



Published in final edited form as:

*Health Educ J.* 2013 September 1; 72(5): 530–536. doi:10.1177/0017896912450874.

## International service and public health learning objectives for medical students

Robert C. Block, MD, MPH<sup>1,2</sup>, Vincent Duron, MD<sup>1</sup>, Peter Creigh, BA<sup>1</sup>, and Scott McIntosh, PhD<sup>1,2</sup>

<sup>1</sup> The University of Rochester School of Medicine and Dentistry, Rochester, New York

<sup>2</sup> The Department of Community and Preventive Medicine, The University of Rochester School of Medicine and Dentistry, Rochester, New York

### Abstract

**Objective**—We aimed to improve the education of medical students involved in a longitudinal perinatal health improvement project in Gowa, Malawi.

**Design**—We conducted qualitative interviews with students who participated in the project, reviewed their quantitative reports, and assessed the application of methodologies consonant with the learning objectives of a novel community health improvement course within their experience.

**Setting**—The Gowa Health Promotions Project, designed to improve perinatal care for women and their families within the Gowa Health Clinic, used community participatory research strategies.

**Method**—Medical students partnered with clinic workers and the local residents, evaluated, and revised an existing perinatal educational program. Qualitative and quantitative health and program data were collected, and program revisions were implemented. The value of the student experiences as a public health educational tool was evaluated by the authors.

**Results**—Project sustainability was enhanced by a fellowship and planning for sequential students. The community health course structure and goals enhanced learning in the project. Engagement of investigators as early as possible in an international public health enhancement project improves student learning and ongoing commitment.

**Conclusion**—Service learning objectives aimed at providing valuable medical learning to student learners immersed in other cultures are consistent with evidence-based learning objectives in the field of public health. Proactively structuring this experience to explicate these goals can enhance student learning. This dual strategy may improve the sustainability of international health programs by educating medical students while leading them into careers where these skills will be leveraged.

### Keywords

International health; public health; perinatal health; medical student; Gowa; double-helix medical education

---

**Corresponding author:** Scott McIntosh, PhD, Associate Professor, Division of Social and Behavioral Medicine Department of Community and Preventive Medicine University of Rochester School of Medicine and Dentistry 265 Crittenden Blvd., CU 420644, Rochester, NY 14642-0644 Phone: (585) 275-0511 scott\_mcintosh@urmc.rochester.edu Fax: (585) 424-1469.

**DECLARATION OF INTEREST** The authors report no declarations of interest

## INTRODUCTION

International health electives are becoming increasingly popular among US medical students and residents with the number of medical schools offering preparatory international health courses increasing 35 percent and the number enrolled in these courses increasing 58 percent from 1990 to 1992<sup>1</sup>. In 2003, at least 20 percent of graduates from US medical schools had engaged in international health activities compared to 6 percent of 1984 graduates<sup>2</sup>. Such electives and required courses are associated with physicians choosing careers in primary care or in underserved settings and being recruited into primary care residencies. Participation is also associated with improved clinical skills and knowledge of tropical diseases accompanied by encouragement to obtain a public health degree<sup>1,3</sup>.

A course required of 4th-year medical students at the University of Rochester, called the “Community Health Improvement Course”, involves 4 weeks of experiential service learning when students design and implement interventions in a target community<sup>4,5</sup>. This course is a critical component of the University of Rochester's medical student double-helix curriculum<sup>4,6</sup>. The goal is to educate students in methods used to improve the health of populations through community-based interventions. Prior projects have included those focused on India (qualitative evaluation of health beliefs of members of Jainist communities), South Africa (formative evaluation towards the development of a sexually transmitted disease Health Clinic), and in South America (documentation of region-wide and country specific cardiovascular disease prevalence and public health strategies). The United Nations' Millennium Project has clearly laid out goals 3, 4, 5, and 6 as, respectively: promoting gender equality and empowering women, reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria, other diseases<sup>7</sup>. Within this Community Health Improvement Course we have also focused on educating students in regard to the optimal care for patients with chronic diseases<sup>5</sup>. We describe one notable project in which medical students, who also have been enrolled in the Community Health Improvement Course participated in, focused on the training of international healthcare workers in a perinatal clinic.

