

MEPI SITE VISIT REPORT 2015

KILIMANJARO CHRISTIAN MEDICAL UNIVERSITY COLLEGE (KCMUCo)

Moshi, Tanzania

June 9, 2015 – June 10, 2015



SITE VISIT TEAM

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1. Acknowledgements

The site visit team extends our most sincere gratitude and appreciation to the KCMUCo MEPI leadership and staff for their hospitality and collaboration in planning for this site visit. Thank you also to the KCMUCofaculty, students, and all staff who participated and provided valuable insight to the impact of the MEPI program in Tanzania.



MEPI Year Five Site Visit- KCMUCo and Site Visit teams

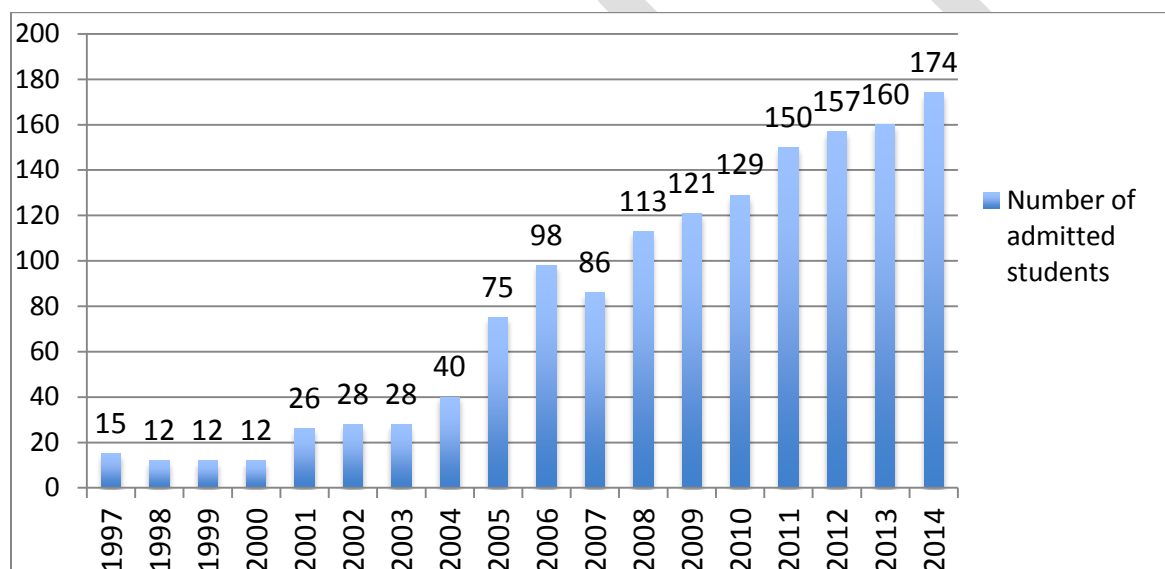
11. Activities Update

Theme 1: Increasing Capacity

Status of Activities in Year 5

1.1 Increase capacity from 120 to 150 students over five years

This goal of medical education enhancement was achieved during the first year of MEPI. The number of admitted students in their first years consistently and steadily increased over the years with 150 students in 2011, 157 students in 2012, 160 students in 2013 and 174 students in 2014. The number of enrollment has been above the 5 year goal since 2012. This medical enhancement has led to a reliable internet access, establishment of e-library, MOOC, eIRB, e-lecturing (VC room), e-student administration and a meaningful use of internet.



1.2 Introduce e-learning, Team Based Learning, PBL and other teaching methodologies

Before the introduction of e-learning, there was a shortage of faculty, traditional-outdated methods of teaching, poor IT Infrastructure and no ways of tracking or verifying course content. The curriculum is delivered using learning content management system(LCMS+/LMS). After the introduction of e-learning, a Massive Open online course (MOOC)in Tropical parasitology: Protozoa, worms, vectors and Human diseases was developed. Tropical Parasitology is a session based, 8 wk MOOC with 3-4 hrs of class time and 3-4 hrs of reading time per week. The MOOC features unique instructional attributes in its authentic approach to learning while in an online format. The MOOC learning activities include: digital materials which includes expert practitioner interviews and video footage filmed on-site in TZ, which provide a rich learning experience for on line participants. MOOC utilizes technology such as online quizzes, online exams, discussion forums and in video quizzes, all accessible via mobile devices. To date, 13 modules, 13 online quizzes, 3 exams and 61 videos have been done. Currently, 8177 students from

