Mentoring in Global Health: Formative Evaluation of Tuberculosis Research Training Programs in Ethiopia and Georgia

Dawn L. Comeau,^{1,2*} Kathryn Mishkin,¹ Nestani Tukvadze,³ Zaza Avaliani,³ Russell R. Kempker,² Lisa Sthreshley,³ Matthew J. Magee,⁴ Hannah Eisen,¹ Damen Haile Mariam,⁵ Abraham Aseffa,⁶ and Henry M. Blumberg^{1,2}

¹Rollins School of Public Health, Emory University, Atlanta, Georgia; ²Emory University School of Medicine, Atlanta, Georgia; ³National Center for Tuberculosis and Lung Diseases, Tbilisi, Georgia; ⁴School of Public Health, Georgia State University, Atlanta, Georgia; ⁵School of Public Health, Addis Ababa University, Addis Ababa, Ethiopia; ⁶Armauer Hansen Research Institute, Addis Ababa, Ethiopia

Abstract. Mentoring is a critical component of career development for research scientists and is related to mentee success both in terms of career selection and advancement. However, there are limited data on the role of mentoring in low- and middle-income countries (LMICs). Cross-cultural mentorship programs have the potential to foster the transfer of knowledge and the development of capacity to resource-poor settings. This formative evaluation explores the cultural context of mentoring in the countries of Georgia and Ethiopia. Results were used to build culturally relevant mentor training programs for two Global Infectious Disease Research Training Programs focused on tuberculosis funded by the Fogarty International Center at the US National Institutes of Health. Four focus group discussions were conducted with research trainees and mentors to explore the perceptions of mentorship, identify obstacles for successful mentoring, and generate recommendations to strengthen mentoring in each program situated in a LMIC. Data revealed the barriers to mentoring in Ethiopia and Georgia included gaps in knowledge about mentoring roles and responsibilities, lack of knowledge about the responsibilities of the trainee in a mentoring relationship, and the need to set clear expectations between mentors and trainees. All of the focus group participants desired formal mentor training. These data informed six key components of the development and implementation of the mentor training programs in both countries. The topics included the following: a foundation in mentoring, establishing expectations between mentees and mentors, increasing interactions between mentees and mentors, additional mentor training, a case study curriculum, and methods of evaluating mentoring relationships.

INTRODUCTION

Mentorship serves as a key component of research training to advance leadership skills and build technical knowledge.^{1,2} One definition of mentorship is “a process whereby an experienced, highly regarded, empathetic person (the mentor) guides another (usually younger) individual (the mentee) in the development and reexamination of their own ideas, learning, and personal and professional development.”^{3,4} Mentorship is correlated with mentee career success, both in terms of career selection and advancement.⁵ In the short term, mentorship programs strengthen research practices, thereby, increasing research capacity. In the long term, they have the potential to reinforce collaboration among researchers, increase the quality and quantity of studies, and ultimately strengthen the research infrastructure in a given country.^{6,7} However, there are numerous challenges to quality mentorship relationships. For example, mentors and mentees may misunderstand their roles, there may be a lack of qualified mentors available to trainees and young investigators, and there may be insufficient institutional support and/or recognition for mentorship.⁸ Recently, in the United States, the National Research Mentoring Network (NRMN) was funded by the National Institutes of Health (NIH) to improve mentoring. The National Research Mentoring Network and similar mentor training programs^{9–11} include skill building on effective communication, aligning expectations between mentors and mentees, assessing the understanding and skill level of mentees, addressing equity and inclusion in mentoring relationships,

fostering mentees’ independence as researchers, professional development, and evaluating the effectiveness and competency of mentors.^{12–15}

However, the aforementioned training programs and studies focus on mentoring in the United States with little attention to mentoring in low- and middle-income countries (LMICs) or adapting mentor training in diverse global settings. The few studies that focus on building mentoring capacity in low-resource settings report that mentorship can be crucial to the development of scientific study when financial sponsorship, human resources, and technical training may be especially limited.^{5,16–21} Mentoring programs appear to increase the quality of research conducted in global health settings. For example, the programs bring funding opportunities for researchers and build on the skill set of in-country mentors to facilitate their career development.²² However, there are several challenges to cross-cultural mentoring programs. Infrastructure, time constraints, and communication challenges may interfere with the quality of mentoring delivered to the mentees.²² Unclear communication goals and a vague understanding of the role of the mentor toward the mentee and vice versa, especially when mentees and mentors are from different cultural backgrounds, can interfere with the mentoring relationship.²³

Although mentoring has been instituted throughout the United States in academics as a critical component of research training, it is still in infancy in the countries of Georgia and Ethiopia. We conducted a formative evaluation to explore the cultural context of mentoring in the countries of Georgia and Ethiopia. Results were used to build culturally relevant mentor-training programs for the Ethiopia-Emory Tuberculosis (TB) Research Training Program (EETB-RTP) and the Emory-Georgia TB Research Training Program (EGTB-RTP). Both programs are funded by the NIH Fogarty

* Address correspondence to Dawn L. Comeau, Department of Behavioral Sciences and Health Education, Rollins School of Public Health, 1518 Clifton Rd., Atlanta, GA 30322. E-mail: dcomeau@emory.edu

International Center (FIC) in the United States—a mechanism that supports research training in LMICs through a variety of capacity building and training grants, including the Global Infectious Diseases D43 International Research Training Grants. The goal of each research training program is to build human capacity to enhance the research infrastructure for high-quality TB-related research by providing didactic and mentored research training and research opportunities to a diverse group of Ethiopian and Georgian investigators.

PROGRAM BACKGROUND

The EGTB-RTP and the EETB-RTP are focused on enhancing TB research and public health infrastructure for TB control by providing didactic and mentored research training to investigators in each country. The program-specific aims include the following: 1) to build human capacity to conduct high quality TB-related research; 2) to build research capacity by providing mentorship and leadership training for Fogarty trainees who advance to serve as in-country mentors for new trainees; 3) to enhance capacity to conduct internationally recognized research on TB; and 4) to translate research findings into evidence-based public health policy (in Georgia and Ethiopia). Trainees supported by the RTPs include PhD graduate students, postdoctoral trainees (with PhD or MD degrees), physicians and PhD-level scientists and junior faculty at academic, public health, and/or research institutions. Fogarty trainees complete an Individual Development Plan (IDP) that outlines their training pathway including their courses in research ethics, research methods, scientific and grant writing as well as other courses related to their career development. The programs provide didactic and mentored research training through in-country courses, distance-learning courses and workshops. The trainees receive a salary stipend so that they have protected time to work on a mentored research project, a stipend for an international conference, training supplies, a computer, and online access to Emory's resources, such as databases and electronic journals.

The EGTB-RTP began in 2004 in collaboration with the Georgian National Center for TB and Lung Diseases and more recently has collaborated with the National Center for Disease Control and Public Health.²⁴ To date, the program has supported 29 long-term postdoctoral trainees (including current trainees) (women = 20, men = 9) who have MD or PhD degrees; in addition, some have also pursued MSc or MPH degrees as part of the didactic research training. The program has included 29 mentors (in-country = 18; US/international = 11) (a few mentors have more than one mentee). One of the former Fogarty trainees (N. T.) now serves as the lead Georgian investigator on the current cycle of the NIH training program. The EETB-RTP began in 2014 in collaboration with three Ethiopian institutions including the Armaeur Hansen Research Institute, Addis Ababa University, and the Ethiopian Public Health Institute. To date, EETB-RTP has supported 17 long-term trainees (women = 5, men = 12) and 27 mentors (Ethiopian = 14, US/international = 13) who often work with one or two trainees in the program.

