

## Evaluating international global health collaborations: Perspectives from surgery and anesthesia trainees in Uganda

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**Background.** The number of international academic partnerships and global health programs is expanding rapidly worldwide. Although the benefits of such programs to visiting international partners have been well documented, the perceived impacts on host institutions in resource-limited settings have not been assessed adequately. We sought to describe the perspectives of postgraduate, Ugandan trainees toward international collaborations and to discuss how these perceptions can be used to increase the positive impact of international collaborations for the host institution.

**Methods.** We conducted a descriptive, cross-sectional survey among anesthesia and surgery trainees at Makerere College of Health Sciences (Kampala, Uganda) using a pretested, self-administered questionnaire. Data were summarized as means or medians where applicable; otherwise, descriptive statistical analyses were performed.

**Results.** Of 43 eligible trainees, 77% completed the questionnaire. The majority (75%) agreed that visiting groups improve their training, mostly through skills workshops and specialist camps. A substantial portion of trainees reported that international groups had a neutral or negative impact on patient care (40%). Only 15% agreed that research projects conducted by international groups are in priority areas for Uganda. Among those surveyed, 28% reported participation in these projects, but none has published as a coauthor. Nearly one-third of trainees (31%) reported discomfort with the ethics of some clinical decisions made by visiting faculty.

**Conclusion.** The current perspective from the surgery and anesthesia trainees of Makerere College of Health Sciences demonstrates rich ground for leveraging international collaborations to improve training, primarily through skills workshops, specialist camps, and more visiting faculty involvement. This survey also identified potential challenges in collaborative research and ethical dilemmas that warrant further examination. (*Surgery* 2014;155:585-92.)

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IN RECENT YEARS, the number of international academic global health programs has increased dramatically. In Kampala, Uganda Makerere University College of Health Sciences (MakCHS) and its affiliated teaching hospital, Mulago Hospital, are the sites of numerous longstanding international health

collaborations and the host to a multitude of international medical trainees, faculty, and global health groups each year.

In the Departments of Surgery and Anesthesia at MakCHS, at least 17 collaborations with visiting international groups exist.<sup>1</sup> In addition to the numerous faculty and trainees visiting MakCHS or Mulago under the auspices of these formal collaborations, many more visit independently each year. As such, MakCHS/Mulago staff and trainees work regularly with international visitors in a variety of settings.

In resource-constrained countries such as Uganda, there is dire need for strategies to address

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the critical shortage of health care workers and the growing burden of disease, including operative diseases.<sup>2</sup> Advocacy to increase medical training has led to expansion of existing programs and creation of new efforts in Uganda, including many focused on surgery and anesthesia.<sup>3-10</sup> However, many of the training programs have significant skills, knowledge, and technical gaps that could potentially be addressed through collaboration with international partner institutions.<sup>11-14</sup>

The scope of international collaborations includes trainee and faculty exchanges, skills workshops, lectures, conferences, mentorship, research training, collaborative research, specialized program funding and development, scholarships, clinical service, education, and equipment or supply donation programs.<sup>14</sup> Although historically, more British and European groups have been involved in Uganda, in the last decade, more North American groups have also become involved.

Although the benefits, both educational and personal, of such programs to visiting trainees and faculty have been well documented through satisfaction surveys, publications, grants, and career development assessments, the tangible benefits to host institutions in resource-limited settings have not been well evaluated or reported.<sup>15-18</sup> Moreover there is growing concern that some collaborations may be initiated by the resource-rich partner to primarily serve their own objectives rather than those of the host institution.<sup>19,20</sup> Recent work has highlighted the strategic importance of trainees and their perspectives in operative collaborations<sup>21</sup> and in planning for operative training elsewhere in the region.<sup>22</sup> Evaluating the impact of international academic global health projects on host institutions is critically needed for both international and locally driven capacity building initiatives. We therefore sought to capture the perspectives of Ugandan surgical and anesthesia trainees with regard to the perceived benefits and shortcomings of international collaborations. To our knowledge, no previous authors have specifically assessed the perspectives of local trainees toward international, visiting collaborators in a resource-constrained environment.

