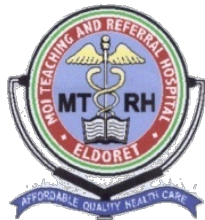


## **PURDUE PHARMACY KENYA PROGRAM**



# Global Health Residency



### Residency Coordinators:

Monica Miller, PharmD, MS

Rakhi Karwa, PharmD, BCPS

**Residency Description:**

Purdue University through its Purdue Kenya Program developed a global pharmacy residency. This is an international pharmacy residency program with a focus on training participants to be global health care practitioners who are able to provide leadership in resource-constrained settings worldwide. The residency class is comprised of American and Kenyan pharmacists allowing for a bilateral exchange of experiences and ideas. The program's main goal is to train clinical pharmacists who can develop and deliver sustainable healthcare.

**Vision:** Provide the premiere global health residency program for international pharmacy leaders who will establish sustainable healthcare services

**Mission:** To educate international pharmacy residents in a diverse, collaborative environment resulting in innovative healthcare enhancement and expansion of clinical pharmacy services

**Values**

Patients First	Excellent patient care is the first priority and the focus of all activities
Investing in Future Leaders	Develop global health champions in pharmacy through mentoring and training
Bilateral Collaboration	Work together in a collaborative, supportive, goal oriented environment of trust, encouragement, and accountability
Sustainable Impact	Establish programs lasting beyond the tenure of any individual and independent of any single funding source
Sharing Best Practices	Disseminate knowledge and experience through scholarly activities

## **Creation of a global health pharmacy residency in Kenya**

Clinical pharmacy services continue to advance in the United States and abroad. Despite these advances, a shortage of clinically trained pharmacists exists in developing countries.

To address this need, Purdue University College of Pharmacy (PUCOP) through its Purdue Kenya Program (PKP) developed a Global Pharmacy Residency Program in Kenya. Since 2004, PUCOP has collaborated with the Academic Model for Providing Access to Healthcare (AMPATH) to provide clinical pharmacy services. AMPATH and PKP are based in Eldoret, Kenya and provide care to more than 140,000 patients at more than 60 clinic locations throughout Western Kenya.

This is an international pharmacy residency program with a focus on training participants to be global health care practitioners who are able to provide leadership in resource-constrained settings worldwide. The residency class is comprised of Americans and Kenyans allowing for a bilateral exchange of experiences and ideas. The program's main goal is to train clinical pharmacists who can develop and deliver sustainable health care regardless of the setting.

The residency framework was developed in part by using the ASHP residency standards and identifying additional global health related training needs of participants. The residents participate in a variety of established clinical services and as a group are developing a new, sustainable clinical service. In addition to developing clinical skills, residents receive didactic training in public health, research methodology, and preceptor development. Residents also strengthen their teaching skills while precepting PUCOP advanced pharmacy practice experience students and Kenyan pharmacy interns.

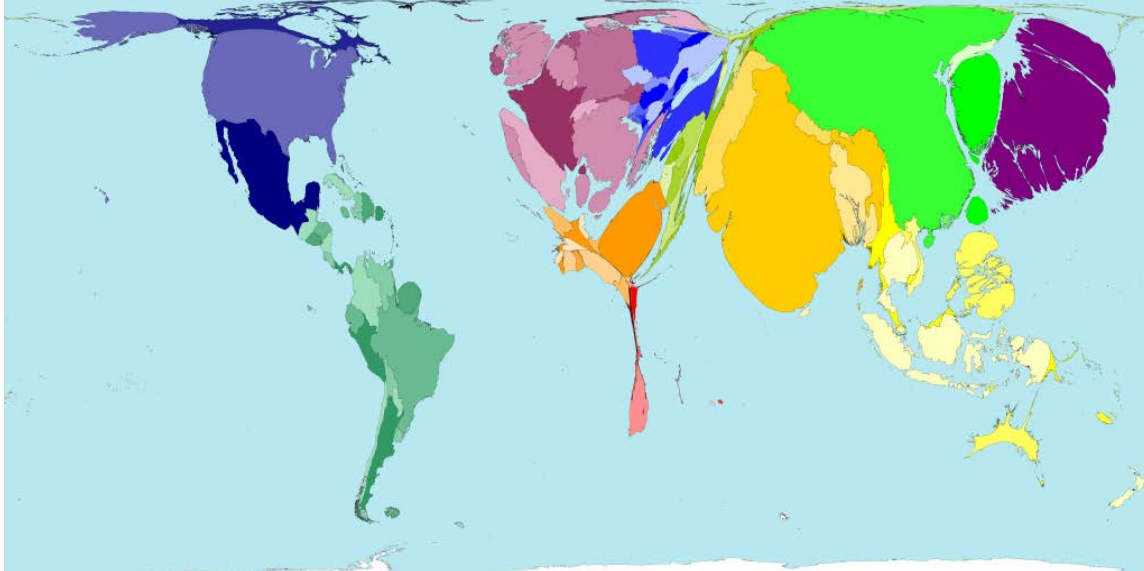
The global pharmacy residency program addresses a need for developing clinical pharmacy services in Kenya while training global health leaders from Kenya and America.

