PHARMACY ASSISTANT TRAINING PROGRAM IN MALAWI

BACKGROUND

Pharmacy workers represent the third largest group of health workers in the world. They are broadly responsible for procuring[1] and dispensing prescription medicines as well as counselling patients on rational medicine use.[2] In rural settings, the pharmacy worker is often a patient's first point of contact with the health system.[3] Rural pharmacy workers also provide continuity of care by helping patients manage chronic conditions, such as HIV/AIDS.[4] Ultimately, rural pharmacy workers play an important role in shaping health outcomes in low-and middle-income countries (LMICs) where the majority of the population lives in rural areas.

Malawi has a very low pharmacist density of 0.3 per 10,000 population.[3] The country also faces a sizable shortage of pharmacy support personnel (table 1), including pharmacy technicians and pharmacy assistants (PAs). This shortage is exacerbated by the inequitable distribution of the workforce across sectors (public/private) and geographies (rural/urban).[5] The brunt of the pharmacy workforce shortage is borne by rural facilities. In 2013, prior to the introduction of the Pharmacy Assistant Training Program, Malawi did not have trained pharmacy personnel at any of its 650 government health centers.

Table 1. Pharmacy Worker Density and Pharmacy Training Capacity in Malawi

PHARMACIST PER 10,000 POP	0.04
PHARMACY TECHNICIANS PER 10,000 POP	0.10
PHARMACY GRADUATES PER YEAR	8
# PHARMACY SCHOOLS	1
# PHARMACY TECHNICIAN SCHOOLS	1

Data Source: FIP Global Pharmacy Workforce Report 2015; World Bank Population Data 2015

The shortage has dire consequences for a country contending with the burden of HIV/AIDS, tuberculosis, and malaria.[6] In the absence of pharmacy workers, pharmaceutical management tasks are performed by overburdened clinical staff, hospital attendants, community health workers who should be in the field, or untrained custodial staff, leading to suboptimal use of human resources, inefficiencies, and unsafe pharmaceutical practices.[7] The shortage of pharmacy workers has contributed to frequent and avoidable medicine stock-outs in Malawi and has been linked to irrational medicine use in other countries in sub-Saharan Africa.[8]

The long-term impacts of the pharmacy workforce shortage are significant—access to medicines is limited, patient health suffers, and public health goals remain out of reach.

> *"I am a clinician by profession, serving a population of over 30, 000 in the 25 villages that my health center serves. I am the only clinician at the health facility with a single nurse to assist covering when possible. We recently lost the only health surveillance assistant that was trained as a drug clerk. This leaves me as the only clinician and also the only person to manage stocks in the medicine store. I undertake the majority of dispensing responsibilities as the hospital attendants that sometimes need to fill this role are not knowledgeable about medicines. When it's month end, I am also responsible for doing the physical inventory and producing a monthly report. Each of these tasks requires time away from my primary responsibility of treating patients. This results in less time with patients, and inadequate reporting of essential information required to manage inventory…"*
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> — *Andrew Hauli, Health Center Manager Nyungwe Health Center, Malawi*

IMPLEMENTATION

VillageReach, in close partnership with the Ministry of Health (MoH) in Malawi, the Malawi College of Health Sciences (MCHS), the University of Washington Global Medicines Program, and USAID, implemented a two-year, certificate-level program to train and deploy an enhanced cadre of Physician Assistants to fill the gaps in Malawi's health workforce. The Pharmacy Assistant Training Program (figure 1) aimed to increase medicine availability and improve rational medicine use in rural health centers by improving:

- *Human resource allocation and the availability of pharmacy workers*
- *The quality of inventory management and record keeping*
- *Dispensing practices and pharmaceutical care provided to patients*

Recruitment

VillageReach worked with MCHS and its partners to recruit students who were likely to succeed academically (i.e. those with strong academic credentials and high scores on entrance exams) and were either from rural areas or had a desire to serve rural communities.

Recruitment efforts included advertisements in local newspapers, working with District Health Offices (DHOs) to advertise scholarships, interviews with candidates, and encouraging qualified MoH staff to apply. Advertising materials emphasized that the training is targeted at students willing to work in rural areas.

