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## Chats

### Glaucoma Testing: Do I Really Have to Do the Visual Field Test Again?

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Transcript of teleconference with Michael Lin, MD, Assistant Professor of Ophthalmology, Associate Service Director for Glaucoma Massachusetts Eye and Ear, Harvard Medical School

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

**MS. DIANA CAMPBELL:** Hello, and welcome to the BrightFocus Glaucoma Chat. My name is Diana Campbell, and I am pleased to welcome you to the Chat today. BrightFocus Glaucoma Chats are a monthly program in partnership with the American Glaucoma Society, and it's designed to provide people living with glaucoma, and the family and friends that support them, with information provided by glaucoma experts. The American Glaucoma Society counts the leading glaucoma specialists in the country in their membership, and we are looking forward to hearing them discuss many topics about glaucoma during this Chat series. Today's topic is "Glaucoma Testing: Do I Really Have to Do the Visual Field Test Again?"

BrightFocus funds some of the top scientists in the world who are looking to find better treatments and ultimately cures for glaucoma, macular

degeneration, and Alzheimer's disease. And we do events like today's Chat to get the latest news from science as quickly as possible to families that are impacted by these diseases. You can find much more information on our website, [www.BrightFocus.org](http://www.BrightFocus.org).

I am pleased to introduce today's guest, Dr. Michael Lin, who is a glaucoma specialist at Massachusetts Ear and Eye Institute and an assistant professor of ophthalmology at Harvard Medical School. He performs a wide range of glaucoma procedures, including minimally invasive glaucoma surgery, or MIGS, which we discussed last month, as well as cataract surgery. He treats all forms of glaucoma in adults. In his research lab, he's interested in determining which treatment approaches are best suited for each particular patient based on their glaucoma and their individual needs and attitudes regarding treatment. Dr. Lin, thanks so much for joining us today, and welcome to today's BrightFocus Chat.

**DR. MICHAEL LIN:** Thank you for the opportunity. Happy to be here.

**MS. DIANA CAMPBELL:** Let's get started with a discussion on tests. What are the common tests that glaucoma patients get?

**DR. MICHAEL LIN:** Just with the name of the topic here, "Do I Really Have to Do the Visual Field Test Again?" I think we can start talking about that. We'll also talk about OCTs [optical coherence tomography imaging], and we can touch on some of the other tests that are less commonly done. But just going back to this, glaucoma often has no symptoms early on, so this testing is necessary to diagnose glaucoma and monitor patients and see how they're doing with their glaucoma to see if it's stable or if it's getting worse, because eye pressure is ... only so much that we can see. That's a snapshot in time. Your eye pressure may be okay, or it actually may be too high, and the only way we'll be able to tell that is examining your eye and the optic nerve, but also all this testing.

So, visual field tests are really common. Most of the time, we're going to get a visual field test at least once a year. And the reason for doing this is that your glaucoma doctor can't tell what you see, right? I don't look through your eyes, and the visual field test helps me get an understanding of what it is that you're seeing and how your eyes are functioning.

So, the visual field test is this thing where you sit at a machine, and the traditional visual field test involves you looking straight ahead at this machine, have your head comfortably seated in a chin rest, and then you look straight ahead, and you get a clicker. We'll cover up one eye, and then we'll test each eye separately, and the machine will pop up these white lights in the periphery, and every single time that you see one of those bright lights pop inside of your vision, you press the clicker button. And the machine will vary the brightness of those dots, and that will help us determine how bright a little spot in your vision has to be in order for you to see it. And there are certain regular levels that we expect most people to be able to see. The light actually has to be a lot brighter for you to be able to see it, and you can't really see those dim ones that other people can see. If you have to have a really bright light like that, that's a sign that you may have visual field damage that could be related to glaucoma or something else. And there are certain characteristic patterns in glaucoma of how people tend to lose their vision in glaucoma. So, the visual field test will keep on doing this until it's mapped out the visual field, and then it gives us a printout. And then oftentimes, if you're in the clinic with me, I'll turn the screen over to you and show you and say, "This is what your visual field looked like today. This is what it looked like a couple months or a year or several years ago. And we can tell if your glaucoma is stable or not based on how you do on the visual field test.

