

Update December 2022



A Holiday Message from NKCF



December is a time to celebrate the past year. This newsletter was sent to more than 25,000 subscribers worldwide. 10,000 individuals participated in our bimonthly webinars and more than 700 families received copies of the Keratoconus Patient Guide. **You are not alone!**

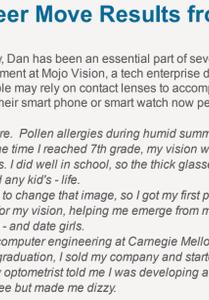
National Keratoconus Foundation works with clinicians and scientists to investigate ways to improve your vision, understand more about KC, and raise public awareness. Thank you to all who support our activities. Without your help, we could not continue.

- Happy New Year from your friends at NKCF

KC Severity affects Quality of Life at all Levels

Doctors have long collected surveys to assess the effect of disease on their patients' ability to achieve a good Quality of Life (QoL). Until recently, eye researchers used questionnaires designed for all eye conditions: a keratoconus patient was asked the same questions that a glaucoma or retina patient would be asked.

In 2017, the Save Sight Registry, an Australian research center developed the Keratoconus Outcomes Research Questionnaire (KORQ) that asked about issues relevant to life with KC.



Researchers at the LV Prasad Eye Institute, a world-famous eye center in southern India invited patients in their keratoconus clinic to complete the KORQ. 574 patients participated in the study; the mean age was 24 years; most had been diagnosed with keratoconus for more than 5 years. Based on their cornea curvature, participants were assigned to 1 of 4 categories which roughly corresponded to mild (<48 Diopters), moderate (48-53 D), advanced (54-55 D) or severe (>55 D) keratoconus.

The authors found that patients at every level of disease reported activity restrictions and symptoms related to their KC. Females report a worse QoL. The authors suggest that women are more willing to seek help for their symptoms; men may be reluctant to admit limitations or difficulty performing certain tasks.

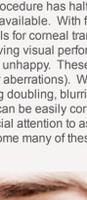
Although a majority (82%) of respondents held a college degree, 61% of survey participants were not working. Those who had jobs outside the home complained of eye pain or symptoms that affected their QoL at a greater level than patients who were students or not employed. One of the chief complaints was discomfort in certain environments. The authors suggested, "it is possible that working participants were exposed to smoky and dry environments, worsening their pre-existing keratoconus-related symptoms."

While the patients with the worst cornea curvatures tended to report the greatest trouble, this finding was not always the case. The authors concluded "Severe keratoconus may not indicate greater negative impact on the QoL. (These patients may develop useful coping strategies.)"

Dr. Barry Elden OD, co-founder and president of the International Keratoconus Academy, who practices at North Suburban Vision Consultants in Chicago stresses communication between patients with KC and their doctors. "As eye care professionals, we typically have limited exposure time with patients. We often fail to appreciate the impact that the disease has on their lives." Elden added, "We do our best to provide our patients with the best vision possible through all available means, however KC challenges individuals in multiple ways. It can impact work performance, it can result in chronic ocular discomfort; it can even have dramatic negative influences on social interactions and mental health. It is imperative that we appreciate the degree that keratoconus influences our patients' lives regardless of the severity of the disease."

What we learned: Even mild KC can have a significant impact on Quality of Life.

Reference: Factors affecting quality of life in keratoconus. Gonthwal VK, Gujjar R, et al. Ophthalmic Physiol Opt. 42:986-997, 2022.



Dr. Barry Elden OD, FFAO, is president and medical director of North Suburban Vision Consultants, a multi-specialty optometric practice in Chicago. He is a graduate of the State University of New York College of Optometry and a fellow of the American Academy of Optometry in Chicago. **Dr. Barry Elden OD**, co-founder and president of the International Keratoconus Academy, a professional organization supporting KC-related education for eyecare professionals. In 2022, he was awarded Keratoconus Practitioner of the Year at the Global Specialty Lens Symposium.

NKCF wants to hear from you! Share your keratoconus journey and help to inspire others. Each month we tell a personal story from one of our subscribers. To tell your story in a future Update, click here.