171 countries enrolled for the MOOC. Of these, 40% are from emerging economies. The continents represented are North America (35%), Europe (25%), Asia (17%), South America (11%), and Africa (10%). The countries that had the largest enrollment are US (27%), Brazil (8%), India (4%), Tanzania (4%) and UK (4%). 266 students from KCMC enrolled for this course. To date, the students that completed and received certificates are 540. Initial course analytics provide evidence of global impact and effectiveness of learning technologies and the learning environment. The Initial learner feedback is positive on video lectures, assessments and overall student satisfaction

Before the introduction of team based learning(TBL) in 2011, students grades were low as shown by the following scores: first quartile (60%), 2nd quartile (64%) and 3rd quartile (71%). After TBL, the percent score cumulative frequency for first quartile was 74%, 2nd quartile was 77% and 3rd quartile was 79.5%. This implies that students grades improved over the years, their critical thinking was enhanced and the spirit of collaborative team effort enhanced. 590 MD2, 169 BSc HLSc students, 102 BSc Nursing students for the 4 academic years was taught by TBL mode. The total number of MD2, BSCHL Sc2, Bsc Nursing 1 taught by TBL to date for the 4 academic years is 861. For undergraduate programs, MMED students taught by TBL increased over the years with 20 in 2012/13, 32 in 2013/14 and 33 in 2014/15 bringing the total to 85. 12 Msc of Parasitology students in the 3 academic years were taught by TBL mode. To date, 958 students at KCMUC were taught by TBL mode.

Adoption of TBL as a teaching methodology has led to improvement of students' performance and enabled the integration of TBL to other medical schools.

1.3 Adoption and expansion of Learning Management System (LMS)

The LCMS+ was a long term Duke collaboration facilitated system donation to KCMUCo. With the support from David Wiener, the LCMS+ system developer and his team from Duke University, LCMS+ started its operation in June 2011. The KCMUCo ICT team and LMS specialist worked with the developer to fully implement the system and to date the LMS team has grown to a total of three members, and together they work to maintain the system. The LCMS+ has already been tested and was designed to address the needs of medical education curriculum delivery and challenges of building, executing, accessing and assessing curriculum for variety of groups. The LCMS+ does not need an in-house programmer for support or maintenance.

KCMUC has expanded the LMS system for the entire university. The number of courses delivered using the LCMS+ system grew over the years with 6 (MD1) courses in 2011/12, 14 (MD1 & MD2) courses in 2012/13, 17 courses in 2013/14 and 23 courses in 2014/15. Further expansion since 2011 to date includes wet laboratory, MPH, MMed, Masters in Biostatistics and Epidemiology, Bsc laboratory Health Sciences and Faculty of Rehabilitation Medicine. KCMUC plans to expand the system to clinical classes (MD-5) in future. There has been a substantial increase in the use of the wet lab by students from 698 in 2013/14 to 893 in 2014/15 and a reduction in the usage by faculty from 12 in 2013/14 to 10 in 2014/15. Before 2010, the KCMUC wet laboratory was under equipped and underutilized by other students and not at all by medical students. KCMUC-MEPI Project identified a need to train MD students in the use of basic laboratory techniques for use in resource-limited settings. The KCMUC-MEPI Project renovated and equipped the wet laboratory by installing the basic infrastructure, purchasing and installing equipment and purchasing the start-up reagents and consumables in 2010-2011. Subject trainings on Point of care tests, Physiology, Parasitology, Clinical chemistry, Phlebotomy, Haematology & blood transfusion, Microbiology and Anatomy through the use of Virtual Microscopy take place in the wet lab.

The system has led to better coordination and monitoring of learning objectives at the University. It has also enabled the faculty to save time, distribute and update learning content very fast, track learners activities and performance and implementation of modern and resources efficient teaching concepts

The students have a positive perception of LCMS+. The strength of consensus for the quality of software is 78%, quality of content is 84% and learning enhancement is 84%. 90% of MD1 and MD2 students are accessing LCMS+ at least 4 days per week. The first online assessment took place in January 2012 with 150 students. There has been expansion of online exams with the introduction of more courses as shown: 2012: Basic Science Classes (MD 1), 2013: Basic Science Classes (MD1 & MD2), 2014: Clinical classes (MD3&MD 4) to 2015: Basic Science, Clinical Classes +BscLab & Physiotherapy. A real time exam monitor was introduced/developed, and an online grade book. 59.1% of faculty is satisfied with online examinations. 92.5% of students use the tablets to look for educational information on the internet, 68.3% of students practice quizzes and 64.8% use the tablets to learn local and international news. 93.3% of faculty feels the LMS has enabled them to enrich their course content through its ability to include resources from the internet.

LCMS+ are disseminated through sharing its achievements with other medical schools e.g. Hubert Kairuki, sharing its implementation at KCMUC in different sites such as You Tube, through conducting awareness programs and orientation to faculty and students, participation in international conferences e.g. 10th International conference on ICT Addis Ababa Ethiopia and using brochures and fliers.

