

# Glaucoma



Chats

## Glaucoma Treatments in 2024

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Transcript of teleconference with Dr. Lindsay Machen, glaucoma specialist at TriCentury Eye Care in Philadelphia, PA

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Please note: This Chat has been edited for clarity and brevity.

**MS. KACI BAEZ:** Hello, and welcome to today's BrightFocus Glaucoma Chat. My name is Kaci Baez, and on behalf of BrightFocus Foundation, I'm excited to be here with you today to talk about "Glaucoma Treatments in 2024." Our Glaucoma Chats are a monthly program, in partnership with the American Glaucoma Society, designed to provide people living with glaucoma and the family and friends who support them with information straight from the experts. All vision Chats presented by BrightFocus are also available to listen to on the go on YouTube, Spotify, iHeartRadio, Amazon Music, Apple Podcasts, and Pandora. BrightFocus' National Glaucoma Research program is one of the world's leading nonprofit funders of glaucoma research and has supported nearly \$51 million in scientific grants exploring the root causes, prevention strategies, and treatments to end this sight-stealing disease. National Glaucoma Research is currently supporting 38 active projects across the globe.

Now, I would like to introduce today's guest speaker, Lindsay Machen, MD, a glaucoma specialist at TriCentury Eye Care in Philadelphia [Pennsylvania]. Dr. Machen received her undergraduate degree from Bucknell University, attended medical school at The Pennsylvania State University College of Medicine, and completed her internship here at Reading Hospital, followed by her ophthalmology residency at the Illinois Eye and Ear Infirmary in Chicago, where she served as Chief Resident, to return to Pennsylvania to complete her glaucoma fellowship at Wills Eye Hospital and has focused her academic efforts on re-envisioning and modernizing ophthalmology education and has created a curriculum utilized by multiple residency programs. Dr. Machen remains committed to educating younger generations of ophthalmologists and using educational resources to help her patients improve their conditions. Welcome, Dr. Machen.

**DR. LINDSAY MACHEN:** Thank you so much, Kaci. It's a pleasure to be here today.

**MS. KACI BAEZ:** Thanks so much for joining us. And so, for today's conversation, we'll just dive right in with the basics. You have glaucoma, and there's no cure for glaucoma, and so you need a plan. What exactly is a plan? And this may be the hardest part: Who manages a glaucoma treatment plan?

**DR. LINDSAY MACHEN:** Certainly. Yeah, one of the million-dollar questions, but effectively, a glaucoma treatment plan is the advice or plan that's made by you and your providers to try to lower intraocular pressures, thereby reducing your risk of progressive glaucoma damage. So, I'd say it's made in combination with you and your ophthalmic provider, be that a glaucoma specialist or a comprehensive ophthalmologist or even an optometrist. And it centers around goals of care, meaning lowering eye pressure, preserving vision. And the means by which that occurs is based entirely on the goal pressure and also your goals of care. And so, that could involve anything from eye drops to laser to surgery.

**MS. KACI BAEZ:** Great. Thank you. What are some of the more well-known treatments available today that some of our listeners might be

more familiar with? And what are the different types that people are most commonly using these days?

**DR. LINDSAY MACHEN:** I think the main center-effective tenant of treatment of glaucoma is lowering eye pressure, and we can do that using a number of different resources. The mainstay tends to be eye drops, mainly because they are noninvasive; generally speaking, affordable and generic; and pretty well known. They lower pressure utilizing different physiological and pharmacological properties, but another interesting modality of treatment is a laser, a so-called selective laser trabeculoplasty treatment. There was a trial published several years ago, titled The Light Trial, of which there are links available online, that looked at the effectivity of laser versus eye drops and found significant benefit to utilizing the laser as actually a first-line therapy. Some may think that a laser sounds slightly more invasive than an eye drop, but it's actually a very safe, well-tolerated procedure that's done in the office, takes approximately 30 seconds to 1 minute, and does not require any type of sedation and you're back to your normal activities the same day. Typically, we escalate care starting with laser/drop therapy combination, and then we would move on to something more aggressive, such as a surgical intervention. Surgeries range from what we call "minimally invasive glaucoma procedures," abbreviated MIGS, to more aggressive filtering procedures, which you may have heard of, including tube shunts or trabeculectomy procedures.

