

### Transcript Details

This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: <https://reachmd.com/programs/empower/empower-cornea-health-diagnostic-tools/39287/>

### ReachMD

www.reachmd.com  
info@reachmd.com  
(866) 423-7849

---

### EMPOWER - Cornea Health Diagnostic Tools

#### Jacob Lang:

Hi everyone. I'm Jacob Lang, optometrist at Associated Eye Care. I wanted to welcome you all to a special episode of the MOD Pod. This is the fourth installment of our new 2025 EMPOWER Series aimed at advancing optometric knowledge to help elevate our practices and our patient care. Today's episode is going to focus on corneal health and diagnostic developments in that space. I'm honored to be joined tonight by our featured experts, Dr. Paul Hammond and Dr. Jason Compton.

#### Jason Compton:

Yeah, thanks for having us.

#### Paul Hammond:

Thanks, Jake.

#### Jacob Lang:

Dr. Hammond, if you want to introduce yourself, what's your favorite color? What's your astrological sign and what things make you get up in the morning?

#### Paul Hammond:

Sure. Yeah, so thank you again, Jake. I'm an optometrist. I work for Twin Cities Eye Consultants in Minneapolis. I'm a glaucoma and corneal specialist there as part of the large ODMD practice, and I've been in practice now for about nine years.

#### Jacob Lang:

Awesome. Again, thanks for being here. I really appreciate your help. Dr. Compton, tell us about yourself.

#### Jason Compton:

So born and raised in New York. Private practice owner, made 10 years this year, so super excited. And in private practice you kind of take whatever walks through the door, but we've definitely have positioned ourselves as a specialty contact lens clinic. So I mean, that's everything from myopia management, keratoconus, scleral lenses. So hope to kind of tap into all of that with our discussion today.

#### Jacob Lang:

Yeah, had to be fun to watch that grow. Congratulations on a decade.

#### Jason Compton:

Thank you. Yeah.

#### Jacob Lang:

Yeah, I'm sure. I don't know, does it seem more like a lifetime or does it seem more like a minute?

#### Jason Compton:

I don't know. All I know is I have a lot more grays. I know this is an audio podcast, so you can't see it, but yeah, I've got a lot more grays than when I started.

#### Jacob Lang:

Yeah, yeah, I'd take gray over any hair, you know, with this hairstyle I got. So we'll take what we can get, but well, yeah, that's huge. So congratulations.

#### Jason Compton:

Thank you.

**Jacob Lang:**

It's really impressive and thanks for specializing, I think that's something that not a lot of private practices do, enough of is kind of saying, you know what? This is the space I'm going to own, especially in a place like New York.

**Jason Compton:**

Yeah, thank you. Yeah.

**Jacob Lang:**

So let's talk about how we've gotten here, where we're at. Let's talk about this evolving role in diagnostics, what we use to help us diagnose our patients with conditions or diseases or even just educate our patients about their eyes. One of the nice things I think in eye cares, we have a lot of toys. What have you guys seen evolving or what trends have you seen in optometry in regards to diagnostics?

**Paul Hammond:**

About 80% of my clinic is glaucoma, and then about 20-25% is cornea and dry eye. So looking at it from that perspective, on the glaucoma side of things, we've implemented the Reichert ORA system for measuring corneal hysteresis and cornea-compensated IOP. That's been huge, especially for our normal tension glaucoma patients, and then the more moderate to severe patients where I feel like that extra information is really useful. In addition to that, using our tomographer for obtaining central corneal thickness, I feel like having it be non-invasive where we're not touching the cornea, and then also the technology is giving us a precise central corneal reading rather than wherever the technician happens to touch the cornea. I think that's also a big step forward in my practice for knowing I'm getting accurate readings for those glaucoma patients in particular.

