
Part I Surgery and Anaesthesia

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1 Exporting Plastic Surgical Care to Developing Countries

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Editorial comment: This chapter is a thought-provoking essay addressing for whom, why, when, where and how plastic surgical support from the Developed to the Developing World should be organized. It limits itself to a surgical review, but nevertheless raises issues that are pertinent to the whole multidisciplinary team.

INTRODUCTION

The word ‘surgery’ – from the Greek words *cheir*, hand, and *ergon*, work – denotes a branch of medicine that treats disease using the hands. Power is given to those who have the ability to correct deformity and excise disease. For the physician who practices the surgical art, operating is not only the primary therapeutic method, it is also a mindset. This operative inclination and ability have spurred surgeons to go on ‘missions’ to other countries where obvious congenital and acquired deformities often go unoperated. Surgical correction is usually relatively uncomplicated. Groups and individuals travel with different motivations to locales with widely disparate medical capabilities. In this chapter, we evaluate the ‘rules of engagement’ for these humanitarian activities in overseas plastic surgery and discuss the reasons why a single model does not apply in all circumstances.

There are several explanations why congenital and acquired deformities are not treated in resource-poor countries. Economic reasons are foremost, i.e., the lack of financial resources in the country’s public health system and often minimal or no payment to surgeons who treat underprivileged patients (Mulliken, 2004). Technological limitations include a lack of modern surgical equipment and operating facilities. There may be no trained surgeons. There are also cultural reasons such as unequal access to surgical care by fringe or minority groups. Government policies may reinforce the economic and the cultural imbalance within a country or minimize the importance of surgical care versus medical care (Mulliken, 2004). Prioritization of resources varies

from country to country. Repairing congenital anomalies in a small section of the population is often low on the list of priorities. Whatever the cause, or combination of causes, many Developing Countries do not have the resources or infrastructure to provide surgical care for the majority of their population.

A stop-gap solution, which has continued to spark debate, is the exportation of surgical care from Developed to Developing Countries. We discuss the different settings that attract surgical teams, past models of exporting care to Developing Countries, and propose new guidelines for future endeavors abroad. We focus on plastic surgery because it is the area with which we are most familiar. Nevertheless, the problems and principles apply to all surgical specialties, and indeed other professional groups.

THE DESTINATION

Surgeons, in general, and plastic surgeons, in particular, have a long history of traveling abroad to operate on congenital and acquired deformities in patients who have no access to care. Inherent in this process is a transfer of resources – intellectual, technological, financial, material and psychological. As exportation of surgical care has evolved, so too have the various locations that attract these types of visits. Not all ‘missions’ arrive in the same setting and address a single type of problem with the same resource requirements. Thus, it is inappropriate to set up a standard core of guidelines or principles to govern the conduct of all groups in all places. Nonetheless, there are tenets that apply to all such humanitarian efforts.

Some individuals and groups go to remote villages with no access to Developed World medical care. Notwithstanding the multiple medical problems in such places, usually the team’s ability to treat complex or involved surgical conditions is limited. Patients in small towns have access to care by traveling to cities, but usually without the benefit of specialists to treat anomalies like cleft lip/palate. There are cities in Developing Countries where modern but under-staffed, under-supplied hospitals exist. In these urban settings, the public health system is often unable to provide plastic surgical services to the country’s poor.

MODELS OF DELIVERING CARE OVERSEAS

Over the past 30 years, plastic surgical care has been transported from Developed to Developing Countries in many ways. The models span a wide range of preparation, organization and sustainability. At one end of the spectrum is the lone surgeon who travels abroad with donated instruments and supplies, and is self-supported. The surgeon performs operations on the patients he feels qualified to help and in the best operative setting available. In the mid-spectrum are the small surgical groups that try to foster long-term relationships with medical communities abroad and make an effort to return to the same resource-poor locale on a regular basis. Further along

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the spectrum are the highly organized and well-financed philanthropic organizations that sponsor large-scale trips. With increased participation of the local medical and surgical community, their efforts may lead to the development of enduring, home-grown care. Some groups assist well-financed, local hospitals and organizations to improve infrastructure and promote a higher level of health-care delivery. At the far end of the 'missionary' spectrum are the few established organizations whose goals are to build infrastructure, train personnel, and develop a self-supporting care system, which might also include research, training surgeons, and assisting other centers in need of help.