**MS. KACI BAEZ:** Our listeners often want to know: Are generic medications as effective as brand-name medications when it comes to treating glaucoma? What is your take on that?

**DR. LINDSAY MACHEN:** Yeah, of course. It's a tough question. For the most part, brand name medications are produced by the same manufacturer every time. So, we can be a little more certain of the components, both the active ingredients as well as the preservatives of those drops, and a little more assured of the consistency across production. However, I say the best medications are those that are affordable and utilized. So, unfortunately, brand-name medications tend to be less affordable, not necessarily covered by all insurers. And I've

had great luck utilizing generic medications in my patients without any adverse effects or reduction in pressure lowering. So, I'd say starting with a generic medication is actually a very viable option, and then, certainly, if your insurance happens to cover the brand name, that may be better for you and is a good means of escalating care. But ultimately, I have not in my practice seen a significant enough difference to suggest that generics are not comparable to their brand-name competitors.

**MS. KACI BAEZ:** Great. Thank you. If the daily glaucoma eye drops don't work, what is the next alternative? Is it usually a combination of things recommended by doctors for glaucoma, or is it just try one thing at a time?

**DR. LINDSAY MACHEN:** I think it's a very independent and artistic question, if you will. So, it depends on how aggressive the patient wants to be, how far from the goal eye pressure the patient's pressures are measuring. So, if you happen to be on one drop, typically we would start a second eye drop or offer a laser treatment if that had not been utilized or offered previously. We do have combination drops, meaning drops in which two drops are contained in one bottle. That can help further lower pressure without requiring more exertion on the part of the patient; you only have to use one bottle instead of two for the same effective two medications. Typically, though, we employ a stepwise approach. If you start with laser or drops and it's not effective in lowering the pressure or not as effective as need be, we'd move on to, perhaps, a second eye drop or utilizing the laser, perhaps a combination agent. There are so many different agents available to treat glaucoma in terms of drops that we typically escalate care starting from those that are dosed minimally, meaning once a day, to those dosed more consistently, two or three times a day, and then we try and leave those with the greatest systemic side effects to last to avoid any adverse side effects.

**MS. KACI BAEZ:** Thank you for that detailed information. It can be a complex landscape when it comes to glaucoma treatments these days, but it is exciting that there are so many new options becoming available. Some of our listeners may have heard of injectable medications for glaucoma. What injectable medications are available for glaucoma, and

what are the risks and benefits?

**DR. LINDSAY MACHEN:** Currently, we have two FDA-approved injectable glaucoma treatments. We're looking to our retina colleagues to use injectable medications for conditions like macular degeneration or diabetic retinopathy as inspiration. The two we have available. The first is Durysta®. It's a small pellet containing a prostaglandin analog, often known as latanoprost, generically speaking. That pellet's embedded with the medication, and the medication pellet's injected into the front of the eye, the so-called "anterior chamber." That little pellet sits in the inferior part of the front of the eye and emits drug over the course of approximately 30 months. This helps to lower pressure without requiring the patient to take an eye drop every evening. A similar medication was just devised by another company, Glaukos, and the name of the medication is iDose®. It's similar in theory to the device, with a reservoir containing a very similar prostaglandin analog medication that's eluted over a similar time course. The biggest risks with these medications is, of course, that the device—either the pellet for Durysta or the metallic device for iDose—is injected into the front of the eye, requiring a trip to the operating room for the iDose or sterile conditions in the clinic for Durysta. Any time we enter the eye, there is the theoretical risk of bleeding, infection, and decrease in best vision. The risks are very low, but they do exist, and compared to a drop, which does not carry risk of infection or vision loss, there are some additional considerations when utilizing these medications.

**MS. KACI BAEZ:** Great. Thank you. Let's say a person is ready to consider surgery for glaucoma. What are the types of glaucoma surgery available, and are there any newer surgical treatments that our listeners should know about?

