Title: An Experience with Orbis International and the Flying Eye Hospital in Ethiopia

Author names: Jibat Gemida Soboka, Omar Salamanca, Alana Calise
Degrees: JGS:MD. OS:MD, MSc. AC:MPH
Affiliations: JGS: Haramaya University, College of Health and Medical Science, Harar, Ethiopia.
OS: Orbis International New York, USA; Department of Ophthalmology and VISOC research group, Universidad del Valle. Cali COLOMBIA.
AC: Orbis International, New York, USA.

About the author: My name is Jibat Gemida Soboka. A new graduate of Ophthalmology from Addis Ababa University. I received the best resident research abstract of the 6th Congress of College of Ophthalmology for Eastern, Central and Southern Africa. Currently, I am waiting the International Council of Ophthalmology fellowship program.

Acknowledgment: I would like to acknowledge Orbis International and the Senior Consultant Ophthalmologists from Addis Ababa University, Department of Ophthalmology.
Financing: There was no financial support received for preparing this article.
Conflict of interest statement by authors: JGS declares no conflict. OS and AC are Orbis International employees.
Compliance with ethical standards:

Authors Contribution Statement: Conceptualization: JGS, OS. Writing – Original Draft: JGS, OS. Writing – Review & Editing: AC. Visualization: JGS, OS, AC.

Manuscript word count: 1001
Number of Figures and Tables: 5

Personal, Professional, and Institutional Social Network accounts

- **Facebook:** https://www.facebook.com/OrbisInternational/, https://www.facebook.com/jibat.gemida.1/
- **Twitter:** https://twitter.com/@orbisintl
- **LinkedIn:** https://www.linkedin.com/company/orbis-international/mycompany/

Discussion Points:

1. In 2018, Orbis hosted its fifth Flying Eye Hospital training project in Ethiopia.
2. The project aimed to strengthen the capacity of eye care teams including residents and ophthalmologists, by delivering subspecialized eye care services and residency training.

THE EXPERIENCE

Background

Approximately 80% of blindness in Ethiopia is avoidable. According to the only national blindness, low vision and trachoma survey in Ethiopia, over 1.6% of the Ethiopian population is blind, and 3.7% live with low vision. This is higher than the world averages of 1.2% and 3.4%, respectively. The major causes of blindness and visual impairment are preventable or treatable, including cataract and trachoma.[1, 2] Despite the huge burden, human resources available for eye health in Ethiopia are alarmingly low. There are approximately 140 ophthalmologists working to serve the millions of people who are blind and visually impaired, and more ophthalmologists are required to meet urgent eye care needs.[3] The cataract surgical rate in Ethiopia is 500 surgeries per million people, though the expected target is 2,000 surgeries per million.[4] This shows that eye care services need to be increased in Ethiopia to meet the burden of untreated eye disease.

Orbis International in Ethiopia

Orbis is a global nonprofit that has been a pioneer in training eye care teams to prevent and treat blindness for nearly 40 years. Orbis began working in Ethiopia in 1998. Over the past 20 years, Orbis achieved a lot in Ethiopia.[5]: One of the ways in which Orbis delivers training is through its Flying Eye Hospital, a state-of-the-art surgical teaching facility with an operating room, classroom, and recovery room on board an airplane. The Flying Eye Hospital has visited Ethiopia five times, in 2003, 2005, 2006, 2012, and 2018, to provide additional training to address the burden of blindness and reduce the shortage of trained eye care professionals.[6] The Flying Eye Hospital visits provided opportunities for Ethiopian eye care teams to develop their skills.[7]

My Experience

I took part in a three-week Orbis project in Ethiopia from October 1-18, 2018, providing ophthalmic training on the Flying Eye Hospital and at Menelik II Hospital (Menelik II), a teaching hospital in the capital, Addis Ababa. Eye care teams from other teaching hospitals and eye care centers across Ethiopia were trained as well. The project aimed to strengthen the capacity of eye health professionals by delivering subspecialized eye care services and residency training.

