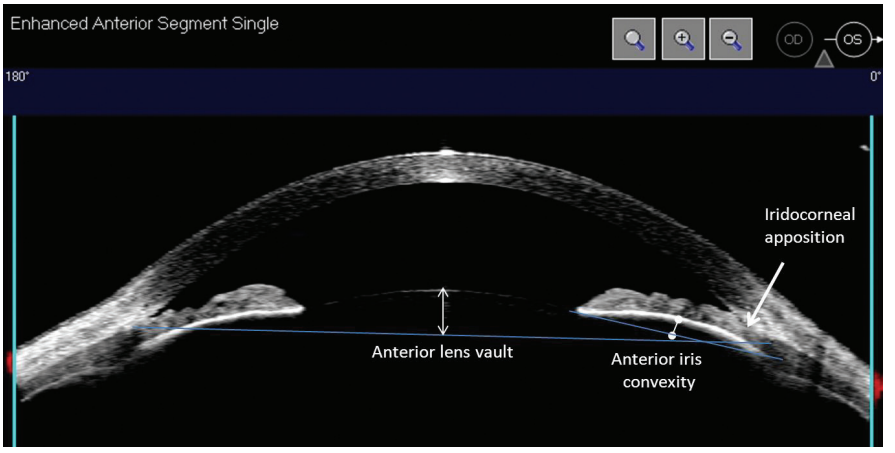
## Rethinking First-Line Tx for Angle Closure




***ANGLE CLOSURE—WHAT NEXT?*** *Although the first-line therapy for angle closure is typically laser peripheral iridotomy, a new study suggests that clear lens extraction may be a better option for some patients.*

**IN A MULTICENTER RANDOMIZED** clinical trial involving patients with angle-closure glaucoma or angle closure with high intraocular pressure (IOP), those who underwent clear-lens extraction (CLE) did better than those who received standard-of-care laser peripheral iridotomy (LPI).[1] Researchers reporting on the EAGLE trial said that CLE is a reasonable first-line treatment option for angle-closure patients.

**Methods and participants.** The trial enrolled phakic patients aged 50 years and older who had either newly diagnosed primary angle-closure glaucoma (n = 263) or primary angle closure with IOP of 30 mm Hg or greater (n = 155). Half of the patients underwent CLE by phacoemulsification with monofocal intraocular lens (IOL) implantation, while the other half received LPI.

The study measured all medical care costs for each participant during 3 years of follow-up. It also evaluated changes in quality of life.

**Results favor CLE.** Early lens extraction proved both more efficacious and cost-effective than LPI. While the differences between the groups were relatively modest, they were statistically and clinically significant, said Augusto Azuara-Blanco, MD, PhD, professor of ophthalmology at the Centre for Public Health, Queen's University Belfast, in Belfast, Northern Ireland.

Perhaps the most striking difference between the groups was the use of medications or additional procedures to meet the target IOP (15-20 mm Hg): 61% of the LPI group required 1 or more medications, compared with 21% of the CLE group. Further, 24 LPI patients had an additional glaucoma surgical procedure, but only 1 CLE patient did.

Among other findings at 3 years:

- Mean IOP was 1.18 mm Hg lower after CLE than after LPI. According to the researchers, this difference is small because the treating physicians were allowed to use medications or further surgical interventions as needed to achieve the target IOP.
- Quality of life scores were significantly higher in the CLE group.
- Visual acuity was better by 3 ETDRS letters in the CLE group.
- Visual field loss was similar in the 2 treatment groups.

**Costs and complications.** Costs for the initial procedure were higher for CLE than for LPI (£2,467 vs. £1,486). However, the higher cost was partly offset by savings associated with reduced need for medications and/or subsequent procedures, and the cost-effectiveness is expected to improve over time.

While there were no serious adverse events, 25 patients in the CLE group and 50 in the LPI group had at least 1 reported complication. For the CLE group, complications were generally those seen in cataract surgery, including posterior capsule rupture, iris prolapse, and vitreous loss; 3 patients needed intraocular surgery to manage these complications. Among the leading complications in the LPI group were intraoperative bleeding and medication intolerance; in addition, 12 LPI patients required cataract surgery during the 3-year follow-up.

**Applying the results to practice.** The results cannot be extrapolated to patients outside the study parameters, for example, those younger than 50, said Dr. Azuara-Blanco. Since a younger patient would lose the ability

Sunita Radhakrishnan, MD

to accommodate with CLE, "we do not know how they would rate their visual function and vision-related quality of life," he said.

Another consideration for CLE is that angle-closure patients often have smaller eyes with crowded anterior segments. This configuration poses surgical challenges.

Dr. Azuara-Blanco plans to revisit the clinical data in 10 years and expects that, despite these caveats, "longer-term will show an even greater benefit of lens extraction."

For now, said Dr. Azuara-Blanco, "I tell my patients that the EAGLE trial is providing strong evidence that supports the use of early lens extraction; and if they have this surgery, they are more likely to be better off than with laser. But there is a small risk of having a surgical complication. The final decision needs to be individualized."