Classroom-based and Practical Training

The Pharmacy Assistant Training Program provides students with preservice training that includes classroom-based learning and two practicum placements (table 2). Students spend approximately 20 weeks per year on campus and another 20 weeks working at a practicum placement site. Practicum placement includes a district hospital attachment in year 1 of the program and a health center attachment in year 2. During their practicum, students are supervised by pharmacy technicians who serve as preceptors.

Figure 1. Pharmacy Assistant Training Program Theory of Implementation

Table 2. Pharmacy Assistant Training Program Activities

	ACTIVITY	TASKS
1	Student Recruitment	■ Place advertisements in local papers (The Nation and Malawi News) ■ Send letters to all DHOs to advertise scholarships ■ Encourage qualified MoH staff to apply through DHOs ■ Conduct entrance examinations ■ Recruit students of high academic caliber with a willingness to serve rural areas
2	Student Orientation	■ Provide students with an initial 10-week orientation ■ MCHS orients students on basic sciences and generic program courses ■ MCHS orients students on the workbook exercises and code of conduct for the practicum
3	Training Material Development	■ Develop a preceptor's manual that is distributed to all preceptors ■ Develop a student workbook and distribute it to each student for use in practical placements
4	District Orientations	■ Conduct three regional training meetings to orient DHOs, District Medical Officers, and pharmacy technicians to the Pharmacy Assistant Training Program and to the overall objectives and goals of the practical attachment
5	Preceptor Refresher Trainings	■ Conduct refresher training for pharmacy technicians serving as preceptors of practical sites
6	Monitoring and Evaluation	■ Conduct at least three rounds of supervision to practical sites each semester by a team comprising MCHS, MoH, and VillageReach ■ Compile and share supervision reports after each supervision round with MoH, MCHS, and other partners ■ Implement routine monitoring and evaluation plan to provide quarterly updates to all partners on progress of project
7	Practical Training Program Development	■ Develop a practical training program for students for their district hospital attachment in year 1 and health center attachment in year 2 ■ Develop orientation, training, and learning materials and assessment tools to ensure that quality is maintained at all levels and that practical experience is satisfactory for students, faculty, and preceptors
8	Health Center Practical Training Placements	■ DHOs contacted to identify names of health centers suitable for student placements for their 20-week practical training ■ Conduct orientation for supervisors of these health centers ■ Place students at the selected health centers for their practical training ■ Orient health center staff to the program
9	Supervision of Practical Training	■ Develop supervision schedules in collaboration with MCHS lecturers ■ Provide support for supervision in the form of supervision tools, approach, and logistical support ■ Support teams from MCHS and MoH to conduct regular supervision visits to PA students training at practicum sites
10	Graduate Placement Strategic Development	■ Work with MoH (Health Technical Support Services and Human Resources Management and Development) to develop and implement placement strategies for PA graduates ■ Follow up with the MoH on the interviews, induction, and placements to ensure timely deployment of graduated students

RESULTS

Since the program was implemented, all students from the first cohort have graduated and remained in their posts for more than one year after deployment. Monitoring and evaluation (M&E) of the Pharmacy Assistant Training Program was conducted through supervisory visits to health centers where PAs have been deployed and a review of data and reports submitted by health facilities during student practicums. The evidence of impact of the Pharmacy Assistant Training Program was assessed using the following indicators:

- Storeroom management
- Medicine availability
- Data quality and report timeliness
- Pharmaceutical practice

Routine M&E data from the Pharmacy Assistant Training Program in Malawi demonstrates that deploying PA students to the last mile improves access to medicines and quality care in remote areas. Trained PA students in a health center leads to marked improvements in:

- Storeroom management, including organizing medicines to reduce the risk of expiration
- Availability of medicines
- Data reported to higher levels of the supply chain
- Patient pharmaceutical care, including adherence to proper dispensing practices and medicine management standards
- Use of human resources by reducing the burden of logistical tasks on clinical staff

Additionally, an impact evaluation conducted by the University of Washington showed that children living in households near health centers with PA students are