And then the other one that's very common for most people is going to be an optic nerve scan. So, you sit, again, at a machine, and you look straight ahead, and there's a fixation light. So, you keep looking at that, and then within a couple of seconds the machine will take a very quick scan of your eye, and that measures the thickness of the nerve tissue in your eye. In glaucoma, oftentimes that nerve tissue starts out healthy and normal, and then over time if your eye pressure is too high for too long and it's stressing out the nerve, then your optic nerve can get damaged. And we can measure that by thinning out of the optic nerve on these scans. So, those are really the two most common things that are going to be tested at glaucoma visits. There are some other more investigational tools or things that are more in research, but those are the most common tests.

**MS. DIANA CAMPBELL:** Great. So, you covered this, but one of our listeners asks: When they're going to click the button, there are times when they definitely see a light or times when they think they might have seen a flash but aren't sure. So, I guess that's what you're outlining about the need for the brighter light or not being able to see it. So, should they still click that button if they think they see the light?

**DR. MICHAEL LIN:** Yeah, that's a great question. It kind of depends on how your test results look. In general, when I'm first instructing a patient to start with this test, I'll just say if you think you see the light, then go ahead and push it. But if you're not certain, don't bother, and just leave it alone. But when we see the printout of the visual field, we get these measures called false positives and false negatives. False positives mean that you're pressing the button just too much, and it's unlikely that you're actually going to be able to see light that dim. Sometimes the decibel readings—the readings of how sensitive you are to light—they're like superhuman levels, and people are pushing the button just because they said, "Oh, I maybe thought I saw something," and they actually just push the button when there's actually not any light shown. So, if it turns out that you're somebody who has a lot of false positives, your doctor may say, "Actually, you know, hold your horses. If you're really certain you see the light, go ahead and push it, but if you're not certain, yeah don't worry about it." But in other cases, some people have a lot of false negatives. They'll say, "Eh, you know, I thought I saw light, but I wasn't totally sure, so I just didn't bother," and then they get inconsistent results where sometimes they'll not really be pushing the light as much as they actually can see, and it underreports their possible vision. So, everybody is a little bit different. Your doctor will customize the instructions based on how you do. But in general, if you're reasonably certain that you saw it, go ahead and push it, and if you're not certain, don't bother.

The other thing, also, is that these are long, boring sessions for most patients. Very few patients are begging me to do another visual field test; most of them dread it. But even though they're long, boring tests and they require a lot of attention, if you need a break during the test, one thing that you can do is just hold the clicker. If you hold the clicker down, it'll actually pause the test, and that'll give you some time to have a breather

and get in the right mindset, and then when you're ready you can let go of the button and then the test will resume.

**MS. DIANA CAMPBELL:** Thank you for all of that. We have—just coming in—two questions from Barbara and Randy about those two exact items you just covered, so that's wonderful. You've covered how they work. Why is it so important to have these tests done, and how do you as a doctor use these results to figure out what treatment is relevant or how you might change treatment?

**DR. MICHAEL LIN:** They're really important because I can only see so much on the examination and figure out what to do based on eye pressure ... only within certain limits, and then the testing really helps us figure out what's going on. Because everybody is different in terms of their eyes. Some people, if they have an eye pressure of 20, that's totally fine for them, and their eye is going to be healthy and continue to stay stable, and that's great. But other people, 20 could be actually a very serious problem for them, and they're continuing to progress very rapidly for their glaucoma. I can see certain changes on the examination when I look at the eye. If the optic nerve has certain changes in the way that it appears when I look at it at the microscope in the clinic, then I can probably say with some confidence that yeah, you should probably get your eye pressure a little bit lower in order to protect against worsening glaucoma. But I really get a lot more information of little, tiny, subtle changes that I'm not going to be able to pick up on the microscope by doing these tests. So, if I compare your visual field test from the date in clinic to a visit a couple times ago when we did the visual field, if it looks about the same, then we'll probably say that's fine and we're just going to keep on monitoring at this level. And if I see that there's worsening over time of your visual field, that probably tells us that we need to be more aggressive about your treatment and get your eye pressure lower.

