Introduction and Guest Background

The prevalence of eye diseases is on the rise and not just in older individuals, especially younger individuals. I do think that our dependence on screens has a lot to do with it.

Unfortunately, there is light toxicity that can come from the blue light from our screens that can cause eye strain and fatigue. Those are kind of milder short-term issues, but long-term, we are also exposed to, so you were mentioning toxins earlier, We are exposed to so many toxins in our modern day world, and we know that when there is a high toxin load, there are increasing risks for macular degeneration.

Welcome to the TBD Fit podcast on Dr. Talks. I'm your host, Daniel Keeley, and I will be guiding you through this wellness journey in terms of optimizing health and longevity, where we unpack the science, the do's, the don'ts, and everything in between.

Come join us. Look forward to seeing you inside. Today's guest, which I'm super excited to bring on Dr. Ronnie Banik, is a board certified ophthalmologist, fellowship trained in neuroophthalmology and also certified in integrative and functional medicine.

So she's a woman after my heart. She's a true pioneer in blending traditional eye care with holistic strategies to preserve vision and optimize health.

In fact, she's one of the few eye physicians in the country to have combined advanced ophthalmology with integrative medicine. So super excited to get you on today and dive into all things eye health.

So, Dr. Banik, thank you for taking the time. Talk to me about how you got started. Going way, way back to undergrad, I knew I was going to medical school and I wasn't sure what I wanted to do in terms of what field I wanted to pursue.

So I shadowed a lot of doctors. I shadowed a pediatrician. I shared with family physician, all kinds of doctors. And then I had the opportunity to shadow a family friend who was doing his residency in ophthalmology.

So I spent the day with him and that day literally changed my life. I fell in love with the eyes. And there were so many aspects of eye care that I loved.

And one of the things I really, really wanted that I saw and I wanted to do on my own was establish long-term care with patients. So I saw that you could have, even as an eye doctor, you could have relationships with your patients from childhood all the way through all stages of life because anyone can have an eye problem.

And I really wanted to be able to develop those types of long-term relationships. Anyway, I ended up specializing in ophthalmology, and I was then drawn to neuroophthalmology, which is the intersection of I care with the brain.

I specialized in that for quite some time. I was in academics, like full-time academics, that first part of my career. Then, because of my own health issue, which was migraine, chronic migraine, I got introduced to functional medicine.

I was blown away by what I discovered that There are imbalances that can lead to disease that a lot of it stems in nutritional deficiencies or gut issues or hormone imbalances or toxins that could affect our health.

And none of this was taught to me during my training in traditional ophthalmology and neuro-ophthalmologies. I

started to integrate some of those aspects of care into my own health because I was suffering for so long.

Finally, my migraine started to get better and I decided to pursue this and get certified. So then now I was able to not only treat myself, but also use these strategies to treat my patients.

And so I think it's a journey that I'm just so fortunate that I stumbled upon because of my own health issue, because honestly, these concepts are not taught during regular or traditional, I should say, traditional training in medical school.

Yeah, that's kind of how I ended up doing what I do right now. Such an interesting story and so powerful because we each have our own personal journey.

And I know I shared on your podcast my personal story and the impetus which led me to my path of helping patients heal. So our stories are powerful but often one that resonates with our patients and it's interesting how you begin to connect the dots and I appreciate now your perspective since you come from the traditional side of things.

How do you feel you have leveraged now the the functional medicine portion in your care. And I only ask that because often enough, when patients come to see us, they're coming in for specific symptoms, but they're not necessarily connecting the dots globally.

Right. So if they have headaches or. joint pain and I'm telling them, hey, let's start with a stool test.

Functional Medicine Approach to Eye Care

They're kind of scratching their head, right? And so we have to serve as educators to help connect those dots. How are you talking to a patient if they come in with eye issues?

Like how do you start painting the full picture? Yeah, so first of all, a lot of my patients find me because they've been to many other eye care providers and they are not getting better.

So whether they've been diagnosed with chronic dry eye, which is so common, and they've tried drops and prescription drops and this and that and nothing's getting better, they're seeking another solution.

Whether it's macular degeneration and in some stages, advanced stages of macular degeneration, the current traditional approach is to give eye injections once a month.

People get these eye injections to control their macular degeneration. It's a procedure. It's an invasive procedure. And it's indefinite and people don't want to do those injections anymore.

They want to heal from within rather than just being injected with a drug, a very expensive drug, by the way, every month. So people are seeking solutions kind of out of the box.

And again, many people have been to two, three, four different eye care providers and they're just not happy with the situation. Their vision may be declining further.

And so they find me. And so I think I've kind of a lot of my patients are already primed for this approach. They're already open to this approach, which is fantastic that they have this open mindset.

They want to explore what is the problem? Where is it coming from? And this is really where functional medicine comes in. It's not just putting a bandaid on the problem, like, okay, you have glaucoma, let's give you this eye drop and it's gonna fix your, stabilize your glaucoma.

Let's see where it's coming from and try to address it from within because our body has a tremendous ability to be resilient and heal itself. And when it comes to some of these chronic eye conditions, if we fix some of the other problems going on in the body, the drivers of inflammation, the drivers of of worsening oxidative stress levels then

we can really stabilize things and sometimes even reverse the eye disease.

So I'm very fortunate in that many of my patients are already very well educated about their condition but then there are some that you know just kind of find me they stumble across me and they they want a more holistic approach to their eye health and And so then I walk them through the protocols that I use, which are, you know, we do a lot of testing.

I do a lot of testing in my practice. I do eye testing, but I also do functional medicine testing. And I think that combined approach is really, really what provides patients the more, not just eye care, but holistic care, because they realize once they're doing something to help their eye health, to improve their eye health, they're also improving in many other aspects of their health.

If they had cognitive issues, they're getting better with that, their overall brain health is better, their digestive health is better, their metabolic health is better.

So overall, it's not just, again, focusing on the eyes, pun intended, it's really Absolutely brilliant. The eye is an extension of the brain, which is an extension of the body.

And so you mentioned some diseases and the power of testing, both eye and otherwise. What are some of the tests that you are doing with your patient? Yeah, so there are the eye tests, of course.

But then when it comes to some of the functional medicine testing, I find that I would usually start with nutrient deficiencies. So I test for micronutrients because the eye is so dependent on, we were talking about this earlier when you were a guest on my podcast, Dr.

Keeley, but we're talking about the metabolic demands of the eye. The eye is perhaps the most metabolically active organ in the body. It's constantly requiring energy from our mitochondria to provide ATP for processing light energy.

sending signals from retinal ganglion cells through the optic nerve to the brain. So it's very energy intense. So it requires an array of vitamins, minerals, antioxidants to function.

And so I talk about with my patients their nutrient status. Are they getting enough B vitamins? Are they getting enough minerals like zinc and selenium and magnesium and manganese Are they getting enough antioxidants, whether it's the macular carotenoids, which we can talk about more in detail, like lutein, zeaxanthin, which are so important for retinal health?

Are they getting enough vitamin C and vitamin E and the precursors to glutathione? So I try to fill in the nutrient gaps first with my patients, with the testing.

And then sometimes there are other patients who have chronic inflammation as part of their eye issue. Again, whether it be dry eye, whether it be macular degeneration, there are certain kinds of eye inflammation called uveitis.

And so in those types of patients, I look at their gut health as well. So I do do gut testing and looking for potential disc gut dysbiosis. or leaky gut syndrome.

Those are the two things that I found are very common in many of my patients with high inflammation. So that's kind of an overview of what I do in terms of combining the two fields of ophthalmology, traditional ophthalmology, with an integrative functional medicine approach.

That's so, so relevant. To me, the foundation is two factors. One is the toxin load, which is obviously inflicting such high degree of damage and inflammation, which compromises your immune function, which too is very, very much micronutrient dependent.

And the second is literally the direct connection with your micronutrient sufficiencies or deficiencies. So I can, I

definitely appreciate that. And that's.

foundational, right? People getting in the right nutrition is what should be easy, but in our modern agricultural system is disconnected.

Testing Nutrients and Gut Health

And as such, we're probably seeing more issues with our eyes, be it such that it's so nutrient rich. In terms of these issues, do you see that happening in a younger population as well now?

Because in my practice, I'm seeing more and more of these issues kind of creep in earlier and earlier, even kids as early as babies. So do you see kind of the full gamut of patients or are yours more kind of an aging population?

I see, I see the full range. So I see babies all the way up to centenarians. And you're absolutely right, Dr. Keeley. The prevalence of eye diseases is on the rise and not just in older individuals.

especially younger individuals. I do think that our dependence on screens has a lot to do with it. Unfortunately, there is light toxicity that can come from the blue light from our screens that can cause eye strain and fatigue.

I mean, those are kind of mild or short term issues, but long term, we are also You were mentioning toxins earlier. We are exposed to so many toxins in our modern day world.