## METHODS

Malawi is a low-income, developing country with a very high infant mortality rate of 110 per 1,000 live births, life expectancy after birth of age 44 for men and 51 for women, and approximately 60% of children under age 5 stunted development<sup>8</sup>. The village of Gowa is in Western Malawi and its residents have very limited access to healthcare with only 1 clinic, 1 medical transport vehicle, and no hospitals within 20 kilometers. The University of Rochester (U of R) established a partnership with the Gowa Health Clinic through a cultural immersion program started on our undergraduate campus in 1998. Subsequently, in 2005 this was expanded to the Gowa Health Promotions Project (GHPP) which has continued to facilitate medical student participation through an ongoing fellowship. Tracking of student involvement for consideration of overlap with the curriculum goals of the Community Health Improvement Course, revealed overlapping public health learning objectives.

U of R medical students participating in this GHPP have received funding through the U of R's Office of Medical Education International Research Award and have typically spent 4–8 weeks in this location. Students complete an application process, which must have a research component approved by our institution's Institutional Review Board. Applications are reviewed by the International Medicine Faculty Advisory Committee, comprised of 13 faculty members. Successful student applicants receive stipend support for travel and lodging. Other requirements include participating in the Medical Student Annual Poster

Session, and Medical Student Abstract Journal. All students must have a faculty sponsor and an expert sponsor in the host country.

The GHPP was designed to improve a perinatal care educational program for women and their families within the Gowa Health Clinic using community participatory research strategies. The primary focus was improving the content and effectiveness of education provided by the Gowa Health Clinic's perinatal education class teachers, consisting of 3 nurse midwives, 2 nurses, and 2 health surveillance assistants. All phases of the project to date have been reviewed and approved by the University of Rochester's Institutional Review Board and were conducted by medical students.

There have, to date, been 5 phases of the GHPP. Phase 1 focused on needs assessment using the Precede/Proceed Model<sup>9</sup> and occurred during the summer of 2005. Work conducted included; a rapid needs assessment, interviews & focus groups with community members, teachers, religious leaders, clinic workers, and representatives from USAID & UNICEF. Issues identified included the needs for health provider education and training, health promotion classes (especially perinatal care classes), the organization of materials and medications for clinic, education regarding disease prevention (especially HIV), and better access to information taught at the Gowa Health Clinic.

Phase 2 centered around perinatal class evaluation and reorganization during the summer of 2006. Work conducted included key informant interviews and focus groups with clinic staff, observing and assessing perinatal care classes, interviewing perinatal care class attendees, and gathering data on clinic health outcomes. Issues identified included a suboptimal clinic structure and division of responsibilities, 52% of WHO guidelines for pregnancy and care for the newborn addressed during classes, and most women first accessing care during their 2<sup>nd</sup> trimester (23<sup>rd</sup> week) of pregnancy. Actions taken included: the creation of a new perinatal care curriculum, following WHO guidelines, and focus groups conducted to introduce the curriculum.

Phase 3 targeted perinatal class reevaluation and expansion during the summer of 2007. Work conducted included key informant interviews and focus groups with clinic staff and residents in outlying communities, interviewing class attendees at clinic and in outlying villages, and observing and assessing perinatal care classes at clinic and in outlying villages. Issues identified included the new curriculum in full use, staff with demonstrated accurate knowledge of perinatal practices, staff requesting help with HIV education and methods to involve men in health education, women still accessing care late in their 2<sup>nd</sup> trimester, and an identified unwillingness of residents to discuss HIV/AIDS. An action taken was the creation of posters for the Gowa health clinic.

Phase 4 focused on program evaluation and reorganization in the fall of 2008. Work conducted included key informant interviews with all members of the GHPP, compiling data and materials used in GHPP, conducting key informant interviews with participants in other Malawi-based health promotions projects, and researching additional funding sources for U of R participants. Issues identified included the need for HIV education as direction for future research, for collaboration with the Pediatric AIDS Corps of Baylor University, Abbott Global Care and Family Health International as possible funding sources. Actions taken included manuscript editing, poster presentation at the Unite for Site Global Health Conference in April 2009, and discussion of the GHPP with 1st year medical students at the University of Rochester later in 2009.

Phase 5 concentrated on the effectiveness of the educational program regarding HIV and risk behaviors over the summer of 2009. Work conducted included interviews, surveys, and focus groups with clinic health educators, schoolteachers, traditional authority figures, and

community members of Gowa and surrounding villages. Issues identified included successful education of the targeted adult women, continued risky behaviors by all groups despite adequate understanding of risks by adult women, and barriers that limit translation of the educational program into behavior change. Actions taken encompassed efforts to create male-focused health classes, working with the local schools to incorporate health education into their curriculum, and collaborating with educators to improve their curriculum to address harmful cultural stigmas and traditions.

