

SAMSS Site Visit Report

Makarere University College of Health Sciences Makarere University, Kampala, Uganda



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Contents

	PAGE
Acronyms	3
Findings	5
Background and General Presentation	8
Overview of Medical Education System	12
Capacity Building	26
Retention	34
Conclusion	41
Appendix 1: Design and Structure of the Curriculum	42
Appendix 2: Graduate Profile and Learning Outcomes	45
Appendix 3: Curriculum Implementation Structure	48
Appendix 4: Assessment	54
Appendix 5: Terms of Reference for Task Forces	55
Appendix 6: Uganda HRH Strategic Plan	57
Appendix 7: Key Informant Interviewees.....	58

Acronyms

Cl.H	Clinical Hours
COBES	Community-Based Education and Service
ENT	Ear, Nose and Throat
FOM	Faculty of Medicine
HC	Health Center
HIV/AIDS	Human Immune-deficiency Virus/ Acquired Immune Deficiency Syndrome
HQ	Headquarters
HRH	Human Resources for Health
ICT	Information and Communication Technologies
IDI	Infectious Diseases Institute
IPA	Individualized Process Assessment
LH	Lecture Hours
MEQ	Modified Essay Question
MMed	Masters in Medicine
MOE	Ministry of Education and Sports
MOH	Ministry of Health
MU	Makerere University
MUCHS	Makerere University College of Health Sciences
NGO	Non-Governmental Organization
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
PBL	Problem-based Learning
PH	Practical Hours
QA	Quality Assurance
SBS	School of Biomedical Sciences
SH	Self-study Hours
SOM	School of Medicine
SPICES	Student-centered, Problem-based, Integrated, Community-oriented, Elective, Systematic
TB	Tuberculosis
TH	Tutorial Hours
UCSF	University of California, San Francisco
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

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The SAMSS site visit team is also very grateful to all the key informant interviewees who participated in the SAMSS site visit interview process



Findings

1. **The College of Health Sciences has a group of excellent medical educators who act as innovation leaders in the supportive educational environment of the University.**

Makerere College of Health Sciences teaching faculty includes a dynamic group of medical educators who have led the University in learner-centered curricular reform. While housed in a venerable institution of higher learning, the College of Health Sciences and Makerere University itself do not fit the norm of a staid old institution resting on its laurels. Rather, Makerere continues to prove itself to take a cutting edge, socially responsible approach to education. The latest University strategic plan includes moving all faculties and programmes to a learner-centered approach to education with a component of community-based service learning.

2. **Curricular change has recently been instituted that addresses Uganda's needs.**

In its search for a medical education that is relevant and responsive, Makerere has implemented a globally recognized approach to medical education with adaptation to meet the healthcare needs of Uganda.

3. **In the implementation of the new curriculum the academic staff has shown adaptability, flexibility and academic rigor.**

These values are reflected in the modification of the curriculum to meet learner needs given resource constraints recognized after implementation. The College has established Task Forces to address continued evaluation, modification and study of the impact of its learner-centered curriculum.

4. **Recruitment and retention of faculty is challenging given the workload demand, reimbursement of faculty, and limited opportunities for promotion.**

The College strategic plan for 2010 and beyond is addressing some of these issues.

5. **The problem-based learning curriculum is a labor-intensive method of teaching that provides learners with critical thinking skills, sometimes at the sacrifice of time of teaching basic science and clinical skills.**

Students value the emphasis on critical thinking and lifelong learning in the learner-centered curriculum; recent graduates of the program articulate this very clearly. The relative lack of skill in procedures and basic science such as anatomy noted as they enter clinical years of medical school is a point of discussion; a new clinical skills training lab under construction will address some of this concern. With current faculty numbers, the small tutorial method that PBL requires is very challenging.

6. **The Community-based education curriculum is designed for maximal exposure to the health care needs and system of care in the rural underserved communities of Uganda.**

The design of the COBES curriculum provides students with goal-oriented community-based learning through substantial and repeated exposure to patients in underserved rural communities. It is not without its challenges in these early years of its existence in student housing and transportation costs as well as supervision at

sites; but has had a positive impact on medical students' perceptions of need in the rural areas.

7. **Interdisciplinary education is a unique feature of the curricular design.**
The newly formed College of Health Sciences at Makerere made up of the Schools of Medicine, Biomedical Sciences, Health Sciences and Public Health provides learner-centered education in interdisciplinary groups of teachers and students. In years 1-3, these groups study clinically-applied basic science through problem-based learning on the campus in Kampala and travel together to community sites for practical and public health education in rural areas throughout the country. This early and repeated exposure to an interdisciplinary team approach to health care will likely prepare them for their roles in teams throughout the healthcare system in Uganda.
8. **Resourceful restructuring of health training into a College of Health Sciences provides opportunities, emphasizing team work in health care.**
In a move that could well serve as a model for other sites for health training throughout Africa and the world, Makerere has restructured its Faculty of Medicine into the School of Biomedical Sciences, the School of Medicine, and the School of Allied Health and combined with the School of Public Health to create a semi-autonomous College of Health Sciences. This shift has signaled the expansion of the educational offerings, to include a wider spectrum of undergraduate health professional programmes, and the opportunity to develop and implement multi-professional undergraduate programmes, in preparation for practice in the health sector, where team work is the norm. In addition, each of the four schools contributes to all of the undergraduate programmes, providing students with teachers from a wide range of disciplines and health professions.
9. **The College has yet to fully tap the educational and research potential provided by the extensive presence of research and clinical partners on its campus.**
Makerere has been very savvy to date in forging ahead with innovation while enduring budget cuts from MOE, mostly through international collaborations and NGOs in Uganda. Continued strategic development and better coordination of these collaborations could leverage the school's international reputation to build greater support for faculty development, research and retention.
10. **Enrollment has stagnated because of financial constraints.**
Considerable financial constraints have prevented the College from much-needed expansion in enrolment numbers. The School of Medicine has firmly refused increased numbers of students until it can support adequate numbers of faculty and the expansion in infrastructure (equipment, library, computer facilities, and classroom space) required to maintain its high educational standards.
11. **Health Care Systems issues adversely affect graduates' motivation to join health care work force.**

