Medical Education Partnership Initiative Summary Report 2010-2012: Building Capacity for Change

This fact book was compiled by members of the MEPI Coordinating Center with feedback from the MEPI schools. Please contact Sarah Baird (Monitoring and Evaluation Lead at the MEPI Coordinating Center) at sbaird@gwu.edu if you have any questions.
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INTRODUCTION AND EXECUTIVE SUMMARY

The Medical Education Partnership Initiative (MEPI) is a five-year initiative (2010-2015) which aims to increase the capacity and quality of African medical education, improve retention of medical graduates, and promote regionally relevant research in sub-Saharan African medical schools through locally-led innovative programs. MEPI is funded by PEPFAR through the Office of the US Global AIDS Coordinator in the State Department and by the National Institutes of Health (NIH). The initiative is administered by both the NIH Fogarty International Center and the HIV/AIDS Bureau of the Health Resources and Services Administration in the Department of Health and Human Services.

In 2010, 13 African universities were funded under this initiative through a competitive peer review process. These universities have a diverse range of research and education activities ongoing under the MEPI umbrella ranging from research infrastructure improvement, to e-learning to curriculum review and beyond, as illustrated in Appendix I (Mullan et al. 2012). These activities all broadly fit under MEPI’s five core overarching themes which are also used to organize the findings presented in this Fact Book. These themes are:

1. **Increasing Capacity**: enhancements in the quality and quantity of medical education in funded schools and in their respective countries.

2. **Retention**: addressing the need to retain graduates in country to build the capacity of the health workforce and faculty to build the capacity of the schools.

3. **Regionally Relevant Research**: important for the generation of new knowledge as well as a tool for faculty development and retention (Mullan et al. 2012).

4. **Sustainability**

5. **Communities of Practice**

The aim of this Fact Book is to report findings related to baseline data collected from the MEPI direct grantees, as well as to look at initial impact of MEPI two years into the program. Monitoring and evaluation efforts at the MEPI Coordinating Center began in the winter of 2010, shortly after the onset of MEPI, and to date have included two rounds of mixed-methods annual surveys (implemented in February 2011 and May 2012, respectively) and two rounds of qualitative site visit reports. Results from the annual surveys and site visit reports provide the data sources for the Fact Book. While some MEPI direct grantees are working with other medical schools within their countries to form consortia, data presented is only for direct grantees (a total of 13 institutions) unless otherwise noted in the text.

When appropriate, baseline findings are also supplemented with background information available from the Sub-Saharan African Medical School Study (SAMSS). SAMSS was a “landscaping” examination of the state of medical education in sub-Saharan Africa and included completed surveys of 105 medical schools. One of the many important findings of SAMSS was that shortages of medical school faculty are endemic and problematic and that international partnerships are an important asset for many medical schools (Mullan et al. 2010a). For a full list of findings see Appendix III. The SAMSS findings provide valuable context when examining the data from the first two years of MEPI activities.

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2 The universities are: Addis Ababa University, Kilimanjaro Christian Medical University College, Kwame Nkrumah University of Science and Technology, Makerere University, Stellenbosch University, University of Botswana, Universidade Eduardo Mondlane, University of Ibadan, University of KwaZulu-Natal, University of Malawi, University of Nairobi, University of Zambia, and University of Zimbabwe.
MEPI school strategies to improve capacity, to produce more and better quality graduates, include increased enrollment and implementing innovative strategies to address attrition of students. MEPI schools are reviewing both the content (competencies) and the delivery methods of their curricula to ensure their graduates are skilled in areas which match their countries’ health needs. MEPI school efforts to address quality focus on producing more teachers and introducing new methods of teaching that enable them to utilize faculty more efficiently.

MEPI schools are addressing retention in a number of ways. Some schools have engaged their ministries to increase rural recruitment quotas, while others have used MEPI as an opportunity to enhance community oriented experiences at the graduate and post graduate level. In addition, schools are using MEPI funds to help develop graduate tracking systems to capture retention rates in the future.

In terms of locally relevant research, MEPI grantees are focusing research efforts on the core areas of funding, training and mentoring, and infrastructure development. At some institutions, MEPI is providing health professions fellowships to qualified candidates to support research. At others, training and mentoring activities in research methods, grant and manuscript writing, and ethical compliance are taking place. Infrastructure development supported by MEPI includes increased human resource capacity, improved physical infrastructure, and enhanced processes.

An important aspect of the success of MEPI is whether it is sustainable. Schools have acknowledged that the factors that contribute to sustainability include engagement with ministries, including the Ministry of Health, Education and even Finance. Success in engaging local stakeholders will likely demonstrate contributions of MEPI to the health systems hopefully securing funding from ministries and potential funders beyond the MEPI grant period.

The formation of communities of practice facilitated by MEPI takes sustainability one step further, creating networks to share best practices and innovations which may include MEPI activities and topics, but may also include activities which are beyond the scope of MEPI. MEPI has the unique opportunity to serve as an even greater catalyst for the formation of such communities of practice and this is well under way just two years into the program.

