

Clear the Runway for a Flying Eye Hospital

Medical professionals from Orbis International visit all corners of the globe to restore sight and prevent blindness.

BY ROBERT MURPHY, CORRESPONDING EDITOR

What is perhaps the most singular DC-10 aircraft in today's skies carries a team of international ophthalmic experts each year to between eight and 10 developing countries worldwide. These volunteer medical professionals provide ophthalmic surgical training to local doctors and urgently needed eye care and surgery for the host nation's most underserved communities.

A UNIQUE PLANE

This aircraft is the Flying Eye Hospital of Orbis International (New York, NY), a nonprofit organization dedicated to preventing and treating blindness by providing quality eye care to transform lives. Volunteer ophthalmologists, nurses, and biomedical engineers work around the globe by volunteering their unique skills for one week at a time aboard the Orbis Flying Eye Hospital. Onboard, medical teams train the host country's eye care providers, doctors, and allied health professionals in the techniques of advanced ocular surgery, nonsurgical eye care treatments, diagnostic measures, and the maintenance of ophthalmic equipment. Volunteer physicians and nurses provide free surgery and other treatments to countless disadvantaged people who may be encountering state-of-the-art eye care for the first time.

The reach of Orbis extends from multiple international offices in Addis Ababa, Cape Town, Dublin, Hanoi, Hong Kong, Kunming, London, Macau, New Delhi, Shanghai, Taipei, and Toronto.

MILLIONS HAVE BENEFITED

Since 1982, the organization's volunteer professionals have brought their skills, knowledge, and compassion to salutary effect in 88 countries. They have enhanced the clinical and surgical skills of more than 288,000 eye care providers and treated more than 15 million people. Orbis has conducted more than 1,000 training programs in 88 countries.

Although much sight-saving work was completed in the



The Orbis Flying Eye Hospital.

organization's first 3 decades, the volunteers and permanent staff of Orbis recognize that their mission poses ongoing and long-term challenges. Approximately 39 million people worldwide are blind, including 1.4 million younger than 15 years of age. It has been estimated that 75% of these cases could have been prevented or are treatable. More than 90% of these visually impaired individuals live in developing countries, according to the World Health Organization.¹ Marshalling and deploying available resources to mitigate vision loss and other ocular maladies—with a special emphasis on treating children—defines in brief Orbis' *raison d'être*.

BEYOND THE FLYING HOSPITAL

The aforementioned statistics are why Orbis' mission typically extends beyond the specially outfitted operating suite based in the DC-10 to hospitals and clinics throughout the host country's cities and villages. Whether on the runway or in the field, the volunteer faculty specializing in all ophthalmic subspecialties establishes a training partnership with local eye care providers that includes ongoing follow-up. This is accomplished by telemedicine-based postoperative monitoring with telephone and e-mail consultations; periodic return visits by individuals, a small cadre of volunteers, or sometimes the entire Orbis team; and long-term contact to ensure that the host country's newly donated ophthalmic equipment meets the local needs.

Orbis' volunteers do not just fly in and fly out; their



A Cyber-Sight consultation of a patient.

mission continues. “What makes it different from other international missions is that, because [we have] a large support network, we can be certain that patients will receive continuity of care,” says Douglas Frederick, MD, an Orbis volunteer faculty member and a clinical professor of ophthalmology and pediatrics at Stanford University Medical Center, Palo Alto, California. Also crucial is outside help in the form of individual, corporate, and foundation-based financial contributions and donations of equipment, supplies, and medicine.

Not only the local doctors, nurses, and patients reap the program’s many rewards. Top-echelon volunteer ophthalmologists from the United States and around the world come away from their trips—*adventures* might be a better word—knowing that they experienced something special. The missions represent compassion, altruism, and effective skill transfer taken to the highest degree. Orbis’ medical director, Hunter Cherwek, MD, supervises the missions on site throughout the year. He says, “So many of our volunteers come to us and say, ‘This reminds me exactly of why I went into medicine.’”

TRAINING AND SKILL TRANSFER

“If you fish for a man once, he will eat for a day; but teach him how to fish, and he will eat for life.” There is much truth to this well-worn proverb. Teaching doctors to perform advanced ophthalmic surgery allows them to operate solo with confidence. Rigorous training and skill transfer are part of Orbis’ foundation and how it seeks to raise the quality of eye care worldwide. It is also the well-spring from which future generations of eye surgeons in remote regions can learn. If the past is prologue, tomorrow’s surgeons from all corners of the globe will improve upon today’s state-of-the-art techniques, as new methods are disseminated through academic avenues and hands-on training, medical conferences, telemedical communication, and print and electronic media. Such was the



Daniel Neely, MD, examines Kitonsa Kasozi, 7, at the Mulago Hospital in Kampala, Uganda. Kitonsa was born with misaligned eyes and suffers from bilateral strabismus.



