

An International Volunteer Program for General Surgery Residents at Brown Medical School: The Tenwek Hospital Africa Experience

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Surgical training programs provide the structure for young physicians to become thoughtful, responsible, and aware attending surgeons; aware not only of the latest operative techniques and equipment, but also of the profound societal responsibility that comes with surgical training. For many years, opportunities have existed for general surgery residents to participate in medical volunteer work in America and abroad. In the past, complaints of time constraints, cost, lack of volunteer site supervision, concerns for resident safety, and institutional resident coverage issues were cited as barriers to such participation. Now, there is a growing call for surgical residents to volunteer in developing communities, not only because it benefits the community, but also because it enriches the residents' learning experience.^{1,2}

The Brown Medical School Department of Surgery has offered the Africa/Tenwek Hospital surgical elective to one or two third-year residents annually for the past 8 years, with 13 total resident participants. The option of participating in the Tenwek rotation is presented to second-year categorical residents, with detailed information about the rotation available. Generally, three or four of the five residents express an interest in the rotation. Those not desiring to participate usually cite personal or family issues as the reason for not wanting to spend time in Africa. The final decision on selection of two residents is left to the discretion of the residency program director. Resident travel and living expenses are covered by the interest earned on a \$100,000 trust fund established by the Brown Medical School Department of Surgery at the inception of the Tenwek Hospital rotation. While at Tenwek Hospital, the res-

idents are integral members of the hospital community and interact with the Kenyan staff in all areas of patient care.

Established in 1935, Tenwek Hospital is a 300-bed, church-affiliated, mission hospital in Bomet, Kenya. The hospital provides primary health care for a population of approximately 750,000 people, but functions as a tertiary referral center for a much larger population in southwestern Kenya. Additionally, Tenwek serves as a teaching facility for Kenyan medical students, interns, and residents. Before enrolling in the Tenwek Hospital rotation, Brown Medical School surgery residents are given a thorough orientation of day-to-day life at Tenwek Hospital, and they understand that they will function alongside their Kenyan counterparts. The surgical amenities include five major and four minor operating rooms, a dedicated recovery room, an intensive care unit, and a video endoscopy suite.

Brown residents are directly supervised by one of three full-time board certified general surgeons. One of these surgeons (RW) developed and coordinates the rotation and also carries an appointment as a clinical associate professor of surgery at Brown Medical School. The residents work with a wide variety of visiting surgeons from Kenya and abroad and are exposed to a broad range of general surgery and surgical subspecialty patients. Past residents have been involved in large and small bowel resections, thyroidectomies, esophagectomies, gastrectomies, peptic ulcer disease management, hernia repairs, appendectomies, hepatobiliary operations, limb amputations, parasitic disease management, burn operations, laparoscopic operations, and endoscopic procedures. Because the general surgery department is also responsible for all surgical subspecialties, residents also take care of thoracic, trauma, obstetric, gynecologic, urologic, pediatric surgery, plastic surgery, otolaryngology, orthopaedic, and neurosurgical patients. During a typical 4-week rotation, a resident will perform, under supervision, approximately 75 to 100 major operations and 40 to 50 endoscopic procedures.

METHODS

During a 1-month period in 2006, comprehensive questionnaires were distributed to the 11 past program participants (participants), all of the current general surgery res-

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idents (residents) at Brown Medical School's Department of Surgery, and to the entire surgical faculty (faculty) affiliated with the residency program. Questionnaires were similar, but not identical, for each group interviewed and covered the topics of past volunteer experiences, desire to participate in future volunteer experiences including the Tenwek rotation, and perception of clinical skill improvement among past participants of the Tenwek elective.

Residents, participants, and faculty were asked to rank statements about the Tenwek/Africa rotation on a Likert scale of 1 (disagree completely), 2 (disagree somewhat), 3 (neutral), 4 (agree somewhat), and 5 (agree completely). For analysis, the results of "agree somewhat" and "agree completely" were combined to create a single value of "agreement." Likewise, "disagree somewhat" and "disagree completely" were combined to create a single value of "disagreement." Descriptive statistics were used to summarize questionnaire results.

RESULTS

Nine of the 11 total participating residents (82%), 45 of the 47 general surgery residents (96%), and 38 of the 50 faculty surgeons at Rhode Island Hospital and all other Brown Medical School affiliated hospitals (76%) completed questionnaires. Seventy-six percent of residents were interested in international volunteerism before residency, compared with 89% of participants. But only 16% of residents and 22% of participants had any previous similar volunteer experiences. Sixty-two percent of participants believed that the Tenwek rotation was a major factor in choosing the Brown surgery residency, and 45% of residents had similar feelings. Eighty-five percent of residents stated that they would like to participate in the rotation if given the opportunity.

