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REPORTS OF ORIGINAL INVESTIGATIONS

Faculty experiences regarding a global partnership for anesthesia postgraduate training: a qualitative study

Étude qualitative de l'expérience des enseignants sur un partenariat global pour la formation spécialisée en anesthésie

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Abstract

Purpose *Partnerships for postgraduate medical education between institutions in high-income countries and low- and middle-income countries are increasingly common models that can create capacity in human resources for health. Nevertheless, data are currently limited to guide the development of this kind of educational program.*

Methods *We conducted semi-structured interviews with visiting and local faculty members in the externally supported University of Zambia Master of Medicine Anesthesia Program. Interviews were thematically analyzed with qualitative methodology.*

Results *Respondents spoke of differences in clinical practice, including resource limitations, organizational issues, presentation and comorbidities of patients, surgical techniques, and cultural issues relating to communication and teamwork. A key theme was communication amongst distributed visiting faculty. Infrequent face-to-face meetings jeopardized programmatic learning and the consistency of teaching and assessment. Co-learning was considered central to the development of a new program, as visiting faculty had to adapt to local challenges while establishing themselves as visiting experts. An ongoing challenge for faculty was determining when to adapt to the local context to facilitate patient care and when to insist on familiar standards of practice in order to advocate for patient safety.*

Conclusions *As a new and evolving program, the findings from this study highlight challenges and opportunities for faculty as part of a partnership for*

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postgraduate medical education. Since maintaining an effective faculty is essential to ensure the sustainability of any teaching program, this work may help other similar programs to anticipate and overcome potential challenges.

Résumé

Objectif *Le partenariat pour l'enseignement des spécialités médicales entre établissements des pays à revenus élevés et à revenus moyens et bas constitue un modèle de plus en plus courant susceptible de créer des moyens en ressources humaines en santé. Néanmoins, il n'existe actuellement que des données limitées pour guider le développement de ce type de programmes éducatifs.*

Méthodes *Nous avons mené des entretiens semi-structurés avec des membres locaux ou en visite du corps professoral travaillant dans le cadre du programme de maîtrise de médecine anesthésique de l'université de Zambie. Les entrevues ont été analysées de façon thématique selon une méthodologie qualitative.*

Résultats *Les personnes interrogées ont parlé des différences dans la pratique clinique, incluant les ressources limitées, les problèmes organisationnels, les tableaux cliniques et les comorbidités présentés par les patients, les techniques chirurgicales et les problèmes culturels liés à la communication et au travail en équipe. Un thème clé partagé était la communication entre les enseignants visiteurs à différentes périodes. De trop rares rencontres en tête-à-tête mettaient en péril l'enseignement programmatique ainsi que l'homogénéité de l'enseignement et de l'évaluation. Le co-apprentissage était considéré comme central pour l'élaboration d'un nouveau programme dans la mesure où les enseignants invités devaient s'adapter aux défis locaux tout en se présentant eux-mêmes comme des experts en visite. Le défi constant des enseignants était de déterminer quand ils devaient s'adapter au contexte local pour améliorer les soins aux patients et quand ils devaient insister sur les normes usuelles de pratiques pour défendre la sécurité des patients.*

Conclusions *Les constatations tirées de cette étude soulignent les défis et opportunités qui s'ouvrent aux enseignants universitaires dans le cadre d'un partenariat pour une éducation médicale supérieure au sein d'un nouveau programme évolutif. Dans la mesure où le maintien d'un corps professoral efficace est essentiel pour assurer la durabilité de tout programme d'enseignement, cette étude peut aider d'autres programmes similaires à anticiper et surmonter les défis potentiels.*

The lack of trained specialists in low- and middle-income countries (LMICs) can be considered a crisis of human workforces for health.[1] For instance, it is estimated that there are only about 12 physician anesthetists in Rwanda for a population of over 11 million[2] and less than one physician anesthesiologist per million population in Zambia.[3] The lack of trained specialists is associated with substandard care[4] despite evidence that investment in surgical care is a cost-effective method of improving public health in LMICs.[5] The lack of capacity to train future specialists perpetuates the situation and impedes a long-term and sustainable solution.[6,7] Global health partnerships for postgraduate medical education are becoming increasingly common models for building capacity in underrepresented specialties such as anesthesia.[8] Visiting faculty members often rotate through short-term visits to the host country as external support for a postgraduate training program. Examples described in the literature include the Zambia,[3] Nepal,[9] Rwanda,[10] Laos,[11] and Uganda[12] programs. Nevertheless, there are many similar programs whose experiences have not yet been published, including those in Kenya, Malawi, Ethiopia, Palestine, and Fiji. The existing literature outlines the structure and curricula of these training programs and the success of the model in creating sustainability through graduates ultimately taking the reins of the programs in which they were trained.[13] There are few data, however, on the educational processes of partnerships for postgraduate medical education in LMIC, particularly on challenges faced and lessons learned in setting up and delivering these programs.