So, that really helps guide our treatment decisions right there, and the same thing with the optic nerve scans. The most common one is called optical coherence tomography, or OCT. So you may hear your doctor talking about your OCT of your nerve, but really, it's just the scan of your optic nerve. And these scans ... if they look about the same, then

over time, that's great. Same deal, we'll just continue to monitor. But if it looks like the nerve tissue is thinning out on the scans, and every visit it just continually gets worse and worse, then that probably tells us that we have to go more aggressive about lowering your eye pressure too. But sometimes they're also saying that maybe we don't have to be so aggressive about your treatment. In some cases, in glaucoma doctors' experience, they say maybe you need an eye pressure of 15 or somewhere in the mid-teens. And we say that's our target, that's our goal, but you'll come in, and your pressure's 20 still. And most doctors would say, "Okay, well, I think you're probably above target. Let's add some more eye drops or think about a laser treatment or some kind of surgery." But at the same time, if your pressure is 20, but your testing has been stable for several visits all these years, and we've never achieved our target of mid-teens, but you're doing fine at 20, maybe that tells us actually our target—our goal—should actually be 20, because as long as that's keeping your eyes stable, then that's fine, and maybe we actually don't need to go more aggressive on your treatment. So, I think those are several ways that the testing is very helpful as a supplement to your visits.

**MS. DIANA CAMPBELL:** That makes a lot of sense. So, how often should patients be getting glaucoma field tests—vision field tests—or the OCT, and how does that differ for people who are glaucoma suspects or just kind of getting a regular eye exam versus patients who are in treatment?

**DR. MICHAEL LIN:** That's a great question. I think it's going to vary for different people depending on the situation. In general—broad, broad, broad guidelines—I'd say in general most people are going to get a visual field and an optic nerve scan about once a year. And that's if you're stable, doing fine, and things are looking okay. Same thing in terms of clinic visits. Oftentimes you'll get seen maybe two or three times a year, but this can vary a lot. For example, some doctors like to test much more frequently when they first meet a patient. There are some guidelines out there that actually say that you should try to get six visual fields in the first two years of seeing a new patient for a new diagnosis, but I think some patients will just revolt if you ask them to do that many visual fields; they would just dread coming to your office. But there are some guidelines that suggest that more frequent testing is helpful and could help diagnose progression



of your glaucoma a little bit earlier. But we also have to be mindful of what patients are able to tolerate and also just what's going to be possible to do in clinic. If you had a clinic where every single one of your patients came in, and they got tested every single time, that would really limit the number of patients that you could help because that would limit the number of patients that you could see in one day in the clinic.

That being said, reasons to test at different frequencies ... one thing is that if I think your eye pressure is above target and we haven't really decided to do anything more aggressive about it or we're kind of at our limit of treatment options, then I might want to test a little more frequently to see if things are stable or if there's going to be progression. And if there's progression that's happening and it's pretty clear, that may tip our scales toward saying, "You know what, we were holding off on surgery, but you're at a maximum medical drops and you can't do any more, so maybe this is our sign that we actually do have to go to that surgery for your glaucoma." So that's one of the reasons to test more frequently, aside from just a new patient diagnosis. And then other times that I might want to test more frequently are if you just have a lot of fluctuation in the testing and there's a lot of noise in the test. What that means is you did the visual field test, and then one time it showed that you had this little defect here, and then another time it showed that you had a different defect, and they're just not consistent, sometimes I might want to test a little more frequently to get a better understanding of what's truly going on because there's going to be fluctuation over time, but hopefully if we get a little more data, we can see that things are ... what the actual overall pattern is. Or, if I see that the visual field looks like it's possibly getting worse, I might want to repeat it a little bit earlier because I might not be able to tell if that was true or if that was just because it was a long, boring test, and you didn't sleep well the night before and were kind of dozing off during the test.