Decentralization of health care delivery as well as involvement of multiple, poorly led and coordinated regulatory and oversight entities has led to a system that is inadequately responsive and unwelcoming to newly graduating doctors

Background and General Presentation

Country Profile

The Republic of Uganda is a landlocked country of 32.4 million people in East Africa. The colonial boundaries created by Britain to delimit Uganda grouped together a wide range of ethnic groups with different political systems and cultures, preventing the development of a cohesive political community when independence was achieved in 1962. Following the brutal dictatorial regime of Idi Amin (1971-79) and then Milton Obote (1980-85), a period of relative stability and economic growth ensued under the leadership of the current President Yoweri Museveni.

The present political and administrative organization of the country includes 80 official government districts; diverse cultural identity is still strong with distinct kingdoms still recognized in many regions. There is no majority ethnic group. While English became the official language after independence, forty languages are regularly and currently in use in the country. The population is very young and predominantly rural, with a median age of 15 years; 80% of Ugandans live in rural areas.

Main/Principal Health Indicators

The reconstructive efforts of recent years to address the deterioration brought by 2 decades of civil unrest have brought progress with documented gains in most health indices in the past 5 years. Communicable diseases continue to be the leading cause of morbidity and mortality, with chronic diseases such as hypertension, cardiovascular disease and cancer on the rise.

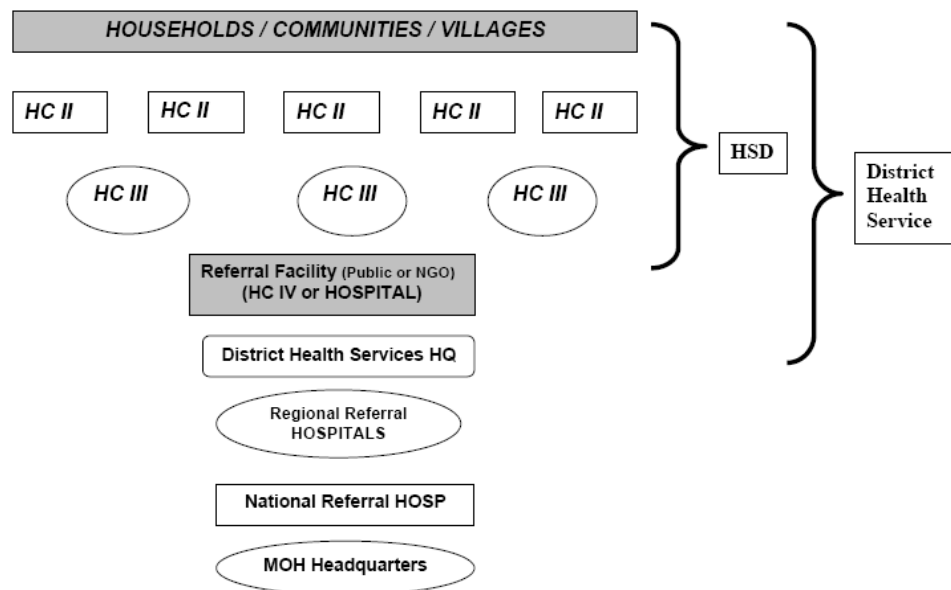
Despite gains, the health of Ugandans is poor. Uganda has an infant mortality rate of 81 deaths per 1,000 live births, a maternal mortality rate of 435 per 100,000 live births, and an adult HIV prevalence of 4.1 %, a rate that has stabilized in recent years. The top five causes of death are HIV/AIDS, lower respiratory infections, malaria, diarrheal diseases, and perinatal conditions. Seventy percent of overall child mortality is due to malaria, acute respiratory infection, diarrhea and malnutrition. Life expectancy has increased from 45 years in 2003 to 52 years in 2008. Furthermore, it is estimated that 70% of the disease burden in Uganda can be prevented through health promotion and disease prevention.¹

Health System Profile

¹ NATIONAL HEALTH POLICY: Reducing poverty through promoting people's health

Health care facilities

Government health care services are provided through the tiered network of facilities depicted below. Facilities are severely understaffed and often lack necessary basic equipment. Referral facilities (HC IV) are the first level staffed by a doctor with a target population served of 100,000.²



The Ministry of Health provides slightly over half of the country's health care. Public health services are decentralized with district jurisdiction over all staffing below the district hospital level. The central MOH has responsibility for regional and national referral hospitals. The private system includes Not for Profit and For Profit organizations, private health practitioners, and traditional and complementary medicine practitioners. Sixty percent of Uganda's population seeks health care from traditional and complementary medicine practitioners.³ Over one quarter of the population lives more than 5 km from the nearest health facility, presenting a barrier to access to allopathic health care.