Mentoring in the programs. Each trainee is paired with two mentors: a mentor in their own country and a U.S. (or other international)-based mentor, generally at Emory University. To be successful, the Fogarty mentors are current experts in the field of infectious diseases and tuberculous research. In

Georgia, several of the mentors are former Fogarty trainees. In-country and U.S.-based mentors and program leadership review the trainee's IDP and provide feedback on the IDP annually. Mentors and trainees are highly encouraged to meet monthly (in person or via audio or video conference calls with U.S.-based mentors). Each year, the programs hold an annual in-country conference. Trainees, mentors, and program leadership attend the conference at which mentees present their research, meet with their mentors, receive additional research training, and network with other trainees and mentors.

MATERIALS AND METHODS

To explore the cultural context of mentoring, we conducted a descriptive qualitative study that included four focus group discussions. Focus groups are ideal for formative evaluation because they facilitate the collection of different points of view from diverse participants. Furthermore, the participants introduce new topics and prompt important conversations with each other in a collaborative manner that is relevant to the research topic.^{25–27} The two focus groups conducted in Georgia included one session with seven trainees (men = 3, women = 4) and another session with seven mentors and members of the program's Georgian leadership (men = 2, women = 5). We also conducted two focus groups in Ethiopia: one with seven trainees (men = 5, women = 2) and one with eight mentors and leadership (men = 6, women = 2).

Data collection. The focus groups took place in Georgia and Ethiopia as part of the programs' annual research conferences. We conducted separate focus groups with trainees and mentors based on the recommendation from our collaborators who suggested that participants would be more forthcoming about mentoring experiences without their own mentor or mentee in the session. The United States mentors and administrators did not participate in the sessions so that we could focus on the in-country experience of our trainees and mentors. The focus group guides were developed by the Fogarty program evaluator (D. L. C.) and then reviewed by the program administration (H. M. B., R. R. K., M. J. M.) (Tables 1 and 2). The guides were revised to incorporate additional culturally relevant questions. The focus groups covered three domains: 1) definitions of mentorship, 2) cultural understandings of mentoring in their country; and 3) an assessment of the mentoring in the program. We used convenience sampling for the focus groups. The focus groups lasted between 50 and 90 minutes. The focus groups were moderated by the program evaluator (D. L. C.) and detailed notes were taken by the program coordinator (L. S.). All the focus groups were conducted in English as all trainees are fluent in English. Three sessions were audio recorded; one session was not recorded because one of the participants in the group objected to being recorded. Detailed notes were taken in place of audio recording. After each focus group, the moderator and note taker debriefed to discuss the key themes of the focus group and make additional notes. The recordings were transcribed verbatim by a professional company.

Data analysis. Thematic analysis was used for data analysis which is a method for identifying, describing, and reporting patterns that emerge in the data.²⁸ Three researchers (D. L. C., L. S., K. M.) reviewed the transcripts and developed a preliminary codebook. The researchers discussed the initial list of codes and their definitions. Then, the

TABLE 1
Emory-Georgia TB Research Training Program: Focus group discussion guide for mentors

Opening

Purpose: Warm-up and collect a general understanding about mentorship

When you hear the term “mentor,” what comes to mind? What do you think about?
Or

How would you define “mentor”?

Possible probes:

What types of things should a mentor do for a mentee?

What types of things should a mentor NOT do for their mentee?

Examples.

Mentoring in Georgia:

Purpose: To collect data about the cultural context of mentoring in Georgia

How is mentoring perceived in Georgia?

Possible probes:

Is mentoring common? Is it necessary?

Who gives career direction and support? How?

Is there a similar term or concept used to describe someone who guides you through your career or gives you advice?

What expectations are there for mentorship in Georgia?

Why is mentoring important for career development as a researcher in Georgia?

Emory-Georgia TB Research Training Program:

Purpose: To collect programmatic context about mentoring

Tell us a little bit about your experience as a mentor in this program, or in general.

What have been the strengths of your mentoring relationship? Benefits?

Weaknesses?

Possible probes:

How often do you meet with your mentee, communicate?

What do you expect from your mentee?

Does your mentee take initiative to follow-up? Or do you?

How do you work with the U.S. mentors?

What do U.S. mentors have a tough time understanding about working in Georgia (or career development in Georgia)?

How has mentoring helped your own career?

Examples.

How could EGTB improve the mentoring?

Possible probes

What recommendations do you have?

Closing:

Please describe the ideal mentoring relationship.

What else would you like to share with us today about mentoring?

EGTB = Emory-Georgia TB; TB = tuberculosis.

researchers reread the transcripts and applied the codes. Throughout the process, the researchers clarified code meaning and application through discussion about the codes and their definitions.^{25,28} Data management and analysis took place in MaxQDA (VERBI Software, Berlin, Germany). To verify the accuracy of the data analysis, we conducted member checks with trainees and mentors in each country.^{29–31} This process included presenting the results back to the participants in a group setting at the annual conferences the subsequent year so that they could correct inaccuracies, inconsistencies and misinterpretations. We incorporated the feedback from these sessions into the results. Written results were reviewed again by Georgian and Ethiopian collaborators.

The Emory University Institutional Review Board determined that this project was exempt from review because the evaluation fell within the scope of routine program quality improvement.

RESULTS

Similar themes emerged in all four focus groups despite the different cultural context in Ethiopia and Georgia (Table 3). In all the focus groups, participants had an understanding of mentorship according to U.S. definitions due to their involvement in the Fogarty programs and traits that exist in similar relationships in their own country. However, Fogarty

trainees were unsure how to determine the extent of mentoring relationships or the expectations between mentees and mentors. The participants discussed local institutional barriers to mentoring, a desire for a cultural shift to value mentoring in their country, strengths of mentoring in the program, and areas for program improvement.

Descriptions of mentoring. *Georgia.* In Georgia, the term “mentor” and the concept of “mentoring” exist but does not necessarily connote the same relationship characteristics as in the United States. The Georgian mentors noted that there is a traditional word used in the native Georgian language to describe the role of a mentor for PhD and other graduate programs in Georgia and that there has been a long tradition of more experienced and older professionals sharing wisdom with younger generations. However, one mentor mentioned that the concept of mentoring “disappeared” for a period of time after the dissolution of the Soviet Union. Mentors explained that the younger generations of trainees might lack memory of the mentoring tradition but it was a deep part of Georgian culture even if the characteristics of mentoring were not the same as current day U.S. practices. This was supported by the Georgia Fogarty trainees who mentioned that mentoring was a new concept to them. They described mentors as someone who has more experience in the field of research, a “bigger background than you” and likened mentors to “a good friend,” “teacher,” “guide,” “boss,” or an aunt in

TABLE 2
Emory-Georgia TB Research Training Program: Focus group discussion guide for trainees

Opening

Purpose: Warm-up and collect a general understanding about mentorship

When you hear the term "mentor," what comes to mind? What do you think about?
Or

How would you define "mentor"?