And then, the same thing with the optic nerve scans—if I'm concerned that there's progression and things are getting worse, I might ask the technicians to help me out with getting a scan again the next visit, just to see if that's truly getting worse. For different types of diagnoses also—that's a good question—some types of glaucoma may be a little bit more

aggressive—like pseudoexfoliation glaucoma often is thought to progress a little more quickly, and when it does it progresses more rapidly. So, in some cases, people might want to test more frequently. On the other end of the spectrum, if you have not really very aggressive glaucoma or you're in the mild, early stages, or you're just labeled as a glaucoma suspect and there's something funny-looking about your optic nerves, but we're not really sure if you have glaucoma, sometimes I actually won't do as many visual fields, and I'll actually rely a lot more heavily on optic nerve scans. And the reason for this is that you can lose a lot of optic nerve tissue and have a lot of optic nerve damage without actually seeing any effect on the visual fields in some cases. You could have a totally normal, full visual field, but actually have a good amount of optic nerve thinning of the nerve tissue, and then we can detect that earlier on the scan. So, early on I might actually be following you with scans more frequently than the visual fields.

**MS. DIANA CAMPBELL:** So, I guess the bottom line is really to have that communication with our doctor, and if you have questions or concerns about the frequency, that should be discussed. And the bottom line is, it's going to vary, and that communication and that understanding of why these tests are repeated can be explained. I have a question that's somewhat related, which is: I get really anxious when I haven't pushed the button for a while and I'm not seeing the light. And to follow that up, how does that impact the accuracy of these tests? It's a long test; I imagine you automatically correct for these abnormal results based on anxiety or other issues.

**DR. MICHAEL LIN:** Yeah, certainly. If you aren't pressing the button for a while, that may be totally fine. So, you don't have to sit there and be anxious that you haven't seen a light and that you're going blind—that's not what that test means at all. You're definitely not supposed to see some of the lights, because the whole point of the test is to make the lights so dim to reach that point that you can't see them anymore, and then we want to find out what's that threshold. We want to get you to that point where you're seeing just the dimmest light that you can and then show you one more light after that that you can't see. So, there's going to be variation. And the test really has a smart algorithm that adjusts to you and your reaction time, so there are certainly going to be variations, and



there may be times when there aren't lights that you see for quite a bit, and that's totally fine. At the same time also, if you are dozing off during the test, I can usually tell by looking at the visual field. For example, if you were not really paying attention or didn't really know what was going on right at the beginning, I can see these four little spots on each corner of the visual field test that are often dimmer than they really should be, and there's a certain pattern ...so there's certain clusters that you learn to recognize when you've interpreted enough visual fields that you can see. And if it does turn out that something like that was happening, we can either repeat the test that day or do it some other time and discount some of those results if we know that they're inaccurate.

**MS. DIANA CAMPBELL:** That's great. So, regarding that patient–doctor communication, are these results shared with the patient, and does the doctor typically explain the results to them?

**DR. MICHAEL LIN:** Yeah. I think in general most glaucoma doctors like to have that relationship with their patient where we're trying to provide as much information as possible. I certainly don't keep the visual fields secret and hide them to myself and say, "No, you can't look at them." Anytime I have a visual field, almost always I'll show the report to the patient and point out and say, "This is what this means. These are the areas where it looks like things were stable. These are the areas that, you know, maybe looks like we have to watch out for and see if there's a little bit of possible progression," and it's certainly, I think, very helpful for patients to see that because it's a visual representation of their glaucoma and helps them better understand where they are.

Oftentimes, if I'm seeing a patient for a second opinion, I'll ask them to retrieve all the results for visual fields from their previous doctor because that helps me see how their glaucoma has been progressing over time and figure out how aggressive we have to be about their eye pressure management. But certainly, I think in general, patients should feel very empowered to ask their glaucoma doctors to please show them their visual fields and explain what the results are if they don't understand. There are some patients out there who are extremely anxious and just don't want to see. I think that's rare, and we'll honor those requests if

they're so anxious that they don't want to see the reports and just want to know, "Am I doing okay or not?" And they just want a simple message from their doc like that. But most people do want to see their visual fields—same thing with their optic nerve scans.

**MS. DIANA CAMPBELL:** That's great. That's good to hear. So, we're going to switch over to tools to measure eye pressure. Why is eye pressure measured in different ways, like air puffs and other tools that actually touch the eye?

