

Patients co-managed with PVI-affiliated optometrists in the Bay Area. Advances in topography-guided CONTOURA Vision LASIK and PRK can lead to 20/10 vision in many patients. To achieve outstanding results, patient selection and education by primary eye care doctors is essential.

## OD Primer to Today's Laser Vision Correction Patient: *LASIK, PRK, or SMILE? (or CXL??)*

A study conducted by Refractive Surgery Alliance last month has revealed a significant increase in patients seeking refractive surgery compared with the same time last year. At PVI, the past two months have seen the largest increase in patient inquiries compared with a previous year in nearly 25 years of practice.

It is widely believed now that the COVID-19 pandemic has brought vision to the forefront. At Pacific Vision Institute, we've conducted a survey of patients, asking for reasons why they are pursuing refractive surgery now. Reluctance to touch their face and glasses fogging up while wearing a mask, were two of the most frequently reported reasons. Other reasons included more flexible schedule while working at home allowing more time to pursue consultations and treatments, and inconvenience of glasses and even contacts when exercising outdoors, especially now in hot weather during summer months.

The pandemic has also changed how patients are looking for information about refractive surgery. Shelter in place turned patients into on-line shoppers for many of their needs, including surgery. Studies have shown that prior to the pandemic, 6 out of 10 patients asked their eye care provider whether laser vision correction was a good option for them. Currently, only 4 out of 10 do, turning to Dr. Google instead. Recognizing a shift in consumer behavior, laser vision correction advertising has proliferated, touting cheap surgery, new surgery, discounts, price matching, and price rollbacks.

To help our patients make the right decisions, we must engage with them in a way that takes the "new normal" into consideration. First, we need to acknowledge that this "new normal" includes increased motivation to undergo refractive surgery, the new reasons for getting it done, and the new ways of obtaining information. We can then tailor our approach to today's patient and help them proceed safely toward the best possible outcome, which in some cases may include corneal cross-linking or even no surgery at all. ■

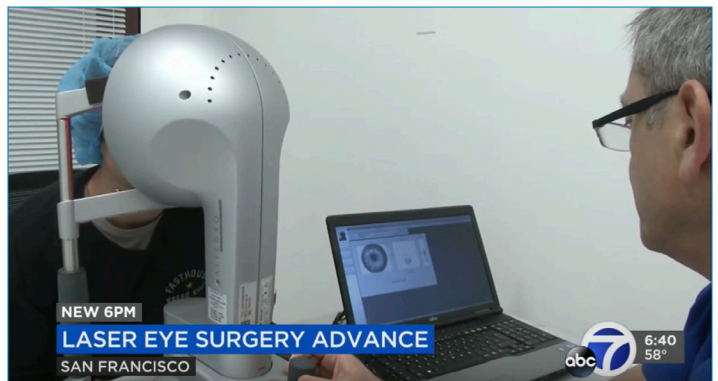
# Clinical News & Views

## 5 Essential Corneal Tests for Accurate Screening of Refractive Surgery Candidates

Accurate corneal evaluation to determine candidacy and establish what procedure is best for each patient is as important as the procedure itself. We have come a long way from topography and ultrasound pachymetry of 30 years ago. As the field of refractive surgery matured, new methods of examining cornea have been added. We now have 5 different methods to evaluate cornea prior to refractive surgery. Each of these methods may have false positives and false negatives. Each is prone to artifact, from subtle angle kappa, to tear film, to human error in performing each test. It is, therefore, essential that we don't rely on only several of these tests, but perform all 5 for each patient to accurately distinguish between healthy and structurally robust cornea vs. pre-ectatic vs. subclinical epithelial basement membrane dystrophy vs. contact lens warpage. Correct diagnosis is essential to successful outcome and great vision long term.

At Pacific Vision Institute, we see patients who have gone to multiple consults and received conflicting opinions. We often find that performing all 5 corneal tests invariably establishes a clear, definitive diagnosis and treatment plan for each patient.

