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Expanding on the Surgical Mission

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As an Orthopaedic Surgeon who has lived and worked full-time on mission in sub-Sahara Africa for years, I read the article by Lezak et al “The Development of a Surgical Mission in the Peruvian Amazon” with great interest. I applaud the authors and their organization for the efforts they have done to advance orthopaedic care in a remote region of Peru. Their dedication and investment in helping an impoverished area of the world should inspire us all to such endeavors. I wish not to diminish their accomplishments, but thought it reasonable to discuss some points of their article and mission that may be constructive to other readers.

Modern medical missions has a long and storied history, dating back to the explorer and physician, David Livingstone, who was inspired by his faith to bring medical care to remote areas of Africa in the 1800’s. Since then, medical missions has evolved to global health, with continual improvements (hopefully) and strategies to ameliorate disease in the developing world. The Peru mission of Cole and associates has focused their strategy on providing orthopaedic care that would otherwise not be available to the local people, much like Dr. Livingstone did. Although this provides immediate benefits to the recipients of their orthopaedic care, the long-term impact on the local healthcare system from this approach can be limited.

As noted by the WHO’s 2014 aptly titled report, “The universal truth: No health without a workforce,” (1) developing an increased workforce is critical to alleviating the healthcare shortage in low- and middle-income countries (LMIC). If we as surgeons, want to maximize our impact on the orthopaedic needs in LMIC, then it is critical that we focus the mission on educating the local surgeons rather than our case volume. During the 15 years that they have been doing the trips to Peru, it is possible that several local residents could have been educated and are now not only doing the same surgeries, but also training more residents to do the same. In my study of an orthopaedic surgery program started in Kenya (2), we have been able to graduate 9 orthopaedic surgery residents after ten years. All of the graduates are still in Africa, and most are in teaching positions.

Although every mission cannot start their own orthopaedic residency program, it is frequently possible to

develop a site for rotation of current local residents. The key is to be intentional with education, and to have regular, consistent coverage of the site with well-trained orthopaedic staff. In addition, other healthcare workers require adequate training, including nurses, OR techs, physical therapists, anesthesia providers, etc. As the authors point out, a lack of education leads to increased stress and risks in the perioperative arena. Thus, there should be a concerted effort to educate the staff, develop protocols, and thus alleviate some of these tensions. It appears that the authors agree with this premise, as they note, a transition "from a relief organization to one that promotes development … is essential." However, there was no significant discussion on this essential component of the mission, and thus, this is raised for discussion here.

The authors discuss in depth their calculations of the monetary value of their program. However, this detracts from the work they have done, and may dissuade others from pursuing the development of a mission based upon the extent of the required funding. Even the authors note that the funding is difficult. In addition, valuations using US metrics is not applicable in LMIC, as the costs there are significantly less.

The authors discuss hospital politics but do not mention the impact they may have on the local surgeons' practices in the region. It is critical to ensure that the mission is not "stealing" paying patients from surgeons who rely on them for their practice and livelihood. Most physicians would not be fond of having someone with their skills providing the same services for free, and watching their potential patients go to them. Also, are the hospitals reimbursed for their costs in providing anesthesia, operating rooms, supplies, and staff? Any sustainable program needs to take into account how to maintain the baseline operating costs of the hospital whenever a team visits.

Government issues are also a major point of concern for many mission trips, and the impact varies greatly from country to country. More and more countries are requiring exorbitant duty fees on any medical supplies, including those carried legally in luggage. As noted by the authors, these fees and administrative costs need to be accounted for in order to maintain a completely legal program. Also, there are WHO restrictions on bringing medications and supplies that are within 6 months of the expiration date into LMIC. Care must be made to ensure following national and international standards. Medical licensing must also be closely adhered to, in order to meet the requirements of the government. We would never accept non-licensed physicians to practice in our hospitals, and thus, the same should be expected abroad.

Any article offering a blueprint for medical missions must include a discussion on safe surgery. There is a tendency to consider "cutting corners" in austere environments due to limited resources. However, we must always demand a level of expertise that includes only doing safe surgery, including our anesthesia providers. For if we don't require it, who will?

