

LEAVING A SUSTAINABLE FOOTPRINT



Steps toward more efficient and effective medical missions.

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In an age of increasing globalization and health care technology, many countries lack the necessary infrastructure to sustain their health care needs. In turn, a large number of volunteer medical mission (MM) trips have arisen to address these needs.

The United States is the largest source of MM volunteers and is responsible for approximately 6,000 MMs to foreign countries annually, with an estimated annual expense of \$250 million to \$3.7 billion.^{1,2} The majority (53%) of the groups active in MMs are nongovernmental organizations (NGOs), but government, educational, for-profit, and faith-based organizations also participate.³ Roughly 10% of US physicians report participating in some form of international mission work; with approximately 19,000 active ophthalmologists in the United States, a significant number of US eye care professionals are helping to address visual impairment on a global scale.^{2,4}

The majority of global vision impairment is avoidable, as interventions exist to prevent eye diseases and to prevent, delay, or reverse vision loss.⁵ Cataract, uncorrected refractive error, and glaucoma are the leading causes of blindness worldwide. Cataract and glaucoma are treatable with surgeries that are regularly performed during MMs, and approximately 28% of the global burden of eye disease is amenable to surgical intervention. This percentage is even greater in the developing world.⁶ Meanwhile, uncorrected refractive errors account for the largest percentage and least-expensive cause of avoidable visual impairment among the

253 million individuals worldwide with moderate to severe visual impairment (217 million) or blindness (36 million) as of 2015.^{7,8} Ophthalmologists participating in MMs primarily target these causes in their efforts to reduce the global ocular disease burden.

AN INEFFICIENT SYSTEM

Unfortunately, the existing system for providing services via MMs is often inefficient and cost prohibitive. Inefficiencies arise from uncoordinated efforts when MM organizations undertake a *do* rather than a *teach* approach, wherein limited integration of local physicians may ultimately lead to the displacement or devaluing of local providers and a system of dependence on foreign interventions rather than local empowerment and sustainability.^{9,10}

In one study designed to provide an objective means of conducting performance evaluations of MMs, the lowest average performance score across the six major factors evaluated was in

education.¹ In addition to concerns that a shortage of teaching contributes to local dependency on external resources, concerns about MMs have been raised regarding:

- Volunteers performing medical procedures without adequate training;
- Inadequate licensing and credentialing of participants;
- Discordance between local needs and visitor offerings;
- Poor relations with local health care systems;
- Inadequate intercultural aptitude of visitors;
- Inequitable use of funding;
- Lack of trained staff for rehabilitation and lack of medication and supplies for ongoing treatment;
- Failure to address potential problems that develop between visits; and
- Scant follow-up care and data.

All of these issues contribute to a lack of MM sustainability.^{1,10,11}

A number of guidelines exist for conducting MMs in a manner that

AT A GLANCE

- ▶ The existing system for providing services via medical missions is often inefficient and cost prohibitive.
- ▶ Limited integration of local physicians into the clinical and surgical care provided may lead to the displacement or devaluing of local providers and a system of dependence on foreign interventions.
- ▶ Revamping the medical mission system could help facilitate on-the-ground, sustainable practices that empower local ophthalmology.

MEDICAL MISSION GUIDELINES



addresses the aforementioned concerns; however, no central monitoring body with the authority to enforce these guidelines exists.^{3,9,10,12} Operating under a general lack of oversight could lead volunteers to celebrate the short-term success of completing a given number of charitable services during an MM while potentially overlooking established scientific methods for tracking and evaluating long-term outcomes, benefits, and shortcomings of interventions.

Currently, there is limited research on MMs, no designated database for collecting and synthesizing results, no objective data on effectiveness, and little information available to guide prospective volunteers or host partners toward quality programs.¹⁰ Additionally, without pooled data on MM expenditures, an accurate calculation of the economic resources expended on MMs is not readily available.^{2,13} In order to foster true sustainability, defined as *a measure of the long-term focus of the mission, including fostering independence through building local capacity*, a cost-effectiveness framework should be applied to MM research.¹

GUIDELINES FOR IMPROVEMENT

Of the wide range of potential guidelines proposed in the literature, a select few recur frequently enough to be considered consensus guidelines that should be incorporated into MMs.