- **Topography:** is usually the first corneal test performed. We look for inferior steepening, skewed axis, and other possible irregularities.
- **Tomography:** is performed to evaluate anterior corneal surface further, to determine corneal thickness, including the exact location of the thinnest spot of the cornea, to evaluate posterior cornea, and to perform ectasia risk assessment with advanced software that compares multiple parameters of the patient's cornea to those found in a general population of people with normal corneas.
- **Epithelial Thickness Mapping (ETM):** is performed to evaluate patient's corneal epithelium to rule out subtle pre-ectatic conditions, contact lens warpage, and epithelial basement dystrophy. It is not uncommon for subtle focal abnormalities on topography and tomography to be misdiagnosed as pre-ectatic conditions, whereas they are truly epithelial basement membrane or contact lens warpage (Schallhorn, JM, et al. Distinguishing between contact lens warpage and ectasia: Usefulness of optical coherence tomography epithelial thickness mapping. J Cataract Refract Surg. 2017;43(1):60-66.) Topography and tomography simply do not show the "whole picture" and often lead the examiner to recommend PRK for patients who are great LASIK candidates based on ETM or recommend no procedure to patients who excellent PRK candidates. At Pacific Vision Institute, we see patients for second and third opinion whose diagnosis and treatment





# Clinical News & Views

plan becomes unequivocally clear after performing and analyzing their ETM

- **Ocular Response Analyzer (ORA):** is a sophisticated technology designed to test the elasticity of the cornea and its ability to remain strong and stable after Laser Vision Correction. ORA is also helpful in sorting out different opinions about patient's diagnosis and treatment options and resolving split opinions. Moreover, a recent review of literature by Moshirfar M, et al has concluded that technologies such as ORA are essential for screening of corneal ectasia because "changes in biomechanical properties may occur before disease becomes apparent via tomography or topography." (Moshirfar M, et al. Advances in biomechanical parameters for screening of refractive surgery candidates: A review of the literature, Part III. Med Hypothesis Discov Innov Ophthalmol. 2019;8:219-240)



- **CONTOURA® Vision Analysis:** is performed to generate a highly detailed map of corneal higher order aberrations by measuring elevation profile of 22,000 unique data points on the cornea. This creates a highly detailed contour scan of microscopic peaks and valleys to screen out pre-ectatic conditions and to determine if the patient has been out of contacts for a sufficient length of time to establish a precise treatment plan. CONTOURA mapping is helpful in patients who receive conflicting opinions about their candidacy for different procedures is one of the 5 Essential Corneal Tests for refractive surgery screening. ■

## 5 W's of Co-managing Refractive Surgery Patients Today

- **WHAT motivates patients now**
  - concerns about touching face/eyes
  - glasses fog up
  - glasses are inconvenient when doing outdoor sports
  - desire for spectacle independence if/when another emergency happens
  - decreased contact lens tolerance due to increased computer work
  - have time now - flexible schedule due to work from home, in between jobs, partner working from home can watch the kids
- **WHO do patients ask for a recommendation**
  - on-line
  - friends
- **WHERE do patients go for consults and procedures**
  - multiple consults
  - willing to travel all over the Bay Area
- **WHY do we need to spend more time educating patients**
  - a shift to online "shopping" exposes patients to sales and marketing claims more than ever. We need to proactively address all procedures even if patients are not asking about them directly.
  - flexible schedule allows patients to go to multiple consults which may result in conflicting opinions about the best procedure for the patient. We need to educate patient about the 5 Essential Corneal Tests required to make correct diagnosis and recommend appropriate procedure.
- **WHEN do we need to communicate with patients about refractive surgery?**
  - e-mail the patient database about refractive surgery counseling provided by the OD
  - speak about it during in-office (or virtual) visit, even if patients are not asking. Especially if other things going on with them, such as ocular surface, retinal, glaucoma problems. Patients are coming in now that would not have if they asked their primary eye care provider rather than internet - we recently had patients who came in for second opinion with problems such as severe trichiasis, retinal problems, and severe dry eyes who were scheduled for LASIK they found on-line.
  - add Laser Vision Correction Consultation and Postoperative Care to the services listed on the website.