In My Own Words:

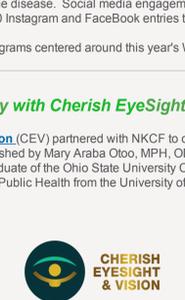
A Career Move Results from KC

Meet **Dan Cohen** of Silicon Valley, Dan has been an essential part of several successful start-ups. Today he is Vice President of Product Management at Mojo Vision, a tech enterprise developing augmented reality (AR) contact lenses. Someday soon people may rely on contact lenses to accomplish some of the information gathering and monitoring tasks that their smart phone or smart watch now perform.

"My KC journey started in Baltimore. Pollen allergies during humid summers were particularly irritating, so I was an aggressive eye rubber. By the time I reached 7th grade, my vision was noticeably poor and I was prescribed thick "coke bottle" glasses. I did well in school, so the thick glasses secured my image as a nerd, right at the most awkward time in my - and any kid's - life.

"As I entered high school, I hoped to change that image, so I got my first pair of contacts. Switching from glasses was the first game changer for my vision, helping me emerge from my "ugly duckling" phase, enabling me to participate in sports and music - and date girls.

"I went on to study electrical and computer engineering at Carnegie Mellon in Pittsburgh, starting my first company while still a student. After graduation, I sold my company and started another. I noticed when wearing my glasses, I couldn't see clearly. My optometrist told me I was developing astigmatism. Prescribing toric contact lenses with glasses enabled me to see but made me dizzy.



"Soon I sold my second company to a company in Silicon Valley, so my wife and I moved there. I was excited to immerse myself in the technology capital of the world, meet brilliant people, and start several new companies. "At every eye exam, my optometrist told me my astigmatism was progressing and prescribed increasingly powerful and expensive soft lenses. My vision with spectacles became worse, to the point where I couldn't do much more than use them to fumble my way to the coffee maker in the morning. My days of reading in bed were over.

"About twelve years ago, my optometrist informed me she was out of options and theorized I may have keratoconus, something I never heard of. She recommended I see her professor at the University of California Berkeley School of Optometry.

"During my first visit, I was diagnosed with keratoconus. I remember the professor beckoning his students, "Everyone gather 'round! We have a KC patient to look at!" I was prescribed my first set of scleral lenses. It took five visits to get the fit right, but I could see perfectly. After wearing soft lenses, I was shocked at the large, rigid lenses yet they were the most comfortable lenses I'd ever worn.

"Over the years I experienced major progress in scleral lenses, with more available lens designs, fewer visits to get a fit, vision care coverage for medically necessary lenses, and easier care options. Inserting and removing scleral lenses is something I can do in seconds; in the dark if I needed to.

"In 2018, my worlds of being a KC patient and a technology entrepreneur serendipitously collided. A lifelong friend founded Mojo Vision, a start-up developing an augmented reality (AR) contact lens for consumers with an embedded computer processor and the world's smallest display. As it turned out, the type of contact lens being used by Mojo Vision was a scleral lens. He asked me to join him in this ambitious venture with dozens of top engineers, scientists, and clinicians and backed by over \$200M in venture capital. I jumped at the chance, and I can honestly say the last five years has been one of the most rewarding and intellectually stimulating projects I've ever worked on.

"I'm the kid from Baltimore who rubbed his eyes too much, developed KC, and couldn't see well who grew up to be the forefront of driving amazing innovation in smart scleral lenses. How cool is that?"

Learn more about Mojo Vision technology here. For information and instructions about telling your story "In My Own Words" in a future NKCF Update, click here.

When Good May Not be Good Enough

Not that long ago, an individual with keratoconus whose vision could not be adequately improved with contact lenses, or who experienced discomfort wearing contacts was referred for corneal transplant surgery.

In the last decade, the corneal crosslinking procedure has halted disease advancement for countless patients and scleral contact lenses have become widely available. With fewer patients progressing to severe KC, and more achieving comfort and better vision, referrals for corneal transplants have fallen significantly.

The challenge that doctors now face is improving visual performance. An individual with keratoconus can have visual acuity corrected to 20/20 and still be unhappy. These patients are not necessarily more demanding; they likely have uncorrected HOAs (higher order aberrations). While they can read an eye chart that signifies their vision as "normal" they may be experiencing doubling, blurring, or smearing of objects. While most lower order aberrations like defocus and astigmatism can be easily corrected with eyeglasses or conventional contact lenses, HOAs are more unique and require special attention to asymmetry caused by the unique curvature and surface of the cornea. Scleral lenses can overcome many of these irregularities but, for some individuals, the remaining HOAs cause significant frustration.