ONE AUTHOR'S EXPERIENCE

One author (ESG) has observed the impact of a medical program in the Caribbean. In 2005, he traveled to rural Haiti to assist the full-time general surgeons at Zanmi Lasante, the Haitian arm of the Boston-based organization, Partners in Health. This organization was founded in the mid-1980s by Dr. Paul Farmer, an infectious disease specialist. His original goal was to treat endemic tuberculosis and HIV infection that were ravaging the Plateau Centrale of Haiti. As the clinic grew in size and resources, surgical care came to be recognized as a necessity.

The surgical program in Cange, where Zanmi Lasante is based, has expanded considerably over the past decade. Large-scale capital investments for two operating rooms, a surgical ward, anesthetic machines, and assorted equipment were given as resources allowed. The present complement of staff surgeons permits the treatment of most urgent and emergent problems. Nonetheless, specialty care, such as plastic surgery, urology, thoracic surgery, neurosurgery, remains beyond the scope of these talented and dedicated surgeons.

Zanmi Lasante has dealt with this deficiency in the usual way. They appealed to foreign groups to donate time and resources for the care of Haitian patients. Plastic surgeons from Miami and neurosurgeons from South Carolina have made several trips. A personal appeal by Dr. Farmer convinced the author to participate. The challenges faced on the Plateau Centrale were typical of many rural hospital settings. Resources were scarce, equipment was of poor quality, and the patients often presented with advanced or complex pathologic conditions. Often there was the temptation to try to do more than was prudent. The importance of responsible patient care in this setting has been underscored in the literature and is addressed elsewhere in this chapter. The major challenge that faces the surgeon after returning home is how the accomplishments during the brief sojourn can be amplified.

Delivery of surgical care in the Developing World ideally requires all the elements with which we, in the Developed World, are familiar. Safe and effective operations require doctors, nurses, ancillary staff, equipment, medications, instruments, information systems and records, and buildings. One way is to establish a large, centrally administered non-governmental organization, such as The Smile Train or Operation Smile. Another is to build a 'grass-roots' organization, obtaining excess inventory

from one's hospital, recruiting volunteers from colleagues, and obtaining donations from sympathetic sources. In our experience, very good intentions are often expressed during the visit without always an understanding of the time commitment required to maintain or build the program in the Developing Country, once back home with all the day-to-day pressures, obligations and interests there. The effort required to establish and support a surgical program from abroad is considerable, and requires vast amounts of discipline and dedication. Surgeons must be disciplined to operate responsibly and within the limitations of training and resources. They must be dedicated to the cause which they have chosen, whatever the constraints of distance and time.

LARGE ORGANIZATIONS

Of the many organizations that export surgical care to Developing Countries, a few have garnered massive logistical support, powerful public relations apparatus, and impressive fund-raising machinery. Moreover, each succession of these large-scale organizations learns from the successes and failures of its predecessors. Three of these organizations are highlighted to illustrate this evolution in exportation of surgical care to Developing Countries: *Interplast*, *Operation Smile* and *The Smile Train*.

INTERPLAST

Interplast (www.interplast.org) was founded in 1969 by Dr. Donald Laub, while he was Chief of Plastic Surgery at Stanford University. According to its mission statement, Interplast's three goals are: (1) to perform reconstructive surgery; (2) to teach local surgeons the skills of reconstruction; (3) to assist local surgeons on the road to independent function. Today, Interplast organizes approximately twenty trips per year to various locations around the world. Each expedition involves a 12–15-person team, including surgeons, anesthesiologists, pediatricians, nurses, technicians, therapists, and coordinators. As part of its goal to educate local doctors, Interplast also sponsors fellowships for foreign surgeons to train at centers of excellence in the United States.

