your body—not just headstands, but also standard positions like bridge pose and downward dog.

And really, why wait three months for consultation? Go for the consultation now. Better to call the ophthalmologist and find out if you have glaucoma and whether you need treatment. [Glaucoma has no symptoms](#). In most cases, you don't have blurred vision or feel eye pressure or realize that you are losing vision. Early diagnosis and treatment with eye drops prevents loss of vision.

61.Question:

I have been diagnosed with narrow angle [glaucoma](#) and it has been suggested I have laser iridotomy. With this type of eye condition would I be able to have [LASIK](#) eye correction?

Answer:

Narrow angle glaucoma, if untreated can lead to a sudden attack of acute-angle glaucoma associated with elevated intraocular pressure and pain. Acute-angle glaucoma is an ocular emergency. If not treated in a timely manner, it can lead to some permanent vision loss. It is very important that if your ophthalmologist has recommended iridotomy that you follow up on the recommendation soon. LASIK is a different kind of laser surgery that involves reshaping the cornea, located at the front of the eye, to reduce dependence on [contact lenses](#) or [glasses](#) to see. In general, the factors that would lead to iridotomy or lead to LASIK are independent of each other and quite different. Often, these scenarios can be more complex. For example, some patients who present with narrow angles may also have [cataracts](#). In that case, rather than LASIK, [cataract removal surgery](#) might better address that situation. Each eye is unique. You should speak to your ophthalmologist to have a better understanding of the risks and benefits of any eye procedure. An ophthalmologist can present your options and explain the best intervention for you.

62.Question:

I have open-angle glaucoma. Can I take seasickness tablets without any adverse reactions?

Answer:

If you have open-angle glaucoma, there should be no problem taking medications to prevent seasickness. These medications only present an issue if you have narrow angles (angle closure glaucoma or narrow angle glaucoma, when the iris blocks fluid from leaving the eye) and are at heightened risk of angle closure.

63.Question:

My father has [glaucoma](#). He wasn't born with it, he just discovered it 10 years ago. Is that still considered hereditary? Am I at risk of it?

Answer:

A family history of glaucoma, whether present at birth or acquired later in life, is a [risk factor for glaucoma](#). It is important for you to have regular eye exams, and to convey your family history to your ophthalmologist.

64.Question:

I have an [acute closed angle \(a rare form of glaucoma when pressure within the eye can rise very quickly\)](#). I am 86 years old. My intraocular pressure (IOP) is 13 mm Hg. My optic nerve is not damaged or discolored. I go on a lot of cruises and worry about a high IOP attack during these trips. Should I move forward with a laser iridotomy for safety reasons?

65.Answer:

I don't think you really have an acute closed angle. My guess is that you have a narrow angle (when the colored part of your eye is pushed too far forward), and are at risk for an acutely closed angle (or acute angle closure glaucoma attack). If your ophthalmologist has evaluated your eye and recommended a laser peripheral iridotomy (LPI), you should take that recommendation seriously. Personally, I do have a lower threshold for recommending laser peripheral iridotomies in those who travel extensively and who may find this aspect of modern health care periodically out of reach.

66.Question:

My wife was recently diagnosed with [pigment dispersion syndrome \(or PDS, when pigment cells detach from the iris and float inside the eye\)](#). It's been caught early on and her [pressure levels](#) are all normal. However, the diagnosis has left her rather depressed as she is an avid exerciser and cares about the appearance of her eyes. Over time will PDS cause her eyes to change color drastically to where they are noticeably different colors?

Answer:

PDS usually does not cause a noticeable change in eye color. The pigment released in this syndrome is from a tissue layer on the back of the [iris](#), which is liberated when it rubs against the front surface of the lens. Happily, this tissue layer is not the source of one's eye color. So, while in rare instances, so much pigment is released into the eye that the iris can take on a slightly brown tinge, this is really quite infrequent and should not be a concern.

