

ABSTRACT

Introduction. Oregon Health & Science University (OHSU) Global Health Center has developed a unique training program--*Professionals' Training in Global Health*-- for mid- and late-career health professionals wanting to perform clinical services overseas in low-income countries.

Methods. A multidisciplinary, multifaceted, structured curriculum underpins the clinical retraining, with classes aimed to be practical for clinical settings in resource-poor regions of the world. Preceptorships in family medicine and emergency medicine offer specialists the opportunity to observe primary care physicians 1-on-1. In addition, PTGH trainees volunteer at free medical clinics where they work under the guidance and supervision of a family physician. For those individuals who live at some distance from Portland, Oregon, the course offers live videoconferencing, as well as archived streaming for later review.

Results. As of November 2013, 79 health professionals have completed the course, with 45 graduates having subsequently volunteered on one or more overseas medical missions, for a total of 109 medical service visits to 36 countries. Pre- and post-course testing shows improvements in clinical skills and knowledge base.

Discussion, Professionals' Training in Global Health has a six-year record of interprofessional training and service both overseas and at home. The course has trained physicians, nurses, nurse practitioners, physician assistants, midwives, paramedics and other health professionals.

INTRODUCTION

The worldwide distribution of physicians is grossly uneven; lower-income countries being the least served. According to the World Health Organization (WHO),¹ the density of physicians ranges from 2.2 per 10,000 population in the African Region to 20.4 in the Americas and 33.3 in the European Region. WHO estimates that 2,360,000 healthcare professionals are necessary to fill the gap in 57 countries facing a health workforce crisis.

Countries with a paucity of physicians may be assisted from abroad. According to the Health Resources and Services Administration (HRSA), the supply of U.S. physician under age 75 will increase from approximately 800,000 active physicians in 2005 to 950,000 by 2020.² At the same time, frustrated by mounting regulation, declining pay, loss of autonomy and uncertainty about the effect of health system reform, doctors are cutting back the number of hours they work and how many patients they see.³

In a 2012 survey of U.S. physicians, only half of respondents said they would continue their current medical practice over the next one to three years. The other half reported looking at other options, including cutting back on hours (22%) and retiring (13.4%).⁴ The HRSA Physician Supply Model calculates that the annual number of retiring physicians will reach 20,000 by the year 2020, up 60% from 12,500 retirees per year in 2005.²

Medical volunteerism in low-income countries can be an attractive option to many physicians and other healthcare professionals who are close to

retirement including “baby boomers” now in their sixties. However, training programs are needed to prepare providers for this role and facilitate the transition into what is often an unfamiliar setting.

In response to the world-wide shortage of medical personnel, together with the increasing number of retiring health professionals, the Global Health Center of Oregon Health & Science University (OHSU) launched *Professionals’ Training in Global Health (PTGH)* in 2008. The course addresses the chronic shortage of health providers by training late-career and newly-retired physicians and other health care professionals to work abroad as clinicians and educators. This eight-week, two-day per week, interprofessional course simultaneously trains physicians, nurses, nurse practitioners, physician assistants, midwives, paramedics and other medical personnel who want to improve their skills as volunteers in low-income countries.

Recognizing that specialists may not have practiced primary care for decades, PTGH offers practical, hands-on retraining in family medicine and acute care. Re-training is particularly important for work in low-income countries where physicians may be called upon to provide services for which they have received little formal training, such as tropical medicine, pediatrics and public health.

The literature on retraining of generalists and specialists in primary care is limited. Twenty years ago, Wall and Saultz⁵ described four possible pathways to retraining, emphasized the importance of defining the scope of practice and necessary skills for the provision of primary care, and identified several

obstacles, including cost and benefit, definition of core competencies, and credentialing. A study of U.S. medical school alumni revealed a strong interest in expanded primary care training among generalists (family practitioners and general internists) and, to a lesser extent, among specialists, with greater interest among obstetrician-gynecologists than medical subspecialists.⁶ This report contributes to the literature on retraining of health professionals by outlining how and why the course was founded, specifics of the course content, and evaluation and outcomes of the program.

METHODS

Course Development. The first step in developing this course was the formation of an advisory board, Oregon Friends of International Health, made up of clinicians, educators, OHSU faculty, the director of the OHSU Global Health Center, the executive director of The Foundation for Medical Excellence and representatives of Portland-based Medical Teams International. The intent was to bring together individuals with a wide-range of experience and obtain their advice on establishing this new program. We had frequent discussions with OHSU's Associate Dean for Continuing Medical Education. Two additional committees were formed: one to develop a survey and one to develop the curriculum and recommend potential speakers.

