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Family Medicine Global Health Fellowship Competencies:
A Modified Delphi Study

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BACKGROUND AND OBJECTIVES: Many US medical schools and family medicine departments have responded to a growing interest in global health by developing global health fellowships. However, there are no guidelines or consensus statements outlining competencies for global health fellows. Our objective was to develop a mission and core competencies for Family Medicine Global Health Fellowships.

METHODS: A modified Delphi technique was used to develop consensus on fellowship competencies. A panel, comprised of 13 members with dual expertise in global health and medical education, undertook an iterative consensus process, followed by peer review, from April to December 2014.

RESULTS: The panel developed a mission statement and identified six domains for family medicine global health fellowships: patient care, medical knowledge, professionalism, communication and leadership, teaching, and scholarship. Each domain includes a set of core and program-specific competencies.

CONCLUSION: The family medicine global health competencies are intended to serve as an educational framework for the design, implementation, and evaluation of individual family medicine global health fellowship programs.

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Globalization requires family physicians to be proficient in the care of immigrants, refugees, and travelers, as well as in the recognition of emerging infectious diseases. At the same time, global health professional shortages[1] have exacerbated the need for well-trained physicians to meet the challenges of providing health care in resource-constrained settings. Additionally, mounting evidence[2-5] supporting the value of health care systems founded on strong primary care has led to the emergence of family medicine training programs in a number of low and middle income countries.[6-10] As a result, there is an ever-expanding need for family physicians with global health skills to help build the training capacity in countries where the discipline of family medicine is emerging. Family medicine faculty with global health skills[11] can assist with the development of predoctoral, residency, clinical, and research education while improving health care systems and promoting health equity in low-resource environments within the United States and abroad.

In the United States, interest in global health at the medical student[12-14] and resident[15-17] level of training continues to grow at a rapid pace. Many medical schools[18] and family medicine departments have responded to this interest by developing international clinical rotations,[19] international partnerships,[20]

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and formal global health concentrations[21] or tracks.[22]

There are a number of publications with recommendations for global health competencies at the medical school[23] and residency[15,24,25] levels, including important ethical[26] and interdisciplinary[15,27] considerations for global health training. The American Academy of Family Physicans (AAFP) has a formal curriculum guideline for family medicine residents[28] and a statement on global health.[29] However, there are no published guidelines outlining competencies for family medicine global health fellowships.

Global health fellowship training first emerged in emergency medicine[30-32] (1999) and in pediatrics[33] (2008).The first two family medicine global health fellowships were Contra Costa's Mark Stinson Fellowship[24] launched in 2006 and Via Christi International Family Medicine Fellowship started in 2008. Most global health fellowships are specialty specific, but some are multidisciplinary, including the recently established Arnold Global Health Institute Teaching Fellowship at Mount Sinai.[34] All of these programs provide further education, skills, and fieldwork experience in global health. Many also aim to produce graduates with advanced faculty development and educational skills who can contribute to building the global health professional workforce.

In 2014, we received a Society of Teachers of Family Medicine (STFM) Foundation grant to assemble a panel of experts to identify core competencies for family medicine global health fellows. Study goals were: (1) to develop a mission statement for family medicine global health fellowships, (2) to reach consensus regarding competencies for family medicine global health fellowships, and (3) to identify core competencies for all family medicine global health fellowships. This article details the process we undertook and the resulting six domains and 30 competencies identified by our panel.

Methods

Design

We used a modified Delphi technique[35] to develop a consensus guideline detailing the mission and core competencies for family medicine global health fellowships. We chose a modified Delphi method as it provides a structured process for consensus development among a group of experts[35,36] and has been used for the development of medical education competencies.[37]

In classical Delphi technique, expert panel members generate and develop ideas as anonymous individuals, which minimizes undue influence of one expert over another. Critics suggest that this process may suppress collaborative, exploratory thought.[36] Typically a Delphi director orchestrates a cyclical process of: (1) distributing questionnaires, (2) collecting individual responses, (3) summarizing responses and generating new questionnaires for panel members to complete. This process remains anonymous though out, until consenses is established.