67.Question:

Can lutein and zeaxanthin decrease eye pressure?

Answer:

These nutritional supplements are generally recommended for people with [macular degeneration](#) or [those at high risk of developing it](#).

They have not been proven to lower [eye pressure](#) and they do not treat [glaucoma](#). They may play a protective role in reducing oxidative stress and damage to the [optic nerve](#) and the [retina](#). Factors shown to impact [glaucoma treatment](#) include regular moderate exercise, [a diet rich in a variety of fruits and vegetables \(particularly green leafy varieties\)](#), healthy sleep habits and the use of relaxation techniques.

68.Question:

How long has OCT scanning been used in ophthalmology?

Answer:

[Optical Coherence Tomography, or OCT](#), is a new powerful tool for the diagnosis and treatment of retinal disease, [glaucoma](#), and optic atrophy. OCT has been used as a research tool for about 20 years. It provides the ophthalmologist with beautiful images of the retina and optic nerve, requires no radiation (as CAT scan does) or injection of dye (as in fluorescein angiography), and can be used safely in people with cardiac pacemakers/defibrillators and hearing implants. It takes only minutes to perform. Over the last decade, retinal specialists have been using OCT to diagnose [macular holes](#), [epiretinal membrane \(macular pucker\)](#), [macular degeneration](#), [central serous retinopathy](#), cystoid macular degeneration, and other retinal diseases. Glaucoma is a painless, symptomless condition that can cause blindness. OCT is very useful for measuring retinal nerve fiber layer and evaluating the optic nerve. With OCT, ophthalmologists can determine the severity of damage from glaucoma and monitor treatment.

69.Question:

Can you use Flonase when you have glaucoma?

Answer:

As you probably know, the body can absorb steroids into the blood stream. In some patients, this can raise the intraocular pressure (IOP). Flonase is a nasal steroid spray that can raise intracocular pressure. While I cannot speak in absolutes about whether you can use Flonase without knowing your history, I would strongly recommend that you monitor your IOP while using the product. Many glaucoma patients can safely use Flonase without any damaging side effects, but I would have your pressure checked in the first few weeks after starting this medication. If you have a history of pressure elevations associated with steroid usage, I would certainly proceed with great caution.

70.Question:

Could getting 3% hydrogen peroxide in my eye lead to glaucoma?

Answer:

The common 3% hydrogen peroxide solution rarely causes permanent or severe eye damage. [Glaucoma](#) is not one of the problems one would suspect from getting this into the eye. Damage of this sort from hydrogen peroxide solution is typically limited to the [cornea, on the surface of the eye](#), where it can produce cause stinging, pain, redness, tearing, and even [corneal abrasion \(scratch\)](#) and [ulceration \(open sore\)](#).

Corneal abrasions and ulcers can be serious if not treated by an ophthalmologist. As with most eye exposure to chemicals, it is wise to flush the eye with water immediately and continue doing so until you know the offending chemical has been flushed from the eye. It would be wise to see your ophthalmologist after you have finished the flush.

71.Question:

Can novocaine (painkiller) used during dental surgery temporarily worsen my [glaucoma](#)?

Answer:

If used as expected, novocaine, which is injected to numb the nerves leading to the teeth, will not have any effect on internal eye pressure. So your glaucoma will be unaffected.

72.Question:

I am thinking of getting eyelash extensions, but I have been diagnosed with glaucoma. Is it safe to get these extensions?

Answer:

This is an interesting question. Eyelash extensions involve “gluing” extensions onto existing eyelashes. This won’t affect your [glaucoma](#). However, keep in mind that if you have been diagnosed with glaucoma, some drops used to treat glaucoma can cause eyelash growth over time, which may eliminate the need for eyelash extensions. Check with your ophthalmologist about this.

73.Question:

Can a slit lamp exam detect glaucoma?