In a case report published by researchers at the University of Houston College of Optometry (UHCO), a 33-year-old man with severe keratoconus and an extremely steep cornea (Kmax = 84) complained of continued halos and starbursts and decreased contrast sensitivity despite being fit with scleral lenses that corrected his vision.

Faced with the likelihood of a corneal transplant, he agreed to work with researchers at the Visual Optics Institute at UHCO to use wavefront imaging technology to create a contact lens that would address his HOA. Wavefront aberrometry has been used by surgeons performing LASIK and other refractive surgeries for some time. Light images are projected into the eye and reflect off the retina. The returning "wave" of light can be analyzed to pick up optical imperfections. The technology is now being applied to the production of highly individualized scleral contact lenses.

Dr. Matt Kauffman OD, who works as a clinical investigator with the Visual Optics Institute researchers at the University of Houston, and now practices in Katy, TX, has experienced success with the technology. He reports, "Wavefront-guided scleral lenses have the potential to not only improve a patient's visual acuity on the letter chart, but may enhance the quality of a patient's vision, reducing distortions or aberrations caused by HOAs." The patient described in the case study has indefinitely postponed any consideration of transplant surgery. Lenses incorporating wavefront technology, Dr. Kauffman concluded, "can be life changing and may delay or eliminate the need for a corneal transplant."

What we learned: The ability to successfully address HOAs, increasing the ability to successfully address HOAs.

Reference: Avoiding penetrating keratoplasty in severe keratoconus using a wavefront-guided scleral lens. Hastings GD, Nguyen LC, Kauffman MJ et al. Clinical and Experimental Optometry. 105:86-88, 2021.



Dr. Matthew Kauffman OD, FFAO, FSLs is a graduate of the Univ. of Houston College of Optometry and completed a residency in cornea and contact lenses at the Univ. of Missouri, St. Louis. He was a full-time member of the UHCO teaching faculty and served as clinic director for specialty contact lenses in the one operating contact lens practice, Contemporary Eye Care in Katy, TX.

World KC Day Wrap-Up

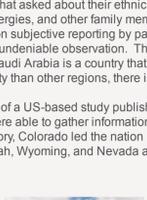


Since NKCF founded World KC Day in 2016, individuals and organizations have used the opportunity to raise awareness and teach the public about the disease. Social media engagement is a primary source of celebrating World KC Day. This year, more than 500 Instagram and Facebook entries tagged #WorldKCDay and #NKCF on November 10.

Here is a summary of some of the programs centered around this year's World KC Day:

- Improving Health Literacy with Cherish EyeSight

Nonprofit **Cherish Eyesight & Vision** (CEV) partnered with NKCF to create short animations as part of their "Vision Tales" project. CEV was established by Mary Araba Otoo, MPH, OD, to combat the lack of public information about eye diseases. A graduate of the Ohio State University College of Optometry, Dr. Otoo had previously been received a Masters of Public Health from the University of Illinois where she focused on global health.



The American Optometric Association named Dr. Otoo as Student of the Year and Prevent Blindness awarded her the Rising Visionary Award for her creative efforts to increase eye health literacy. Otoo has said her involvement is not a departure from her commitment to global health, but an extension of that passion.

One of the first projects that CEV took on was a keratoconus awareness project with NKCF. Otoo and fellow optometry students created a script. She hired Ghana-based animators to illustrate the story. Three relatable videos were developed, with characters of various ages and backgrounds dealing with issues resulting from their keratoconus. The videos were released on November 10, World Keratoconus Day. Watch these animations and share them on your own social media to remind others of the global impact of keratoconus.

- [Risk Factors](#)
- [Signs & Symptoms](#)
- [Treating Keratoconus](#)

- KC: Thru My Eyes - Photo Contest



This year's World KC Day photo contest received entries from seven countries. Judges from NKCF, Keratoconus Australia, and UK-based Support Group found a mix of funny, serious and artistic photos that shared a slice of life for those with keratoconus.