We maintained the anonymous process for the first two questionnaire rounds only (ie, the initial generation of ideas and identification of core competencies). For subsequent rounds we continued the cyclical process of summarization and feedback to the group for comment, but utilized iterative conference call discussions to clarify and further develop concepts, until we reached consensus. We felt this "modified Delphi" approach optimized both the expression of individual opinions and exploratory collaborative thought. The IRB exemption was granted by the Memorial Hospital of Rhode Island IRB.

Panel Recruitment Criteria

We recruited US-based family medicine educators with dual expertise in global health and family medicine education. Global health expertise was demonstrated by scholarship, leadership in global health education or global health committees, and presentations at national education and global health conferences (STFM, AAFP Global Health Workshop, etc). We defined a family medicine expert as a leader in family medicine education at the department, fellowship, residency, or medical school level. We generated a list of 18 potential experts based on the above criteria and from recommendations of senior members of the STFM Group on Global Health. Other considerations included ensuring adequate regional representation from training programs across the United States and from faculty development, service-based (including faith-based), and skills-focused global health fellowships.

Process of Competency Development

We held one in-person meeting at the 2014 STFM Annual Spring Conference to orient panel members to the modified Delphi process and study goals. We continued the iterative process via email and through six conference calls held between June and December of 2014.

Round 1: We asked panel participants to answer the following four questions via e-mail: What should be the mission or purpose of a GH fellowship in family medicine?

What do you think should be the essential knowledge and skills that every GH fellow would be proficient in at the time of completing the fellowship?

How long should a GH fellowship program and international field experience/practicum be to sufficiently train a graduate to meet the above standards?

What future job(s) should GH fellowships prepare graduates for?

This paper focuses on the first three questions.

Round 2: We sent collated anonymous responses to panel members and asked them for feedback on the proposed mission statement and whether each of the proposed competencies should be core for all programs, optional for some programs, or should not be included.

Round 3: We sent tabulated anonymous responses to the group and held four conference calls to discuss each proposed competency. After our fourth conference call, a mission statement and six domains emerged, with 30 core competencies.

Peer Review

We presented a draft of the mission statement and core competencies for review to a convenience sample of 40 family physicians attending a session on global health fellowships at the annual AAFP Global Health Workshop in September 2014. Participants included US-based family medicine faculty and residents and international family medicine faculty from collaborating universities in low/middle income countries. We used suggestions from the session to make final revisions to the consensus document.

Results

Panel Participants

Thirteen of the 18 invited experts agreed to participate in the panel. They included five professors, four associate professors, and four assistant professors. Six participants represented existing family medicine global health fellowships.

Mission Statement

Using Koplan's definition of global health: "An area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide,"[38] we agreed that fellowship programs are working toward health equity for all and that our fellows needed to be trained within that context.

We recommend the following mission statement: Family medicine global health fellowships prepare family medicine physicians to provide and promote high-quality, cost-effective, equitable, and culturally relevant care to individuals and communities worldwide with a focus on vulnerable populations in low-resource settings.

Principles for Competency Development

We used the following principles to guide the development of domains, core competencies, and program specific competencies:

(1) Competencies are tailored for family medicine global health fellowships in the United Sates.

(2) Competencies are specific and measurable.

(3) "Core" competencies are achieved within a 1-year fellowship by all programs and fellows.

(4) "Program-specific" competencies are intermediate competencies achieved in a focused content area within a 1- or 2-year fellowship program. Examples include teaching, public health, clinical, or research skills.

(5) Fellows enrolled in a 2-year program also obtain an advanced degree (eg, MPH, MMEd, MBA, CTM&H) or in-depth skills training (eg, surgical obstetrics, ultrasound, HIV care, disaster medicine).

Using these guiding principles, we developed 30 core competencies grouped into the six domains described below. Tables 1–3 present the core and program-specific competencies included in the six domains.

Domain 1. Patient Care: the ability to care for patients in diverse circumstances throughout the world. The global health fellow is a clinical expert able to apply and practice full-scope family medicine in resource limited settings. (Table 1) S/he should also be able to develop and apply a framework for addressing mental health and psychosomatic illness in a culturally specific and appropriate manner. Additional core skills include basic point of care ultrasound skills and the management of closed fractures and dislocations in low resource settings. We felt that the ability to respond to natural disasters and complex emergencies is a separate "niche" skill set requiring mastery of many administrative and clinical skills and therefore "program specific." We agreed unanimously that surgical skills including cesarean section, tubal ligation, surgical management of ectopic pregnancies, appendicitis, and vasectomies are advanced "program specific" skills requiring significant additional training time and resources to achieve mastery.