There are many reasons why developing an externally supported training program in a global health partnership may be different from doing so in a single institution in a high-income country.[13] These include the logistics of travel over long distances, the coordination of external support with any existing program, negotiating other languages and cultures, and the differences in patient population, pathology, and health care systems. Since qualitative research methods are designed to allow the researcher to understand phenomena in their natural setting,[14] we aimed to investigate the experiences of both visiting and local faculty in the first year of an externally supported postgraduate training program at the University of Zambia. In a recent narrative review, Shelton *et al.*[14] highlighted that rigorous well-designed qualitative research

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can generate useful data and important insight into understanding how and why people act the way they do, which is essential for the advancement of anesthetic practice. Thus, our intention was to use robust qualitative analysis to identify potential challenges, solutions, and a programmatic learning curve that may be of benefit to others when planning to set up similar anesthetic programs in other LMICs.

Methods

Participant selection

Informed consent was received prior to data collection, and ethics approval was granted from the Children's Hospital of Eastern Ontario Research Ethics Board (protocol number #11/61X – approved June 2011). All visiting and local faculty who participated in the first year (2011-2012) of the University of Zambia Master of Medicine (MMed) Anesthesia Program in Lusaka, Zambia were eligible to participate.

Program background

The University of Zambia MMed Anesthesia Program was developed as a Zambia-UK government initiative to assist in achieving the World Health Organization's Millennium Development Goals in Zambia. The education program is supported and delivered by a "distributed faculty" of volunteer consultant anesthetists from the UK and Canada. The University of Zambia postgraduate training program in anesthesia began in June 2011 in Lusaka, Zambia. The four-year program, which will result in awarding a MMed in Anesthesia qualification, focuses on three pillars, i.e., clinical anesthesia, scholarship, and leadership, in order to produce physician anesthetists who will become future leaders in Zambian anesthesia.[3] In the first year of the program, there were thirteen visiting faculty members and one anesthetist in Zambia formally involved in the program, the Head of the Department of Anesthesia at the University Teaching Hospital, Lusaka. In the first year of the program, there were eight MMed trainees admitted.

Data collection

Semi-structured interviews (45-60 min) featuring open-ended questions were used for data collection. Interviews were conducted either using Voice over Internet Protocol telephony after participants returned from Zambia or in person if in Zambia. Using a predetermined interview guide (Appendix), the interviewers sought to explore key issues relevant to the ongoing faculty development of this program. As this is an exploratory study, the interview protocol was used as a starting point and was adapted as necessary based on feedback from previous interviews. Interviewees were asked to share their perspectives and experiences regarding global health, anesthesia in under-resourced situations, and the challenges and opportunities presented by the MMed Anesthesia Program. In the event of unexpected traumatic or emotional responses to the interviews, ongoing counselling support was available from the MMed program. All interviews were audio recorded, anonymized, and transcribed verbatim for analysis.

Data analysis

Interview transcripts were imported into NVivo 9 (QSR International, Doncaster, Australia) and underwent inductive thematic analysis by the investigators using an iterative process.[15-17] Initially, two trained qualitative researchers versed in the topic area read through interview transcripts independently to obtain an overall sense of the content. They then met to discuss their impressions, which informed the development of the initial coding strategy. One researcher further developed a coding scheme through independent line-by-line review of the transcripts. Emergent themes were refined through discussions with the larger research team to clarify, challenge, and elaborate on the developing thematic structure. The intent of the coding strategy was to capture both recurring themes and any markedly dissonant voices.