OPERATION SMILE

Operation Smile (www.operationsmile.org) was founded in 1982 by Dr. William Magee, Jr, a plastic surgeon in Norfolk, Virginia, specifically to treat cleft lip and palate. Surgeons operating under the auspices of Operation Smile have cared for over 100,000 children in Developing Countries. Operation Smile also helps surgeons in Developing Countries through in-country fellowships and through sponsorship of plastic and reconstructive surgical training for foreign surgeons in the United States. According to the Operation Smile website, 86% of cash and in-kind donations go directly to patient care.

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In 1999, there was a widely publicized report in the *New York Times* that highlighted the deaths of several children undergoing operations during Operation Smile visits to Developing Countries (Abelson & Rosenthal, 1999). These and other complications led to the criticism that many surgical 'missionary' organizations had inadequate safeguards, poor quality assurance mechanisms, and operational philosophies that emphasized the number of procedures over both safety and quality ('head count'). This negative publicity and the philosophical issues led to changes in Operation Smile's organization. Processes for safer procedures have evolved. Surgery is a discipline, a branch of medicine, not an act. Operation Smile's visits have developed to reflect the increasing importance of teaching the local surgeons advanced techniques in order to lessen the reliance on visiting teams.

THE SMILE TRAIN

The Smile Train (www.thesmiletrain.org) has taken a different tack from Operation Smile. The operational style of The Smile Train emphasizes lean, cost-conscious, and low-overhead procedures; 100% of donations go directly to patient care. The Smile Train began operations in 1999 based on the age-old concept of 'teach a man to fish'. Instead of sending teams of American doctors on overseas visits, The Smile Train manages cleft lip and palate by upgrading local infrastructure. The Smile Train provides free education, equipment and financial support to hospitals, organizations and medical professionals through partnerships, educational, research and training grants. The organization's emphasis on teaching local surgeons how to safely and effectively perform certain procedures is also illustrated by the development of a virtual surgery training CD and the internet-based patient record system, The Smile Train Express (<http://www.smiletrainexpress.org>). All operations supported by The Smile Train are recorded on The Smile Train Express, and the outcomes of cleft lip repair undergo regular quality assurance reviews by a medical advisory board, based on photographs. The first response to surgeons with poor reviews is to provide opportunities for further training and education. Since March 2000, The Smile Train has treated over 230,000 children with cleft lip and palate (website, 28 June 2007).

Recently, The Smile Train has introduced a change of policy by having surgeons visiting the Developing World from the Developed World. In a mass-mailing campaign in early 2007, the organization introduced The Smile Train Medical Exchange Program, the aim of which is to recruit volunteer surgeons to travel abroad to perform cleft lip repair. The proposed benefits of this new program include the ability of the surgeon to choose dates, location, team members, and length of trip. Financial support is included. These volunteers are required to enter patients into The Smile Train patient database and the results of procedures are to be audited in accordance with their standards of care. This departure in approach is notable for its emphasis on facilitating trips by foreign plastic surgeons who may not care for cleft children in their home practice. The application for the new program includes only the most cursory questioning on competence to perform cleft lip/palate repair. The Smile Train was founded, in part, as a reaction to the culture that stressed quantity over

quality in surgery. This new change of approach seems to represent a reversal from other 'mission' styles. While The Smile Train has always had high standards, there is concern that their commitment to the highest quality care will be derailed in favor of sending more surgeons out 'into the field', irrespective of expertise in cleft lip/palate repair.¹

SUMMARY

With each iteration of large-scale charities, the type of care and measure of success has evolved. The goal has changed from that of treating the largest number of patients to training and supporting medical professionals and organizations. Accountability grew from none, to personal recollection, to sporadic records, to web-based, formalized quality review. The ratio of productivity to overhead and number of patients treated has also increased dramatically as these groups have adopted the organizational conduct of well-run companies.²

EVOLVING PRINCIPLES

The evolution of surgical philanthropic efforts has been influenced by several professional organizations. Guidelines on surgical overseas visits are set out by international bodies, such as the Volunteers in Plastic Surgery program (VIPS), The American Cleft Palate-Craniofacial Association (ACPA), and the International Plastic Reconstructive and Aesthetic Society. Supplementary anecdotes and advice on international surgical volunteer visits are published in over 50 journal articles.