## Introduction

The importance of training cannot be understated as it represents one of the crucial pillars for the long-term success of the care programs that have been built through the USAID-AMPATH Partnership's presence in western Kenya. The provision of high quality experiential training also represents one of the biggest challenges as we partner with the Kenyan government to expand our mission beyond HIV care to bolster maternal health, child health, diabetes care, and management of hypertension within our Primary Health Care (PHC) and Chronic Disease Management (CDM) program. One of the primary cadres of healthcare provider, which will be needed to address the many challenges inherent with developing comprehensive care programs, is pharmacy. Furthermore, the transition of pharmacy personnel from a dispensing focused role to a more clinically focused role would also help to ensure the delivery of safer and more effective care.

Advancements in clinical pharmacy services in the U.S. and developed nations have been well described.<sup>1</sup> Despite similar recognition of the role of the clinical pharmacist abroad, profound disparities exist in developing nations in both the supply of pharmacists and the implementation of clinical pharmacy services.<sup>2-5</sup> Figure 1 below helps illustrate this disparity in the global pharmacy workforce.

Figure 1 – Geographical Representation of the Relative Share of Pharmacy Workforce



FIP Global Pharmacy Workforce Report – 2009

Due to limited resources, schools and colleges of pharmacy in developing nations may face even greater challenges to meet basic workforce demands. The current shortages of pharmacists may detract from training pharmacists in clinical pharmacy provided by academic institutions.<sup>6</sup> As a result, by comparison to pharmacy education in developed nations, there may be relatively fewer learning opportunities in clinical pharmacy in developing nations and the relative need is greater.

In addition to gaining exposure to clinical pharmacy, pharmacy students and interns participating in clinical pharmacy practice experiences may contribute positively to direct patient care.<sup>7-10</sup> Although the role of students assisting in the provision of clinical pharmacy services has been explored in the U.S. and other developed nations, little is known about the potential role of students in resource-constrained settings.

Since 2004, Purdue University College of Pharmacy (PUCOP) has offered the Purdue Pharmacy Kenya program in conjunction with the Academic Model for Providing Access to Healthcare.<sup>11</sup> The Purdue Pharmacy Kenya program includes two credit hours of didactic coursework to prepare students for an eight-week advanced international medicine clerkship in Eldoret, Kenya, during the fourth professional year.<sup>12</sup> The required international elective addresses cultural and travel preparation and management of tropical diseases through didactic lectures and small-group discussions. The clerkship site is in western Kenya at Moi University Teaching and Referral Hospital (MTRH). At MTRH, PUCOP pharmacy students are paired with pharmacy students from the University of Nairobi School of Pharmacy (UNSOP) to create a bilateral exchange where students partner to deliver patient care. Students from the UNSOP enrolled in the Bachelor of Pharmacy curriculum participate in 12 months of clerkships after completing 4 years of didactic education. Didactic coursework at UNSOP includes a similar emphasis on pharmacology, pharmaceuticals, anatomy & physiology to the PharmD curricula offered by ACPE-accredited institutions but lacks coursework in pharmacotherapeutics.<sup>13</sup> MTRH is the second largest, public referral center in Kenya with over 600 inpatient beds. Frequently, beds may include 2 or more patients in each of the 4 public adult medicine wards, which may be occupied by 30 to 50 patients each. The limitations in healthcare worker resources in this setting are consistent with the staff to patient ratios seen in public sub-Saharan African health care institutions.<sup>14</sup> Within the medicine wards, tropical diseases, HIV, and tuberculosis are commonly encountered alongside many of the disease states seen in resource-rich settings such as hyperglycemic crisis, hypertensive emergency, and psychiatric illnesses.<sup>15</sup> The MTRH Department of Pharmacy typically hosts 25-30 PUCOP students and 8 – 10 UNSOP students throughout the year. PUCOP and UNSOP pharmacy students attend daily interdisciplinary patient care rounds in the adult internal medicine hospital. The four patient care teams each include one UNSOP and one PUCOP student and two full-time clinical pharmacists at MTRH supervise pharmacy students during patient care rounds.