The panel held a lengthy discussion about whether or not the ability to first assist in surgeries should be a core competency. We recognized that in low income countries where family physicians routinely perform surgeries, their first assistant is usually a nursing assistant or scrub tech, so that training fellows to first assist would not be useful. The skill set needed, however, is country or region specific. For example, in some countries, hospital-based deliveries take place at maternity hospitals where generalist physicians are rarely involved, and advanced obstetric and surgical skills are less useful.

Domain 2. Medical Knowledge: specific to global health. While much of the medical knowledge needed for the competencies in Table 1 is covered during residency, a fellow is expected to apply this knowledge at an intermediate to advanced level. This includes having additional exposure and knowledge in the care of immigrants and refugees, the preparation of adults and children for international travel, and the application of appropriate protocols, such as those by the World Health Organization, for clinical care in low resource settings. We chose to place public health and population health knowledge in this domain, recognizing that resource management skills and the ability to integrate public health measures to address social determinants of health are critical to providing health care in low income countries with limited resources and large populations with unmet medical and social needs. We placed the public health research skills under the scholarship domain.

Some programs will be able to offer a 2-year fellowship that includes advanced training in management, public health, health professions education, or tropical medicine, leading to an advanced degree or diploma.

Table 1: Patient Care and Medical Knowledge Competencies

Core	Program Specific
1. **Patient care**: the ability to care for patients in diverse circumstances throughout the world	
Apply and practice full-scope family medicine in low resource settings including: • high risk obstetrics • management of chronic disease and acute illness • reproductive and sexual health • prevention and health promotion • end of life care	Complete training in emergency and essential surgical procedures* such as C-section, management of ectopic pregnancy, uterine evacuation, management of wounds, burns, and infections, anesthesia and resuscitation, tubal ligation, appendectomy, vasectomy, etc.
Manage closed fractures and dislocations in low resource settings.	Demonstrate advanced skills in preparedness and response to natural disasters and humanitarian emergencies.
Develop ultrasound point-of-care diagnostic skills.	
Perform routine microscopic lab skills.	
Develop a framework for addressing mental health and psychosomatic illnesses in a culturally specific and appropriate manner.	
2. Medical knowledge specific to global health	
Demonstrate knowledge of health care of immigrants and refugees, including country/region specific health screening.	
Identify safety measures and preparation necessary for international travel including stress management, recognition, and response to culture shock, pre/post briefing.	Demonstrate advanced travel medicine skills.
Demonstrate knowledge of global burden of disease and tropical medicine, including but not limited to malaria, TB, HIV/HIV.	Complete a diploma in tropical medicine and hygiene
Employ WHO protocols for clinical care in low resource settings: including malnutrition, integrated management of childhood illness, non-communicable disease, and end of life/palliative care.	
Define and apply the best standards of care given available resources for health in a particular setting.	
Develop an ethical approach to health care in low resource settings including consideration of impact of power, privilege, and structural violence.	
Demonstrate an understanding of the impact of environment and public health in global context.	
Develop a practical approach to address public health and social determinants of health in clinical care	
Demonstrate an understanding of: • the organization and financing of health care systems and services • the role of United Nations, government institutions, non-governmental organizations, and private companies in global health. • different health delivery models and approaches to health systems strengthening • ways in which delivery models may or may not be translatable from one country/region to another • types of and the need for development of human resources for health	Complete a Master in Public Health or Health Administration

* World Health Organization: Emergency and Essential Surgical Care. http://www.who.int/surgery/en/. Accessed June 19, 2016.

Some of the medical knowledge could be acquired by completing on-line modules available from institutions with a larger global health teaching curriculum such as those available from the University of Minnesota.[39] Length of international experience in low resource settings ranges from 1 to 4 months per year of fellowship and is based on multiple factors, including funding, host country constraints, as well as time needed to complete an advanced degree.

