

Published in final edited form as:

Acad Med. 2014 August ; 89(8 0): S98–S101. doi:10.1097/ACM.0000000000000352.

Strengthening Faculty Recruitment for Health Professions Training in Basic Sciences in Zambia

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Other disclosures: None reported.

Ethical approval: Reported as not applicable.

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Abstract

Zambia is facing a crisis in its human resources for health (HRH), with deficits in the number and skill mix of health workers. The University of Zambia School of Medicine (UNZA SOM) was the only medical school in the country for decades, but recently it was joined by three new medical schools—two private and one public. In addition to expanding medical education, the government has also approved several allied health programs, including pharmacy, physiotherapy, biomedical sciences, and environmental health. This expansion has been constrained by insufficient numbers of faculty. Through a grant from the Medical Education Partnership Initiative (MEPI), UNZA SOM has been investing in ways to address faculty recruitment, training, and retention. The MEPI-funded strategy involves directly sponsoring a cohort of faculty at UNZA SOM during the five-year grant, as well as establishing more than a dozen new master's programs, with the goal that all sponsored faculty are locally trained and retained. Because the issue of limited basic science faculty plagues medical schools throughout Sub-Saharan Africa, this strategy of using seed funding to build sustainable local capacity to recruit, train, and retain faculty could be a model for the region.

Zambia is facing a crisis in its human resources for health (HRH), both in terms of numbers of health workers and the skill mix with regard to specialization.^{1,2} In 2009, there were only 1,661 physicians in Zambia (many of them foreign-trained³) to serve a population of more than 14 million. With about 0.12 physicians per 1,000 people, the country would need 67% more physicians to reach the World Health Organization (WHO) target of one doctor per 5,000 people.³ The deficit of medical doctors is more pronounced in rural areas, with physician-to-population ratios as low as 1:65,000 throughout Northwest Province, and the situation was made worse by widespread shortages of both general and specialized practitioners (surgeons, pediatricians, obstetricians, and gynecologists) and a complete lack of family and emergency medical officers.^{1,2}

A major contributor to this HRH crisis has been the limited health training opportunities for Zambians within Zambia. For more than four decades, Zambia has had only one medical school, the University of Zambia School of Medicine (UNZA SOM), which has produced just over 1,500 doctors during the past 40 years. In the past two decades, the graduating class size ranged from an average of about 30 to just over 60 in 2012. To make matters worse, 57 percent of these graduates have chosen not to stay in the country after graduation.^{2,4} The limited output from UNZA SOM, the absence of other medical schools in Zambia, and the persistent flight of skilled professionals to more developed countries or countries that pay higher salaries ("brain drain") has greatly limited the health workforce in the country.^{4,5}

Efforts to scale-up the production and retention of physicians rely on the capacity of Zambian medical schools to train and retain graduates. This article examines the challenge of limited faculty at Zambian medical schools and describes how UNZA MEPI leveraged existing policies to scale-up the recruitment and training of staff development fellows to improve the faculty pool at medical schools throughout the country.

Health Workforce Scale-up Plan

The Ministry of Health's (MOH) 2011–2015 National Health Strategic Plan⁶ prioritizes the recruitment, redistribution, and retention of health workers in the country. In an effort to expand the physician workforce, the strategy includes increasing enrollment at UNZA SOM while supporting the creation of new medical schools in the country. Enrollment at UNZA SOM had already increased from 48 in 2010 to more than 150 in 2013.⁴ In 2009 and 2010 the government approved the opening of two new private medical schools—Cavendish University Zambia School of Medicine (CUZ SOM) and Lusaka Apex Medical University (LAMU), respectively. In 2011, the government approved the opening of a second public medical school, The Copperbelt School of Medicine (CBU SOM). By 2016, the number of physicians graduating in-country is expected to increase from fewer than 100 to more than 300 (Table 1). Because there may have been a tendency for the four medical schools to compete for limited resources, the MOH and the Health Professions Council of Zambia encouraged collaboration rather than competition to maximize in-country expertise. After a series of consultative meetings, memoranda of understanding were signed during 2010–11 between UNZA SOM and the other three schools to formalize the collaboration.

In addition to increasing enrollment in medical education, the government has also been working to improve the skill mix of health workers.⁶ To do this, the MOH over the past 10–15 years approved the opening of other allied health educational programs, including pharmacy, physiotherapy, biomedical sciences, and environmental health. This expansion of training programs throughout the country has intensified the need for faculty, particularly in the basic sciences.

Bottleneck: Faculty Shortages

Despite these impressive efforts to increase the production and diversity of health workers, the capacity of new and existing institutions to fulfill their mandate has been constrained by an insufficient number of faculty to teach and support the growing numbers of students. This bottleneck is particularly felt in the basic sciences, which form the foundation for all health professions training programs. The challenge of limited faculty affects both established and new schools as they try to support the growth of their training programs. For example, in 2013, after several years of student enrollment increases, only one-third of lecturer positions at UNZA SOM were filled⁷ because of the challenges in both recruitment and retention.