Many of the same principles are cited by numerous authors, although their visions of 'missionary' surgery vary widely. Certain principles are universally valid, whether one is a single surgeon traveling with limited provisions to an isolated clinic in the jungle or a multidisciplinary team descending on a large city hospital with crates of supplies. Some of the guidelines governing conduct and goals of surgical philanthropy are broad enough to apply to all the various ways in which specialty care can be exported. For example, the mission statement of VIPS is to serve, train, educate and conduct research in areas of the world where there is need and where surgeons from Developed Countries are invited visitors. VIPS guidelines underscore that the visiting surgeons must work in conjunction with local surgeons and must be formally invited to participate in the care of patients in that locale. These guidelines further state that an operation should be done 'by experts or senior residents or fellows under their supervision' and that the 'team leader should be board certified'. Unfortunately, it is not specified whether or not the 'team leader' practices the specific type of procedures, e.g., repair of the cleft lip/palate, in their home country. VIPS states the 'mission' should not include untried, experimental, or aesthetic surgery. Regulations about appropriate follow-up, team composition requirements (therapists, dentists, orthodontists, etc.) are not included in their guidelines (Volunteers in Plastic Surgery, 2007).

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Natsume (1998) has also suggested broad guidelines. These include a long-term plan for technology transfer, an understanding of local laws, customs, and systems, collaboration with local doctors, and quality assurance for participating doctors. Visits should not be religiously, politically or profit-motivated. Visiting surgeons should act as both teachers and practitioners and should accept responsibility for the convalescence of the patients on whom they operate.

THREE COMMON PRINCIPLES

Three common principles to follow when delivering health care to Developing Countries are:

1. Build and support the local infrastructure.
2. Create long-term, self-sufficient care.
3. Adhere to the highest standards.

BUILD AND SUPPORT THE LOCAL INFRASTRUCTURE

One concept that applies to all locations and varied systems of health-care delivery is the need to support the existing medical infrastructure. This principle requires that the 'mission' has as its basic goal the permanent improvement of the local medical establishment in ways that are not directly dependent on outside assistance. As Abenavoli (2005) clearly stated, organizations that empower the local medical community

are those that integrate with and attach themselves to the domestic socio-medical community, by working together with physicians and paramedics in a personal and collaborative manner to share professional experiences and by donating medical equipment that allow these professionals to become autonomous in their local efforts.

Also commenting on the important role of the local medical community, Robinson (2006) wrote:

If you do not have a support group in that country, then you shouldn't operate there and leave behind any particular problems, unless of course, you are willing to stay there or come back and take care of them. I attest that providing alternative care to the local health system, even in a long-term and comprehensive manner, sets a precedent for reliance on foreign aid and undermines respect for the local infrastructure, akin to medical imperialism.

CREATE LONG-TERM, SELF-SUFFICIENT CARE

A 'mission', whatever its purpose, is a finite endeavor. It has been argued that this is its greatest liability. There seems to be a consensus among the medical community that ceasing to provide necessary medical care, or substituting sub-standard care, is

unacceptable. Mulliken (2004) wrote about surgical trips that focus on cleft lip/palate: 'Usually, there is no continuity of care. These children need help with speech, dental and orthodontic services, and often secondary surgical procedures, and they must be followed until their facial growth is complete.' Echoing this sentiment, Wolfberg (2006) stated, 'Differences in the medical needs of populations, the skills of local health care providers, and the level of international collaboration present a challenge to volunteer organizations, particularly if they send volunteers for short periods.' Indeed, there is general disapproval of 'hit-and-run' care, leaving local surgeons to manage post-operative problems after the foreign team has departed.

There are two responses to the argument that surgical 'missions' must be sustained until local professionals assume responsibility. The standard answer is that given the circumstances of time and place, it is better to do something – anything – than to do nothing. Furthermore, groups whose resources are limited can, in time, change their *modus operandi* to provide more longitudinal care, even if it is delivered sporadically. Indeed, many groups aspire to transition to long-term, locally supplied, self-sufficient surgical care. These surgical 'missions' rely on community participation, such as a physician or local organization, that is dedicated to continuing care in the absence of the overseas visitors. The challenge of this feat is highlighted throughout the literature. Bermudez (2004) underscored that, 'It is not easy to find a well-trained professional who is willing to work for free or almost for free, at home, weekly, and who is committed to an excellent result.' In Zbar *et al.*'s (2000) model for cleft lip/palate repair in developing nations, the 'independence' phase, in which host health-care providers maintain the site during the absence of the guest team, may represent the greatest hurdle to true independence. Indeed, recruiting local participation is the greatest challenge, i.e., to overcome to provide sustainability in communities with an underdeveloped medical infrastructure.