More than half (57%) of participants said that they would have found another way to volunteer internationally if the Tenwek rotation was not offered during their residency. No participant regretted going to Tenwek, and all of the participants believed that their level of training and supervision was adequate and appropriate. All of the participants thought that they were more likely to participate in volunteer opportunities in the future both in America and abroad, and all believed that this experience made them more cost aware, improved their physical examination and decision-making skills, and overall, made them better doctors. In general, the majority of residents and faculty agreed with this assessment (Table 1). All participants said that they would recommend this experience to other residents and that they would return to Tenwek if given the opportunity. Only one participant felt that personal safety was ever in jeopardy at any time during the

Table 1. Perceived Improvement in Various Qualities after Experience

Qualities	Residents, %	Participants, %	Faculty, %
Decision making	51	100	61
Physical examination skills	34	100	51
Cost effectiveness	46	100	53

Percentages were calculated by dividing the number of those responding "agree strongly" (5), or "agree somewhat" (4), by the total number of respondents. It should be noted that the majority of those not indicating an answer of 4 or 5 gave a response of "neither agree nor disagree" (3), generally for the reason that the respondent did not have sufficient contact with the participant to evaluate. So in any given category, a maximum of 5% of residents actually disagreed that the participants had improved in the particular quality, and a maximum of 10% of faculty members disagreed.

rotation. No participants thought that the faith-based, religious nature of Tenwek Hospital negatively affected their learning experience.

A majority of faculty (74%) polled said that they would volunteer at Tenwek Hospital if given the chance. Although 97% of faculty agreed that this was a valuable experience for surgical residents, only 45% of this same group of faculty members said that the residents should be allowed to participate even if it created resident coverage issues at the home institution in the United States. Ninety-seven percent of faculty also believed that the presence of a board certified general surgeon with a Brown Medical School faculty appointment who supervised was a key element to the success of this program. Eighty-nine percent of faculty believed that participants returning from Africa exhibited greater surgical competency.

DISCUSSION

Despite active promotion of international volunteerism by the American College of Surgeons, few general surgery residency programs offer international electives to their residents.³ Because the Brown Medical School/Tenwek Hospital program is one model of a successful international experience offered yearly through the residency program, we decided to evaluate our program to see why and how it works so well. Perhaps publication of this experience can encourage other surgical training programs to consider offering similar experiences for their residents.

Based on our questionnaire, most surgical residents and faculty members want to volunteer in some capacity. Despite this interest in volunteerism, most residents do not find practical opportunities to be involved. The majority of participants in the Tenwek Hospital rotation (78%) had not been part of an international volunteer experience previously, and likely, most of them would not have found another international volunteer opportunity during their

residency. With the tight scheduling and coverage crunches of most surgical residencies, especially in the 80-hour work week era, there are few open blocks, if any, for surgical residents to explore volunteer options on their own. If we, as surgical educators, are serious about the value of volunteerism efforts within our profession, it is incumbent upon us to provide the option of some practical experience during residency training. Additionally, availability of a special international volunteer program acts as a significant incentive for many residents to join the Brown Medical School Department of Surgery (45% of general residents and 62% of past participants). Because many surgical residency programs find difficulty in filling all of their positions, this is not an observation to be taken lightly.

The Tenwek Hospital rotation is seen as a valuable experience by nearly all (97%) of the faculty. But less than half of them (45%) would be willing to have one less resident on their surgical service for the month-long Africa rotation. This situation can be addressed by stressing the value of an international rotation for the resident's educational experience. In this way, the volunteer rotation is seen as an integral piece of the larger residency training rather than an extracurricular activity. In addition, creative alternatives for resident coverage such as night-float systems or differentiating teaching and nonteaching services, may help allay faculty concerns. Of the 13 residents who have participated in the Tenwek rotation, one resident was involved in a nonclinical, research year after his second year of residency. This did help alleviate the coverage issues at the US institution and may well be a practice to be encouraged in the future.

All participants and the majority of faculty (89%) thought that this experience made the participants better, more competent doctors. Although it is difficult to clearly identify improvement in specific skill sets, there was general agreement among participants and faculty that the experience in Africa improves overall competency. This is a general theme for international volunteer experiences as returning residents feel more confident and experienced.¹⁻⁶

Common criticisms of international volunteer programs, such as lack of supervision and appropriate preparedness of the participating residents, were not observed in survey responses. This underscores the sentiment expressed by an overwhelming majority (97%) of the faculty: that the presence of a supervising attending surgeon at the volunteer facility was an important aspect of this program. In fact, it became clear from reviewing survey responses that a large part of this program's success stems from the feeling among faculty and participants that it is a supervised, safe, and educational experience.