Overall winner was Diana Ward from Auckland, NZ who has lived with keratoconus for more than thirty years, and has undergone three corneal transplants. Her "Still Life" (left) displayed some of the paraphernalia she uses each day to ensure good vision and eye health. Congratulations, Diana, and thank you for giving us a peek into your life in a most artistic way.

For a look at other winners, visit [here](#)

- NKCF Medical Director Challenges Colleagues

On World KC Day Dr. **Sam Garg MD**, Professor of Ophthalmology at the University of California Irvine, and advisor to National Keratoconus Foundation announced he and his family would match donations made by any ophthalmologist or optometrist to NKCF through December 31, 2022.

In a message to other keratoconus doctors, he summarized the positive effect of NKCF's outreach - patients grappling with a diagnosis of keratoconus can be directed to NKCF for materials and information at no cost. He wrote, "These patients return with a greater understanding of their condition and treatment options."

Thank you, Dr. Garg and the other generous doctors participating in this year-end challenge! Your support of NKCF was most appreciated! Are you an eyecare professional still considering participating in the Garg Challenge? It's not too late. [Click here!](#)

- Webinar Rewind: CXL is like a First Responder

Dr. Jack Parker MD, PhD of Parker Cornea in Birmingham, AL was the featured speaker at the November Evening Webinar. An engaging and entertaining lecturer, he shared new and novel surgical techniques for treatment of KC. Dr. Parker also revealed his philosophy of crosslinking (CXL) as part of his World KC Day lecture, *International Perspective on Keratoconus Surgery*.

He said that newly diagnosed patients – often students - come to him and ask if it makes sense to wait until a convenient time to undergo CXL, perhaps during the summer which may be several months away. Dr. Parker said he discourages putting off the treatment. Waiting can result in changes to vision. He quoted a recent Italian study where patients scheduled for CXL were delayed an average of 8 months, largely due to COVID shutdown. 70% of these patients had lost some vision by the time they underwent the procedure.

Keratoconus does not present as an emergency, according to Dr. Parker, but it is an urgent problem that should be addressed if the cornea is changing shape or vision is worsening.

He offered the analogy of a house fire. He asked, "When do you call the fire department? When one room burns? Or when the house burns down? No, you call the fire department immediately, as soon as fire is detected to stop the destruction. The same with keratoconus and crosslinking." The one-time procedure takes about an hour and involves dripping riboflavin (Vitamin B2) on the cornea and then looking at a UV light for 30 minutes.

Dr. Parker continued with his comparison of crosslinking to the fire department. "Keep in mind, the fire department doesn't rebuild your house. They won't replace your furniture. Whatever is burned is lost forever. Likewise, crosslinking is not performed to improve vision, or to improve the shape of the cornea, or to turn back the clock on what has already happened. It simply stops new thinning and steepening of the cornea. In the overwhelming majority of cases, crosslinking keeps an eye with keratoconus from getting worse."

To listen and watch the recording of this seminar [click here](#).

- Optometrists attend KC Roundtable

Fifty keratoconus experts attending the American Academy of Optometry annual meeting in San Diego gathered for the NKCF-sponsored Keratoconus Roundtable to discuss issues affecting clinicians. **Dr. Brian Chou OD**, of Revision Optometry in San Diego served as local host and moderator for the event. He welcomed panel of experts: **Dr. Christine Sittler OD** of University of Iowa, **Dr. Susan Gromacki OD** of First Sight Vision Care in Maryland and **Dr. Ed Bennett OD**, who recently retired after forty years, as Asst. Dean at the University of Missouri St. Louis School of Optometry.

Also at the AAO meeting, **Dr. Brian Chou OD**, NKCF Top Doc in 2017 presented the 2022 Top Doc award to **Dr. Chantelle Mundy OD**, of the Ohio State University Wexner Medical Center in Columbus. Top Doc is celebrated by NKCF each March. The final selection of an outstanding optometrist and ophthalmologist is made from among nominations submitted by patients who are subscribers to *NKCF Update*.