A survey distributed in 2007 by direct mail sought to determine the level of interest in this retraining program among all licensed Oregon physicians between the ages of 46 and 69. Of the 6,099 surveys mailed, 624 were completed and

returned (10.2% response rate). Despite the low response rate, the survey allowed us to identify a large cadre of physicians interested in training for work overseas. The survey also gave us guidelines on the tuition fee this group of physicians was willing to pay, the number of days per week they were willing to devote to the training, and the subjects of greatest interest to them. This group became, in effect, the initial target audience for the program.

Of physicians returning the survey, 40.8% were in group practice, 19.6% in solo practice, 19.2% were salaried, 7.8% were retired, 7.0% were semi-retired, and 5.5% were in teaching or administration. Five hundred and thirty-five respondents (88.1% of those returning surveys) indicated an interest in global health (91.4% of female and 87.8% of male physicians), although only 38.2% had previously done volunteer medical work overseas. Significantly, only 19.7% of respondents thought they had the necessary skills to work in low-income countries [TABLE 1]. When asked the question “Would you be interested in obtaining additional training for such work?”, three quarters of respondents (75.8%) said “yes.” The areas of greatest interest for training were infectious disease (67.9%), emergency medicine (63.9), and public health (57.0%) [TABLE 2].

When asked about the intensity and duration of a course, respondents indicated a preference for no more than two days per week over 2-3 months. When asked how much they would be willing to pay for such a course, 2.5% indicated they would pay \$10,000 tuition, 24.5% would pay \$5,000, 37.8% would pay \$3,000, 17.8% would pay \$1,000 and 17.8% were not willing to pay for the

course. (In 2014 dollars, these amounts are \$11,396, \$5,620, \$3,418, and \$1,140 respectively.)

The results of this survey were essential in garnering the support of OHSU's President and Associate Dean for Graduate and Continuing Medical Education. They demonstrated that over 400 Oregon physicians were interested in taking global health training, if such a course were available at OHSU. The first PTGH class was launched in 2008 with six physicians, two days a week over ten weeks. All of the requested topics, as well as many others, were included in the course curriculum. Tuition was initially set at \$5,000, which included ten weeks of preceptorships in primary care (described under "Learning Activities").

Course Content. Categories of subjects taught in the PTGH course are primary care, acute care, tropical medicine, public health, medical specialties, mental health, cultural competency and medical ethics, and travel health and safety [TABLE 3]. Topics related to public health methodology, outbreak investigation and community needs assessment are fundamental to the curriculum because in lower-resource settings there is often little separation between clinical practice and public health. Psychiatry was dropped from the course content as experience showed that taking a psychiatric history is not practical in low-resource settings where time with each patient is limited and where formidable language barriers often exist. However, post-traumatic stress disorder is included in the curriculum as it plays a major role in evaluating refugees and internally displaced persons, as well as people subjected to wars, natural disasters, injuries, family loss, economic privation and famine.

Hands-on laboratory sessions include abdominal ultrasound, suturing, intubation, splinting and casting, regional block anesthesia, shoulder dystocia & breech deliveries (using mannequins), and microscopic identification of parasites in blood and stool samples. A full day is devoted to a Safety and Security Field Exercise. Figure 1 shows how time is allocated to major topic areas. Of the 96.5 hours of lectures and practicums, 7.5 hours (7.8%) are devoted to primary care training with reviews of hypertension, diabetes, pediatrics, trauma and resuscitation. These sessions might be considered redundant/unnecessary for a primary care provider, although they have been well attended by all participants, regardless of specialties.

Course Faculty. Course faculty consist primarily of those OHSU faculty who are experts in their fields, but also include distinguished educators from other teaching hospitals in the Portland area, as well as from Bend, Hood River, San Francisco and Seattle. All faculty have extensive overseas experience. On orientation, they receive a review of course objectives and teaching methods from the PTGH Director.

Learning Activities. Classes are held on the OHSU campus with a limit of 20 trainees per class. The sessions are face-to-face and interactive with questions and comments encouraged during presentations. Some classes--for example relief team mental health, cultural competency, and ethics in global health--particularly lend themselves to a "round-table" discussion format.

For the first time, in 2013 the course offered live videoconferencing for those individuals who lived at some distance from Portland, Oregon, or who preferred to take the course on-line. All course enrollees have access to archive streaming to review taped sessions on line, and the tapes are available for up to a year.