Answer:

Yes, at the slit lamp we can do a variety of tests to detect glaucoma. We can measure pressures and perform an evaluation of the optic nerve and angle. There are several adjunctive tests that are performed with other instruments (pachymetry, automated visual field testing, computer-assisted optic nerve imaging), but the slit lamp examination is central to making the diagnosis.

74.Question:

Can symptoms from [Fuchs' dystrophy \(a condition that harms the inner layer of the cornea\)](#) be confused with [symptoms of glaucoma](#), for example those caused by corneal edema?

Answer:

Fuchs' endothelial dystrophy and glaucoma (a disease that increases pressure in the eye) can have overlapping signs and symptoms that can make them difficult to distinguish. The hallmark sign of Fuchs' is dysfunction of the corneal endothelium and edema (swelling) in all layers of the cornea. Occasionally in glaucoma, patients can get edema in the corneal epithelium, typically when there is a very acute elevation in intraocular pressure. Over time, the cornea adapts to the elevation in eye pressure and the edema resolves.

Glaucoma and Fuchs' can have overlapping symptoms including blurred vision, light sensitivity, glare, and halos. A thorough slit lamp evaluation looking for corneal guttae (damaged corneal cells) in Fuchs' or optic nerve changes in glaucoma, as well as diagnostic tests such as specular microscopy can aid your ophthalmologist in differentiating between the two conditions.

75.Question:

Is acupuncture a good treatment for [glaucoma](#)?

Answer:

There is very little data in the Western literature to suggest acupuncture is an effective treatment for glaucoma. Based upon what I have read, I am not comfortable recommending acupuncture as a specific treatment for glaucoma.

76.Question:

Is it advisable to have an IOL inserted if you also have [glaucoma](#) and use Cosopt drops?

Answer:

Yes—you should still have an IOL. There is hardly ever a situation where an [intraocular lens \(IOL\)](#) would not be advisable for [cataract surgery](#).

77.Question:

I have [glaucoma](#) and I am [myopic](#). Can I have safe, successful [LASIK](#)?

Answer:

Unless the glaucoma is severe, LASIK is an option for most patients with glaucoma. However, one concern is that because LASIK thins the central cornea, it may affect the accuracy of subsequent eye pressure measurements. You should discuss your situation with the MD who is treating your glaucoma.

78.Question:

How is a "target" IOP determined?

Answer:

The determination of target pressure is based upon several factors. These include the baseline pressure or the pressures where someone has previously experienced [glaucoma](#) damage, the extent of damage to the optic nerve, as well as other predisposing factors that may affect an individual's susceptibility to damage.

79.Question:

I have a bad cold and developed [viral conjunctivitis](#). I also have [open-angle glaucoma](#). Can the conjunctivitis adversely affect the pressure in my eye?

Answer:

Generally an upper respiratory tract infection associated with a viral conjunctivitis does not affect the [eye pressure](#). In some circumstances, if the eye becomes extremely congested, the eye pressure could increase a small amount, but this would not be typical. If you have concerns about the nature of your eye, it is important to see your ophthalmologist for a full evaluation.

80.Question:

What is the incidence of [retinal tear or detachment](#) after a sudden onset of PVD following an iridotomy?

Answer:

The incidence of retinal detachment after an iridotomy is quite low. Studies I've seen suggest rates of less than one percent. I've not seen studies that effectively quantify the frequency of retinal tears following laser iridotomy, but I'd suspect that most retinal events that do occur are coincidental.

81.Question:

Is it necessary to have three pressure readings taken when I go for my bi-annual exams? I'm an American, live in Chile, and they always take a reading at 8 am, noon and then at 3 pm. When I lived in the U.S., my doctors only took one reading.

Answer:

[Intraocular pressure](#) generally changes throughout the day with the highest reading early in the morning and the lowest in the mid-afternoon. Due to this fact, your eye doctor in Chile feels more comfortable taking three pressure readings per day. This might be the standard of care in Chile, although most in the U.S., will take one reading as a reasonable sample and only ask for more if the medication and pressure seem to be

working less well. It is generally standard of care in the U.S for [glaucoma](#) patients to be seen every 3 months.