Since brief visits have a limited, and oftentimes negligible effect, 'missions' designed on this model of export need to carefully evaluate the medical environment into which they go. There are some settings where, on balance, there will be a net benefit from a short visit, but there are many more in which this model is unacceptable.

ADHERE TO THE HIGHEST STANDARDS

It is no surprise that quality is the major component of optimal standards of international surgical care. Theories of social justice and human rights justifiably criticize many international surgical trips for practicing new operative techniques and training inexperienced medical professionals on resource-poor communities overseas (Ward & James, 1990).

Ideally, surgical teams should follow the highest medical standards to 'guarantee that the quality of the treatment and the safety standards [are] as high as in any other surgical unit in countries with better resources' (Ward & James, 1990). Zbar *et al.* (2000) suggested anything less is 'perhaps irresponsible, or, at best, purely an aesthetic rather than a fundamental undertaking'.

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Dupuis (2004) wrote:

There cannot be, for volunteer plastic surgeons, two standards of care: one for their cosmetic surgery patients at home, and another one, a sort of 'good enough is better than nothing' approach, for foreign humanitarian missions because there is little risk of malpractice action. There is only one standard of care, and that is one provided by surgeons qualified in that type of surgery, and it has to be met by all surgeons participating in humanitarian missions.

Linda D'Antonio, a speech pathologist at Loma Linda University who spends much of her professional life teaching abroad, echoed this sentiment:

Few efforts have included attention to associated rehabilitation areas such as otologic care and speech treatment. Most of us reading these comments would not think of providing such uni-dimensional services for our cleft patients at home. Why are we allowing ourselves to accept this level of care abroad? (D'Antonio, 1990)

Aspects of high quality care for cleft lip/palate that are largely uncontested include: (1) comprehensive and multidisciplinary treatment; (2) experienced health-care providers. The attempt should be made to establish centers that resemble as closely as possible those in the Developed World. At these centers, longitudinal, multidisciplinary care of the child is the goal. For the surgeon in the Developing World context, this should be the goal as well. A plastic surgeon should perform abroad only procedures performed regularly at home (Dupuis, 2004). Availability of resources, determination, and good fortune will help to determine how successful he/she will be in this endeavor. Adhering to the highest standards of treatment ensures that surgical visits avoid focusing on the number of operations completed. As Fisher states: 'A team that sets out to teach will certainly put a lower emphasis on turning out large numbers of operations' (Fisher, 1990: 16).

One of the pitfalls of this long-standing debate on quality of care is that it does not take into consideration variations in medical landscape. For those who choose to go to the most remote places to treat patients with the least access to medical facilities, the standard of care will be unlikely to be equal to that delivered at home. Before embarking on such a venture, the team leader must be certain that the differential is as small as possible and that the benefits of delivering care at a lower level truly outweigh the risks. Ideally, surgical skill and knowledge should be the same. The differences are access to supplies, physical plant, absent multidisciplinary team and nature of the disorders one hopes to correct. It is a Panglossian surgeon who thinks that it is possible, necessary, or desirable that all surgical 'missions' be held to the standards that exist in the Developed World.

Optimizing standards of care will reinforce the others. Co-ordination with the local community to build and support local infrastructure improves treatment and minimizes many issues of cultural sensitivity. As Zbar *et al.* (2000) wrote, 'Guaranteeing patient safety, preserving indigenous culture, and teaching local surgeons the multidisciplinary approach to cleft care are key goals.' Moreover, targeting the local infrastructure is more conducive to permanence and self-sufficiency. Establishing

sustainable, locally delivered care helps to address the problem of follow-up and improves treatment overall. Finally, adhering to the highest possible standards depends on building a stable infrastructure in the local community.