Patient Coordination

As a chief resident, a key organizational role I held prior to and during the Flying Eye Hospital project was supporting case communication between Ethiopian ophthalmologists, visiting Orbis Volunteer Faculty (medical experts), and patients. I prepared case summaries and uploaded the data to Orbis's Cybersight telehealth platform, through which Volunteer Faculty could review the cases prior to arrival.[8] Case types included newly diagnosed patients, known patients with complications or previously failed surgeries, and cases of academic importance. Patients were selected for treatment based on factors such as suitability for teaching, having conditions affecting both eyes, blindness risk, age, predicted surgical prognosis, etc. However, treatment plans were discussed for all patients, whether or not they were selected for treatment. After online review by volunteer Faculty, patients were selected for in-person screening, where the Ethiopian ophthalmologists and volunteer Faculty worked together to determine a treatment plan. At the in-person patient screening, I was responsible for organizing the patient log books for the Ethiopian ophthalmologists and provided critical communication to

patients about their treatment plan, logistics, and scheduling. In addition to patient organization, I was involved in a different training each week.

Week One: Glaucoma Simulation

Wet lab training included both lecture and simulated surgical training. As a chief resident, it was a great opportunity to simulate glaucoma surgery on high-fidelity model eyes. The wet lab training focused on trabeculectomy, a surgical technique to treat advanced glaucoma. I was able to practice every step of the surgery on the model eyes (Figure 3). The practice I was able to get using model eyes was less stressful as compared to real-time surgical training. At the end of the project, Orbis donated model eyes and wet lab equipment to Menelik II, so I have been able to continue to practice my surgical skills.

Week Two: Phacoemulsification Simulation

This was my first experience using a virtual reality simulator for phacoemulsification surgery (Figure 4). Using the simulator onboard the Flying Eye Hospital, I was able to receive training and practice the steps required for a successful phacoemulsification case. Live patient surgeries were broadcast from the plane's operating room to its 46-seat classroom. Between simulation cases, I was able to watch live surgical cases, ask questions of the surgeons in real-time, and sit in on lectures. Through the simulation and live surgical case observation, world-renowned ophthalmic surgeons taught me about different surgeries to treat eye diseases.

Week Three: Hands-on Training in Medical Retina

I was able to participate in a hands-on capacity, treating patients. I was exposed to different methods and equipment used to diagnosis retinal disease, including indirect ophthalmoscopy, fundus photography, and Optical Coherence Tomography (OCT). Most patients involved were diabetics with an eye complication called diabetic retinopathy. Diabetic retinopathy is one of the leading causes of blindness worldwide, and it is an emerging cause of blindness in my country.[9] With guidance from volunteer Faculty, I provided pan-retinal photocoagulation laser treatment for patients with diabetic retinopathy for the first time. At the three-month follow-up mark, the patients' diabetic retinopathy was still under control.

Conclusion

The opportunity to engage with and learn from world-class doctors was a great experience for me as a resident in Ethiopia. My experience with the Flying Eye Hospital was multi-faceted and fascinating. Orbis brought state-of-the-art services and education to Ethiopia, and the training was inspiring. I organized, observed, and trained both in simulation and with patients. The training improved my skills to provide quality eye care services in Ethiopia.

Through the Orbis training experience, the proverb "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime!" will be a source of encouragement to serve and improve the future of eye care services in Ethiopia. The training I received will help me treat blindness now and in the future.

FIGURES AND TABLES

Figure 1. The Operating Room on with in the Flying Eye Hospital.

Figure 2. Patient Discharged After Treatment on Board the Flying Eye Hospital.

Figure 3. Simulated Surgery In the Menelik II Wet Lab.

Figure 4. VR Magic Eyes Surgical Simulator.