- **Patient S.C. (Dr. Irene Koga)** - topography, tomography, ETM, ORA, CONTOURA = normal

ANSI Z80.23  
Std. palette/scale

AXIAL CURVATURE

90 120 150 180 210 240 270 300 330 360

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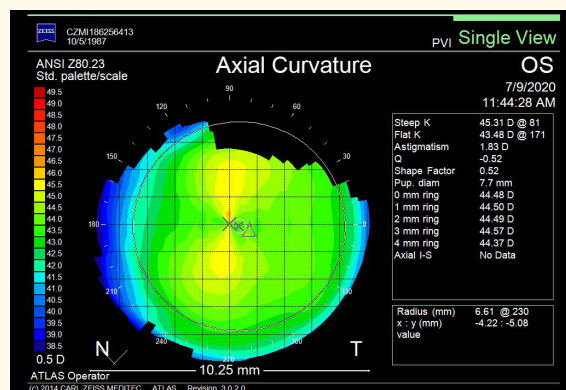
10.75 mm

ATLAS OPERATOR  
© 2014 CARL ZEISS MEDITEC ATLAS Revision 3.0.2.0

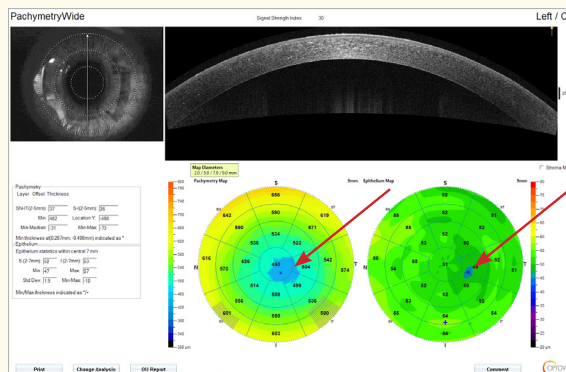
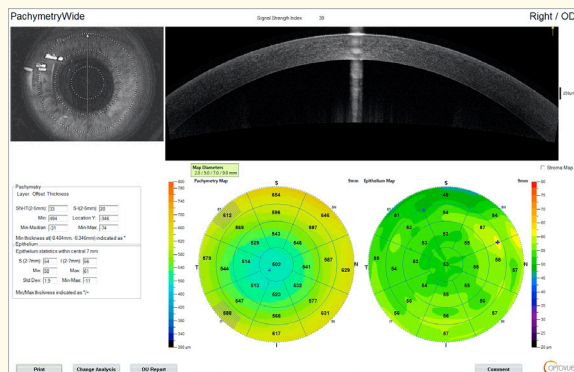
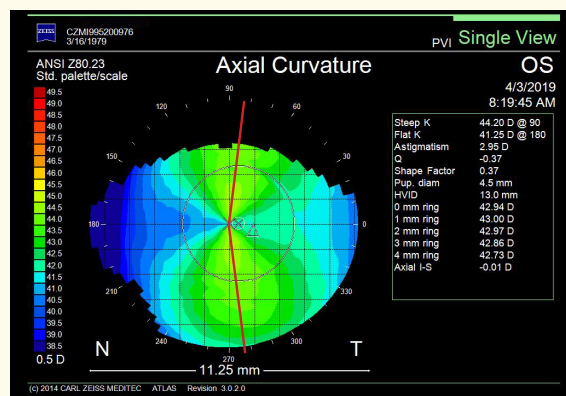
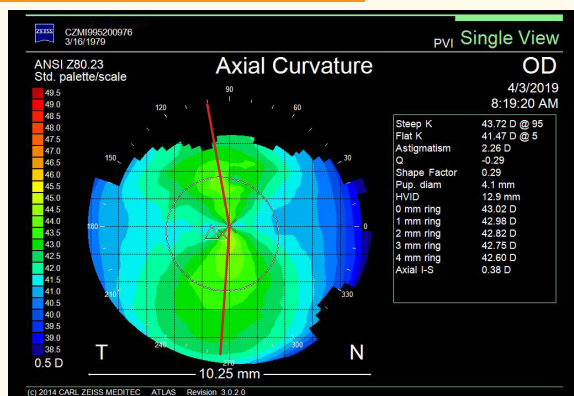
PVI Single View OD

7/9/2020  
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Steep K	45.35 D @ 87°
Flat K	42.89 D @ 177°
Astigmatism	2.45 D
Q	-0.52
Shape Factor	0.52
Pup. diam	7.4 mm
RVD	11.3 mm
0 mm ring	44.66 D
1 mm ring	44.51 D
2 mm ring	44.44 D
3 mm ring	44.27 D
4 mm ring	44.09 D
Axial I-S	No Data