No. 1: Form a collaborative coalition of involved stakeholders. Partnerships enable MMs to conduct informed needs assessments and set development goals based on locally identified priorities. Long-term plans

to address these goals should supplant isolated short-term efforts. MMs should synchronize with local health care institutions and providers, NGOs, community leaders, and other MMs to reduce redundancy and to provide services in the most efficient and sustainable manner.^{9,10,12,14}

No. 2: Provide continuing education for local health care providers. To avoid competing with and potentially displacing local health care providers, MMs should integrate local providers into all aspects of patient care. MMs should work to train local providers to care for their patients without the need for future intervention from outside sources.^{3,9,10,14}

No. 3: Build capacity for local infrastructure to facilitate sustainability and continuity of care. Rather than constructing temporary clinics outside the local health care system or transporting a limited quantity of medications and supplies on each trip, MMs should aim to continuously improve the infrastructure and resources of the host country. This can be accomplished by working at existing (or constructing new) clinics or hospitals, staffed with local health care professionals who can function when MM volunteers are not physically present. Along with training local providers, this approach facilitates adequate follow-up care and reduces dependency on visiting MMs.^{9,10,12,14}

No. 4: Ensure proper training, selection, and supervision of volunteers. Predeparture training should convey the desired outcomes, set standards for participants, and address the repercussions of failing to meet those standards. Volunteers should possess skills that match the identified needs of the

projects being undertaken in the host community. Testing or credentialing may be conducted to ensure that volunteers possess required competencies before the MM. Although opportunities for learning should be encouraged, participants should be allowed to contribute to supervised clinical care only within their scope of training and ability.^{3,9,10,12,14,15}

No. 5: Evaluate program outcomes. Patient information and outcomes should be recorded and tracked in a database to aid in reporting on program effectiveness, identifying program issues, and promoting process improvement. Along with reporting on financial aspects of the mission, organizers should report on the number of patients treated, any necessary follow-up, the cost per beneficiary, the training of local counterparts conducted, and the challenges faced. Additional information can be collected through debriefing sessions held during and after each MM.^{9,10,12,14,15}

No. 6: Conduct frequent ethical review and promote cultural competency. In order to preserve relations with local providers and patients while ensuring that all interventions are conducted with their best interests in mind, cross-cultural communication methods should be implemented. Local laws and practices should be researched before the MM, and efforts should be made to minimize power imbalances and inequities in the context of limited time and resources and cultural and language barriers. One analysis indicated that volunteers' ability to speak the local language explained the greatest amount of variability in predicting



the volunteers' perceived effectiveness. Thus, implementing interpreters or selecting volunteers versed in the host language may ease communication with local health care staff and patients.^{3,9,10,12,14,15}

EXISTING MODELS

Several models that incorporate some of these recommendations and guidelines include the Darwin Eye Project, Orbis International, Lifeline Express China, and ReSurge International.

Darwin Eye Project, organized by the Bascom Palmer Eye Institute, is a vision screening program on Isabela Island. Isabela is the largest of the Galapagos Islands, with about 3,500 residents. However, the island lacks an ophthalmologist, optometrist, and optical shop and has only two general health clinics and no functioning ORs. The Darwin Eye Project works with a local NGO to aid with sustainable follow-up and with the Ecuadorian Society of Ophthalmology for surgical referrals or advanced care not



Dr. Lee and members of the Bascom Palmer Eye Institute's Darwin Eye Project participate in medical missions on Isabela Island in Ecuador.

available on the island. The Darwin Eye Project provides local children and adults access to vision screenings, refractions, eyeglasses, and referrals for more advanced eye care to the Ecuadorian mainland (Editor's note: For more on community vision screenings, visit bit.ly/GTscreening). On previous trips, teams have screened nearly all 300 children on the island for amblyopia and referred those in need of advanced care.¹⁶

Orbis International operates the Flying Eye Hospital, a state-of-the-art teaching facility complete with a classroom, OR, laser suite, and operative holding space on board a functional aircraft. Trainees can observe live surgeries and interact with surgeons from inside the classroom. Orbis also has land-based MMs in local eye hospitals and has implemented Cybersight, a teleconference platform that digitally bridges the gap between volunteer ophthalmologists and trainee ophthalmologists in underserved countries using real-time video, online courses, and an artificial intelligence–equipped consultation service. Orbis reports having trained more than 5,000 professionals in 165 countries with Cybersight, and it facilitated more than 2,100 patient consultations in 2018.¹⁷

Lifeline Express China pioneered the provision of free cataract surgery in rural China using four custom-built trains equipped with an OR and overnight postoperative housing required by the government. Lifeline Express China has provided free cataract surgery to more than 180,000 patients since 1997. In addition to the cataract trains, Lifeline Express China has set up 69 eye centers throughout the country to provide surgical and medical training and has implemented telemedicine-enabled diabetic retinopathy screening centers and mobile vans. At the rural eye centers, credentialed ophthalmologists from around the world provide lectures and training in medical and surgical aspects of ophthalmology, usually in association with ophthalmic trainees.¹⁸