To capitalize further on the many positive gains of this program for Kenyan patients, we are hoping to develop the Global Health Pharmacy residency to provide an even more intensive training program to 4 Kenyan and 1 American pharmacist who have completed internship in order to help develop the future leaders for clinical pharmacy in Kenya and sub-Saharan Africa.

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## **Core Values**

### **Clinical Practice:**

Antenatal and postnatal care, diabetes, adult internal medicine, pediatric internal medicine, anticoagulation, drug information, pharmacovigilance, access to medicines, chronic disease management, primary health care

### **Management/Leadership:**

Leadership of students, working with pharmacy director(s), management of projects and on-site pharmacies, management of teaching duties

### **Research:**

Grant writing, manuscript development, submission of projects for ethics approval, statistical analysis, presentation of findings at professional meetings

### **Teaching:**

Clinical teaching of students during experiential rotations, lecture during student electives, multi-disciplinary teaching opportunities, participation in bilateral exchange

### **Didactic Education:**

Organizational training, project development and management, teaching and learning certificate program, biostatistics, pharmacoconomics, communications applicable to pharmacy, ethical foundations to practice, management, health systems to practice

## Description of Core Content Areas

### **Clinical Practice:**

*Description:* The core of pharmacy is the application of knowledge in the clinical setting. Residents will receive a broad experience to enhance practical skills and application of pharmaceutical knowledge. Rotations will focus on delivery of care in a variety of settings, including outpatient vs. inpatient, and for a variety of patient types, including adults vs. pediatrics, acute vs. chronic disease, and communicable vs. non-communicable diseases.

### *Educational outcomes:*

- Provide evidence-based, patient-centered medication therapy management with interdisciplinary teams.
- Provide drug information to health care professionals and/or the public.

### *Required rotations:*

- Adult internal medicine
- Pediatrics acute care
- Ambulatory care
- Drug information
- Maternal health
- AMPATH Pharmacy Management

### *Evaluation:*

Rotation objectives were based off of pre-written, peer-reviewed objectives from ASHP and then modified when needed to fit into this international resource constrained setting.

Residents will be evaluated at the midpoint and end of the rotation block. Each resident will complete a self-evaluation in conjunction with the midpoint and final evaluations.

The goal is that each resident will receive an achieved status for each objective.

### *Future Development:*

- Increasing rotations offerings in oncology, gynecology, cardiology
- Develop and hire more pharmacy preceptors
- Continue preceptor training and development



## **Management/Leadership:**

*Description:* During each rotation, residents will not only participate in clinical activities but they will also work with the pharmacy team to participate in management activities associated with the different clinical services. Residents will have the opportunity to work with director(s) of pharmacy and other managerial positions. Residents will have the opportunity to work on administrative projects in order to gain experience in pharmacy operations. In addition, residents will attain management experience by becoming responsible for the pharmacy in their practice setting during clinical rotations. Management duties will include, but not be limited to the following, maintaining appropriate stocks and management of drug procurement, management of needs of emergency medical issues, management of personnel, and assessing the needs of other healthcare providers.

### *Educational outcomes:*

- Exercise leadership and practice management skills.
- Utilize medical informatics
- Manage and improve the medication-use process
- Engage in public health activities to improve access to medicines

### *Activities:*

- Management settings/Leadership opportunities
- AMPATH clinic pharmacies
- MTRH associated pharmacies
- Primary health care pharmacies
- Revolving fund pharmacies
- Ambulatory care clinic management

### *Evaluation:*

Residents will be evaluated twice per rotation on objectives specifically associated with management activities within the corresponding clinical service.

### *Future Development:*

The goal is to expand management activities to more AMPATH clinics.

**Research:**

*Description:* Each resident will complete a practice related research project. Residents will be responsible for assisting in completion of all aspects of their associated research project. Each project will attempt to assess sustainability and impact.

*Educational outcome:*

- Demonstrate project management skills.

*Activities:*

- IRB submission
- Protocol development
- Statistical analysis
- Abstract submission
- Meeting presentations
- Manuscript writing

*Evaluation:*

Each resident will be evaluated on his or her final written manuscript.

*Future Development:*

In the future, residents will be included in grant writing opportunities.