- ### Procedure recommended: PRK

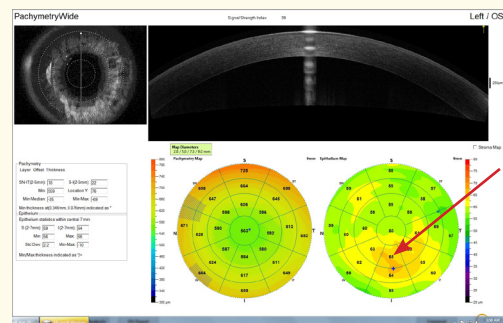
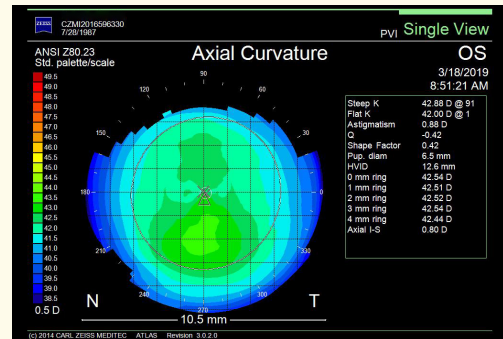
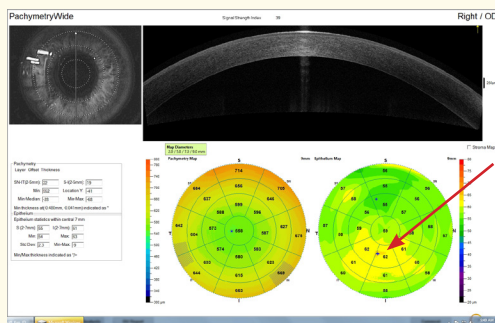
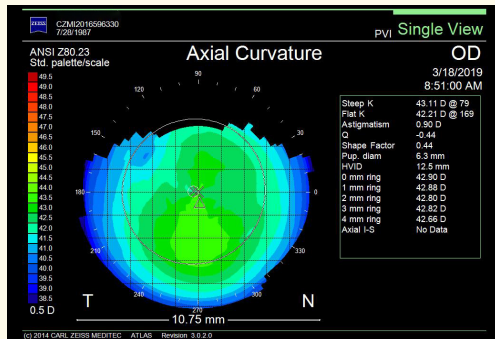




# Clinical News & Views

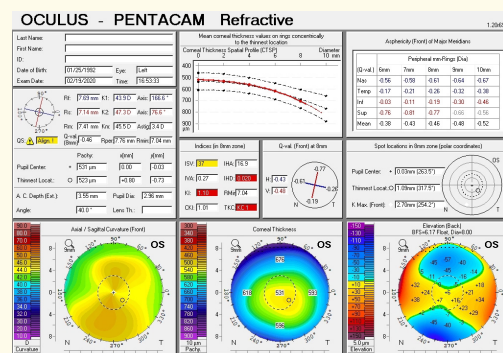
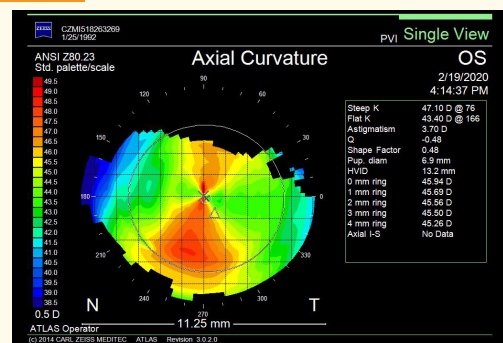
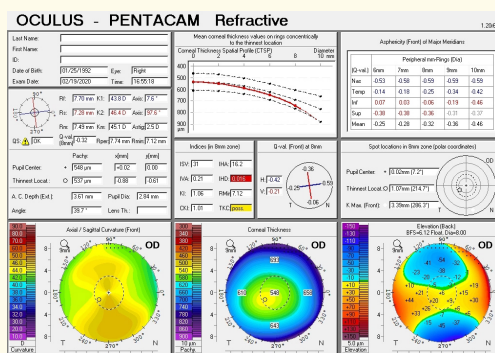
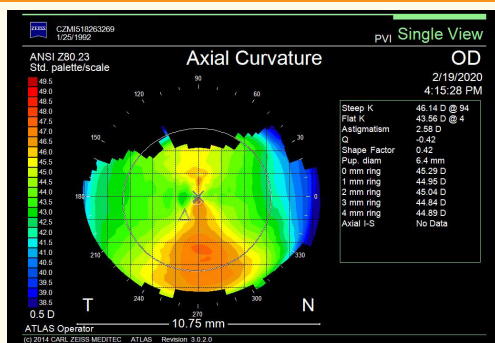
- **Patient K.S. (For Eyes, Dr. Jeff Lem)** - epithelial thickening (ETM) coincidental with slight inferior steepening (topography and tomography), mild vertical coma (CONTOURA), normal ORA.