Overall, the data presented in this Fact Book clearly shows that MEPI is already influencing medical education in Africa with immense promise for continuing effect over the remaining three years of MEPI and beyond.
KEY FINDINGS

THEME 1: INCREASING CAPACITY

Many national Ministries of Health are prioritizing the scale up of medical graduates as part of overall health sector strengthening (Mullan et al. 2011). Strategies to address this scale up include dramatically increasing numbers of admitted students as part of an overall country plan to train more doctors. Findings from SAMSS also indicate shortages in medical school faculty and the challenges this presents for the quality of education medical students receive (Mullan et al. 2011).

MEPI focused efforts include increased enrollment, curricular innovations, enhanced curriculum delivery models, and faculty training and support, all of which are discussed in more detail below. As illustrated in Figure 1, increasing capacity involves a scale-up in the quantity and quality of medical education in the funded schools and their respective countries.

MEPI school strategies to address the quantity of students include increasing enrollment, forming consortia, and implementing innovative strategies to address attrition of students. MEPI Schools are reviewing both the curricular content, with emphasis on achieving the desired competencies and the delivery methods of their curricula to ensure their graduates are skilled in areas which match their countries’ health needs. To address the teacher shortage, some schools have expanded graduate-level basic science programs and others have introduced new methods of teaching to be able to utilize faculty more efficiently (Mullan et al. 2012). MEPI is also addressing access to learning resources and infrastructure. The remainder of this section looks at capacity building in more detail, first focusing on quantity before turning to quality.
Quantity

Enrollment

Among direct grantees, survey data indicate an overall increase in the average number of students enrolled in their first year of medical school. In the Round 1 survey, the average number of first year enrollees was 176, while in Round 2 the average number of first year enrollees was 210, an increase of over 15%. The total number of first year enrollees at all direct grantee schools is illustrated in Graph 1.

**Graph 1. Total Number of Students Enrolled in First Year of Medical School among All MEPI Direct Grantees, Rounds 1 & 2**

While MEPI is not entirely responsible for this increase, it is contributing by improving the capacity of grantees to absorb this increased enrollment. Data received in Round 2 indicates that, of a total of 11,338 undergraduate students enrolled at direct-grantee institutions, an estimated 7,909, or 70%, are directly benefitting from MEPI-funded programs in some way.

Graduates

Data on the number of graduates in 2010 and 2011 is available from 11 direct grantees. The average number of graduates was 141 in 2010 and 135 in 2011. It is too early to tell what the ultimate impact of MEPI will be on the number of graduates since on the one hand MEPI is helping to increase the number of enrollees, while on the other hand MEPI is also trying to improve the quality of the student which may lead to an increase in attrition due to more rigorous curricula and examination standards.

Box 1 highlights some of the initiatives MEPI schools are using to reduce attrition. Data on attrition was available from Rounds 1 and 2.

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3 Data is missing from one direct grantee and is not available from another, since they have not yet graduated their first class.
of the Annual Survey for a total of 8 direct grantees; the average percent of students advancing from Year 1 of medical school to Year 2 was 91.5% and ranged from 71.6% to 100%. The top reasons for attrition reported in the Round 2 survey include poor academic performance and inadequate financial support. MEPI schools are introducing innovative plans to try and decrease attrition while maintaining quality.

**Quality**

*Recruiting New Faculty*

At baseline, the average number of full-time medical school faculty among the thirteen direct grantee institutions was 204, and ranged from 35 to 483 with an average total of all medical school faculty of 257. The average ratio of full-time faculty to all medical students was 1: 5.0, and ranged from 1:1.5 to 1:16.0. These numbers indicate that MEPI direct-grantees vary greatly in the number of full-time medical school faculty they employ, as well as the student faculty ratio.

As shown in Table 1, MEPI is contributing to lessening the burden of faculty shortages. Data from the Round 2 survey indicate that MEPI has directly contributed to the salaries of faculty hires at 4 direct-grantees. At these universities, 7 positions have been fully funded by MEPI, while 28 positions have been partially-funded by MEPI. Additionally, MEPI funds have been used to sponsor visiting faculty at 7 direct-grantees. The University of Nairobi has a particularly interesting Adjunct Professor initiative that is highlighted in Box 2.

| Number of Schools where MEPI funds have been used to Sponsor Visiting Faculty | 7 |
| Number of Schools with MEPI-funded Faculty Hires | 4 |
| Number of Faculty Positions Filled, Fully Funded by MEPI | 7 |
| Number of Faculty Positions Filled, Partially Funded by MEPI | 28 |

**Box 2. Faculty Recruitment at the University of Nairobi**

*Nairobi’s District Hospital Adjunct Professor Initiative:* University of Nairobi in partnership with the Ministry of Health (MOH) has developed an initiative to create a pathway for MOH clinical employees who provide supervision for students at rural training sites to attain adjunct professorships. Currently, 30 adjunct faculty from decentralized sites have been trained on innovative teaching and mentorship.

**Enhanced Teaching Quality**

Many MEPI schools are confronted with the challenge of increasing faculty recruitment and retention in the face of growing numbers of students. Schools are trying to address these challenges by engaging faculty in innovative methods of teaching and medical education research.