- Keratoconus Barbados Makes a Difference

One of the newest and most active international organizations celebrating World KC Day was **Keratoconus Barbados (KCB)**. This nonprofit is led by the tireless efforts of Keisha Russell-Greaves and Roseanne Myers. KCB has raised funds for diagnostic equipment at Queen Elizabeth Hospital in Bridgetown and obtained government grants to support keratoconus screenings for school-aged children. KCB shared the word on November 10 by asking individuals with KC to share their stories in the press, on radio, and on TV. Congratulations on your success in raising awareness on your island nation!

High Altitude Keratoconus

An article published this year surveyed people with keratoconus living in Saudi Arabia. Optometrists invited their patients to complete a questionnaire that asked about their ethnicity, education, habits like eye rubbing, other medical conditions like dry eye or allergies, and other family members with the disease.

Because the study was based entirely on subjective reporting by patients, there may be some weaknesses with the results, but the authors made one undeniable observation. There was a higher concentration of KC among people living in higher altitudes. Saudi Arabia is a country that contains mountain, desert, and coastal regions. Despite a lower population density than other regions, there is a much higher prevalence of KC in the mountains.

These results are similar to the findings of a US-based study published last year. Using Vision Service Plan insurance claims database, the authors were able to gather information on plan members with KC including age, sex, and state of residence. In every category, Colorado led the nation in the number of individuals with keratoconus. Other Western states like Utah, Wyoming, and Nevada also reported the high rates of disease.

Could there be a connection between ultraviolet radiation or lack of oxygen that exists at high elevation and KC? **Dr. Emily McCourt MD** is Associate Professor of Ophthalmology at the University of Colorado. She diagnoses and treats many children with KC and cautions there is more to learn before we accept that altitude plays a role in the development of KC. "This raises an important research question that warrants more attention," according to McCourt. She advises, "Understanding environmental factors that possibly play a role in the development of keratoconus is extremely important. Studies like these help us think more about why certain populations develop keratoconus, and this information could potentially help us to more customized treatments."

What we learned: Research studies suggest a link between keratoconus and certain environments.

Reference: Demographic and clinical variations of keratoconus in Saudi population. Al Otaibi, Alshahrani MD, Assaf AA, Boudi J Ophthalmol 36:42-46, 2022. Estimated Prevalence of Keratoconus in the United States From a Large Vision Insurance Database. Mark SZ, Munn'NM, Albrecht A. Eye & Contact Lenses. 47:505-510, 2021.

Dr. Emily McCourt MD is Associate Professor of Ophthalmology at the University of Colorado Anschutz Medical Campus in Aurora, CO. A graduate of the SUNY-Buffalo School of Medicine, she completed her ophthalmology residency and pediatric ophthalmology fellowship at U Colorado before joining the faculty there. She heads the Division of Pediatric Ophthalmology and frequently diagnoses and treats pediatric keratoconus.

Corneal Transplant Outcomes for Kids with KC

Cornea surgeons at Moorfields Eye Hospital in London recently studied cornea transplant (keratoplasty) outcomes for patients with keratoconus.

In the UK, eye surgeons are required to contribute to a transplant registry maintained by the National Health Service, the publicly funded healthcare system. Information including diagnosis, visual acuity, age, and ethnicity, donor graft information, and type of surgery performed are recorded. Doctors are also expected to update the registry at 1, 2, and 5 years after surgery.

During the period between 2003 and 2018, there were over 7,300 corneal transplants for treatment of keratoconus in the UK. Of those, 170, or less than 2% occurred in patients aged 16 or younger. The researchers compared this pediatric group to adults to learn if outcomes were different in younger patients.

Children who underwent keratoplasty for treatment of keratoconus generally had very poor vision when the surgery was performed. 132 pediatric patients (80%) had vision worse than 20/200 when they received their corneal transplant, compared to 64% of adults with equally poor vision. When KC occurs in children, it generally progresses more rapidly and is more severe in nature. Children may be less aware of changes to their vision and parents may not seek treatment until the disease is advanced and options are limited.

Dr. Erin Stahl MD, a fellowship trained pediatric and corneal specialist, diagnoses severe keratoconus in some of the patients she treats at Children's Mercy Hospital in Kansas City, MO. Dr. Stahl reports other concerns that impact surgery in younger patients "Corneal transplant for the treatment of keratoconus can be more challenging in the pediatric population due to the need for general anesthesia, risk for rejection, and a more active lifestyle."