Personal security may be threatened while working in more volatile areas of the world, and one of the most popular and appreciated classes is a day-long session, *Safety and Security in the Field*, directed by Medical Teams International (Tigard, Oregon), a non-governmental organization with 35 years experience in 70 countries. This training includes re-enactment of a hostage situation with first responders role-playing the part of terrorists. This simulated experience includes the direct involvement of PTGH trainees in mock kidnapping, handcuffing, blindfolding, gunfire (blanks) and interrogation.

Physician specialists who want training in primary care may elect preceptorships in emergency medicine, family medicine and pediatrics. These are three-hour, 1-on-1, observation sessions with primary care physicians in their clinics or hospitals. To our knowledge, PTGH is the only global health course in the country offering retraining in primary care.

Trainees also have the opportunity to work at free medical clinics in the Portland metropolitan area under the supervision of primary care physicians. Free clinics may approximate volunteer work overseas to the extent that practitioners encounter immigrants, refugees and the medically underserved.

The supervised clinics are reminiscent of those experienced by a senior medical student or junior resident, where details of the history and physical exam are discussed with an attending physician, who then helps to develop a plan of treatment. The goal is to allow physician specialists to become familiar with practicing primary care in a controlled and supervised setting.

The course includes a Global Health Fair where trainees have the opportunity to hear from 12-16 medical organizations that offer programs overseas. The Health Fair is divided between 5-minute PowerPoint presentations and information tables where trainees may ask questions of NGO volunteers and staffers, and obtain brochures and literature.

Fees and Credits. Course tuition currently ranges from \$3,800 for physicians to \$3,300 for nurses and other health care professionals. Preceptorships in primary care are an additional \$125 per session, since preceptors are paid for their services. Lecturer honorarium rates range from \$175 for one hour to \$425 for three hours..

Course tuition includes Continuing Medical Education (CME) and Continuing Education Unit (CEU) credit hours. In 2013, the OHSU School of Medicine Division of CME designated the course for a maximum of 87.25 AMA *PRA Category 1 Credits*. The OHSU School of Nursing approved PTGH for a maximum of 97.5 Continuing Education Units.

Evaluation. Each lecturer is evaluated by the trainees, as required for CME course accreditation, utilizing a score of 1 to 5, with [1] being poor and [5]

being excellent. Information from trainee evaluation forms is used to provide feedback to lecturers.

To determine if PTGH trainees have improved their knowledge and skills, they are given an objective multiple-choice test and a subjective questionnaire on the first and last days of the course. The 4-level evaluation model developed by Kirkpatrick in 1994, and adapted by Curran and Fleet in 2005,⁶ provides the basis for assessing Level 1 (participant satisfaction) and Level 2 (knowledge and attitude change). The objective and subjective instruments were developed with the advice of the PTGH Advisory Board and with the OHSU School of Medicine CME director. Speakers are asked to submit 4-5 multiple-choice questions for each of their talks. Over the course of the past six years, questions have been modified or dropped if they were felt to be ambiguous or confusing. New test questions have been added for newly-covered subjects.

The subjective questionnaire asks trainees such questions as:

- On what level would you rate your ability to use primary care skills (family medicine, emergency medicine, pediatrics) to treat patients in an international setting? (Scale: 1-no capability; 2-possibly capable; 3-somewhat capable; 4-moderately capable; 5-considerably capable; 6-completely capable)
- On what level would you rate your ability to address issues of infectious disease, tropical medicine and public health that may arise while working overseas? (Same scale as above)

- On what level would you rate your awareness that significant ethnic and cultural differences may exist between you and patients in international settings that may interfere with patient care? (Scale: 1-no awareness; 2-possibly aware; 3-somewhat aware; 4-moderately aware; 5-considerably aware; 6-completely aware).

RESULTS

In the six years from 2008 to 2013, 79 health professionals have completed PTGH, including 59 physicians, 8 nurses, 3 nurse practitioners, 4 physician assistants, 1 dentist, 1 podiatrist, 1 certified nurse midwife, 1 paramedic and 1 PhD in psychology. To complete the course, trainees must attend a minimum of 80% of the course content. Two trainees had to drop the course in mid-semester because of practice and family issues, but both subsequently enrolled the following year.

