



# The Power of Ophthalmology in Community Health

Six experts discuss innovative programs that are improving access and care.

By Reena Mukamal, Contributing Writer

**A**N UNDERINSURED MEDICAL ASSISTANT in Alabama with visual defects and elevated IOP; a father with diabetic retinopathy who migrated from another country and is living in rural Oregon; a middle-aged veteran with advanced, traumatic glaucoma. These individuals have something in common: their eyesight was saved through community-based ophthalmology programs offered at health centers deep in rural areas or urban neighborhoods—locations that often have few health resources and limited or no capability to provide care for complex conditions.

**Disparities in vision care.** These aren't isolated cases, and access to vision care will become even more critical in the years and decades to come. The number of people over the age of 40 in the United States who are affected by visual impairment and blindness is projected to double by 2050—to approximately 6.95 million.<sup>1</sup> Nearly half of people with vision-threatening conditions are undiagnosed and untreated, and limited access to vision care is a cause.<sup>2</sup>

A multitude of factors contribute to disparities in ocular health, including race and ethnicity, age, income, insurance coverage, and geographic region. Numerous studies have shown a disproportionately high occurrence of diabetic retinopathy, glau-

coma, cataract, and other eye conditions in Black, Hispanic, and Indigenous Americans, who also experience lower rates of eye disease screenings and eye examinations. Eye exams are not a standard part of primary care, and in areas with few eye care providers, people often delay getting routine eye exams or treatment until they develop problems, said Maria Woodward, MD, MS, at the University of Michigan, Ann Arbor.

## Federally Qualified Health Centers

Improving access to comprehensive eye care is a mission of the Academy's Task Force on Ophthalmology and Community Health Centers, formed in December 2022. This group is working to develop best practice guidelines and to identify locales and ophthalmologists to help expand eye care through Federally Qualified Health Centers (FQHCs). One in 11 Americans receives health care at FQHCs. They include people who are uninsured, individuals enrolled in Medicaid, people who live in rural areas that have few health care providers, and people who may experience homelessness. FQHCs are primary care-based community clinics that serve populations with few resources.<sup>3</sup> "FQHCs are poised to function as health system safety nets because they are federally funded, form a vast network across the country [there are 1,400], and have substantial medical infrastructure, plus connections to social services,"

**HUMPHREY TEST.** A SIGHT participant undergoes a visual field test.



said Paula Anne Newman-Casey, MD, MS, at the Kellogg Eye Center at the University of Michigan, Ann Arbor.

Unlike free clinics and some other types of health centers, FQHCs can bill and be reimbursed for ophthalmology services. Patients without insurance pay on a sliding scale based on their income. Currently, only 25% of FQHCs provide access to eye health resources, said Dr. Woodward. These centers represent an opportunity to bring comprehensive ophthalmology to primary care settings. “By partnering with more of them, we can scale up and sustain eye care in medically underserved communities,” said Dr. Newman-Casey.

Four initiatives, one of which is spearheaded by Dr. Newman-Casey, are on the leading edge of this effort to partner with FQHCs—and they spotlight how Academy members are volunteering in their communities to help close gaps in ocular health.

### Technology-Based Eye Care Services (TECS) for Rural Veterans in Georgia

**Comprehensive telehealth care.** A successful and scalable model of community eye care was conceptualized and designed in 2015 by April Maa, MD, at the Emory Eye Center in Atlanta in partnership with the U.S. Department of Veterans Affairs (VA). Using a telehealth approach, TECS offers

comprehensive eye screening, glasses, and disease follow-ups for veterans living in rural regions. The development of noninvasive, reliable ocular imaging devices—that can be used by specially trained ophthalmic testing staff—and the capacity to electronically transmit results to an ophthalmologist based hours away have enabled the use of telemedicine in the detection of many eye conditions.<sup>4</sup>

**How it works.** A certified ophthalmic technician is stationed at a VA primary care clinic, working out of a 120-square-foot room outfitted with an autorefractor, lensometer, tonometer, fundus camera, handheld pachymeter, phoropter, vision chart, trial lenses, and trial frames. Following a detailed protocol to collect information about each patient’s eyes, the tech uploads data to an electronic health record, which is reviewed by a remote eye specialist, said Dr. Maa. The patient is assessed, and a care plan is developed, including a prescription for free eyeglasses as needed.