Possible probes:

What types of things should a mentor do for a mentee?

What types of things should a mentor NOT do for their mentee?

Examples

Mentoring in Georgia:

Purpose: To collect data about the cultural context of mentoring in Georgia

How is mentoring perceived in Georgia?

Probe:

Is mentoring common? Is it necessary?

Who gives you career direction and support? How?

Is there a similar term or concept used to describe someone who guides you through your career or gives you advice?

What expectations are there for mentorship in Georgia? Is the scientific environment conducive to helping you researchers succeed?

Why is mentoring important for career development as a researcher in Georgia?

Emory-Georgia TB Research Training Program:

Purpose: To collect programmatic context about mentoring

Tell us a little bit about your mentors in this program.

Possible probes:

How often do you meet, communicate?

What do you expect from your mentor?

Does your mentor take initiative to follow-up? Or do you?

How are the US/Georgian mentors the same or different?

What do U.S. mentors have a tough time understanding about working in Georgia (or career development in Georgia)?

How have mentors helped your career?

What has been missing?

What additional assistance would you like from mentors?

Examples.

Do you currently provide mentorship to someone? If so, has this impacted your view of mentorship at all?

What have been the best qualities of your Georgian mentor?

What have been the weaknesses of your Georgian mentor?

What have been the best qualities of your U.S. mentor?

What have been the weaknesses of your U.S. mentor?

How could EGTB improve the mentoring?

Probe:

What recommendations do you have?

Closing:

Please describe your ideal mentor

What else would you like to share with us today about mentoring?

EGTB = Emory-Georgia TB; TB = tuberculosis.

the Georgian context of family." The Georgian mentors used similar descriptions and explained that a mentor is "not only a teacher but a friend," "someone who is more knowledgeable," and "someone who boosts the mentee's self-esteem."

Ethiopia. Like Georgia, in Ethiopia, there is a tradition of older generations transferring important wisdom and knowledge to younger people. According to one mentor, in Ethiopia "mentoring" is a daily activity of any responsible adult within society that is reflected in families, among senior colleagues, community members, etc. This is acquired within the community as part of the Ethiopian culture and transferred through generations. Ethiopian mentors described a mentor as a "guide," "coach," "advisor," and "role-model." They described a mentor as someone who "follows and makes sure a person delivers," "someone who takes the mentees successes personally," and person who "supports the student [or trainee] with career and psychosocial support." Ethiopian trainees explained that "mentoring" as we describe it in the United States is a new concept to them. The participants likened a mentor to a "senior researcher," "advisor," or "supervisor" and explained that the terms were used interchangeably. However, the trainees interpreted a mentor's role

in the Fogarty program to be different than an advisor or supervisor. An advisor typically focuses on a trainee's specific research project but does not provide the "big picture" on larger career goals. The Ethiopian trainees described an ideal mentor as someone who is more experienced, skillful in the student's area of interest, friendly and easy to talk to, and helpful in areas of their life beyond their research project. One Ethiopian trainee stated, a mentor is "a senior researcher or expert who can coach, who can direct, and who also shows guidance [on] future character development both in research and in other life aspects as well."

Expectations of mentoring relationships. In both countries, the mentors and trainees described important attributes of mentoring which came from their cultural traditions and their involvement in the Fogarty TB RTPs. One Georgian mentor explained, "A mentor is a person who guides you through... your career at different stages." Another mentor noted, "honesty is key" and a mentor must be "a person who you trust." One Georgian mentor shared: "The mentor is a person to whom you can go and ask questions, and you will get inspiration... who supports you when you are nervous, like before your presentation... who gives you direction and

TABLE 3
Selected themes, key findings and supporting quotes from trainees and mentors in Fogarty research training programs by country

Themes	Georgia		Ethiopia	
	Trainees	Mentors	Trainees	Mentors
Traditional roles similar to mentors	Teacher and lecturer	Head of research	Advisor and supervisor	Advisor, supervisor, coach, and project manager
Descriptions of mentoring	Guide, supporter, friend, family member, and teacher Sharer of knowledge, helps with hardships, answers questions, and provides feedback and recommendations	Guide, supporter, friend, family member, and teacher Mentoring is a relationship over time, throughout life, and a person you trust	Guide and friend More experienced person, expert, coach, and guides career and character development	Guide, supporter, and family Ensures mentees meet their goals and someone with more experience leading someone new to the profession
Supporting quotes	“A good friend who is with you in difficulties, shares your opinion, listens to you, and helps you, and accompanies you” “Like an aunt in the Georgian context”	“Someone who highlights your strong points, and helps you with the weak ones,” “Someone who remains in contact throughout your career”	“A guide in character development both in research and in other life as well (in families, culture)” –	“Someone who communicates experience to those without” “Someone who takes mentee successes personally”
Expectations of mentoring relationships	Provide feedback on research projects Mentors should be better (more experienced and skilled in TB research) than trainees, someone who adds value to your work Mentors should teach the trainee new things and be available to discuss research and day-to-day activities	Provide feedback on research projects and daily routine Honesty, trust, and mutual respect Mentors provide overall career advice and boost confidence of mentee Mentees should be independent, have goals, and ask for what they want from their mentors	Provide professional and personal guidance More than a supervisor on a research project, considers long-term plans Mentors help mentees solve problems, monitor progress and share opportunities for work –	Provide professional and personal guidance Transfers important knowledge to a younger professional and guides mentees beyond a single project –
Supporting quotes	“It means that she or he must teach everything, show us directions, the road which he past already . . . for finding a new world.” “Mentors always answer your e-mails, never ignore your question and provider their recommendations and feedback on all your questions”	“Mentors should be as honest as possible to the mentee and identify the potential of a mentee which might be hidden” “The mentor is a person to whom you can go and ask questions, and you will get inspiration.” “The job of the mentor is . . . to introduce the mentee to other people as well who might [benefit] the mentee.”	“For me a mentor is more than supervisor. It's a deeper meaning than the supervisors, so I expect guidance. . . helping me, as a model for [my career]” “I expect [mentors] to . . . monitor my progress. . . support my challenges” “I expect additional work from my mentor. . . funding options in relation to my work.”	“Giving the mentee vision and ambition beyond the project” “The role of the mentor is very critical and the idea is to deliver something at the end. . . making sure that what was agreed is actually delivered” “Expectations should be individualized and followed up”
Barriers to mentoring	Mentoring by U.S. standards is new Uncertain of what to expect of mentors (frequency of communication and meetings, scope of relationship, and who initiates meetings and projects) Mentors are very busy	Mentoring by U.S. standards is new, leftover Soviet style mentoring in Georgia Uncertain about scope of mentoring roles (frequency of communication and time with mentees, amount and type of feedback and direction, who initiates meetings and projects) Institutions and leaders do not always value mentoring, mentoring not	Mentoring by U.S. standards is new, unsure about the scope of mentoring relationships Ethiopian mentors busy with many trainees outside of Fogarty program because of expansion of graduate programs, mentors (advisors) are passive Communication with U.S. mentors is a challenge	Mentoring by U.S. standards is new Mentors busy with many trainees outside of Fogarty program Hierarchal relationships

(continued)