**DR. LINDSAY MACHEN:** Yeah, there's a lot of considerations when it comes to glaucoma surgery. So, before I briefly mentioned that minimally invasive glaucoma surgical opportunities, those are typically done in combination with cataract surgery. So if you're someone who's not yet had your cataracts out but they're becoming visually significant and your provider is suggesting it may be time for cataract surgery, a

minimally invasive glaucoma procedure—so-called MIGS—would be a great combination procedure available to you. There's a lot within this spectrum, things like the eye stent, which you may have heard of; a device called the Kahook Dual Blade®; a device called TrabEx—the list goes on. All of these procedures are minimally invasive, in that they can be combined with cataract surgery, adding only 1 to 2 minutes in skilled hands. The majority of these devices do not leave behind any residual hardware. They target the drainage system in the front of the eye. You can think of the eye just kind of like a bathtub. There's a drain right in the front of the eye that, over time, in patients with glaucoma becomes clogged, for lack of a better term. It's less effective, and as a result, fluid builds up in the eye, causing elevation in pressures. These minimally invasive glaucoma devices act almost like a roto-rooter. You go in, and you remove that blockage or obstruction to outflow so fluid can more easily flow out of the eye, thereby reducing the pressure and reducing your risk of progressive glaucoma damage. When someone who has a cataract that requires removal and has elevation and pressures but not severe glaucoma, I would say the minimally invasive glaucoma procedures are a wonderful option.

Say you've already had your cataract removed, however, and you have what's considered to be severe glaucoma. In discussion with your provider, you may get the impression that a minimally invasive glaucoma procedure is actually not the best route for you to go. On average, minimally invasive glaucoma procedures can reduce the pressure by approximately 15 percent to 20 percent. So if you're starting with very high pressures and you need a near 50 percent reduction in your pressure for safety and stability purposes, MIGS is probably not the right route. Then we would start talking about more aggressive ... what are called filtering surgeries. That's along the lines of the glaucoma tube shunt or trabeculectomy. These procedures involve creating a conduit, a new alternative drain. For the trabeculectomy, a hole is created in the sclera, the wall of the eye, to allow for fluid to filter out of the eye. That hole is covered by skin and tissue so that when the fluid moves out of the eye, it forms a small little bleb or bubble, and then that fluid gets reabsorbed by the skin of the eye. Similarly, a tube shunt involves a device that looks much like a rubber plate with a straw attached. The straw siphons fluid

off of the eye via the anterior chamber, the front part of the eye, and then the plate serves as a reservoir for reabsorption. Again, all covered by skin. Both of these surgeries are performed up under the upper eyelid on the skin of the eye, and so they're not visible typically to the naked eye. Those are more aggressive procedures and carry greater risks, more long-term risk of infection, bleeding, and, of course, loss of sight with any surgical intervention is a rare but potential possibility. I think the most important thing to understand about glaucoma surgery is that it's unfortunately not curative of the condition and does not restore any vision that you may have lost as a result of your preexisting glaucoma damage. These procedures aim to lower pressure and, hopefully, reduce the number of eye drops required, but they cannot reverse the damage that has already occurred, so careful consideration and discussion with your provider are essential.

**MS. KACI BAEZ:** That's such an important reminder about these procedures that they're not going to be a magical cure. A lot of people want to know: Are there any treatments that do improve vision? People are looking for the next new treatment on the horizon that might restore sight.

**DR. LINDSAY MACHEN:** Yeah, of course, theoretically, in a lot of our research studies, we are avidly looking at ways in which to restore vision. At this point, our current drop regimens, laser, surgery cannot yield an improvement in vision. Now that said, if you happen to have a cataract that's impairing your quality of vision, removing that in combination with a glaucoma procedure could theoretically improve the vision, but not from a glaucoma standpoint. There are some interesting studies out of Cornell University looking at high-dose administration of some antioxidants that might have improved the visual field, which is the test of your peripheral vision. But those are in very rudimentary early stages, requiring very high doses of medications that can have untoward stomach side effects. So, unfortunately, at this point, we don't have a lot that can improve vision. However, there are low vision rehabilitation options that can optimize the vision of our patients suffering from glaucoma. So, working with our low vision colleagues and optometrists, we can help with closed-circuit television, magnifying glasses, white cane aids, prism glasses, all of which

can help improve the vision that you do have. And in a lot of ways, that's an important focus as we move forward in treatment and care.

**MS. KACI BAEZ:** That's an excellent point. And Dr. Machen you mentioned cataracts a couple of times. Is cataract surgery safe for people with glaucoma? And can it help glaucoma?