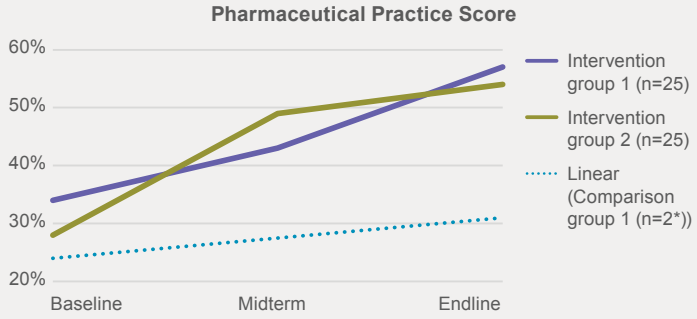
PA graduate Esther Kantwera in a Malawi storeroom

significantly more likely to seek and receive treatment for malaria compared to children living in households near health centers without pharmacy personnel.[9]

As a result of the program, patients get better access to medicines and receive better care. In the long term, this program has the potential to improve health outcomes among patients in rural settings. M&E results from the Pharmacy Assistant Training Program are shown in figures 3a-3c.

Figure 3a. Pharmacy Assistant Training Program evidence of impact
A performance assessment of the initial cohort of pharmacy assistant students deployed to health centers in 2014–2015 illustrates evidence of impact on health facilities.

Pharmacy assistant students improve pharmaceutical management at health centers



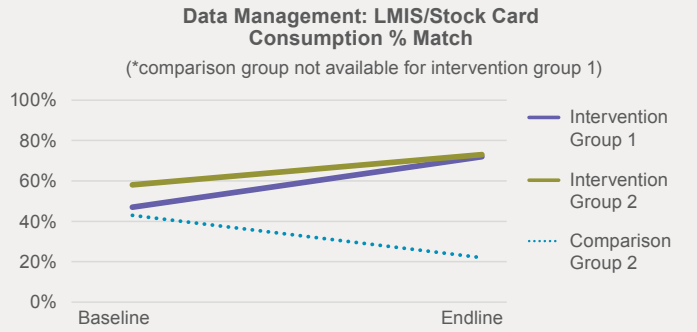
Metric: Pharmaceutical practice measured quality of care, information patients receive when they are dispensed treatments, and the cleanliness and organization of the dispensing environment.

Finding: Average score for pharmaceutical practice increased by 43% in health facilities served by PA students during student practicums.

Implication: PA students enhance the quality of pharmaceutical care provided to patients at health centers. This promotes rational medicine use and can improve health outcomes in the long run.

Figure 3b. Pharmacy Assistant Training Program evidence of impact
A performance assessment of the initial cohort of pharmacy assistant students deployed to health centers in 2014–2015 illustrates evidence of impact on health facilities.

Pharmacy assistant students improve data management at health centers



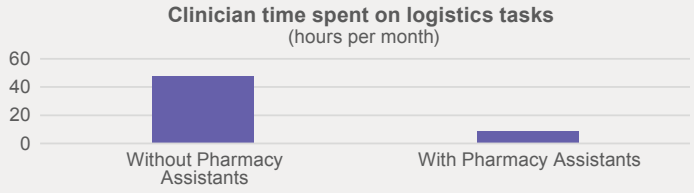
Metric: Data management measures the match between medicine stock on hand and what is reported on the monthly Logistics Management Information System (LMIS) form as ending stock balance.

Finding: Average score for data management increased by 40% in health facilities served by PA students during student practicums.

Implications: PA students improve the quality of timeliness of medicine data reported, thereby providing greater visibility of medicine availability at health centers. This is a critical step for ensuring medicine availability at health centers.

Figure 3c. Pharmacy Assistant Training Program evidence of impact
A performance assessment of the initial cohort of pharmacy assistant students deployed to health centers in 2014–2015 illustrates evidence of impact on health facilities.

Pharmacy assistant students improve clinical workflow



Metric: Clinical time spent on logistical tasks measures how much time clinical staff spend on tasks that should be performed by pharmacy workers.

Finding: Clinician time spent on logistics tasks decreased by 81%, from 48 hrs/month to 9 hrs/month in facilities served by PA students.