Trustworthiness

The quality of the research findings depends on the trustworthiness and rigour of the research process. During the stages of data collection, reduction, and analysis, we relied on the key determinants of trustworthiness for qualitative studies proposed by Lincoln and Guba:[18] credibility, dependability, confirmability, and transferability. The credibility of findings was enhanced through member checking, i.e., a summary of the preliminary study findings, reported as themes, was circulated back to study participants to ensure that the analysis resonated with them.[19] Additionally, in order to obtain peer review and feedback from colleagues outside of the context of the study, the preliminary results of this study were presented at two academic medical education research conferences.[20] The maintenance of detailed field notes helped to create thick descriptions, which strengthened the transferability of findings. The thick description included accounts of the context, participants, setting, and research methods.[21] Dependability was

established through the use of data triangulation by eliciting the perspectives of different local and visiting faculty members and by comparing the data collected across various interviews. Additionally, a second researcher used the established thematic coding strategy to code 22% (3 of 14) of the transcripts, and the degree of inter-rater reliability was ascertained for the duplicate coding (97.5% overall agreeability; Kappa = 0.59). Moreover, to enhance the confirmability[22] and dependability of the findings, we maintained a systematically documented audit trail comprising analytical memos, meeting minutes, evolving coding schemes, and revisions of the coding structure.[23] Analysis continued until thematic saturation was achieved.

Reflexivity

Some of the researchers are themselves part of the MMed Anesthesia faculty and were also interviewed as faculty members. While it is recognized that these researchers are a part of the populace being studied, this condition is compatible with a social constructivist perspective that is being used to guide the study. For these internal interviews, the researchers who were then in faculty roles aimed to "step out" of the researcher role in order to reflect on and speak to their experiences and perceptions as participants. An interviewer who was not directly involved in the University of Zambia MMed Anesthesia Program conducted these interviews.

Qualitative framework

Qualitative research is relatively new to anesthesia and offers researchers the ability to assess aspects of practice that traditional quantitative methods cannot measure.[14,24] While quantitative methods focus on generating numerical data, qualitative methods comprise a group of research techniques that aim to understand phenomena and processes by considering why and how they occur.[25] For example, anesthesia qualitative research is ideal for assessing dynamic interpersonal interactions associated with non-technical skills (i.e., teamwork,[26] communication,[27,28] and decision-making)[29,30] and education.[31,32] To assess these interactions effectively, qualitative methods allow researchers to consider common characteristics or themes that take place in naturally occurring settings rather than in experimental ones. Guided by a qualitative theoretical framework to identify common themes, the outcome of qualitative inquiry is often an in-depth understanding of the research topic.[33] Although qualitative research may seem incongruent with the confidence affiliated with quantitative studies, Shelton *et al*. encourage researchers in anesthesia to consider that "qualitative methods offer the researcher the capacity to answer more types of question, and such diversity should be embraced".[14]

Results

Participant characteristics

Fourteen faculty members were interviewed for this study; one was a local faculty member and the rest were visiting faculty members. Two of the visiting faculty members were senior UK trainees. Detailed participant characteristics are shown in the Table.

Teaching and learning

Available teaching resources included a classroom, a projector, a blackboard, and low-fidelity mannequins. These resources were considered sufficient, especially later in the year with increased sharing of electronic resources between faculty and students using an online shared drive system (Dropbox).[18] Visiting faculty members highlighted the opportunity to teach as one of the most enjoyable aspects of the partnership.

> *Interviewer (I): "Okay. So what would you say you got out of the trip?"*
> *Respondent 4 (R04): "I've done more teaching in three weeks than I'll do in my hospital over a period of six months."*

There were daily classroom teaching sessions, with the format left to the discretion of the visiting faculty member. Visiting lecturers who used a more transmissive style of didactic teaching found that the trainees were often not engaged. Other respondents reported their impressions that the Zambian trainees seemed to expect information to be presented to them rather than to engage themselves in more active learning strategies.