TABLE 3
Continued

Themes	Georgia		Ethiopia	
	Trainees	Mentors	Trainees	Mentors
	Few qualified mentors in Georgia who are TB researchers	structured or well-defined (outside Fogarty)	Limited opportunities for career development	Difficult coordination with U.S. mentors Minimal institutional capacity or support for mentoring
Supporting quotes	"Mentors in Georgia, who have very great backgrounds, do not have any time."	In Georgia (outside Fogarty): "there is sort of mentor, but not really well structured or well defined or result any program or guidance."	"I don't know how to exploit, you know, properly the US mentor"	"I don't know the other mentors. We haven't had a chance to meet in person. . . it would be good for [us] to meet."
Strengths and benefits of mentoring in programs	Mentors provide increased career opportunities	Mentoring benefits own research approach	Mentors provide increased career opportunities	Mentors develop research and professional capacity of mentees
	In-country mentors: Accessible, brainstorming ideas and discussion, knowledgeable about research in Georgia	Being a mentor is enjoyable and rewarding	Mentors are active, follow-up and overall communication is good	Mentors take mentee' success personally
	US mentors: Responsive, available, helpful, give detailed feedback, share knowledge and new perspectives, access to career and funding opportunities	New generation of TB researchers give mentors hope about the future, mentees are inspirational	Easy to communicate with Ethiopian mentors (advisors), they answer your questions and keep you on track	Mentoring builds character
	Trainees can become future mentors	Improves mentors time management, boosts mentors confidence	US mentors are proactive Program provides funding and resources for a mentored research opportunity not available in their own country	
Supporting quotes	"[Georgian mentors] They shared everything they knew. They shared everything they could, and it was very good for me personally."	"Program gives the opportunities to meet international standards" "good chance of a good education"	US mentors: "they know every detail of your activities and they are proactive and follow every inch of your progress"	Student' successes are like our "own children's successes"
	"[Georgian mentors] They're accessible every day, every time."	"I enjoy it very much. . . Mentoring diverts my attention from daily routine to another kind of work, it's delightful."	"I'm totally about funding, focusing on research."	Mentoring "can make you a better person"
		"The relationship is awesome. . . it gives you clarity and confidence"	"We have close communication." "They guide in the individual development plan"	— —
Opportunities to improve mentoring and future directions	Mentor training for mentors and mentees	Mentor training for mentors and mentees	Mentor training for mentors and mentees	Mentor training for mentors and mentees
	Standard operating and evaluation procedures	Continued support for mentors' career development (i.e., funds for an international conference)	Continued help with research procedures, access to research and funding opportunities,	Continued support for mentors' career development
	More in-person meetings with U.S. mentors	Include people from the "older" generation in mentor training.	US mentors learn more about the culture and the challenges as a TB researcher in Ethiopia	(i.e., funds for an international conference)
	Increase exchange between the U.S. and Georgian mentors Evaluation procedures for mentoring	Advocate for mentoring and research support at higher institutional levels so there is sustainability	US mentors share more about their research and laboratories in the US	Increase exchange between the U.S. and Ethiopian mentors
Supporting quotes	"My suggestion is that every time when the US mentors arrive in Georgia they should try to save	"A mentor. . . needs constant development."	Trainees request "day-to-day" help with research experiments,"	"Mentors would benefit from proper training."

(continued)

TABLE 3
Continued

Themes	Georgia		Ethiopia	
	Trainees	Mentors	Trainees	Mentors
	several hours [for mentoring]. . . maybe ideally it should be the whole day.”	“Fund international conference at least once per year for mentors would be a good idea.” “Create a bridge between young and in previous generation, because them working together, it’s kind of a mutual force to make a change in the country”	“Collaboration beyond their research project” from mentors	“I think it would be good for mentors/mentees to have regular communication.” “Help to go to international meetings and presentations.” “Motivation of the mentor is very important. This is also a chance for the mentor to develop.”

TB = tuberculosis.

highlights your strong points, helps you with the weak ones.” Similarly, the Ethiopian mentors suggested that it is a mentor’s responsibility to “identify the student’s strengths” and assist with developing their mentee’s skills and communication. One Georgian mentor explained, “we are not basing our mentoring on best practices but rather thinking, ‘how would I love to be assisted?’” Several mentors in both countries described unclear expectations about the role of mentors. The mentors said that it is challenging to determine the “level of direction” and “involvement” in the mentee’s career. In both countries, trainees expressed uncertainty regarding what to expect from their mentors, such as how much time and feedback was typical, the breadth of the relationship professionally and personally, and how they should approach their mentors for assistance. The Georgian trainees conveyed their hope that mentors would be available to discuss their research projects, provide research and career advice, and give feedback on their proposals and manuscripts. Ethiopian trainees hoped mentors would link them with other researchers in their field and also guide them through career and life decisions.

Barriers to mentoring. In both countries, the mentors and trainees discussed barriers to mentoring. The Georgian mentors described a lack of support of mentoring by their supervisors and leaders—and at points, even an outright rejection of the benefit of mentoring by senior officials. For that reason, the Georgian mentors suggested including senior officials in mentor training to create a “bridge” between generations. The Ethiopian mentors noted that because of the intense demands of their jobs that it is challenging to find the time to mentor students or other trainees. Some felt that this is linked in part to the Ethiopian government’s recent scale-up of medical education and the expansion of graduate training programs which increased the number of students at medical and health professional schools by 300–400%.³² They explained that there are too many mentees (not related to Fogarty but the number of mentees they might have through their research or academic institutions) and they “can’t give them the time” that is needed. The trainees in both countries also discussed time as a barrier to strong mentorship. One Ethiopian trainee stated, “advisors are too busy” and, therefore, “we expect minimal assistance from them.” Until recently, outside of the Fogarty program, there have not been formal procedures to develop,

evaluate, or improve the mentoring relationships in either country.

Strengths of the mentoring in the programs. In both countries, the trainees and the mentors articulated benefits of receiving and providing mentoring in the Fogarty programs. The trainees said their mentors exposed them to important aspects of TB research, career and funding opportunities, skills and knowledge, and professional networks that otherwise would not have been available. The strengths of the in-country mentors included their availability for routine in-person meetings and phone calls, quick response to challenges with their research projects, and their knowledge and connections within their own country’s institutions. In both countries, the trainees felt that the U.S.–based mentors were available for meetings via Skype or phone and were able to provide helpful feedback on their research proposals and manuscripts. The Georgian trainees commented that the U.S.–based mentors gave “large volumes” of detailed written feedback and shared knowledge about their “skills and career opportunities.”

The mentors in both countries reported personal and professional rewards with mentoring trainees in the programs. The Georgian mentors reported that mentoring benefited their own research projects and career development. One Georgian mentor explained, “It helps you reconsider things [research] that you were up to before.” Another Georgian mentor explained, “It gives you a thought that there is a generation coming and there is a fix you can delegate at some point. . . the relationship is really awesome. . . it gives you clarity and confidence as well.” Several Ethiopian mentors also noted the positive aspects of mentoring in the Fogarty program. For example, it “can make you a better person,” and they described their students’ successes like “their own children’s successes.”