And we know that when there is a high toxin load, there are increasing risks for macular degeneration. We know that. people who are living in more, for example, there was an interesting study published out of England where they looked at air pollutant levels and levels of macular degeneration or prevalence of macular degeneration in that population.

And people who were living in more polluted areas had significantly higher prevalence of advanced stages of macular degeneration and vision loss. So we know that.

Also, there are, in my practice as a neuro-ophthalmologist, I also see toxic types of optic neuropathies and even hereditary optic neuropathies and toxins, whether it be, again, air pollution like smoking or vaping or other toxins in the environment.

It is important to consider this in our youth. And I always talk to my patients, if they're parents, for example, I talk to them about thinking about their kid's eye health.

What are some nutritional strategies to bolster their ocular metabolism? What are some antioxidant preventative strategies beyond just blue blocking glasses, for example?

So it is a conversation that I always have with my patients as an integrative eye care provider, unfortunately. I don't want to throw anyone under the bus, but the truth is that most eye care providers are not trained in this, so they may not feel comfortable having the conversation.

So I also try to educate my colleagues in eye care, both ophthalmologists and optometrists, about some of these lifestyle and diet issues that many of our patients may be at risk for.

And so it's important to have these conversations. So before we unpack some of these disease states, because nutrition is such a foundational principle for any optimizing health lifestyle outcome program, what are, I know you, we already discussed certain nutrients, but what are some foods that people should be mindful?

Because nutrition to me is instruction. It's going to heal you or it's going to hurt you. And people don't realize the power of nutrition. It's all, I think, Third in only after you got to breathe to live, right?

And so how much breath you take, obviously you're talking about pollution. That's relevant. That's going to increase

your oxidative burden. So again, your toxin exposure.

Second is how much water you're drinking. That's also relevant or not drinking and replacing with some other things that are not, not endemic to our natural biology.

And then third to me comes food. So what we're doing daily, obviously we have to breathe, we have to drink and we're likely going to have to eat. Most of us are not doing very long extended fast.

So in terms of nutrition, what are some foods people should be mindful of that will benefit not only protecting our eyes, but maybe as we talk about some of these disease states can reverse some of the things that people are afflicted with.

Yeah, I'm so glad you asked me that, Dr. Keeley. It's actually my passion is ocular nutrition. And that's why I wrote my book. My book is called Beyond Carrots, Best Foods for Eye Health, A to Z.

And I'm titled it that because a lot of people think that if they just eat enough carrots, they'll be guaranteed 20-20 vision. That's one of the probably the biggest one of the biggest myths out there when it comes to ocular nutrition that I hear.

Yes, carrots are important. They're a great source of beta carotene that gets converted by the body into vitamin A that we need for our retinal phototransduction of light energy.

But beyond carrots, there are so many other nutrients our eyes need. And I mentioned this earlier, we need at least 30 plus nutrients rotating through these 30 plus nutrients to support our eye health.

And in terms of foods, there are over 40 foods that provide not just one nutrient, not just a single nutrient, but an array of nutrients. So I call these therapeutic foods for eye health.

The biggest category of eye healthy foods is leafy greens. This includes spinach, kale, arugula, romaine lettuce, broccoli, even this also cruciferous vegetable, which is also helpful.

But the leafy greens are so important because they have the highest concentration of the two nutrients that are so critical to our eye health beyond vitamin A, which are lutein and zeaxanthin.

These nutrients are hard to pronounce, hard to spell, hard to remember, but they are the staple of our eye health. And they are basically, they're very potent antioxidants similar to glutathione.

Unfortunately, our bodies can't make these nutrients. And so we need to get them from diet and or supplementation. I always prefer diet. That's the way nature intended.

What they do is these nutrients, they get absorbed by the body and they get selectively deposited into the retina in the back of the eye. So they are deposited there and they act like a shield.

So they are our natural sunglasses. These nutrients are like our natural blue blockers. So instead of wearing blue blocking glasses, I always tell my patients, make sure you have enough lutein and zeaxanthin in your diet.

And going back to the leafy greens, they're the highest in terms of concentration per hundred grams of food weight. If you're not a fan of leafy greens or if you have, let's say, an oxalate sensitivity and you can't have leafy greens, there are many other foods that provide lutein and zeaxanthin.

Egg yolk is a perfect example. I'm a huge fan of egg yolk because the orange color of the egg yolk is because of the lutein and zeaxanthin. It's also got so many other great nutrients like choline and B12.

Screen Time, Toxins, and Eye Disease in Younger People

I mean, in protein, of course, it's got lots of other benefits. Then there are another food group that I'll highlight is, I guess we can classify them as berries in general, because berries have pigments in them called anthocyanins.

And these dark pigments, particularly like blueberries, blackberries, bilberries, these dark pigments are very potent antioxidants and in the eye they have been shown to help with glaucoma, they've been shown to help lower eye pressure in glaucoma patients, and they've also been shown to help with conditions like macular degeneration.

So if you had to ask me, you know, what are the top three foods or food groups, I would say your leafy greens, make sure you're getting a good amount.

So not just, you know, like a little side salad of spinach. That's not enough. You need to get about three to five cups of leafy greens a day or eggs, egg yolk in particular, or at least half a cup to one cup of berries per day to support your eyes.

That's just kind of scratching the surface. But that's, that's what I, I call it plant points. And my goal is for our patients to have five plant points at each meal.

And that can include spices as well, herbs and spices. And so the goal is to do what you enjoy, but certainly understanding the power of dark, leafy vegetables, which to me should be a staple, but unfortunately, most are not eating.

I'll discuss with my patients, try to get in dandelion greens, mustard greens, endive, frise, Swiss chard, collard greens, you name it. Obviously, there's arugula, spinach, kale that people are aware about, but there's so much more than that, which as we now see, pun intended, is so eye-protective.

And so looking at oxalates, which you mentioned, it's so interesting because there's obviously a lot of contention around the consumption of oxalates to me is if someone doesn't do with with oxalates they're likely missing oxalobacter or the bacteria the microbes that break down oxalates and thus they don't tolerate it as well.

In fact our interplay between our microbiome and our mycobiome so again we need to make sure we are restoring missing microbes and making sure our yeast burden isn't so high or a fungal burden isn't so high that we can't tolerate some of these healthy nutritious staples.

But no, I appreciate that the depth that you provided there in terms of your ocular microbiome. I know in your podcast, I mentioned staphylococcus, streptococcus, corneobacterium, propionium bacterium.

Is there a way and perhaps I'm overlooking, is there a way to test our ocular microbiome because I know that you know with the GI test it's so ubiquitous now and we're doing that on every all our patients and if we see any sort of dysbiosis or immune dysfunction which up regulates inflammation which now increases in oxidative burden really hits the eyes so hard and it's interesting this is such a timely opportunity because my last five patients all had eye issues, some of which were hoping to prevent eye surgery.

So I want to get into that discourse. But is there a way to discern and look at the ocular microbiome? Yeah, so let me explain a little bit about the eye and the immune system.

So the eye itself, the inside of the eye, is a privileged site, meaning it's immune privileged. It's not directly exposed to the immune system. And really, the inside of the eye is sterile.

So there is no microbes inside the eye unless, of course, there's an infection. But generally, microbes don't live there. And again, immune cells don't live inside the eye.

We can talk about this in a moment, but they can get exposed, which causes disease. But the ocular microbiome is on the surface of the eye. When people have disturbances in their ocular microbiome, so there are certain bacterial strains that live on the surface.

And then there's the pathologic ones, which some of which you mentioned, that cause inflammation, whether they're related in some sense to dry eye, blepharitis, eye infections, that would be on the surface.

So in terms of testing for that, there are tests that can be done, which are basically swabs. on the surface of the eye. They're not commercially available.

So currently, they're done, you know, basically through either a hospital lab or in a research setting. But when it comes to the other types of exposure that can happen when things break down, like if there's some kind of dysbiosis elsewhere in the body that affects the eye, what happens is, again, I said the eye itself is a privileged site.

So there is something, we know that there's a blood brain barrier, which protects our microbes from getting, pathogenic microbes from getting inside the brain.

There's also a blood retinal barrier. So the blood vessels inside the retina have tight junctions, just like the gut has tight junctions, and that can break down.

And when that breaks down, then organisms or immune cells can get into the retina inside the eye and wreak havoc. Like really, this is to be devastating if that happens.

And that's something that I call leaky eye syndrome when that happens. And what I found is in a lot of my patients with various types of leaky eye, whether that be macular degeneration or uveitis or diabetic retinopathy is also an example of a leaky eye syndrome where things break down and products go into the retina that shouldn't be there.

I found in a lot of my patients through their testing is that they tend to have gut issues. And when people have leaky gut, they are also likely will be more predisposed to leaky eye.

And so definitely in those chronic eye diseases, those patients that I see, I always ask them about their gut symptoms. And then oftentimes I will do testing to see what's going on.

And the interesting thing is, I haven't published this yet, but someday I hope to have enough patients where I can publish this, is that when you fix their gut issues, their eye issues start to finally come under control.