“If you’re a rural clinic and can’t hire an ophthalmologist, you can still keep the patient within the system and give them access to the care they need,” she said.

**Growing the model.** TECS implementation across the VA enterprise is largely funded by the VA Office of Rural Health. Technology-based eye services started with three sites around Atlanta

## Glasses First!

Providing low-cost glasses is an essential ingredient of any community-based vision care program, for several reasons.

- “The leading cause of vision impairment is lack of glasses, and getting a pair for a patient can be life changing,” said Dr. Henderer, who works with the Lions Club at Temple University Health Center #5 to provide free glasses to patients who can’t afford them.
- “We entice people by providing low-cost glasses and then simultaneously screen for eye disease,” said Dr. Newman-Casey, who helps patients navigate the Zenni optical website where they can purchase \$12 single-vision glasses.
- “Patients are more likely to come back and see an eye doctor for follow-up after receiving glasses because they trust you and know you are trying to do the best for them,” said Dr. Henderer. Likewise, Dr. Chen gives patients



**SEEING CLEARLY.** A SIGHT participant selects a pair of glasses.

vouchers for glasses in part as an incentive for scheduling a follow-up appointment.

- Beyond the carrot effect, “It’s medically important for us to provide glasses for patients so we know their best-corrected vision,” said Dr. Maa. “That also helps us identify cataracts,” she added.

and have scaled to more than 60 locations around the country. Building on a proven model—TECS has served more than 70,000 patients since its inception—Dr. Maa is now piloting virtual subspecialist care for patients, including teleglaucoma and telemacula follow-ups. “This allows subspecialty care to be spread out across the entire country to veterans who might not otherwise have access,” she said, noting that the percentage of veterans who have never been seen by an eye care provider in the VA has dropped from 8% to 5% because of the TECS program.

She attributes the success of the program to meticulous project management and to the use of a step-by-step “cookbook” followed by each site, a standard protocol that can be implemented at each location. “You want the services to be like McDonalds; you walk in and know exactly what to expect,” said Dr. Maa. One remaining problem is getting patients to follow-up, she said. TECS is investigating, in a research setting, whether using artificial intelligence (AI) could help kick-start follow-up before the patient leaves the clinic.

### AI Screening for Diabetic Retinopathy in Philadelphia

In another innovative use of technology, Philadelphia-based Temple Health aims to improve the odds of getting patients in areas that are medically underserved to go for follow-up care by using AI to screen and diagnose diabetic retinopathy (DR). Jeffrey Henderer, MD, at Temple University in Philadelphia, started a program in 2016 that has partnered with nine primary care clinics (one is an FQHC and five others are converting to this model) where Temple Health–affiliated physicians are stationed.

“We wanted to create a screening system with a rapid DR result at the point of care, as well as reads for other diseases behind the scenes,” he said.

**How it works.** Temple has a full-time ophthalmology department employee who installs fundus cameras and Eyenuk’s EyeArt AI software in each of the clinics and trains medical assistants (MAs) to take photos of patients’ eyes. The images are securely uploaded to the cloud, and within minutes the MA receives a diabetic eye disease result. The photos are reviewed asynchronously by a team of Temple optometrists, who look for other eye conditions. Findings are communicated back to the primary care provider through Temple’s electronic medical record, Epic. Then a screening coordinator schedules eye exams with ophthal-



**MANIFEST REFRACTION.** Casey Community Outreach volunteer Katie McAnnis and a participant at a Casey Eye Institute community vision clinic.

mologists for patients with positive reads.

**Staffing deficits.** Getting images taken of patients’ eyes has been more difficult than Dr. Henderer anticipated. “We have staffing shortages, and MAs are precious commodities. Frequently, they can’t be pulled away to take photos,” he said.

He is considering the use of designated photography days or a Temple Health–hired photographer. The program was launched in 2016 in just one location and has now screened about 4,500 patients.