Human Resources for Health

Uganda's healthcare workforce shortage, maldistribution, and working conditions are dire. The country has one doctor, nurse or midwife per 1818 inhabitants, placing Uganda among the 57 countries worldwide with a critical shortage of health service

² Planning Department, Ministry of Health 2009

³ Ministry of Health (2009) "National Health Policy: Reducing poverty through promoting people's health [draft].

https://www.health.go.ug//index.php?option=com_content&view=article&id=66&Itemid=85

providers.⁴ For physicians, specifically, there is one doctor per 8,373 Ugandans.⁵ (12 per 100,000) In the rural areas, these ratios are even worse. Government figures from 2009 report that 70% of doctors, 80% of pharmacists and 40% of nurses and midwives are urban-based, serving only 12-16% of the population¹.

Only slightly over one half of the approved positions at existing health facilities are currently filled, and of those filled there is an estimated 40% physician absenteeism rate¹. The decentralization of services described above necessitates that positions below the level of regional hospitals are filled at the district level in a cumbersome, slow system of hiring with no national coordination. Living accommodations for health workers in the districts are poor; salaries are low and often go unpaid for months. Currently, mechanisms for linking health service requirements (skills, cadres, etc) to education and training outputs do not exist.⁶ Training of medical doctors and other health workers is governed by multiple institutions (MOH, MOE, a variety of training institutions, Professional Councils) which are not coordinated; in fact, often decisions made by one sector negatively impact the others. As the population has grown in the last ten years, there has been no commensurate increase in medical school enrolment.

Education System and Faculty of Medicine Profile

The government of Uganda has dedicated resources to universal primary and secondary education in the past decade, creating some constraints on financial resources for higher education. Resource allocation is determined by recommendations from the Ministry of Education and Sports provided to the Ministry of Finance. At Makerere University, a public institution, funds are transferred *en bloc* to the Vice Chancellor's office where they are then distributed among the Faculties and Colleges of the University. There is no formula to determine distribution of those funds, but the amount is shrinking; in recent years, approximately 30% of the budget submitted from the School of Medicine to the Vice Chancellor's office has been approved, reflecting the financial realities for all of higher education. These funds pay for overhead, administrative and teaching staff salaries.

To address its constrained resources and large number of faculties, schools, and institutions, the University of Makerere elected to move toward a more efficient and effective administrative structure. To that end, it opted to form semi-autonomous constituent Colleges comprised of their own faculties and schools. Health training

⁴ World Health Report, 2006

⁵ Health Cadre Rationalization Study, MOH Uganda, September 2007

⁶The Republic of Uganda, The Uganda Human Resources for Health Strategic Plan 2005 – 2020; January 2009 (Consultant: Dr. Joseph Herman Kyabaggu)

programs led the way when, in 2008, the College of Health Sciences was created out of the School of Public Health and the Faculty of Medicine, which was then reorganized into three Schools: Medicine, Health Sciences, and Biomedical Sciences.

Competition for admission to medical school is steep. Only students with the highest scores on qualifying examinations at the completion of secondary education gain admission to medical school. In addition to Makerere University, there are now two other public and one private medical school in the country. A third public medical school is scheduled to open in 2010. With about 120 graduates in each class, Makerere School of Medicine supplies over half of the new physicians trained in the country. All medical schools have a five year curriculum which confers a Bachelor of Medicine and Bachelor of Surgery degree. Qualifying examinations are taken at the end of fifth year, after which students may apply for internships at a site of their choosing. There is no required service following internship year.

The Ministry of Health provides scholarships for the majority of students enrolled in health training programs. At Makerere 90 of the 120 students receive MOH scholarships; the remainder of the pupils, some of whom are from neighboring African countries, pay for their education privately. Tuition charged does not cover expenses incurred by MUCHS. Other revenue for the College comes from grants.

Regulatory Councils

All higher education is to be accredited through the recently formed Council on Higher Education. When established in 2003, the Council took on the task of setting standards for accreditation for all tertiary programs and schools. In medicine, as in other fields, this was done through consultation with experts in the field both within the country and internationally. All of the 1088 existing institutions and programs in Uganda were given provisional accreditation pending full review as the Council began the work of applying its new standards to each institution through rigorous review of documents and site visits. There are two levels of accreditation: licensed and chartered. A chartered institution meets the highest internationally recognized standards for higher education. Makerere University has engaged in the first steps of this formal accreditation process, and is well-positioned having set its own high standards through its Task Force on Quality Assurance in education.

The Council on Medical and Dental Practitioners provides licensing for all graduating physicians and interacts closely with the Council on Higher Education. Both report to the Ministry of Education and Sports.

Overview of Medical Education System

Makerere University is the oldest of three public universities offering health sciences education in Uganda, the other two being Mbarara in the west, and Gulu in the far north. It has a proud reputation of excellence in Africa, and of its alumni holding high office in both the health and higher education sectors across Africa, and globally.

For most of the 85 years since its establishment in 1924, Makerere Medical School pursued a pattern of academic practice which had been laid down by its founders, and which followed the tradition of most medical schools across the world. In first few decades, the delivery of the five-year undergraduate medical curriculum was characterized by mostly didactic methods, complemented by clinical bedside teaching in the Kampala-based Mulago Teaching Hospital in the later clinical years.