In Round 1 of the annual survey, respondents were asked to give examples of the three greatest needs/requirements for improving quality of graduates. Responses included:

1. Improve staffing levels and faculty to student ratios, improved funding for facilities, improved technology;

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4 For five direct grantees, the consistency and quality of enrollment data reported in Rounds 1 and 2 of the survey were insufficient to calculate the percent of students advanced from year one of medical school to year two.
2. Access to scientific literature, current information technology tools, improved transport and accommodation at rural sites, improved infrastructure; and
3. Improved community sites, increased space for faculty and students, staff training in training methodologies.

All MEPI schools are investing in faculty development (training in pedagogy, medical education research and curriculum development training). Box 3 highlights the investments of the various schools in teaching methodologies.

<table>
<thead>
<tr>
<th>Box 3. Investments to Improve Teaching Methods</th>
</tr>
</thead>
</table>
| **Training Faculty on New Teaching Methodologies** | University of Nairobi  
Kilimanjaro Christian Medical University College  
Addis Ababa University  
University of Zimbabwe |
| **Innovative Use of IT** | Kilimanjaro Christian Medical University College  
Kwame Nkrumah University  
Makerere University  
University of Eduardo Mondlane  
University of Ibadan  
University of KwaZulu-Natal  
University of Nairobi  
University of Zambia |
| **Leadership Skills** | University of Eduardo Mondlane  
University of KwaZulu-Natal  
University of Nairobi  
Addis Ababa University |
| **Training on Curriculum Development** | Kwame Nkrumah University  
University of Zambia  
University of KwaZulu-Natal  
Addis Ababa University  
University of Nairobi |
| **Training on Mentoring Practices** | University of Nairobi  
Addis Ababa University  
Makerere University  
University of Nairobi  
University of Zambia  
Kwame Nkrumah University  
University of Zimbabwe |
| **Skills Lab** | Addis Ababa University  
Makerere University  
University of Nairobi  
University of Zambia  
Kwame Nkrumah University  
University of Zimbabwe |
| **Training for Preceptors in Rural Sites** | Addis Ababa University  
Makerere University  
University of KwaZulu-Natal  
University of Nairobi |
| **Masters in Health Education** | Addis Ababa University  
Makerere University  
University of Zambia |
| **Peer Mentorship with Partners Outside Home Campus** | University of Eduardo Mondlane  
University of Zambia  
University of Zimbabwe |
Zimbabwe, which suffers from shortage of faculty, has developed a strategy to train MMED faculty in collaboration with their US partner, University of Colorado- Denver, in an effort to build a critical mass of faculty.

In Ghana's MEPI project, Kwame Nkrumah University of Science and Technology is working with five other partners to develop leadership capacity in Emergency Medicine (EM) post graduate trainees. The hope is that by investing in these individuals they will ultimately take on leadership positions as junior faculty.

University of Zambia is focused on producing more faculty for the pre-clinical years of medical education through offering Masters in Science (MSc) programs in the basic sciences. These efforts are aimed at producing basic scientists that will become candidates for faculty positions at UNZA and the three new medical schools in Zambia.

One strategy that is being employed at nine universities in the MEPI network is the establishment of medical education departments, which can provide faculty development programs, stimulate medical education research and ensure the quality of curricula (Mullan et al. 2012). Within the MEPI network, these initiatives are aimed at addressing quality while simultaneously providing faculty with incentives to remain in academia through providing training, mentoring, and incentivizing medical education research (Mullan et al. 2012). Currently, AAU, UNZA, UEM and Malawi are all establishing medical education units. Additionally, KCMUC, UON, UBSOM, Makerere and Ibadan are in various stages of developing Medical Education Departments which will be supported by MEPI funds.

As of Round 2, a total of 3,749 participants have received 1,719.5 hours of MEPI-funded training and CME at direct grantee institutions. Evaluation efforts to measure the impact of these investments will benefit from the fact that ten schools reported they currently track teacher performance.

Other teaching resources being funded by MEPI and reported in Round 2 are displayed in Figure 2.

*Figure 2. Number of Direct Grantees Reporting MEPI Funding for Specified Teaching Resources, Round 2*
Curriculum

To provide more relevant training for students and address faculty shortages, all schools are investing in curriculum development, specifically content enhancements and innovative delivery methods. Seven schools are investing in development of new curricula, while 8 are in the stages of implementing curriculum review initiatives across a wide range of topics and levels of training.

During MEPI Year 2, University of Ibadan has focused their efforts on implementation of their new integrated, system-based, patient-centered, community-oriented, competency-driven curriculum. It is hoped that the new curriculum will result in an improvement in the quality of education and the competencies of graduates. These competencies are the following: critical thinking, information management, communication skills, clinical skills, population health, scientific foundations, and professional values and attitudes. The curriculum revision movement has had a galvanizing effect that promises improvements in education not only in the Faculty of Medicine at the University of Ibadan, but also at the medical schools of the other consortium partners as well as in faculties of nursing, pharmacy, and dentistry at Ibadan and elsewhere.

Box 4 highlights Nairobi’s effort to evaluate their new curriculum.

With a focus on improving quality of medical education in Uganda, the Medical Education for Services to All Ugandans (MESAU) consortium of 5 schools has embarked on transforming their medical curriculum by revising their undergraduate curriculum to be competency-based. To spearhead this effort, MESAU consortium meetings were held to determine the competencies needed in a medical curriculum in Uganda. Using MEPI funds, the consortium schools together identified nine competencies required of medical graduates in Uganda which include leadership and management skills, population health and research.