Opportunities to improve mentoring. *Expectations and communication.* Trainees in both countries suggested more deliberate plans for communication between mentees and mentors, clear deliverables and timelines, and a greater understanding of the unique strengths and limits of each country’s research capacity. Georgian trainees suggested developing mentor/mentee standard operating procedures to outline the expectations and responsibilities of the mentoring relationship throughout the course of the program. Some trainees requested more regularly planned

communication and coordination between their Georgian and U.S.-based mentors. For example, at times, they received conflicting feedback from their U.S. and Georgian mentor and it was difficult to determine whose advice they should follow. Mentors in both countries also mentioned the challenges of coordinating communication between the trainees and U.S. mentors to provide synchronized feedback. Ethiopian trainees suggested that the U.S. mentors learn more about the culture in Ethiopia to understand the challenges of becoming a TB researcher in their country. One trainee explained, "The mentor [in] the US is thinking [of] the environment where he grew up, and he looks at us as if we are in the same environment. So unless we see [his] environment, and the mentor sees ours, it is really difficult to say what's a good kind of mentor-mentee relationship."

Additional mentor training for trainees and mentors. All the mentors and trainees recommended additional mentor training. The trainees in Georgia suggested training for mentees and mentors soon after acceptance to the program to establish a strong foundation, set guidelines for interaction, and establish frequency and content of meetings. In addition to skill building and setting expectations, mentors suggested that training could help shift cultural expectations of mentoring relationships. For example, in Ethiopia, it is typical for the mentor to initiate and determine the tone and substance of a relationship with their trainees, and therefore, trainees might be hesitant to initiate or approach the mentor. Furthermore, the mentee might hesitate to initiate contact with a mentor because they do not want to be intrusive. Mentors suggested that mentees might need training to "overcome their timidity" and learn how to ask their mentors for assistance and mentors might need training to expect and value a mentee's initiative. Another Ethiopian mentor elaborated that potential mentees may be too shy to request mentorship or may be afraid that they will be rejected and therefore do not approach senior faculty or would-be mentors. They might be worried that they will be considered intrusive. One Ethiopian mentor suggested developing a "master" level training for mentoring (such as a certificate or an award) so that they could improve their skills and be formally recognized for their commitment. The trainees and mentors in both countries suggested implementing training beyond the Fogarty programs to include participants from their research institutions to strengthen the mentoring infrastructure in the country overall.

Support for mentors' careers. In both countries, the mentors requested support for their own career development so that they could "stay ahead" of their mentees. They wanted exposure to cutting-edge TB research through funding for an international conferences and additional training workshops. One mentor summed it up by stating, "we want to stay on board in terms of developing ourselves or we cannot mentor." The Georgian and Ethiopian mentors were also interested in meeting with the U.S. mentors to discuss their trainee's projects and career opportunities as well as build their own professional networks.

Evaluation of mentoring relationships. Trainees and mentors in both countries desired feedback on their performance to improve their roles and recommended implementing

an evaluation process to assess the success and productivity of their relationships.

DISCUSSION

In this formative evaluation, we learned important contextual factors about mentoring in LMICs (Ethiopia and Georgia) to inform our research training and capacity-building program development, and implement mentorship training to achieve our program goals. Overall, the Georgians expressed a view of mentoring that was similar to that carried out in the United States or Western Europe most likely because our NIH-funded RTP has been operating in Georgia for more than 10 years and we have been fortunate to cultivate new mentors from the pool of our former Fogarty trainees. This result might not hold true for Georgians outside the Fogarty program. In Ethiopia, trainees and mentors understood mentoring in relation to their current organizational structure, which includes more advanced scientists acting as advisors or supervisors. Although the use of the English term "mentor" is new, elements of mentoring have been present in Ethiopian and Georgian culture particularly regarding the importance of transferring knowledge from one generation to another but there is a need for more structure and evaluation of such relationships. In both countries, the mentors and trainees described a potential for more hierarchical relationships between a trainee and mentor compared with the United States. Additional research exploring the range of mentoring relationships would be helpful. For example, in some areas of Ethiopia where there is high sensitivity to hierarchy in the culture, it might be considered somewhat disrespectful to request mentorship from a very senior person whereas others closer in hierarchy to the student could be the mentors. This might hold true in Georgia as well but it was not introduced in the focus group. The focus group discussions revealed the barriers to mentoring in each country, gaps in knowledge about mentoring roles and responsibilities, the need to set clear expectations between mentors and trainees, and the desire for mentor training. The results informed six key components of the development and implementation of our mentorship training program, which primarily includes in person training of mentors and trainees at the annual conferences, with supplemental online sessions (Table 4).

Development of mentor training. *Foundation in mentoring.* The focus group data indicated that we needed to provide a strong foundation in the basic principles of mentoring. Therefore, we delivered an introductory training entitled "What is mentoring?" based on materials available in the United States³³⁻³⁵ but which have been adapted to meet the context in these countries. This included didactic training on the following topics: the typical roles and responsibilities of mentors; routine types of interactions in mentoring relationships; structuring expectations between mentors and mentees to maximize the effect of the relationship; goal-setting; and establishing and maintaining communication. We also taught mentees and their mentors how to use the IDPs as a tool for communication and measuring progress. The sessions concluded with questions and discussion about the specific role of mentoring in our program and in the field of TB research.

Establishing expectations. Data from the focus groups showed that our RTPs needed to establish clear expectations

TABLE 4
Six key components of the mentor training program developed from formative evaluation in the countries of Georgia and Ethiopia

Focus group topics	Program development
Foundation in mentoring	Highlight the strengths from cultural traditions of experienced professionals guiding younger generations even if not called "mentoring" Provide training on the basic principles of mentoring for trainees and mentors Develop list of important mentoring characteristics
Expectations of mentoring	Develop and implement mentor/mentee agreement in conjunction with individual development plan that outlines expectations between mentors and mentees Mentors and mentees review documents together and make adjustments as needed, revise annually Establish communication norms between trainees and mentors
Increase interaction between trainee and mentors	Video conference meeting with trainees and both mentors on a monthly basis In-person meetings at the in-country annual conference; in-country and U.S. mentors are invited to attend
Additional mentor training for trainees and mentors	Mentor training sessions at the annual conferences that cover roles and responsibilities for trainees and mentors Distance mentor training for trainees after acceptance to the program Culturally relevant case studies and curricula for mentor training Routine needs assessment for additional training topics
Case study curricula	Develop culturally relevant case studies that prompt discussion and learning from real-life mentoring scenarios Support case studies with PowerPoints and interactive skill-building activities
Evaluation	Conduct annual program evaluation of mentorship Distribute examples of evaluation questionnaires for trainees and mentors to adopt in their relationships Conduct interviews with U.S. mentors to assess program strengths and weaknesses Forthcoming: interviews with in-country and to assess strengths and weaknesses of mentoring capacity, programmatic support and individual relationships.

TB = tuberculosis.

between the trainees and their mentors early in the relationship particularly because the trainees have two mentors in different countries (one in their home country and one U.S. or international mentor) who might have diverse expectations. We reviewed several existing mentoring contracts, compacts, and agreements used in the United States to delineate roles and responsibilities in mentoring relationships.³³ We developed our own version of a mentor/mentee agreement that outlines the key responsibilities of each party in the mentoring relationships (Table 5).