**DR. MICHAEL LIN:** There are lots of different ways to measure eye pressure. Generally, the gold standard of what is considered the best way to measure your eye pressure and the most accurate is called Goldmann applanation tonometry. So, Goldmann applanation tonometry—that's the one where you get some numbing drops in your eye, and they have a little bit of yellow dye that's applied to the eye, and you sit at the microscope for the examination, and your doctor brings this little device up close to your eye and has a blue light, and that comes up close to your eye and figures out what your eye pressure is by gently touching the surface of your eye and figuring out, "How much pressure do I have to exert to push on the eye to get it to flatten a certain small, microscopic amount?" So, this is the blue light test to measure your eye pressure. In general, that's historically what's been used for most people's clinics and most of the historical, big glaucoma clinical trials and discussing things.

There are lots of different other ways to measure eye pressure. In general, most glaucoma specialists think they're a little bit less accurate; however, there are some other tests that are out there. There are several different versions of the puff test. There's one that actually gets you a measurement of the eye pressure, but it also does some fancy calculations in the background that account for the stiffness of the eye and give you these corrected measures of your eye pressure, and some people actually have published data suggesting that these are more progressive ... that these are more predictive of glaucoma progression than the blue light way of measuring your eye pressure. The eye puff with the air puff—that in some ways could be more accurate for some patients than others. The air puff is nice because you actually don't need any numbing drops to have the

procedure done, and it can be done on anyone, and it's a quick, easy test. Sometimes, if the eyelids are very droopy for a patient or they're squeezing really hard, then we can't measure with the blue light very accurately, and the puff test will be a nice alternative.

There are other devices also that are little pens or devices that have these little probes that come out, and they touch the surface of the eye and then bounce back. So, one of them requires numbing drops, and there's a pen with a little safety cover on it, and it comes up to the front part of the eye, and the technician or your doctor tap, tap, taps on the eye, and then getting repeated measurements like that will give you a measurement of the eye pressure. In general, people think those are a little bit less accurate. They're nice for screening tests, so oftentimes, our retina service colleagues or comprehensive ophthalmologists who are just checking that your eye pressure is roughly in the normal range, they'll often use that, but glaucoma specialists use those a little bit less frequently. And then there's this other thing that has a rebound tonometer. It's called a rebound tonometer, and it has this little probe that comes up. These devices are very gentle. The probe is so small that it actually comes up and touches the surface of the eye and bounces back in a split second. And they actually don't require any numbing medication, so they're often really nice for patients who are also a little bit squeamish about things or they're squeezing since nothing really requires them to hold their eyes open for extended periods of time.

And there's no numbing drops, so this is helpful for children also in the clinics, where we don't give them any numbing drops, but we'll be able to get a quick measure of the pressure that way. So, lots of different pressure measurements. Most glaucoma specialists will use the blue light. Some of these other devices with the puffs or pens or little probes that bounce off the eye—they're all possible ways to measure eye pressure.

**MS. DIANA CAMPBELL:** So, a quick follow-up, and I'm someone who is still seeing an optometrist, and I'm a possible glaucoma suspect, and I think a lot of people are in that boat. At what point should you begin seeing a glaucoma specialist and get something more telling than the puff test or start—well, I guess the optometrist can also measure OCT—but at

what point do you want to switch over to the specialist category?

**DR. MICHAEL LIN:** That's a really good question, and I think it's going to vary depending on what kinds of doctors you're seeing. For example, Massachusetts actually was the very last state to grant optometrists the power to prescribe glaucoma medications, so in Massachusetts actually, a lot of the times if a patient came in with high eye pressure, they'd be referred immediately to an ophthalmologist because the optometrist couldn't prescribe a glaucoma medication. That's changed now, so I think actually in all states now at this point optometrists have the ability to prescribe glaucoma medications. But then the question becomes: Is your optometrist comfortable managing this? If you're a glaucoma suspect and your eye pressures have never really been high, your optic nerves generally look a little suspicious but overall healthy, and your nerve scans and your visual fields have been totally fine, if your optometrist feels comfortable managing that then that's great, and they should practice to the maximum of their ability of what's keeping you safe and leave the really serious glaucoma that needs surgery and things like that that they can't manage, get that referred over to a glaucoma specialist right away.