## **METHODOLOGY**

In 2011, the Departments of Surgery and Anesthesia at Makerere University designed a survey for Masters in Medicine (ie, MMed) trainees to be used for program assessment and planning. The anesthesia and operative training programs at MakCHS have been described previously.<sup>23</sup>

Following ethical approval from the MakCHS School of Medicine Institutional Review Board, this descriptive, cross-sectional survey was conducted among postgraduate trainees in anesthesia and surgery at MakCHS in September 2012.

Content validity of the survey was established through the use of expert panel reviews and focus groups. Residency class leaders and a sample of Ugandan and international operative and anesthesia faculty were polled for relevant topics in areas, including international collaborations, research experiences, and perceived quality of training. In addition, a recent survey of American residency programs was reviewed with specific areas adapted to the Ugandan context.<sup>24</sup> After initial pilot testing with a sample of MakCHS trainees, surveys were refined by clarifying wording and re-piloting. All second- and third-year trainees were invited by their respective department chairs to participate in the voluntary survey. First-year trainees were not asked to participate given their limited clinical exposure at the time of study. Once informed consent was obtained, the survey was administered in hard copy by the departmental offices.

For the purpose of the survey, skills transfer workshops were defined as specialized training sessions whereby specific skills and competencies are taught through didactics and hands-on practice using simulated clinical scenarios. Examples of workshops include essential surgical skills, trauma management, hand surgery, and flap construction courses. Specialist camps are defined as dedicated, hands-on sessions lasting days to weeks, where specialists instruct trainees on particular clinical skills using patients in the clinical setting. Examples of specialist camp focus areas include laparoscopy, cardiac surgery, urology, pediatric surgery, and specialized anesthesia (eg, pediatric, cardiac, and obstetric anesthesia). This article defines international collaborations as short or long-term relationships between MakCHS or Mulago Hospital and at least one institution or organization of individuals from outside of Uganda that may focus on public health-oriented missions.

**Data management and analysis.** Survey data were manually entered (in duplication) and validated using EpiDataEntry 3.1 (The EpiData Association, Odense, Denmark, 2008). Data analysis was performed with Epidata Analysis Software (The EpiData Association). Continuous data were summarized as means or medians where applicable; otherwise, descriptive statistical analyses were undertaken.

**Table I.** Demographics of Masters in Medicine survey respondents

Variables	Number	Percentage
Department		
Surgery	20	61
Anesthesia	13	39
Age, mean years (SD)	31 (3)	
Female	9	29
Marital status		
Married	16	48
Single	17	52
Number of dependents (mode)	2	
Funding source, <i>n</i> = 32		
Self	6	19
International scholarship*	11	34
Domestic scholarship†	15	47
Scholarship coverage		
Tuition	26	100
Living expenses	12	46
Research fees	9	35

\*International scholarships include any tuition funding source listed by respondents that was provided by a non-Ugandan entity.

†Domestic scholarship sources include any funding source from within Uganda (eg, Ministry of Health, local charity organizations, former employer).

## RESULTS

Of the 43 eligible surgery and anesthesia trainees at MakCHS, 33 (77%) completed the questionnaire (20 surgical trainees and 13 anesthesia trainees). The age range of respondents was 25–37 years, with a mean of 31 years (Table I). The majority of the respondents were male (71%), and 48% were married. The modal number of dependents was two. The majority of survey respondents (81%) reported receiving a scholarship, and of these scholarships, 42% were provided by international sources. All scholarships reported covered tuition fees, with 46% also covering living expenses and 35% also covering research fees. Approximately two-thirds of the trainees (67%) were housed through hospital-provided accommodations.

When surveyed on the utility of various functions of visiting international collaborations (Skills workshops, specialist camps, access to educational resources, scholarships, or additional support on the ward), survey respondents ranked skills transfer workshops and specialist camps as the most useful (Table II).

When asked, 31% of respondents reported discomfort with the ethics of some clinical decisions made by visiting faculty and trainees (Table III). A similar number (30%) reported discomfort with the ethics of some clinical decisions made by local faculty. Overall, 78% of respondents reported

that visiting faculty improves their training experience, and 63% reported that their training experience is improved by visiting trainees. The majority of trainees (75%) agree that international/visiting groups to Mulago Hospital/MakCHS improve the quality of their training. A substantial portion of trainees reported that international groups had a neutral or negative impact on patient care (40%).