82.Question:

Does having [posterior vitreous detachment](#) lead/contribute to open-angle glaucoma?

Answer:

A posterior vitreous detachment (when the vitreous gel that fills the eye liquefies and collapses as we age) has not b

83.Question:

How safe is [corneal transplantation](#) for someone who has glaucoma?

Answer:

Many patients with [glaucoma](#) undergo successful corneal transplantation surgery. However, the risk of graft failure is increased when their pressure does not stay in good control. Patients may need [additional glaucoma therapy](#) after surgery since often a slight increase in their intraocular pressure is noted. All patients need to be closely monitored to ensure that their transplant remains healthy.

een shown to lead to or contribute to [open-angle glaucoma](#).

84.Question:

What is your opinion of the Trabectome surgical device for the treatment of [open-angle glaucoma](#)?

Answer:

There are [many newer surgical approaches that are being evaluated for the treatment of glaucoma](#), some of which have been approved for use in the United States. The Trabectome is one of the approved methods in the United States. Unfortunately, both with established and newer surgical methods there are always some associated risks and variation in benefits to individual patients. With that in mind, many factors have to be considered by your ophthalmologist, when determining the best treatment, including the type of glaucoma, the state of the disease, and the ocular anatomy, in addition to general health considerations. What is most important is that you work closely with your

ophthalmologist to make sure that your glaucoma is appropriately managed, as untreated glaucoma can lead to permanent vision loss.

85.Question:

How long after a [glaucoma](#) diagnosis do you lose your eye sight?

Answer:

Glaucoma is the most common cause of irreversible yet preventable blindness. It is therefore not expected that you would ever lose your eye sight. Once the glaucoma is diagnosed and [treatment](#) is initiated we do not know how much treatment will be necessary or what will be required to control the glaucoma. In addition, over time it is important to adjust the treatment as needed and control the eye pressure better if anything changes. This can include medications, laser, or glaucoma surgery. While glaucoma is certainly a challenging disease and a frightening diagnosis, with early detection and treatment it is our goal to preserve good and useful vision for your entire lifetime. I encourage you to discuss your outlook and prognosis with your ophthalmologist.

86.Question:

My father in-law has closed-angle [glaucoma](#). He has had [drops and laser surgery](#). He doesn't see at all out of the affected eye. Would any new surgery give him back his sight in that eye? Would it repair the optic nerve? Or would it just stop further damage to that eye?

Answer:

Unfortunately, at the present time we are unable to restore an optic nerve. Newer surgeries can effectively reduce pressures with lower risk, but once an optic nerve has been damaged, with today's technology the accompanying vision loss is permanent.

87.Question:

Is [glaucoma testing](#) a simple routine for a thirteen-year-old? Are any medications involved in a [glaucoma](#) test?

Answer:

Most thirteen-year-olds can do a [visual field test](#). The only medications used in glaucoma testing may be diagnostic drops such as anesthetics or dilating drops. These drops are safe to use except in rare circumstances.

88.Question:

At what stage of glaucoma is surgery the only option for [controlling eye pressure](#)?

Answer:

There are many types of [glaucoma](#). Our assumption is this question is referring to the most common type of glaucoma, primary open-angle glaucoma, which can present in various stages. In managing primary open-angle glaucoma there are many factors to consider in choosing an intervention, including the stage of the disease and apparent rate of progression as well as the more global issues of age, health status, and life expectancy. That is why an ophthalmologist—a physician trained in diseases affecting the entire body as well as diseases of the eye—is best trained to help.