**Jason Compton:**

I think of it from the perspective of almost patient expectations because our patients are consumers and they're exposed to all other different types of industries, and almost every industry is advancing and using technology. So if I'm coming to them with healthcare, it's almost an expectation. And the thing I'd like to think the most about is my profilometry and how I've been fitting... I probably fit my first sclera lens in 2005, 2006, and back then it was the wild west of sclera lenses. No one knew what they were doing, the doctors or the manufacturers. I just have seen how I've become very efficient at fitting lenses just by looking at the side profile of someone's eye. But what I am able to understand what these data points from just profilometry alone really has elevated my fitting. But taking it back to where I started, showing the patients what I'm doing and how I'm using this technology really enhances that kind of doctor-patient relationship.

**Jacob Lang:**

I love that, it's a gateway to connecting with your patients. I love that comment, Jason. That's great. Yourselves included, a lot of doctors probably didn't even practice before OCT. I'm one that did... OCT is just something that everyone takes advantage of or takes for granted, I should say nowadays, but we'd say, oh, it's at this layer of the retina or that layer. It used to be like we'd kind of guess, yeah, it looks deep retina or it looks superficial retina, and now we just take for granted this. So it really has evolved quite a bit. So why is making these diagnoses matter? Why is it important for us to have the technology to make these diagnoses for our patients, whether it's keratoconus or dry eye? That's such a thing that I hear a lot is why does it matter?

**Jason Compton:**

Yeah, and I would say if we can just address keratoconus, it allows us to be, as opposed to being reactive, it helps us be proactive. Now, I mean, not in my office, but I can offer treatments like cross-linking or really when you think about the lifespan of a keratoconic patient, you're just kind of managing or before we're just managing them until the transplant. So now if I can diagnose this earlier or I can monitor it, I can refer that patient to a colleague that can assist them with something. So I think this is a huge area where technologies are helping us.

**Paul Hammond:**

Absolutely. Staying on that same topic, I think having the back surface, the tomography for that early detection, that's huge over the placido rings that we had initially. And then the advancement of the EpiMapping with the anterior segment OCT, we have that in our clinic too. It's not necessarily the thing that drives the clinic, but it is helpful in certain cases, especially with our topo-guided PRK. If you're looking at the Pentacam or your tomography and maybe something is on the edge, you're not quite sure yes or no, are we going to refer? You look for that thinning of the epithelium, that can kind of be your thing that nails the diagnosis.

**Jacob Lang:**

That was a two-hour diagnosis keratoconus lecture in two minutes. So you guys are awesome. Top game. So I just want to boil that

down a little bit. So when we're really thinking about corneal ectasias, specifically keratoconus and pellucid, maybe some post-refractive ectasias, we're looking at the back surface, as you guys had mentioned. Looking for anterior changes or things moving forward on the back surface of the cornea before. And then Paul, can you describe what you're looking for in corneal epithelium that might hint at some sort of ectatic process or keratoconus?

**Paul Hammond:**

Yeah, so with the EpiMapping in particular, I find it really interesting actually in that it's almost like the epithelium from the friction or the pressure of the lid, it's almost like it's thinning right over the cone. And so because the epithelium is thinning over the cone and it's thicker next to the cone, it's actually masking that cone anteriorly. And so that's exactly what you see on the printout from the EpiMapping software is you'll see that epithelium thin out and that will directly correlate to the cone that you see on your tomography maps.

**Jason Compton:**

Just going back to our theme of technology, before all we had was topography. And topography tells you what the cornea looks like, but the tomography tell you what the cornea is becoming or what the cornea is transforming into. So it's just like, one, it was a great diagnostic tool, but now the next generation has given us a whole different way to look at it. Yeah, I can diagnose it, but I can also see what the future holds for this particular cornea.

**Jacob Lang:**

In dry eye, we've seen kind of this evolution of talk about meibomian glands, right? First we started talking about just meibomian gland disease and talking more and more about that, the meibomian gland workshop, huge publication came out. And then we started to get on the back end more ways of imaging meibography and meibomian glands. What have you guys seen clinically and how has that helped with regarding diagnosis of meibomian gland disease in your clinics?