Table 2: Professionalism, Communication, and Leadership Competencies

Care	Program Specific
3. Professionalism: the ability to immerse oneself in a different culture and operate with humility and respect in order to promote learning and collaboration.	
Demonstrate capacity for compassion (desire and commitment to do something to address human suffering).	
Employ self-care, work-life balance in low-resource settings.	
Demonstrate commitment to service, equity, and principles of social justice.	
Demonstrate commitment to self-directed learning, to recognition of personal limitations/competencies, and to engagement in strategies to address these limitations.	
4. Communication and Leadership: the ability to (1) use advanced communication skills with a focus on cross cultural teaching, (2) work in a setting when one is not a native speaker, (3) facilitate collaboration and partnership by empowering and motivating others, (4) mentor colleagues and learners, and (5) model excellence in medical knowledge, principles of family medicine, and patient care in all settings.	
Use advanced communication, including: • written and oral presentations • language adaptation skills (ability to work in a setting where you are not a native speaker)	
Demonstrate transcultural competency (ability to move beyond understanding the differences between two cultures to focusing on the similarities), including: • effective cross cultural communication • facilitation and collaboration skills • ability to articulate and formulate individual experience into larger conceptual framework of global health	
Develop leadership and collaboration skills for work with interdisciplinary teams, including: • ability to motivate, delegate, promote, and empower others • ability to define a problem and formulate a vision	Demonstrate the ability to understand and analyze the current health system, identify areas for improvement, and promote the change within those health systems.

Domain 3. Professionalism: the ability to immerse oneself in a different culture and operate with humility and respect in order to promote learning and collaboration. Basic professionalism skills required of all physicians include demonstration of self-care, work-life balance, recognition of personal limitations, and commitment to self-directed learning (Table 2). We expect family medicine global health fellows to demonstrate these skills throughout their work in low resource settings.

We discussed at length the difference between innate attitudinal dispositions and attitudinal skills that can be learned. For example, demonstrations of respect may vary among cultures but are skills that can be learned through observation, reflection, and practice. On the other hand, a sense of humor is more innate and not as easily taught. Flexibility is both an attitudinal disposition and a skill that can be practiced. Empathy, humility, flexibility, and respect for others are critical for effective global health work, as is having insight into one's motivations for pursuing global health experience.

Domain 4. Communication and Leadership: the ability to: (1) use advanced communication skills with a focus on cross cultural teaching, (2) work in a setting where one is not a native speaker, (3) facilitate collaboration and partnership by empowering and motivating others, (4) mentor colleagues and learners, and (5) model excellence in medical knowledge, principles of family medicine, and patient care in all settings. Because leadership skills require effective verbal and written communication, we decided to combine them into the same domain. Consequently, the first leadership competency is to demonstrate effective language adaptation skills, which we defined as the ability to work in a setting where one is not a native speaker. While effective and appropriate communication using an interpreter is a residency-level competency, a global health fellow needs to be aware of nonverbal cues, cultural norms, and expectations that also impact communication and understanding.

Another important leadership skill is transcultural competency.[40] We defined this as the ability to move beyond understanding the differences between two cultures to focusing on the similarities and working from within as a colleague and partner.

Table 3: Teaching and Scholarship Competencies

Core	Program Specific
5. Teaching: the ability to use teaching methods to educate health care providers and to teach others to teach.	
Employ multiple teaching techniques (small group, 1:1, lectures, precepting) as appropriate to health care providers with different levels of training (community health workers, nurses, medical officers, physicians, medical students, residents, fellows, faculty). Demonstrate the use of multiple teaching techniques.	Complete a Faculty Development Fellowship
Design, develop, and implement a training intervention and evaluate its effectiveness.	Obtain a Master in Medical Education
Design, develop, and implement faculty training intervention (training the trainers) and evaluate its effectiveness.	Complete a Faculty Development Fellowship
Demonstrate advanced mentoring skills/modeling skills.	
Tailor educational strategies to local educational systems. Assess educational needs with cultural sensitivity.	
6. Scholarship: demonstrate (1) a critical, intellectually rigorous approach in clinical and teaching activities, (2) proficiency in the application of basic principles of research.	
Develop functional skills in research methods (needs assessment, design, implementation, evaluation)	Obtain a Master of Public Health or Science
Recognize the need for a tailored approach to community-based research in international settings.	
Identify ethical considerations relevant to international research.	
Demonstrate exposure to basic funding strategies for global health including grant writing skills.	Demonstrate advanced grant writing, management, and procurement skills

To achieve transcultural competence requires effective cross cultural communication, development of facilitative and collaborative skills, and the ability to articulate and formulate one's individual experience into a larger conceptual framework of global health. These skills should be developed within a collaborative leadership framework and respect the authority and expertise of local leaders. As with other domains, a number of leadership skills will have been acquired and demonstrated during residency. However, fellows need to demonstrate effective application of these leadership skills including collaboration and interdisciplinary teamwork in an international or cross-cultural setting. Advanced "program specific" leadership skills might include completion of a master in health administration or public health with a focus on developing the skills needed to promote health systems changes in international settings.