*—Miriam Karmel*

1 Azuara-Blanco A et al. *Lancet.* 2016;388(10052):1389-1397.

**Relevant financial disclosures**—Dr. Azuara-Blanco: None. The EAGLE trial was supported by the Medical Research Council.

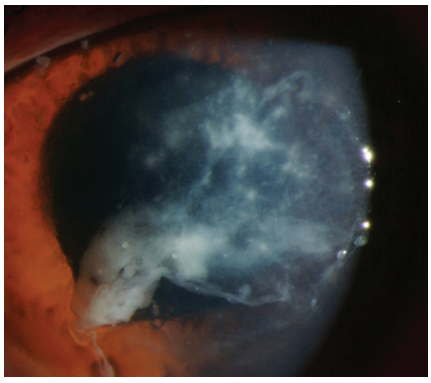
FIGHTING CORNEAL INFECTION

## Another Role for Povidone-Iodine

**IN PLACES WITH SCARCE MEDICAL** resources, bacterial keratitis can sentence a child to a lifetime of blindness. "In much of the world, this is the No. 1 cause of preventable blindness in children," said pediatric ophthalmologist Sherwin I. Isenberg, MD. "The World Health Organization has estimated that there are currently more than 400,000 children who are blinded by corneal scarring secondary to corneal infections."

**An inexpensive treatment alternative?** Thus, in a multinational clinical trial of treatments for bacterial keratitis, Dr. Isenberg and colleagues Leonard Apt, MD, and Gary N. Holland, MD—along with collaborators in Los Angeles, India, and the Philippines—were heartened to find no significant difference in effectiveness between inexpensive and widely available povidone-iodine 1.25% drops and 2 less-accessible antibiotic medications.[1]

"The idea was to come up with something that would be applicable to the developing world. To do so, a medication has to be No. 1, cheap; No. 2, effective; and No. 3, widely available. Povidone-iodine is one of the few drugs that could fit those criteria," said Dr. Isenberg, who is professor of ophthalmology at the University of California, Los Angeles.



***BACTERIAL KERATITIS.*** *This eye shows substantial scarring after resolution of a* Bacillus *infection.*

**Trial details.** This prospective trial randomized 172 bacterial keratitis patients in 2 countries to receive either povidone-iodine or a topical antibiotic commonly used there: neomycin–polymyxin B–gramicidin in the Philippines

OPHTHALMIC EPIDEMIOLOGY

## Refractive Error in Chinese Americans

Chinese American adults in the United States have a substantially higher prevalence of myopia, high myopia, and astigmatism than do U.S. adults in other racial/ethnic groups, according to a large population-based study in California.[1]

**Highest rates in the world.** "These rates, particularly in the 50- to 75-year-old group, are the highest of any study of Chinese [people] done anywhere in the world. And that's something we didn't expect," said Rohit Varma, MD, principal investigator in the Chinese American Eye Study. Dr. Varma is professor and chair of ophthalmology at the University of Southern California, in Los Angeles, as well as dean of the Keck School of Medicine and director of the USC Roski Eye Institute.

Funded by the National Eye Institute, the Chinese American Eye Study recruited and conducted comprehensive refractive exams on 4,144 adults (aged 50 years and older) of Chinese ancestry in the Southern California city of Monterey Park.

Analysis of the data revealed that, overall:

- Prevalence of myopia (greater than –0.5 D) was 35.1%; in comparison, the age-adjusted rate was 26.2% among the white subjects in the Beaver Dam Eye Study.[2]
- Prevalence of high myopia (greater than –5.0 D) was 7.4%. This was almost twice as high as the rate in the Beaver Dam study.
- Prevalence of astigmatism was 45.6%.
- Prevalence of hyperopia was 40.2%.
- Myopia prevalence decreased with age, and hyperopia increased.

"These data provide the first population-based estimates of refractive error in Chinese Americans," Dr. Varma said. Because of the known high prevalence of myopia in Asian nations, the authors had assumed Chinese Americans had more myopia than other groups in the U.S. "but we didn't really know," he said.

*—Linda Roach*

1 Varma R et al. *Am J Ophthalmol.* Published online Oct. 18, 2016.
2 Wang Q et al. *Invest Ophthalmol Vis Sci.* 1994;35(13):4344-4347.

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or ciprofloxacin 0.3% in India.

All patients were hospitalized for at least 7 days, which was the customary practice at the study centers at that time. To ensure compliance with the study's rigid dosing schedule, nurses instilled drops into the affected eyes hourly around the clock for 3 days; after that, treatment was slowly tapered over 0 to 15 days. The corneal infections resolved in 54% of the eyes treated with povidone-iodine compared with 52% of those treated with antibiotic.

**Learning from earlier studies.** Dr. Isenberg also helped lead studies in Kenya in the 1990s that proved the effectiveness of povidone-iodine 2.5% drops in preventing neonatal conjunctivitis.[2] "Before our studies, many babies there and elsewhere around the world were going blind from gonorrhea and chlamydia," he said.