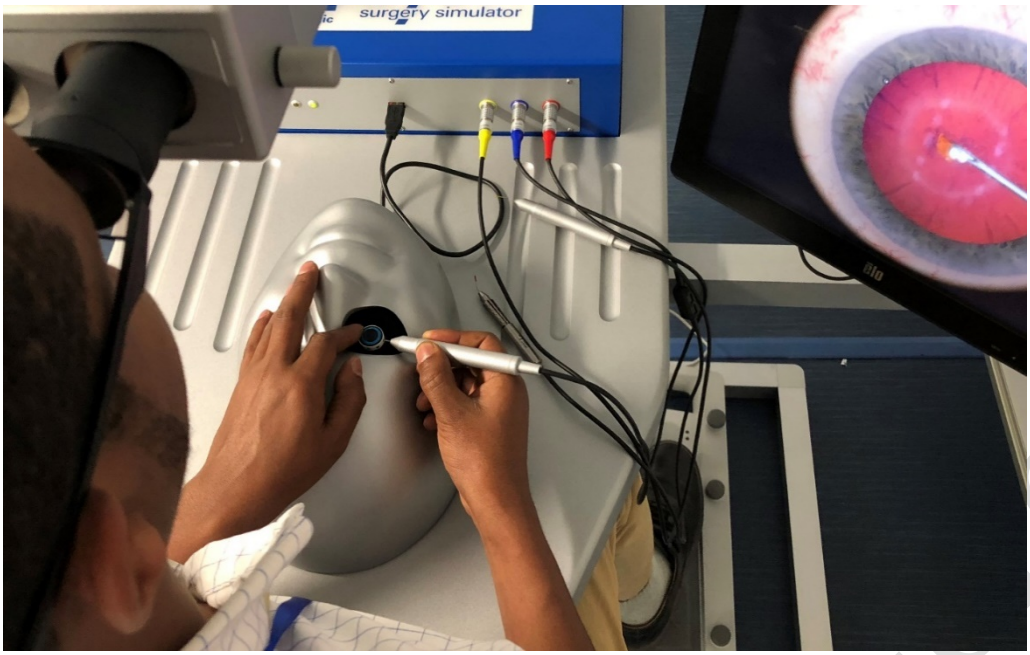

Figure 5. My First Day Training on the Flying Eye Hospital.

REFERENCES.

1. Berhane Y, Worku A, Bejiga AJAAFMoHoE. National survey on blindness, low vision and trachoma in Ethiopia. 2006.
2. Berhane Y, Worku A, Bejiga A, Adamu L, Alemayehu W, Bedri A, et al. Prevalence and causes of blindness and low vision in Ethiopia. 2007; 21(3): 204-10.
3. Kletke SN, Soboka JG, Dimaras H, Sherief ST, Ali AJBme. Development of a pediatric ophthalmology academic partnership between Canada and Ethiopia: a situational analysis. 2020; 20(1): 1-8.
4. Palmer JJ, Chinanayi F, Gilbert A, Pillay D, Fox S, Jaggernath J, et al. Mapping human resources for eye health in 21 countries of sub-Saharan Africa: current progress towards VISION 2020. 2014; 12(1): 44.
5. Internaional O. Our work in africa. 2020, December 18 [cited; Available from: https://www.orbis.org/en/orbis-africa?geographicregion=www.
6. Hospital FE. What we are doing to tckle global blindness. 2020, December 18 [cited; Available from: https://www.orbis.org/en/what-we-do/flying-eye-hospital.
7. Szamocki SJIJoOP. Aboard the Flying Eye Hospital from London to Pampanga. 2014; 5(6): 237-40.
8. cybersightt. We provide online training and mentorship for eye health professionals in developing countries. 2020, December 18.
9. Azeze TK, Sisay MM, Zeleke EGJBrn. Incidence of diabetes retinopathy and determinants of time to diabetes retinopathy among diabetes patients at Tikur Anbessa Hospital, Ethiopia: a retrospective follow up study. 2018; 11(1): 542.