> *R05 – "It's important to get the students to stop thinking that we're going to tell them everything they need to know. They need to do their own studying, and we then use classroom teaching as discussions and highlighting certain situations, making it more practical and then moving it into theatre."*

A key challenge in the first year of the program concerned issues of inconsistencies in teaching that were often related to the geographically dispersed nature of the faculty members who travelled from throughout the UK and, in one case, from Canada. Visiting faculty members were briefed on the content to teach before their visit, but they did not necessarily know what information other

visiting faculty had already provided. Some assumed prior knowledge as they had seen PowerPoint presentations in the online shared drive, but in fact, these had been placed there as potential e-resources and were not necessarily covered in the classroom. The group of visiting faculty had designed the curriculum collaboratively before most of them had spent any time in Zambia. Visiting faculty spoke of the difficulties of working through the details of the planned curriculum in the context of the clinical environment at the University Teaching Hospital (UTH), which required a flexible approach. They remarked that texts and resources from the UK referred to practice that was very different from that in Zambia and that available texts for the "developing world" focused largely on rural practice that was not as advanced as current practice at UTH.

R06 – "I simply don't think it's feasible to teach them a very large amount expecting [them] to absorb and retain a large amount of information about things that are largely fiction to them."

In contrast to what appeared to be a steep programmatic learning curve in classroom teaching, respondents described the process of clinical teaching in the operating room as comparatively similar to their usual practice. Clinical teaching included a combination of demonstration, supervision, and questioning while going through a familiar process of checking equipment, assessing a patient, developing and discussing an anesthetic plan, and then executing that plan. Respondents considered the clinical teaching effective despite a low ratio of visiting faculty members to trainees.

R02 – "It's very difficult to relate the teaching we've given to their performance because you don't know how much is through their own endeavours and accessing textbooks, internet, etc. But even if it isn't the classroom teaching that was effective, it was certainly the workplace-based teaching and the kind of stimulus to go away and think about things."

There were comments of inconsistency between the content delivered by different visiting faculty and to a greater extent between visiting faculty and local consultant anesthesiologists. There was some divergence of opinion on this issue:

R03 – "No, I think it's not a problem… at the end of the day they will choose which method or approach is better, [name: local consultant]'s, [name: local consultant]'s, or somebody."

Another key challenge to clinical teaching was teaching while simultaneously dealing with unfamiliar deficiencies in resources, teamwork, and wider systems issues that could threaten patient safety. Some visiting faculty members reported that negotiating these challenges while teaching resulted in significant emotional stress.

Table Participating faculty characteristics

Characteristic	Proportion (%)
Sex	Female = 5 (36%)
	Male = 9 (64%)
Average years of practice	14 years
Range of years of consultant practice	0-31 years
Currently practicing anesthesia at home institution	Yes = 12* (86%)
	No = 2 (14%)
Previous "developing world" experience	14 (100%)

* Yes includes two senior UK trainees

R05 – "It takes me a lot longer to have to work out what's actually on the list and what's actually going to happen. That sort of dysfunctional system makes it very hard to teach effectively in a time-efficient manner. Because, as the teacher, it takes me so long to figure out what it is we're actually doing and what we're getting on with."

Faced with the need to act as role models in difficult clinical situations, visiting faculty described the importance of focusing on non-clinical skills such as professionalism, management, and scholarship:

R07 – "That was the way I approached it, you know, we were teaching them not just to be anesthetists but to be leaders in anesthesia. Because being the first group through it's probably more important to them than even for subsequent groups because the changes and improvements that they will be able to put in will, one hopes, inform the careers of their successors."

A recurring emergent theme was "co-learning" between visiting faculty, the trainees, and local anesthesiologists. Visiting faculty had to learn on their feet while concurrently stepping into a role as an invited educator. This process of co-learning was not necessarily explicit at the start of the program and not necessarily clear to the local trainees and anesthesiologists. Although the local faculty had much valuable expertise to share, it became increasingly clear that they had much less experience than local practitioners in terms of issues such as local pathology, equipment, language, and culture and that bi-directional learning was the key to progress. One very simple example of co-learning was the need to reconsider the doses and timing of administration of anesthetic agents due to the use of drugs no longer available to visiting faculty in their home practice.

R01 – "I'm not used to giving anesthetics with halothane, thiopental, and pancuronium. My efficiency was nothing like it would've been here, and certainly I'm sure I have stuff to learn about the local situation, about the local drugs, and I'm sure there's a way of doing things that the local staff know that I could learn from."

Assessment of learners

The assessment of the Zambian trainees was focused on a summative examination at the end of the year that consisted of multiple choice questions and a structured oral examination delivered by two visiting faculty members who were current examiners for the UK Royal College of Anesthetists. Nevertheless, most visiting faculty members had a largely informal role in the assessment of learners. There was little mention of formative assessment, and conclusions about the trainees' performances were guarded as the trainees were still very early in their training, especially at the beginning of the academic year.