Increased interaction between mentors and mentees. At the beginning of the program, the frequency of meetings between mentees and mentors was determined by the trainees and mentor's discretion. After the focus groups, we implemented a strong recommendation that the mentors and trainees meet virtually (e.g., via video conference or telephone conference call) at least once per month. At times, this is difficult given the challenge with poor or intermittent internet connectivity, particularly in Ethiopia. Following this recommendation, our preliminary evaluation shows that the frequency of meetings has increased. We also recognized the importance of in-person meetings between trainees and both of their mentors. This is challenging given the geographical spread; however, we continue to fund trainees and many mentors to attend the annual conference where time is allocated for such meetings.

Additional mentor training. We developed new mentor training curricula based on the needs and cultural context explained in the focus group data. The trainings were implemented at the annual conference and in separate sessions for the trainees and mentors, and the curricula followed a similar format to published curricula by NRMN.

Mentees. As part of our mentor training activities in response to the findings from the focus groups, training for the

mentees entitled, "How to manage your mentor," was developed. This training addressed multiple strategies for communication (including frequency and approach), guidelines on how a mentee should run a meeting with their mentor (e.g., create an agenda ahead of time), strategies of initiating contact and scheduling meetings, and the act of following up with your mentor when needed. The curriculum defined some of the mentoring norms in the United States, which advocates for reciprocal mentoring relationships.

Mentors. After presenting a case study (outlined in the following paragraphs), the trainer presented strategies for communicating effectively and giving feedback. This included how to provide feedback on research proposals and manuscripts that was actionable, detailed, and easy to adopt. Mentors shared their expectations of trainees and discussed how these strategies did or did not fit within the cultural context of their understanding of mentoring. At times, mentors presented mentoring challenges that were unique to their country. Facilitators and other mentors in the session brainstormed methods of solving problems and overcoming barriers to mentees' productivity.

Case study curricula. A critical component to the mentor training was the development of case studies that resonated with the experiences as trainees (Table 6) and mentors (Table 7). Case studies are useful because they present challenging problems, introduce thought-provoking issues, contain elements of conflict, lack obvious or clear-cut answers, and require problem-solving, decision-making or action.³⁶ We developed a case study for trainees and a similar case study for the mentors about miscommunication and ineffective feedback between mentees and mentors. Each case allowed for exploration of their primary role as a trainee or mentor while considering the position of others in the mentoring relationship.

TABLE 5
Mentor/mentee agreement

Ethiopia-Emory TB Research Training Program
Mentor/Mentee agreement*
2016–2017

This agreement outlines the key elements of the mentorship relationship between the Fogarty trainee **and the in-country and international mentors**. The purpose of this agreement is to set clear expectations for training and mentorship so that the program successfully supports the Fogarty trainee throughout their training and career development. Please review and sign the agreement and provide a copy to the program administrator (insert contact information and due date).

As a mentor for an EETB-RTP Fogarty trainee, I agree to do the following:

1. I confirm my willingness to serve as a mentor and provide guidance to the trainee as they conduct their training and research required for the program.
2. I will provide my mentee with advice, encouragement and other support to facilitate their research project and proposal. This includes guidance on seeking funding, submitting the research protocol for IRB approval, advice on study design (including data collection), and assistance with manuscript writing and submitting research results for publication.
3. I will meet in person or talk via phone (or Skype) with my mentee on a regular basis and communicate at least monthly to review research progress and help the mentee work toward his or her goals.
4. I will provide guidance and feedback to my mentee in the construction of a grant application and/or scientific manuscript required for the scientific and grant writing course.
5. I will encourage my mentee to interact with fellow scientists and researchers.
6. I will encourage my mentee to present their research at scientific meetings and provide feedback on presentation content and skills.
7. I will promote ethical standards for conducting research.
8. I will review the mentee's IDP, evaluate the mentee's progress and provide constructive feedback during the entire mentoring experience.
9. I will strive to be supportive, equitable, accessible, encouraging and respectful. I will try my best to understand my mentee's unique situation and mentor accordingly.
10. I will evaluate the mentoring program components and provide feedback for EETB-RTP program improvement.

As a Fogarty trainee (mentee), I agree to do the following:

1. I acknowledge that I have the primary responsibility for the development of my own career.
2. I will initiate monthly meetings with my mentors.
3. I will provide my mentors with adequate time to review my research proposal, assignments, and other research-related projects that need feedback.
4. I will respond to my mentor's e-mails and feedback in a timely manner. I will be responsive to advice and constructive criticism.
5. I will complete and discuss my IDP with my mentors and submit it on time to EETB-RTP program leadership at least once per year.
6. I will review and revise, as needed, my research project with my mentors and include well-defined goals and timelines.
7. I will work consistently on my research project and document progress (e.g., IRB approvals, study initiation, data analysis, coursework, presentations, etc.).
8. I will adhere to ethical standards when conducting my research project.
9. I will have open and honest conversations with my mentors about the status of my research progress, my career plans, and the challenges and obstacles to attaining my professional goals.
10. I will respect and work collegially with my mentors, coworkers, support staff, and other individuals with whom I interact.
11. I will actively seek opportunities to develop the full set of professional skills necessary for a successful career in research.
12. I agree to acknowledge the EETB-RTP NIH Fogarty grant when making scientific presentations and on any written scientific publications. The acknowledgment should read "This work was supported in part by the NIH/Fogarty International Center Global Infectious Diseases grant D43TW009127." I will follow the NIH guidelines for investigators on how to submit an electronic version of my publication to the National Library of Medicine's PubMed Central, to be made publicly available no later than 12 months after the official date of publication.
13. I will meet all program requirements as outlined in my annual acceptance letter and the EETB-RTP checklist.
14. I will provide annual updated information to the EETB-RTP administration following completion of formal EETB-RTP support on career progress, academic or other institutional position, publications, grant applications, and funding.

Name of EETB-RTP trainee:

EETB-RTP trainee/mentee's signature: Date:

Name of in-country mentor:

In-country mentor's signature: Date:

Name of international mentor:

International mentor's signature: Date:

* Parts of this mentor agreement have been adapted from:

Compact between postdoctoral Appointees and their Mentors: A framework for aligning the postdoctoral mentor-mentee relationship. The compact was updated for 2017 by the AAMC Group on Graduate Research, Education, and Training and AAMC Council of Faculty and Academic Societies. 655 K Street, NW, Suite 100, Washington, DC 20001-2399. <https://www.aamc.org/initiatives/research/postdoccompact/>
Pfund, C, House, S, Asquith, P, Spencer, K, Silet, K, Sorkness, C, 2012. *Mentor Training for Clinical and Translational Researchers*. New York, NY: W. H. Freeman and Company, p. 40. For complete curriculum and additional resources visit: <https://mentoringresources.ictr.wisc.edu/>

AAMC = Association of American Medical Colleges; EETB-RTP = Ethiopia-Emory TB Research Training Program; IDP = individual development plan; IRB = Institutional Review Board; NIH = National Institutes of Health; TB = tuberculosis.

Evaluation. The focus group data revealed the desire for mentees and mentors to evaluate their relationship and make midcourse corrections as necessary. The program evaluates the mentoring relationships with an annual survey and mid-point check-ins with leadership. We provided additional tools that included open-ended evaluation questions for discussion between mentoring pairs or triads, as well as a questionnaire to self-assess one's own role as a mentee or mentor.