**Engage medical students.** Dr. Henderer also brings medical students to the city’s Health Center #5—the clinic nearest the main campus—once a month to provide free eye exams and glasses. This program was started in 2011 in partnership with the Lewis Katz School of Medicine and uses a donated slit lamp, phoropter, lensometer, and other equipment—“all on wheels so it can easily be stored away when not in use.” Dr. Henderer holds the endowed Dr. Edward Hagop Bedrossian Chair of Ophthalmology, which funds his time at the health center. The program screens about 15 patients each day and exposes medical students to the field of ophthalmology. “The medical students are first and second years who don’t get much exposure to ophthalmology or direct patient care until later in school,” said Dr. Henderer. “This gives them an opportunity to take care of patients and learn about a specialty they may otherwise get no exposure to.”

The screening and eye exam programs work well in an urban area where transportation is accessible and insurance is not a barrier to subspecialist follow-up, he said. (Temple Health takes almost all forms of health care, including Medicaid.)

## Casey Mobile Eye Clinic Brings Care to Patients in Rural Oregon

When there are larger geographical disparities between patients and ophthalmology care, some providers rely on mobile health care. Sending its ophthalmology office on wheels to more than 70 locations across rural and metropolitan Oregon, the Casey Community Outreach Program bridges physical divides, said Aiyin Chen, MD, at Oregon Health & Science University in Portland. Ophthalmologists travel to community health centers (many of which are FQHCs) in the 33-foot mobile health unit equipped with two full ophthalmology exam lanes. They offer free, on-site screenings at these localized points of primary care and work with community partners to assist in follow-up care, said Dr. Chen.

**A turn toward telemedicine.** The Oregon program was established in 2010 and is funded by local donors. When it celebrated its 10-year anniversary in 2020, the Casey Mobile Eye Clinic boasted more than 10,000 adults screened and nearly 6,000 prescriptions for glasses during its decade serving patients. “But when the COVID-19 pandemic happened, health care protocols significantly reduced our capacity. We brainstormed how to make our

services more sustainable,” said Dr. Chen.

Now, the group is piloting a telemedicine program in two brick-and-mortar sites. “We empower local community health professionals to do these tests without us,” said Dr. Chen. “They collect pictures using a combined OCT and fundus camera and send them through Epic to our reading center for evaluation.” The goal is to scale the telemedicine model to eight sites and screen 2,400 participants per year, she said.

**Problem solved: digital records.** One of the greatest challenges has been the setup of shared infrastructure for secure records transfer. “It took months of back-and-forth coordination between the office of digital health, medical informatics, network security, external vendors, risk management, legal, and imaging experts,” said Dr. Chen.

“The infrastructure was built to be adaptable and can integrate many different EHR systems ensuring successful partnership with rural communities across Oregon.” The model of a mobile clinic working hand-in-hand with local providers “helps patients overcome common barriers to follow-up care because we can either refer patients to local doctors or offer the van as a safety net,” she said.

## Why I Love Working in Community Health

Wondering what the “why?” is for Academy members who volunteer in their communities? Here’s what these dedicated doctors have to say.



**Dr. Woodward:** “At this moment in time, people are understanding more than ever how inequitable health care is across America.

Academy members can make an impact by helping more patients prevent need-less blindness.”



**Dr. Rhodes:** “I feel like my impact as a physician is multiplied by reaching populations with numerous barriers to care. It is deeply rewarding to provide eye care

beyond my clinic walls in a way that addresses inequities in our current health care structure.”



**Dr. Newman-Casey:** “The inequity is too great to sit and be quiet. People are so grateful to receive the kind of service they think others are getting at University

of Michigan, but in a place that’s easy for them to come to.”



**Dr. Maa:** “It’s a huge burden on both the patient and the community when an individual loses their vision. It’s rewarding to know that not only can I help prevent a patient from losing their sight, but also I can have a positive impact on the system.”