So that's something which is really fascinating and just to show you that the body functions as an organ, you know, a total organ. It's not just each organ in its silo.

It's really all linked and combined. Absolutely brilliant. Walk me through before we get into disease and reversing disease states here at a cellular level then.

So what actually happens to the retina and the optic nerve as we age? So as we age, we have, I think we were talking about this in your interview with me, Dr.

Akili, on my podcast, but the mitochondria are so critical to our retinal cells, our retinal photoreceptors, our retinal ganglion cells, and also within our optic nerve, the axons within the optic nerve.

So they have a very, very high level of mitochondria because of their metabolic state.

Eye Nutrition and Protective Foods

And as we get older, our eye cells, I'll just call them eye cells to generalize, but mainly our retinal cells, get exposed to oxidative stress and it causes them to have breakdown of some of their protective mechanisms.

And so their mitochondria start to malfunction in some way and there's a decrease in the number of mitochondria per cell. Then when the cell doesn't work well, eventually that cell can become what we call apoptosis or programmed cell death because lower levels of mitochondria are making the cell not function properly and eventually the cell can die because of the state of this progression.

Now there is a domino effect here. Ocundrial health, oxidative stress are very closely linked. But when those two processes are going on, then inflammation adds to the stress on the cell.

And so there's kind of what I tell my patients is for all of these eye diseases, whether it's dry eye, macular degeneration, glaucoma, there is usually that kind of three dominoes that fall.

mitochondrial health, oxidative stress levels are extremely high, leading to inflammation. And when you have that kind of triad of pathologic processes, that's when the cell is most likely to die off.

Yes, that happens as we get older, but we're seeing that process happening now at earlier stages. Because again, we talked about this, our daily choices, our nutrient choices, our lifestyle exposures, our stress levels, not getting enough hydration or oxygenation, these are all contributing to chronic eye disease.

So I hope that answered your question. That was kind of a long-winded way to answer your question, Dr. Kulay. This is what I wanted to walk my patients through because it sets the stage now for the progression of disease.

Talk me through what are kind of some of the most common conditions that you see in relation to the eye what people are going through and prevention strategies or better still reversal.

Sure, so I'm actually going to show you, I have a little show and tell for you here. Let's talk about dry eye because it's probably one of the most common eye conditions across the population.

It happens at all ages, so it's not just older individuals who can develop dry eye, even younger people, even children can have dry eye. So let me explain what the root cause of dry eye is and how we approach dry eye from its root cause.

So first of all, dry eye is when the tears on the surface of the eye evaporate too quickly, leaving the surface dry, leaving it irregular. It can cause discomfort, it can cause pain, it can cause burning, and it can make our vision blurry.

So those are the symptoms that many people with dry eye have. But what people don't realize is that the tears are essential for dry eye and having a healthy tear film is essential, but dry eye, the root cause typically starts in the glands that produce the tears.

So let me show you what the glands look like. So hopefully you can see this here. This here is someone's eyelid pulled down like this. And these are the glands in the eyelids.

And we have about 25 to 30 glands in each eyelid. And normally they're like little finger-like projections. They have acini, which produce the oils for our tears.

And when the glands are healthy, you can see that they're, again, they're pretty straight. There's no significant gaps here. This is what they look like.

Now, when the glands don't function properly, when there's inflammation, when the ocular surface microbiome is off, when there's dysbiosis going on, when there's not enough antioxidants provided to those glands, or there's not enough omegas provided to those glands, the glands start to not function properly and not secrete healthy oils.

And what happens is the glands get plugged up with unhealthy oils. So the glands eventually can get plugged up. And you can see in this picture here of someone with gland dysfunction.

We call these glands myobomian glands. That's the name of the glands, myobomian glands. With gland dysfunction, what happens is you get distorted architecture.

So the glands are clogged. And eventually, the tears are not stable, and the tears evaporate, and it leads to dry eye. Eventually, what you can have is you can even have gland loss.

And this is what we want to avoid, where you have gaps in the glands. Because once these glands die off, you can't resurrect them. You can't revive them.

They're gone. And so that's an irreversible process that many people with dry eye have. So in my patients, I talk to them about this process that it's not just dry eye.

It's coming from your glands in 85% of patients. It's coming from gland dysfunction. Let's optimize your glands. Let's optimize your ocular surface microbiome.

Let's optimize your omega intake and support the glands from within and try to prevent gland loss. Now, I'll show you this example here. This is someone you can see where their glands are really degenerated.

They're basically wiped out. So this person probably has about 85 to 90% gland loss and you just see like some stubs of glands left. This is someone who has autoimmune disease and autoimmune disease can also attack the glands.

For example, lupus or Sjögren's disease or rheumatoid arthritis. This is an example of someone actually a patient of mine who had rheumatoid arthritis and you can see her glands are just wiped out.

So this is another stressor on our glands. So when you think about dry eye from using a functional medicine lens, it's not just putting in drops. It's not just, it does work.

I mean, it's a band-aid. You can use artificial drops to relubricate your eyes, but you need to treat it from within, get to the bottom of what's happening, and really address it more holistically.

And sometimes, you know, I get an omega index on my patients who have dry eye and myobomian gland dysfunction. I talked to them about their gut microbiome and how they can support their ocular surface microbiome.

So there are many, many aspects of eye health that are beyond just the eye that need to be thought of when it comes to. So in terms of omega index, so you're obviously suggesting make sure that.

You get enough omegas. Are there any other very, I mean, because the nutrient load is quite high, right? We want to make sure, as we discussed previously, to cover our bases with micronutrient deficiencies.

So omegas is a staple. Anything else are you sort of like, okay, you got to take vitamin A, cod liver oil versus beta-carotene versus a different nutrient.

Is there some, I know you mentioned zeaxanthin and what are like specific nutrients then to help with that? Yeah, so the traditional teaching is omega-3s, D-H-A-E-P-A, and there have been numerous studies published about the benefits of those omegas for dry eye.

There's some newer work that's been done with some of the other omegas. So there's an omega, and normally we think of omega-6s as pro-inflammatory, but there's one omega-6 called GLA.

gamma-linolenic acid, which has been proven in dry eye to be helpful. Get your omega-3s, D-H-A-E-P-A, also consider GLA. And then there's some other omegas that may be helpful as well.

There's omega-7, which isn't so commonly found, but you can get it from certain types of nuts like macadamia nuts, omega-9s, which is oleic acid. So all of the omegas are important for dry eye.

But beyond that, We talked earlier about the macular carotenoids for retinal health. There is some early research to show that lutein and zeaxanthin can also help with dry eye, as can vitamin D.

And a lot of people think about vitamin D as it's not just a vitamin. It's really kind of, it works like a hormone in the body. It has many functions.

It's anti-inflammatory as well. It can turn genes on, turn genes off. But we know that with dry eye, because it's such a multifactorial process, the anti-inflammatory role of vitamin D can be really helpful.

So again, get your omegas, get your macular carotenoids, vitamin D, and also this is really interesting where you were talking, Dr. Keeley, earlier about spices.

So turmeric or curcumin, which is the active ingredient in turmeric, has been shown to be helpful for dry eye. So I always tell my patients, try to include some turmeric in your diet, cook with it.

You can take it as a supplement, but I always prefer it to be kind of naturally absorbed by the body through food. Consider some of these aspects of dry eye that you may not hear about from your regular eye doctor, because this is really trying to think about it again from what's causing the problem.

There's oxidative stress, there's gland dysfunction, there's inflammation. How can we address those? We can address it with prevention over reaction, right?

So, no, but that's absolutely elegant what you provided in terms of how you can protect the eye in terms of now reversing. Cause I know you mentioned that some of these glands once they're gone, they're gone in the deterioration level.

What are some, some other common things that are conditions people are coming in with and how much of, how much of it is reversible? How much can you do to, to reverse some of the damage that's already been done?

So let's talk about macular degeneration, because I know that you probably hear about it. There are ads on TV now about all these new drugs for macular degeneration.

And perhaps you or any of your listeners or maybe their family members have been diagnosed. It is rising at escalating numbers. I mean, it's really because the eye is an extension of the brain, macular degeneration is considered a neurodegenerative disease and it's actually more common than Parkinson's and Alzheimer's combined.

So it is the number one neurodegenerative disease in the world, yet we don't really think about it. And as I mentioned earlier, you were talking about prevention, many people wait, many eye doctors wait until it develops to a certain stage before they decide to treat it.

But it really is important to try to, number one, prevent it from happening. If you know that you are at risk, for example, if you have a family member at risk, if you have a parent who's had it, or if you have, and I'll just mention this, I don't want to frighten anyone, but another risk factor would be light pigmentation.

So if you have light-colored eyes, blue eyes, green eyes, if you have lightly pigmented skin or light-colored hair, you are at higher risk for macular degeneration.