Currently, we are in the process of conducting qualitative interviews with the in-country and U.S. mentors to develop a more rigorous evaluation tool.

The goal of our NIH FIC-supported RTPs—EGTB-RTP and EETB-RTP—is to develop in-country research capacity and enhance career development of young investigators so that they will carry out internationally recognized TB-related research and inform evidence-based public policy decisions.

TABLE 6
Case study activity for mentees

Case study: “How can I please my mentors?”

Instructions: Please read the case study and mark important themes that emerge. With a partner, discuss the case study and the guiding questions. Share your answers with the big group during our discussion.

Dr. B is beginning her first year as a research trainee for a research training program that is funded through a collaboration with her international academic center and a university in the United States. The purpose of the training program is to acquire research skills, complete a research project and become an independent researcher in her country. To date, she has worked on a research team with other faculty members but she has not conducted her own research project. She feels like she has a lot to learn to meet the program’s requirements and succeed as a trainee. In the first few months of the program, she submitted a research proposal to her two mentors (one in her own country and one from the United States) to receive feedback before submitting her project the Institutional Review Board. The U.S. mentor provided a large amount of feedback. It is helpful but she is not always sure what some of the comments mean (the English is still a struggle to understand) and she feels overwhelmed by the number of changes she needs to make to her research project. Her in-country mentor also provided a lot feedback but the comments are very different from the changes recommended by the U.S. mentor. Dr. B feels confused about how to move forward with the revisions on her research proposal. She is not sure how to reconcile the differences between her mentors and how to meet their expectations while still proposing a research project that she can complete.

Guiding questions for discussion:

1. What are the topics presented in this case study?
2. What are some of the differences between in-country and U.S. mentors?
3. What could have been done to prevent some of these challenges?
4. What could the mentors do now? What could the mentee do now?
5. How do you align expectations between mentees and co-mentors?
6. What are some strategies for co-mentoring across countries, cultures and fellows?

This necessitates strong mentorship to ensure that trainees meet program benchmarks and deliverables and increase research skills and productivity through sustained mentored relationships so that they become leaders in TB research worldwide and a future generation of mentors. Our data reveal that mentors also benefit from the program. For example, the trainees push the mentors to think differently about their own research projects and career pathways, network with other TB researchers, and to stay up-to-date with recent TB research studies and new research methodologies. In the future, we hope to focus on building additional cultural competence with the U.S. mentors, provide career-building opportunities for the in-country mentors, and create opportunities that might not otherwise be available in their own countries. It is our goal to implement additional in-country mentor trainings, co-instructed by a Georgian and Ethiopian trainee and mentor, that are available to additional institutional partners, and thereby, building a more extensive mentoring culture.

Limitations. The evaluation research is limited by a small sample of focus groups and researchers working in the field of TB. It would be beneficial to conduct additional focus groups

with trainees across various fields and at different points in career development in these two countries to explore if similar barriers exist with building mentoring capacity. The focus groups were conducted in English by program evaluators (D. L. C. and L. C. S.) from the United States. It is possible that language made it difficult for the participants to fully understand and participate in the discussions. In the future, we hope to use in-country co-moderators to help facilitate the focus groups so that we are sure to capture additional nuances in language and culture. However, all the trainees take graduate-level courses in English. For one focus group, we relied on detailed notes for data analysis rather than a verbatim transcript. It is possible this decreased the richness of the data from that focus group discussion.

CONCLUSION

Mentoring is a critical component to career development of research scientists. It is important to understand the local cultural meanings of mentoring to build TB and other research programs that strengthen mentoring capacity in LMICs. The

TABLE 7
Case study activity for mentors

Case study: “Where are the revisions?”

Instructions: Please read the case study and mark important themes that emerge. With a partner, discuss the case study and the guiding questions. Share your answers with the big group during our discussion.

Dr. S is a research trainee with an international training program that is funded through a collaboration with his international academic institution (in-country) and the United States. The purpose of the program is to teach junior scientists research skills so that they can conduct a mentored research project and cultivate a career as an independent researcher. Dr. S submitted his research proposal to his in-country mentor and his U.S. mentor for feedback. The U.S. mentor returned the proposal via e-mail with written comments about the weaknesses of the project. The in-country mentor provided written comments and met with Dr. S in person to discuss the necessary changes to the proposal. A month later, Dr. S submits a new version of the proposal to both of his mentors. There are very few changes to the proposal. In fact, most of the comments from the mentors have not been addressed. The mentors are unsure how to prompt the trainee to incorporate their recommendations. They feel frustrated about the lack of attention to their feedback even though they know this mentee has the potential to be a very successful researcher.

Guiding questions for discussion:

1. What are the topics presented in this case study?
2. What are some of the differences between in-country and U.S. mentors?
3. What could have been done to prevent some of these challenges?
4. What could the mentors do now? What could the mentee do now?
5. How do you align expectations between mentees and co-mentors?
6. What are some strategies for co-mentoring across countries, cultures and fellows?

participants in our focus groups identified obstacles to successful mentoring and made recommendations on how to improve mentoring in our programs. This formative evaluation showed how the focus group results were used to develop and implement mentor training relevant to the research trainees and mentors in Ethiopia and Georgia. These lessons can be applied to other training programs building mentoring capacity in LMICs.

Received September 26, 2017. Accepted for publication June 2, 2018.

Published online July 16, 2018.

Financial support: Research reported in this publication was supported by the Fogarty International Center of the National Institutes of Health under award numbers D43TW009127 and D43TW007124, the National Institute of Allergy and Infectious Diseases under award numbers K23AI103044 and R21AI12200, and the National Center for Advancing Translational Sciences of the National Institutes of Health under award numbers UL1TR000454 and UL1TR002378.

Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Authors' addresses: Dawn L. Comeau and Hannah Eisen, Department of Behavioral Sciences and Health Education, Rollins School of Public Health, Emory University, Atlanta, GA, E-mails: dcomeau@emory.edu and hannah.eisen@emory.edu. Kathryn Mishkin, Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, GA, E-mail: kemishkin@hotmail.com. Nestani Tukvdaze and Zaza Avaliani, National Center for Tuberculosis and Lung Diseases, Tbilisi, GA, E-mails: marikushane@yahoo.com and avalianzaza@yahoo.com. Russell R. Kempker, Division of Infectious Diseases, Department of Medicine, Emory University School of Medicine, Atlanta, GA, E-mail: rkempke@emory.edu. Lisa Sthresley, Emory University School of Medicine, Atlanta, GA, E-mail: lisa.christine.sthresley@emory.edu. Mathew J. Magee, School of Public Health, Georgia State University, Atlanta, GA, E-mail: mjmagee@gsu.edu. Damen Haile Mariam, Department of Health Economics, School of Public Health, Addis Ababa University, Addis Ababa, Ethiopia, E-mail: damen_h@hotmail.com. Abraham Aseffa, Armauer Hansen Research Institute, Addis Ababa, Ethiopia, E-mail: aseffaa@gmail.com. Henry M. Blumberg, Division of Infectious Diseases, Department of Medicine, Emory University School of Medicine, Atlanta, GA, and Department of Epidemiology and Global Health, Rollins School of Public Health, Emory University, Atlanta, GA, E-mail: henry.m.blumberg@emory.edu.