Challenges: KCMUC has no policy for LMS integration with the present curriculum. The perception of some faculty members on the use of LMS and adherence of flow charts e.g. Assessment workplan flow chart is negative.

Usage of LCMS

	Percentage of active faculty	Percentage of Courses
	n=50	n=15
Basic science	57%	87%
	n=41	n=15
Clinical science	39%	67%

1.4 Faculty development workshops, faculty and student performance evaluation

Before MEPI, KCMUC had 96 faculty members. This number increased to 167 faculty members after the introduction of MEPI mainly as a result of introduction of modern teaching methods and support to research. There are continued faculty development sessions on TBL and several training opportunities for the LMS system with reported satisfaction with the offered development workshops. There are opportunities annually for faculty awards for outstanding performance and performance based supplements. The LMS system has enabled the College Administrators to evaluate students, department and individual faculty performance.

Recommendations

- **Evaluation of quality in medical education:** Consider expanding the evaluation methods of the program such that they capture the competencies being taught by the new teaching methods. These should include assessment tools that evaluate critical thinking and leadership / management skills.

Response

- Thank you for recommending the need for critical evaluation of our program. We also agree that it would be very important to evaluate these aspects of quality and competencies. The major hurdle in implementing this recommendation will be the availability of specific tools to evaluate these competencies; if you have tools to recommend, we would be very grateful
- **Evaluating the value-added of e-learning:** Consider ways to evaluate how the use of ICT is transforming education. Currently the evaluation plan measures uptake, but this assumes a value-added which has not yet been described or measured. Consider ways to capture the value-added of using technology which might include early-identification of poor-performers, increased intellectual curiosity of students with ease of access to learning material, increased use of ICT at point of care to make evidence-based decisions, increase faculty time spent on research with time saved using e-learning.

Response

- Thank you for your recommendation. During the past year we have made strides in this area. We have used the Technology Acceptance Model to assess user friendliness, usefulness and attitudes towards changing their behavior (learning by using technology vs. traditional methods). Within the LMS platform, we have performed analyses to describe the frequency of use by individual students, and have logged most frequently visited pages of the LMS. We have also used the bandwidth manager to evaluate student's behavior on the Internet by describing the access points, most frequently visited sites, software requests and downloads. In the third year of the project we evaluated the faculty's responses on the type of activities they would engage in with the "free" time that the technology-assisted learning was providing, and one of the responses was research. Through the MRTTP programs, faculty participation in research has increased tremendously. We have not yet evaluated the use of ICT at point of care. As the rural placement program continues to improve, we will plan to evaluate this aspect.
- **Leveraging ICT for health workforce needs in Tanzania:** Now that KCMC has a robust ICT platform including leadership and faculty champions, consider ways in which this can be used strategically to meet the health workforce needs in Tanzania. This could include establishing ICT connection at peripheral hospitals to facilitate access to online resources for onsite staff as well as CPD opportunities. Consider also starting online courses from KCMC (non-degree to start could expand ultimately to degree programs) allowing increased access to training. This could include CPD for providers at distant sites. A regional example of this is the University of Nairobi which has started an accredited nursing program online that allows nurses to stay in their place of work, take the coursework online after hours and then work with onsite preceptors for the clinical component.

Responses

Thank you for your recommendations. We recognize the need to expand the KCMUCo achievements beyond Moshi, and toward that goal, the KCMC MEPI revived the Forum of Universities and Colleges of Health Sciences (FUCHS) to be the vehicle of dissemination and expansion of the MEPI efforts. Apart from leadership from universities, the membership includes the ministries of health, education and science and technology. The rationale for using FUCHS to drive these efforts is that one requires governmental and institutional buy-in to have a successful and sustainable program. Some of the initial achievements of the FUCHS with the assistance of MEPI have been the piloting of a national coordination of continuing professional development (CPD). Through MEPI funding MUHAS has also been implementing a project on teaching methods dissemination.