In Kenya, the University of Nairobi has also established a new course targeting diploma nurses who are serving in various facilities across the country. This course targets diploma level nurses who want to upgrade to degree level and is offered in e-format in collaboration with the Nursing Council of Kenya and The African Medical Research Foundation (AMREF). Additionally, UoN is incorporating innovative teaching methods such as PBL, OSCE, Skills lab into the medical training curriculum.

The University of KwaZulu-Natal completed a comprehensive curriculum review of the undergraduate curriculum and found gaps within the HIV/AIDS curriculum, most notable within the basic science areas. MEPI has facilitated the introduction of basic sciences relating to HIV/AIDS into an existing third year Infectious Diseases Module. The Discipline of Public Health Medicine has introduced a self-care HIV module entitled “Me and HIV” in the 1st year Becoming a Professional Module. MEPI has assisted with
facilitation of the students and in funding a scientific poster day whereby students present the results of a HIV health promotion activity done in the surrounding community. MEPI funding has been used to conduct a workshop with final year medical students to bridge the gap between the theoretical and clinical management of HIV/AIDS so that these students are prepared to care for HIV patients in their clinical years and beyond.

Stellenbosch University’s Rural Medical Education Partnership Initiative (SURMEPI) has just completed an extensive baseline evaluation of the first year of implementation of the Faculty of Medicine and Health Sciences’ Rural Clinical School. The focus of this study was to explore the experiences and perceptions of different role players with regard to the first year of implementation and to evaluate the extent to which it has been successful in providing students with a meaningful learning opportunity in a rural context. Much of what was experienced as positive by the students had to do with the smaller numbers, the access to the clinicians and to the patients, and the privilege of one-on-one training. Lessons learned from the program involved innovative rural education models which provided the appropriate environment to enhance clinical confidence and encourage innovation. The study highlighted the enormous social capital in rural communities and opportunities to build long term linkages between training institutions and communities in which they work (van Schalkwyk, 2012).

A total of 11 MEPI Universities report they have implemented new teaching methodologies as a result of MEPI. Examples of the new teaching methodologies being implemented are listed in Box 5.

All MEPI grantee schools are investing in the use of internet-based education tools to address faculty time constraints, limited education resources for students, and to connect to rural sites. Several have also augmented their IT resource and network connectivity capabilities at main campus sites.

MEPI funding is contributing to e-learning courses at a total of 11 MEPI direct-grantees. At these universities, MEPI is helping to support 22 e-learning courses. MEPI-funded e-learning initiatives cover a variety of activities, as shown in Box 6. These activities span a number of topics, including public health, pediatrics, internal medicine, basic sciences, HIV/AIDS, and infectious diseases.
Box 7 highlights MEPI-funded access to learning resources, including e-learning.

**Box 7. MEPI Highlight: MEPI-funded Access to Learning Resources**

**University of Zambia & eGranary:** With their US partner, the University of Alabama (UAB), University of Zambia has begun implementation of eGranary (http://www.widernet.org/egranary/), which includes both a digital library and learning management system. UAB has helped in training of both students and faculty. eGranary provides off-line information storage and access to over 30 million internet resources.

**AAU:** The AAU MEPI team methodically surveyed the inventory and needs of students and purchased enough textbooks to significantly improve the availability of learning material for students. The ratio of textbooks available changed from 1:6 to 1:2 as a result of this initiative. In addition, computers and some supplies have been procured in a bid to improve the teaching and learning environment. AAU has also begun implementation of eGranary.

**KCMUC:** KCMUC plans to revamp the delivery of its existing curriculum using technology and novel teaching methods. Several workshops were held for faculty to orient them to the new Learning content management system (LCMS) “Blue Docs”, adapted in collaboration with their US partner Duke University. Faculty in the basic sciences who have adopted the LCMS report high satisfaction, particularly in the significant reduction of work load that it provides. Faculty and students all remark on the markedly improved access to information with the newly installed wireless internet. In order to address the issue of inconsistent electricity, KCMUC has also made Motorola Xoom tablets available for each student of the entering medical school class. This program has been integrated with the Learning Management System and allows internet access at multiple locations throughout KCMUC facilities.

**University of Nairobi:** In collaboration with the University of Maryland, Baltimore, UoN is enhancing the library by not only improving infrastructure but also improving available content in terms of reference materials, journals and archived resources.

**University of Zimbabwe Textbook Initiative:** This initiative has provided an HIV & AIDS textbook to the undergraduates and faculty. Through a complementary grant from the Ministry of Higher and Tertiary Education the UZCHS MEPI is procuring books in various medical fields for the library. Faculty and students have access to e-Granary with a wide range of literature covering medicine disciplines, Social Sciences and Management Sciences. Faculty and students also have access to RedCap which is a database for capturing, administration and management of research data. Physicians have access to UpToDate, a database that assists with diagnostic solutions at the point of care

MEPI funds are contributing to infrastructure as shown in Table 2.

