

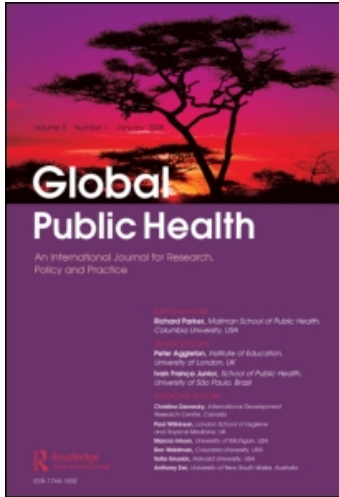
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Clinical research and global health: Mentoring the next generation of health care students

Sural K. Shah^a, Bobbi Nodell^b, Silvia M. Montano^c, Chris Behrens^b and Joseph R. Zunt^{d*}

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Interest in global health and opportunities to conduct clinical research at international sites have increased markedly for health profession trainees. With this increase in demand comes an increase in the need for mentors at international and home institutions to provide guidance with designing, implementing and analysing clinical research projects that benefit both the trainees and the research site. In this article, we provide an overview of our insights gained through mentoring in the international setting and suggest a series of key points to help ensure an enjoyable and productive international clinical research experience for both trainees and mentors.

Keywords: clinical research; mentoring; global health; Peru; medical students

Introduction

Interest in global health has increased dramatically over the past decade among health profession trainees, including students and graduates of schools of medicine, public health, dentistry, nursing and veterinary medicine (Ravdin *et al.* 2006, Drain *et al.* 2007). Today, more and more trainees perform international research electives with the intention of dedicating their careers to underserved populations. While many opportunities exist for international clinical electives, these opportunities are typically restricted to 4–8 weeks due to curricular demands or national accreditation bodies and usually prohibit the implementation of a research project. Other programmes, such as the NIH Fogarty International Clinical Research Scholars and Fellows (FICRS-F) Programme (2009) for health professional and public health students and the Doris Duke Clinical Research Fellowship (DDCF) for medical students (2009), offer prolonged international experiences of 1 year. Although completing a research project in an unfamiliar setting is challenging, these programmes offer rare mentored opportunities to guide careers of new researchers interested in clinical global health research.

The medical literature contains many articles illustrating how clinical electives in the developing world increase cultural sensitivity and interest in global health

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research careers for students and residents (Sitthi-Amorn and Somrongthong 2000, Thompson *et al.* 2003). However, we are not aware of any articles that have assessed the efficacy of clinical research mentorship at developing country sites or proposed mechanisms for enhancing mentoring at these sites. Unfortunately, formal mentor training is often limited at both home and international sites, with the result that mentoring at international sites may not be what a trainee expects or requires. Effective mentoring at both the home institution and international site is critical for the success of overseas rotations involving clinical research. This article details the key characteristics of effective mentorship and proposes methods for enhancing mentoring in this setting for visiting trainees.

Key characteristics of effective mentorship

An engaged mentor who takes interest in a trainee's development is critically important to the success of that trainee's clinical research career. In clinical research, mentoring typically encompasses a number of functions and relationships, including counselling, advice, career guidance, discipline and teaching. The most commonly used definition of mentoring in medicine is from the Standing Committee on Postgraduate Medical and Dental Education (SCOPME):

An experienced highly regarded empathic person (the mentor) guides another individual (the trainee) in the development and re-examination of his or her own ideas, learning, personal and professional development. (SCOPME 1998)

According to SCOPME, mentors should support the trainee's career development, challenge the trainee to acquire or hone skills and foster the trainee's vision of career goals (Bower *et al.* 1998). Characteristics of effective clinical research mentors include: availability, insightful comments and critiques of clinical research and career activities, and opportunities for trainees to develop independent clinical research careers.

The National Academy of Sciences published a practical guide to mentoring students in sciences entitled 'Advisor, teacher, role model, friend: On being a mentor in science and engineering' (Sciences 1997). This guide states that for trainees to successfully transition to successful independent research careers, mentoring should provide an introduction to the clinical and research environments, assist with integration into the clinical research environment, provide timely guidance of research protocols and scientific papers and encourage development of outstanding clinical research skills.

Finally, specific to health profession students is the goal of integrating research skills with clinical knowledge and education, the three pillars of an academic health professional (Manabe *et al.* 2009). The US Accreditation Council for Graduate Medical Education (ACGME) has developed a list of core competencies that provide a useful guideline for mentors hoping to impart both practical skills and a sense of social and ethical responsibility, including: patient care, medical knowledge, interpersonal and communication skills, professionalism, practise-based learning and systems-based practise (Stewart 2001).

