IGOT-The Institute for Global Orthopaedics and Traumatology

A Model for Collaboration and Change

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Summary: The global burden of musculoskeletal conditions and injuries is large and escalating, especially in developing countries already struggling with the devastation of poverty, HIV, and shortage of healthcare workers. In order to fill the gap in essential musculoskeletal surgical needs in the developing world, there has been a long tradition of surgeons from the developed world reaching out to provide surgical services and equipment. In recent years, growing interest in creating more sustainable approaches for global orthopaedic surgical intervention has prompted some to revisit this traditional model of intervention and to develop new strategies that focus on creating sustainable change. The Institute for Global Orthopaedics and Traumatology (IGOT) at University of California San Francisco and the San Francisco General Hospital has embarked on an innovative and comprehensive academic approach to addressing global orthopaedic needs. The focus of the organization’s efforts is targeted on the development of a sustainable model to improve musculoskeletal care in the developing world. Academic partnerships are actively being developed to act as the means to build infrastructure, allowing each country to build its own capacity, to address its own problems, and to answer its own clinical and policy questions. To date, partnerships have been established in Nicaragua, Uganda, and South Africa, working toward mutual beneficial goals. Along the way, efforts are being made to monitor the efficacy of each initiative in order to ascertain whether such efforts truly result in sustainable changes in orthopaedic care.

IGOT is headquartered in the Orthopaedic Trauma Institute at San Francisco General Hospital. This institute contains basic science, clinical, and biomechanical research facilities, coupled with fully equipped anatomy laboratories and conference centers. These academic resources facilitate collaboration with a variety of investigators and clinicians to expedite the translation of findings from bench to bedside. IGOT is able to access these resources and to utilize them in collaboration with its overseas partners.

For the foreseeable future, IGOT will focus on creating site-specific approaches to address the pandemic of injuries in the developing world. It will do this by promoting academic, research, and educational initiatives where overseas partners can be found.

Key Words: academic initiatives—developing world—global health—global health initiatives—global health organization—IGOT—international orthopaedic surgery—musculoskeletal care—orthopaedics—orthopaedic surgery—trauma—traumatology.

GLOBAL BURDEN OF MUSCULOSKELETAL DISEASE AND TRAUMA

The global burden of musculoskeletal conditions and injuries is large and escalating, especially in developing countries already struggling with the devastation of poverty, HIV, and shortage of healthcare workers. The landmark “Global Burden of Disease” study put forth estimates that 15% of all ill-health in the world as of 1990 was attributable to injury alone, with a projected increase to nearly 20% by the year 2020.1,2 The follow-up “Global Burden of Disease and Risk Factors” publication in 2006 lends further evidence to this original projected trend, reporting in 2001, that 16% of ill health in the global adult population was accounted for by injury.3 A major contributor to this burden is road traffic injuries.

Estimates hold that 20 to 50 million disabling and injurious road traffic accidents occur annually around the globe, with an overwhelming proportion of these injuries resulting in fractures, requiring orthopaedic management.4–6 Lower and middle income countries suffer a disproportionately large burden of musculoskeletal trauma, resulting in a significant strain at the individual, community, and societal level.7 The 2006 World Health Organization (WHO) publication, “Disease Control Priorities in Developing Countries,” points to the necessary role of surgery in public health, with increasing appreciation of surgery as an instrument of prevention, as well as a cost-effective intervention to mitigate the burden of orthopaedic injuries.8 These are novel suggestions, as surgery historically has not been included in public health and global health intervention models.

TRADITIONAL ROLE OF THE DEVELOPED WORLD SURGEON

There has been a long tradition of surgeons from the developed world reaching out to impoverished developing world countries in an effort to fill the gap in essential musculoskeletal surgical needs. Historically, short-term “mission” trips independent of the existing local systems have embodied the bulk of surgeon involvement from the developed world. Well-organized visits by service-providing non-governmental organizations, with responsible preparation and follow-up, can provide vital contributions to care, and...
can disseminate knowledge regarding rapidly evolving orthopaedic surgical knowledge. When ill contrived, though, these “missions” can have adverse outcomes: they can strap the local system with administrative burdens, leave patients with little support for inevitable postoperative complications, and overwhelm the local clinical support staff with intensive postoperative management. Charitably donated equipment and supplies may be transported from the initially intended public hospital sites to private practices or clinics operating on a fee for service basis. Most importantly, this traditional surgical mission model can generate an environment of dependency on outside visitors that undermine attempts to bring about sustainable improvements in education, administration, and local funding that will reduce the burden of orthopaedic disease.

Spiegel et al describe a scenario whereby in providing temporary short-term free surgical services, the international surgeon unknowingly deprives the local private infrastructure of patients, and essentially forces local practitioners out of business and away from the region. Once the “mission” has been completed, the surgeon leaves, leaving in his wake a health care void that has been effectively created with the further loss of already severely limited numbers of local surgical practitioners. This model of global intervention to improve musculoskeletal surgical care has come under increasing scrutiny in recent decades for its obvious lack of sustainability.