The visual acuity outcomes reported for pediatric patients in the Moorfields Eye Hospital study are excellent. At two years after surgery, 35% of the pediatric patients were seeing 20/20 or better, and 80% were managing day-to-day activities with no vision aids or eyeglasses only. Dr. Stahl was not surprised at the results documented in the UK study, "Although challenging, pediatric patients can expect good visual outcomes after a corneal transplant. We hope this early corneal transplant treatment with corneal crosslinking, we can reduce the need for corneal transplant in children and adults with keratoconus."

What we learned: Pediatric patients can expect corneal transplant outcomes that are as good or better than for adults.

Reference: Keratoplasty for Keratoconus in Young Patients: Demographics, Clinical Features and Post-transplant Outcomes. Waqarstaji D, Hopkinson CL, et al. Am J Ophthalmol 226:68-75, 2021.

A graduate of the Univ. of Kansas School of Medicine, **Dr. Erin Stahl MD** completed her ophthalmology training at the Univ. of Kansas in Prairie Village. She finished two year-long fellowships: one focused on cornea disease and a second on pediatric ophthalmology. She is Section Chief of pediatric ophthalmology at Children's Mercy Hospital in Kansas City, MO where she trains residents and fellows and maintains a busy clinical practice focused on cornea disease in children. Dr. Stahl holds medical school faculty positions at both the Univ. of Missouri Kansas City and the Univ. of Kansas.

Preservative vs. Preservative-Free Eye Drops

There are so many types of over-the-counter eye drops on the market, it might be hard to decipher which brand or kind to use and when to use it. There are eye drops marketed to relieve the symptoms of redness, allergies, and dry eye. Other solutions are sold to clean, disinfect, rinse and store contact lenses. There are "all-in-one" multi-purpose solutions that can play multiple roles in contact lens management.

When your doctor trains you on the correct handling of your lenses, you'll also learn about different solutions and eye drops that you'll need to care for your lenses. Some contact lenses have a special coating to keep

deposits from accumulating, and so your doctor may warn you to avoid certain solutions that can cause lenses to become pitted or rough, or to only use certain types that will thoroughly clean and maintain your lenses.

Another decision you'll need to make is Preservative vs. Preservative-Free. Generally, the preservative BAK (benzalkonium chloride) is added when an eye drop or solution bottle will be used over several days or weeks. There is a need to protect against contamination that can enter through a loose cap, touching the eyelid with the bottle tip, or exposure to bacteria. While preservative-enhanced solutions are less costly, for some individuals with keratoconus, they can harm the contact lens and aggravate the eye. An eye drop sold to lubricate or soothe painful eyes may actually be the source of irritation.

To avoid adding preservatives, companies sell single dose capsules. The cost may be slightly higher, but for some contact lens wearers, there is comfort in the knowledge that each vial is fresh, sterile, and ready to be used. Preservative-free usually means there is less a chance of irritation, but good hygiene is still essential. Don't top off or store open single-use capsules for the future.

Dr. Susan Gromacki OD, MS, FAAO, FSLs, Dipl is a keratoconus expert from Maryland who directs the contact lens service at First Sight Vision Care. She cautions, *"I prefer prescribing eye drops that are nonpreserved, particularly for my keratoconus patients. Some are already experiencing eye itching or irritation due to their condition or to contact lens wear, so I need to do everything I can to prevent any additional irritation caused by an eye drop containing a preservative."*

Your doctor will recommend certain brands or types of contact lens solutions or non-prescription eye drops based on the type of lenses you are wearing and your own sensitivities. If that brand is hard to find, your doctor can suggest some alternatives.



Dr. Susan Gromacki OD, MS, FAAO, FSLs, Dipl is a graduate of the Ohio State University College of Optometry and has been named one of that institution's most notable alumni. She directs the contact lens service at First Sight Vision Care, a full-service optometric practice in Fullon, Maryland. Dr. Gromacki is a highly regarded clinician, author, and lecturer who has presented at numerous professional meetings, often on the subject of keratoconus, her area of expertise.