A recurring emergent theme was lack of continuity amongst a distributed visiting faculty, including in the informal assessment of Zambian trainees.

R01 – "Some people had deliberately anonymized comments on trainees and I thought how interesting to me, how bizarre. It's like I was just trying to picture as if I had a departmental meeting and we tried to talk about all our residents and fellows and called them A to F. So nobody actually knew who was talking about who else…. somehow because there's this whole kind of like e-mail distance kind of thing, I think some people have got the idea that maybe it should be confidential when I think absolutely it must not be confidential."

Other visiting faculty described challenges with the process and the culture of the formal examinations at the end of the year being unfamiliar to the trainees. Some considered poor performance in the structured oral examination as unfair owing to the time-pressured style of questioning. This contrasted with the opinions of the visiting examiners who compared their experience to examining for the UK Royal College of Anesthetists and considered the atmosphere of the examination to be encouraging and supportive.

R02 – "They weren't sure what to expect, and the ones who had done very well I think were very surprised that they had done well. They all… I think they all expressed similar feelings of the oral exam being more pressured than they thought. They thought it'd be more like a chat in a tutorial rather than very time-bound, high-paced sort of questions being fired at them."

Regardless of these challenges, a number of trainees performed at a high level in the end of year examinations, with the examiners mentioning that some of the trainees performed at the level of a UK trainee after 18-24 months of experience. Respondents also remarked on the challenge of being unsure what would happen if trainees failed the formal examinations, as the consequences of this were the responsibility of the University of Zambia and not that of the visiting faculty or examiners.

Experiences of clinical practice

Respondents spoke at length about the differences in clinical practice at the University Teaching Hospital compared with working in the UK or Canada. These differences included resource limitations, organizational issues, differences in the presentation and comorbidities of patients, surgical techniques, and cultural issues relating to communication and teamwork. Drug supplies were limited and inconsistent, and the generally available anesthetic drugs were no longer available for use in the UK and Canada. Limited supplies meant that single-use equipment was often reused. Some visiting faculty expressed that, due fear of theft, the limited amount of equipment was often locked up and difficult to access, especially if required in an emergency. There could even be inconsistent availability of very basic resources.

R09 – "Very good use was being made of very limited resources…. A lot of the time we were there we had problems with electricity, problems with water. Three days I was there, there was no running water. We had a power cut one day in the middle of operating so we had to finish operations by torchlight."

Visiting faculty raise ethical concerns regarding some of the more complex cases, and there were instances of conflict when visiting faculty questioned local surgeons about whether cases should proceed. Respondents discussed taking on cases that they would not usually manage in their practice at home.

R08 – "I don't normally do open surgery in under one-year-olds, but you know, I was anesthetizing for sort of under one-year-olds having neurosurgery…. I haven't done neuro for years. But I was doing all that, and I was doing sort of caudals, and you know, inguinal blocks and stuff I don't normally do, and I found that really… I found it interesting to be doing stuff I haven't done for ages."

One of the two visiting faculty members who was no longer practicing perioperative anesthesia at their own

institution described himself as quite comfortable in the environment at UTH.

R09 – "Anesthesia there was rather like the anesthesia I'd learned in I suppose the early 80 s, and actually going out to Zambia was just like going back 35 years to… 30 years or so to being in… the UK in the early 1980 s in terms of the drugs, pancuronium, halothane, suxamethonium, laparotomies."

Respondents described having to modify their usual clinical practice due to severe resource limitations and the emerging realization that the program had to attempt to make some systemic changes early on in order to teach effectively to a standard of care that is acceptable to the visiting consultants.

R02 – "Just simple things like post-op recovery. It was just nonexistent. And that exposes one unnecessarily really as an anesthetist because you know when you leave your patient in post-op it's sink or swim… You honestly get that feeling that when you move that patient, that's it. Nobody else is going to be looking at that patient."

Respondents described the tacit learning necessary to navigate the system in the operating rooms at UTH during the first visit, information that was not always available from previous electronic communication and phone calls between visiting faculty members. It took a number of days to "work out how things work" (R10), and respondents described the first days in particular as very stressful. More successful strategies for navigating the system included ensuring that there had been formal introductions with all local staff and that challenging clinical issues were broached through the appropriate local chain of command.