Large and well established non-governmental organizations like Health Volunteers Overseas, with its Orthopaedics Overseas (OO) branch, have long attempted to address this problem by focusing on the teaching and training of local practitioners in a culturally sensitive manner. This model merges the traditional mission-based role with a more sustainable objective. Newly emerging global health organizations are meeting the challenge to produce a sustainable model for improvement of musculoskeletal care in the developing world with unique and creative strategies that will set the standard for others to follow suit. The Institute for Global Orthopaedics and Traumatology (IGOT) is one such organization.

THE INSTITUTE FOR GLOBAL ORTHOPAEDICS AND TRAUMATOLOGY: IGOT

Growing enthusiasm for global health at the University of California San Francisco (UCSF) was the impetus for the 3 founding academic surgeons to form an initiative embedded within the global health commitment of the institution. The concept of creating an organization with a new approach toward addressing orthopaedic global health disparities was embraced by many of the faculty and residents of the Department of Orthopaedic Surgery at UCSF. Hence, in the summer of 2006, IGOT was created as a non-profit organization within the orthopaedic department and medical school.

IGOT occupies a unique position as the first academic orthopedic organization to assume a comprehensive academic approach to addressing global orthopaedic needs. The sole focus is on generating the end goal of “sustainable” musculoskeletal care in the developing world.

Three guiding principles drive the IGOT organizational mission: awareness, advocacy, and activism. What makes IGOT unique in its approach is its focus on the development of transnational academic partnerships to facilitate sustainable change. The first step in achieving this model is developing collegial partnerships that engender a shared awareness focused on the issues particular to each setting. A shared awareness leads to advocacy. Through a shared vision, IGOT workers and their local co-workers develop approaches to achieve the desired objectives. Academic partnerships are designed to act as the means to build infrastructure, allowing each locale to build up its own capacity, to address its own problems and clinical needs, and to answer its own policy questions. Such collaborative efforts frequently are designed to strengthen those institutions that can sustainably build capacity and infrastructure. Rather than focusing on short-term gains brought by efforts aimed purely at providing service, this approach is aimed at permanently reducing underlying inequities in healthcare. Teaching, training, and research arising from new academic and administrative partnerships can provide platform to achieve those changes that will lead to improved orthopaedic care.

An important element that invigorates IGOT lies in the activism of its leadership, which seeks and maintains affiliations with various organizations: the UCSF Global Health Sciences Program and the UCSF Medical School as a whole, the Orthopaedic Trauma Institute (OTI) at San Francisco General Hospital (SFGH), OO, and finally, the WHO, which sets the standard for global health initiatives.

As academic orthopaedic surgeons, the directors of IGOT have extensive clinical and educational experience complemented by a history of involvement in various organizations, such as leadership roles in OO, the orthopaedic division of Operation Rainbow, and Medecins Sans Frontieres. They have served in numerous overseas venues with these organizations. One of the directors helped perform an analysis of cost-effectiveness of surgical interventions and has participated in surgical care work groups as part of WHO, most recently the newly formed “Global Burden of Surgical Disease Group.” The IGOT directors are also closely affiliated with the UCSF Global Health Sciences clinical scholarship program, which includes 1 or 2 orthopaedic residents from each resident class. The program is designed to provide trainees an opportunity to gain expertise in global health issues during their residency training, and to assume a leadership role in similar global health pursuits in their later careers.

IGOT’s home at SFGH is no accident. Since its founding SFGH has served the indigent population of San Francisco, and its physicians have advocated strongly for the care of the vulnerable and disadvantaged within the city. The OTI at SFGH serves as a headquarters for the Orthopaedic Surgery Service and for IGOT. Within one training and research facility, the OTI brings together experts in the basic sciences, biomechanics, and clinical research. The goal of this facility to foster collaboration, enabling a rapid translation of promising musculoskeletal research findings to clinical applications. The anatomy laboratory and the surgical facility within, outfitted with broadband real time video and audio, and could be used to provide interactive teaching modules targeted to orthopaedic surgical applications in resource-deprived settings.

IGOT’s emphasis on the importance of partnerships and synergy has already led to active collaborations with the Surgical Implant Generation Network (SIGN). The SIGN group has focused on the mission of promoting worldwide equality in fracture care. SIGN’s success has derived from providing hardware, on-site education, and yearly conferences to promote a higher standard of fracture care in developing countries. This partnership with SIGN provides mutual benefits: it permits SIGN personnel to make use of the resources and personnel of an academic institution, whereas allowing IGOT participants access to a wealth of clinical information and contacts in global fracture care. Collaborating with innovators like those in the SIGN group allows IGOT to fulfill its mission of decreasing the burden of musculoskeletal disease by aligning itself with
SIGN’s effort to create global equality in fracture care. In 2010, IGOT, in collaboration with SIGN, will conduct an inaugural teaching conference on soft tissue flaps for wound coverage. To overcome the distance and financial barriers facing many surgeons in the developing world, a video conferencing system will be used to broadcast the conference and teaching modules to sites in other countries.