## **Teaching:**

*Description:* Residents will provide oversight for Purdue University College of Pharmacy students and University of Nairobi pharmacy interns rounding through the Nyayo wards. During this time, residents are responsible for onsite supervision with the assistance of the attending pharmacist, facilitating case-based topic and patient discussions, and providing appropriate feedback. Each resident will also have the opportunity to provide direct instruction through didactic lectures in an elective course PUCOP students participate in prior to enrollment in the elective rotation.

### *Educational outcomes:*

- Provide medication and practice-related education/training
- Develop teaching skills

### *Activities:*

- Topic discussions
- Elective didactic lecture
- Clinical teaching during rounds

### *Evaluation:*

Residents will be evaluated on their teaching as part of their Nyayo ward rotation objectives and through feedback from students in the elective course and students on rotation.

### *Future Development:*

Participation in teaching certificate program, development of a grand rounds program and formalized preceptor development.

## **Didactic Education:**

*Description:* A total of ten 2-hour didactic seminars will be offered. Each seminar is designed to provide the learner with distinct set of knowledge about different issues surrounding pharmacy practice. Learning outcomes for each seminar will be assessed via administration of post-seminar quizzes developed by each seminar speaker.

### *Didactic Topics:*

- Research Seminar
- Public health case studies
- Presentation and writing skills
- Preceptor development

### *Evaluation:*

Residents will be evaluated via a case-based final examination.

### *Future Development:*

Increase the number of preceptors participating in delivery of didactic education, assessment of the effectiveness of the training and determine if additional sessions are needed.

## **Appendix I: Presentation Requirements**

Elective Course Didactic Lectures – Every resident is responsible for giving at least one lecture

- TB
- HIV/AIDS
- Malaria
- Diabetes
- OIs

Topic Discussions: Each resident will give 1 to 2 per month

Tropical Disease

- TB
- OI
- HIV
- Meningitis

Non-communicable

- Diabetes
- HTN
- Anticoagulation
- COPD/Asthma

## Appendix II: 2011-2012 Residency Calendar

Draft Residency Calendar				
Month	Resident 1	Resident 2	Resident 3	Resident 4
July	Orientation	Orientation	Orientation	Orientation
August	Drug Information	Nyayo Wards	AMPATH Pharmacies	Mother Baby
September			Ambulatory Care I	Drug Information
October	Mother Baby	Drug Information		Nyayo Wards
November	AMPATH Pharmacies	Mother Baby	Ambulatory Care II	
December	Home	Clinical Coverage & Time off	Clinical Coverage & Time off	Clinical Coverage & Time off
January	Ambulatory Care I	US Visit Internal Medicine	Nyayo Wards	AMPATH Pharmacies
February		AMPATH Pharmacies		US Visit Internal Medicine
March	Research	Ambulatory Care I	USA Visit Internal Medicine	Ambulatory Care II
April	Ambulatory Care II		Drug Information	Ambulatory Care I
May	Nyayo Wards	Ambulatory Care II	Mother Baby	
June		Research	Research	Research

## **APPENDIX III: Proposed Research Projects 2011-2012**

### *Pharmacovigilance:*

Collection methods for detection of adverse events in sub-Saharan African patients utilizing antiretrovirals

Collection methods and identification of adverse events in sub-Saharan African patients utilizing anti-tuberculosis medications

Development of pharmacovigilance database

### *Maternal health:*

Development of a gestational diabetes clinic

Emergency Kits: prospective evaluation of the use and impact of emergency kits Post abortion care medicine kits

### *Drug information center*

Development of a drug information center in eastern Africa

Development of a drug information database

Needs assessment of drug information center

### *Anticoagulation:*

Drug interactions with antiretrovirals and warfarin

Drug interactions with anti-tuberculosis and warfarin

### *Informatics:*

CTSI: Pharmacy adherence issues

Diabetes database configuration

Applying database knowledge to aid in collection of patient information

## APPENDIX IV: Didactic Lecture Schedule

Month	Didactic topic
<b>July</b>	
<b>August</b>	Presentation skills Research seminar: Developing a research protocol
<b>September</b>	Public health Topic: Bilateral exchange
<b>October</b>	Research seminar: Statistics Preceptor training
<b>November</b>	Public Health: Topic: Health case studies and research ethics
<b>December</b>	Self-learning: Assigned readings, technical writing skills
<b>January</b>	Research seminar
<b>February</b>	Preceptor development
<b>March</b>	Pediatric Seminar: Basic Pediatrics care: Immunizations, child development, well baby
<b>April</b>	Writing workshop
<b>May</b>	Public Health: Topics: Health care system evaluation Analysis of cost analysis
<b>June</b>	TBD