So individuals who have lighter pigmentation, who have family risks, and individuals who smoke are at significantly higher risk for macular degeneration.

So what can we do to prevent it? So the most important thing, and this has been studied, this has been published in major journals, which again, a lot of eye doctors don't know about, is diet.

If you have enough macular carotenoids in your diet, again, lutein and zeaxanthin, your risk of progression of macular degeneration goes down by 43%. is huge.

Simply by eating these nutrients, you can lower your risk by 43% versus if you take supplements, it's about 28% protection. People also should follow a Mediterranean style diet.

So yes, have those specific nutrients, but also try to follow a Mediterranean style diet. Lots of produce in your diet,

fruits, veggies, nuts, seeds, legumes, minimal alcohol intake.

Ocular Microbiome and Leaky Eye Syndrome

You can have animal products, but minimal red meat intake has been shown to decrease them for macular degeneration. Now, lifestyle-wise, we know that weight plays a role.

And as with many conditions, we know that people who are overweight have a higher risk for vision loss from macular degeneration. We also know that people who are sedentary have a higher risk for macular degeneration.

So this kind of goes back to some of the pillars that Dr. Keeley, that you talk about. You address all of those pillars, you can significantly reduce your risk of vision loss from macular degeneration.

It's within your control. And this is all, actually my next book is going to be on macular degeneration. It should be coming out probably in early 2026. And it's talking about seven integrative strategies to prevent vision loss from macular degeneration.

So I talk about a lot of this and again, highlighting those pillars that you said so eloquently, Dr. Keeley. Definitely. We'll get a copy of your book and showcase that when it does come out.

So in terms of other conditions, NIU very, very, again, elegantly provided the opportunity to prevent or hedge against macular degeneration. What about something like cataracts?

So cataracts, actually I have my other show and tell here, my eye model. Yes. Okay. So. When we look at someone's eye, we typically just see the very front part, right?

We see the colored part, which is the iris. We see the white part, which is the sclera. But let's take a peek inside the eye to see how complex the eye is.

There are many, many structures inside the eye. There is over 40 structures inside the eye, and each has its own nutrient needs. And I'm just going to take this apart here to show you.

You're asking me about cataracts, so let me explain what a cataract is. Inside the eye, we have this structure. It's the lens. and it sits right behind the colored part of the eye.

And it's our natural lens inside the eye, and it helps us to focus. And when we're looking at distance, it has a certain shape. When we're looking at something up close, it changes its shape to focus up close.

So it's a dynamic structure inside the eye. And you can see here that this in the model is plastic, but in reality, this is mainly made out of proteins and water.

And these proteins keep accumulating as we get older. And eventually the proteins begin to undergo oxidative stress. And eventually, instead of being optically clear, these proteins develop enough oxidative stress that they discolor and they start to become a little bit yellowish.

And when the lens undergoes oxidative stress and when it becomes opaque, it blocks the amount of light coming through your pupil, which is right here.

So imagine here, you can see that there's a clear view to the back here, but imagine this is yellow or yellowish. It's going to block the amount of light getting through and it will affect your vision.

It will cause you to have blurry vision. So oxidative stress is the main driver of cataract, bottom line. And yes, you can include lots of nutrients in your diet to help reduce your levels of oxidative stress.

The studies are not so conclusive because I think they were looking at very large populations and it's very hard to

do a population-based study looking at diet because there's lifestyle, there's genetics, there's so many other factors involved.

So the studies haven't really panned out in terms of exactly giving us recommendations. How much of each type of antioxidant do you need? But what I tell my patients is if you're eating for your eye health, you're eating lots of antioxidants anyway because you're trying to prevent macular degeneration and glaucoma.

So what you're doing for that is going to hopefully prevent cataract formation and progression. The other thing that's really important is UV protection because a major source of oxidative stress is UV light, UVA and UVB light that comes from the sun.

Yes, we need exposure to the sun for many different aspects of our health, but too much exposure to the eyes will accelerate the development of cataracts.

And we know this from population studies. We know this. It was an interesting study called the Chesapeake Fisherman Bay Study. I think that's what it was called.

They looked at fishermen who were out on the water. This is their profession. They fish for a living. They looked at cataract progression, people who wore sunglasses versus people who didn't wear sunglasses.

And they found that people who didn't wear sunglasses, the fishermen who didn't wear sunglasses, had significantly higher rates of cataract. development.

Diabetes is another risk factor for cataract development because that also leads to oxidative stress in the lens. So think about all of these things when you're thinking about your general eye health, but specifically to cataract prevention.

Nutrition, sunglass protection or UV protection, and also blood sugar management are really, really vital for cataract management. And so once that degenerative process has progressed, how much of that is reversible?

So unfortunately, there is no way to turn things around in the lens. Once it's established, like let's say there's a slight discoloration, it will remain there, but you can prevent it from progressing.

So I've definitely been able to arrest cataract progression in many of my patients by using nutritional strategies. I do want to just mention there is the, I believe it's a drop called can see.

Out there on the market, the active ingredient is carnosine, and so people take it as a drop and it's marketed as cataract prevention. I personally have not seen any benefits using this drop, can see, but some of my patients swear by it.

So if you're interested, you can definitely consider using a drop like that. Again, it hasn't been scientifically studied, but anecdotally, some of my patients have benefited.

Now, there is, and I'm blanking on the name, it starts with an L, I believe it's called lanosterol, and maybe mispronouncing this, but lanosterol. So this is a form of a steroid drop that was given in animal studies, in dogs particularly, who had cataracts, and the lanosterol was able to dissolve the cataract, which is fantastic.

I mean, it's It was amazing when this study came out that using lanostral drops was able to reverse cataract progression and development in animal studies.

However, when they tried it in humans, they didn't get the same results. That's why it's not on the market. It's not available on the market because it wasn't shown to be helpful.

I do hope that at some day in the future, we will have drops that we can use, that we can potentially dissolve away the cataracts that have been developing.

That's hopefully on the horizon at some point. Is that the same also with, because you mentioned glaucoma as an example too, and is there an ability again to reverse that damage?

So glaucoma is damage to the optic nerve. So once the damage has been done, the only time I've seen it being reversed completely is in kids. Kids have tremendous resilience for their optic nerves to reverse damage.

But in adults, again, what I've seen is people reaching a certain level and staying at that, plateauing at that level, but not progressing with some of the strategies that we can use that are, again, nutrition-based, supplement-based, lifestyle-based.

So stabilization. But if someone's already lost some part of their peripheral vision to glaucoma, unfortunately I have not seen that reverse. I wish I could say that.

I really do. Because I hear anecdotally studies and now with the emerging field, at least in the US, obviously the science I think is unequivocal in many countries outside of the US, but the use of exosomes and stem cells, are you looking into that?

Are you utilizing any of that in your practice? Are you able to restore vision? in some of these really severe impaired vision loss patients. So that's it.

I'm so glad you brought that up, Dr. Keeley. I do believe that stem cells are the future of some of these chronic eye conditions. I do think that they will be, if not a cure, a way to try to stabilize and perhaps provide the best vision outcome there is.

Aging, Mitochondria, and Eye Cell Damage

The issue is that stem cells are very inflammatory. There have been some clinics where they injected stem cells into the eye. So remember I said earlier that the eye is a very privileged immune site, like it's not typically exposed to the immune system or microbes.

So when you inject something into the eye, it can potentially create a lot of inflammation. And so there were reports of stem cells being injected into the eye that caused a lot of inflammation and even permanent vision loss.

So there are stem cell studies, there are clinical trials going on. So I would say if anyone's interested in stem cells, they're still in the experimental stage.

If you're interested in stem cells, let's say you have a chronic eye condition like macular degeneration and you want to explore stem cells, do it under the auspices of a clinical trial and find a center.

There are centers around the US and also around the world where they're doing stem cell research Do it that way because that way, if there is a complication like inflammation, that they can identify it and address it and treat it.

Because unfortunately, there is that again, that risk that some of these not yet FDA approved therapies can produce a lot of inflammation in the eye. Now exosomes, that's a really interesting concept.

I've toyed with that idea. I know that exosomes have been so beneficial for many medical conditions ranging from joint health to, you can probably speak to this much better than I can, but all the different clinical uses of exosomes.

Again, because the eye is a privileged site, I'm not sure if the exosomes would get into the cells that they need to get to to provide the benefits. So I haven't tried it yet in my practice, but I want to definitely learn a little bit more about how it may be used for neurodegenerative diseases, for example, before I consider that for my practice.

Fair enough. And well said. Perhaps we can provide in the show notes, maybe some of these centers or clinics that you're familiar, they're doing these experimental treatments.

I know anecdotally, some of my colleagues were expressing tremendous benefit through exosome eye drops in restoring, or at least partially restoring impairments in vision loss due to stroke.

So I know science is moving fast and we have different tools at our disposal to now begin to reverse some of these really chronic or degenerative issues from various maladies.