Mentorship experiences: good, bad and ugly

Clinical research in the international setting can provide a greater sense of both autonomy and isolation. As trainees are typically high achievers and traditionally measure success through other standards, such as grades or class rank, placement in a new international environment – where success will be measured by development and implementation of a research project – can produce insecurity regarding progress, stress or depression. In addition, the interests and experience of trainees are often diverse, making it difficult to identify relative strengths and weaknesses and provide appropriate levels of autonomy. Mentors need to anticipate the unique concerns of each trainee. The presence of a strong mentor–trainee relationship should increase the likelihood of an enjoyable and productive international experience, regardless of length. This is particularly true in the international setting, where trainees are attempting to simultaneously develop relevant research skills within the context of an unfamiliar environment (DeSilva and Fischer 2008).

The NIH FICRS-F Programme (2009), previously known as the Fogarty/Ellison Overseas Fellowship in Global Health and Clinical Research, offers a mentored patient-oriented research training experience of 10 months for US graduate students to participate in clinical research at NIH-funded research centres in 24 countries; each student is paired with a student from the international site and mentored by faculty affiliated with a USA and an international institution (FICRS-F, 2009). According to exit surveys in 2004 and 2005 the majority of scholars rated their experience as good or excellent (21 of 26 Scholars [81%]), but the quality of mentoring was inconsistent, with international mentors rated as excellent by only 36% of scholars. When asked, ‘What were the weaknesses of your international training programme experience?’, 50% noted lack of supervision or inadequate mentoring. Of the 20% who rated their mentorship as poor, the most common complaint was having little direction, as noted below:

For the first several weeks, it was not clear who my mentor was to be. Dr A . . . was in fact eager to welcome me to the lab. However, I didn’t feel like he took very much leadership in directing my efforts at first . . . was unable to act as an effective mentor and advocate. Given that there were some very significant complications in the course of my research efforts, this was quite stunting.

The absence of mentoring in these experiences becomes even clearer when compared to trainees who experienced strong mentorship:

I think I had an exceptionally pleasant year, and the difference was having an involved mentor. Working with Dr. B . . . was one of the best parts of my [research experience]. I benefited from Dr. B’s expertise in training and research, from his personal support and guidance, to his ability to hone in on the relevant problem and kick-start my project whenever it was faltering . . . Dr. B gave me specific, timely and excellent feedback and guidance . . .

Dr. C has been an excellent mentor and friend throughout the past year. He is very approachable, available and supportive of my research interests while allowing me to work independently. As evidenced by the array of student training programmes he is involved in, he is truly invested in providing meaningful international learning opportunities for young public health professionals. Drs. D and E were both excellent on-the-ground mentors, with rich funds of knowledge in research methods. With very

different working styles and representing very different institutions, I felt I had the best of all worlds working with Drs. D and E. Through them, I gained an excellent range of first hand experiences and opportunities in public health research and practice.

Enhancing clinical research mentoring at international sites

Effective mentoring at international sites often requires the same skills as those needed for any site, with some notable differences – mentoring teams include mentors from both the trainee's home and international institutions, and the trainee is far from home and exposed to a new culture. Although many countries adopt the Socratic method of imparting knowledge, a growing number of scientists based in the developing world have received training outside their home country and returned to conduct research and teaching. Such scientists are often more likely to adopt a mentoring style with which trainees are familiar and are also aware of potential barriers regarding local customs, politics and bureaucracy. In addition to differences in mentoring style, relationship dynamics between the home and international site mentors may be affected by perceived or real differences in financial resources, training or practical experience. However, if the goal of both mentors is the trainee's education, these differences can be instructional to mentors and trainees alike as they illustrate the inequities associated with research and training infrastructures and different approaches to mentoring.

Mentors educated at the international site may also be accustomed to different forms of providing or receiving feedback. To increase understanding of mentor and trainee roles, communication between the home-based and local mentors should strive to resolve differences in content, style and structural targets, such as: (1) frequency and method of mentoring in the international setting; (2) navigating bureaucratic systems of two separate institutions; (3) ethical considerations and Institutional Review Board (IRB) approvals; and (4) potential cultural and logistic conflicts, such as working in clinical settings with scarce resources.