Finally, we must always allow the host's needs be the priority. Although we often believe we know what is best for our hosts, our opinions must be subservient to the host's desires. How do we know what they need? The best, and most accurate method is to ask the hosts. As the authors point out, the best work is accomplished when we co-labor with our hosts.

Despite the points brought up in this commentary, I again do not want to detract on what has been accomplished by the Coles. My hope, as I believe is the Coles', is that others will be inspired to join or start medical mission programs in LMIC. I agree with the authors that the need for increased surgical skills will only continue to increase, thus the need for the development of cost-effective programs to increase the surgical capacity in LMIC.

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Article Author Response

2 March 2020

Article Author(s) to Letter Writer(s)

Dear Dr. Gokcen

Thank you for your thoughtful comments, and for your amazing work in Africa. I sincerely enjoy knowing that there are likeminded colleagues in the profession. I agree with everything you say, and perhaps the right messages weren't illuminated given the scope and purpose of this investigative report. I do appreciate all the perspective you have provided which I hope will compliment the article for others to read.

Respectfully,

Peter Cole

Article Author Response

10 March 2020

Article Author(s) to Letter Writer(s)

Peter A. Cole Jr., MHA

03/03/2020

Letter to the Editor:

We appreciate Dr. Gokcen's thoughtful comments and congratulate him on his impressive history of service in Africa. We are encouraged to hear from likeminded colleagues in the profession whose critical interest only increases the level of rigor for which our organizational standards are challenged, and as a result, elevated. It is clear that there is mounting interest amongst the orthopaedic community on this topic, as evidenced by the interest that we have received in response to this article.

The primary motive of our paper was to detail the vision, history, implementation, and challenges in the development of an orthopaedic surgical mission in a majority world nation. This, we hope, could help provide a blueprint for future providers to take on similar endeavors in LMIC settings. To our readers' points, this project did not go into depth about many important considerations, such as limitations of the short term medical trip model, methodologies of creating self-sustainable development, and if/how we intend to address upstream determinants of local healthcare. Each of these points are significant discussion topics for SATC leadership, which has constructed a 10 year roadmap in hopes of bearing more fruit in these areas for years to come.

The authors wish to address what we see as the four main points raised: 1) Limitations of the short term model 2) Discussion of financial costs for implementation 3) Impact of free medical care on local surgeon practices 4) Encouraging highest standard of care.

Limitations of the short-term trip model

We commend the work of organizations such as CURE, who has graduated orthopaedic surgery residents who now hold local teaching positions. This is a feat that SATC hopes would one day manifest through years of local investment. We must emphasize that SATC is representative of an organization in its infancy (<15 years) seeking to build medical infrastructure from the ground up while identifying key leaders in the local community alongside whom we can partner. Being well aware of shortfalls that are too typical in the short-term trip methodology—namely, difficulty tracking outcomes, inadequate follow up, and perpetual medical dependency—SATC has been intentional to build and hire around these concerns and turn them into areas of strength.

Though we do not argue that the short term model substitutes for the work of full time training organizations, we do believe that the short term methodology can be an effective platform for many skilled surgeons who are interested in helping in underprivileged geographical contexts. SATC agrees that surgical education, local research and leadership, and knowledge exchange are essential to creating a sustainable short term program. A few examples of SATC training and local investment are provided as follows:

Past Investments in Medical Education:

- SATC sponsored local up-and-coming surgeons for a two-month observership rotation in the United States under the Regions Hospital orthopaedic trauma program.
- Each trip, SATC surgeons representing different orthopaedic subspecialties operate with local surgeons, noted practice adoption, and discuss cases.
- SATC has run and hosted an orthopaedic trauma conference in Pucallpa with many lectures and 50 attendees from the region.
- SATC has sponsored a local surgeon to attend the SIGN Nail conference in the United States and subsequently trained Peruvian trauma surgeons on the SIGN Nail System.
- SATC has brought experts in physical therapy and prosthetics and orthotics to train our employed local medical professional on knowledge and techniques.

Past Investments in Healthcare Infrastructure:

- Besides the medical equipment that SATC donates to the local hospital on an as-needed basis, SATC has donated an entire medical container full of hospital supplies, beds, and imaging technology for the local hospital.