The OR of the Orbis Flying Eye Hospital. The laser treatment room can be seen through the far windows.

vision that David Paton, MD, chief of the Ophthalmology Department at Baylor College of Medicine in Waco, Texas, when he founded Orbis in early 1982.

Naturally, the Flying Eye Hospital attracts considerable attention, but its function as an ultramodern training venue and its utility as a surgical suite make it an ideal setting in which the volunteers can work. Orbis’ custom-made DC-10 has three main sections. Up front is a 48-seat classroom equipped with a two-way audiovisual system where local doctors gather for lectures, seminars, and live broadcasts of surgeries performed in the plane’s OR. Tucked between the lecture hall and OR is a laser room, and the plane’s back section serves as a recovery room. Trainees watch surgery on a video screen, while the surgeon narrates—through a translator—his or her every move. The audience is invited to ask questions of the surgeon throughout the procedure.

In some instances, Orbis broadcasts surgeries to another classroom elsewhere, such as a local hospital. In this

way, the largest number of trainees may be accommodated. Those who miss a presentation can catch it later when Orbis leaves the video with a local institution for further training. Local doctors can largely dictate their own curriculum. “They actually request the lectures they want to hear, and so we cater to their needs,” says oculoplastics specialist Thomas E. Johnson, MD, a professor of clinical ophthalmology at the University of Miami’s Bascom Palmer Eye Institute and the Miller School of Medicine.

ON THE PLANE AND IN THE FIELD

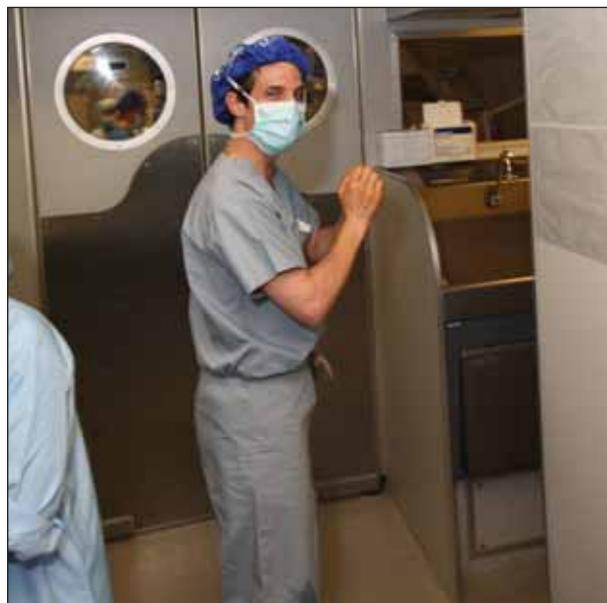
The on-board training is only the beginning. Just as important are Orbis’ hospital-based programs, where the volunteers can provide hands-on training for local ophthalmologists and allied eye health professionals. Orbis also provides funding for specialized fellowship training to many of their partner doctors so they can in turn, diagnose, manage, and treat more on their own. These efforts complement the goal of allowing partnering doctors to provide quality eye care on their own over the long term.

“The Flying Eye Hospital is certainly alluring. It’s very cool, and it’s very fun,” says volunteer faculty and retinal specialist Brian D. Sippy, MD, PhD, of the Rocky Mountain Eye Center in Missoula, Montana. However, it is in Orbis’ local hospital training programs where someone will find what Dr. Sippy calls the program’s “core teaching.” This setting offers fertile ground in which productive and rewarding partnerships and relationships between visiting and host doctors can take root and flourish.

Orbis’ training mission extends beyond doctors and nurses to the biomedical engineers needed to maintain new equipment—a key part of the overall picture. After all, what good is a phaco machine or automated perimeter if it sits in a corner gathering dust, because no one knows how to use it or because it malfunctions?

“That was part of what was happening in China,” Dr. Sippy says. “The government built this new state-of-the-art hospital. It was like a *Star Trek* hospital. It was incredible, but they moved the same staff from the old hospital across the street right into that hospital with all this equipment that they’d never seen. They had the equipment at their disposal, but they didn’t know how to service it. They didn’t know how to triage it, and they didn’t know how to utilize it. Orbis, by bringing the comprehensive team approach, is able to [address] all levels. When [the volunteers] leave, the machine can continue to function. [Local biomedical engineers] have contact numbers that they can call. . . . They have Web sites that they can refer to. It’s more of the long term, ‘teaching them how to fish.’”

Training is a reciprocal endeavor, and Orbis’ doctors can learn much from their overseas counterparts. “I definitely learn a lot from them such as how to do different



Brian Sippy, MD, prepares to enter the OR on the Flying Eye Hospital.

types of surgery without the instruments we’re used to using,” says Bascom Palmer’s Dr. Johnson. “They are very good . . . at improvising. They have techniques that we don’t use that work very well, too. . . . I carry back a lot of the information they give me.”