The sustainability of the perinatal program was estimated and considered to be enhanced by the fact that the classes exist, are provided free, thus providing a framework upon which improvements could be made and from which a baseline assessment could be obtained. Furthermore, consultants from international health organizations were enthusiastic regarding the ability of the GHPP to greatly enhance the clinic's program. These facts suggest that this project's long-term sustainability will be enhanced by the longitudinal involvement of University of Rochester medical students.

## RESULTS

Public Health learning objectives, as presented to students in the required Community Health Improvement Course and described elsewhere<sup>4</sup>, overlapped considerably with experiential learning objectives from this ongoing GHPP, whether or not this was explicitly apparent to the students. We identified these population-based learning objectives including Partnership Building, Cultural Determinants of Health, Surveillance, Environmental Change, Risk Behavior Change, Program Evaluation, and Sustainability. Such learning objectives are part of educational recommendations for medical students so they can become proficient in improving health at the population level from the World Health Organization<sup>10</sup>, the Pew Health Professions Commission<sup>11, 12</sup>, and the Association of American Medical Colleges, in its Medical School Objectives Project report<sup>13</sup>.

### Comprehensive evaluation plan

It was repeatedly observed that a comprehensive assessment is needed to establish baseline data, provide information for process evaluation goals, and to determine the effectiveness of curriculum, clinical, partnership building, and educational objectives. A more defined leadership plan with instruction on research methods (particularly community driven strategies), with flexibility to incorporate student learners and all levels of interventionists would help standardize the various approaches, content, and assessment.

### Online modules prior to service learning

Currently, our medical school requires "longitudinal students" to take an online module for public health approaches (including the public health learning objectives outlined above), in order to prepare for local community health improvement project work. Students aiming to go abroad, whenever anticipating working with local agencies, professionals, and community residents, should take this online module and confirm an understanding of evidence-based public health approaches.

### Increase faculty involvement as early as possible

Consistency in mentorship, programmatic concerns, and medical content concerns (including evidence-based public health approaches) is needed earlier and more frequently by identified faculty with protected time to ensure high-level oversight and guidance.

### **Structured sustainability plan to increase continuity from one student to the next**

Students engage with global health projects in a variety of ways and develop relationships with community and international health faculty mentors. A more centralized core, responsible for archiving both short and long-term goals and objectives, will better guide students as they plan their involvement. Students should also carefully observe underlying social and cultural barriers for health improvement interventions. To do this, they should be encouraged to improve immersion time in the targeted community including time spent in social activities such as dances and celebrations. First and 2<sup>nd</sup> year medical students should be encouraged to continue participation as early as possible in their education to enhance the creation of optimally effective future projects and their choices of future careers.

### **Require more deliverables from students upon completion**

Standardization of academic and clinical deliverables is needed to solidify expectations of both students and programmers, so that goals and objectives can be more clearly met to benefit the target communities as well as the learning objectives for the students. One major priority should be student comparison of the effectiveness of the project they participated in with that of prior projects conducted by their own and other institutions.

### **Dissemination**

One such deliverable could be a manuscript for publication in collaboration with a faculty mentor. Each student project has involved some or more of the key learning objectives for public health interventions (as outlined above), as well as qualitative research methodology and population-based intervention strategies. Dissemination of these processes and outcomes via publication is needed for the benefit of the target community, the academic learning objectives of medical learners, and the science of public health. The training of local staff on health improvement methodologies is also critical.

## **CONCLUSIONS**

Service learning objectives aimed at providing valuable medical learning to student learners immersed in other cultures are consistent with established, evidence-based learning objectives in the field of public health. Proactively structuring this experience to explicate these goals can further validate the experience and add to the scientific literature. Implementing ethically approved collaborative international research projects helps build research and service delivery capacity in the host country by creating a sustainable infrastructure<sup>14</sup>. A fairly rapid and powerful practical learning process can ensue in which US medical school faculty educate and mentor students who then use community participatory research-based methods and/or educational interventions to enhance the training of international healthcare workers in locations where their presence is most needed. Curriculum elements can provide a unique opportunity for medical students to pursue careers that incorporate population health strategies in international settings while developing skills in healthcare leadership and interdisciplinary research.