It's interesting when, when you mentioned the sun and blue light and we'll touch on artificial blue light in a second, but what we're suggesting and myself included, I'd like to practice what I preach is to get out early in the morning, expose your eyes to early morning.

blue light from the sun, which is the less damaging on ionizing rays, such that they, the light hits the super prismatic nucleus, the SCN, which sits above the octave nerve and it crosses into the hypothalamus, which is important to optimize our circadian biology and behavior.

And so we're suggesting this, but then we hear, I know you said is you want to avoid the sunlight. So perhaps if. Yeah. So I can clarify that a little bit or try to give people some guidelines here.

So the sun emits various wavelengths. Blue light is part of the visible spectrum. So those are the short wavelength. They're powerful rays, but short wavelength part of the visible spectrum.

Then there's a UV rays. The UV rays are potentially damaging. The blue light, there is no proof that it's damaging. And as you said, we do need healthy exposure to blue light to set our circadian rhythm, to set our super chiasmatic nucleus, and to optimize our melatonin levels or patterns of melatonin secretion.

So yes, we'd need exposure to blue light. What I would say is definitely get out there, try to get morning sun between the hours of 8 to 10, and the one caveat I would say is go out there, you can go out there without your sunglasses on during those times of the day because the sun is still very low on the horizon, potentially not as damaging, but do not look directly at the sun.

Because that's what can potentially cause so much oxidative stress. It can cause retinal burns. It can cause corneal burns if you look directly at the sun.

So if you want to, you know, there's this, I guess it's a trend or health, I don't know how you would describe it, like called sun gazing. Have you heard of that before, Dr.

Kulay? Absolutely, yes. Sun gazing. Yeah. So what I tell my patients is, yes, sunlight is helpful, but if you want to sun gaze, if you really want to do that, do it with your eyelids closed.

So you're looking at the sun, your eyelids are closed, those rays are still getting through your eyelids and activating your retinal ganglia cells, that signal gets through your optic nerve into your brainstem.

So you can do it that way, but please don't look directly at the sun because I'm going to put on my traditional ophthalmologist hat right now. I've seen so many complications from people sun gazing.

Dry Eye Causes and Nutrient Support

I just had a patient two weeks ago who had these tiny little scars in her retina, like all throughout her retina here, these tiny little black scars. And she was a young person, 32 years old.

And I said, can I ask you a question? Do you like to look at the sun a lot? And her husband chimed in saying, She does it every morning. She gets up and she stares at the sun for like 10, 15 minutes.

And I said, okay, well, you probably have these, these are solar retinopathy scars in your retina. And you do have, you know, her vision wasn't 2020. It was a little bit less, about 2040. And I said, probably this is the reason why you have these scars because you've been staring at the sun.

So if you want to do it, I'm not telling you not to do it, do it with your eyelids closed. So that's the caveat. Proof maybe it's not always best to follow influencers or some of these crazy strategies.

Definitely keep your eyes closed when you do, but what's interesting too, because sunglasses, right? So while we shouldn't be staring at the sun with our eyelids open, sunglasses is interesting to me because I want to unpack that for a minute here.

It's important for the sun to hit. the eyes such that we can begin to create melanin, which is very skin protective, which enhances the skin pigmentation, which creates this tan effect that we're so elegantly seeking when we sunbathe.

But if you wear sunglasses, you're preventing some of the effect, which is again, preventing some of the skin protective effects that now interrupts that system.

What are your thoughts, I guess, surrounding the use of sunglasses? I've heard this. This is also being shared on social media. The term I've heard is that sunglasses are hormone disruptors.

Hormones meaning it's affecting your melatonin levels and etc. This is my thought on this. Sunglasses are a staple of eye health because, again, there's so many ocular complications that can happen from sun exposure, ranging from just scar tissue on the surface of the eye, something that we call a pterygium or panguacula, to corneal issues, to cataracts, to retinal issues, and even macular degeneration.

So does it really, if you wear sunglasses when you're outdoors during the day, does it really affect your melanin secretion? I don't think so. And the reason is because you're still getting so much exposure from the sides and your eyes will receive sunlight, even though it's not direct sunlight straight ahead, you're getting enough peripheral exposure that your pineal gland knows what time of day it is, your super chiasmatic pathway like it's not going to be disrupted by wearing sunglasses.

I actually did this experiment last weekend just to kind of to see. So I have a light meter on my phone and basically I tested outdoors in the bright sunshine what the amount of light was.

And then I put my sunglasses, which are 100% UVA, UVB blocking in front of it. Even though I covered the entire lens of my camera with the sunglasses, it was minimally decreased in terms of the amount of light, natural light exposure.

So again, my little experiment that I did, it wasn't an eye, but it was a camera and a light meter. So I did not see any significant cut down or decrease in that.

level that is necessary, I think, for optimal health. So it's a balance. You want to have good melanin protection, protect your skin. Also, cosmetically, you want to look healthy.

So some people want that appearance. But then again, you also want to protect your eyes. So I'm still a huge advocate of sunglasses. And again, maybe in the extreme hours of the day, like from sunrise until 10 a.m., maybe you don't wear them.

But from 10 a.m. to 2 p.m., it's really, really a must. And then later on in the day, again, you may not necessarily have to wear them. But really, when the sun is at its zenith in the sky is when it can do the most damage.

And there are even types of glaucoma that have been associated with sun exposure. There's a type of glaucoma called pseudo exfoliation glaucoma. where there's actually like this dandruffy-like material that develops on the iris and the lens from too much sun exposure.

So we know that there's just so much that can happen. The eye is such a delicate organ. It's really important to protect. From my understanding, there were some studies too reflecting, I don't know if I want to say permanent damage, but definitely damage to retinal cells from blue light exposure, meaning like indoor LED lights or say, you

know, lights from a car headlight when you're driving at night.

How damaging is some of these newer lights that tout how efficient they are, but versus our kind of evolution from candlelight to incandescent, which may be obviously a different spectrum.

How does that impact the retinal cells? Yeah, so let me share with you the study that was done that raised all of this concern. So this study, it was published back in 2016. The researchers took cells and they put them in a petri dish and they exposed them to high levels of blue light, basically the type of light that comes from all of our screens, that comes from our CFL bulbs or LED bulbs.

expose them to blue light, and lo and behold, the cells died. They underwent apoptosis. They died. So their conclusion was that blue light can damage cells.

Now, if you look at the study, if you read the study closely, the cells that they used in the Petri dish were not even retinal cells. They weren't eye cells.

They were cervical cancer cells called Gila cells. And these cells are used in a lot of research because they live. They multiply very easily. They live.

They're a great research substrate. But they're not eye cells. They're not retinal cells. And a retina has these pigments in them, lutein and zeaxanthin, to protect against blue light.

So we have these internal blue blockers that we can get from food. And what these pigments do is they neutralize the blue light. And this has been shown in studies where if you have enough lutein and zeaxanthin in your retina that we can actually do a test and I do this in my practice.

There's a test called macular pigment optical density or MPOD and we can measure the amount of lutein and zeaxanthin in the retina. And there are studies to show that if you have enough, high enough levels of lutein and zeaxanthin in your retina, people with eye strain improve, like their subjective symptoms improve, their visual performance improves, and visual tests like markers of contrast sensitivity and color vision, and just subjective optical quality.

So we know that the pigments are essential. So the bottom line is that these devices that are surrounding us in our daily modern life, our lights, our energy saving lights.

They're helpful, yes. Some of us are addicted to them, yes. They're not going to cause you permanent damage unless you don't have enough macular carotenoids to protect you.

It goes back to nutrition. Have your macular carotenoids diet and or supplementation. That's really the key is to protect against blue light. A lot of my patients are surprised when I tell them, don't waste your money on the blue blocking glasses.

There have actually been now two studies done on blue blocking glasses, looking at whether they were able to protect people from eye strain and blue light exposure and light sensitivity.

Neither study showed that blue blocking glasses work. What does work are these pigments, lutein and zeaxanthin. That's so interesting. So it falls back again onto optimizing nutrition, right?

Optimizing lifestyle. If I'm understanding correctly, so less important on the external, more important always on the internal. And that's what I preach every day to my patients is that we will improve the external When we optimize the internal providing the right input, the right signal, the right mechanisms of action to, to allow an environment conducive for healing.

So that, that was beautiful and I appreciate referencing those studies. Now that test in particular that you referenced, is that one that can only be performed by a clinician in clinic or is that something that others can do

outside of that?

It is a device. It's a small tabletop device that some eye doctors have in their practices. Not all. It's typically been used as a research tool. Now as a substitute for that, there is a way to detect carotenoids in the skin because the carotenoids also get deposited in the skin.

So you can also check, but it doesn't correlate 100% with what's in the retina. So you can definitely do a skin test for your skin carotenoids, but it's not always a one-to-one.

Yes. So we used to have that device actually as well to assess the coronary level in the skin. I think it's a spectroscopy. I think it's Raman spectroscopy, that device.