Although it was not designed for this purpose, this survey also highlighted the fact that many of the faculty members are interested in volunteering at Tenwek Hospital. In the past few years, several members of the Brown Medical School Department of Surgery faculty have volunteered at Tenwek, and discussion is underway to make this option available for more faculty volunteers. Providing additional faculty involvement may strengthen this particular program and provide an important avenue for altruistic efforts among the faculty.⁷

It is important to strive to achieve a rotation experience that is beneficial to both the visiting American resident and the African interns and residents in training. One must assure an adequate clinical load to provide a positive educational experience for all parties. To date, the interaction has generally been appreciated by all groups. Visiting residents have taken active teaching roles in clinical and conference settings. At the same time, American residents have clearly learned from their African colleagues, often gleaned information about diseases they would rarely see in the US. It is also important to bear in mind that the visiting American resident is placed in a foreign cultural situation. It is imperative that issues such as culturally acceptable or unacceptable behavior be discussed with the elective coordinator before beginning the elective. To date, the Brown residents have been uniformly appreciated by the staff and patients of Tenwek Hospital. When residents are aware that the "standard operating procedures" may be quite different in an African setting, the interaction between residents and patients, nurses, and hospital staff can be gratifying for all parties.

Possible barriers to such programs in the past can be divided into several categories. "Coverage issues" must be addressed. This will require planning and communication between program directors and faculty to develop schedules that allow for mid-level residents to commit to rotations away from their US-based facilities. It is our experience that residents in their middle years are able to offer significant help to the visiting institution while receiving significant educational benefit. In addition, surgical residency requirements generally do not allow senior level residents to be away from their primary teaching hospitals. In order for such a program to work, everyone involved must be flexible in arranging resident schedules and focusing learning opportunities.

Many volunteer efforts are faith-based or religious in nature, as is the case at Tenwek Hospital. This issue must be addressed carefully so that visiting residents and faculty do not feel pressure to subscribe to particular beliefs, and the hosting institution can comfortably maintain its religious nature. In this particular case, Tenwek Hospital is a Protes-

tant, Christian mission hospital; visiting residents from Brown Medical School have been from a wide variety of religious backgrounds. This has required honest dialogue to “agree to disagree” in certain areas while working together on the common ground of treating very needy patients.

Finally, the issue of case recording and Residency Review Committee (RRC) recognition will need to be addressed. Currently, operative cases performed by visiting residents cannot be officially counted for credit with the RRC, despite the fact that residents are directly supervised by board certified surgeons. For Brown University’s surgical residents, this does not present any real hindrance because most will complete residency with more cases than are required for graduation. But it appears to send a message that the experience at Tenwek Hospital is less than acceptable for RRC educational standards. We believe that programs like the Tenwek Hospital rotation should be recognized by the RRC as valuable educational experiences and residents should be allowed to submit their operative case work for consideration.

In conclusion, many surgical residents are interested in participating in international volunteer efforts during their training, but currently there are few opportunities. There appears to be a tangible improvement in the resident’s ability perceived by both residents and faculty on completion

of the Tenwek Africa rotation. The Brown Medical School/Tenwek Hospital rotation works well, but requires permanent surgical faculty in Africa. Other surgical training programs are encouraged to examine variations on this model to develop viable opportunities for surgical residents to participate in international volunteer efforts.

REFERENCES

1. Jacobs MJ, Young SC, Mittal VK. Benefits of surgical experience in a third-world country during residency. *Curr Surg* 2002;59:330–332.
2. Ozgediz D, Roayaie K, Debas H, et al. Surgery in developing countries: essential training in residency. *Arch Surg* 2005;140:795–800.
3. Ozgediz D, Roayie K, Wang J. Surgery and global health: the perspective of UCSF residents on training, research, and service. *Bull Am Coll Surg* 2006;91:26–35.
4. Cobey JC. Physicians and surgeons volunteering in developing countries: a personal perspective. *Clin Orthop Relat Res* 2002;396:65–72.
5. Thompson MJ, Huntington MK, Hunt DD, et al. Educational effects of international health electives on U.S. and Canadian medical students and residents: a literature review. *Acad Med* 2003;78:342–347.
6. Karamichalis JM, Moller MG. Surgery residents and volunteerism. *Bull Am Coll Surg* 2005;90:23–26.
7. Mitka M. Volunteering overseas gives physicians a measure of adventure and altruism. *JAMA* 2005;294:671–672.