Theme 2: Retention of Graduates

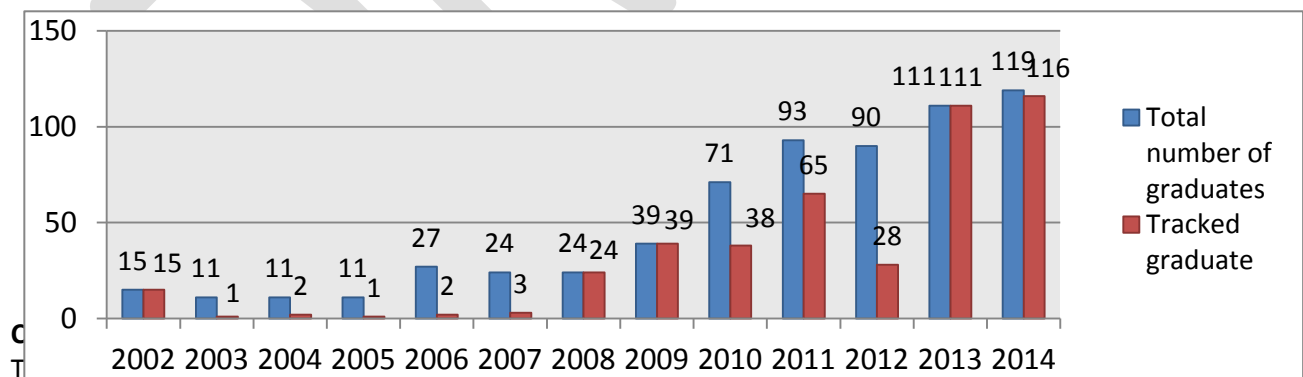
Status of Activities in Year 5

2.1 Graduate tracking, Career counseling and Alumni engagement

Graduate tracking

Software has replaced the paper-based system. Existing students are entered in year 5. Approximately 31% from KCMC have been tracked within on-going creative and persistent efforts of staff to track the rest of the alumni. 100% of 2013 graduates are in the system and 116/119 of the 2014 graduates are in the system.

Initial data indicate an effective pipeline for meeting the country's needs – 30% working for underserved, only 10% have left the country



services. There is increased trust by students as they are now using the office to consult on academic issues. Academic societies including a rural doctors club have been established.

Career counseling sessions requested by other departments for example School of Nursing, Laboratory Health Sciences are taking place

Alumni engagement

Several alumni events were held in addition to a newsletter being launched.

Way forward:

- There is need to identify a mechanism to systematically track graduates after they leave.
- Staff to be employed by the institution and existing alumni relations' person will be engaged in this work.
- Proposal has been made to fund a cohort study to examine the contribution of KCMC graduates to the rural-urban distribution gap in Tanzania.
- Plans to engage the College leadership, MOH and MOE and other medical schools in the country to support Graduate Tracking and share systems in place.

2.2 Community-based Education Program

As part of the overall CBE program, peripheral hospital rotations are integrated into the MD3 curriculum with 8 sites being used. Students are assigned to the site. Students reported satisfaction with their rotations at the peripheral hospital as it provides a good opportunity to practice hands-on skills. The move to expand into peripheral hospitals was largely motivated by the increase in students and the need to provide opportunities for hands-on learning. Reciprocal relationships have been established with each of the hospitals such that KCMUC sends specialists to provide intermittent services and onsite providers supervise students on a daily basis.

CBE TWG study is on-going to examine the contribution of students to the facility, quality of care and staff satisfaction. Preliminary results of interviews conducted with facility staff at KCMC sites indicate that the staff is very happy to have students at the peripheral hospitals (especially the rural site). Point-of-care (PoC) kits were provided to students at two sites. Students who use the PoC toolkit report very high satisfaction with their learning experience due to the rapid response of diagnostics and the ability to refine their differential diagnosis before presenting. However, those students who don't have access to the toolkit during their peripheral rotation complain that the lack of diagnostics is frustrating. The toolkit is costly and is a pilot program with no current sustainability plan in place. That said, it does seem that providing these kits to students does improve their impression of working in a peripheral hospital.

2.3 Distance Learning Program

Recommendations

- **Tracking after graduation:** Continue to explore ways to systematically track graduates once they have left. This might include connecting with the medical council in Tanzania. Explore the uptake of the program MDNet in Tanzania – a partnership between a telecom company and the medical association. In Ghana, this partnership successfully captures all physicians in-country (by providing free MD to MD calling) creating a useful database of providers in-country. MDNet had planned to expand to Tanzania after their success in Ghana and Liberia.

Response

Thank you for your recommendation. In the past three years we have been working with the Capacity Plus on the Uganisha platform. We are not sure how closely related the MDNet program is to Uganisha. Capacity Plus has collaboration with the Medical Council of Tanzania and they were to work with them closely to provide a national database of graduates.

- **Targets for distribution and retention:** Consider setting targets for the institution so that as you gather data on where your graduates are placed, the institution can determine if KCMUC is meeting the health workforce needs of Tanzania.

Response

Thank you for your recommendation. At KCMUCo the efforts to track graduates are well underway. However, the Ministry of Health, depending on the availability of positions, does the placement of graduates. The Ministry of Health sets the country level targets. We plan to provide periodic reports directly to the MOH and also through FUCHS to enhance their strategic plans.