GLOBAL PUBLIC HEALTH

Global statistics show that people in developing countries suffer disproportionately, relative to those in more advanced nations, from what is often preventable disease. Part of the public health problem in developing countries has to do with malnutrition; part of it is due to unsanitary drinking water or other contaminations such as exposure to parasites; and part of it is because the population in many settings lacks access to adequately trained health care providers. An early-stage tumor, for example, can grow and spread with alarming rapidity because of the lack of a timely diagnosis. Orbis trains the local doctors how to spot the telltale diagnostic signs and symptoms of ocular disease earlier. Coupled with this education are efforts to develop a medical infrastructure that can ensure that people, particularly children, have access to regular preventive checkups from the neonatal stage on.

“In terms of . . . infectious disease within the eye, certainly underdeveloped countries have a wealth of parasites, bacteria, and organisms that we don’t deal with routinely in developed countries,” Dr. Sippy says. “We might see [such conditions] in [US] inner cities because of the immigrant population, but we certainly don’t see them in the general population. So, when you do travel to these countries, you almost have to keep in your mind

a more broad differential of what could be happening in this eye with infectious processes that you might not be used to thinking about or seeing.”

PREVALENT OCULAR CONDITIONS

Ocular conditions seen prevalently in developing countries that the Orbis volunteers are trained to diagnose and treat are cataract, diabetic retinopathy, glaucoma, retinoblastoma, retinopathy of prematurity, strabismus, trachoma, and refractive error.

The program emphasizes diagnosing, treating, or preventing oculoplastic disorders, especially among children, as well as close observation of older patients.

Oculoplastic specialists like Dr. Johnson and pediatric experts like Dr. Frederick commonly come across ptosis; upper eyelid scarring due to trachoma, advanced age, or trauma; blocked tear ducts; periocular fractures due to trauma; and tumors involving the orbit, eye, or tear gland.

FOLLOW-UP

Close monitoring of patients postoperatively is no less important in developing countries. “We don’t just do surgery and leave them stranded,” Dr. Johnson says.

Dr. Frederick endorses Orbis’ regimen for postoperative follow-up in the short term and beyond. “The full-time Orbis staff of five ophthalmologists who travel on the plane as well as the support staff will do follow-up visits in the country 3 or 4 weeks postoperatively, and then again several months after that,” he said. “[We] make certain that there aren’t patients out there [who] have had complications and [ensure that] patients get the care that they need postoperatively. In addition, often, we will return to the countries 1, 2, or 3 years later. We make certain that the skills and techniques that we passed on are being utilized by other ophthalmologists in the country. In other words, our [protégés] become teachers for other physicians in the country.”

First established in 1998, Orbis’ Cyber-Sight telemedical process—the online transmission of photographs along with e-mail or telephone updates on a patient’s postoperative status and prognosis—establishes an extended presence for the volunteer doctors after they return home. A Thai counterpart, for instance, provided invaluable postoperative help for Dr. Sippy’s Chinese patients.

“She was an ophthalmologist trained in Thailand. Instead of going out into practice to actually join ORBIS as a staff doctor for a full year, . . . she returned 2 weeks after we left and then 2 months after we left and was in constant contact by phone and e-mail with the local physicians regarding follow-up. Although it personally isn’t on me to know exactly the outcomes of the patients

I work on while training doctors there, Orbis . . . gives me a safety net of some ethics so that they’re going to make sure that things are done appropriately and are followed up. And, I certainly have access to her, for example, to ask her how it is going. I did reach out to ask her how the [postoperative patients were] looking and was everything as we expected.”

For his part, Dr. Johnson appreciates the long-term benefits of keeping in touch with the local doctors he has trained throughout the years in far-flung places. “A lot of doctors I keep in touch with for years,” Dr. Johnson says. “There’s one woman in Bulgaria who, even now that I haven’t been there for 10 years, sends me cases by the Internet to help her out with. So, that’s enjoyable. I like doing that.”

A REWARDING EXPERIENCE

Orbis’ volunteers have unforgettable experiences that can refresh their entire approach to teaching and clinical practice for years to come.

“I have to think physicians get a little bit blunted or numb to the good that they do,” Dr. Sippy says. “They want to do good, they expect to do good, yet they don’t remember the good things. They remember the bad things, and I think that’s a sad part of the feedback of our profession. So, when you do something that’s an outreach program like this, and you meet a colleague like Tom Johnson who[m] you would have never met in a million years—there is great camaraderie. We’re doing a good thing for the greater good of the world population. I think that shows you your place in the scheme of things—and maybe [makes you think], What are we doing here? It lets you step back and reflect on how important health care is to every individual out there.”

“Participating in international work, whether it’s primary service based where you try to do as much surgery as possible to fill an unmet need or whether it’s teaching based such as Orbis, is well worth the ophthalmologist’s time,” Dr. Frederick says. “It brings you right back to the core reason why we wanted to be doctors when we were little kids. It really often sustains us through the mundane trials of surviving, whether it’s private practice or academic practice, because it’s medicine in its purest state.” ■

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1. World Health Organization. Blindness. www.who.int/topics/blindness/en. Accessed March 15, 2011.