Logistics and communication between faculty members

Communication between faculty members was seen to be one of the greatest challenges for the program in its first year. Strategies evolved organically to bridge this gap, including novel and varied forms of electronic communication and the development of informal subgroups. Faculty members communicated through e-mail, an electronic "MMed handbook", formal pre-departure briefing by the program lead, further *ad hoc* phone calls, an inaugural annual meeting day for the program, and also electronic "letters from Lusaka" describing early experiences in the program, which were shared with all faculty members via a shared online drive. The "letters from Lusaka" were described as very experiential and conversational. They painted a picture but with details that often appeared to be quite peripheral. In view of later letters, some respondents thought that "simple lessons had not been learned well" and suggested improved methods of communication and follow-up on key issues. Perspective diverged greatly regarding how well prepared respondents considered themselves for their first visit, but preparation was generally described in terms of practical planning of logistics and classroom teaching sessions. Some did not consider this problematic.

R07 – "I mean she tended to paint such a bleak picture both at that time and in subsequent communication with me that I was possibly expecting things to be even worse than they were. I mean I have experienced worse in Nepal. So it wasn't worse than I expected, it was pretty much in line with it."

Whereas others thought that you could not be adequately prepared for the experience until you actually arrived at Lusaka.

R11 – "I thought… I am a tough lady and I thought it's fine, but emotionally and the stress, I wasn't prepared for that. But logistically, yes. The flight, and the accommodation, and the driver, and the food and everything, absolutely no problem. And getting around in the hospital, no problem; contacting [local faculty], no problem; interacting with the students, no problem. No, I didn't have any issues, but I wasn't prepared for the emotional onslaught."

One respondent remarked that a lack of communication made it difficult to adopt a consistent approach.

R12 – "We hear about some problems and are prepared for those, and then we go and find others that we hadn't expected, and so you think about doing or do something about them. It's a bit like hitting a nail; you put a nail in and hit it hard and then again and then again to drive it home, and I think the things that people are picking up on, like (R06) and the local anesthetics. I was interested in pushing that, but it was difficult with 5-mL syringes that leaked. You could be continuing to emphasize the things the previous person has been trying to do something about. "

Respondents described different approaches to the donation of drugs and equipment to the training program. Some respondents brought their own supply of drugs that enabled practice to be more in keeping with their practice at home and allowed them to be more confident about delivering safe anesthesia. Others brought no drugs with them, preferring to use only what was available despite inconsistent supplies. One respondent stated that donating drugs would further prevent medications from being

supplied consistently in Zambia, remarking that developing a culture where donations provide essential medications or equipment may seem to absolve local supply chains of some responsibility.

R06 – "Do you take out a better muscle relaxant in small quantities, use them up, and then leave them to the pancuronium?"

Visiting faculty also brought donated equipment such as nerve stimulators for regional anesthesia and basic airway equipment. Communication amongst distributed faculty members again became an issue as it was often not clear what equipment would be the most useful and there was no established system to coordinate donations. The distribution of donations also varied; some visiting faculty members gave donations to local faculty members while others gave directly to the students.

Discussion

This qualitative research was conducted to capture perspectives from faculty regarding their experiences in the University of Zambia MMed Anesthesia Program. Rather than provide a description or assessment of the MMed Anesthesia Program, this research sought to capture the live experiences of faculty supporting an anesthesia training program. Several recurring themes emerged pertaining to faculty experiences in the first year of a global health partnership for postgraduate medical education.

A key issue was the geographical spread of the visiting faculty who came from different institutions throughout the UK (and one in Canada). Few of them regularly saw each other in their "home" institutions, although most visiting faculty had met each other at a Faculty Day before the start of the academic year. Bilateral communications were mostly by e-mail and telephone, and although there were multilateral communications by the sharing of "letters from Lusaka", these were very informal and *ad hoc* with little sustained group discussion over the course of the first year of the program. These issues with communication affected curriculum delivery, trainee assessment, and some logistical issues, all of which may have slowed our programmatic learning during the first year of the MMed program. The problem was further compounded by lack of continuity due to relatively brief faculty visits, sometimes as short-lived as two weeks.

