

Models for Glaucoma Treatment and Eye Care in China

With the creation of a hospital-based network that provides comprehensive eye care, glaucoma diagnosis and treatment may improve.

BY NATHAN CONGDON, MD



Nathan Congdon, MD, has the unique experience of having practiced in both a major academic center in the United States and in rural and urban China. His perspective on the problems China faces sheds light on some of the obstacles encountered there, ranging

from patients' perceptions to manpower training. Dr. Congdon describes these problems and details innovative strategies by which to systematically minimize unnecessary blindness. He places China at a crossroads: an aging population, rural areas offering inadequate eye care, substandard resident training, and an economy that may be threatened by poor outcomes.

I hope you enjoy this inaugural edition of Glaucoma Today's "International Perspectives" column and that this and the articles that follow broaden your perspective about glaucoma care around the world.

—Alan L. Robin, MD, section editor

Population-based research continues to show that glaucoma is among the leading causes of blindness in China.¹ This is in part due to the relatively high prevalence of angle-closure glaucoma, which carries a four- to fivefold elevated risk of blindness at the time of diagnosis, and partly due to widespread misconceptions among both rural Chinese patients and their doctors that glaucoma is a symptomatic condition that commonly presents as a painful, red eye. In fact, as multiple population studies have demonstrated, some 90% of individuals with glaucoma in China have an IOP of less than 21 mm Hg at the time of diagnosis.²

Identifying and treating patients with glaucoma is a major challenge in China, because it requires a change in mindset among physicians and patients. Also needed are the means to encourage patients over the age of 40 at the time of presentation to routinely seek comprehensive eye examinations. Presently, the majority of glaucoma patients who present for routine eye care in rural areas of the country still go undiagnosed. The question remains how China will cope

with this problem in the face of a cataract surgical rate of less than 1,000 per million population per year (among the lowest in Asia) and an explosion of diabetes, a rate that has increased 10-fold over the past 30 years.

A MODEL FOR COMPREHENSIVE EYE CARE

A continuing priority for program planners in China is training a cadre of capable cataract surgeons, particularly in rural areas. These doctors can then oversee the clinic-based diagnosis of glaucoma. Most economic models show that population screening for glaucoma is not cost-effective.³ Rather, well-trained clinicians can diagnose glaucoma during routine examinations and outreach cataract screenings.

The Zhongshan Ophthalmic Center (ZOC) is collaborating with Orbis International to establish the Comprehensive Rural Eye Service and Training (CREST) network. The CREST network consists of rural county hospitals capable of providing comprehensive eye care, including the diagnosis and treatment of glaucoma. The basis for this system is 10 rural hospitals staffed with ophthalmologists who are capable of performing cataract surgery, thanks to the training they received from ZOC doctors. These centers have a steady flow of clinic patients—10,000 to 20,000 per year, in most cases. Rural ophthalmologists receive 2 months of didactic training in glaucoma diagnosis and treatment at ZOC, and ZOC's medical teams travel to the hospitals on a rotating basis to perform trabeculectomies and provide hands-on training on case selection, surgery, and postoperative management (Figure).

The CREST network is financially self-sustaining and educates both physicians and patients. It provides a viable model of comprehensive eye care for rural China. The CREST network also serves as a laboratory for research on all aspects of training, education, treatment, and the maintenance of high levels of compliance in this challenging setting.

A key feature of the CREST network is that it is not a

“glaucoma project.” It was funded by the World Diabetes Foundation to develop a state-of-the-art computerized network for diabetic retinopathy as well. Each of the 10 centers is linked to ZOC through a telemedicine network that provides central grading for digital fundus images, reviews electronic medical records for completeness and compliance with standards of care, and sends automated text message reminders to patients about their upcoming appointments. All of these features improve the quality of and demand for care of patients with glaucoma and diabetic retinopathy. Hospitals are learning that providing comprehensive eye examinations for patients 40 years and older at a low price, when such care was previously very expensive and offered only when disease was suspected, ultimately leads to the identification of many patients who require care. This, in turn, contributes to the hospitals’ income, because patients are willing to pay for high-quality care.

Educational videos made in collaboration with New York University film students are designed to educate patients about the value of comprehensive examinations and to explain how the goals of glaucoma surgery differ from those of cataract surgery. It is hoped that these materials will prevent patients from being dissatisfied postoperatively, which might reduce the uptake of all eye surgeries at the hospitals.

RESIDENT TRAINING IN CHINA VERSUS THE UNITED STATES

As a US-trained ophthalmologist and a resident of China for many years, I am often asked how eye care differs between the two countries. One critical difference lies in residency training. The educational system for residents in China is a key factor in the country’s low cataract surgical rate and is partly responsible for the challenges associated with managing complex chronic diseases such as diabetic retinopathy and glaucoma. I frequently liken projects aimed at training Chinese doctors to improving road safety by systematically inspecting and repairing all broken cars without going back to the factory to ask where the faulty cars came from in the first place.

The average ophthalmology resident in China is lucky to independently perform a handful of cataract surgical cases during training and very few emerge able to perform this procedure independently. Much of their time is spent completing paperwork for the routine admission of patients undergoing cataract and other surgeries, and there is a tendency for doctors to rely heavily on expensive tests rather than clinical examinations (ie, ultrasound biomicroscopy rather than gonioscopy). These problems are, to an extent, compounded by the fact that the medical profession does not have a particularly high status, unlike in the United States. Orbis International among other organizations is collaborating with the Chinese Ophthalmic Society to create



Figure. Surgical training is an important part of capacity building to manage glaucoma in areas of limited resources.

model residency programs to help address these important issues.

STRENGTHENING THE MEDICAL SYSTEM

During the past 30 years, China has transformed its economy to an unprecedented extent, resulting in an extraordinary transition from poverty to financial well-being for hundreds of millions of people. The current government realizes that poor medical care in rural areas threatens the country’s stability. It has demonstrated a willingness to tackle this problem in a variety of concrete ways, including a rural health insurance system with coverage levels exceeding 98% and a recently completed program providing 1 million free cataract surgeries to rural dwellers.

Chinese culture values education above all of the other investments a family or a government can make. I believe it is only a matter of time before the Chinese government and organized medicine begin training a cohort of doctors of whom the nation can be proud. For those of us lucky enough to live in China and to work on improving the rural health care sector here, it is difficult to imagine a more exciting place to be or a more auspicious time to be here. ■

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