Among those surveyed, 22 % agreed that donated equipment is provided with adequate training, and half of the respondents reported that donated equipment is not readily available to trainees. Approximately one-third (35%) of respondents agreed that research projects undertaken by visiting, international groups are done with an appropriate level of Ugandan input and collaboration, and 15% agree that research projects done by international groups are in the highest priority areas for Uganda. A substantial proportion of those surveyed (28%) reported participation in collaborative research with international groups, yet none reported publishing a paper as a co-author.

## DISCUSSION

Numerous studies have consistently found “positive impacts” on visiting, international participants in global health experiences, although the benefits for trainees and faculty at host institutions in resource-constrained environments have not adequately been examined.<sup>16</sup> To our knowledge, no previous authors have formally assessed perspectives of local trainees in a resource-limited environment toward international collaborations, leaving a critical gap in the literature on effective models for global health collaborations.

Through the use of a cross-sectional survey, we assessed MakCHS postgraduate operative and anesthesia trainee perceptions and experiences working with international collaborating groups. The results are discussed by survey subsection (to follow) before final conclusions are made.

**Perceptions of visiting faculty and trainees.** The majority of trainees surveyed reported that visiting collaborators improve their training experience, although respondents reported this to be the case more often for visiting faculty than visiting trainees (78% vs 63%). This finding was expected as visiting faculty, by virtue of their seniority, will potentially have more knowledge to impart. Furthermore, visiting faculty usually conduct the skills workshops and specialists camps, which the MakCHS trainees ranked as the most useful functions of international collaborations.

**Table II.** Ranking of usefulness of various activities of visiting faculty, trainees, and groups

Activity	Rank*					Number of responses	Median	IQR
	1	2	3	4	5			
Specialist camps	7	12	1	7	1	28	2	3
Skills workshops	15	5	5	1	1	29	1	2
Scholarships	11	1	5	5	6	28	3	3
Increased access to educational resources	1	8	7	6	5	27	3	2
Additional Support on wards and operating rooms	2	0	7	5	14	28	4	2

\*Respondents were instructed to rank each activity, with "1" being the "most useful" and "5" as "least useful."  
IQR, interquartile range.

**Table III.** Responses on international collaborations

	Strongly Disagree, n (%)	Disagree, n (%)	Neutral, n (%)	Agree, n (%)	Strongly agree, n (%)
I am uncomfortable with the ethics of some clinical decisions made by visiting faculty and trainees.	10 (31)	5 (16)	7 (22)	10 (31)	0
I have received adequate training in ethics	3 (9)	6 (19)	9 (28)	5 (16)	9 (28)
I am uncomfortable with the ethics of some clinical decisions made by faculty (local).	4 (12)	10 (30)	9 (27)	10 (30)	0
Visiting trainees overall improve my training experience.	2 (6)	1 (3)	9 (28)	13 (41)	7 (22)
Visiting faculty overall improve my training experience.	0	2 (6)	5 (16)	16 (50)	9 (28)
Equipment donated to the hospital is routinely available to me while working.	4 (12)	7 (22)	5 (16)	12 (38)	4 (12)
Donated equipment comes with adequate user training and support services.	6 (18)	5 (16)	14 (44)	6 (19)	1 (3)
Research projects undertaken by visiting/international groups are in the greatest priority areas for Uganda.	5 (16)	3 (9)	19 (60)	3 (9)	2 (6)
Research projects undertaken by visiting/international groups are done with appropriate level of Ugandan input and collaboration.	3 (9)	2 (6)	16 (50)	10 (32)	1 (3)
I feel international/visiting groups to Mulago improve my learning/training.	1 (3)	3 (9)	4 (13)	16 (50)	8 (25)
I feel international/visiting groups to Mulago improve quality of patient care.	4 (13)	3 (9)	6 (18)	14 (44)	5 (16)
I have participated in collaborative research with a visiting/international group.	No 23 (72)	Yes 9 (28)			
I have published as a coauthor through research with a visiting/international group.	32 (100)	0			

This finding highlights the importance of active faculty participation in the growing number of international medical initiatives that seek to provide maximal benefits to host institutions.<sup>15,17,18,25-27</sup> Given the challenge of securing protected time for faculty wishing to pursue academic global health endeavors, the results presented here should be used to urge academic institutions to pay closer attention to the needs of partnering institutions and do more to provide faculty, not just trainees, with support to participate in international medical collaborations.