So it's a marker. It's definitely helpful. But again, if you have enough of these nutrients, you don't need to measure necessarily. I mean, you know that you're going to get them because you're getting them deposited where they need to be.

The body can do a remarkable job of that. How damaging, something like high blood pressure is an example, which I think so many of our patients are coming in with.

And I'm correlating high blood pressure, again, leaky heart, leaky gut. Are you looking at high blood pressure when someone comes into clinic? And what is that impact on the eye health?

Yeah, there's a huge connection between our blood pressure and eye health. So hypertension can damage the tiny little capillaries in the retina. And by the way, I didn't show you the full, I didn't give you the tour of the full eye, but back here is the retina.

And this is, I mean, it looks orange, but in reality, it's transparent. It looks orange because there's a good blood supply behind it called the choroid.

But basically, you can see the little blood vessels here. So there are retinal arteries, arterioles, veins, venules, and capillaries. So capillaries are tiny little vessels that basically one cell goes through at a time kind of in line fashion.

And so hypertension can damage those little capillaries. And what initially happens is the capillary wall starts to thicken. The internal elastic lamina, which is the lining of the capillary wall, starts to thicken.

And so less blood flow goes through. And sometimes you can even get, the whole capillary may be narrow, but sometimes you can even get out pouchings of the blood vessel.

We call these aneurysms. So you can get retinal aneurysms from hypertension. And you can also, what can happen is, and I'm going to get a little bit technical here, but you have an artery and you have a vein.

If the artery is thickened, it's kind of tough, it's not really very pliable, it can push down on the vein and cause an occlusion of the vein. So it can cause a type of eye stroke called essential retinal vein occlusion.

All of this can happen with hypertension. And this is again, it's a cause of vision loss. It's not one of the leading causes of vision loss. Diabetes is much more likely to cause vision loss than hypertension.

But it is something that we oftentimes see in our patients and there have been so many patients where They may not have even known that they had high blood pressure but on their eye exam we can see the vessel changes.

The eye is not just a window to our soul, it's a window to our health and we can diagnose conditions like hypertension or heart disease or atrial fibrillation based on what we see on an eye exam.

Macular Degeneration Prevention and Reversal

So yes, it is linked to eye health and And you want to optimize your vascular health because without appropriate nutrients and oxygen getting to your retinal tissues and optic nerve, your eyes are going to suffer.

And these are, again, things that are within our control. We can do things to optimize our vascular health, our metabolic health. You know, it's sad to see some patients who've kind of gone down that road.

who've not been aware, perhaps, and they weren't talked to by their doctor, like, okay, you need to manage your blood pressure better. 160 over 100 is not a good blood pressure to have.

You really need to optimize that or optimize your A1C, get it below 6.4 or even 6.1 if possible. If those conversations are not had by providers, then people don't know.

So they need to be educated about these aspects of health. Yeah, the risk of elevated blood sugar or insulin resistance is extremely damaging. And I always say that we see that the brain begins to degrade after an A1C of 5.5. So there's degeneration that occurs, which is very impactful on our cognitive health.

Walk me through what happens when blood sugar and diabetes, one of my colleagues always said, friends don't let friends get diabetes, which is so prevalent here, unfortunately.

What happens in the eye in terms of diabetes? So it goes down to those retinal capillaries again. What happens is that elevated sugar in the blood or having a high glycemic load in the blood It causes damage to the endothelial lining of the capillary and it causes glycation.

So the glucose molecule kind of attacks that lining and it breaks it down. And so the capillaries become leaky. And so the tight junctions, just like we have in the gut, we have those tight junctions in the gut.

They start to separate and then blood and fluid and protein and lipids extrudes from the capillary into the retina. And when that happens, you can get hemorrhages, you can get tiny little hemorrhages, you can get protein deposits, you can get lipid deposits, you can get fluid or a combination of all those things.

And that's what we call diabetic retinopathy, is when those capillaries, which again, normally should protect the retina from everything else in the body, you know, the blood cells are supposed to stay inside the capillaries, not extrude out.

But when that happens, the barrier is broken down, the blood retinal barrier is broken down, And this is a form of what I call leaky eye syndrome where things get into the retina that should not be in the retina and then it causes inflammation and it affects the photoreceptors and it causes decreased vision.

So this is kind of a domino effect where if you can maintain healthy blood sugars and not cause that glycemic damage to the capillaries, you can prevent a lot of these things.

Now what I'll mention is that diabetes, of course, is an epidemic in our society. Many people don't realize that if you're diabetic, you need to go in for regular eye checkups depending on how your blood sugar is doing.

So if you have good control of your A1C, maybe you just need to go once a year. That's totally fine. Go get checked, get a dilated exam, look for diabetic, you know, your eye doctor will look for diabetic retinopathy and counsel you on what to do if they see diabetic retinopathy.

But if your blood sugar is not well controlled, let's say you have an A1C of 8 or 9 or 12 or 13 or 15, which I've seen in some patients, they need to be monitored, those patients need to be monitored very, very closely because they're at risk for not just the leaky eye that I was talking to you about, but they're at risk for something called a vitreous hemorrhage, which happens when the tiny blood vessels, if they're damaged, they cannot just leak blood into the surrounding retinal tissue.

They can leak blood into the vitreous gel, which is the gel that kind of gives the IR structure. If the bleeding extends

into this vitreous, you get huge clumps of blood floating around in the vitreous that can significantly affect vision.

That's something that can happen to people who are diabetic with diabetic retinopathy. And in the worst case scenarios, if this keeps happening, if there's recurrent hemorrhage in the retina into the vitreous cavity, it can cause scar tissue and it can even cause retinal detachments.

And so there's like this sequence of events that can happen and it's all preventable. It's 100% preventable if we catch it and we counsel patients and we help our patients to get better glycemic control.

So you said friends don't let friends get diabetes. Well, doctors shouldn't let their patients get diabetic retinopathy. It is something that is, it's tragic when it happens.

And I've seen it happen across all age groups from type one young diabetics to older type two diabetics. It breaks my heart to see it when it happens.

And it's so, so preventable as you suggest. I mean, it's nutrition goes a long way, which has been kind of a very much echoing a pillar of today's conversation I see.

How about red eyes? Cause obviously that's super common too. What's happening when we see people with these kind of bloodshot eyes. Yeah, so there's a lot of different possibilities as to what's causing the redness.

It could be dry eye. When people have dryness, their eyes get really inflamed. They can look very red. It could be a conjunctivitis. It could be a viral or bacterial conjunctivitis.

It could be allergies, which many people have, again, to exposures in our environment. You may not think that you're allergic to something, but it could pop up at any day, basically, out of the blue.

So again, the most common cause of red eyes is dry eye, followed by I would say allergies, followed by conjunctivitis. Then there are some more rare, more serious causes of red eye, which would be ocular inflammation, whether that be scleritis, which is inflammation of the white part of the eye.

episcleritis, which is inflammation of the very surface of that white part, or even uveitis, which is inflammation deeper in the eye. So there are multiple different types of red eye.

Sometimes it's hard to tell them apart. Like sometimes it's actually even with allergies versus viral conjunctivitis, sometimes they look very, very similar.

Sometimes it's very, very challenging to tell them apart. But what I would say is if you have red eyes, get it checked out and don't just try to treat it with over-the-counter drops like Visine.

It's marketed as, you know, get the red out, but all it does really is to constrict the blood vessels on the surface. So your eyes look whiter, they look less red, but as soon as you stop using it, the blood vessels just dilate and the redness comes back.

So you can use it for a short term, you know, if you have a big event to go to, you can put a little Visine in, but it's not something that I would say do on a regular basis.

rather go to see your eye doctor, find out what's causing the red eye, what you should do, how you can support your eyes from within. And yeah, it's a really common issue.

And many people will have red eye during certain stages of life, for example, or seasonal even. So it can come and go depending on what's going on. So I've definitely seen patients who, when they're under tremendous amounts of stress, their eyes and their eyelids will get very red and their eyelids will get very thickened where it looks really inflamed and then they look like they're just really uncomfortable, they're light sensitive, their vision is blurry.

So definitely think about those lifestyle factors as well. exposures in your environment, your stress levels. Oftentimes for red eye, I will tell my patients, you know, sometimes it's very hard to find out if there's an allergen in your home, but it's really important to have a high quality air filter by your bed or even right by your workstation.

Many of us spend hours and hours in front of a computer. Have a small air filter right on, you know, under your, by your workstation. If your eyes are really bothered and irritated, that can make a big difference.

It's interesting because, I mean, in naturopathy, eyes are the window to, to a lot of the body. Why is there a window to the soul? But anything spiritual aside, reflection in certain components or certain areas of where their redness can exist.

is often attributable looking at the study of iridology to certain inflammation or irritants. So when you mention allergy or connecting it with specific organ function, are you ever attributing any redness in compartments of the eye with certain other areas of the body?