CHALLENGING THE PRINCIPLES

There is a debate as to whether a high quality of treatment can be achieved through a top-down approach or a bottom-up approach. A decision must be made whether one is committed to replicating, as closely as possible, care that is delivered at the highest levels in Developed Countries (top-down approach) or whether one will try to do one's best with the available resources (bottom-up approach). As a profession, we have an obligation to continuously strive to find the most effective ways to improve delivery of care, regardless of the environment, situation, or setting. If we are successful, the point where the top-down curve and the bottom-up curve meet will continue to approximate, indicating ever-improving standards of care, independent of the availability of resources. It is unlikely that it is efficient for an individual, relatively inexperienced, plastic surgeon to organize, fund, and manage small expeditions to hospitals visited once or infrequently. Nevertheless, for the time being, in certain settings, this may be the only or best available option. Our responsibility is to provide better choices.

In an ideal world, only surgeons with 'acceptable' levels of training would be allowed to participate in the care of children in Developing Countries; however, sometimes, this is simply not possible. There are many parts of the world where strict adherence to this standard would lead to high morbidity and mortality. The experience of the Italian group Comitato Collaborazione Medica (CCM) highlighted this problem in general and obstetrical surgery. They have been acting in concert with the UN over many years to perform and teach surgical procedures to individuals in the Sudan, where few doctors live and large portions of the population have limited or no access to adequate care. Instead of waiting in vain for experts to arrive, they have chosen to teach basic surgical skills to paramedical personnel. The results are not the same as if a Caesarean section or a hernia repair were performed by master surgeons but they are good enough to save lives (Meo *et al.*, 2006).

In the most remote, poorest parts of the African continent, timely access to expert physicians and surgeons is unrealistic. CCM's solution was to train people to do the basic minimum to save lives in a variety of circumstances. The standard of care is clearly different from that in the Developed World. CCM's argument is that the ethical and surgical standards of the Developed World should be modified in situations like this. What is the cost-benefit ratio? Can the operations be done safely? What are the minimum standards of care for different operations and how can they be modified under different situations? Should care in Los Angeles and Lesotho be governed by identical standards? If not, how and how much should they be modified?

The debate within the plastic surgical community revolves around a single ideological difference. Is it better to do what one can with existing resources, i.e., to repair x

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number of children, or is it more important to build the closest possible approximation of the care that exists in Developed Countries? Certainly, the health-care infrastructure in most Developing Countries makes the achievement of the latter goal unlikely, at least through the work of individuals or foundations. Equally certain is the fact that submitting to the do-what-we-can mentality can be suboptimal, dangerous, and irresponsible. An alternative is a case-by-case analysis of the needs and resources of a given setting overlaid on a group of principles to govern surgical work abroad.

The most advanced and well-established cleft centers in the Developed World have an experienced and interdisciplinary team of professionals working towards the single goal of habilitation of the child born with cleft lip/palate. These teams include plastic surgeons, anesthesiologists, audiologists, otorhinolaryngologists, dentists, orthodontists, speech and language therapists, and nurses. The timing of surgical repair and subsequent interventions is closely choreographed and audited. The families of these children are motivated, responsible, and reachable by phone, email and regular mail (Bearn *et al.*, 2001). In contrast, the care of children with cleft lip/palate in most of the Developing World lacks most of these elements. 'Missions' have, for decades, filled only part of the surgical void, and only periodically. How closely must a 'mission' approximate the best available care for a given condition? What are the minimal elements for appropriate intervention?