- **Evaluation from a health system perspective:** There are clear examples of how medical student activities are improving aspects of the health system. The current evaluation plan does not yet capture these. This angle to evaluation will be important as training is decentralized and as further investments are sought by different funders and stakeholders. Some examples of how students contribute (that came up during this site visit and at other MEPI schools) include: Increased staff satisfaction at peripheral hospital, student quality-improvement projects that translate into changes in standards of care, increased coverage of immunization among communities served by student outreach projects, increased HIV testing at peripheral sites when students attend. Consider expanding your evaluation plan to capture the value-added of students in the health-system (not just as a pipeline for a future workforce but as an immediate contribution to the quality and utilization of care).

Response

Thank you for your recommendation. Since the peripheral placement program has been developed, future planned studies will capture the above-mentioned effects on the health system.

Theme 3: Regionally Relevant Research

Status of Activities in Year 5

3.1 Mentored Research Training Program (MRTP)

Research capacity building is going on well including several interventions like Medical Education Innovation program (4 rounds of seed funding for teaching innovations), Mentoring program (seed funding for students to conduct mentored research), responsible research workshop, establishment of eIRB, Database of research projects, and establishment of an institutional Office of Research Management (through the IRIM grant).

Mentoring program was well received by students and faculty and is effective in raising confidence levels and interest of students to do research. Students indicated that they hope to continue to have opportunities for mentored research in MD3 so that when they enter MD4 they are ready for their own research projects. Results: 55 awarded, 31 presented locally, 9 published in scientific journals, 61 mentors engaged and 144 students engaged. The MRTP has been expanded to 2 other schools

3.2 ICT and Research

The eIRB has been established and is now in use. It has converted from paper-base to electronic system allowing students/faculty to track the progress of their research proposal

DSpace: The use of an open-source software as an online repository of all research done at the institution is now accessible by faculty and students.

The CITI training is now available and is being used by faculty at KCMUC

Way forward

KCMC has assigned 1% of budget to research and plans to provide additional training in grants management. KCMUC is considering integrating the mentoring program into the curriculum

3.3 Collaborations

KCMUC established collaborations with external institutions. KCMUC invited these institutions to participate and consequently awarded MRTP and MIP funding to Hubert Kairuki Memorial University (HKMU), Muhumbili University, Christian Social Services Commission (CSSC) and Catholic University of Health and Allied Sciences (CUHAS).

Way forward: KCMUC plans to work collaboratively with these institutions

Recommendations

- **Integrating mentored research into the curriculum:** Given the positive response from students and faculty on the mentored research program, consider integrating it into the curriculum to sustain the broad interest and momentum of strengthening the local research culture.

Response

Thank you for your recommendation. MRTP has been integrated into the current curriculum. MD4 students have a block in their year to focus on research. This is the formal section of the curriculum but students throughout their time at KCMUCo are encouraged to participate in MRTP. With this approach, students are exposed to research throughout their time at KCMUCo and this does not only become a fulfillment of the medical training but an enriched experience that may have lasting effects on their careers.

- **Use Dbase to inform the research strategy:** Consider establishing a dashboard from Dbase that would provide the KCMC leadership with a snapshot of which disciplines are doing research, which faculty and which students. This data could inform institutional research strategy.

Response

Thank you for your recommendation. This project is still in its infancy and we recognize its potential to inform the KCMUCo's research strategy. Therefore the implementation of the dashboard is underway.

- **Translating research to policy:** Consider a way to prioritize the translation of research to policy. At other MEPI schools, they have incorporated this task in the duties of the communications office such that there are deliberate efforts to train faculty to write policy briefs and to create opportunities to make research results more visible to policy-makers.

Response

Thank you for your recommendation. We recognize the need to disseminate research findings. We are currently implementing several strategies. For example, through the FUCHS, we provide a snapshot of the research done at KCMC to the membership that includes policymakers. Published articles are also shared with the National Institute for Medical Research (NIMR). However, we have limited capabilities in the communications office to provide the training in writing policy briefs. Assistance in this area will be highly appreciated.

○

Theme 4: Overall Sustainability

Alumni & Career Counseling

The Alumni and Career Counseling has 3 components namely; Graduate Tracking (GT), Career Counseling and Alumni Engagement. In 2015, the sustainability efforts in this department included the following:

- GT extended to Departmental level, admission and examination offices and collaboration with Deans of students
- Demonstrate benefits for GT, and C.C
- College leadership and the Ministries of Health and Education are supportive of GT. Some key people are KCMUCo alumni
- Sharing KCMUCo success with other Medical schools in Tanzania, Tanzania Medical Council, and MEPI Schools (CUHAS, UZM, MESAU)
- Strengthen KCMUCo GT through targeted support by College Leadership and other departments – An alumni office, ID, Priority for opportunities at KCMUC
- Best practices and dealing with challenges
- Further research on GT and retention interventions

Under the **Research** department, the Office for Research Management and Innovation (ORMI) was established and KCMUCo have set aside fund for research. Capacity building to faculty to apply for external funds/ Grants is also being done.