**DR. LINDSAY MACHEN:** It's absolutely safe for patients with glaucoma. I think we probably should take a step back and even just define the different types of glaucoma, because that's pertinent for this portion of the discussion. Typically, glaucoma is grouped into two distinct categories: so-called open-angle glaucoma and so-called angle-closure glaucoma. There's different etiologies within each category, but broadly speaking, the majority of people suffer from open-angle glaucoma, and that refers back to that drainage system that I mentioned in the front of the eye. If that drainage system in the front of the eye shows evidence of true scarring, then that patient is suffering from angle-closure glaucoma. And that can happen over time in patients with smaller-than-average eyeballs in whom the cataract is growing in size. As the cataract grows in size, it takes up more space in the eye and can lead to narrowing of that channel in the front of the eye and subsequent scarring. For those patients, cataract surgery can actually be a treatment, even curative, of angle-closure glaucoma. Now, that said, since the majority of people are suffering from open angle, cataract surgery will not cure glaucoma, but there's no contraindications to cataract surgery in patients with glaucoma. And, on average, patients notice a 2-point reduction in pressure with cataract surgery alone. So, not only is it safe, but it actually can be beneficial. As I mentioned before, you can also combine the cataract surgery with a small minimally invasive glaucoma procedure to further lower pressure.

**MS. KACI BAEZ:** Thank you. Does the choice of treatment depend on the stage or type of glaucoma? And also, what about the age of the patient? How does that factor into glaucoma treatment consideration, typically?

**DR. LINDSAY MACHEN:** Choice of treatment is wholly dependent on stage and type of glaucoma, although there are no hard and fast rules, so by no means do you need to have X degree of glaucoma or be X



age to undergo a specific treatment. That said, most of our glaucoma surgical interventions have an approximately 10-year shelf life, so we do try and reserve those surgical interventions until later in life when we've exhausted the less aggressive, more conservative measures. That said, if I was speaking with a patient who had significant drop allergies, could not tolerate the utilization of drops, had a physical restriction whereby they could not administer their own drops, then perhaps earlier surgery would actually be an excellent option for said patient. For the most part, we try and escalate care based on degree of glaucoma. If you have ocular hypertension, meaning high pressure in the eyes but no glaucoma damage or very mild glaucoma, we would recommend starting with the laser treatment or a single eye drop. If you have more advanced glaucoma, we may start multiple agents or even suggest going straight to a surgical intervention. In terms of the age, it's a very big difference between congenital glaucoma, which occurs at birth, which has been discussed in other BrightFocus discussions, versus primary open-angle glaucoma in our older patient populations.

So, yes, there's a big difference between the way in which those are treated, mainly because the eye is so different when we're in infancy versus adulthood. We have more considerations of how the eye is going to grow and develop over time. We have different goals for visual preservation and restoration, so the age of the patient does matter. But when we're talking about adults—those over the age of, I would say, about 18 years of age—the age actually does not matter quite as much, except in the fact that we want to preserve as much real estate on the eye as possible, thereby deferring surgery if more conservative measures do work for the patient.

**MS. KACI BAEZ:** Thank you for that information. It's so interesting because we age every single day, and our risk for age-related diseases increases daily, so it's so important to have all of this valuable information about treatment plans. And so, when thinking about a glaucoma treatment plan, how might other variable factors, such as one's genetics, gender, or other ancestral or ethnicity factors play a role in the efficacy of these vision treatments we're discussing today?

**DR. LINDSAY MACHEN:** One of the greatest risk factors for the development of glaucoma is family history, so certainly, ask your relatives, speak with family members, and relay that information to your physician, because our index of suspicion, meaning our red flag, goes up when we hear of family members with a history of glaucoma. Gender tends to be equal amidst the genders, at least for adult-onset glaucomatous damage. Ethnicity plays a major role. We know that our African American patients suffer much more aggressive and much more advanced glaucoma presentation. Some of this is due to disparities in health care access, but a lot also has to do with just basic ethnicity differences between populations. So, we take these into great consideration.

**MS. KACI BAEZ:** Thank you. And I also wanted to note that a recent National Glaucoma Research–funded study discovered that Black and Asian people diagnosed with glaucoma undergo visual field testing less often per office visit compared to white people. So, it's just so important to think about all of these factors that play into glaucoma and glaucoma treatment. And many of our listeners also want to know about lifestyle strategies or nondrug or noninvasive therapies or interventions that can help with glaucoma treatment. What are the best vitamins and diet for someone with glaucoma?