**Dr. Henderer:** “I enjoy the smile on a patient’s face when you’ve told them they are doing a great job caring for themselves and you can see evidence of the work they’re putting in by the fact that they don’t have diabetic eye disease. The most important thing we can do is to teach patients how to care for themselves at a whole-body level, not just an eyeball level.”



**Dr. Chen:** “Being an MD these days involves a lot of nonglamorous work, but helping a patient prevent blindness and seeing how grateful they are to hold on to their vision reminds me of why I became a doctor.”



## Screening and Intervention for Glaucoma and Eye Health Through Telemedicine (SIGHT)

Three sister programs funded by the CDC in partnership with the University of Michigan (UM), Columbia University, and the University of Alabama at Birmingham (UAB) are evaluating strategies to surmount the challenges of patient follow-up. Each program uses a telemedicine-based detection and management strategy for glaucoma and other eye diseases.

### Success with disease detection.

In Alabama and Michigan, patients are seen at free clinics and FQHCs. As of January 2023, the programs have screened a total of 3,822 patients, referred 1,692 for follow-up eye care, and found 853 cases of suspected/diagnosed glaucoma. “So far, the programs have detected eye disease at astronomically higher rates than in the general population,” said Dr. Newman-Casey. “We’ve seen uncorrected refractive error four times higher than the national average, found glaucoma at three times higher than the national average, and DR at two times the national average. This is what happens when people don’t have access to care,” said Dr. Newman-Casey.

**How it works.** In Alabama, full-time ophthalmic research coordinators work with health centers to funnel high-risk patients into the screenings one or two days per week at three sites, said Lindsay A. Rhodes, MD, MSPH, principal investigator of the SIGHT study at UAB. Patients receive an hour-long screening exam that may include spectral-domain OCT imaging, fundus photography, and perimetry, and all of this equipment is purchased with CDC funding, said Dr. Rhodes. “We are studying different visual field devices—including traditional standard automated perimetry, a virtual reality headset, and a tablet-based perimeter—to compare the portability, cost, and effectiveness in a community-based setting,” she said.

**Follow-up strategy 1.** Of course, participants with vision issues get referrals for follow-up care. Dr. Rhodes and her team are testing whether a patient education program alone or coupled with a financial incentive—\$50 paid upon completion of each referral visit—will improve patient adherence to follow-up. “Similar studies for the flu vaccine and mammography have shown that financial incentives can positively affect behavior,” she said.

**Follow-up strategy 2.** In Michigan, ophthalmic technicians are testing patients using similar screening protocols and also embedding a trial to see whether personalized glaucoma coaching



**VISION CHECK.** A SIGHT participant has an eye exam in Flint, Michigan.

will increase adherence to follow-up care. “We’re giving the control group a standard handout and the intervention group interactive, motivational interviewing-based coaching,” said Dr. Newman-Casey, SIGHT principal investigator at UM. “We’ll compare the proportion of each group who attends their follow-ups.” Overcoming high no-show rates is a significant hurdle, she said. “But we are learning to change our mindset from blame to understanding. We see how hard it is for people to make the time, which requires so many things that are often taken for granted by those with higher socioeconomic status: did a person have a chance to wash their clothes, get enough food, find childcare, get permission to take time off work? We need to think about adherence from the perspective of income inequality and how that impacts people’s autonomy in taking care of their health.”

### How You Can Get Involved

There are plenty of opportunities to play a role in increasing access to ophthalmology services nationally and locally.

**Advocacy and policy needs.** Ophthalmologists need to advocate for better policies and payment around telemedicine, said Dr. Maa. Licensure restrictions and reimbursement disparities remain barriers to more widespread implementation of teleophthalmology, she said. The American Telemedicine Association (ATA) is currently lobbying for changes in policy that allow doctors to treat patients across state and federal lines. “There are some telehealth medical licensure compacts available now, where a physician can obtain a telemedicine licensure that applies to an entire group of states that have banded together.” Ophthalmology care should be included in these compacts and

also be a part of the lobbying efforts, she said.

There's also the problem of payment. "If I gather information from a patient at one time but call the patient at a later time, I can't easily bill for asynchronous care," said Dr. Maa. "During COVID we had payment parity for telemedicine because it was considered a health emergency, but now that's become harder," she added. She urges Academy members to consider joining the ATA or encouraging Congress to make the public health emergency rules for telehealth payment parity permanent.