The key element of the **ORMI** is accelerating pre-existing institutional plans to create a consolidated Office of Research Management and Innovation and related training program, therefore the acknowledgment of their importance is unquestioned and the likelihood of a sustained investment by the institution is high. Given the track record of KCMUC in receiving external funding, this office will be able to receive a portion of Facilities and Administration Costs to assist with operating expenses, thus creating a financial incentive for the Office to promote and facilitate growth in research.

The University College owns and maintains the running of the Wet Laboratory by recruiting Wet Laboratory Staff, Maintenance and purchasing of new equipment and Purchasing of reagents and consumables.

In the **ICT** department, the fiber optic cable they have is a 20years investment, beginning from 2011 which has caused internet service charges to keep going down. There are also other initiatives including Lastmile, Government Initiative, through Ministry of Science & Technology and Telemedicine, Government Initiative, through Ministry of Education.

Ingredients/Recommendations for sustainability

- Institutionalization of the project - MEPI has been a part of the University
- Involve all organs in the University e.g. Board of Governors, Staff College Statutory Meetings, Students forums
- Commitment and dedication from the leadership
- Clear, fair, firm reward/recognition system
- Introduction of small changes at a time
- Embedding M&E within the project for quality improvements
- Engagement in challenges facing students
- Genuine support from University that involves resource allocation to support initiatives beyond MEPI support! E.g. Wet Laboratory supplies, 90 iMacs, E-Library renovation etc...
- Harnessing the role of US partners.
- Finally a team of dedicated hardworking young women and men who have a hunger for change!!!!

Theme 5: Community of Practice

Status of Activities in Year 5

KCMUCo has developed and sustained several partnerships over the course of the last five years. In addition to its longstanding collaboration with Duke University, KCMUCo has also partnered and/or is working with the Touch Foundation, London School of Hygiene and Tropical Medicine, and

KCMUCo hosted the Forum for Universities and Colleges of Health Sciences (FUCHS) “Optimizing Impact, and Building Sustainability of Medical Education Institutions of Health Sciences in Tanzania” meeting in June 2014. Supported by MEPI, the recently revitalized annual FUCHS meetings create a platform for the medical institutions in Tanzania to share challenges and successes in medical education. The meeting also provided an opportunity for KCMUCo to share the significant progress and many accomplishments achieved through MEPI.

Led by a representative of the Honorable Minister for Education, the Vice Chancellors and senior representatives in attendance were called upon to foster in-country collaborations that would produce health care workers and ultimately benefit the people of the United Republic of Tanzania. Present were: Medical Council of Tanzania, Ministry of Health and Social Welfare (MoHSW), Christian Social Services Commission (CSSC), Touch Foundation, Duke Global Health Institute, African Center for Global Health and Social Transformation (ACHEST), Center for Educational Development in Health Arusha (CEDHA), KCMC MEPI team, senior KCMC staff, and KCMUCo student representatives.

It was determined that pilot projects would be set up over the course of the next year based on interest and need. Interested institutions submitted proposals according to RFA guidelines through the KCMUCo MIP and MRTP proposal process. KCMUCo has been engaging with the following institutions on the listed activities.

Hubert Kairuki Memorial University (HKMU)

- Deployment of LCMS+
- Mentored research training program

Christian Social Services Commission (CSSC):

- Enhancement of CPD program

Catholic University of Health and Allied Sciences (CUHAS)

- Reciprocal Peer Teaching- innovative way to learn gross anatomy
- Team-based learning
- Mentored research training program

Muhimbili University of Health and Allied Science (MUHAS)

- Enhancing Medical Education Preceptorship through faculty development

Recommendations

- KCMUCo is encouraged to creatively foster and leverage new and old relationships, to be able to continue the work that is being done with FUCHS and across schools in Tanzania. One idea is to consider public private partnership, perhaps with Apple or other technology companies.

Responses

Thank you for the recommendations. We appreciate the need to connect to the private entities to enhance the MEPI work. We have established connection with a World Bank-sponsored program (Last mile) that will provide subsidized bandwidth cost at KCMC. There is also a partnership with Electronic Health Records International. Through our US partners we have been able to enjoy discounted rates on networking equipment from CISCO. We have not explored a partnership with Apple but have been in discussions with US partners to explore the possibilities for collaboration.