IGOT provides a solid theoretical foundation for healthcare intervention in resource-limited countries. A growing number of inspired orthopaedic residents are partnering with medical students from within and outside of UCSF to increase opportunities and research initiatives abroad. Rapid growth of the organization has occurred due to hard work and passion of these residents and medical students, as well as summer interns from universities across the country. It is hoped that some of these individuals will assume leadership roles in the global orthopaedic community in the future.

EARLY IGOT INITIATIVES

Links with educational institutions and hospitals in Nicaragua, Uganda, and South Africa have been established. Orthopaedic residents, medical students, and faculty sponsored by IGOT have visited and worked at various sites in these countries. Research projects have been initiated to assess the burden of disease, local infrastructure, resources, and educational needs. Building on the academic partnership established with Universidad Nacional Autonoma de Nicaragua in Managua, for eg, a prospective study has been proposed to assess clinical outcomes and system cost comparisons for early versus delayed internal fixation of femoral shaft fractures. In Mthatha, South Africa, UCSF orthopaedic faculty and residents have had a clinical presence since 1999. In 2008, the Chief of Orthopaedic Surgery at the Bedford Orthopaedic Hospital in Mthatha identified the need for better training of medical personnel in district hospitals referring orthopaedic trauma patients to Bedford. Only 2 orthopaedic surgeons, and several medical officers at Bedford, provide orthopaedic care to an indigent population of 3 to 4 million inhabitants of the eastern portion of the Eastern Cape Province. Frequently, care of referred patients is made more complex, time-consuming and complication-prone because of inadequate initial management of their injuries. In collaboration with IGOT, an orthopaedic fracture course was developed; to date the course has been given, which has been administered at 5 district hospitals. To assess the effectiveness of this effort, medical students from UCSF, sponsored and mentored through IGOT, are carrying out an observational research study in the outpatient department at Bedford.

Data have been collected from 2 successive years, to assess changes in the type of referrals being made and the quality of initial fracture management. The overall goal of this collaborative effort is to improve orthopaedic care for the surrounding population and to lessen the trauma burden at Bedford Hospital. If this educational effort proves successful, then funding will be sought from the Eastern Cape Department of Health to expand the teaching program to the remaining district hospitals.

Positive outcomes from this project are visible on more than 1 level. Not only is the project gaining momentum, but the Chief of Orthopaedics at the Bedford hospital is gaining recognition not only as an educator and investigator but also as an advocate for sustainable change in the region. Of interest is the fact that this individual, Dr. David Oloruntoba, was previously trained in the SIGN intramedullary nail fracture fixation system, and gained recognition throughout Sub-Saharan Africa as an instructor in the technique. His partnership with IGOT represents an effective combination of effort, ie, developing the synergy, that lies at the core of the IGOT mission. This year, Dr. Oloruntoba, with IGOT’s support, attended the yearly scientific meeting of the Orthopaedic Trauma Association, and gave a paper addressing the challenges of providing orthopaedic surgical care in the developing countries of Sub-Saharan Africa.

FUTURE DIRECTIONS

Relationships with individuals and institutions in other resource-constrained settings are currently being developed and nurtured with the purpose of identifying problems and issues where collaborative efforts can be initiated. One exciting new project is the establishment of a collaboration with the orthopaedic faculty of the National Military Hospital in Kabul, Afghanistan, where a recent UCSF orthopaedic surgery alumnus served as a military advisor. IGOT’s colleagues in Afghanistan have identified the need for a 2-tiered musculoskeletal curriculum, 1 for orthopaedic surgery residents in training and 1 for medical students. IGOT’s efforts in Afghanistan are responding directly to this need and are being carried out in collaboration with the various local governmental health organizations. Initially, educational material provided by IGOT is focusing on basic orthopaedic instruction, such as a syllabus for medical students and electronic textbooks for residents.

Another area of future effort is the initiation of a biomechanical study of low-cost orthopaedic implants manufactured overseas and targeted at the developing world. Participants from developing countries in the yearly SIGN conference have presented anecdotal reports of catastrophic failure of such implants in the clinical setting. These studies will focus on comparing the metallurgy and mechanical properties of these surgical implants in comparison with US standards. The biomechanics laboratory at the OTI has the personnel and resources to carry out these studies. Funding through academic, governmental, and industrial sources supports a comprehensive research focus on studies of fracture fixation techniques.

Much work remains ahead. IGOT will continue in its comprehensive approach to address the emerging pandemic of injuries in the developing world. To accomplish this, IGOT will increase its global presence by continuing to promote academic, research, and educational initiatives where overseas partners can be found. Along with this comes the crucial responsibility of monitoring of the efficacy of each of these initiatives to ascertain whether such efforts truly result in sustainable changes in orthopaedic care.

REFERENCES