On the recruitment side, UNZA SOM is the only university in Zambia with the capacity to train medical faculty at the master's level. The university has a long-standing Staff Development Fellowship (SDF) program for all disciplines to train faculty. The University Senate allocated certain numbers of SDF positions for each school and provided resources accordingly.^{8,9} Candidates with at minimum a bachelor's degree would be eligible for the

program and, if accepted, their training in a two-year master's program would be sponsored by the university. Upon completion of their master's program, these fellows were then required to be retained to the university as lecturers.^{8,9}

But at UNZA SOM, this program had been inefficient and ineffective for decades because of the inadequate resources to support SDFs. The SDF program has also struggled with a poor retention rate of graduates. Over the past few decades, the university had allocated insufficient numbers of SDFs for the UNZA SOM because of insufficient resources, and the salaries it provided for faculty in training have been lower than what experienced faculty could earn in much of the workforce outside of academia. The situation was further complicated by the fact that UNZA SOM did not offer the full complement of master's programs, so many faculty went abroad to earn their degrees, never to return. For the small numbers of faculty who did join the SOM, the conditions of service were difficult; teaching loads were heavy, and even natural attrition created major stressors on the system. In 2011, for example, the Anatomy Department was left with one anatomist after two of the three faculty members left.^{10,11} The challenges with the SDF program at UNZA SOM, coupled with the challenges in retaining faculty, have led to faculty constraints at training programs across the country.

Using MEPI to Train and Retain Faculty

With the opening of three additional medical schools, the SDF program needed to be expanded and strengthened, but UNZA SOM lacked the necessary resources, a situation that also threatened national efforts to tackle the country's HRH crisis. UNZA SOM responded to this challenge by utilizing the resources of a timely grant from the Medical Education Partnership Initiative (MEPI), funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) in partnership with the Office of the USA Global AIDS Coordinator and supported by the National Institutes of Health and the Health Resources and Services Administration. Recognizing that faculty deficits have been a major barrier to scaling-up the health workforce in Zambia, the UNZA MEPI program invested in the SDF program, with the goal of supporting all four medical schools and training nationwide.^{10,11}

Scaling-up Local Faculty Production

As part of the MEPI program, UNZA SOM invested in strengthening and expanding its overall SDF program. The vision was to use MEPI funding to develop local capacity to train SDFs and to directly sponsor a larger cohort of fellows to serve as faculty for all medical training programs in the country. To expand the SDF program, MEPI funding was initially used in 2011 to create new SDF positions at UNZA SOM.¹¹ During the second year of the grant, UNZA SOM allocated funds for SDFs for each of the new medical schools. These funds went to the facilitation of registration and to support tuition, mentorship, research, and curriculum development. MEPI funding also was used to stimulate and support the development of local master's programs in the basic sciences by creating local capacity for faculty training.¹¹ Significantly, salaries for existing SDFs were more than doubled, which made the opportunity more attractive and feasible for experienced candidates. Funding also was used to recruit visiting lecturers (from Zambia and abroad) to teach during the first few

years of the program.¹¹ Support by university leadership is evidenced by the fact that the new master's programs will become part of the ongoing course offerings even after the MEPI grant expires. These new programs are intended to ensure a continuous supply of lecturers in basic sciences for Zambia and ultimately for the region.

From 2010 to 2013, 14 new master's-level programs were introduced, largely in the basic sciences, including physiological sciences, pharmacology, anatomy, pathology, and microbiology.^{10,11} In addition, master's-level programs in nursing, clinical pharmacology, physiotherapy, and biomedical sciences were also introduced. UNZA SOM, which had severe shortages of staff in anatomy and physiology, added four SDFs in anatomy and five in physiology, using MEPI support during the first year. In the second year of MEPI (2011–2012), ten additional staff SDFs were recruited, seven for UNZA SOM and one for each of the three partner schools.^{10,11} This was further expanded in subsequent years with 20 additional SDFs enrolled, 14 for UNZA SOM and two for each of the partner schools. (UNZA SOM received more SDFs because it has the greatest and longest-standing need and also because it is the holder of the MEPI grant.) Twenty SDFs annually will be recruited during the fourth and fifth years of the MEPI grant (Table 2).

Expected Results and Sustainability

The scale-up in the SDF program is expected to significantly relieve the bottleneck in health professions training programs in Zambia. At least 70 new lecturers are expected to be trained through this initiative during the MEPI grant period. With projected intakes in years four and five, this will bring the proportion of filled lecturer positions at UNZA SOM up from the current 33% to 53% by 2015. Although this represents a significant step toward closing the deficit, a serious shortfall remains. This will increase the lecturer establishment at UNZA SOM by more than 20% by the end of the grant period, while simultaneously training seven lecturers for each of the other three medical schools (Table 2).

The prospects for sustainability of this scale-up are very good. During the past few years, the government, through the university, has undertaken an independent review of the SDF program and decided to triple the salaries for SDFs to help ensure that the program continues to be attractive and feasible for high-caliber candidates. Furthermore, all of the 14 master's programs are expected to continue at UNZA SOM to produce basic science faculty, not only for the country but also for the region. The master's programs are not only attended by SDFs, but also by self-pay students. This revenue will further strengthen the likelihood of sustainability.