**DR. LINDSAY MACHEN:** Yeah, this is an area in which I'm really passionate, and I try and discuss this with my patients as often as possible because I think it's nice to feel empowered, and this is a way for our patients to really become involved and invested in their care. So, the first thing that I recommend is reduction in caffeine, tobacco, and alcohol intake. So, there's no specific evidence to suggest that 8 ounces or less of caffeine a day impact eye pressure, but high-dose caffeine administration in studies has shown an increase in eye pressure, so I do tell my patients to keep it to about 8 ounces or less a day. And you'll be surprised when you start measuring your ounces of caffeine, what we call a cup is actually much closer to 16 to 20 ounces of caffeinated beverages a day. Similarly, smoking does impact eye pressure, and so we, as every other physician, do recommend smoking cessation. Alcohol, typically I tell my patients, based on some studies out of South Korea, to limit alcohol to three to four drinks per week. In terms of diet, we really encourage healthy exercise,

diet, and specifically antioxidant intake—so, green leafy vegetables, fruits that are high in antioxidants, such as peaches, kale. Radishes are a great source of antioxidants.

Unfortunately, there are no standardized vitamin supplementation that have been shown to benefit intraocular pressure, unlike macular degeneration, which has the very commonly known PreserVision® eye vitamin or AREDS formulation. There's not anything proven in our literature to strongly suggest vitamin supplementation. However, meditation has been proven to reduce eye pressure. There are many free applications available online or via phone, such as Headspace, that can help give you 5 to 10 minutes of dedicated focus meditation a day, which has been proven to reduce pressure in the long run. Similarly, 30 minutes or more of exercise five times a week has also been shown to lower eye pressure. Not an easy prescription. That's probably one of the harder things I encourage my patients to do, but it is something over which you have agency and which I find patients feel really passionate about.

**MS. KACI BAEZ:** Thank you so much. I know every day is a chance to improve our eye health, and so that's super helpful information. You mentioned vision rehab earlier. Could you explain a bit more about that?

**DR. LINDSAY MACHEN:** Yes. Vision rehab can be administered by a number of different providers. Typically in my community, it's optometrists that have had focused education in the subset of optometry where we help people utilize the vision that they do have. Most patients with glaucoma notice changes in their peripheral vision, which can be hindering for things like merging in traffic, driving comfortably, getting to know their surroundings, or even reading and tracking words throughout a text. So, we can send them to these low vision specialists, who will work with them to provide special glasses to help with enhancing reading capacity. They can place a prism in the glass, which actually shifts the words on the page to make reading a bit more simplistic. They can help with magnifying devices, either those handheld stand magnifiers or even closed-circuit television captioning. They can help with audio references, they can help with large text print books, and then they can do things that are more occupational, such as cane training, use of assistive aids, making

the home safer by removing loose furniture or upturned rugs. So, seeking out care through your provider to a low vision specialist is something that should be utilized early and often. I think all too often people feel that a referral to a low vision specialist is a sign of defeat, whereas I think of it as another additional tool to be used simultaneously to really optimize what you do have. You wouldn't ignore an asset that you have available, so I encourage patients not to think of it as defeat but as optimization of the capacity that you have.

**MS. KACI BAEZ:** It really is wonderful that there are so many options and resources available for people with low vision, so thank you for explaining that. Are there any new treatments on the horizon for glaucoma later this year in 2024, or perhaps in 2025, that are causing glaucoma professionals to be hopeful?

**DR. LINDSAY MACHEN:** You know, I think the iDose is our most recent FDA-approved device that's going to be very revolutionary to the provision of care. You know, if we can incorporate one drug into an eluting device that does not require the patient to remember to instill the drop, ideally we'd be able to incorporate all drops into this type of nondependent administration system. There is some interesting stem cell research, but unfortunately, nothing directly applied to regeneration of the optic nerve at this point—at least not readily available, though clinical trials are ongoing. At this point, I think we're looking at iDose as a really interesting modality, and then there are some new minimally invasive glaucoma devices coming down the pipeline, many of which are similar to what's already existing or are platforms that currently exist today.