- SATC brought SIGN Nail to Pucallpa and started a SIGN Nail program with a local surgeon.
- SATC built local campus with clinic and supplies from which local personnel can work.
- SATC has employed three local employees, including a local medical professional to run outcomes program and follow up with SATC patients to document key metrics and provide physical therapy and orthotics and prosthetics assistance as needed.
- SATC has worked with a software development company to develop an electronic medical record customized for outcomes tracking in the local orthopaedic environment. This EMR is shared amongst SATC team members, hospital personnel, and local medical professional.

Discussion of financial costs for implementation

It is important to delineate the medical value that SATC and its campaigns provide. Having a firm understanding of implementation and maintenance costs helps inform prospective decision makers who are interested in building a similar model. Given that it is not always easy to account for downstream costs in a prefeasibility analysis, we believe that reporting SATC costs helps potential stakeholders consider expenses in advance rather than spending valuable time and money pursuing a project that turns out to be outside of their means.

Similarly, we believe that in order to demonstrate the impact of a medical mission to the donor bases that sustain it, it is important to develop methodologies that capture its value. Certainly, in order to fully appreciate the value of medical mission work, one must understand that the metrics will pale in comparison to the intrinsic value of lives changed, relationships developed, and patients returned to livelihood. However, just as in any other venture, one must have an understanding of the value proposition in order to justify running a program relying upon budgetary commitments. This philosophy is consistent with the current healthcare landscape which pushes for value-based outcomes tracking.

Impact of SATC medical care on local surgeon practices

We recognize that there exists a delicate line between doing best by the patient’s regard and being sensitive not to disrupt the practices of local surgeons. For this reason, SATC has made it a point to work alongside the needs of host providers rather than simply ‘relieve then leave.’ In keeping with the aforementioned examples of how SATC has worked diligently to train medical staff, we believe that SATC is expanding the practices of the providers which we work alongside by extending their surgical capacity.

Worth considering is the typical path of an SATC patient. Oftentimes, local hospitals providing initial

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treatment for injured patients are not equipped with the funding, resources or expertise necessary to treat severe injuries. In these cases, high complexity trauma patients presenting with critical morbidities are then responsible for purchasing the drugs and implants necessary for surgical fixation prior to surgery. The condition of the patient, coupled with the costs of anesthesia and medical implants, often makes treatment unattainable. For these reason, many SATC patients report that SATC was their final option to receive healthcare.

The nature of the SATC patient pathology also indicates that SATC is a safety net for patients who would not otherwise receive care. Based on the lion's share of SATC patients who present with neglected injury, late stage congenital foot problems, mal-union, non-union, hunting-trap wounds, infection, and complex trauma, we are able to deduct that a large percentage of our patients had no other option in the local healthcare system. Though SATC is continuing to learn how to optimize local development of surgical care, we do not believe that SATC has a negative impact on other surgical practices.

Upholding the highest standard of care

Dr. Gokcen makes mention of many good points related to providing the highest quality of care for SATC patients. Since SATC has demonstrated excellent quality of care in a past article (1), the authors did not go into detail about SATC quality standards. SATC adheres to the ethical framework defined in Pean et. al. (2), which emphasizes the importance of infrastructural support, surgical education, and empowerment of local health-care providers as the primary focuses for any global orthopaedic surgery initiative.

Conclusion

In 2019, SATC extended its vision statement to include:

Scalpel At The Cross is a Christian, Orthopaedic, Patient Care, MISSION which:

- Blends Peruvian and American volunteers, our staff and medical professionals, for the care of musculoskeletal conditions.
- Serves the physical and spiritual needs of Pucallpan Peruvians, tribal populations, and the missionaries who serve them.
- Integrates educational exchange to catalyze knowledge and understanding of orthopedics and rehabilitation.
- Tracks patient outcome for accountability to the highest standard of care.
- Seeks opportunities to spawn Peruvian development in the industry of medicine and growth

of the Church.

- Desires a spiritual cascade through the lives of American volunteers with impact to the communities in which they live.

We believe these amendments are in the same spirit of Dr. Gokcen's thoughtful commentary and will propel the mission to greater heights in quality care, educational exchange, and outcomes tracking.

References

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