**Table 2. MEPI-Funded Infrastructure Enhancements Across 13 Direct Grantees**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Schools with MEPI-funded Renovations to Physical Infrastructure</td>
<td>8</td>
</tr>
<tr>
<td>Maximum Number of Students Served by MEPI-funded Renovations</td>
<td>5,719</td>
</tr>
<tr>
<td>Number of Schools with MEPI-funded Digital Infrastructure</td>
<td>9</td>
</tr>
<tr>
<td>Maximum Number of Students Served by MEPI-funded Digital Infrastructure</td>
<td>20,594</td>
</tr>
<tr>
<td>Number of MEPI-funded Computing Devices</td>
<td>1,027</td>
</tr>
<tr>
<td>Number of Schools with MEPI-funded Skills Labs</td>
<td>7</td>
</tr>
<tr>
<td>Number of Students Utilizing MEPI-funded Skills Labs</td>
<td>1,310</td>
</tr>
<tr>
<td>Number of Schools with MEPI-funded Library Resources</td>
<td>6</td>
</tr>
<tr>
<td>Number of MEPI-funded Library Resources</td>
<td>2,596</td>
</tr>
</tbody>
</table>
In Ethiopia, the dramatic increase in student enrollment has resulted in a significant shortage of patient exposure for the students, with some of them only following 1-2 patients a week in core rotations. To address this issue, AAU has plans to expand the skills lab to provide more hands-on practice.
THEME 2: RETENTION

The scope of activities under this theme includes strategies to address the issue of geographic distribution of graduates, particularly in rural areas and also includes training and retaining academic faculty.

As illustrated in Figure 3, direct grantees are addressing retention in a number of ways.

Figure 3. Direct Grantee Approaches to MEPI Theme 2: Retention

Recruitment/Admissions

Six schools reported having recruitment programs for women, while four schools reported having reserved seats for women. Five schools reported having recruitment programs for rural/underserved populations, while four schools reported having reserved seats for rural/underserved populations.

At present, in most MEPI countries admissions and recruitment are centrally controlled. In Ethiopia, the Ministry of Education has implemented recruitment programs to increase the percentage of female medical school undergraduates (Mullan et al. 2011). In Zimbabwe, recruitment programs for both rural and female students also exist, although the country has a central admissions process. Additionally, both Ghana and Zambia have a recruitment program for rural students.

Undergraduate Education: Rural Training

A common focus across the MEPI network is strengthening community-oriented experiences. MEPI funding has been used to expand community based programs, specifically in upgrading clinical training sites, training community preceptors, providing transport and accommodations, and developing targeted curricula. The competencies taught through community-based experiences include clinical skills, public health, and research skills (Mullan et al. 2012). The emphasis and duration of these experiences vary widely.
In Round 1, 91 community training sites were reported by MEPI direct grantees. By Round 2 this number had increased to 210, an increase of over 100%. Of these 210 sites, 100 community training sites were being supported by MEPI. A summary of the data available is presented in Table 3.

**Table 3. Reported Descriptive Characteristics of Community Training Sites at 13 Direct Grantee Institutions, Round 2**

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>MEPI-Supported Community Training Sites</th>
<th>All Community Training Sites Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Clinic, 19 District Hospitals, and 80 Other Facilities</td>
<td>41 Clinics, 68 District Hospitals, and 84 Other Facilities</td>
</tr>
<tr>
<td>Level of Trainee</td>
<td>50 sites train undergraduates and three sites train both undergraduates and postgraduates</td>
<td>131 sites train undergraduates, 1 site trains postgraduates, and 3 train both undergraduates and postgraduates</td>
</tr>
<tr>
<td>Location</td>
<td>68 sites in rural communities and 32 sites in urban underserved communities</td>
<td>115 sites in rural communities and 95 sites in urban underserved communities</td>
</tr>
<tr>
<td>Trainee Supervision</td>
<td>96 sites operate with medical school faculty supervision and 4 sites operate with site clinician supervision</td>
<td>104 sites operate with medical school faculty supervision and 97 sites operate with site clinician supervision</td>
</tr>
<tr>
<td>Internet Connectivity</td>
<td>75 sites with no internet connectivity and 18 sites with internet connectivity</td>
<td>113 sites with no internet connectivity and 81 sites with internet connectivity</td>
</tr>
<tr>
<td>Interdisciplinary Training</td>
<td>50 sites with interdisciplinary training and 49 sites without interdisciplinary training</td>
<td>111 sites with interdisciplinary training and 89 sites without interdisciplinary training</td>
</tr>
<tr>
<td>Maximum Capacity for Students (At One Time)</td>
<td>1,055</td>
<td>1,734</td>
</tr>
</tbody>
</table>

In Uganda community based education is a key component of medical education. There are significant variations in the Community Based Education, Research and Service (COBERS) curriculum offered across MESAU institutions. The variations among schools are being described, tracked, and evaluated separately as a unique opportunity to study different models of community-based education and their potential impact on retention.

In South Africa, the University of KwaZulu-Natal (UKZN) MEPI team has shown flexibility and resourcefulness within their quest to secure five MEPI Learning Center (MLC) sites for rural training exposure for their students. They have leveraged stakeholder resources and university connections to prepare for three fully functioning well equipped MLCs which incorporate an electronic repository of learning materials, video conference facilities, internet access and other distance learning capabilities which allow it to link to the main training institution and other remote sites. In Kenya, University of Nairobi is offering clinical rotations at community based sites to students during which they interact with and are supervised by adjunct faculty. These students also participate in distance learning sessions where either the faculty offer specialized training or the students make case presentations.