**Jason Compton:**

I was just going to start off with saying, again, focusing on scleral lenses, contact lenses, the ocular surface or that anterior segment area is often forgotten, and myself included, sometimes you get so focused on addressing the cornea, but you forget the other factors or the anatomy involved. And when we incorporated meibography into the clinic, it really just kind of opened up that kind of understanding. In big part, patient education of course, but in our practice, just understanding how we really needed to manage this aspect if we're going to be successful with these fits.

**Paul Hammond:**

Yeah. So we get meibography on all of our dry eye consults that come in to see me. We will repeat that about every two years thereafter, just looking for any significant changes. I find it super helpful, number one, with patient education. Number two, sometimes directing what treatment strategies we're going to use. If we don't have many glands left at all, if there's extremely severe atrophy, and I tell patients we might be heading into more of a compensation type of treatment modality, whereas if their structure is looking good and they're just really plugged, then we can rehabilitate. And so those are a couple strategies I use in my patient education to kind of tell them where are we going and here's why.

**Jacob Lang:**

Yeah, I love that. I had that today. I had a patient was like, "Wow, look at all this stuff you did. Look at all these pictures you took. This is so great that you're taking the time to care for my acute surface disease." And again, to your point, Paul, that say I know you've heard about this treatment or that treatment, but based on your gland structure, I'm going to go a little different direction at first that I don't think this might be the best option for you based on the severe gland loss you have and things like that. So pivoting on that, Jason, you were talking about profilometry and scleral lenses, so I really want to kind of dig into that. How has that profilometry technology... First, just explain that to me a little bit more and what you're looking for in your profilometry? But how has that reduced that guesswork, that chair time as compared to the good old days of early scleral lens fitting?

**Jason Compton:**

Well, it kind of goes into the speed of the overall fit. So the idea behind profilometry for people who aren't familiar with it is you think of it as a topographer that stretches all the way out throughout the sclera. So when you understand when we're fitting sclera lenses, we're not fitting the cornea, we're fitting the sclera. And there's so much literature has come out within the last couple five, 10 years to help us appreciate the asymmetry of the sclera. So if you're throwing on a spherical lens, that's where all sorts of complications come up, well, there's irritation, redness, fogging. And the closer you can match, or I should say align that lens with that scleral surface, the happier everyone's going to be with that fit. It used to be that we could do toric haptics, and we could kind of do one or two meridians, and the manufacturers got good at maybe doing quadrant specific where we can kind of tweak it.

And with profilometry, I can literally map this whole area, and if I want to do what we call freeform lenses, I can build a lens that matches it identically. So now these were things that I had to kind of figure out on my own with my slit lamp and some fluorescein, and we were able to get it done. But the level that we're able to do it, now, I should say the precision, when we are talking about blebs, you're talking about pinguecula or just any type of conjunctival abnormalities. Being able to map that with this instrumentation is just next level.

**Jacob Lang:**

Yeah, that's so cool. How do you use that to communicate with your lens labs, your lens builders, if I can call them that? How do you communicate that and say, "Hey, I'm seeing this and..."?

**Jason Compton:**

Oh no, they've literally dumbed it down for you. I'm an externship site, so I have externs that rotate to the clinic, and I also feel like I'm doing them an injustice because they make it very simple. So what happens is my profilometer has... They have the algorithms of every, I don't know, maybe 30 different labs, so I can literally upload my images and they'll literally build a lens for you, just a couple clicks. So it kind of takes the fun out of it in some regards. But on those busy clinic days, I do enjoy it.

**Jacob Lang:**

Yeah, yeah. These kids got it too good, don't they?

**Jason Compton:**

They got it way too good.

**Jacob Lang:**

We got to make them, sweat it out.

**Jason Compton:**

I make them work sometimes.

**Jacob Lang:**

Oh, I love it. Yeah, you got to get dirty too-

**Jason Compton:**

Old school, yeah.

**Jacob Lang:**

Especially at first, right? Know what you're up against and know why it works and-

**Jason Compton:**

Exactly.