**MS. KACI BAEZ:** Thank you. Communication about health can often seem like a daunting task. Do you have any advice on how our listeners and individuals affected by glaucoma can effectively discuss information or treatment options with their health care providers?

**DR. LINDSAY MACHEN:** I think you never know until you ask, so you want to find a provider that's going to be able to answer as many of your questions in the time allotted as they can. So, I tell my patients, "Come armed with your questions. Write them down." The minute you sit down in the doctor's office, it all goes out of your head, so please write it down.

And then you can come in with articles or questions of interest and keep the discussion going. You know, if you get one or two questions answered at one visit, if you're coming in for pressure checks every 3 to 4 months, there's going to be plenty of opportunity to continue that discussion. You can also utilize the portal system that your physician or office employs to initiate that conversation. Send a message in advance of your appointment saying, "Hey, I'm really interested in talking about iDose and whether I would be a candidate," or "Selective laser trabeculoplasty and whether my glaucoma warrants laser treatment—could we discuss this at my next visit?" And just that little heads up will give the physician the opportunity to review your chart and make a decision as to whether that would be something that's (a) beneficial and (b) of timely import for you. And I think that's a great starting point.

**MS. KACI BAEZ:** Thank you so much, Dr. Machen. We actually just got a listener-submitted question, who has asked, "Can glaucoma treatments be used if you also have macular degeneration?" We also have a Macular Degeneration Chat. And so, that's actually a great question.

**DR. LINDSAY MACHEN:** Yeah, absolutely. So, unfortunately, an eye can have multiple problems. We wish it was that you only had one ocular condition to combat, but yes, all of the treatments that we utilize to treat glaucoma are typically safe for macular degeneration. Glaucoma surgery does carry risk of progressive macular degenerative changes. And that's not a hard-and-fast rule, and it's not that the entirety of patients treated with surgery see progression, but it is something that has been noted. That said, however, if the pressures are very elevated and you require the surgery for preservation of vision, that risk–benefit discussion will be important to have with your provider. Generally speaking, though, the laser and drops do not compromise treatment or stability of macular degeneration.

**MS. KACI BAEZ:** Thank you. We have a couple more listener-submitted questions that we have just a couple more minutes for, and one of those questions is, "I'm on several medications, and my eyes are extremely dry. What is the best treatment for dry eyes?"

**DR. LINDSAY MACHEN:** Yeah, this is a question that plagues many, many

listeners. So, you are not alone. All drops contain preservatives, which are inherently drying to the surface of the eye. I wouldn't say there's one great treatment. Dry eye, just like glaucoma, has no cure, so I think it really ends up being a compilation and constellation of things. First is simple things, warm compresses and cleaning the eyelids. It sounds silly, but it's very soothing. Take a washcloth, run it under warm water, hold it gently on a closed eye over the lid. You can use that same washcloth, put a little bit of baby shampoo on it, and closing the lids gently, clean the eyelids. This gets rid of any debris and accumulation of the glands of the eye. The glands of the eye produce good oil, which is secreted onto the surface of the eye and coats the eye. That prevents evaporation of your tears and subsequent dryness. I preference preservative-free artificial tears. They'll be labeled as such in your pharmacy and available without a prescription, and as long as it's preservative free, it can be used up to every hour.

If you do find that these measures are not sufficient, then we can look to more aggressive interventions in the form of prescribed medications. Sadly, these tend to be pretty unaffordable but, based on your insurance, would be a good option in discussion with your provider, such as Xiidra®, cyclosporine, or Restasis®. And then a newer drug called Tyrvaya®, which is actually a nasal spray used to irritate the nasal passages, yielding tearing and reduction in dry-eye symptoms. So, I'd probably start with the more conservative measures, escalating your way up until you get to, probably, I think, the most aggressive intervention, but one of the most effective, which is called serum tears. This is done typically through a cornea specialist. They'll actually take a sample of your blood, spin it down, remove the red blood cells, and take the serum—the yellow/white component of blood—and formulate that into an eye drop. All of your body's natural immune systems and cells are then deposited on the surface of the eye through the eye drop to help yield comfort, and I find that patients find this very helpful. It is, however, labor intensive in that you have to have a blood draw and expensive. The drops can range anywhere from \$60 to \$100 per bottle and is not covered by insurance.