There are other optometrists who have an interest, and they've done some additional special training for glaucoma management, and they're comfortable prescribing the glaucoma medications. And some of them even work very closely with glaucoma specialists to do co-management, so they'll check the patient's pressures, sometimes with the blue light, the applanation—the blue light applanation—or they'll sometimes do a puff test. The puff test with the ... certain machines are probably a little better than others. There's ... not all the puff tests are exactly the same, so I would be careful about that and ask your optometrist which one they're using if they're going to be using puff tests. In general, for most of our glaucoma patients, we're still using the blue light applanation. So, if your doctor isn't using that, you may want to ask them why and get an understanding of that. But in general, most of your doctors are trying to do the very best for you.

So, to go back to when to refer, it's still a very tricky question. If you're ... you feel like you're getting really good care and testing is stable and

your vision is stable and everything is great and your eye pressure is well controlled, then it sounds like your optometrist or your ophthalmologist is doing a good job. There are many comprehensive ophthalmologists who manage glaucoma, as well, who aren't glaucoma fellowship trained, and they're comfortable managing a lot of this. Some people will do laser treatments for glaucoma as a comprehensive ophthalmologist. But I think it all depends on your setting and what's the availability of getting to a glaucoma specialist, how far away they are, how busy the clinics are, how difficult it is for you to get into that clinic or travel there—there's really a lot of ... this is a very complex question, is basically what I'm saying. But in general, if you have concerns about what's going on with your care, especially if things seem like they're getting worse, it's never a problem to ask for a second opinion, as well, or a referral to a glaucoma specialist or somebody else. If you do end up doing that, it's very helpful to get all your testing and your previous clinical notes in order to share with the other doctor who is going to be seeing you to evaluate.

**MS. DIANA CAMPBELL:** That makes a lot of sense. The next question sounds a little more futuristic: Is it okay if the doctor switches to using a virtual reality headset for visual field tests?

**DR. MICHAEL LIN:** That's a great question, and we're going to get more and more of those questions coming up in the future. Traditionally, there's two major visual field tests that are done in the office—two major types. The most common by far I would say is called the Humphrey visual field or the Humphrey field analyzer. The Humphrey field analyzer is the one where it's this big, large machine with a big bowl, and you put your head right there in the center and then push the buttons when you see the lights. And there's another one that's very similar, it's called the Octopus, and both of these are the traditional ones. But there ... especially during the early pandemic with COVID, there were some concerns about how safe is this, you know, with all of the aerosols and all of this stuff going on, and I think virtual reality visual fields have really started to get a little bit more popularity among all kinds of different ophthalmologists and optometrists. I think they're an okay, reasonable way to get around this, especially for patients who have issues where you can't position well at the machine for the Humphrey field analyzer or the Octopus. It requires

keeping your head there in a certain position for an extended period of time, sometimes 15 to 20 minutes for both eyes at some point, depending on what type of test your doctor orders. But the visual field with the virtual reality are these headsets that just strap onto your head and are supported like that. You know, you can sit comfortable in a chair, and if you're a patient who has limited mobility, then that could be an option that's ... you know, having a virtual reality visual field is certainly better than having no measure of your visual field if you can't do the Humphrey.

But, that being said, the virtual reality visual fields have not really ... they don't have as much research background and validation as the traditional tests, and while they try to be ... while they try to mimic and emulate the tests as much as possible, there are going to be variations, so you may see that your virtual reality visual field tests may not correlate that much with your other more traditional types of tests, and I'd be cautious about making any major comparisons between the two different ones, because one could look a lot better than the other, and there's going to be variations between the different platforms of these new, upcoming, futuristic virtual reality fields. I would say that the other thing about visual fields is that, really, a lot of what we're looking for is change over time for you, though. So, if you're going to do virtual reality visual fields, I think it's important to stay on the same type of machine the whole time instead of switching between different devices, because that's going to make it very hard to compare. But if you keep on using one type of machine the whole time, then you can see: Are things stable or are they progressing? So, the short answer is, yeah, I think the virtual reality visual fields, they may become more popular in the future. I think there's more research validation that's necessary to see: How valid are these results? How comparable are they to what we consider the more traditional gold standard types of visual fields? But the nice thing is, you can take these home even and do visual field tests at home or do it on the tablet or on the computer or some kind of headset, and that may allow more frequent testing for patients who may need it.