Over its lifetime, the school has maintained a reputation for excellence of the clinical service delivered by its staff, and for its biomedical and public health research, focused on national and regional health priorities. To this end, at a post graduate level, educational offerings have also included masters and doctoral programmes in clinical medicine, basic science and public health.

Following a period of decline from the late 1970s to the mid-80s, Makerere University embarked on a period of recovery, providing an opportunity for the revitalization of the Faculty of Medicine⁷.

*Its **vision** is to be a centre for academic and health service excellence, and its **mission** states:*

“We are dedicated to improving the health of the people of Uganda and beyond, and promoting health equity by providing quality health education, research and health services. We achieve this by enhancing capacity and participation of stakeholders; strengthening systems and partnerships; and harnessing the power of new sciences and technology so as to build and sustain excellence and relevance.”

Teaching and learning

In the last few years, there have been several drivers for change in the education of health professionals at Makerere. These have included changes in the requirements of the national health system; demands for the adoption of new approaches in

⁷ Sewankambo, Nelson: Presentation at meeting of SAMSS Advisory Team, January 2009

health sciences education; opportunities for use of new technologies; the changing role of the health professional in general, and in Uganda specifically; and an increased requirement for the university and the faculty for social accountability and responsiveness⁸.

The Faculty has responded to these realities by implementing two major changes, each of which has had significant impact on the educational programs.

The first change has been the reorganization of the Faculty, described above, with the establishment of the College of Health Sciences (Figure 2). This shift has signaled the expansion of the educational offerings, to include a wider spectrum of undergraduate health professional programs, and the opportunity to develop and implement multi-professional undergraduate programs, in preparation for practice in the health sector, where team work is the norm. In addition, each of the four schools contributes to all of the undergraduate programs, providing students with teachers from a wide range of disciplines and health professions.

The second change has been the adoption of an undergraduate curriculum which is substantially and significantly different from its predecessor in its educational strategy; sequence and organization; content; and its learning outcomes. While this move has been aligned with global shifts in the educational practice of health sciences institutions, and follows some international approaches in this regard, efforts have also been made to bring the evidence of national need to bear on the new design of the curriculum.

Figure 2

MAKERERE UNIVERSITY COLLEGE OF HEALTH SCIENCES (MUCHS)			
School of Biomedical Sciences	School of Medicine	School of Health Sciences	School of Public Health
Anatomy	Family Medicine	Nursing	Disease Control & Environmental Health
Biochemistry	Internal Medicine	Pharmacy	Epidemiology & Biostatistics
Microbiology	Obstetrics & Gynecology	Dentistry	Community Health & Behavioral Sciences
Pathology	Pediatrics & Child Health	Allied Health Sciences	Health Policy & Management
Pharmacology & Therapeutics	Surgery		Regional Centre for Quality of Health Care
Physiology	Anesthesia		
Medical Illustration	Psychiatry		
	Orthopedics		
	Ophthalmology		

⁸ Ibid

	Otolaryngology		
	Radiology & Radiotherapy		
	Child Health & Development Centre		
	Clinical Epidemiology Unit		

Curriculum

The following ***principles and values*** have guided the development, implementation and revision of the current curriculum:

- learning to learn
- life-long learning skills
- problem solving skills
- curriculum integration
- relevancy
- partnerships with stakeholders⁹

Educational Strategy and Curricular Design

The College and the School of Medicine have adopted a SPICES model for their undergraduate medical education curriculum: Student-centered; Problem-based; Integrated; Community-oriented; Electives; and Systematic¹⁰. The design and structure of the curriculum are described in detail in Appendix 1. Both clinical and community exposure begin in the first year and carry through the five years of training. In the first three years, the learner-centered curriculum is taught in small, interdisciplinary groups with a problem-based learning (PBL) approach. The Community Based Education and Service (COBES) curriculum is a goal-directed experience that combines public health and clinical work in rural settings throughout Uganda for 3-5 weeks each year. For both PBL and COBES, learning teams are comprised of students from the all Schools of the College, providing a unique interdisciplinary approach to learning. Student to faculty facilitator ratios of 10 to 1 are targeted although this may at times be exceeded given the large, stable number of students and variable facilitator availability. To accommodate both of these strategies, some components of the curriculum such as forensic medicine were dropped and time was taken out of each of the clinical clerkships in the fifth year of training in particular.

⁹ Ibid

¹⁰ Harden et al 1984. Medical Education 18: 284-297)

Problem-based Learning (PBL)

Faculty from all Schools and departments contribute to the writing and teaching of cases for PBL from year one. The intention is to provide cases that follow the overall curricular design. Thus, cases are contextual and holistic, rather than focusing on an organ system or disease process. Horizontal integration of the material breaks down boundaries among disciplines; each case may include principles from several of the basic sciences. The cases advance in complexity in line with the vertical integration of the learning material, ensuring that all levels of the learning spiral, with increasing clinical medicine application and less basic science as students advance from Year 1 to Year 5. There is a skills training component designed to complement each case that addresses skills ranging from doctor-patient communication to hands-on practical skills such as taking vital signs and starting intravenous drips. This component of the curriculum will be implemented in full with the anticipated completion of a skills training center under construction as of the writing of this report.