The International Training and Education Centre on HIV (I-TECH), an organisation that has delivered clinical mentoring to more than 1000 health workers at 180 facilities in a dozen countries, compiled a list of lessons learned in clinical care mentoring for both mentors and trainees (I-TECH 2008). We have modified this list for clinical research mentoring (see Table 1):

- *Establish mentor–trainee relationship.* The home and host-country mentors should begin developing a mentoring relationship with the trainee prior to departure for the international site. More frequent interactions should be conducted during the early experience to assist with methodological issues and assimilation into the host-country. Assessment of clinical research skills is necessary for determining which trainees will require more intensive 'micro-mentoring' on tasks such as developing a research protocol, consent form or IRB applications.
- *Define expectations.* To ensure the trainee and mentor have a clear understanding of roles, responsibilities, interests and educational goals, each trainee–mentor pair should define expectations regarding: (1) the programme and mentoring needs; (2) commitments and frequency of meetings; (3) existing and desired clinical research skills; (4) collaboration on research projects; (5) local resources and collaborators; and (6) authorship of manuscripts.

Table 1. Summary table of mentorship elements.

Mentorship elements

-
- Establish respective responsibilities in the mentor–trainee relationship
 - Define expectations of the research and reporting
 - Develop a mentoring team
 - Determine the clinical research site
 - Specify who needs to approve trainee project at research site
 - Ensure adequate on-site supervision
 - Familiarise trainee with local customs
 - Be aware of time constraints
 - Help prepare IRB applications and confirm approvals are obtained
 - Monitor progress
 - Offer assistance in study design, analysis and presentation of data
 - Edit abstracts, presentations and manuscripts
 - Build research community with other trainees and host-country peers
 - Share research findings with local collaborators and research participants
 - Conduct mentoring evaluations
 - Expand mentoring capacity
 - Maintain relationships
-

Requiring each trainee to write a page regarding points 1–4 prior to arriving in the host country provides an opportunity for the trainee to clarify goals and expectations and inform the mentor in a more formal manner.

- *Develop a mentoring team.* The host-country mentor may need to recruit colleagues from specialties outside their expertise to help trainees develop a research niche. The mentoring team often benefits from the input of colleagues skilled in study design and qualitative or quantitative analysis, as most trainees desire to develop these essential skills. New members of the mentoring team require orientation into the international mentoring environment.
- *Determine the clinical research site.* Clinical research sites may not be accustomed to patient-oriented research and could experience decreased patient flow when a trainee is present. Therefore, it is important to define the implications and expectations with the clinic or hospital director and discuss how new research could also benefit clinic staff through training or mentoring of persons at the site.
- *Specify who needs to know.* While many clinical sites host visiting health care professionals, most are not accustomed to hosting a trainee conducting clinical research for an extended period. Patient-oriented research at a clinic or hospital may require approval from only the director, or also from higher bureaucratic levels; regulations vary by country. We prefer starting conversations at the clinical site to determine what level of approval is required for each specific project. For projects requiring Ministry of Health approval, such as clinical trials, the investigators should be certain the Ministry has communicated with the director of the research site. Visiting trainees should also be informed about what data they can have access to, and what approvals are needed for collecting or analysing data.
- *Ensure adequate on-site supervision.* Delegating supervision of daily activities to someone at the clinical research site ensures that the trainee receives

necessary oversight of daily activities and has an accessible contact should problems arise. In clinics with limited resources, busy staff members have limited time to provide supervision to a visiting trainee, and may require reminders or clarification of their role in supervising a visiting investigator.