There have since been a number of initiatives aimed at alleviating these issues. Most faculty members have attended Annual Faculty Days that allowed face-to-face group discussions of progress, and they have also participated in some faculty development initiatives to encourage more interactive teaching. Most visiting faculty members from the first year have returned to Lusaka, thus improving continuity. The program has since introduced structured reports to be completed by visiting faculty upon their return from Lusaka (replacing the informal "letters"). The reports detail changes in key issues, such as teaching, assessment, clinical practice, resources, and logistics. This process includes detailed tracking of those areas of the curriculum covered by visiting faculty so that future visiting faculty members can better plan their teaching. There are plans to develop formal teaching resources, such as case-based learning modules based on the existing curriculum to facilitate further consistency and thoroughness in the program contents. We attempted to prepare visiting faculty members as thoroughly as possible for the program; however, faculty found planning for logistical and classroom tasks easier than preparation for more complex clinical and cultural issues. Our conclusion is that there is much that can only be appreciated when actually in-country and that this initial experience on the ground would ideally be supported by another more experienced faculty member. Although it is arguable whether donations of drugs and equipment are appropriate in a global health partnership for postgraduate medical education, the focus of recent quality improvement projects by the Zambian trainees has been on improved organization of scarce resources. Future research will be required to identify the effect of these initiatives. Nevertheless, the respondents in this study thought that the curriculum, which had been designed before the start of the program, was generally delivered effectively, with clinical teaching being the backbone of the program.

For a number of reasons, clinical practice was central to the experiences of visiting faculty in the first year. First, clinical teaching was of key importance to the trainees, and second, visiting faculty needed to understand clinical practice within the realities of the perioperative environment at UTH. The issues included resource limitations, cultural differences, and a case mix that was very different from practice in high-income countries, including late presentation, advanced pathology, and comorbidities. The importance of co-learning – visiting faculty had as much to learn from local anesthetists and trainees as they had to teach in return – seems to have been underappreciated at the start of the program. Co-learning also created tensions for visiting faculty regarding boundary issues, such as when to adapt to local practice and when to insist on more familiar standards of care to promote patient safety. Some visiting faculty performed well outside their usual range of practice in their host institutions. Interestingly, the two visiting faculty members who no longer practiced clinical anesthesia in the UK seemed to be amongst the most comfortable in clinical practice at UTH, possibly due to their seniority and a career that started when the practice of anesthesia was much less dependent on modern drugs and equipment. The importance of cultural issues – both

"medical culture" and the broader culture in Zambian society - cannot be underestimated as many visiting faculty may have had little appreciation of local conditions and expectations. Flexibility and adaptability of visiting faculty seemed to be key to successful co-learning in the first year of the program.

In addition to differences in clinical practice, respondents highlighted challenges with teamwork in an unfamiliar medical culture and differing approaches to teaching and learning. Visiting faculty emphasized the need to focus their teaching on non-clinical skills, such as professionalism, management, and scholarship, to help create a culture of safe anesthesia.

Other similar externally supported anesthesia training programs have been described in the literature. Shrestha *et al.* reported on the first 20 years of the Nepal program supported by the Canadian Anesthesiologists' Society International Education Foundation (CASIEF). This program trained 62 anesthetists (from a baseline of seven anesthetists for a population of 16 million) and saw the formation of a Society of Anesthesiologists of Nepal and annual anesthesia symposia.[9] There was 89.5% retention regarding the 19 anesthetists trained in a three-year master's degree program within Nepal and 70% retention in the shorter diploma program. The authors point out that it is difficult to identify factors leading to success in a program but cite the dedication of anesthetists in Kathmandu, the Nepali Ministry of Health and Institute of Medicine, and committed Canadian faculty, each spending a minimum of *three* months in Nepal. Twagirumugabe *et al.* have described their experiences in the partnership between the National University of Rwanda, the CASIEF, and the American Society of Anesthesiologists' Overseas Teaching Program (ASAOTP) based on a model similar to the previously existing Nepal/CASIEF program.[10] They point to opportunities for co-learning between Rwandan trainees and visiting Canadian trainees; however, the reports of the Rwanda and Nepal programs do not contain detailed qualitative data that would allow further comparison with faculty experiences in the University of Zambia program. Riviello *et al.* have reflected on a number of partnerships for surgical education and similarly highlight co-learning as a key lesson learned, noting that this also results in mutual benefit to both visiting and local faculty.[12] For an externally supported residency program to be a true partnership, we suggest that there needs to be significant input by both parties of the relationship as well as significant benefit to both parties, which engenders mutual respect and contributes towards sustainability.

