mic ointment (1 g) and topical azithromycin (2.5 mL) were estimated to cost $1.94 and $72.12 per infant, respectively.

There were 4,247,000 births in the United States in 2008. Assuming an average of 354,000 births per month, the average monthly cost of universal prophylaxis for ophthalmia neonatorum would be $2.8 million for povidone-iodine (assuming costs of $7.77 per infant), $0.7 million for erythromycin, and $25.5 million for topical azithromycin.

Comment. Povidone-iodine has efficacy for a wide spectrum of pathogens, including gonococci, chlamydia, and herpes, and does not appear to cause systemic adverse effects. Bacterial resistance to povidone-iodine is rare and likely less problematic than resistance to macrolides. Povidone-iodine is already commonly used for preoperative ophthalmic preparation, including in neonatal eyes. Concern that the detergent formulation of povidone-iodine could mistakenly be applied to infants’ eyes does not need to be the limiting factor preventing its use since nurseries have strict protocols regarding administration of routine medications and since the packaging of pharmacy-formulated syringes would clearly be different from that of the detergent.

Our calculations show that pharmacy-formulated povidone-iodine, 2.5%, represents substantial cost savings over topical azithromycin for ophthalmia neonatorum prophylaxis. In practice, many hospitals were able to reserve erythromycin for neonatal prophylaxis, which may have limited the economic impact of the shortage. However, based on cost-effectiveness and the potential for enhanced clinical effectiveness, we believe povidone-iodine would be a suitable and perhaps preferable alternative to azithromycin for ophthalmia neonatorum prophylaxis.

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Shifting Distribution of Chicago-Area Acanthamoeba Keratitis Cases

Acanthamoeba keratitis (AK) is a rare contact lens–related infection with significant morbidity. Acanthamoebae are ubiquitous, free living, and believed to infect the cornea through contaminated water. Risk factors include poor hygiene, swimming while wearing contact lenses, tap water contamination, and use of certain contact lens solutions. A statistical significant increase in cases began in June 2003 in Chicago, Illinois. Self-reported use of COMPLETE MoisturePLUS multipurpose solution (Advanced Medical Optics, Inc, Santa Ana, California) was strongly associated with AK in 2 studies, leading to a product recall on May 25, 2007. Nevertheless, only 35% to 60% of patients with AK reported exposure to COMPLETE MoisturePLUS, while approximately 40% did not. Although Acanthamoebae are resistant to multipurpose solutions, generalized outbreaks have not occurred since introduction. In Chicago, cases continue despite the recall (11 cases were diagnosed from June 1, 2003, to May 31, 2004; 21 cases were diagnosed from June 1, 2004, to May 31, 2005; 15 cases were diagnosed from June 1, 2005, to May 31, 2006; 25 cases were diagnosed from June 1, 2006, to May 31, 2007 |COMPLETE MoisturePLUS was recalled on May 25, 2007, the eve of the Memorial Day holiday weekend; thus, AK cases diagnosed as a result of the recall began June 1, 2007|; 27 cases were diagnosed from June 1, 2007, to May 31, 2008; and 16 cases were diagnosed from June 1, 2008 to November 30, 2009 [which represents only half a year of diagnosed cases|], and the number of cases in which the patients have been using solutions other than COMPLETE MoisturePLUS is increasing. Surveillance data by the Centers for Disease Control and Prevention presented in January 2009 at the Microbial Testing for Contact Lens Care Products workshop, sponsored by the US Food and Drug Administration and others, suggest that cases continue elsewhere also. The purpose of this article is to evaluate whether the spatial distribution of AK cases is changing with time.

Methods. The University of Illinois at Chicago Institutional Review Board reviewed and approved this research. Patients evaluated at the University of Illinois at Chicago with atypical keratitis were defined as having AK as previously described using a validated disease definition. Geographic information systems were used with exploratory time series analyses to evaluate case distribution in Chicago, where case residence was plotted to overlay 2003 census population density by quartile. Residence at diagnosis was geocoded using the ArcInfo version 9.1 geographic information system (ESRI, Redlands, California) and was limited to the 5-county Chicago metropolitan area;
analyses were stratified a priori into 2-year periods (June 1, 2003, to May 31, 2005, and June 1, 2005, to May 31, 2007). To evaluate whether the disease pattern was changing and moving centrally toward the city, the mean distance between the residence of patients with AK and the University of Illinois at Chicago (convenience selection centrally located in Chicago) was compared using a 2-sample $t$ test; euclidean distances were estimated using Hawth’s Analysis Tools version 3.27 (http://www.spatialecology.com/index.php).