**Post-Graduate Education**

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5 Please note that not all sites reported detailed data.
Round 1 of the Annual Survey offered baseline data on PGME programs being offered at direct grantee institutions, eight direct grantees reported including rural training in at least one of their PGME programs. The PGME training program that most often included rural training was Public Health (offered at 5 direct grantee institutions). Four direct grantees included rural training in OB/GYN and Pediatrics, respectively. Three direct grantees included rural training in Family Medicine, and two offered rural training in Internal Medicine and Psychiatry, respectively. In Round 2, direct grantees reported a total of 71 clinical specialty programs were being supported by MEPI, with 2,242 trainees enrolled in these programs. A total of 36 non-clinical specialty programs were being supported by MEPI, with 526 trainees enrolled.

Three schools are currently using MEPI funds to develop Family Medicine PGME programs, while 4 schools are using MEPI funds to enhance existing MEPI Programs. AAU, University of Botswana (with support from Stellenbosch) and University Ibadan are all developing a Family Medicine PGME programs as a part of their MEPI portfolios. Makerere and Stellenbosch Universities are using MEPI funds to enhance existing Family Medicine programs. The UNZA MEPI leadership has initiated the development of a family medicine program, which is strongly linked to the Ministry of Health. This program incorporates the rotation of registrars to the Livingstone District Hospital in an effort to promote further exposure to rural and regional health.

Research Based in the Community

Enhancing research in the community is used as a retention mechanism by providing existing community clinicians with opportunities for career growth, as well as providing students with research skills to meet their country’s needs.

An agreement has been reached between MEPI and the Ethiopian Medical Association to work jointly on the retention of medical doctors and faculty working in rural areas. This strategy includes training 20 physicians from rural areas on research methodology with advisory and financial support.

In Tanzania, there are established field research sites and the Community Health Department is in the process of establishing model villages for teaching. Fourth year medical school students undertake individual research projects on a topic within the national, regional, and institutional priorities.

In Uganda, there is a student mentored research project as a component of COBERS training. In Zambia, students develop research proposals where they learn evidence based approach practice in their second year of training. AAU and Stellenbosch also have community research incorporated into their MEPI programs.

In Kenya, postgraduate students were supported through the linked MEPI award to conduct research related to maternal, newborn, and child health at the decentralized training sites.

Graduate Tracking

Graduate tracking systems are critical to measuring the success of retention efforts. In response to the Round 1 MEPI survey, no schools reported that a graduate tracking system existed at their institution. To address this challenge, schools are engaging their countries’ Medical Councils to initiate partnerships. According to site visit reports and Round 2 of the MEPI Survey, 7 schools reported that their institutions are developing tracking systems, all of which include collaboration with their respective licensing councils.

The University of Zambia, in collaboration with the Zambia Medical Association, is developing a web-based system to track graduates including doctors and other health professionals. In Ghana, Kwame Nkrumah University of Science and Technology Emergency Medicine residency has a built-in graduate tracking system through the Ghana
College of Physicians and Surgeons. Additionally, the University of Botswana School of Medicine and University of KwaZulu-Natal are in initial discussion with their respective medical councils to access national workforce data. The University of Nairobi has initiated the process of setting up a graduate tracking system starting with medical students graduating in 2012.

In an effort to form a collaborative effort around graduate tracking systems, the MEPI network has formed a Technical Working Group around the issue. This network seeks to nurture strong linkages among physician regulatory bodies, workforce planning agencies, and training institutions, in collaboration with other key stakeholders.
THEME 3: REGIONALLY RELEVANT RESEARCH

Theme 3 aims to help medical schools build the capacity to conduct research that is locally driven and regionally relevant. MEPI direct grantees face several challenges in this area, including limited faculty time, expertise, and administrative support (Mullan et al. 2012).

As illustrated in Figure 4, MEPI Direct Grantees are focusing research efforts on the core areas of funding, training and mentoring, and infrastructure development.

Many schools are developing research capabilities as a strategy to enhance the capacity and retention missions of MEPI. For example, the University of Ibadan in Nigeria and other schools are providing seed grants to encourage faculty to start research careers (Mullan et al. 2012). In Round 1 of the MEPI Survey, six direct grantees reported offering research fellowships for students. In Round 2, 8 direct grantees report that fellowships or grants have been made available to health professionals at their institutions through MEPI-funding. In Round 2, a total of 229 medical school trainees and 113 faculty were reported to be participating in MEPI-funded research. A number of MEPI-related manuscripts have also been drafted and published and are listed in Appendix II.

Every MEPI program has included activities to increase research capacity. Four of the awards have embarked on establishing Research Support Centers (RSCs) in various capacities. Eight of the eleven programmatic awards include activities which can be encompassed in an RSC, including: grants management, pre- and post- award support, IRB/eIRB, compliance, faculty mentoring, grant writing assistance and clearinghouse for research opportunities. In Round 2 of the MEPI Survey, nine direct grantees reported that MEPI funds were enhancing grant-writing support. Direct grantees are also focusing efforts on improving the research capacities of their faculty. For example, the University of
Zimbabwe is sending faculty to the University of Colorado for skill development (Mullan et al. 2012). More general research areas being supported by MEPI were identified in Round 2 of the MEPI Survey and are displayed in Figure 5.