## **Acknowledgments**

Reverend Tendance Suya and Phillip Mlongoti from Gowa. Beatriz Champagne PhD, Executive Director of the InterAmerican Heart Foundation. Joseph Lanning, MA, formerly of the Department of Anthropology at the University of Rochester. Elinor Wilson PhD, CEO of the Canadian Public Health Association. The following University of Rochester faculty members: Thomas A. Pearson MD, MPH, PhD, Senior Associate Dean for Clinical Research and Co-director, Clinical and Translational Science Institute; Noelle Andrus PhD, Assistant Professor of Clinical Nursing; Kevin Fiscella MD, Associate Professor, Departments of Family Medicine and Community and Preventive Medicine; Teresa Gipson MD, RN, Instructor, Department of Family Medicine; Michael Keefer MD, Professor of Medicine and Associate Director for Scientific Administration of the HIV Vaccine Trials Network; and Adrienne Morgan MS, Co-director of the Center for Advocacy, Community Health, Education, and Diversity

(CACHED). The following University of Rochester medical students or former students: Jennifer Riehl, Jessica Rosenthal, Joanne Chan, Christine Osborne, Ashley O'Hara, for their enthusiasm and devotion to the project. The people of Gowa.

**Research Support** This publication was made possible by Grant Number KL2 RR 024136 from the National Center for Research Resources (NCRR), a component of the National Institutes of Health (NIH), and the NIH Roadmap for Medical Research. Its contents are solely the responsibility of the authors and do not necessarily represent the official view of NCRR or NIH. Information on NCRR is available at <http://www.ncrr.nih.gov/>. Information on Re-engineering the Clinical Research Enterprise can be obtained from <http://nihroadmap.nih.gov/clinicalresearch/overview-translational.asp>. Funding was also provided, in part, by the University of Rochester Medical Center Dean's Office, and the Office of Medical Education.

## REFERENCES

1. Thompson MJ, Huntington MK, Hunt DD, LE Pinsky, JJ Brodie. Educational effects of international health electives on U.S. and Canadian medical students and residents: a literature review. *Acad Med.* 2003; 78:342–347. [PubMed: 12634222]
2. Panosian C, Coates TJ. The new medical “missionaries”--grooming the next generation of global health workers. *N Engl J Med.* 2006; 354:1771–1773. [PubMed: 16641393]
3. Drain PK, Primack A, Hunt DD, Fawzi WW, Holmes KK, Gardner P. Global health in medical education: a call for more training and opportunities. *Acad Med.* 2007; 82:226–230. [PubMed: 17327707]
4. McIntosh S, Block RC, Kapsak G, Pearson TA. Training medical students in community health: a novel required fourth-year clerkship at the University of Rochester. *Acad Med.* 2008; 83:357–364. [PubMed: 18367896]
5. Block RC, Tran B, McIntosh S. Integrating the Chronic Care Model into a Novel Medical Student Course. *Health Educ J.* 2011; 70:39–47. [PubMed: 21532935]
6. Williams GC, Markakis KM, Ossip-Klein DJ, McIntosh S, Tripler S, Grady-Weliky T. Evidence-Based Behavior Change Curriculum for the Ambulatory Clerkship; The Double Helix. *Health Ed.* 2005; 105:142–153.
7. United Nations. Millenium Project. Available at: <http://www.unmillenniumproject.org/>.
8. The World Health Organization. [Accessed July 3, 2011] Countries: Malawi. Available at: <http://www.who.int/countries/mwi/en/>.
9. Last, JM.; Wallace, RB., editors. Maxcy-Rosnau-Last: Public Health and Preventive Medicine. 13th ed. Appleton and Lange; Norwalk, Connecticut: 1992.
10. World Health Organization. Doctors for Health: A WHO Global Strategy for Changing Medical Education and Medical Practice for Health for All: World Health Organization. 1996.
11. Pew Health Commission Report. Recreating Health Professional Practice for a New Century: The Fourth Report of the Pew Health Professions Commission. 2006. p. 4
12. Pew Health Professions Commission. Critical Challenges: Revitalizing the Health Professions for the Twenty-First Century. 1995.
13. Pomrehn PR, Davis MV, Chen DW, Barker W. Prevention for the 21st century: setting the context through undergraduate medical education. *Acad Med.* 2000; 75:S5–13. [PubMed: 10926035]
14. McIntosh S, Sierra E, Dozier A. Ethical review issues in collaborative research between us and low-middle income country partners: a case example. *Bioethics.* 2008; 22:414–422. [PubMed: 18554278]