- *Familiarise trainee with local customs.* The visiting trainee should be aware of local customs and procedures. In many countries, visitors are expected to greet everyone in a room with a handshake, kiss or local phrase. Taking time to meet key clinic staff, including the triage nurse, counsellor, pharmacy assistant and medical records clerk is time well spent; learning names and roles builds trust and ensures a more receptive environment. Living and working in a new culture can be challenging; sharing personal experiences and expectations can help reduce this stress and references for acquiring cultural competency are available online (Morris 2009, Sicht 2009).
- *Be aware of time constraints.* Visiting trainees often have little concept of the time required to implement a research project and need help designing a feasible project that fits within the existing clinical research infrastructure. In addition, because IRB approvals from the host and home institutions often takes months to obtain, depending on how much time is available, involving the visiting junior researchers in analysis of an existing database can provide a sense of involvement and a tangible result if an abstract or manuscript is produced. Time can be maximised by training. Establishing a timeline offers practical guidance for maximising the value of these experiences (see Table 2).
- *Monitor progress.* Regular meetings with the mentor should be arranged; these can include in-person meetings, Internet-based communications and phone calls. These meetings should include discussion of the research project and any perceived barriers. Encourage trainees to pursue goals outlined at the onset of the experience. If multiple trainees are in the same city, quarterly ‘works-in-progress’ conferences provide a forum for exchange of ideas, social interaction, constructive criticism and learning through others’ mistakes and successes.
- *Offer assistance in study design, analysis and presentation of data.* Trainees rarely possess the skills necessary to independently develop, conduct and analyse a clinical research project, and each trainee’s needs will be different; recognising these needs and arranging instruction from colleagues who possess complementary skills will enhance the trainee’s development. In addition, most trainees have not had extensive experience preparing or presenting scientific work. Guidance in presenting research findings at meetings, authorship and writing scientific manuscripts is appreciated by the trainee and reflects well upon the mentor by demonstrating the trainee’s productivity.
- *Build community.* Introducing incoming trainees to host-country trainees at the same or advanced level enlarges the trainee’s scientific network, reduces isolation and promotes cultural exchange. An additional benefit of interaction with other trainees is awareness of the stage of research development and progress of their peers, encouragement to achieve similar levels of progress and a forum to provide constructive criticism and identify those trainees who may require additional assistance. Visiting junior researchers should strive to be collaborative, and include input from host-country colleagues.
- *Share research findings with local collaborators and research participants.* Providing research findings to local collaborators recognises their efforts and

Table 2. Mentor and trainee expectations prior to, during and after global health training periods.

	Pre-arrival	During	Post-departure
Local mentor	<ul style="list-style-type: none"> ● Discuss expectations with home country-based mentor and trainee ● Orient trainee to opportunities and resources at international site ● Identify feasible and appropriate clinical project and timeline ● Identify potential political or research infrastructure barriers ● Facilitate approvals from appropriate IRBs ● Develop a plan should an emergency arise 	<ul style="list-style-type: none"> ● Orient trainee to clinical site ● Introduce trainee to clinic staff ● Orient trainee to cultural and professional customs ● Schedule regular meetings with trainee ● Assist trainee with cultural issues ● Assist trainee with troubleshooting and identifying local resources ● Assess independence, mental health and safety of trainee ● Facilitate networking and community building ● Assist trainee with providing updates to local staff ● Help develop presentation and writing skills ● Maintain contact with home-country-based mentor ● Conduct mentoring evaluations (discussion with trainee) 	<ul style="list-style-type: none"> ● Conduct mentoring evaluations (discussion with trainee and mentor evaluation survey) ● Be available for future contact and assistance with completion of remaining tasks ● Discuss impact of experience on trainee ● Provide feedback to trainee ● Conduct evaluation of mentorship quality ● Present project outcomes to local research subjects and colleagues
US-based mentor	<ul style="list-style-type: none"> ● Assess trainee interests and skills 	<ul style="list-style-type: none"> ● Schedule regular meetings with trainee 	<ul style="list-style-type: none"> ● Conduct mentoring evaluations (discussion with trainee and mentor evaluation survey)

Table 2 (Continued)