*Figure 5. Number of Direct Grantees Reporting MEPI Support for Specified Research Areas, Round 2*
THEME 4: SUSTAINABILITY
While sustainability was not included in the original core themes, it was added as a fourth key focus given that the ultimate success of MEPI comes down to whether it is sustainable. Factors that contribute to sustainability include engagement with ministries of health and education and indirect benefits of the investment. If MEPI universities can document how their efforts have strengthened the health system, future funding to sustain MEPI-efforts becomes more promising.

Ministry of Health/Ministry of Education Engagement
Medical schools often rely on the Ministry of Education (MOE) for recruitment and rely on the Ministry of Health (MOH) for employment of graduates. Therefore, effective scale-up and sustainability of MEPI programs at the undergraduate, graduate, and faculty levels will require close working relationships between MEPI schools and MOH and MOE. Direct grantees and their government counterparts have opened more direct lines of communication catalyzed by aligning MEPI activities with national priorities (Kristiansen 2012). The extent to which Ministries of Health and Education have been incorporated into the broader MEPI Network is illustrated in Figure 6. In this figure, various institutions are represented as circles; the thirteen direct grantees are highlighted in green. The network illustrated is based on external partnerships formed as a result of MEPI, as reported in Round 2 of the Annual Survey. The relative size of an institution’s circle was determined based on the number of partnerships reported.

In Zambia, the MOH is a strong supporter of MEPI activities including expanding schools and faculty training. The MOH and MOE are both significant stakeholders in specific MEPI activities in the Nairobi MEPI Program. Additionally, in Ghana the MOH expressed its support for the KNUST emergency medicine program and its intention to provide adequate positions to deploy graduates of the program. In many cases, Ministry delegates serve on external stakeholder advisory boards and participate in monthly inter-ministerial meetings. At KCMUC, an MOH delegate is on the external advisory board of the University. In Uganda, both Ministries recognize the importance of MEPI-MESAU’s activities and have established monthly inter-ministerial meetings to discuss progress and vision. In Botswana, The MOH and MOE meet on a monthly basis with the School of Medicine to ensure the medical school is aligning with national priorities.
Figure 6. Integration of Ministries of Health and Education Into MEPI Network

Data visualization created using Google Fusion Tables Beta.

6
Indirect Benefits of MEPI

It is estimated that 4,377 students are enrolled in undergraduate health professions training programs (other than medical school) which are being enhanced by MEPI (see Figure 7). These training programs are benefiting from enhanced infrastructure and/or improved faculty training. For example, in many cases grants management infrastructure support has extended beyond the MEPI grant. In Zambia, non-MEPI faculty wanted more engagement in educational planning and were brought into the process with quarterly consultative meetings with heads of departments, coordinators, and other interested faculty. In Mozambique, although the MEPI grant originally targeted only the internal medicine department, faculty from other departments asked to become involved in MEPI research activities when they saw the interesting work being done. In Nairobi, non-MEPI faculty were initially resistant to new teaching strategies until they were brought on board for consultation, which was critical to the successful implementation of campaign to educate faculty and students on IT resources.

Figure 7. Number of Direct Grantees Reporting MEPI Enhancement of Specified Health Professions Training Programs, Round 2
**THEME 5: COMMUNITIES OF PRACTICE**

MEPI has the unique opportunity to serve as a catalyst for the formation of communities of practice, networks that share best practices and innovations and may ultimately promote sustainability of these innovations. Recognizing this, the U.S. Government, in collaboration with direct grantees, added Communities of Practice was added as a fifth key focus. Historically in Africa, there has been a strong community of practice around the field of surgery, but in few other areas of the medical field (Mullan et al. 2011).

**Partnerships in Medical Education**

Six of the MEPI Universities have formed consortia with other medical schools in their countries. Data from Round 2 is available for two consortia located in Ethiopia and Uganda. In Ethiopia’s consortia, it is estimated that 1,224 medical students are directly benefitting from MEPI (75% of currently enrolled medical students). In Uganda’s MESAU consortia, it is estimated that 687 medical students are directly benefitting from MEPI (36% of currently enrolled medical students). Detailed examples of consortia activities are illustrated in Box 8.