**MS. KACI BAEZ:** That's really helpful information and very detailed. Thank you so much. Another question we have is, "If I get an LPI procedure, can I change drops from a combination medication to a single medication?"

**DR. LINDSAY MACHEN:** So, a laser peripheral iridotomy is a purely anatomic fix. It's a laser used to create a hole in the colored part of the eye, the iris, to try and increase space in the anterior chamber. This is utilized in patients with that form of glaucoma I mentioned called angle closure, but the laser itself does not reduce pressure. It's purely an anatomic change, so if you require drops prior to the laser, it's unlikely that the laser itself will change the need for an eye drop or the type of eye drop. Unfortunately, most people still require drops after this type of laser treatment.

**MS. KACI BAEZ:** Okay. Thank you. And what new glaucoma treatments may be useful for low- or controlled-pressure glaucoma?

**DR. LINDSAY MACHEN:** Typically, the approaches to low-tension glaucoma or normal-tension glaucoma and high-pressure glaucoma are similar, so everything that's new on the market today is a viable option for either type or brand of glaucoma.

**MS. KACI BAEZ:** Okay. Thank you so much. And so, our final question, saving the best for last: What about eye transplants?

**DR. LINDSAY MACHEN:** Ugh, don't we wish? Unfortunately, currently there are no available eye transplants, meaning a full eye transplant. We can transplant corneas. Unfortunately, corneas are the clear front part of the eye and are not what's at fault in glaucoma. In glaucoma, we're dealing with damage to the nerve in the back of the eye, so transplanting a cornea in a patient with glaucoma would not yield improvement in vision. And as of this date and this point, there's no nerve transplant and no whole-eye transplants available.

**MS. KACI BAEZ:** Got it. Thanks for the information there. And there's new research breakthroughs every day. And thank you, Dr. Machen.

**DR. LINDSAY MACHEN:** Right.

**MS. KACI BAEZ:** Yeah. There's so much to be excited about, truly. And again, thank you so much, Dr. Machen, for all the important information you shared with us today. To our listeners, thank you so much for joining

our Glaucoma audio Chat. I would like to mention that our website, [www.BrightFocus.org/glaucoma](http://www.BrightFocus.org/glaucoma), has a wealth of low vision resources. One in particular is our treatment options fact sheet for glaucoma, which is available in print or as a PDF and can be mailed or emailed to listeners free of charge. Our partner, AGS, also has a series of handouts on glaucoma treatments that are available on their website, which we will link to at the end of this transcript.

I'm also happy to let you know that National Glaucoma Research recently awarded 9 new grants to scientists around the world at an investment of nearly \$2,000,000. These scientists are investigating some of the most innovative and cutting-edge ideas in the field to continue advancing our understanding of the origins of glaucoma and why certain neurons in the eye are more resilient than others. Their relentless determination on the quest for a cure fuels the development of new treatments and allows for earlier detection of irreversible vision loss. Take charge of your eye health today and visit our website at [www.BrightFocus.org/glaucoma](http://www.BrightFocus.org/glaucoma) and read more about the latest glaucoma breakthroughs, promising research studies, and expertly vetted eye health and wellness information. Many thanks, again, to our amazing community of donors for making this possible.

Our next Glaucoma Chat on Wednesday, October 9, will answer the very popular question everyone wants the answer to which is, "Can glaucoma be prevented?" And it will explore the science behind risk reduction. Thanks again for joining us, and this concludes today's BrightFocus Glaucoma Chat.



## Useful Resources and Key Terms

BrightFocus Foundation: (800) 437-2423 or visit us at [BrightFocus.org](https://BrightFocus.org). Available resources include—

- [BrightFocus Foundation Live Chats and Chat Archive](#)
- [Glaucoma research funded by BrightFocus Foundation](#)
- [Overview of Glaucoma](#)
- [Treatments for Glaucoma](#)
- [Resources for Glaucoma](#)
- [Expert Advice for Glaucoma](#)

## Drugs and other forms of treatment mentioned during the Chat include—

- Durysta (bimatoprost-SR)
- iDose (travoprost intracameral implant)
- Xiidra (lifitegrast ophthalmic solution)
- Tyrvaya (varenicline solution)
- Kahook Dual Blade
- TrabEx
- Latanoprost, a rho-kinase inhibitor
- Trabeculectomy and tube shunts
- Headspace, a meditation app