A SURGEON FOR ALL SEASONS AND PLACES

There is a relationship between the various settings where surgeons go and various modes of exporting surgical care. One could imagine starting at one end of the spectrum and positing that any surgeon, or health-care worker, could close a cleft lip, even though the result was both functionally and cosmetically poor ('something or anything is better than nothing'). Most plastic surgeons would deem this unacceptable. Nonetheless, the argument could be made that there are some places and some people for whom such a substandard result would be preferable to the alternative of living with an unoperated lip (see Chapter 13, Bradbury and Habel). The next best option might be to have the repair performed by a junior or senior resident who plans to focus a career on cleft care. One might enlist the assistance of surgeons who might never do cleft repairs in their practice but are competent plastic surgeons willing to volunteer to perform this operation in Developing Countries. It is possible to imagine places and patients who would accept this sub-optimal care rather than have no care at all. A higher standard would be to send an active cleft surgeon whose weekly practice closely approximates the caseload in the Developing Country. This experienced surgeon would help a local surgeon who has specialized in cleft lip/nasal deformities and cleft palate repair. The ultimate goal would be a multidisciplinary center staffed by local experts where the personnel closely resemble those found in the finest cleft centers. Certainly, this would be the preferred choice of all patients and families anywhere in the world. Our goal, as a profession, should be to allocate resources to this end.

In an attempt to address current shortcomings, many groups now place greater emphasis on teaching, adhere to higher standards for visiting surgeons, and are more selective in choosing their destinations than they were a decade ago. There is another possible prescription for a surgeon wishing to contribute to care of underprivileged children in the Developing World. Mulliken's advice is to become an expert in one's own country, 'refining the craft of labiopalatal repair, writing, [and] teaching', rather than traveling. If a surgeon wishes to travel abroad, the preferred strategy is to pick one country, one hospital, one local health-care system to assist until the local physicians are sufficiently able to perform the operations themselves. Another alternative is to send a local surgeon who is passionate about cleft care in his or her own country to learn by observing a master-surgeon in a Developed Country. In this way, one-to-one training between the surgeon and the pupil is delivered. This results in a lifetime relationship, sustained by exchanges of ideas, questions, techniques, and principles. Such a post-graduate interaction can now also be continued via the internet, including the exchange of digital images. Cases can be discussed both pre- and post-operatively between surgeons in Developed and Developing Countries.

FROM DEPENDENCE TO INDEPENDENCE

Rather than simply outlining costs and benefits of different styles and philosophies, some authors offer algorithms for establishing cleft centers in the Developing World. The tripartite plan put forward by Zbar and colleagues (2000) consists of observation, integration, and independence. These phases coincide with many of the principles and suggestions discussed previously. The goal of their algorithm is the progression of both the visiting team and the local doctors from phase I (observation) to phase III (independence).

In his discussion of the Zbar plan, Laub (2000) suggests that fourth and fifth phases are possible. The fourth phase entails the evolution of the newly independent local physicians into visiting surgeons in a less developed location. The student becomes the teacher. Phase V involves the continual improvement and refinement of surgical skills by the local team, up to and including the development of new techniques and, ultimately, perhaps even the elucidation of new operative principles. The goal is to develop a major center in that country for treating the particular deformity or disease, equal to the best the Developed World offers.

A UNIQUE EXAMPLE OF A SURGICAL MISSION – DR. SAMUEL NOORDHOFF AND CHANG GUNG MEMORIAL HOSPITAL

In 1958, Dr. Samuel Noordhoff completed his training in plastic surgery under Dr. Ralph Blocksma at the Butterworth Hospital in Grand Rapids, Michigan, USA. Dr. Noordhoff became aware of the need for a plastic surgeon at the MacKay Hospital in Taipei, and moved to Taiwan with his family. He learned the Taiwanese language and not only worked as a plastic surgeon, he became an administrator. Over the next

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15 years, he established centers for polio patients, children with cleft lip/palate, burn victims, and suicide prevention. He also started the MacKay Nursing School. In 1976, he became the Chief of Plastic Surgery at the new Chang Gung Memorial Hospital. Dr. Noordhoff had a vision and a simple plan: he recruited the brightest young Taiwanese surgeons and sent them abroad to Europe, North America, and Australia for specialized training. Then they returned to Taiwan. Noordhoff also found time to focus on perfecting his own techniques for repairing cleft lip/palate. Today, Chang Gung Memorial Hospital is one of the most modern and largest medical centers in the world (4,000 beds and over 100 operating rooms). Dr. Noordhoff's protégés are leaders in the fields of cleft lip/palate, craniofacial, and microsurgery. They are not simply busy practitioners, they are academic surgeons involved in clinical and basic science research who write and publish in prestigious English-language journals. Plastic surgeons from Chang Gung travel around the globe to share their knowledge and skill with Developing Countries, while Chang Gung has become a mecca for young plastic surgeons.