Evening Webinar Preview: Pediatric Keratoconus with Dr. Kathryn Hatch MD

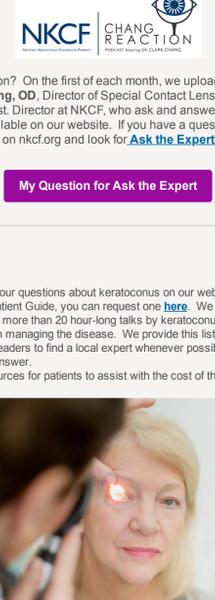
WATCH THIS!

You are invited to join National Keratoconus Foundation in welcoming **Dr. Kathryn Hatch MD** on January 10, 2023 presenting **Keratoconus in Children**. Dr. Hatch will discuss treatment considerations for adolescents and teenagers diagnosed with keratoconus.

Dr. Hatch completed her ophthalmology training at Manhattan Eye, Ear and Throat Hospital / New York University and holds the position of Director of Refractive Surgery and Assistant Professor of Ophthalmology at Harvard Medical School. Dr Hatch is medical director of the Mass Eye & Ear Infirmary (MEEI) satellite in Waltham.

She has been engaged in studies involving crosslinking (CXL) for treatment of keratoconus since her cornea fellowship at MEEI/Harvard Medical School and has extensive experience performing CXL on pediatric and special needs patients.

Parents and others interested the subject must register in advance to hear this live broadcast. If you are not available on **January 10**, a video recording will be available on YouTube and the NKCF website.



Register for Evening Webinar



Join NKCF for the 2022-2023 Evening Webinar Series - Register for Live Events or Visit nkcf.org for Past Recordings

- September 13, 2022 - Brian Chou OD, San Diego, CA
 - Straightening out Keratoconus Misinformation**
- November 8, 2022 - Jack Parker MD, Birmingham, AL
 - International Perspective on Keratoconus Surgery** (World KC Day Lecture)
- January 10, 2023 - Kathryn Hatch MD, Waltham, MA
 - Keratoconus in Children**
- March 14, 2023 - Louise Scialfani OD, Chicago, IL
 - Hybrid Contact Lenses for Keratoconus**
- May 9, 2023 - Chantelle Mundy OD, Columbus, OH
 - Risk Factors for Keratoconus**
- July 11, 2023 - John Gelles OD, Steven Greenstein MD & Peter Hersh MD, Teaneck, NJ
 - Addressing Keratoconus Vision Needs Throughout Life**

Chang Reaction Explains It All for You



Have you watched Chang Reaction? On the first of each month, we upload a new 20 minute episode to the NKCF website. Join **Dr. Clark Chang, OD**, Director of Special Contact Lenses at Willis Eye Hospital in Philadelphia and **Taylor Young**, Assl. Director at NKCF, who ask and answer questions submitted directly from viewers. Previous episodes are available on our website. If you have a question about keratoconus you'd like discussed, find the "For Patients" tab on nkcf.org and look for **Ask the Expert / Chang Reaction**.

My Question for Ask the Expert

NKCF Resources

We hope you'll find the answers to your questions about keratoconus on our website, nkcf.org. If you are interested in receiving a copy of our Keratoconus Patient Guide, you can request one [here](#). We also have a sign-up for our next Evening Webinar, and a video library of more than 20 hour-long talks by keratoconus experts. Our Referral List includes doctors with an expertise and interest in managing the disease. We provide this list of experts without endorsing any doctor or practice, and we encourage readers to find a local expert whenever possible. If you still have questions, write to info@nkcf.org and we'll try to get an answer.

NKCF cannot provide financial resources for patients to assist with the cost of their medical care.



Make a Difference! DONATE

Your tax-deductible gift to **UCI Foundation** makes the programs of National Keratoconus Foundation possible. Consider making a year-end donation or a special gift to honor a doctor, or to acknowledge a family member living with keratoconus. Every dollar we receive is spent directly on programs to raise KC awareness. Click the link below to make your on-line gift or print out a giving form from our website and mail your contribution to our offices. **Thank you!**

I SUPPORT NKCF

NKCF Update is sent to you compliments of the National Keratoconus Foundation, an outreach program of the Gavin Herbert Eye Institute at University of California Irvine.

The mission of NKCF is to increase awareness of keratoconus and to provide information and resources to those living with the disease.

NKCF does not provide medical advice, medical consultation or financial assistance. If you have specific questions about your diagnosis, treatment or outcomes, please contact your eyecare professional.



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