So I'll just talk a little bit about iridology, which you mentioned. So in iridology, it's a field where basically the iris, which is the colored part of the eye right here, here it's blue, but the iris is examined in terms of its color.

its architecture or its geography, there are little like crips and valleys in the iris. So that's all looked at. And again, pigmentation.

Cataracts, Glaucoma, and Emerging Therapies

And based off of what the iris looks like, there may be, and I'm not an expert in this by any means, but there may be areas that are linked to dysfunction of other organs, for example, liver dysfunction.

or kidney dysfunction, or neurologic dysfunction, or perhaps there's some infection going on. So that's the iris. That's the colored part of the eye. But that is a little bit separate than looking at redness and where, you know, if the redness may indicate something else going on.

I'll share a story with you since you're asking about this. So I have a patient who's actually a very prominent individual in the sports world, and he has chronic red eye.

He's had red eye for 20 years. I asked him, he's tried everything. He's tried drops. He's tried all kinds of therapies. He's tried red light, which I'm a big advocate of red and infrared light, by the way, for eye health.

But none of that seemed to be working for him. He even got some treatments done for his glands. There are some treatments that we can use, light-based treatments for gland support.

None of that was working. And so based off of his history being an athlete, I asked him, have you ever had any major concussions? And he said, of course, it's part of what I do.

You know, I've had many concussions throughout my sports career. And so I said, okay, Okay, let's investigate that. And it turned out that he underwent a scan and it turned out that he actually had a connection of certain blood vessels in his brain called an arteriovenous fistula.

And that was post-concussion basically from all these multiple bouts of head trauma. He had an arteriovenous fistula in his brain that was causing a flow issue with the blood flow coming out of his eyes.

draining from his veins, basically. And that was causing his red eyes. So that was an example of where there was a neurologic issue that shows up in the eye as redness.

And the good news is, I said, this is great. Now we know what's causing your redness. Let's treat it. So he ended up having a treatment for that fistula, and his red eyes went away.

So that's just an example of how, again, the eye is not isolated. It's so closely linked, especially with the brain, because it's a direct extension of the brain.

But there's a lot that can be looked at under the surface to try to figure out what is going on. What is causing this problem? Another cause, I should mention this as well, we're talking about red eyes.

Another cause of red eye is a mite infestation. Now, you may kind of recoil into mites, like, I can't believe I may have mites in my eyes or my eyelids, but there are mites that live at the base of our eyelashes.

And the majority of us have these mites. As we get older, almost 95% of us by the time we're in our 70s, 80s have these little eyelid mites. And they live at the base of the eyelashes, and usually they don't cause a problem.

But sometimes the mites overgrow. and they overgrow in the setting of when the ocular microbiome is disrupted. The mites can overgrow and cause a lot of inflammation of the base of the eyelid right here, right by the glands, and cause a lot of redness.

So this is, again, Something that I really encourage patients, like if they're suffering with something and it's not getting better and they've tried some options and they're not improving with the current solutions that have been offered to them, look deeper or have your eye doctor look deeper.

Ask, could I have this? Could I have a mite infestation? Because that's treatable. We can treat that. Could it be something else? Could it be something neurologic?

Could it be something else? Could it be something autoimmune? So also with conditions like rheumatoid arthritis, lupus, churgrens, people can have red eyes.

It's very common. And if you treat that underlying autoimmune condition, the redness gets better. And sometimes it will go away. It will go into remission.

So again, it's so important not just to treat the eyes in a silo. It's an organ system that's part of the body and very intimately connected with our immune system as well.

I'm curious, what does treatment look like for in terms of improving the fistula and in terms of reduction of mites? Okay, so for the fistula, it is going back to traditional medicine.

There is a procedure that can be done where the fistula can be closed off with coils. So it's a single time procedure. They go in through the groin. They put a catheter up into the fistula and they put coils in that basically closes it off.

And once it's closed off, then normal flow is restored, the drainage is restored, and the redness typically goes away. Within, it's pretty remarkable, within a week, some of my patients look completely back to normal when they've had this chronic redness for decades.

Now for the mites, so I always start with more, I would say natural types of therapies rather than a prescription. There is a prescription drop available for mite infestation, but I always tell my patients start with natural therapies.

And this may be interesting to your audience, but tea tree oil. which is melaleuca oil, is antimicrobial and it also kills the mites and controls their overpopulation.

So you can use an eyelid cleansing wipe infused with tea tree oil and you just clean your eyelids with it at nighttime. or maybe twice a day, once in the morning, once at night.

And that will help to, again, normalize the mite population. It's very difficult to eradicate them completely, but you want to reduce their numbers. And the other thing that is also very helpful is hypochlorous acid spray.

So hypochlorous acid is also antimicrobial. And so it's a very dilute spray, 0.01 or 0.02%. And all you do is it comes

in a spray bottle, you spray it on your eyelids and you just let it dry and that will also help to reduce the mite infestation.

So I start with those two things which are again more DIY type strategies people can do on their own. They don't need a doctor to do this. You can buy these wipes over the counter.

I actually have them on my website. I sell them. and the hypochlorous acid spray as well. You can try that first, maybe try that for about a month. And then if that doesn't work, then go see your eye doctor and then they can recommend a prescription drop to lower the mite issue.

We'll provide a link to that in the show notes. You mentioned red light therapy. Are there any other treatments or kind of emerging therapies or anything?

I know we've been really underscoring prevention, but just both in terms of prevention and treatment that you're excited about in the pipeline. That is probably one of the most exciting things, red light and infrared light therapy in the eye care space.

It was just actually FDA approved for macular degeneration. And what it is is basically specific wavelengths of red light. Now we're talking earlier about blue light, which is on the short end of the spectrum.

Red light is on the longer end of the visible light spectrum. If you think about the color of the rainbow, it's more in the 600 to 700 range. So the specific wavelength of light that's been used in studies is 670 nanometers of red light combined with infrared light.

And the wavelength is typically about 860 nanometers. And so a combination of those two wavelengths, red and infrared, has been shown to slow macular degeneration and actually help people improve their vision by a few lines.

And so that is now FDA approved. And also glaucoma, there are some studies with glaucoma and red and infrared light therapy. So that is still under investigation.

It's not yet FDA approved. But what I recommend for patients is, and I actually have a device at home that I use myself. You can do red light therapy at home.

You can get a device, like a tabletop device. Now, the ones that are FDA approved are not commercially available. There are ones that you would do in your doctor's office.

But basically, you can get a device at home, put it on your table, and what you should do is, the safest way to do this is, and you sit about 12 to 14 inches away from your device, and you do it with your eyelids closed.

Again, eyelids closed, because those light wavelengths do go through your eyelids, and you do it three minutes, three times a week. That's what the studies show.

It's not that you have to do it every single day. You do light therapy three minutes, three times a week. And I've seen improvements in glaucoma helping to control eye pressure in some of my patients.

I've seen stabilization of macular degeneration. Also, we're talking about red eyes and inflammation. I've also seen patients' ocular surface improve when they have a lot of inflammation of their eyelids if they have blepharitis or even ocular rosacea, which can happen.

So the red light therapy can help with that as well. Now again, that's from my experience treating my patients. It's not something that's yet been published except for the macular degeneration study that was published.

But it's a home therapy you can do. It's relatively inexpensive. It's very safe. And yeah, if you want to support your eyes from within. So the concept behind it all is that these specific wavelengths of light activate your mitochondria.

They support your mitochondrial health, and they help to improve energy production. And that's kind of the basis behind using light therapy. We call that photobiomodulation is the How much of that can be derived from free just by kind of standing under the sun with your eyes closed?

That's a great, great question. I don't know. I mean, that would be an option for sure, because yes, those wavelengths are coming. I don't know about the infrared, if that's…

coming from sun, like that specific wavelength. I don't know. I'd have to look that one up, but the red light definitely is coming from the sun, like that wavelength.

Well, it's exciting to hear nonetheless that, I mean, technology is enabling patients to, to heal. And so there's obviously always promise on the horizon.

I just think often enough there are times where. We're just overlooking certain natural free, if you will, elements that are also very therapeutic and healing.

Sunlight, Blue Light, and Red Light Therapy

Is there anything else that you want to leave our patients with in terms of being mindful for eye protection, eye health? I mean, this has been an absolute mini masterclass in all things eye health, so I appreciate obviously your time and the breadth of experience and everything that you shared.

Are there any kind of final thoughts or considerations in terms of eye health that we haven't discussed? Yeah, we talked about a lot of various different types of preventative strategies from nutrition.

We didn't talk that much about supplementation, but if you're not getting enough from nutrition, then try to fill in the gaps with supplementation. We talked about sunglasses.

We talked about air pollution and filters and weight modulation and blood sugar and blood pressure. The one other thing I would add is for your overall eye health, because you guys do a lot of work for us every single day.

They're constantly working. We rely on them for everything. We need to be proactive about their care, and a lot of people forego their annual eye exam.