This teaching strategy is a major paradigm shift for faculty, and one that requires considerable faculty time, training, and coordination. A core group of faculty received training overseas in its development, bringing it back for actualization in a “train the trainers” model. There is a PBL Task Force made up of faculty from basic sciences and clinical sciences departments that oversees its implementation and adaptation, but there is no administrative staff specifically tasked with its coordination. Now in its fifth year, the curriculum has been modified from its original “pure PBL” to include more didactic presentations of basic science and epidemiology, as well as orientation sessions at the start of modules.

Community-based education and service (COBES)

A feasibility study undertaken in 2000 established that important missing elements in the learning process for students were the opportunity to do research, training in communication and leadership skills, and a better knowledge of the social determinants of disease. This result, combined with the realities of disease and limited service in rural areas, led to the Faculty initiating COBES as a channel for the students to exercise social responsibility through service, while at the same time learning about health-seeking behaviors, the social and economic context of rural life, the value of strategic partnerships and community participation.

On the basis of random allocation, and under the supervision of a faculty-linked tutor, students spend dedicated periods of time in a rural site every year throughout their training. The placement occurs in multi-professional teams, there is a structured program of orientation, activities and learning, and assessment is conducted on the basis of a weekly report, a group report and a summative assessment.

Assuring administrative and educational oversight of this ambitious program is challenging, given the large number and remote location of sites. The uneven

supervision at each site, difficulties in accessing learning materials, and cost to students (who are allocated less than 50 US cents per day) are all being addressed. There is no dedicated administrative support for the COBES program centrally, although a Task Force made up of faculty members oversees and adjusts the program as feedback is received from students and sites.

The experience of COBES in the College has been noted by the greater University leadership, and consideration is being given to adopting the approach appropriately in other disciplines across the university.

Student and faculty response to curriculum

While students cite the uneven implementation and administrative problems mentioned above in both PBL and COBES, recent graduates of the program and current students are overwhelmingly enthusiastic about their education. They see the PBL approach as providing them with critical thinking and lifelong learning skills. The COBES experience is cited as arming them with leadership and management skills, understanding of the realities of the health care system of Uganda, and an appreciation of the necessity and rewards of providing service in underserved rural communities.

The Makerere academic staff also note the lack of administrative and material infrastructure required for ideal implementation of the new curriculum, but maintain high levels of enthusiasm for the methods and their results. Faculty view students as more confident and assertive in their critical thinking skills, and in knowing how to seek answers to questions than their predecessors. Concerns among students and faculty regarding the extent to which students are adequately prepared with clinical skills for their fifth year clinical rotations in particular were cited most forcefully by the clinician educators at Mulago Hospital who also feel that the shortened time in clinical rotations provides inadequate exposure time to the learning opportunities that arise from clerking patients. Clinicians also raise concerns that students lack essential procedural skills by their fifth year that they will need to cope in an internship environment in which they might have limited clinical support and supervision. While feeling that their problem-solving skills are superior to graduates of other programs with whom they work, recent graduates (interns at Mulago) confirmed this shortcoming in procedural skills. This has been addressed to some extent, with provision of a refurbished space for a skills-learning facility, although its completion will be reliant on the availability of donor funds.

Another challenge is to ensure that time allocated is utilized maximally by the clinicians for clinical teaching, with an emphasis on those neglected areas seen as essential for generalist practice. This last is highlighted against the background of students' concerns about "signature-based learning", a process through which their clinical learning is documented in logs for which their limited contact with clinical teachers may mean only the acquisition of a signature, to indicate that the requirement has been met.

Students cited that strong individual motivation is a key to successful learning both in the PBL small group learning and during clinical rotations.

“Medicine is not just about the equipment that you have, but about people and their needs.”

“We have a longer time to see the patient and can do follow-up, and then we meet out patients again in the health facility, in their homes, and even in the social places where we go to relax.”

Students, commenting on the value of the COBES experience

“Our goal is to create the right providers, who will work in the right place, with the right tools, and the right skills to be there for the community at the right time.”

COBES Course Director

“PBL takes students away from hands-on learning on patients.”

Clinician, commenting on the use of curricular time for PBL

Learning outcomes

The global shift in the approach of health sciences institutions – from a focus on the education process, to a focus on its product, the graduating doctor – has taken firm root in Uganda and at Makerere. The need to strengthen the vital link between the producers of human resources for health, the School of Health Sciences, and the users of the products—Ugandans and their health system—is recognized as being a fundamental part of the various efforts to strengthen the fragile health system. The desired profile of graduating physicians and specific learning outcomes are presented in Appendix 2.

Ensuring a better match between the graduates and the health system will be informed by a new study, conducted in collaboration with Johns Hopkins University, which will assess the needs of the health sector, and use this assessment to inform improved academic practice and programmes, thereby ensuring greater impact on health systems.

Content, sequence and organization of the curriculum

The implementation structure of the curriculum is attached, in Appendix 3, demonstrating repeated exposures to clinical practice.

Use of technology

Students have access to more than 200 computers which are in the library as well as 4 separately located computer labs. In the first several yrs of the curricular innovation, each student was provided with a PDA. Students report limited training in computer literacy. Students access the internet for current information in an environment of scarce resources, where textbooks are outdated. They also use social networking sites in building student organizations, and facilitating their

engagement with their international counterparts, in particular, in the planning of an international student conference on trauma, to be held early in next year.