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<th><strong>Box 8. MEPI Highlight: Examples of Consortia</strong></th>
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<td><strong>Ethiopia:</strong> The MEPI project in Ethiopia includes a consortium of four schools led by Addis Ababa University (AAU). The consortium schools (Hawassa University, Haramaya University and the Defense College of Health Science) are smaller schools facing similar challenges of limited faculty, limited clinical sites, and increasing class sizes. This consortium also includes five US partner institutions (Johns Hopkins University, Emory University, University of California San Diego, Alabama University, and University of Wisconsin).</td>
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<tr>
<td><strong>Nigeria:</strong> The University of Ibadan has partnered with the University of Jos, University of Nigeria, University of Maiduguri, Ahmada Bello University, University of Lagos, the AIDS Prevention Initiative Nigeria Ltd., Northwestern University, and Harvard School of Public Health to form the Medical Education Partnership Initiative in Nigeria (MEPIN) Consortium. The MEPIN consortium itself is developing as an important platform, providing a forum for discussion and planning that extends beyond the actual MEPI resources at its disposal.</td>
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<tr>
<td><strong>Uganda:</strong> Medical Education for Services to All Ugandans (MESAU) is a consortium of five medical schools: three public institutions, one in development, and one private institution (Makerere University, Mbarara University, Gulu University, Kampala International University, and Busitea University). This consortium is the only one within the MEPI network which represents all accredited medical schools in the country. The consortium has two US partners: Johns Hopkins University (JHU) for the Programmatic Award and Case Western Reserve University (CWRU) for the Linked Award.</td>
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Other partnerships continue to evolve. In Round 2 of the MEPI Survey, MEPI direct grantees reported that a total of 89 partnerships or collaborations have been formed with institutions outside of their own as a result of MEPI. When consortia schools in Uganda, Ethiopia, and Nigeria are included, a total of 125 partnerships or collaborations as a result of MEPI have been reported. The nature of the MEPI grants has strengthened the relationship between the direct grantees and their partner medical schools outside of sub-Saharan Africa (see Box 9). An association of students at MEPI direct grantee institutions is in its formative stage. While the MEPI Symposium has provided a forum for networking among direct grantees and their partner institutions, it has also provided a platform for direct grantees to meet other potential international partners as well. The diversity of the participants in the 2012 MEPI Annual Symposium is illustrated in Figure 8. Communities of practice may also be expanded through networking.
at international conferences. For this reason, MEPI has been represented at several such conferences, including AIDS 2012, eLearning Africa 2012, and Toward Unity for Health 2012.

**Box 9. U.S. Partner Universities**

- Harvard University
- University of Pennsylvania
- Emory University
- Johns Hopkins University
- University of Wisconsin
- University of California, San Diego
- University of Maryland, Baltimore
- University of Washington, Seattle
- Columbia University
- Duke University
- Alabama University
- Case Western Reserve University
- Yale University
- Vanderbilt University
- University of Alabama, Birmingham
- University of Colorado, Denver
- Stanford University
- University College and King’s College, London
- University of Michigan
- University of North Carolina

*Figure 8. Formation of MEPI Communities of Practice: Diversity of 2012 MEPI Annual Symposium Participants*
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van Schalkwyk, S, Bezuidenhout, J, Conradie, H, de Villiers, M, Fish, T, Heerden, B. 2012, “Going Rural: Lessons Learnt From the First Year of Implementation (2011) Of The Rural Clinical School Of The Faculty Of Medicine And Health Sciences, Stellenbosch University”, *Manuscript*. 
APPENDIX I. PROPOSED ACTIVITIES OF MEDICAL EDUCATION PARTNERSHIP INITIATIVE DIRECT GRANTEES (MULLAN ET AL. 2012)
## APPENDIX II. MEPI-RELATED MANUSCRIPTS AND PUBLICATIONS

<table>
<thead>
<tr>
<th>MEPI University</th>
<th>Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAU</td>
<td>Mekasha, A, Derbew M, Desalegne A, Haile Mariam D. 2012. “Rapid assessment of the implementation of small class teaching at the School of Medicine, Addis Ababa University”. <em>Manuscript.</em></td>
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<tr>
<td>MEPI University</td>
<td>Article</td>
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<td>Stellenbosch University</td>
<td>Van Schalkwyk, S; Bezuidenhout, J; Burch, VC; Clarke, M; Conradie, H; Van Heerden, B &amp; De Villiers, M. Developing an educational research framework for evaluating rural training of health professionals: a case for innovation. <em>Medical Teacher</em>. Early Online:1-6. DOI: 10.3109/0142159X.2012.719652.</td>
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<td>U Zambia</td>
<td>Daka, H. 2012, “Quality of training as assessed by student course evaluations and the impact of eLearning initiatives”, <em>Manuscript</em>.</td>
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APPENDIX III. KEY FINDINGS FROM THE SUB-SAHARAN AFRICAN MEDICAL SCHOOL STUDY (MULLAN ET AL. 2010A)

1. Many countries are prioritizing the scale up of medical education as part of overall health sector strengthening.
2. Physician “brain drain” is a special problem for medical education.
3. Accreditation and quality measurement are important developments for standardizing medical education and physician capabilities.
4. The status of the country’s health system affects medical education and physician retention.
5. Coordination among ministries of education and ministries of health improves medical schools’ ability to increase health workforce capacity.
6. Shortages of medical school faculty are endemic and problematic.
7. Problems with infrastructure for medical education are ubiquitous and limiting.
9. Educational planning that focuses on national health needs is improving the ability of medical graduates to meet those needs.
10. International partnerships are an important asset for many medical schools.
11. Impressive curricular innovations are occurring in many schools.
12. Beyond the creation of new knowledge, research is an important instrument for medical school faculty development, retention, and infrastructure strengthening.
13. Private medical schools hold promise for adding to physician capacity development.
14. Post-graduate medical education is an important element of a national health system development strategy.