REFERENCES

- Nora LM, 2010. The 21st century faculty member in the educational process—what should be on the horizon? *Acad Med* 85 (9 Suppl): S45–S55.
- Gray J, Armstrong P, 2003. Academic health leadership: looking to the future. Proceedings of a workshop held at the Canadian Institute of Academic Medicine meeting Quebec, Que., Canada, Apr. 25 and 26, 2003. *Clin Invest Med* 26: 315–326.
- Standing Committee on Postgraduate Medical and Dental Education, 1998. Supporting doctors and dentists at work: an enquiry into mentoring. *BMJ* 317: S3–S7165.
- Frei E, Stamm M, Buddeberg-Fischer B, 2010. Mentoring programs for medical students—a review of the PubMed literature 2000–2008. *BMC Med Educ* 10: 32.
- Sambunjak D, Straus SE, Marusic A, 2010. A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine. *J Gen Intern Med* 25: 72–78.
- Mahmood S, Hort K, Ahmed S, Salam M, Cravioto A, 2011. Strategies for capacity building for health research in Bangladesh: role of core funding and a common monitoring and evaluation framework. *Health Res Policy Syst* 9: 31.
- Mayhew SH, Doherty J, Pitayangsarit S, 2008. Developing health systems research capacities through north-south partnership: an evaluation of collaboration with South Africa and Thailand. *Health Res Policy Syst* 6: 8.
- Nakanjako D, Byakika-Kibwika P, Kintu K, Azire J, Nakwagala F, Luzige S, Namise C, Mayanja-Kizza H, Kamya MR, 2011. Mentorship needs at academic institutions in resource-limited settings: a survey at Makerere University College of Health Sciences. *BMC Med Educ* 11: 53.
- Martina CA, Mutrie A, Ward D, Lewis V, 2014. A sustainable course in research mentoring. *Clin Transl Sci* 7: 413–419.
- Feldman MD et al., 2009. Training the next generation of research mentors: the University of California, San Francisco, Clinical & Translational Science Institute Mentor Development Program. *Clin Transl Sci* 2: 216–221.
- Lewis V, Martina CA, McDermott MP, Trief PM, Goodman SR, Morse GD, LaGuardia JG, Sharp D, Ryan RM, 2016. A randomized controlled trial of mentoring interventions for underrepresented minorities. *Acad Med* 91: 994–1001.
- Fleming M, House S, Hanson VS, Yu L, Garbutt J, McGee R, Kroenke K, Abdein Z, Rubio DM, 2013. The mentoring competency assessment: validation of a new instrument to evaluate skills of research mentors. *Acad Med* 88: 1002–1008.
- Meagher E, Taylor L, Probstfield J, Fleming M, 2011. Evaluating research mentors working in the area of clinical translational science: a review of the literature. *Clin Transl Sci* 4: 353–358.
- Abedin Z, Biskup E, Silet K, Garbutt JM, Kroenke K, Feldman MD, McGee R Jr., Fleming M, Pincus HA, 2012. Deriving competencies for mentors of clinical and translational scholars. *Clin Transl Sci* 5: 273–280.
- Anderson L, Silet K, Fleming M, 2012. Evaluating and giving feedback to mentors: new evidence-based approaches. *Clin Transl Sci* 5: 71–77.
- Bennett S, Paina L, Ssengooba F, Waswa D, M'Imunya JM, 2013. Mentorship in African health research training programs: an exploratory study of Fogarty International Center Programs in Kenya and Uganda. *Educ Health (Abingdon)* 26: 183–187.
- Manabe YC, Katabira E, Brough RL, Coutinho AG, Sewankambo N, Merry C, 2011. Developing independent investigators for clinical research relevant for Africa. *Health Res Policy Syst* 9: 44.
- Heimbürger DC, Carothers CL, Gardner P, Primack A, Warner TL, Vermund SH, 2011. Nurturing the global workforce in clinical research: the National Institutes of Health Fogarty International Clinical Scholars and Fellows Program. *Am J Trop Med Hyg* 85: 971–978.
- Whitworth JA, Kokwaro G, Kinyanjui S, Snewin VA, Tanner M, Walport M, Sewankambo N, 2008. Strengthening capacity for health research in Africa. *Lancet* 372: 1590–1593.
- Hyder AA, Meddings D, Bachani AM, 2009. MENTOR-VIP: piloting a global mentoring program for injury and violence prevention. *Acad Med* 84: 793–796.
- Harris E, Tanner M, 2000. Health technology transfer. *BMJ* 321: 817–820.
- Nakanjako D, Katamba A, Kaye DK, Okello E, Kamya MR, Sewankambo N, Mayanja-Kizza H, 2014. Doctoral training in Uganda: evaluation of mentoring best practices at Makerere university college of health sciences. *BMC Med Educ* 14: 9.
- Sawatsky AP, Parekh N, Muula AS, Mbata I, Bui T, 2016. Cultural implications of mentoring in sub-Saharan Africa: a qualitative study. *Med Educ* 50: 657–669.
- Kempker RR, Tukvadze N, Sthresley L, Sharling L, Comeau DL, Magee MJ, del Rio C, Avaliani Z, Blumberg HM, 2018. The impact of a Fogarty International Center-supported tuberculosis research training program in the country of Georgia. *Am J Trop Med Hyg* 98: 1069–1074.
- Hennink M, Hutter I, Bailey A, 2011. *Qualitative Research Methods*. Los Angeles, CA: Sage Publications Ltd.
- Krueger RA, Casey MA, 2014. *Focus Groups: A Practical Guide for Applied Research*. Los Angeles, CA: Sage Publications Ltd.
- Patton MQ, 2015. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*, 4th edition. Thousand Oaks, CA: Sage Publications Ltd.
- Braun V, Clarke V, 2003. Using thematic analysis in psychology. *Qual Res Psychol* 3: 77–101.
- Birt L, Scott S, Cavers D, Campbell C, Walter F, 2016. Member checking: a tool to enhance trustworthiness or merely a nod to validation? *Qual Health Res* 26: 1802–1811.

30. Lincon Y, Guba E, 1985. *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications Ltd.
31. Cohen D, Crabtree CB, 2006. *Qualitative Research Guidelines Project*. Available at: <http://www.qualres.org/HomeMemb-3696.html>. Accessed March 17, 2017.
32. Mengistu BS et al., 2017. Student and faculty perceptions on the rapid scale-up of medical students in Ethiopia. *BMC Med Educ* 17: 11.
33. Pfund C, House S, Asquith P, Spencer K, Silet K, Sorkness C, 2012. *Mentor Training for Clinical and Translational Researchers*. New York, NY: WH Freeman and Co.
34. Center for Faculty Development and Diversity, 2016. *Brigham and Women's Hospital Mentoring Curriculum & Toolkit*. Available at: <http://bwhmentoringtoolkit.partners.org/>. Accessed November 21, 2017.
35. Dookeran N, Eichel L, Grodstein F, Haas A, Nadelson C, Seely E, Tsen L, Borus J, 2013. *Brigham and Women's Hospital Mentoring Tool Kit*. Available at: <http://bwhmentoringtoolkit.partners.org/>. Accessed September 12, 2016.
36. Morrison G, Ross S, Kemp J, Kalman H, 2011. *Designing Effective Instruction*. Hoboken, NJ: John Wiley & Sons.