Domain 5. Teaching: the ability to effectively educate health care providers and teach others to teach. Regardless of a fellowship's area of focus, members of the panel agreed that all programs should provide their fellows with a structured curriculum in teaching methods and skills with the goal of graduating fellows who can assume faculty positions. In particular, they should be able to teach others to teach. We stressed the need for family medicine faculty to teach in emerging family medicine residencies in low- and middle-income countries. This skill set includes the ability to assess and understand different educational approaches and learning styles that exist in the United States and abroad and to tailor the educational strategies to local systems and values. Ultimately, we decided that full faculty development skills imply a more advanced set of teaching skills and expertise outside the scope of "core" competencies, which could be a "program specific" content area of some fellowships.

Domain 6. Scholarship: the development of (1) a critical, intellectually rigorous approach to clinical and teaching activities and (2) proficiency in the application of basic principles of research. In considering scholarship competencies for global health fellows, we elucidated the core skills that fellows would need that could be delivered by all fellowship programs. In particular, we were cognizant of balancing the global demand for research mentoring in family medicine both in the United States and among our partners in emerging family medicine residencies in low- and middle-income countries with the amount of time that could be allotted for the acquisition of these skills during a 1-year fellowship. As a result, we recommended that fellows acquire working knowledge of basic principles of research, quality improvement, and program implementation and evaluation. Fellows should develop

scholarly approaches to their work and be knowledgeable about various funding strategies including grant writing and fund-raising. Two-year programs can offer a degree or focused experience to build more advanced research skills relevant to family medicine in global health.

Discussion

This paper presents a set of six domains and 30 core competencies for graduates of family medicine global health fellowships developed through a consensus process by family medicine global health and medical education experts. Building on previous global health competencies established for medical students,[23] residents,[15,24,25] and health professionals,[28] it positions the family medicine global health competencies within a continuum of knowledge, attitudinal and clinical skills acquired at the residency, fellowship, and advanced "program specific" training levels.

To our knowledge, this is the first consensus report of competencies developed specifically for family medicine global health fellowship training. A set of competencies for emergency medicine international fellowships[31] focuses on preparing fellows to assess, design, and implement emergency medicine services in international settings. Similar to our proposal, they emphasize public health, research, and tropical medicine skills. However, our competencies provide more explicit leadership, communication, and teaching skills.

The primary limitation of this proposal is that these competencies are designed for US-based fellowships delivered by US-based faculty. While the panel of experts we assembled included faculty from both academic and community-based programs, we did not have as much regional diversity in terms of both US-based family medicine departments and residency programs and global regions represented. Even so, there was considerable debate around which competencies should be considered core versus program specific. We acknowledge that this is a working consensus document reflecting the current needs for family medicine leaders in global health. As family medicine and global health evolves, educators will have differences of opinion regarding the core competencies that should be covered in family medicine global health fellowships.

In conclusion, the competencies presented in this paper are intended to serve as an educational framework for family medicine teachers who are considering, designing, implementing, or evaluating global health fellowship programs. By using this framework to further develop specific competencies and curricula based on their own goals, context, and resources, global health fellowship programs will be able to share and learn from their respective challenges and successes in preparing family physicians for global service. Involving international family medicine and other primary care colleagues in further developing this framework will ensure that these guidelines best contribute to the development of family medicine worldwide and to global health.

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Ethical approval: This study (#14-18) was reviewed on March 4, 2014 and determined to be exempt by the Committee on the Use of Human Subjects in Research, Memorial Hospital of Rhode Island.

Previous presentations: This work was presented as a lecture presentation at the 2014 American Academy of Family Physicians Global Health Conference, La Jolla, CA and at the 2015 STFM Annual Spring Conference, Orlando, FL.

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