Speakers' scores have averaged 4.8 to 4.9 for content of their talk, knowledge of the subject, and teaching ability. Speakers who have scored below 4.5 (6% on average) or who have received significant negative comments on speaker evaluation forms have not been invited to teach in subsequent years.

Objective test results for trainees over the past six years have shown an average improvement of 5.2 additional correct answers out of 30 questions asked (17.3% improvement). The degree of improvement has remained stable over time and is independent of specialty of the trainee.

Over the past five years, results of the subjective questionnaire have shown 18.8% improvement from the first to the last day of the course. This calculation derives from the average value of the five questions on the subjective questionnaire and calculating the percentage change from the first to the last day of the course.

In 2013 we initiated an anonymous evaluation of the course by PTGH trainees. 100% of the class agreed or strongly agreed, “The stated objectives were understandable,” “The educational materials and resources enhanced my learning,” and “Overall, I rate this course highly.” 91% of the class agreed or strongly agreed, “The course as a whole was well organized.”

From questionnaires and phone calls, 45 (57%) PTGH graduates have been identified as serving on 109 medical trips to 36 countries, nearly all of which are low-income countries [TABLE 4]. These numbers are expected to rise over time. Nineteen of 78 graduates completed the Fall 2013 course only 3 months prior to this report; thus, a quarter of all graduates have had little time to volunteer overseas and may do so in the future.

In February 2014, we conducted an online survey of the 78 living graduates to determine whether they had volunteered overseas, whether they were volunteering in local free or low-income clinics, and whether they were working full time, semi-retired or retired. Fifty-six graduates (72% response rate) completed the survey.

In looking at current employment status, an equal number of graduates

who completed the survey are either working full time or are retired [FIGURE 2]. The highest percentage of graduates volunteering abroad are those who are semi-retired (69%), with full-time professionals (48%) and retirees (44%) less likely to serve overseas.

According to the recent survey, of those graduates who have volunteered abroad, clinical care represented the predominant focus (89%), while 62% engaged in educational activities, and 11% assumed administrative roles. 55% of those who have worked overseas reported doing so more than once, which may imply that overseas medical service missions are an ongoing part of their lives.

Forty-three percent of PTGH graduates surveyed continue to volunteer their time in local free or low-income clinics at least once a month since graduation [Fig. 3].

One disappointment has been inconsistency in the quality of preceptors. If preceptors ignore trainees assigned to observe them for the afternoon, the session may be unproductive. If the preceptor understands that this is a teaching opportunity, and s/he treats the trainee as a colleague who may add value to the patient visit, then the session is more likely to be productive and instructional.

In 2013, two free clinics that have been an important part of our primary care training closed, one for the entire Fall semester and one for a few weeks. This unforeseen problem required us to cancel clinic assignments for a number of our trainees. In future years we need to work with a sufficient number of free clinics that if closures occur again, we can readily reassign trainees to an

alternative site.

Ultrasound training has been immensely popular, but the reality is that ultrasound skills can hardly be mastered in the course of three hours. We plan to add a daylong ultrasound lab in 2014, then reevaluate whether this amount of time is sufficient. If a trainee requests more training in any subject taught by PTGH, we help them access additional resources.

DISCUSSION

Professionals' Training in Global Health is a unique course that trains health providers who want to volunteer in low-income countries. To our knowledge, it is the only global health course in the country offering retraining in primary care.

Originally designed for physicians, the course has become interprofessional and has enrolled a broad range of health professionals. This cross-fertilization of multiple professionals learning together has strengthened the program as it stimulates dialogue about interprofessional approaches to medical care.

The 43% of PTGH graduates who volunteer in local free or low-income clinics may reflect a positive ethic of providing care for the medically underserved, as well as a desire for graduates to maintain newly acquired primary care skills. We believe the course has provided a net increase in medical providers volunteering in free and low-income clinics around Oregon, but we have no statistical information on this outcome since we have not asked trainees about their volunteer practices before starting the course.

We believe that videoconferencing can be an effective way to keep current with new changes in medical education at a reasonable cost. However, we are concerned that videoconferencing may diminish the educational experience compared to attending classes in person, where trainees can be more fully engaged and interactive.

In 2014, we plan to compress the course into two full days (Thursdays and Fridays) over eight weeks to facilitate attendance by out-of-town and out-of-state trainees.