Theme 6: HIV/AIDS

The MEPI program has contributed to HIV/AIDS training and research through the Investigator-initiated studies and providing support for HIV-related Mentored Research Training Projects and HIV-related Education Innovation Projects. The Laboratory infrastructure that was created by current and past HIV research grants, utilized by MEPI (International Studies of AIDS-Associated Co-infections [ISAAC] also enhanced HIV/AIDS training and research at KCMUC. The creation of the Clinical Trials Unit participation in ACTG and IMPAACT networks, Center for HIV/AIDS Vaccine Immunology [CHAVI and CHAVI-ID] and Center for AIDS Research [CFAR]) played a huge role in enhancing HIV/AIDS research and training.

Through the MEPI program, the KCMUC postgraduate students have got access to research training awards for post-graduate training opportunities such as;

- D43 AIDS International Training in Research Program (AITRP; MEPI Co-PI served as Director)
- D43 HIV Associated Malignancies Training Research Program (HAMTRP; MEPI Co-PI serves as Director)
- D43 Sociobehavioral Sciences in HIV Infection Research Training Program (MEPI Co-PI serves as Director)

It was very gratifying to see year 3 students using rapid diagnostic tests for HIV and malaria at the bedside. They were very eloquent in their interpretation. This was attributed to the MEPI program.

Monitoring and Evaluation

- The KCMC MEPI program has a thorough and thoughtful evaluation plan that tracks progress of activities, uptake of innovations, satisfaction with new technologies/methods and research productivity.
- The results presented indicate that in most cases, targets for uptake were met, and in some cases surpassed.

Recommendations

- Consider expanding the evaluation to include assessment of the quality of education. While there is no control group, graduates from KCMC before the MEPI award can be used as a reference and performance in practice could be assessed. Consider also expanding the evaluation tools used to demonstrate prospectively that KCMC graduates have leadership competencies such as critical thinking, communication skills, and comfort working in inter-professional teams.

Response

Thank you for your recommendation. As we mentioned above, our team requires support in this area. Any assistance in getting validated measures would be highly appreciated.

- Consider also including qualitative analysis of MEPI results with a more pragmatic approach to try to capture the value-added of the MEPI investment to the health system. There are clear stories throughout the different themes of MEPI activity that demonstrate how students interact and add value to the health system. While not always quantifiable, pragmatic qualitative evaluation will allow a thoughtful exploration of the connection between MEPI and the health of the communities, the health facility and the community-based health providers. (ZT will provide a link to an article on applied qualitative research)

Response

Thank you for your recommendations. We recognize the need to employ qualitative research in our evaluation plans. We are glad the ZT has experience in this area, and look forward to the link on applied qualitative research.

111. Program Overview Years 1-5

- Very strong leadership of the MEPI program and engagement of the KCMC institutional leadership. The principles of transformative medical education permeate the reflections at all levels of leaders from the Provost, to the faculty and even the students
- The focus on establishing a comprehensive e-learning program has resulted in a robust platform of ICT (including physical infrastructure, well-utilized LMS, engaged students and faculty and the first-in-the-continent use of online NBME exam for students. This sets the stage for KCMC to use technology to transform the way medical education is delivered in a low-resource setting. Of note, it was a particularly wise decision to select Mac computers for the computer lab. KCMC now has 450

computers onsite, managed by only 4 IT personnel and over 5 years has not had a single computer stop working.

- Excellent integration of advanced teaching methods (e.g. team-based learning) that focus on competencies beyond technical skills, necessary to produce leaders in the health system including critical thinking skills and effective group work.
- Implementation of effective strategies to maintain (and even improve) the quality of education in the context of increasing class sizes. Students on clinical rotations increased from less than 10 at a time to up to 30 and as a result KCMC employed the use of technology (to facilitate distance learning for students on surgery rotations) and the use of peripheral training sites to ensure students learn the technical skills necessary to graduate as competent physicians
- Staff motivation seems to have increased and the faculty pool has significantly increased during the MEPI time-frame, likely attributed in large-part to the transformation of the learning and work environment to be one of innovation, change and technology-enhanced.