In general, we try to minimize and delay—when safe—exposure to interventional risk. That is, we choose a treatment that is most likely to minimize adverse effects in the short term while preserving vision over the short- and long-term. For that reason, typically, we [try to control intraocular pressure whenever possible with a combination of medication and laser treatments](#). However, in eyes in which we are unable to adequately control the intraocular pressure, despite our best efforts, surgical options need to be considered.

89.Question:

What has caused my eye color to change from dark brown to green?

Answer:

If this is truly in the iris, it means that some of the pigment is being lost. This could be normal or associated with some forms of [glaucoma](#). If it is only in one eye, this might be of concern. Some people get a gray/white ring on the corneas as they age (and we all age at different rates), making the iris appear lighter. Rarely, a Kaiser/Fleischer ring may occur on the cornea, making the underlying iris seem lighter in color. See your ophthalmologist for an accurate diagnosis.

90.Question:

I have been diagnosed with closed-angle [glaucoma](#) in one eye. I had an iridotomy and take Azopt three times a day and Combigan two times a day. My eye tires very easily when doing any close-up work and it feels much better if I just cover the bad eye while working. Is this putting too much strain on my "good" eye? Am I doing any damage to the eye with glaucoma? Is it OK to wear an eye patch when my eye is tired?

Answer:

The eye fatigue that you are noticing could be related to the glaucoma in the eye if you have lost substantial vision or it could be a side effect of the eye drops or merely normal aging. It is good that your closed-angle glaucoma has been diagnosed and that you had

an iridotomy in that eye. If you have primary closed-angle glaucoma it is also important to have your other eye evaluated and perhaps it has already had an iridotomy which can be preventative for angle-closure in the future.

You are not putting strain or causing any harm to your "good" eye by using it nor will this affect the glaucoma in your other eye. If the eye feels better by covering it or shutting the eye that will not do any harm. I urge you discuss these issues with your ophthalmologist and also be sure that your pressure is well controlled and there are no other problems with your eyes.

91.Question:

My wife has [glaucoma](#) and is on many medications for it. She has had three [cornea transplants](#) and the third one is taking hold, but her vision is unstable. Lately she has been seeing images that are outlined in red. This is the second time she has mentioned it. Do you know what is causing this symptom?

Answer:

I am sorry to say that I don't have a good answer to your question. It is not unusual for the corneal swelling associated with a healing transplant to produce glare or haloes around point sources of light, but the red outlining is peculiar. If this continues, please have your wife see her ophthalmologist/cornea specialist for further evaluation.

92.Question:

I have "end-stage open angle [glaucoma](#)" and wondered what the term "6 degree tunnel OU" means.

Answer:

[Visual field tests](#) measure how wide your field of vision is. In other words, to what extent can you see things beyond what is right in front of you in your central vision. Degree measurements begin at the center crosshairs when taking the test, and the measurements get larger the farther from center that you can see. A six degree tunnel indicates that you have a tunnel of vision six degrees wide. People with ten degree visual fields are described as legally blind.

93.Question:

I had laser treatment for narrow angle [glaucoma](#) two weeks ago. I'm now experiencing light sensitivity in that eye and my eye continues to water and is red. How can I treat this?

Answer:

It is possible you still have inflammation following your laser iridotomy. Typically, we treat post-operative inflammation with topical steroids, but the redness and discomfort can return if the steroids are discontinued too quickly.

94.Question:

Can Pred Forte usage elevate intraocular pressure (IOP)? Also, how long after stopping Pred Forte will the IOP drop back to normal?

Answer:

Pred Forte (prednisolone acetate 1%) and other steroids (whether topical, inhaled, oral, intravenous, or injected) can elevate IOP. This is more likely to happen in patients who are predisposed to developing glaucoma. Usually, the pressure-elevating effect of a steroid will wane after a few weeks, but occasionally, we can see the effect persist for months.

95.Question:

Do Azopt® glaucoma [eye drops](#) cause posterior vitreous detachment or accelerate it so it happens soon after starting the drops?