Other qualitative studies of global health experiences overseas have tended to focus on short-term visits and undergraduates,[34] and although there are some common themes, the context is very different. For example, the theme of moving beyond one's usual scope of practice has very different implications for a medical student on an elective than for established clinicians or an anesthetist at the end of their career who now practice mostly pain medicine. In our study, this situation was not necessarily disadvantageous. Petrosoniak *et al.* described a trainee "learning more from them than I was giving back to the project" as "medical tourism", and while it is important that the learning needs of the host country are prioritized, our data suggest that learning by visiting faculty should be embraced as a key to success.[35]

This is a novel qualitative study of faculty experiences in externally supported postgraduate training programs in LMICs. Nevertheless, this study has several limitations. First, our data concern the perspectives of only the faculty members in the University of Zambia Master of Medicine Anesthesia Program. We did not interview the trainees or any other health care providers at UTH who may have chosen to prioritize different issues. The trainee perspective is currently being examined in a further ongoing study. In particular, only one local anesthesia provider was interviewed, being the only anesthetist formally involved with the program at that time. The perspective of a wider sample of local anesthetists would likely have been a valuable contribution. Current research in progress is following up on this initial study and will aim to include the perspective of students and other local anesthetists. The extent to which the issues experienced in this program are generalizable with other externally supported residency programs is unclear, particularly those programs with similar issues of a distributed external faculty and resource limitations. Finally, this study examines the early part of a learning curve for a program. Future research will be required to investigate the development of such programs longitudinally over the duration of training and indeed over the time required to make the program self-sustaining.

This study provides new and unique data on individuals' perspectives, adding to the small body of existing qualitative research in anesthesia.[14] As a new and evolving program, the findings from this study highlight challenges and opportunities for visiting faculty as part of a global health partnership for postgraduate medical education. Since maintaining an effective faculty is essential to ensure the sustainability of any teaching program, this work may help other similar programs to anticipate and overcome potential challenges. We found that the model of short-term visits from distributed visiting faculty was problematic in terms of communication between faculty members, leading to failures in continuity and consistency. These issues should be anticipated in similar programs and thought should be given to ways of promoting ongoing multilateral conversations, especially considering the flexibility required in the early stages of the program. Pre-departure briefing, collaborative electronic communication, and thorough debriefing are recommended. Ideally, programs would be based on long-term placements of visiting faculty (six months or more), with

shorter term visits providing focused training, such as the Safer Anesthesia From Education (SAFE) Obstetric Course.[2] Nevertheless, finding faculty members for such long-term placements may be challenging. Co-learning suggests that visiting faculty may have as much to learn as the trainees in the program, and this may be at odds with expected roles as educators and learners at the start of the program. The importance of co-learning and listening to local voices should be expected and made explicit early on.

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Appendix: Interview guide

1. How was your trip? (Anticipate significant amount of unstructured dialogue in this part of the interview):
   - How did you find Lusaka?
   - The environment at UTH?
   - The culture at UTH?
   - The clinical work, equipment and case mix?
   - The clinical teaching?
   - The didactic teaching?
2. What did you get out of your trip?

   What did you achieve?
   In what ways was it different from how you expected it to be?
3. What did you find most challenging about your trip to Lusaka?

   Probes (anticipate significant amount of unstructured dialogue in this part of the interview):
   - Can you give some examples? What happened? Were these challenges managed successfully?
   - Can you expand on this? Feel free to tell stories or anecdotes.
4. What did you find to be the most notable opportunities for improving the University of Zambia MMed Anesthesia Program?
5. Which of the following issues were significant challenges for you during your trip?
   - No financial reimbursement for the trip.
   - No recognition from your primary employers for the time spent doing this work.
   - Working in an unfamiliar environment.
   - The differences in clinical practice in a resource-poor environment
   - Lack of teaching infrastructure
   - Limited contact amongst faculty members – discussion of students
   - Cultural issues – ethical issues
   - Clinical governance
   - Bringing equipment
   - Workplace assessments
6. Do you think that you were adequately prepared for your trip?

   What could have made you more prepared?
   What would you do if you had your time again?
   What would you do next time?
   What could be done better for other visiting faculty?

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