And I always tell my patients, just like you go for your annual visits, you go see your primary care doctor, you get your labs done, you go get your colonoscopies or mammograms, you go see your dentist twice a year, you're doing all that for prevention.

Go see your eye doctor once a year. And a lot of people will say, well, my vision's fine. I see 2020. Why do I need to go see the eye doctor? It's because your eye doctor, through their dilated exam, can pick up over 200 medical conditions.

We can pick up things before other doctors can't. So really, the eye is a window into your health, your overall health. So go get that eye checkup and hopefully things are fine.

Hopefully there's nothing that is a red flag on your eye exam. But there's so many times when I've picked up diabetes, I've picked up strokes, I've picked up MS, all these conditions that can be, you know, patients may not know that they have it yet, that can show up on someone's eye exam.

So go get that annual eye exam. It's typically recommended after the age of 40 to go every year. So if you're younger than 40, maybe you don't have to go every year, maybe go every two years or every five years, depending if you have any issues.

But definitely after the age of 40, make that a part of your routine. Again, the tests don't guess. And we overlook simple tests like a routine eye exam as an example.

which can be so powerful and as you allude to, so preventative, which is absolutely essential. I think you said should become part of our routine. So definitely become friends with your, your eye doc for sure.

And when people are, when vision loss is becoming apparent, are you then suggesting LASIK or PRK or some of these routes to, to restore the degradation of a vision?

So it depends what the problem is. So LASIK and PRK, they're called what we call refractive surgeries. And I'll pull out my eye model again, because I think it'll demonstrate what I'm going to share.

So the cornea is in the front part of the eye. It's a dome-shaped structure. It's clear, and it's curved. And what it does is the role of the cornea is to refract light coming in.

The light gets focused onto the retina. Now, the cornea is responsible for about 2 thirds of our refraction, and the lens is responsible for the other third.

So the cornea is bending lightweight so they're focusing on the retina. Now depending on the shape of your cornea, if your cornea is very steep, very flat, you may have a refractive error like myopia or hyperopia or astigmatism even.

So those treatments like LASIK or PRK are designed to reshape the cornea. So that's all they do is they're reshaping the cornea so that the light rays can now fall more perfectly onto the retina in the back of the eye instead of falling in front of the retina or in back of the retina.

So now they're more focused on the retina. So that is more of a procedure that can be done mainly for comfort, for lifestyle reasons, for people who don't want to wear glasses or contacts.

Some of the other things that we've talked about today are more, I would say, like medical eye care rather than optical eye care. So that would be like an optical eye care issue, right?

So if you're nearsighted, farsighted, or you have astigmatism, that's an optical issue that can easily be fixed with surgery or glasses or contacts. The other things like diabetes, high blood pressure, autoimmune diseases, dry eye, glaucoma, macular degeneration, those will not be fixed by having a procedure done.

Those require more in-depth maintenance and care, like what we've been talking about. So I hope that clarifies things. I think my last question is this new procedure of changing your eye color, probably you're familiar with.

What are the risks involved to something like that? Is that something you ever see that becomes almost a staple in your world? So there are a couple of different procedures that can be done to change one's eye color.

One is implanting a colored contact lens inside the eye, which I don't recommend because it's It's a foreign body inside the eye and it can create a lot of inflammation.

So basically, what happened to my iris here? The colored part is here, right? So what the surgeon would do is go in and put a colored kind of a contact lens inside the eye to block the original iris color and to make it a different color.

So that I do not recommend. I've seen some really bad outcomes with that, like really aggressive types of inflammation. The other procedure that I've seen on social media, and I really can't speak to the long-term issues with it, but because I think it's fairly new, is they go in and they inject pigment into the cornea, like the undersurface of the cornea.

here actually so the cornea has five layers and so they're injecting pigment into the cornea so that basically when someone looks at your eye it looks like it's a different color so it's not really changing the color it's just let me see what kind of analogy I can give you let's say you you have a window And then the window is slightly tinted and then you put something in front of the window and that's a different tint.

That would kind of be what it would be like. So we're putting, what they're doing is they're injecting a tint in front of

the colored part of the eye.

I can't speak to the safety of it. I don't know if there have been like long-term studies done about that, but I do know that there are providers who are doing this.

So wild because when I was younger, I always wanted to kind of, I was thinking, was there ever going to be a day where I could see eye color changes? Like if someone wanted to go from blue to green or brown or anywhere in between.

And when I started seeing that procedure, like that's interesting that we've been able to achieve that. My concern is yes, long-term safety, if there's any sort of issues.

So interesting to see how that continues to unfold, but this has been, Yeah, I would say, I had always wished I had a different eye color, and I even wore colored contacts for a while in my youth.

I've become okay with my eye color, and I'd rather have my brown eyes rather than risk some of the complications I've seen in some patients who've tried to get their eye color changed.

To me, it wouldn't be worth it, but really, if you're considering it, colored contacts are the way to go. It's the least risky and you can change it. You know, one day you can have blue eyes, one day you can have green eyes, one day you can have brown eyes.

That to me seems like a win-win rather than going for a procedure that permanently changes something inside your eye.

Eye Exams, Procedures, and Closing Thoughts

How does color context, because you mentioned that, can that change? I know we were talking about the microbiome earlier and ocular microbiome. Can that manipulate anything is because I don't believe contacts come without their own risk.

Obviously they're relatively safe and it's becoming ubiquitous and in restoring clarity of vision. But is there an issue or a potential risk with long-term contact use?

It would be, it's a good question. It would be the same colored contacts versus regular contacts. They would be the same risk, which is a risk of infection, like a corneal, first of all, corneal abrasion.

If you're putting in the lens and you accidentally scratch your cornea, that's called a corneal abrasion. It can be very painful. So that can happen to anyone who wears contacts.

That in turn, if your ocular surface microbiome is dysbiotic and you have some organisms there that don't belong there, they can get into that abrasion and cause an ulcer.

So that is something to consider is developing a corneal ulcer from contact lens use. And that can be also very serious or can be mild, but still it has to do with an infection.

So just simply wearing the lenses, not to my knowledge, I don't think it changes the ocular surface microbiome, but if you already have dysbiosis of the ocular surface microbiome, then you're at higher risk for something else developing.

So I remember back in the day when I was wearing contacts and for sports, I kind of had to at some point. I remember I was constantly developing blepharitis, but I suspect that was also attributable to the environment back when I was in college and very kind of damp moldy environment, which It was only perhaps exacerbating the underlying driver there, but no, all of that absolutely makes sense.

This has been a genuine pleasure. And I know we went to well above time today, so I appreciate your time. Again, everything that you've shared, this has been super profound in it.

What I like to call a mini masterclass for all our guests today on all things iHealth. My final question that I'd like to end and ask all guests, if you could have any superpower, what would it be?

I would say two superpowers, if I could say two. One would be the ability to fly. Again, unrelated to health and just having that freedom of being, yeah, enjoying that flight.

The second thing would be the ability to sing. I wish I could sing. I really do. I just think it's so beautiful how people can use their voice as an instrument and express themselves and also evoke emotions in other people.

And I really, really wish I could sing. I can't. I cannot. I'm like tone deaf. I cannot sing. So I really wish I could do that. Well, today I can say you sang very elegantly with all things eye related.

So, no, thank you as well. Thank you. Singing in a difference there. I hope everybody enjoyed this discussion as much as I did. Where can people find you?

Obviously, you mentioned a book and then a book in the works. Where can people tune in to what you're doing, reach out to you, come to see you for an eye exam?

Sure. So thank you, first of all, Dr. Kealia. This has been fantastic. And you got my wheels turning too. So afterwards, I'm going to look up some things with exosomes, et cetera.

My website is the best source, doctor.ronnibanek.com. And I'm located in New York City. So if you're ever in New York or visiting New York, you can come see me as a patient.

I also do telemedicine visits, but only for individuals in New York. That's where I'm licensed. And then I have a podcast of my own called the IQ Podcast.

And I had you as a guest, Dr. Keeley. So thank you for joining me as a guest on that and sharing your wealth of expertise. And then my books and my supplements, you can find on my website as well.

I have a supplement Lyme curated for eye health and it includes the macular carotenoids, a lot of what. This has been an absolute pleasure when I am in New York.

I would love to come see you pun intended and just kind of check up on my eye health. I know I have a relationship with a doctor here that I like to do routine visits yearly, but I would love to always see you get a second opinion.

I think that's always Great. Other, especially when you're approaching things from a functional medicine lens, it provides, I think, even more value. And so your, how you've been able to kind of connect the dots for us today has been incredible and very, very fruitful.

So thank you again for your time. We look forward, well, I look forward to meeting you in the flesh at some point here in the near future. Same here. Yeah.

I would love to meet in real life. So. Hopefully we run into each other at a meeting or if you come to New York or if I come to your neck of the woods.

We will definitely do so and perhaps we can do a round two if our guests have any more questions. Until then, thank you for tuning in today and I look forward to continuing these wonderful conversations.

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