**Procedure recommended: PRK**



- **Patient Y.N. (Stamper Optometry, Dr. Kyoka Hansen)** - inferior steepening (topography), abnormal KCN indices (tomography), vertical coma (CONTOURA), normal ETM and ORA

**Procedure recommended: Cross linking followed by topo-guided PRK**



## Comparison of vision outcomes and safety after LASIK, PRK, and SMILE

To help patients distinguish between three different types of laser vision correction, we have compared data from the FDA clinical trials for each procedure. Vision outcomes, safety, and long-term follow up are superior for LASIK and PRK vs. SMILE. SMILE does offer some short-term advantage as far as dry eye symptoms during the first 3 months after the procedure. After 3 months, however, these symptoms are comparable between LASIK, PRK, and SMILE. In all three types of procedures, the symptoms diminish over time. SMILE technology is promising, but at this point, lacks the customization capabilities of LASIK and PRK. This could be one of the reasons why the FDA data shows no patients achieving 20/10 and 20/12.5 vision with SMILE whereas nearly a third of patients achieve such vision with topography-guided laser vision correction.

Very importantly, vision recovery after SMILE is slower than LASIK. When the procedure is advertised as “new LASIK,” and patients compare their vision on Day1 to that of their friends who had “old LASIK,” they may be disappointed. They may be unhappy that they are not seeing as well as their friends did after LASIK and may require significant chair time in follow ups.

Additionally, corneal specialists caution about performing SMILE in patients who are not LASIK candidates. Anyone with thin cornea and/or corneal asymmetry, should be treated with PRK, Crosslinking, or no corneal surgery at all. Patients who are not candidates for LASIK are not candidates for SMILE. ■

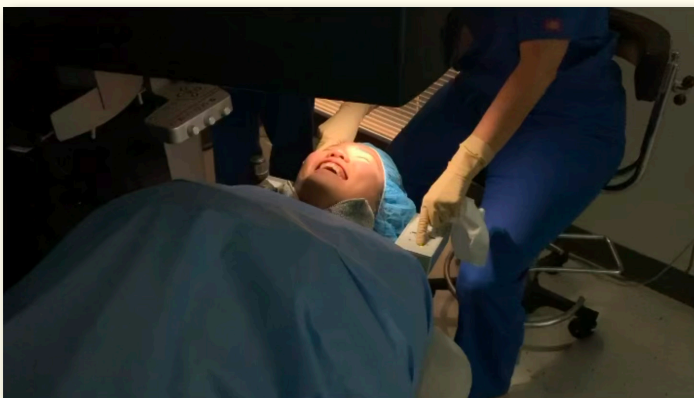
	LASIK	PRK	SMILE
3 or more lines better than 20/20	Yes	Yes	No
Custom/Wavefront/Topo-guided	Yes	Yes	No
Fast vision recovery	Yes	No	No
Long term data	Yes	Yes	No
Eye tracker	Yes	Yes	No
Thin cornea	No	Yes (if mild)	No
Irregular cornea	No	Yes (if mild)	No
Flat cornea	Yes	Yes	No



- Dr. Faktorovich is chosen by her peers and Castle Connolly Medical to receive **2020 America's Top Doctor and America's Best Physicians 2020** awards representing the top 1% of medical specialists and sub-specialists nationwide.
- **KRON 4 News** interviews Dr. Ella Faktorovich of Pacific Vision Institute regarding COVID-19 and the extra precautions to take when touching near the eyes.
- **CBS KPIX Channel 5 News** interviews Dr. Ella Faktorovich of Pacific Vision Institute regarding how the eyes are susceptible to COVID-19.