**Tips to get started.** Beyond championing laws and policies that will facilitate telehealth, ophthalmologists can get involved in their communities.

**Conduct a search.** Dr. Rhodes recommended researching locations within your community where patients may be falling through the cracks and forming partnerships with local organizations that are already reaching those individuals. "Consider your budget, setting, and target population. For example, the area you want to reach may not have broadband access, and that would be prohibitive to telehealth so you may have to be creative," she added.

**Partner with a medical school.** "If you have a relationship with a medical school, they could be a phenomenal partner," said Dr. Henderer. When designing a program, he said, "I think of it as a three-legged stool: 1) identifying the patients who need screening and getting them to the camera; 2) the who, what, and how of taking, transmitting, and interpreting the photos and 3) getting the patient to follow-up care. Each leg has to be the same length or the stool falls over."

**Assess the partner's needs.** If you already have your sights on an FQHC, it can be helpful to assess their needs first. "Our FQHC serves a community where glaucoma is prevalent and asked us to help step up their game, so we had to expand our screening services from just DR to a more comprehensive approach where we are looking for other diseases," said Dr. Henderer.

**Contact the Academy.** To learn more about the Academy's efforts to expand access to eye care, contact the Academy's director of public health advocacy, Scott Haber, in the Washington, DC, office at 202-737-6662.

**Volunteer for EyeCare America.** Another way to help increase access to vision care is by volunteering for existing service opportunities with organizations like EyeCare America ([aao.org/volunteer](https://aao.org/volunteer)), said Dr. Newman-Casey.

The Academy's EyeCare America program helps seniors who have not had a medical eye exam in three or more years and those at increased risk for glaucoma access eye care. The time commitment is minimal, and volunteers can serve remotely.

1 Elam AR et al. *Ophthalmology*. 2022;129(10):e89-e113.

2 Tan O et al. *Exp Biol Med*. 2021;246:2214-2221.

3 [www.nachc.org/research-and-data/americas-health-centers-2022-snapshot/](https://www.nachc.org/research-and-data/americas-health-centers-2022-snapshot/). Accessed June 5, 2023.

4 Rhodes L et al. *J Glaucoma*. 2021;30(5):371-379.

**MORE ONLINE.** For diversity, equity, and inclusion-related news and resources, including *EyeNet* articles and *Ophthalmology* journal's special DEI supplement, visit [aao.org/diversity-equity-and-inclusion](https://aao.org/diversity-equity-and-inclusion).

---

## MEET THE EXPERTS

**Aiyin Chen, MD** Associate professor of ophthalmology, Oregon Health & Science University, Portland. *Relevant financial disclosures:* None.

**Jeffrey Henderer, MD** Dr. Edward Hagop Bedrossian Chair and professor of ophthalmology, Lewis Katz School of Medicine at Temple University in Philadelphia. *Relevant financial disclosures:* None.

**April Maa, MD** Associate professor of ophthalmology at the Emory University School of Medicine in Atlanta; Tele-Specialty Care Director and TECS Subsection Lead, Veterans Integrated Service Network 7 Clinical Resource Hub, in Atlanta. *Relevant financial disclosures:* None.

**Paula Anne Newman-Casey, MD, MS** Associate professor of ophthalmology and visual sciences,

associate chair for research, University of Michigan Kellogg Eye Center, Ann Arbor. *Relevant financial disclosures:* None.

**Lindsay A. Rhodes, MD, MSPH** Associate professor of ophthalmology and visual sciences, Heersink School of Medicine, University of Alabama at Birmingham. *Relevant financial disclosures:* None.

**Maria Woodward, MD, MS** Associate professor of ophthalmology and visual sciences, section leader, cornea, cataract, and refractive surgery at the Kellogg Eye Center, University of Michigan, Ann Arbor. *Relevant financial disclosures:* None.

**For full disclosures,** view this article at [aao.org/eyenet](https://aao.org/eyenet).