**Jacob Lang:**

... what the numbers mean, right? I love that. So yeah, we have a lot of tools available. We're talking about all these different things to assess and diagnose, measure corneal health. Corneal topography is kind of in this foundational role, and I think we're using that not only for diagnosis, but also for following and managing patients over time. What do you guys do? What's kind of your protocol there? When are some cases where you're doing serial topographies watching for conditions? And then what sort of limitations or issues do you see with the corneal topography?

**Paul Hammond:**

In my clinic that mostly regards to keratoconic patients before cross-linking, deciding when to send them for the cross-linking consult, if and when that is. And then also the patients after cross-linking coming back to us to make sure that things are strengthening, stabilizing, and nothing progresses from that point forward. So I'm a big fan of the Belin Ambrosio display, the bad score. They also have a nice progression analysis so you can watch certain numbers over time to make sure things are staying within a stable range. Some of my favorites, especially for post cross-linking are the mean K in addition to the K max, the minimum corneal thickness. And then frankly, there's some element of just having enough reps of looking at enough topographies or tomographies to kind of get a sense of things where it becomes second nature. Your eyes know where to look for certain numbers, and then you get really efficient with it.

**Jacob Lang:**

Oh, that's nice. I like that. I do a lot of the change analysis too with my dry eye patients actually, especially the patients with regular surface from basement membrane dystrophies or just really beat up and saying like, hey, look, we're going to watch this and look how much different this is before and after we did your treatments. And if we hadn't have treated this before, your IOL calculation would've been off or your LASIK wouldn't have gone as smoothly as it did. So doing a little bit of before and after on that is a powerful tool,

especially with clinical communication. Jason, I think that visualization in clinic by getting patients buy-in is just so important. Can you speak to that a little bit more? Maybe other-

**Jason Compton:**

Absolutely.

**Jacob Lang:**

.. opportunities for that?

**Jason Compton:**

I love talking about that because that's really transformed different aspects of my practice. So if I can kind of just lay it out how my testing area is. I have a little nook where I have my topographer, my profilometer, higher order aberrations, meibographer, and it's all connected to this flat screen. It's a very little nook, but what we do is once we take the readings, we put it up on the screen and I can show the patient right there what their image shows, and we have these little laminated sheets where I can show them what normative data looks like. And it has been absolutely instrumental, especially when it comes to upgrading scleral lens patients.

When I mean upgrading scleral lens patients, there's different fees associated with a spherical lens, a quadrant specific lens or free-form lens, and helping them to see their map and understanding that if I can only adjust these two meridians or just these four meridians, you're still going to have some issues. And it makes something that can be extremely complicated to a seasoned professional, very simple for them to understand. So I think it's a huge aspect of my patient education, and as I said, it's really transformed that portion of my practice.

**Jacob Lang:**

What's the name of this nook? Is this like a cave of technology?

**Jason Compton:**

I haven't named it, no. The moneymaker, that's what I call it.

**Jacob Lang:**

The moneymaker, the bat cave. I imagine like the bat cave. It's just this place you go and all this tech is just flowing. I love that too, that I imagine it's useful if you need to pivot on a scleral lens too, right? You're like, I think I can get away with a spherical back surface, and then patients coming back and I'm just getting all this fogging, all this fogging. You'd be like, okay, we went for this, and if you look back at this map, there's enough toricity here that I need to do something different. Does it help you with-

**Jason Compton:**

Yeah, exactly.

**Jacob Lang:**

I guess not to say it was a mistake, but when you need to pivot and say, yeah, we can't go for this, we got to do this.

**Jason Compton:**

Absolutely.

**Jacob Lang:**

Yeah, I love that. Any thoughts about other real world examples for using this to explain patients and maybe their visual function with regards to glaucoma or corneal health?

**Paul Hammond:**

For me, the one that comes to mind in particular is we did use a Wavefront analyzer for some of the clinical trials we were a part of. Unfortunately, we weren't able to keep it, but I find that technology really interesting and really cool, especially for the post refractive patients or for the keratoconic patients. Being able to throw a Snellen chart up and showing the patient, okay, here's what your vision is the way it is currently, and here's what it could be getting rid of the HOAs. Here's that sharpness of the Snellen chart that everyone knows and is familiar with. I think that's really cool.