Answer:

There are no data implicating the drops as a cause of [posterior vitreous detachment \(PVD\)](#). Still, PVDs become quite common with aging, so there certainly are people using the drops who have had PVDs or develop them while being treated for [glaucoma](#).

96.Question:

I'm experiencing nausea 10 days after my [cataract surgery](#). I have moderate [glaucoma](#) for which I am taking azopt three times a day besides the post-operative drops of vigamox, prednisolone and ketorolac. Is my nausea due to any of my medications?

Answer:

It is unlikely that the drops are causing nausea, but it is very important to determine that your eye pressure is not too high. If it has been 10 days or more since surgery, and if your eye feels fine, I would stop the vigamox drops.

97.Question:

I recently had [cataract surgery](#) with wonderful crisp, clear vision after the first cataract extraction. However, the second surgery has resulted in blurry vision. Could the postsurgical complications in my second eye be caused by my pseudoexfoliation [glaucoma](#) (which I treat with Timolol eyedrops)? I am returning for a postsurgical checkup on this second eye in one week. I hope I do not have a secondary cataract.

Answer:

It is unlikely that the glaucoma is directly responsible for the blurring. There are a multitude of reasons that postoperative vision may be blurry, and many of these resolve spontaneously. I am confident that your ophthalmologist will evaluate you thoroughly on your return visit. Should your vision continue to deteriorate significantly, you should return earlier.

98.Question:

Is it normal for your eye to be red after laser surgery to lower the pressure in your eye?

Answer:

It is not unusual for an eye to be red for several days following laser trabeculoplasty. Let your ophthalmologist know if the redness persists, or if you develop blurred vision, pain, or progressive light sensitivity.

99.Question:

My 20-year-old son has [uveitis](#) as well as [glaucoma](#) caused by his medications. His IOP is measured at 17 in his right eye and 18 in his left eye. How do we keep the pressure low and continue the meds for the uveitis?

Answer:

The treatment for steroid-induced glaucoma associated with inflammatory eye diseases, such as uveitis, is to lower the eye pressure initially with glaucoma medications and possibly glaucoma surgery if the eye pressures are high enough and persistent enough to cause damage to the optic nerve. Another means is to stop the use of steroids, but this is often not an option because of the eye inflammation that needs to be treated to prevent vision loss and damage to the eye.

In certain cases, inflammation of the eye can be treated with non-steroidal medications (topical, oral and/or intravenous) depending on the severity of the uveitis and the side effects of treatment, although steroids are the most commonly prescribed medication class used to treat eye inflammation. Baseline optic nerve head and visual field testing is recommended so that your ophthalmologist can determine if steroid-induced glaucoma is causing optic nerve damage or visual field loss. Depending on the test results, your

ophthalmologist may recommend more aggressive glaucoma treatments or the use of non-steroidal uveitis treatments.

100.Question:

My 61 year old husband is almost blind from diabetes related glaucoma. Are there any surgical treatments available to return his vision?

Answer:

Vision loss from [glaucoma](#) is irreversible unfortunately. However, it is important that your husband or any individual with diabetes and glaucoma maintain regular complete eye care. It may be that glasses, [cataract surgery](#), treatment for diabetic macular edema or bleeding may be necessary which may improve the vision.

101.Question:

I have been diagnosed as being at risk for closed-angle glaucoma. My doctor is recommending a laser iridotomy. I have read the risks, but have not found anything that says this treatment is recommended as a prophylactic measure. How do I properly assess my risks?

Answer:

Laser iridotomy is a laser treatment to help prevent angle-closure glaucoma. Typically, an ophthalmologist will recommend the laser treatment if the angle is narrow enough to increase the risk of glaucoma significantly. The best approach is to discuss your concerns with your ophthalmologist, and ask her/him about your specific risks.