To address the clear need for ICT to promote communication and access to learning materials in the community-based (COBES) sites, the Director of the program has been innovative in seeking support for addressing this need, and with the acquisition of a special device for downloading information – an eGranary (digital library).

The construction of a video-conferencing facility in a refurbished lecture theatre holds promise for sharing of lectures and seminars with colleagues across the world, and could also serve as a means for connecting students with their counterparts, to share conferences and meetings of their own organizations.

Sites of delivery

Currently, two types of teaching and learning sites are used – the Mulago Teaching Hospital, based in Kampala, adjacent to the College of Health Sciences; and community sites used in the Community Based Education and Service (COBES) program.

Mulago Hospital is a large referral hospital, with 1,300 beds and a huge patient mix. The extent of the overload on the services was evident in the February 2009 visit of the SAMSS Advisory Committee, where patients were seen to be accommodated in beds in close proximity to one another, and also on the floor in wards, and in corridors.

The hospital is the primary site for the teaching all health sciences students, while the requirement of the health service is for the hospital to serve as one of two national tertiary and quaternary referral centers (The other is the national psychiatric facility). In reality, patients who would ordinarily be managed at lower levels of the health care system also seek care at Mulago. Although this provides students and their teachers with a wide “case mix” appropriate to their learning, it also puts strain on the staff workload.

Education program

Governance, management and administration

The College of Health Sciences was established in 2008, as formally adopted by the University in August of this year.

The change from two Schools – one of Medicine and one of Public Health - to a confederation of four Schools, convened, led and managed under the umbrella of the College, and led by its Principal, Professor Sewankambo, has brought many opportunities, but has also presented challenges. One of these challenges is delay in

the establishment of new governance structures, to replace those which existed under the previous dispensation, and have now become defunct.

The management and administration processes are also in flux, in a hybrid model of centralization, with some decentralization of executive management and authority. It is the university's intention to grant greater authority and autonomy to the principal, at the level of the College, but this change has not yet been affected.

In the transition period, the following are being established in respect of education management: a curriculum committee and an education committee; designated staff will be appointed with responsibility for leadership and developing new terms of reference for each.

Oversight and management of the curriculum implementation and the academic programmes are being maintained through eight Task Forces and through a weekly meeting of Task Force leaders and all other interested parties, convened and led by the Principal. Task Forces include: PBL, COBES, Quality Assurance, Assessment, Research, Staff Development, Skills Training and Information and Computer Technology. Task Forces are also charged with coordinating medical education research in their designated areas. Appendix 5 has the terms of reference for the Task Forces.

Quality assurance, evaluation and assessment

Quality assurance here refers to the quality of education: teaching, learning, and evaluation. The College has led the University in establishing quality assurance as an essential component of good academic practice, and has also led the way in developing a framework and guidelines for the implementation of quality assurance structures, processes and practices. The imminent adoption of the quality assurance framework and guidelines will draw further attention to the priority for monitoring and evaluation of the program and its curriculum. Such processes will include clear directions for both staff and student roles within the quality assurance system.

Methods of student assessment include: continuous assessment during all rotations, multiple choice question examinations, Objective Structured Clinical Examinations (OSCE) and practical examinations as well as log books. The College's standards call for feedback for students at the end of each learning block. Students report that, as in many busy institutions, this doesn't happen regularly and that the log books lead to "signature-based learning"; that is, they are not accurate reflections of experience or ability. The intentions for introduction of new assessment methods integrated with the requirements of the revised curriculum has been slow, and constrained by lack of resources. Addressing this challenge remains high on the agenda of the curriculum planners; there is a dedicated Task Force in Assessments to ensure progress.

Methods of assessment are listed in Appendix 4.

Students

Recruitment, admissions and size of student intake

There is no active recruitment policy in place for attracting students to Makerere. Students apply in vast numbers, and only 120 students are enrolled, a number which has been almost static for over thirty years.

The admission policy is applied in the following way:

- The top-scoring 90 students are admitted strictly on a merit ranking basis, and are all sponsored by the government.
- The 20 who score just below these top 90 are offered places private, fee-paying students. Most of these are described as coming from areas and schools more distant from Kampala, where secondary schools are not always up to par with those in the capital.
- The last 10 places are allocated to international fee-paying students from the region, who will return to their countries of origin upon graduation.

Female students are given extra points to ensure more gender equity in line with gender mainstreaming policy of the University. There is also a female scholarship support scheme for women from disadvantaged backgrounds once they are admitted through the fee-paying scheme.

There is no dedicated strategy for recruiting students from rural and underserved areas, nor is there any obligation for government-sponsored students to repay their financial assistance by committing to service to the government.

Academic support and counseling

There is no systematic academic or counseling support available to students. In the former system, a deputy dean of students was charged with looking after the welfare of students, but this has yet to be reinstated. In the absence of a faculty support system, students provide peer support, and have a system of referral for those students who are physically ill, when needed.

Students have also explored the possibility of introducing a mentoring system, through which academic staff would provide mentoring to students in a structured way. This proposal has been presented to the academic board of the College, and is under consideration.

Representation

Students are represented in each of the Task Forces overseeing the curriculum implementation, as well as on the academic board.

In meetings with the SAMSS team students showed a concerned and mature leadership committed to the ideals of the Faculty, and articulated their awareness of

the expectations of society for their potential to contribute to the country's development.