A significant amount of MEPI funding has been used to recruit external lecturers to provide teaching in the new programs, and these costs are expected to decrease over time. UNZA SOM has already seen the growth of internal capacity as new graduates take on these teaching roles. For example, in the second year of the program, the school required more than 45 visiting lecturers, whereas only 11 were needed the following year.

This strategic scale-up of the SDF program is also expected to produce better-qualified faculty who remain in Zambia. Unlike in the past when many lecturers were trained outside Zambia and did not come back, all of the new SDFs are trained within Zambia. It is

expected that locally trained lecturers will have a higher retention rate.¹² Furthermore, the fact that these new lecturers are being trained in Zambia gives them the advantage of understanding the health system and health issues facing Zambians. UNZA SOM plans to track graduates of the new programs to monitor the retention rate of these locally trained SDFs and expects to see a much better return on investment than has been the case in the past. When the grant ends, even if the intake numbers for SDFs return to pre-MEPI levels, the rate of graduates recruited should be higher than they were previously.

Implications for Health Workforce Planning

Collaboration between private and public institutions has been critical for the expansion efforts. The partnership between the four medical schools marks the first time that private and public training institutions in Zambia have come together to support the MOH in reaching national HRH targets. The scale-up of the SDF program provided an opportunity for the four schools to work collaboratively to address a common need. Although UNZA SOM was the primary MEPI grantee and not required to sub-contract with other medical schools, leaders of SOM felt it was essential to support the new medical schools and provide them funding for SDFs. As a measure of success, each school has been able to select individuals they wished to send for training based on their institutional needs. Furthermore, the continued need for SDFs at the new schools will help to ensure a steady demand and revenue for the master's programs at UNZA SOM. This partnership will enable the MOH to work more efficiently with the medical schools and enable more effective planning for scaling-up health workforce training.

Challenges and Future Considerations

Although the partnership between the public and private universities has been very positive, it remains a challenge to maintain the sense of collaboration across the various levels. While the leadership of the schools are eager to work together, some faculty members within UNZA SOM have complained about the sharing of valuable resources with the new medical schools. And although UNZA SOM received seven times more SDF support than did other institutions, the future might see even more SDFs coming from partner institutions as the new schools grow and the demand for faculty increases at those institutions.

Another challenge at UNZA SOM is to physically accommodate the increasing number of students. Infrastructure and equipment remain a challenge and will require additional resources from the university. UNZA SOM has ramped up its eLearning program to provide students with better access to resources and learning materials.

A number of potential challenges were mitigated during the early years of the scale-up. Senior leadership at all the medical schools were engaged in the process early on, and as a result there has been consistent political support from UNZA and the SOM to initiate and sustain the new master's programs and train SDFs from other schools. Approvals from the UNZA Senate for the new master's curricula were very easily obtained in a short time frame. Although there was a limited pool of visiting lecturers to pull from locally, UNZA SOM's U.S. partners in the MEPI grant (University of Alabama-Birmingham, Vanderbilt

University, and the University of Maryland-Baltimore) were able to identify appropriate experts to fill short-term gaps in teaching.¹¹

Conclusion

The strategic investment of the Zambia MEPI program is expected to help relieve the bottleneck in health professions training throughout the country. Graduates from these programs are expected to staff new and existing health professions training programs and significantly improve the number, quality, and diversity of health workers in Zambia. The importance of addressing the issue of faculty shortages was recognized in a recent report from WHO that calls for innovative expansion of faculty in supporting the transformative scale-up of health professions education. Because limited basic science faculty continues to plague medical schools throughout Sub-Saharan Africa, Zambia's model of leveraging seed funding to build sustainable local capacity to train and retain faculty might become a model for the region.

Acknowledgments

Funding/Support: The authors acknowledge the support provided by the Office of the Global AIDS Coordinator (OGAC) and the National Institutes of Health (NIH) through the Medical Education Partnership Initiative (MEPI) programmatic Award No. 1R24TW008873, entitled "Expanding Innovative Multidisciplinary Medical Education in Zambia."

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Table 1**UNZA MEPI Partner School Characteristics**

Name	Location	Date of Opening	Public / Private	Under-graduate students	Post-graduate students	Faculty
University of Zambia School of Medicine	Lusaka	1966	Public	495	333	86
Cavendish University School of Medicine	Lusaka	2009	Private	62	47	6
Copperbelt University School of Medicine	Ndola	2011	Public	225	10	47
Lusaka Apex Medical University	Lusaka	2010	Private	97	10	40

Table 2**UNZA MEPI Funding Support for Staff Development Fellows**

Institution	Number of Staff Development Fellows Supported					
	Year 2	Year 3	Year 4	Year 5 (Planned)	Total year 2-4	Total year 2-5
University of Zambia School of Medicine	7	14	14	14	35	49
Lusaka Apex Medical University	1	2	2	2	5	7
Cavendish University School of Medicine	1	2	2	2	5	7
Copperbelt school of Medicine	1	2	2	2	5	7
TOTAL	10	20	20	20	50	70