**Jacob Lang:**

Yeah. Are they like, "Yes, that's what I see?" The patients are like, "Yes, that's it"?

**Paul Hammond:**

Yep.

**Jason Compton:**

I mean, I definitely want to echo that. We talk about functional vision versus your regular visual acuity. I mean, someone who's had a fair share of fitting scleral lenses knows the story where you have a patient comes in your office, they're counting fingers, you got them to 20, 30, and you're thinking they're going to name their firstborn child after you. And then they're like, "Doc, it's just not that sharp." And you're like, what are you talking about? But with understanding of these high aberrations and contrast sensitivity and all these things and glare, yeah, you did a service, but the patient is still not happy. So when we brought the Wavefront technology in the office, I mean, that's next level. So you can really address these patients, these patients that before we were just kind of diagnosing as, oh, that's that crazy patient. They're never happy, but no, there's actually a reason behind their troubles.

**Jacob Lang:**

So that's that next level, it's beyond Snellen, right? It's like beyond this where we're talking about these higher aberrations, spherical aberration, trefoil, all those next level things that we try and pin down.

**Paul Hammond:**

That's one area where I'm really excited to see where things go in the next five to 10 years, what comes out that's more accessible to all of us, and implementing that in different ways into the clinic. I think that's really cool.

**Jacob Lang:**

Yeah. Jason, so you're using this to actually change lens optics and actually get cancel out some of those higher aberrations?

**Jason Compton:**

Yeah. So because of the stability of a scleral lens, you have the ability to do that. A soft lens moves too much, obviously. Definitely a GP would. But a scleral lens, you have to have it incredibly stable, and it's a process to go through, but these are patients that have been fit and unhappy, and you're really providing them a level of care and clarity that they're just not used to, and it's amazing.

**Jacob Lang:**

Yeah, it sounds like they're asking for it too, right? Exactly what you said, these patients have come in and said, "Yeah, it's good, but it could be better." So they're asking for it. And in the past, to your point, Jason, we haven't been able to deliver on it because of the technology, the limitations we had. And now if you're actually acknowledging the patient, just like we do in dry eyes so much, acknowledge their symptoms, acknowledge their disease, and embrace the technology we have to make it better. So it is really cool. Now, the business, the practice part of this, Jason, I'm going to hit you up for this. With your anniversary, since you made it this long, you must have done something right. How do you keep this efficient? How do you fit it into your patient flow? How do you educate your staff about why we're doing these things? What other pearls do you have as a small practice owner?

**Jason Compton:**

I would actually kind of give you a different perspective that you probably weren't expecting. When you're doing these fits and you have all this technology, I mean, I could do a scleral lens fit in five minutes, and you have to be careful with that because these patients are paying a lot of money. And if their butt doesn't even get warm in the chair, then it becomes an issue. So that I've trained myself to not focus as much on the fitting aspect of it because we can get that done quickly. But also just understanding that the old stuff is just as important, that patient education, that doctor patient relationship. And that's why I spent a lot more time in showing that when I talked about that little area in my office, spending more time talking to them and really stretching out that exam because this technology helps you zoom through these exams, but the patients really need to understand that there's a lot still going into it, even though it only took me a couple minutes.

**Jacob Lang:**

Yeah. It might be my experience and my know-how and my dedication to my craft. But patients also like to see pictures and get into the mind of their doctor a little bit.

**Paul Hammond:**

On the dry eye side of things, I think tear testing is big, and then also meibography is big. Having those as mainstays in the dry eye clinic, I think differentiates having a true dry eye specialty clinic from, say, primary eye care clinic where they're treating dry eye because patients notice those things. From start to finish, it's all about their dry eye and figuring out, okay, what are the symptoms? What's truly bothering you at home? And focusing in on that and trying to get them, and a very detailed answer with some solutions.