	Pre-arrival	During	Post-departure
	<ul style="list-style-type: none"> ● Assist trainee to define a project and establish timeline 	<ul style="list-style-type: none"> ● Assist trainee to troubleshoot and identify resources 	<ul style="list-style-type: none"> ● Be available for future contact and assistance with completion of remaining tasks
	<ul style="list-style-type: none"> ● Orient trainee to international site 	<ul style="list-style-type: none"> ● Assess independence, mental health and safety 	<ul style="list-style-type: none"> ● Ensure IRB status reports are submitted
	<ul style="list-style-type: none"> ● Orient trainee to cultural and professional customs 	<ul style="list-style-type: none"> ● Facilitate networking and community building 	<ul style="list-style-type: none"> ● Assist trainee with preparation and submission of research manuscript
	<ul style="list-style-type: none"> ● Identify local co-mentor and clinical site(s) 	<ul style="list-style-type: none"> ● Encourage adherence to timeline and identified goals 	<ul style="list-style-type: none"> ● Discuss impact of experience on trainee's future goals
	<ul style="list-style-type: none"> ● Introduce trainee to local mentor 	<ul style="list-style-type: none"> ● Maintain contact with local mentor 	<ul style="list-style-type: none"> ● Conduct evaluation of mentorship quality
	<ul style="list-style-type: none"> ● Discuss expectations with local mentor and trainee 	<ul style="list-style-type: none"> ● Ensure necessary IRB approvals are obtained 	<ul style="list-style-type: none"> ● Provide feedback to trainee
	<ul style="list-style-type: none"> ● Assist local mentor to obtain approval from clinical site 	<ul style="list-style-type: none"> ● Help develop presentation and writing skills 	<ul style="list-style-type: none"> ● Continue to build community of researchers
	<ul style="list-style-type: none"> ● Determine if a database is available for an analysis project 	<ul style="list-style-type: none"> ● Conduct mentoring evaluations (discussion with trainee) 	
	<ul style="list-style-type: none"> ● Assist trainee with IRB application 		
	<ul style="list-style-type: none"> ● Develop a plan should an emergency arise 		
Visiting trainee	<ul style="list-style-type: none"> ● Discuss expectations with both home- and host-country mentor 	<ul style="list-style-type: none"> ● Be proactive about maintaining contact with mentors and providing feedback regarding strengths and weaknesses of mentoring 	<ul style="list-style-type: none"> ● Maintain contact with both mentors regarding project outcomes
	<ul style="list-style-type: none"> ● Be honest and open regarding interests, skill sets, goals and personal and professional needs and limitations 	<ul style="list-style-type: none"> ● Assist with preparation of IRB application – for US and research site 	<ul style="list-style-type: none"> ● Prepare and submit research manuscript

Table 2 (Continued)

Pre-arrival	During	Post-departure
<ul style="list-style-type: none"> ● Understand strengths and limitations of the clinical site 	<ul style="list-style-type: none"> ● Be flexible regarding unanticipated delays 	<ul style="list-style-type: none"> ● Seek feedback on the experience
<ul style="list-style-type: none"> ● Define a project and timeline with assistance of both mentors 	<ul style="list-style-type: none"> ● Be willing to ask for help, particularly when unexpected problems or safety concerns arise 	<ul style="list-style-type: none"> ● Be willing to request further professional guidance
<ul style="list-style-type: none"> ● Complete relevant trainings, such as Human Subjects Training 	<ul style="list-style-type: none"> ● Focus on identified goals and attempt to complete as many as possible prior to departure 	<ul style="list-style-type: none"> ● Evaluate mentorship quality with mentor and via written feedback
<ul style="list-style-type: none"> ● Become familiar with cultural and professional customs of host country 	<ul style="list-style-type: none"> ● Establish a peer network as a forum to discuss barriers and successes 	<ul style="list-style-type: none"> ● Consider remaining part of the research community at the site
<ul style="list-style-type: none"> ● Become familiar with the history and situation of the research site, including living conditions 	<ul style="list-style-type: none"> ● Develop or improve presentation and writing skills 	<ul style="list-style-type: none"> ● Thank all involved and send updates on future directions
<ul style="list-style-type: none"> ● Develop a plan should an emergency arise 	<ul style="list-style-type: none"> ● Start drafting research manuscript – define who will be authors and order of authors (discuss with mentors) 	
<ul style="list-style-type: none"> ● Accomplish as many steps of project planning as possible prior to departure, including developing relevant data analysis or language skills and conducting a literature review to identify what is known about area of interest in the host country 		
<ul style="list-style-type: none"> ● Assist with preparation of IRB application 		

provides information that could affect the care they provide or future research projects they design. Providing research findings to research subjects expresses gratitude for their contributions to the research and also informs them how their involvement has affected science.

- *Conduct mentoring evaluations.* Mid-point and exit surveys or discussions of mentorship provide useful feedback for mentors at both the home and international institutions and provides an opportunity to strengthen mentoring for future trainees. Surveys administered via a third party (e.g., the FICRS-F Programme 2009) can be administered in a way that promotes honest dialogue.
- *Expand mentoring capacity.* To increase mentoring effectiveness at the international site and recruit future mentors, sites can invite past trainees and collaborators from the host site to discuss experiences and methods of mentoring. Site directors of the home and international sites should be encouraged to invite other interested researchers to participate in training sessions, thereby encouraging the recruitment and training of additional mentors.
- *Maintain relationships.* Mentorship, as traditionally defined, involves a long-term commitment to building a mentor–trainee relationship. This requires maintaining connections with trainees after the training period has ended and encouraging communication when they are challenged. Mentors should offer a variety of ways for trainees to meet: in person, by email, phone, Internet-based phone service or group meetings. Additionally, periodic communication between host-country and home-based mentors can reduce confusion and expedite resolution of problems that arise.