To date, no attempt has been made to evaluate Levels 3 (performance) or 4 (patient outcomes). Assessing physician competence in free medical clinics or in overseas assignments is beyond the scope of this course. We believe there is merit to ascertaining both the trainees' level of knowledge (objective multiple-choice test) and their confidence in applying for and accepting overseas assignments (subjective questionnaire). We do intend to track the volunteer service of PTGH graduates over time to determine if there is a correlation with age, specialty, health, faith, finances, family or other factors that may affect how long providers continue to volunteer globally and locally.

Professionals' Training in Global Health has garnered great interest among West Coast health professionals, seeking training in global medicine. It has a six-year record of interprofessional training and service both overseas and at home. The course has trained physicians, nurses, nurse practitioners, physician assistants, midwives, paramedics and other health professionals.

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Table 1: Distribution of Responses to the Initial Survey of Oregon Physicians in 2007.

	Yes		Not Sure		No	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Do you think you have the necessary skills for overseas work?	245	41.9%	225	38.5%	115	19.7%
Would you be interested in obtaining additional training for such work?	411	75.8%	95	17.5%	36	6.6%

Table 2: Areas of greatest interest for course study

Specialty	Level of Interest
Infectious disease	67.9%
Emergency medicine	63.9%
Public health	57.0%
Water/food sanitation/pollution	48.5%
Community needs assessment	42.5%
Epidemiology and outbreak investigation	40.1%
Nutrition/hydration therapy	39.8%
Wound care	37.6%
Pediatrics	36.5%
Adult medicine	36.3%
Dermatology	29.2%
Obstetrics	19.9%
Security risk assessment and safety	15.7%
Stress management/ psychosocial issues	14.9%
Reproductive health	14.6%

Of the N=411 respondents who indicated potential interest in training for practicing medicine overseas, the question was "In what fields would you like more experience? Check all that apply." *Source:* OHSU Global Health Center 2007 Survey of Oregon Physicians.

Table 3: Subjects taught in the *Professionals' Training in Global Health Program*

Category	Subjects
Primary care	Pediatrics, family medicine, essential medications in the field
Acute care	Emergency medicine, trauma, abdominal emergencies, resuscitation, fluid replacement following trauma and burns, surgical triage
Tropical medicine	Infectious diseases, microscopic identification of parasites
Public health	Epidemiology, water and sanitation, malnutrition and feeding programs
Medical specialties	Obstetrics, orthopedics, dermatology, dentistry, radiology, nutrition, ophthalmology, family planning, anesthesia, neurology
Mental health	Relief team mental health, post-traumatic stress disorder
Cultural competency and medical ethics	Oral communication skills, cross-cultural medicine, medical ethics in low income settings
Travel health and safety	Risks and recommendations

TABLE 4: Number of Medical Service Visits by Country of Course Graduates as of Nov. 2013

Country	Trips	Country	Trips
Uganda	16	Cambodia	1
Haiti	13	Costa Rica	1
Kenya	8	El Salvador	1
Philippines	7	Fiji	1
Rwanda	7	Gambia	1
Guatemala	6	India	1
Ethiopia	5	Lebanon	1
Cameroon	4	Malawi	1
Nepal	4	Malaysia	1
Honduras	3	Mexico	1
Nicaragua	3	Nigeria	1
Peru	3	Palau	1
Vietnam	3	Panama	1
Bhutan	2	Sierra Leone	1
Democratic Republic of Congo	2	Solomon Islands	1
Papua New Guinea	2	South Sudan	1
Tanzania	2	Ukraine	1
Burundi	1	USA (after Hurricane Sandy)	1