- Dr. Ella Faktorovich interviewed by **Ophthalmology Times** on facts backed by scientific literature about the eyes and COVID-19 virus.
- PVI research on Screening Refractive Surgery Candidates is presented at **American Society of Cataract and Refractive Surgery 2020** and **World Ophthalmology Congress 2020** virtual meetings
- **Ocular Surgery News** interviews Dr. Ella Faktorovich of Pacific Vision Institute about a new phenomenon in the peer-review literature called “quarantine myopia” in children during the COVID-19 pandemic.
- **Bay Area Parent** interviews Dr. Ella Faktorovich on “quarantine myopia.”
- **The Science of Eyesight Foundation** is granted a non-profit status. The Science of Eyesight Foundation is dedicated to advancing the knowledge of eye disease prevention and treatment through education, research, and mentorship of current and future eye care providers.
- PVI's chief optometrist Dr. Peggy Chen undergoes PRK to correct her high myopic astigmatism.



# eFocus PVI Education Series

## 3 Innovative Products for a Germ-free Office

Here are the 3 innovative products we love for their safety and efficacy in keeping the office, patients, and us clean and healthy.

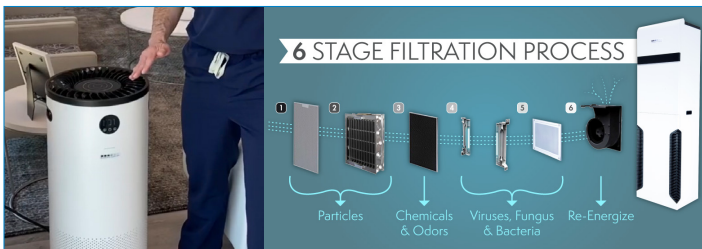
### Orbel Hand Sanitizer

A clip-on sanitizer with multi-roller balls that is always with doctors and staff, regardless of where we are in the clinic. It has been shown to improve compliance rate of using the hand sanitizers.



### Surgically Clean Air Purifier (Jade)

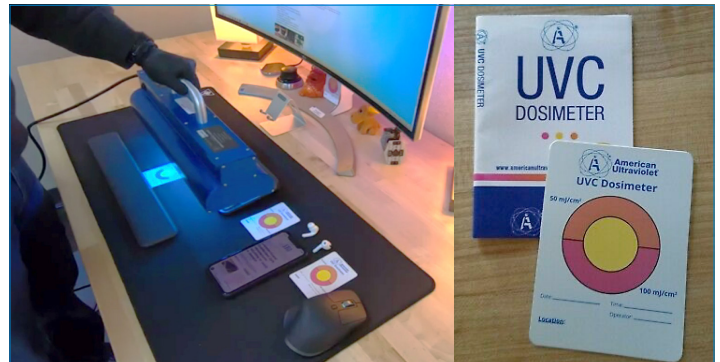
A very popular medical grade air purifier in dental offices (due to high amount of aerosolized droplets in the air) can be easily installed in the eye clinic. It is one of the most sought after air purifier in health care environment, including general surgery due to its 6 stages of filtration and sterilization process, all activated with “no touch” controls, and noise canceling design making it one of the quietest systems on the market: (1) Ultrafine HEPA-Rx particulate filter (2) Activated carbon filter (3) Germicidal UV-C+ light filter (4) Super oxidizing photocatalytic nano-TiO<sub>2</sub> (5) Hydroxyl radical reactivity chamber (6) Revitalizing negative ion chamber.



### American Ultraviolet Company UVC handheld/surface-mounted device

A portable UVC disinfection device designed to deactivate bacteria, viruses and fungi in health care environments. This hand-held unit is a new addition

to this company's other UVC devices used in hospitals and operating rooms. It utilizes a UVC Dosimeter, a tool used to verify UVC exposure of a surface. The dosimeter is a technology consisting of photochromatic ink that changes color when it is stimulated by certain UVC radiation (253.7 nm). The color change correlates with log reduction in microbiology samples.



## OPTOMETRIC CONTINUING EDUCATION

**September 1st, 2020:**

**San Francisco Optometric Society Meeting -**



“Crosslinking 2.0: who are the patients today and how are we diagnosing and treating them now.” Lecture by Dr. Ella Faktorovich

- How young is too young for CXL?
- When should patient be referred for CXL?
- What are new diagnostic methods?
- Which eye is treated first?
- Options for visual rehabilitation during healing?
- What are the outcomes with current methods?
- Who is a candidate for laser vision correction?



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