Postgraduate training

The School of Medicine has well established 3-4 year MMed programs in all clinical departments. The Department of Internal Medicine also houses an MMed program in Clinical Epidemiology and Biostatistics, whilst the Department of Surgery houses programs in Urology, Neurosurgery, Pediatric and Plastic Surgery. The MMed programs are directed at producing specialists that cater to the healthcare and health education needs of the country; 107 residents enrolled in 2008. Additionally, there are ten students undertaking a 9-month Postgraduate Diploma program. Some residents in these fee-paying programs are sponsored by the Ugandan Ministry of Health or the District Health Councils but a significant number are self-sponsored. MMed residents participate in the teaching and training of undergraduate medical students and their juniors in the MMed program as a part of their service provision at Mulago Hospital.

The university has a small but active PhD program, with several candidates enrolled. Several "sandwich" programs are well-established whereby graduates of the School of Medicine seek advanced training outside of Uganda in both South-South and South-North exchanges. Two joint programs support this; one with Karolinska and one with Bergen. Most return to Uganda after completing this advanced training. In fact, when the SAMSS team interviewed a group of recently graduated interns, all who expressed interest in participating in such a program quite clearly claimed that they would return to Uganda to serve with their new skills., The Sewankambo Scholars and Infectious Diseases Fellows Program housed at the Infectious Disease Institute was recently established to promote PhD training on campus. Five Sewankambo Scholars are required to complete two successful grant applications within five years. This serves to increase research capacity and encourage retention of faculty.

Teaching faculty (staff)

Almost all teaching faculty completed their training at Makerere. Since much of the curriculum is taught by the entire teaching faculty of the College (from each of the four disciplines), staffing at all four schools has an impact on undergraduate medical education.

Numbers and distribution by academic rank

Of available faculty positions, only one fourth at the level of professor are filled. (See table 1, below) Lecturers, assistant lecturers and teaching assistants make up two thirds of the teaching faculty, while there remain a large number of unfilled positions at higher ranks. A graduate degree, Masters in Medicine or PhD, is required to achieve the rank of lecturer. While there are large numbers of unfilled

positions, however, Mulago and Butabika hospital clinical faculty bear teaching as well as research responsibilities. Hospice Africa Uganda provides training in palliative care.

Table 1: Academic staff positions filled/positions available as of February 2009

School	Prof.	Assoc. Prof	Senior Lecturer	Lecturer	Assistant Lecturer	Teaching Assistant	Total
Biomedical Sciences	2/6	6/5	5/13	15/24	11/20	10/10	49/78
Medicine	5/20	10/15	19/35	37/55	17/52	20/25	108/202
Health Sciences	1/3	0/3	3/7	17/19	18/12	12/6	51/50
Public Health	1/6	5/6	5/12	6/15	9/15	3/5	29/59
Total	9/35 (26%)	21/29 (76%)	32/67 (48%)	75/113 (66%)	53/99 (54%)	45/46 (98%)	235/389

Teacher roles and workload

While some of the teaching faculty members have been supported in gaining pedagogical skills by participation in medical education training programs and workshops held for staff training at Makerere, there is currently no regular program of staff development. The College includes such training in its Strategic Plan for 2009/10.

Educational resources¹¹

Physical facilities

Buildings include the lecture and tutorial rooms, laboratories, offices and the library, all of which were built before 1975. Newer building on the campus and in its precinct were built with donor funds, for specific purposes, most of which relate to research. There are dormitories for students “across the valley” on the main

¹¹ Derived from College of Health Sciences Strategic Plan 2009 - 2014

campus about ½ mile (0.8km) away. Those students on night duty stay in housing provided closer to Mulago Hospital on the hill where the College resides.

Laboratory and clinical training resources

The College has basic laboratory and teaching equipment, most of which was acquired before 2005. Labs have been upgraded recently with funding from partner organizations involved in research on the campus.

Information technology

Basic ICT facilities and hardware exist, with most buildings networked with internet connectivity. Insufficient bandwidth is a problem, but the imminent connection to the newly laid fiber optic cable holds promise of substantial increase in bandwidth, at no additional cost¹².

Linkages

Internal Linkages

College of Health Sciences: The School of Medicine benefits in terms of academic and financial resources from its collaboration with the other three schools in the College.

University of Makerere: The College of Health Sciences has gained recognition as a leader in educational innovation on the campus of the University of Makerere. While that has won it some autonomy, it also benefits from its position as part of well-established institution of higher learning. For example, while the College led the way in establishing its own Quality Assurance standards for teaching, learning and evaluation, the University is now at that step and may well provide resources to move forward with implementation. The central University QA office has engaged in collaborative research with other institutions on the continent and in Europe on assessment of staff satisfaction and development of common standards for universities in East Africa. In addition, the central University QA office is examining the introduction of a policy to promote education scholarship, providing perhaps the need career advancement path for those in the College who are actively engaged in educational innovation and research into its efficacy.

COBES: While part of the curriculum itself, this community-based program has served as a hub for attracting internal and external partners. The Infectious Diseases Institute (IDI), Child Health and Development Center, Baylor, and other entities described elsewhere in this report have provided support to COBES sites in infrastructure and expertise. The Mulago-Mbarara Joint AIDS Program (supported

¹² Personal communication with Dean: Computer Science and IT, 15 October 2009

by PEPFAR) supports student learning in the community. COBES has also drawn support for students and their projects from local and international non-profits.