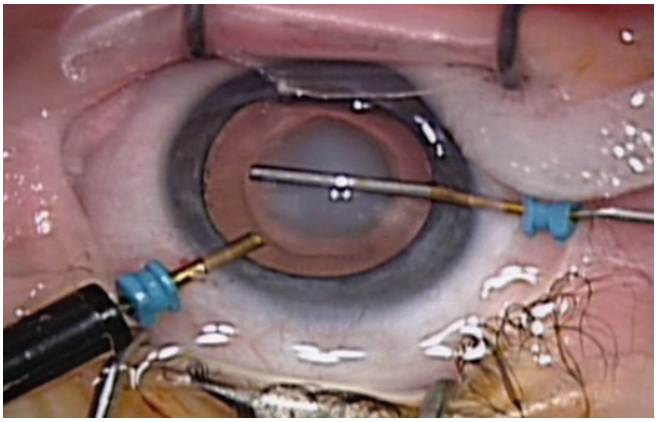
Similarly, povidone-iodine 1.5% represents an affordable, readily available option that would enable health care workers and clinics in remote and underserved areas to prevent corneal scarring and blindness secondary to bacterial keratitis. "In many places they cannot afford antibiotics, or they simply are not available," Dr. Isenberg said.

*—Linda Roach*

1 Isenberg SJ et al. *Am J Ophthalmol.* Published online Oct. 27, 2016.

2 Isenberg SJ et al. *N Engl J Med.* 1995;332(9): 562-566.

**Relevant financial disclosures**—Dr. Isenberg: None.



***PEDIATRIC CATARACT SURGERY.*** *Anterior capsulotomy being performed with a 25-gauge forceps in a young patient.*

Michael X. Repka, MD, MBA

PEDIG REGISTRY FINDINGS

# Cataract Surgery in Kids

**THERE'S SOME COMFORT IN NUMBERS**—at least when it comes to research. To date, most information about outcomes in pediatric cataract surgery has been based on case series. But a recent prospective observational registry study included 1,266 eyes in 994 children to create a focused snapshot of children who'd had cataract surgery during the preceding 45 days.[1]

The children, who had surgery at 61 centers in the United States, the United Kingdom, and Canada, were enrolled in the Pediatric Eye Disease Investigator Group (PEDIG) cataract surgery registry at any age from birth to less than 13 years old. The researchers recorded baseline characteristics as well as data on use and type of intraocular lenses (IOLs), refractive errors, operative and perioperative complications, and eye and systemic conditions.

**Age at surgery.** Only one-third of cataract surgeries were performed in the first year of life, which initially seems surprising, said lead author Michael X. Repka, MD, MBA, vice chair for clinical practice at Wilmer Eye Institute, Baltimore. "In reality, however, many children are born with mild cataracts that worsen over time, or [they] develop cataracts during the first decade of life." There was a family history of infantile cataract in nearly 20% of cases, although associated systemic conditions such as galactosemia were rare.

**Treatment trends.** Age also played a dramatic role in the use of IOLs, which were implanted in 59% of all eyes, he said. "It's almost as though a switch was turned on at the first birthday," said Dr. Repka, explaining that only 8% of eyes underwent IOL surgeries in the first year of life, whereas implants became nearly universal thereafter, especially after 2 years of age. In children who received an implant, the prediction error of the implanted IOL was less than 1.00 D in about half the eyes, but greater than 2.00 D in 15% of eyes.

Dr. Repka said that the study's observations may reflect practice patterns influenced by publication of data from the Infant Aphakia Treatment Study. In that trial, which included only infants with unilateral cataracts, the researchers found that use of IOLs at less than 1 year of age was associated with the need for more surgery and provided no better vision than the use of aphakic contact lenses.[2]

**Complications rare.** In this registry study, intraoperative complications occurred in 5% of the participants, with the most common being posterior capsule rupture in eyes undergoing primary IOL placement. The most common postoperative complications were increased intraocular pressure and cloudy cornea.

The low rate of complications is particularly reassuring, said Dr. Repka, given that this cohort reflects outcomes attained in a community setting, rather than in a randomized trial with defined protocols.

**More to come.** The researchers are now preparing 1-year data, and they plan to continue follow-up for 5 years to provide information about longer-term complications and the accuracy of current IOL prediction formulas, as well as visual outcome data for both unilateral and bilateral cataract surgery—with and without IOL implantation. "With the size of this cohort," said Dr. Repka, "we hope to be able to shed significant light on outcomes across many age ranges."

*—Annie Stuart*

**Relevant financial disclosures**—Dr. Repka: National Eye Institute: S.

1 Repka MX et al. *Ophthalmology.* 2016;123(12): 2462-2473.

2 Plager DA et al. *Ophthalmology.* 2011;118(12): 2330-2334.

**See the financial disclosure key,** page 10. **For full disclosures,** including category descriptions, view this News in Review at aao.org/eyenet.