Resources on mentorship

Few formal resources are available regarding clinical research mentoring in developing countries. Despite that, existing resources for clinical global health experiences often prove useful in the clinical research setting, as well. One such resource is the Clinical Mentoring Toolkit produced by I-TECH (2008) which is a CD and DVD package that includes a step-by-step guide for starting and maintaining an effective clinical mentoring programme. The toolkit is free and includes tools for planning, assessment, training, mentoring and evaluation that can be tailored to local needs. I-TECH also conducts clinical mentoring workshops for developing mentors. The objectives of these 1–2 day didactic and interactive sessions are to provide guidelines for mentorship at international sites, to exemplify methods of good mentorship and encourage each mentor to develop skills and resources necessary for effective mentoring (I-TECH 2008).

As noted above, acculturation and cultural competency are perhaps most important early during the training period but can affect relationships between visiting trainees and local colleagues and communities for the duration of the training period (Morales-Mann and Higuchi 1995). Mentors can prepare trainees for potential cultural differences through discussions and by providing access to online resources (Morris 2009, Sicht 2009).

A valuable but subjective measure of mentor training effectiveness is satisfaction with mentoring reported by trainees. Surveys containing qualitative and quantitative

questions can evaluate aspects of mentoring that are functioning well and those that require corrective action. A more quantitative measure of mentoring is direct observation by a skilled mentor with use of scales to assess competence, as recommended by the I-TECH guide for clinical care mentoring (I-TECH 2008). Results of evaluations should be shared with programme directors to ensure each site is responsive to the trainee's needs at each international site. Evaluating mentor effectiveness typically involves qualitative scales and mentor–trainee interviews (Berk *et al.* 2005). The NIH recently initiated a programme to capture information regarding the career trajectory and academic achievement of trainees (CareerTrac; NIH 2009); this provides a more quantitative measure that is likely an excellent surrogate for mentoring effectiveness over extended periods of time.

Finally, unlike the ethics of conducting clinical research in developing countries, the ethics of short-term clinical research projects with potentially vulnerable populations have not been well defined (Singer and Benatar 2001). Similar to recommendations regarding short term global health electives, the focus of clinical research in global health should be on improving lives through developing intentional partnerships between colleagues and institutions in resource-rich and resource-poor countries (Abbasi and Godkin 2006, Crump and Sugarman 2008, Drain *et al.* 2009). Keeping this goal in mind, mentored clinical research experiences should effectively train the next generation with the necessary skills to answer clinical research questions in global health while defining a set of ethical guidelines that will benefit future generations of trainees.

Conclusions

Global health is increasingly viewed as a dedicated career path by young health profession trainees and has been accompanied by an increase in formal training opportunities. Parallel with this increase arises the need for improved mentorship to maximise the effectiveness of clinical research opportunities during the experience and to ensure continued guidance as trainees transition to independent careers.

Expansion of formalised mentor training can minimise the burden of a visiting trainee on the international site and encourage productivity and future commitment of new mentors in host countries. Ideally, mentors would have access to more dynamic forms of training, such as workshops centred on communication and education skills, as well as reference materials for mentors and trainees, such as those created by I-TECH (2008).

As global health related experiences for trainees often permit high levels of autonomy, emphasis should be placed on providing tools to help them succeed while ensuring a safety net is present should problems arise. These tools should include practical recommendations regarding communication and preparation, as well as planned opportunities to discuss study implementation, outcomes and lessons learned with the international and home colleagues. For both mentors and trainees, programme evaluation that includes questions regarding the experience and its outcomes are invaluable means of identifying and addressing areas of concern.

The challenges involved in clinical research training for students in the international setting require flexibility and anticipation of unexpected obstacles.

For those mentors and trainees who possess a passion for improving global health, the effort is worthwhile. As Mark Twain wrote in 1869, 'Broad, wholesome, charitable views of men and things cannot be acquired by vegetating in one little corner of the earth all one's lifetime'. These words epitomise the drive felt by many involved in global health – a desire to not only experience the world for oneself, but also to contribute to the alleviation of suffering on a global scale.

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