Implications: PA students allow clinical staff to focus on their primary duties of clinical care, thereby reducing clinician workload.

LESSONS

- **Practical training is integral to the program**
  By spending almost half of the two-year program in the field, PA students gain hands-on experience in patient care and logistics management and more thoroughly understand the challenges of the settings in which they will work. An added benefit of the practicum placements is that students have an immediate impact on the health system by improving medicine management and pharmaceutical practice at their practicum sites, even before earning certificates.

- **Training mid-level pharmacy workers helps make optimal use of scarce human resources for health at the last mile**
  As workers dedicated to medicine management, PAs help clinicians focus on clinical care provision. In doing so, they allow doctors and nurses to make most of the short amount of time they spend with patients (estimated to be 2.3 minutes per patient in Malawi[10]). Further, they provide the checks and balances needed to ensure that patients are prescribed and dispensed the right medicines and provided the right information about medicine use.

- **Mid-level pharmacy workers are likely to serve rural areas**
  PAs require shorter preservice training and less education than pharmacists.[11] The shorter training period enables rapid scale up of this workforce to address shortages in rural areas. While this training equips workers to effectively fulfill pharmaceutical and supply chain duties, it does not qualify them for jobs in other sectors or geographies in the way that a pharmacy degree would, making PAs less susceptible to internal or external brain drain.[12]

PA student practicum training in Malawi

- **Recruitment strategies can help retention**
  Interviewing candidates is a critical step in the recruiting process. It provides an opportunity to screen candidates and determine who will be best fit to serve rural areas, which will help ensure retention during training and after graduation. This recruitment strategy proved successful, with a 100% retention rate of the first cohort of PA students, who remained in their rural posts for more than one year after deployment.

- **Cohort size is an important factor in maintaining the quality of training provided**
  Due to current training capacity gaps, a cohort of 100 PA students was found to be challenging to manage. Based on our experience, smaller cohorts of 50 to 75 would be ideal to maintain the quality of the practicum supervision.

- **Government engagement in early stages of the program is a critical success factor**
  The Malawi MoH requested that the Pharmacy Assistant Training Program be re-established and was involved in implementation from the onset. The direct support and advocacy from the MoH has been critical to the success of the program and has led to the enrollment of additional student cohorts at MCHS.

CONCLUSION

The pharmacy workforce is an integral component of a functioning health system. Pharmacy personnel enable the smooth functioning of the health supply chain and facilitate clinical care in health facilities. In doing so, they can help shape health outcomes in countries. Investments in strengthening the pharmacy workforce can help improve the quality of care at the last mile.

The Pharmacy Assistant Training Program is an effective strategy for addressing the shortfall of pharmacy workers in LMICs. A complete health care workforce—including pharmacy personnel—allows for a more efficient allocation of tasks, which improves the care patients receive and ultimately improves their health. PAs and PA students have already made noticeable improvements to the management of medicines and dispensing practices. Ultimately they can help improve medicine availability at the service delivery point.

There is interest from the government and donors to maintain and enhance this program through support of future student cohorts and a desire to expand the program to new training institutions. Maintaining the high quality of training, including supervision and continued technical support, is critical for the program and for the overall improvement of medicine management and pharmaceutical practice at the last mile.

> *"I am completely relieved to have this additional workload of dispensing and inventory management taken over by those specially trained to do the job through the introduction of the Pharmacy Assistant Training Program. Through the Pharmacy Assistant Training Program, our health center receives one student who has already received training in the areas of dispensing and inventory management—more training than anyone currently working at the health center, including myself."*
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> — *Andrew Hauli, Health Center Manager Nyungwe Health Center, Malawi*

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About VillageReach

VillageReach is a non-profit global health innovator that develops, tests, implements and scales new solutions to critical health system challenges in low-resource environments, with an emphasis on strengthening the "last mile" of healthcare delivery. Through partnership with governments, local communities and other non-governmental organizations, VillageReach combines expertise across public health, technology, and the private sector to bring life-saving innovation to scale and sustainability in the world's most underserved communities.

www.villagereach.org

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