ReSurge International provides reconstructive surgical care and builds surgical capacity in developing countries. With educator trips and ongoing classes for local doctors and nurses, this organization facilitates a transition away from volunteer surgeons performing surgeries. In 2017, ReSurge International trained 858 medical professionals globally, and these developing world partners performed 91% of the 4,101 procedures sponsored by the organization. ReSurge International asserts that teaching local health care providers helps more patients access surgery over time than short-term, fly-in events. The organization also maintains that patients are often more comfortable with local doctors and nurses who can speak their language, understand their values, and provide ongoing care.¹¹

A TIMELY APPROACH

One previously unexplored approach to MMs is our proposed Sustainable Healthcare And Regional Education Through International Medical Excursions (SHARETIME) model. This model is capable of incorporating the aforementioned recommendations and guidelines into a synchronized partnership for efficient international aid.

Currently, MM groups spend much of their time each year fundraising, organizing, and working out the logistics of their annual trips. This is a highly inefficient approach. In the SHARETIME model, a fully functional clinic and surgery center associated with and staffed by local doctors, nurses, and ancillary staff members forms the crux of the mission. MMs reserve and finance blocks of time in these facilities. During a SHARETIME block, the volunteers bring their own staff and any special equipment and supplies. Then, the local facility with its SHARETIME staff helps coordinate core equipment and supplies (ie, phacoemulsification equipment and medications) through contributions from pharmaceutical companies, works with local shipping and customs

agents, and helps manage the logistics of working in a foreign country.

Once the MM staff arrives, they follow a *train the trainer* approach, in which local ophthalmologists participate in surgeries on their own patients in order to learn from the volunteer surgeons. By involving local ophthalmologists and SHARETIME staff in completing pre- and postoperative care and surgical procedures, this model institutionalizes best practices for care and encourages patients and local doctors to adhere to established and standardized protocols. In between reserved clinic and OR blocks, the local SHARETIME staff can screen and prepare patients for the next MM so that, when MM volunteers arrive, they have patients ready for treatment and local eye care providers ready for training. The ultimate goal is to achieve skills transfer from volunteer surgeons to local ophthalmologists so that the local ophthalmologists can go on to support their country's eye care needs on their own terms and in their home working environment.

The SHARETIME model promotes resource utilization, engages health care providers, and improves patient care and outcomes. Reorganizing currently competing practices under a unified mission with shared resources will allow MMs to benefit from economies of scale in procuring supplies and covering overhead costs while supporting the local economy and medical professionals. Studies have shown that self-contained temporary platforms and specialized surgery centers appear to provide more cost-effective care than short-term surgical mission trips. Additionally, it has been shown that small teams of surgeons using local nursing and support staffs have an advantage in cost efficiency per procedure over fully functional traveling teams.^{6,13}

The SHARETIME model exemplifies a framework to provide medical education and training, deliver necessary

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ophthalmic care, enrich the medical volunteerism experience, and develop a sustainable model for other medical specialties to follow.

OBLIGATORY OVERSIGHT

Because a number of the concerns surrounding MMs result from a lack of oversight, enacting a sanctioning body or professional society to coordinate and possibly oversee them may represent a step in the right direction. Formation of a national or international organization specifically focused on MMs, with a dedicated journal and recurring congresses, could serve as a platform for quality enhancement. Effective deployment of online databases could allow the global health community to evaluate the ethics and sustainability of MMs.^{10,14}

The World Health Organization (WHO) has taken steps to address the long-term cost-effectiveness and sustainability of interventions with its project Choosing Interventions that are Cost-Effective (CHOICE). To standardize the process of analysis and reporting for various health intervention trips, WHO has developed three software packages: CostIt, PopMod, and MCLeague.^{19,20} These packages, along with an MM database, could serve as tools for generating an evidence base to measure the impact of ophthalmic MMs. Whether WHO or another body were to serve as the governing agency, there remains a need for broader global standards to increase accountability for all types of participants.⁹ Other potential tracking mechanisms could include a seal or certification of responsibility, direct third-party audit, databases that track reports of harms associated with MMs, and awards to highlight models of responsibility.¹²

CONCLUSION

Revamping the MM system could help facilitate on-the-ground, sustainable practices that simultaneously empower local ophthalmology and

provide much-needed service and training to local eye care professionals in resource-poor countries. Several of the initiatives and approaches highlighted in this article benefit both those who wish to serve and those who want to create a sustainable health care footprint in the developing world. With an ample supply of US eye care professionals willing to devote resources and time to humanitarian efforts, it is vital to provide volunteers with a structure that maximizes the effectiveness of their services and maintains efficiency in resource allocation. Comprehensive global standards for MM work are also needed to ensure that services are beneficial to patients and to the health care systems of recipient countries.⁹ ■

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