Figure 1: Professionals' Training in Global Health Curriculum

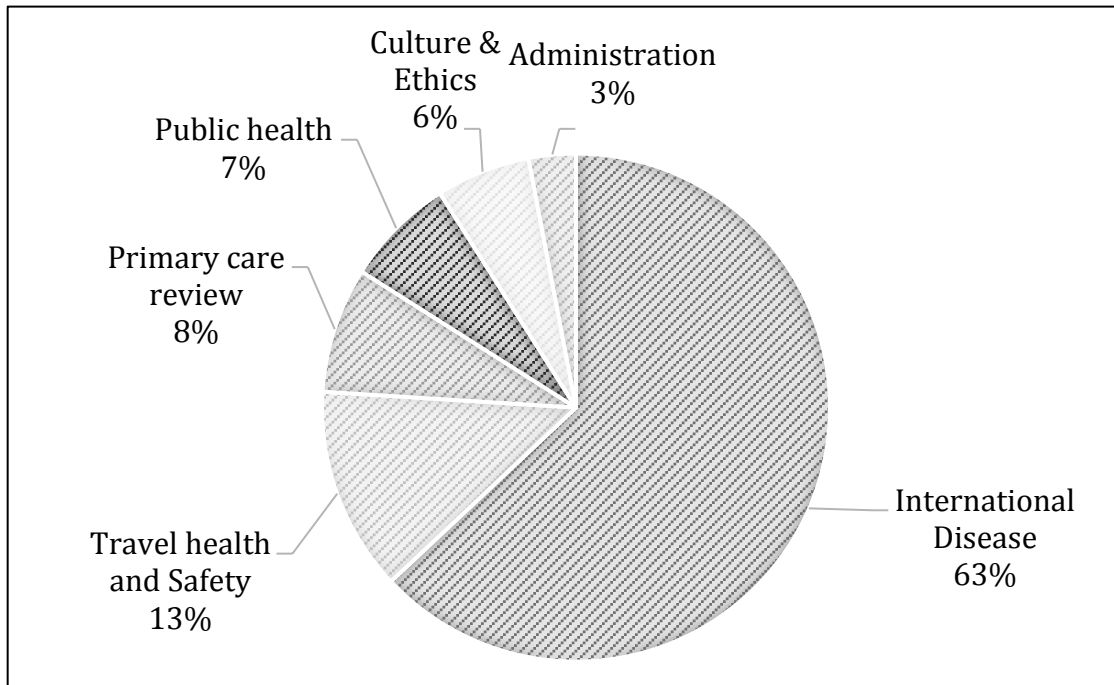


Figure 2: Distribution of Responses to the Question: *What is your employment status?* (Answered n=48, skipped n=8; February 2014 survey, 72% response rate). *Source:* Recent survey of PTGH graduates (Feb. 2014).

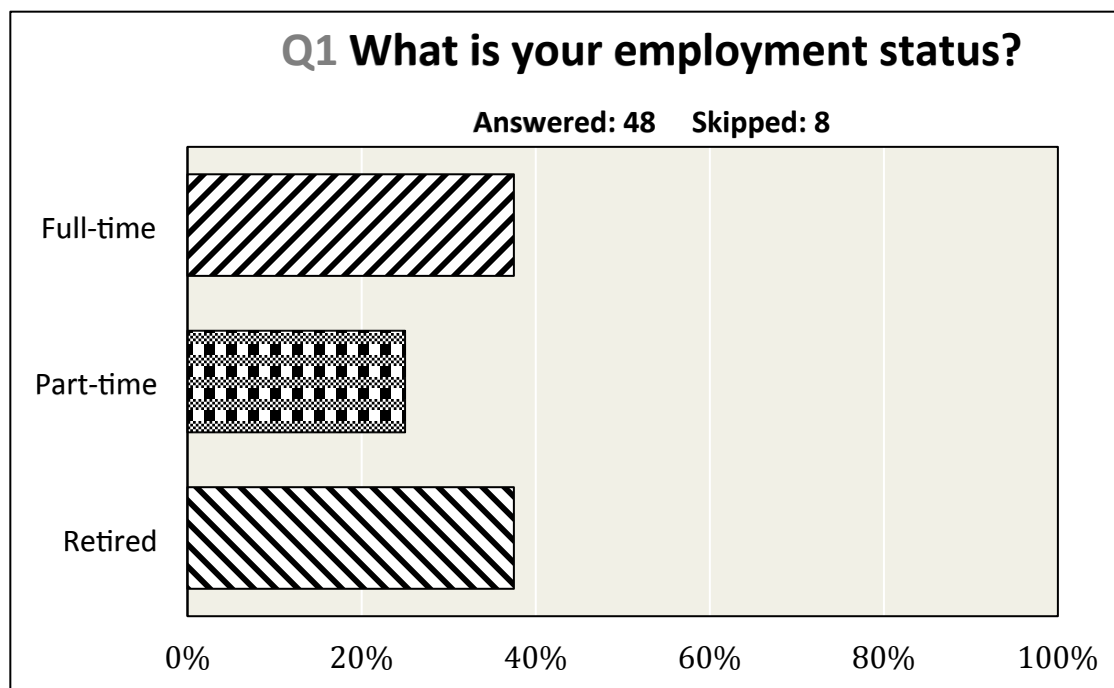


Figure 3: Distribution of Responses to the Question: *Do you volunteer in free or low-income clinics?* (Answered n=56, skipped n=0; February 2014 survey, 72% response rate)