THE NEXT LEVEL OF SURGICAL VISITS

We propose that the next step in exporting surgical care overseas should not focus on direct patient therapy. The purpose of international volunteer surgical visits should be the development of the medical infrastructure. Of all the aspects of building a sustainable medical infrastructure in the Developing World, the most important is training local medical professionals. Following the training of local medical professionals, the next responsibility is the efficient, cost-effective provision of surgical equipment, such as sutures and operating room facilities.

Most medical and philanthropic communities now largely agree that educating local medical professionals is the critical next level. Dupuis (2004) argued that 'twenty operations performed perfectly for the purpose of teaching are better than 100 amateurish ones performed by volunteer plastic surgeons'. As long as local, trainable physicians are available, the value of an educational 'mission' far outweighs the value of a purely procedure-oriented surgical mission.

Recognition that education is essential to building or supporting local infrastructure resounds in the medical literature: 'If you give a man a fish, he feeds his family. If you give him a fishing pole and teach him to fish, he feeds his family for a lifetime.' Nevertheless, as D'Antonio (1990) states:

In practice, this goal is often relegated to a lower priority than a more tangible, measurable goal, such as the number of patients seen or the number of cases managed. This is understandable in that such data is concrete and can be quantified, which is valuable for accountability and fund-raising issues. Obviously, it is more difficult to deal with ambiguous and amorphous goals such as 'empowering local people' or 'training.' Nevertheless, there should be an increased emphasis on training local health care providers and community leaders in ways and means that they can help to improve the quality of health care for people whether we ever return again or not.

Besides the benefit of creating sustainable surgical care, training medical personnel will generate positive public relations for surgical 'missions' that are often criticized for over-emphasizing numbers of operations per trip.

CONCLUSION

In his article, Dupuis (2004) quoted the Chinese proverb, 'It is better to light a candle than curse the darkness.' It is laudable to care about people in parts of the world where there is little or no access to surgical care. On a fundamental level, it is important to feel connected to others. It is a privilege to care for others, especially, perhaps, those whom we do not know, will never see again, and from whom we will not receive payment.

Even when the highest standards are followed, problems endemic to the surgical and the popular culture contribute to suboptimal interactions between visitors and hosts. Many plastic surgeons in Developing Countries cite the lack of compensation as a factor in their choice not to perform cleft lip/palate repairs. Frequently, however, the host surgeon seems more interested in the latest cosmetic techniques than in learning how to better repair a cleft lip. On the part of the patients, there is often the perception that even when an established cleft team exists in a Developing Country, visiting surgeons from abroad are somehow better. This effect not only is counterproductive to the efforts of the local surgeons but often inaccurate as well.

Plastic surgeons have a long history of traveling to Developing Countries to operate on patients in need. They have journeyed as individuals and groups, as small and large organizations, and as sectarian and non-sectarian 'missions'. Some of these individuals and groups have become well known through the media, while others remain largely anonymous. The highest standards should govern these surgical 'missionaries'. The teams should be interdisciplinary. All participants must clearly and rationally evaluate the specific requirements of local milieu and the capabilities of both the regional professionals and infrastructure. Each team must have a clear sense of its own core capabilities and resist temptation to stray from its goals. Each 'mission' must be tailored to fit the particular location. Equipment should be of the highest possible quality, procedures planned with the utmost care and performed by the most skilled practitioners available. 'Missionary' surgery should not be a publicity-generating event or a way to assuage some more or less recognized guilt. As a profession, we must continue to work towards the far end of the spectrum where all patients receive the best possible surgical care, ideally by their fellow countrymen.

NOTES

1. Editorial note: The Smile Train was invited to contribute a chapter to this volume but declined.
2. The editors also draw the reader's attention to the issue of payment to surgeons by these large organizations for undertaking cleft lip and palate repair. This runs

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the risk of distorting the local surgical environment and rewarding individuals not genuinely interested in these anomalies.

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