**Results.** Comparison of map symbols demonstrates that the cases from June 1, 2003, to May 31, 2005 (n=22) were distributed to the west, south, and southwest and further from Lake Michigan compared with population density, while the cases from June 1, 2005, to May 31, 2007 (n=31) continued in the west, south, and southwest but also occurred closer to Lake Michigan and the city center.

The mean distance between the patients’ residence and the University of Illinois at Chicago was statistically farther for cases diagnosed from June 1, 2003, to May 31, 2005, than for those diagnosed from June 1, 2005, to May 31, 2007 (22.90 vs 17.81 miles, respectively; $P=.04$).

**Comment.** Exploratory time series analysis demonstrates a shifting case distribution, which is incompatible with identified risk factors including hygiene, swimming while wearing contact lenses, ineffective solutions, or even demographic variables such as socioeconomic status, age, race, or behavior. Although demographic variability may confound AK risk, such as the prevalence of contact lens use by socioeconomic status or race, no contact lens-related

![Figure.](http://archopht.jamanetwork.com/)
risk factors or demographic variables can account for the changing distribution in a 2-year period because few can change at a population level in 2 years. Disease continues, which indicates that prevention will require further risk factor identification and/or a sizeable modification to current hygiene practices and contact lens solutions. Additionally, the changing distribution directs research to factors that can vary by geography over time, requiring study designs where controls are not matched on geography. Results also suggest the need for further exploration of alternative environmental hypotheses, including whether changes in disinfection practices to meet US Environmental Protection Agency disinfection byproduct regulations may be inadvertently shifting the microbial balance of the domestic water supply.

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Marked Cup Reversal Presumably Associated With Scleral Biomechanics in a Case of Adult Glaucoma

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everson of cupping after the reduction of intraocular pressure (IOP) is common in children but is also known to occur in adults. This phenomenon is postulated to be due to a reversal of the backward bowing of the lamina cribrosa, swelling of the optic disc, and increased intravascular volume. In contrast, recent studies using finite element modeling predict that optic nerve head (ONH) biomechanics strongly depend on scleral biomechanical properties. In support of this prediction, we report an adult case of secondary glaucoma in which the ONH tissue deformation and restoration due to IOP fluctuation were associated with changes in axial length and optic disc size.

Report of a Case. A 21-year-old Japanese man was referred to our institute in June 2002 because of uncontrollably elevated IOP in his right eye after repeated surgical procedures (phacoemulsification, scleral encircling, pars plana vitrectomy, and trabeculectomy) for cataract and rhegmatogenous retinal detachment associated with atopic dermatitis. He had no history or family history of collagenous diseases. At initial examination, his best-corrected visual acuity was 20/200. His IOP was 47 mm Hg as measured with Goldmann applanation tonometry, despite maximally tolerant medical therapy, normal depth of the anterior chamber, open angle, artificial aphakia, a cup-disc ratio of 0.9, and a mean deviation of −19.26 dB on a Humphrey 30-2 program in the right eye. The left eye was normal. Following trabeculectomy with the adjunctive use of mitomycin C, 0.04%, a month later, the IOP fluctuated between 5 and 48 mm Hg owing to filtration blockage and its subsequent release by laser suture lysis and a needling procedure until August 2003, when diode laser cyclodestruction was eventually performed. Although no apparent visual field defect progression or central corneal thickness fluctuation (mean [SD], 532 [7] μm) occurred during this period, enlarging and reduction of cupping correlated with the IOP fluctuation, which accompanied asymmetrical extension and reduction of the disc size (Figure). Therefore, the higher IOP corresponded to a larger disc diameter with more prominent horizontal expansion.

Serial measures of the ONH configuration, axial length, and corneal curvature were conducted using the Heidelberg Retina Tomograph II (Heidelberg Engineering, Heidelberg, Germany) by one of us (Y.K.), the IOL Master version 3.01 (Carl Zeiss Meditec, Jena, Germany), and an autokeratorefractometer (Tomey, Nagoya, Japan), respectively, under approval of the institutional review board of the Kobe University Graduate School of Medicine as previously described (Table). Pearson correlation...