Models to support visiting faculty have been recently described but need further exploration.<sup>28</sup>

The sustainability and impact of a recent initiative funded by the *US Agency for International Development* to support postgraduate training in Rwanda may provide useful evidence in this regard.<sup>22</sup>

Trainees ranked skills transfer workshops and specialist camps as the most useful programs involving visiting faculty and trainees. Although this information may be useful to visiting groups looking to prioritize activities, it is important to note that impact evaluations of these workshops and assessments of skills transfers that occur are lacking. Several studies have attempted to measure the capacity of local teams to treat surgical conditions independently, without outside support,

whereas others have measured effectiveness of courses by assessing fund of knowledge or confidence of local trainees to perform procedures.<sup>29-32</sup> As collaborations grow and the number of skills transfer and educational workshops increase, more attention must be given to the evaluation of such programs.

Previous work has highlighted the ethical challenges of short-term medical missions in resource-constrained environments<sup>33,34</sup> and warned of the unintended negative consequences of humanitarian surgical programs.<sup>35</sup> This study is the first we know of to attempt to examine the ethics of practices by international global health collaborations as perceived by host trainees. In this study we found that 31% of respondents reported discomfort with the ethics of some clinical decisions made by visiting faculty and trainees. Interestingly, 30% of trainees surveyed also reported discomfort with the ethics of some clinical decisions made by host institution faculty. Although space was provided for further comments, respondents did not elaborate on the issue of ethics. Of note, only 44% of survey respondents reported feeling they had received adequate ethics training during their education. MakCHS and other local universities teach Medical Ethics and Professionalism courses at undergraduate level but no similar courses were being offered at Masters level by the time of conducting this survey. The present survey asked only a few questions related to ethics, as its design was intended to provide a preliminary examination of multiple topics that could potentially warrant more in-depth exploration. The results obtained here are significant and provide ground for much needed additional investigation including review of ethics training available for both local and visiting faculty and trainees.

**Research.** One of the primary activities of international collaborations is collaborative research.<sup>14,16</sup> Only the minority of trainees surveyed felt that research by international collaborators was being conducted in local priority areas or with adequate Ugandan participation. These findings may reflect unilateral planning of projects and pursuit of studies dictated by international calls for funding, rather than collaborative study design. Although we report that 28% of the trainees have participated in collaborative research, we do not characterize this participation and thus cannot make definitive conclusions as to why no one has published a paper as a result of such efforts.

Nonetheless, this finding adds to previous suggestions that international collaborative

research may not always address local health needs<sup>19,20</sup> and also echoes the calls by many for greater attention to local authorship and joint priority setting in collaborative global health research.<sup>36</sup>

In Uganda as in other British-derived education systems, it is mandatory for postgraduate trainees to write a dissertation based on original research. Given the challenges of funding, implementation, dissemination of findings and lack of mentorship for these projects, postgraduate research efforts present a rich ground for international collaboration.

As most scholarships do not cover research support, financing of collaborative research could be an area to engage international collaborators. One recent initiative offered research stipends and joint mentorship as part of a research competition to stimulate collaborative public health research.<sup>37</sup>

Previous work has identified similar challenges in collaborative research, with a number of "pitfalls" cited in collaborative global research.<sup>19,20,36,38</sup> Most of this work has focused on collaborations in infectious disease research. Our survey indicates that some of these issues exist among surgery and anesthesia initiatives in Uganda and suggests that partners should be mindful of joint priority-setting, with local leadership and local ownership of research.

**Equipment and supplies.** Equipment and supplies donations have been a significant component of international partnerships that aim to support surgery and anesthesia training and services in Uganda. In this survey, we assess trainee experiences working with donated equipment, which comprises a significant proportion of the operating theatre supplies. Only a minority (22 %) of those surveyed felt they had received adequate training for operating donated equipment. Also, just half of the trainees reported that donated equipment was readily available to them while working.

The onus is upon the local institution as well as collaborating partners to co-develop systems to facilitate appropriate equipment donation, ongoing support, access and technical training. Donation of any equipment should be accompanied by an evaluation of the local capacity to operate such equipment as emphasized by prior work in this area.<sup>39</sup> Some groups have made a focus on biomedical support training, which may have a more sustainable local impact.