**Jacob Lang:**

Yep. Yep. Just that next level communication. I was actually thinking about a patient, and it was a patient I diagnosed with keratoconus, first time they've ever heard these words, blurry vision. And it wasn't the patient that was impressed with me, it was mom, right? So this is a teenage keratoconic patient that we detected early, used all the technology, gave this patient early detection, early intervention, all the good things. But it was mom that was like, "You helped save my baby's life or my baby's vision at least." And so then she's bringing

the next kid in, the next kid in, she's talking to her mom's groups and all this stuff. So impressing moms always an important thing as well. And to be able to explain to mom what's going on with the child's eyes is so important and can you imagine doing that without a topography or without some imaging of the cornea? I think that's so huge.

**Jason Compton:**

That's everything. I mean, we have a definite protocol that we go through in the office because I mean, you think about meibomian management, mom, dad came in thinking that they're going to update their insurance glasses, at least in my office, and all of a sudden I'm talking about pharmaceuticals. I'm talking about contact lenses for their seven-year-olds, that's a lot. And I definitely need to give the parents the time and respect that they deserve, but if my waiting room is full of people, I can't sit there for an hour. So we have developed all sorts of protocols in the office where the technicians are trained to a certain level where they can have these conversations, where we do certain things with follow-ups and schedule consultations, but that's a whole nother beast. But it's an important aspect when you're talking about parents and their kids.

**Jacob Lang:**

Yeah, I love it. Such an important thing. And like you said, such a good strategy to have the same voice throughout the whole exam, whether it's check-in, technician, check out, everyone in between. Yeah, I always want my whole staff singing the same song knowing why they're doing this test, what it's showing the patient. So always fun to educate our staff and have them be able to be our voice throughout the clinical experience. I'm going to ask you both for one piece of advice that you'd each give our listeners, our colleagues, if they're looking to integrate more and newer diagnostic technologies into their practice for corneal health. So what piece of advice would you give our listeners?

**Paul Hammond:**

I would say owning it inside and out, knowing the clinical research of what you're jumping into and really going to take a hold of, knowing the billing and coding and just having a full grasp of the disease state that you are looking to dive into, before you make that, before you jump off the edge. You need to look into all the clinical trials, truly feel like it front to back, like you're studying for boards. So that every question that does come your way, you've got an answer for it. It's going to be a little nerve wracking, especially at first. There's going to be a little bit of that fake it until you make it, until you've got a few snaps under your belt.

**Jason Compton:**

Yeah. I love that. I'm thinking about my former self and opened up my practice. We're talking about all these bells and whistles. I probably had my [inaudible 00:28:48] in a few minus lenses when I opened up. I don't want people to think that they have to go out and buy everything right away. Definitely take a stepwise approach. Look at the technology that meets some of the conversations that you're having with your patients, and as you have these different experiences with these different patients, then you find where another piece of instrumentation could come in. Because a lot of this stuff, at least from the contact lens size, well, especially from the contact lens side, you can't build for, it's not like an OptiMap where I'm building fundus photos or visual field or external photos. You're not building a profilometry, you're not building for your scleral lens OCT assessment. So it has to make sense. So don't feel you got to do it all right away. Take a stepwise approach.

**Jacob Lang:**

Yeah, I think that's so true with everything. I mean, whether it's a dry device with meibography to your breakup time, whether it's a Pentacam or some other topographer, tomographer of the cornea, OCT as well. We all love these bells and whistles, but we have to be able to use them. And whether it's having them reimbursed by payers or integrating them into your other services, whether it's contact lens fees or something else, is an important way to make sure that we keep the doors open for a decade, right?

**Jason Compton:**

Exactly.

**Jacob Lang:**

Awesome. It's a pleasure to have a conversation with you both about optometry and things you're so passionate about and experts in. So again, thank you both for being here. Such a great discussion. Again, I am Dr. Jacob Lang. I want to thank you for listening to the special episode of the MOD Pod. Please stay tuned for another installment of the EMPOWER Series coming your way shortly.