DRAFT

Appendix I: Participants

S/N	Names	MEPI Role	Date interviewed/ or date of session /presentation	Activities discussed
1	Ahaz Kulanga	Project Coordinator	June 9 th , 2015	Interval progress summary
2	Charles Muiruri	Project Coordinator	June 9 th , 2015	Interval progress summary, IRIM/ORMI/eIRB
3	Egbert Kessi	Provost	NA	NA
4	Olola Oneko	Leader in Clinical Training	NA	NA
5	Rachel Manongi	Leader in Research	NA	NA
6	Venance Maro	Dean of Medicine	NA	NA
7	Christine Lim	Program Officer	NA	NA
8	Zorhay Talib	Site Visitor	NA	NA
9	Peter Eriki	Site Visitor	NA	NA
10	Robert Masaule	Internal Auditor	June 9 th , 2015	IRIM/ORMI/eIRB
11	Iman Israel	Project Accountant	NA	NA
12	Gilda Mtaita	Accountant	NA	NA
13	Aman Minja	LCMS+ Specialist	June 9 th , 2015	LCMS+ update
14	Glory Ibrahim	LCMS+ Specialist	June 9 th , 2015	LCMS+ update
15	Rose Mwangi	Career and Alumni Officer	June 10 th , 2015	Alumnae & Career Counselling
16	Ndimangwa Fadhil	IT Analyst	June 9 th , 2015	ICT & MOOC update
17	Fredrick Sigalla	ICT Technician	NA	NA
18	Gibson kapanda	Statistician	June 9 th , 2015	Monitoring and Evaluation, Heat map
19	Deodatus Mogella	ICT Technician	NA	NA
20	Frank Dubi	eIRB Technician	June 10 th , 2015	eIRB/D-Space
21	Mramba Nyindo	MOOC Coordinator	June 9 th , 2015	Team-based learning update
22	Baltazari Nyombi	Leader in basic and laboratory service	NA	NA
23	Lucy Mimano	WET lab Coordinator	June 9 th , 2015	Wet Lab Summary
24	Pius Tarimo	Lab technician	NA	NA
25	Nancy Kassim	Lab technician	NA	NA
26	Neema Kulaya	Lab technician	NA	NA
27	Franklin Masha	Leader in Research	NA	NA
28	Chripina Tarimo	Monitoring & Evaluation officer	June 9 th , 2015	Monitoring and Evaluation, Heat map

Appendix II: Site Visit Agenda

KCMUCo MEPI YEAR- FIVE SITE VISIT

June 9-10, 2015

SITE VISIT GOALS AND OBJECTIVES

1. Deliberate over areas of progress since Year 4 and impact of MEPI in Tanzania
2. Review plans for sustaining MEPI initiatives at KCMUCo and beyond
3. Discuss lessons learnt from site visitors the strategies other schools are using to sustain MEPI initiatives

SITE VISIT TEAMEPI LEADERSHIP

- Christine Lim, HRSA
 - Dr. Peter Eriki, ACHEST
 - Dr. Zohray Talib, GW
- Prof. Egbert Kessi, Provost
Prof Kien Mteta, KCMUCo PI
Dr. John Bartlett, Duke Co-PI

TUESDAY JUNE 9, 2015

Time	Topic	Persons Responsible
8:30	Pick-up at Sal Salinero	
9:00-9:10	Welcome and Introduction	Prof. Kien Mteta, PI
9:10-12:00	Interval Progress:	Ahaz Kulanga/ Charles Muiruri
9:10-9:30	<ul style="list-style-type: none"> • Interval Progress summary 	
9:30-10:00	<ul style="list-style-type: none"> • Monitoring and Evaluation, Heat map 	Chripina Tarimo / Gibson Kapanda
10:00-10:15	<ul style="list-style-type: none"> • Wet Lab Summary 	Lucy Mimano
10:15-10:30	<ul style="list-style-type: none"> • Team-based learning update 	Dr. Mramba Nyindo
10:30-10:45	Tea break	
10:45-11:10	<ul style="list-style-type: none"> • ICT & MOOC update 	Ndimangwa Fadhili/ Mramba Nyindo
11:10-11:30	<ul style="list-style-type: none"> • LCMS+ update 	Glory Ibrahim/ Amani Minja
11:30-11:45	<ul style="list-style-type: none"> • IRIM/ORMI/eIRB 	Frank Dubi/Robert Masaule/ Charles
12:00-12:30	Tour KCMC MEPI facilities	
12:30-1:30	Lunch	
1:30-4:00	Visit to periphery Hospital	

WEDNESDAY JUNE 10, 2015

Time	Topic	Persons Responsible
8:30	Pick-up at Sal Salinero	
9:00-9:10	Recap of Day 1 and review of Day 2 Schedule	
	<ul style="list-style-type: none"> • eIRB/D-Space 	Frank Dubi
	<ul style="list-style-type: none"> • Alumnae & Career Counselling 	Rose Mwangi
9:10-9:30	Report Survey & Update on MEPI presentations	Chripina Tarimo / Gibson Kapanda
9:30-10:30	Meeting with students	
10:30-10:45	Tea Break	
10:45-11:45	Meeting with faculty	
11:45-12:30	Site Visit Team Meeting	Site Visitors
12:30-1:30	Lunch	Tumaini Restaurant
1:30-3:30	Sustainability Discussions	Provost
3:30-4:30	Debrief	All
4:30	Site visit team leaves KCMC	