Nonetheless, directed equipment donation, especially to assist in providing trainees with access to skills development that they would not otherwise have, may fill a temporary need until the local system can provide the infrastructure to train in

these areas. Finally, when training of the local staff is to be conducted, the postgraduate trainees should also be involved as they are future users of such donated equipment.

**Sponsorship.** The majority (81%) of trainees are supported through scholarships, 42% of which come from international collaborating partners. Despite high use, scholarships ranked only third when we assessed for the most useful functions of international collaborations, behind skills workshops and specialists camps. Financial sponsorship may have ranked lower than hypothesized because scholarships are relatively more abundant than other activities surveyed. This finding is in stark contrast to the recent past when scholarships in surgery and anesthesia were relatively few as compared to other medical fields. Lack of scholarships was previously identified as a significant barrier for medical students considering a career in surgery or anesthesia.<sup>11</sup> In response to that finding, multiple efforts were undertaken to increase the available funding for postgraduate training in these areas.<sup>37,40,41</sup> Since 2007, the number of surgery and anesthesia trainees at MakCHS has increased from 20 to 50 and 2 to 24, respectively.

The increase in surgery and anesthesia intake at MakCHS in the past 5 years has partially been attributed to increases in available sponsorship.<sup>37</sup> As more funding becomes available for surgery and anesthesia training, results of the present survey can help focus attention toward funding more educational projects.

## LIMITATIONS

This study has several limitations. The survey tool was administered to trainees and did not include faculty or other individuals or groups who may be stakeholders in international collaborations. Therefore, any inferences made shall be limited to the perspectives of those trainees. Also, this study was an assessment of opinion. No measure of feasibility, sustainability or cost effectiveness of international collaborations was made, and thus no comments can be made in those areas. Because of the large number of groups and collaborative activities ongoing at MakCHS, it was not feasible to administer a more detailed survey that targets each of the specific activities undertaken by these groups. Further examination of each type of project undertaken by international collaborators would provide valuable information and should be part of the implementation strategy of each project.

The data here represent findings from a single institution in Sub-Saharan Africa and come from a small sample size. As such, the generalizability of

these findings must be done with caution. Specifically with regard to the research subsection of this survey, because of the limited information collected by the survey tool, we are unable to make the conclusion that all trainees who confirmed participation in research projects had done so in a manner that justified co-authorship.

Finally, although the survey was administered by the department and not by international collaborators, because 42% of trainees are sponsored by international groups, this may be a source of bias in the trainees' responses. Nonetheless, as previously discussed, trainees did not report scholarships as the most useful contribution of international groups.

In conclusion, this survey is the first to report perspectives of trainees from a resource-constrained environment towards international collaborations in surgery and anesthesia. Here we find that the majority of MakCHS trainees believe that international collaborations improve their training experience, especially through visiting faculty, skills workshops and specialist camps. According to trainees, current collaborative research is not in high priority areas and has low trainee co-authorship.

The current experience from MakCHS shows that there is rich ground for leveraging international collaborations to improve postgraduate anesthesia and surgery training. This study also highlights the critical need to examine the ethical practices of visiting groups and individuals in resource-constrained settings.

Although the majority of those surveyed reported a positive impact of international collaborations on their training and patient care, a significant portion of trainees reported that international groups had a neutral or negative impact on their training (25%) and patient care (40%), respectively. Further examination and characterization of these perceptions is likely to be critical for strengthening ongoing collaborations not only at MakCHS but also in other similar settings. The perspective of trainees in resource-limited environments is a critical and often overlooked aspect of global health collaborations and should be given greater priority in setting guidelines, establishing programs, and measuring impact and effectiveness.

## Author Contributions

*Study concept and design:* Alex E. Elobu, Doruk Ozgediz, Michael Lipnick, Moses Galukande, Sam Kaggwa, Cephas Mijjumbi, Joseph Tindimwebwa, Anthony Roche, Gerald Dubowitz, Andrew Kintu

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*Study supervision:* Alex E. Elobu

*Data Access:* Alex E. Elobu had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

#### Conflict of Interest

Michael Lipnick, Doruk Ozgediz, and Gerald Dubowitz, are members of Global Partners in Anesthesia and Surgery, one of the international visiting groups at MakCHS. Alex E. Elobu and Andrew Kintu hold senior scholar positions at MakCHS that are partly sponsored by international collaborating groups.

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