102.Question:

I was reading your website on everything having to do with [glaucoma](#). I just had [trabeculectomy surgery](#) on Tuesday in my right eye only. My question to you is that since I am stuck at home recovering and being extremely careful, would it be harmful to [smoke marijuana](#)? I know it doesn't cure glaucoma, but just to relax and take it easy? I have tried finding articles on using it after the surgery just to relax and haven't found any answers. If you could please email me back so that I know whether or not it will ruin the healing process, I would really appreciate it.

Answer:

Any recovery from eye surgery can be complex. Recovery from glaucoma filtering surgery can be especially complicated depending upon many factors relating to the stage and type of the glaucoma that you have, the medical and other treatments performed before surgery, the nature of the surgery, as well as how your eye heals

following surgery. Cannabinoid containing compounds, such as marijuana, have been reported in some individuals to lower the eye pressure and have been used as a treatment for glaucoma. Unfortunately, in most of these studies the pressure reduction was relatively short term, and more and more marijuana is required over time in order to achieve the same effect. Smoking marijuana can also damage the lungs, similar to what can occur with cigarettes.

While the mechanism by which marijuana lowers the eye pressure is not fully understood, it appears to work by reducing the amount of fluid that is made in the eye. Following glaucoma surgery, it is important for the eye to make fluid normally in order to heal properly. Use of marijuana could potentially, therefore, interfere with appropriate healing and increase the risk of the surgery failing. You should talk with your ophthalmologist before taking anything that could affect your eyes following surgery.

103.Question:

What causes high eye pressure?

Answer:

The causes for elevated eye pressures are only partially known. In some individuals, a specific cause can be identified. High eye pressure is always related to some increased resistance or obstruction of the normal outflow of fluid inside the eye. Inside the eye, fluid is constantly being manufactured and has to drain from inside the eye. The pressure will only elevate if the drainage system in the eye is somehow not functioning properly. With injury or trauma, for example, the drainage system can be blocked in the eye, hopefully only temporarily. However, in most individuals with elevated eye pressure and [glaucoma](#), the drainage system appears normal but is not functioning properly. The molecular mechanisms that lead to the failure of the drainage system are not entirely understood.

104.Question:

I have [glaucoma](#) and am being treated with prostaglandin eyedrops after having had laser iridotomy in each eye. Can I continue being a platelet donor as I have been for the last few years?

Answer:

I know of no problem with prostaglandin drops and platelet donation. You should, however, always notify the blood bank of all medications you are taking including drops.

105.Question:

Is it possible to get an [eye pressure](#) measuring device for the home that will not make direct contact with the eye?

Answer:

There are techniques for measuring the eye pressure without directly contacting the eye. These techniques are referred to as "non-contact [tonometry](#)."

The most common form of non-contact tonometry is air puff tonometry, which uses a rapid air pulse released from the tip of the device which rebounds from the cornea, allowing an estimation of the pressure inside the eye. These devices have relatively good correlation with standard techniques of measuring the pressure that does actually contact the front of the eye.

There are other techniques that can estimate the eye pressure through the eyelid. With this technique the patient looks for a characteristic light reflex in their side vision when the device is pressed against the eye through the lid in order to estimate the pressure. There are some concerns about the accuracy of this technique.

A more important question is how these eye pressure measurements obtained at home will be utilized. It is important to discuss with your ophthalmologist what value and insights might be obtained from these home eye pressure readings in the management of your [glaucoma](#).

106Question:

How do eye drops relieve pressure when you have [glaucoma](#)

Answer:

Different drops have different mechanisms. Some eye drops work to diminish the amount of fluid the eye produces. Others work to enhance the amount of fluid that drains out of the eye.

107Question:

Can drinking green tea have an effect on ocular pressure?

Answer:

I am unaware of studies suggesting that green tea itself has a direct effect on intraocular pressure. However, there has been some work suggesting that there is penetration of the powerful antioxidants, known as catechins, into the ocular tissue in rats. Reduced oxidative stress could play a role in diminishing the rate of [glaucoma](#) disease progression.