**MS. DIANA CAMPBELL:** That brings us to the next question, which is also a newer development. So, you kind of covered, "Can people do visual field tests at home?" Are there also home tests for measuring eye pressure?



**DR. MICHAEL LIN:** Yes. There are certainly ways to measure eye pressure at home. Your doctor will not come to your house at 2 a.m. to measure your eye pressure, but you can get a device that will help you measure your pressure at home. The ones that are commercially available out there are the versions of the rebound tonometers. So these are the little, tiny plastic probes materials that you hold the device and support it on your face, and you press a button, and this little probe will come out, and it will help measure your eye pressure. And the nice thing is that you don't need any numbing medication, and it's so quick that you often don't really feel much of anything other than a little tickle. So, you can measure your pressure as much as you want a home. There are patients who will do this hundreds of times in a day, but that may not necessarily be required or necessary.

I think that the reasons for measuring your eye pressure at home are many. When you come into the office to see your doctor, you're getting an eye pressure measurement at one split second in the day, and that might be it for your measure for several months. That's quite limited if you think about ... you're going about living your life, your pressure may be 15 in the office, but maybe at some point in the evening your pressure is spiking up to 28, who knows. So, if I see a patient who's consistently got well-controlled pressures in the office, and they're 13 every single time they come in, but their visual fields are getting worse, sometimes we'll ask them to see if they want to get a home test of their visual fields and then they can do the testing at home, and it'll give us a nice printout of all the measurements that you've completed at home, and we can see, "Yeah, is your pressure in the teens the whole time, or is it at 8 p.m. you happen to be spiking up there?" And I know colleagues who have asked their patients to help with this, and they see these results, and even though everything looks really stable in the clinic, they actually see these huge spikes that are happening, and that's giving them the confidence to say, "You know, we actually have to be more aggressive about your treatment. You're on maximum drops. Let's move to that laser or move to that surgery as the next step." So, certainly ways that you can measure pressure at home, and I think in the future there will be other things that we can talk about, too—even implants that you can put into the eye that can measure pressure all the time without you having to do anything.

**MS. DIANA CAMPBELL:** That's awesome. I feel like it could be a rabbit hole, as you sort of alluded to in the beginning, with being really obsessed with it, but I think at the same time, those changes that you mentioned are really important to capture. And I think that's really an interesting development for people to know about. So, we've kind of run out of time. I want to say thanks so much for all the advice you shared today. To our listeners, thanks so much for joining the Glaucoma Chat. I sincerely hope you found it helpful. Our next Glaucoma Chat will be on Wednesday, May 10, and is about "My Doctor Said I Have Narrow Angles. What Does That Mean?" so stay tuned for that, as well. To close out today, Dr. Lin, thanks so much for your time and for providing us with so much important information. Before we conclude, are there any final tips you'd like to share about the visual field test or anything else related to glaucoma?

**DR. MICHAEL LIN:** I'd say, first, thanks for the opportunity to join you here, and I would just say that if you have any issues with your visual field, just talk about it with your doctor—that's what we're here for. And we're on your team trying to figure out what's the best way to do things, so if you really hate the visual fields, you can ask your doc, "Hey, do I really have to do it this time?" but oftentimes we do have your best interest here, so sometimes we've just got to do it and see how you're doing.

**MS. DIANA CAMPBELL:** That's great. Thanks again and this will conclude today's BrightFocus Glaucoma Chat.

**DR. MICHAEL LIN:** Thank you.

## Useful Resources and Key Terms

BrightFocus Foundation: (800) 437-2423 or visit us at [BrightFocus.org](https://www.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](#)
- [Get the Facts on Glaucoma](#)
- [American Glaucoma Society, "Regular Eye Exams: Why Are They Important? What Can You Expect?"](#)

## Types of pressure tests mentioned during the Chat include—

- Optical coherence tomography, OCT
- Goldmann applanation tonometry
- Humphrey visual field test or the Humphrey field analyzer
- Octopus (for visual field testing)
- Rebound tonometers
- Air puff test