Infectious Diseases Institute and other campus-based research and service collaboratives: Housed centrally on the College campus, the IDI is one of several specialty-based institutes that provide opportunities for collaboration in research as well as teaching for medical students. It houses the post-graduate Sewankambo Scholars and Infectious Diseases Fellows Program. IDI also provides infrastructure support at learning sites off campus in the course of its research, providing a direct benefit to patients and the students who go to these sites for COBES. Such arrangements also prevail with Baylor College of Medicine Children's Foundation Uganda, an extension of the Baylor International Pediatrics AIDS Initiative. Johns Hopkins, Walter Reed, and Yale Universities are among a considerable number of others who have a strong presence on campus. While medical students' direct exposure to the work of these research institutes on campus is limited, they do benefit from the resources the organizations bring to the campus.

Ministry of Health and Mulago Hospital: In addition to providing scholarships for the majority of medical students, the MoH also employs 75% of the physicians at Makerere's primary teaching hospital Mulago Hospital, the remainder being Makerere academic staff. While the MoH-employed physicians at Mulago do not have faculty appointments, the Ministry requires that all physicians employed there engage in teaching. This dichotomy in appointment and reporting structure has proved somewhat problematic in implementation of the curricular changes in recent years, as the majority of clinical teachers are not directly involved in curriculum design, development, and decision-making. The Ministry also runs the **Uganda Heart Institute** on the campus of the College.

The Ministry has supported the establishment of the new Department of Pharmacology, has provided some scholarships for post-graduate training, and has supported the construction of the building for the Department of Pharmacy. Through the Ministry's encouragement, some of the District offices where COBES training takes place have agreed to contribute funds to the support of the program by providing housing for students, for example.

External Linkages

There are multiple foreign academic and non-profit linkages at Makerere, many with a long history on the campus. These linkages provide extensive research capability, with over 30 international and some local collaborations. Some partners such as Johns Hopkins University, Baylor College of Medicine, Walter Reed Hospital and Yale University have a large visible presence on campus and provide some teaching at the undergraduate medical level. For the most part, however, undergraduate medical students are not involved in the research and services provided by these entities. Some of the non-profit partners have supported medical students in their community sites by providing financial support for transportation

or housing. They also support “sandwich” programs whereby students who complete their undergraduate medical education travel to the donor institution for further training before returning to Uganda to practice.

One current research collaboration involves medical education directly. With Johns Hopkins and donor funding, the College is conducting a needs assessment to examine how medical education at Makerere can better meet the healthcare needs of the country.

Uganda Cancer Institute provides the opportunity for additional resources for teaching, learning and research.

Key Points: Innovation

- a. **Achievements/Strengths** - Makerere University (MU) has built on its tradition of academic excellence by creating a learner-centered (PBL) curriculum with a substantive community component (COBES) that is horizontally and vertically integrated, team-based, and focused on needs of rural communities where 80% of Ugandans live. These groups study clinically-applied basic science through problem-based learning on the campus in Kampala and travel together to community sites for practical and public health education in rural areas throughout the country. This early and repeated exposure to an interdisciplinary team approach to health care which will likely prepare them for their roles in teams throughout the healthcare system in Uganda.
- b. **Challenges/weaknesses** - PBL is resource-intensive. Training faculty for their new role as facilitators is challenging. Students and faculty also note tradeoffs such as decreased basic science knowledge (anatomy) and clinical skills due to reduced time in these areas. Quality of COBES sites and experiences is also highly variable.
- c. **Opportunities** - Training for PBL facilitators can serve dual role of leadership and faculty development with a clear rewards and recognition structure through MUCHS and University quality assurance programs. Coordination with the MOH to support education projects and students as part of the MOH strategic HRH plan could improve quality/consistency of COBES experience.

Finally, as fiber-optics become available in Uganda, partnerships with ICT-focused donors could increase technology on campus and at COBES sites.

Capacity Building

The Uganda Human Resources for Health Strategic Plan 2005 – 2020 states that **'there is a real health workforce crisis in Uganda'** and that this crisis is a major constraint to scaling up health care provision in the country. This supplement further acknowledges that as health workers are the most important component of any health system, capacity building of this resource is not an option but a necessity if future disaster is to be prevented. USAID's Capacity Project in its May 2007 Country Brief on Uganda declared an acute shortage of health workers in the country with staffing levels as low as 50% in certain types of personnel resulting in many parts of the country being undeserved. The HIV/AIDS epidemic has also taken its toll on health personnel. The combination of an insufficiency of trained health workers and mal-distribution of the available staff suggests that Uganda's human resources for health capacity is inadequate to meet the current and future health needs. As such, medical schools such as the Makerere College of Health Sciences are required and expected to double their production of all categories of health workers and to diversify their training programs (especially the training of mid-level cadres) in order to address this crisis.

With the above factors in consideration, the issue of capacity building at MUCHS was discussed at several of the meetings with the various stakeholders during the SAMSS site visit.

Capacity Building in the College of Health Sciences

The old Faculty of Medicine and the School of Public Health both had internationally recognized reputations for providing excellent medical education and for their clinical and public health research, drawing undergraduate and graduate students as well as numerous international research bodies and researchers. The College has continued to build on this foundation in several areas.

1. ***Teaching Resources:*** The four Schools that now compose the College (Medicine, Biomedical Sciences, Public Health and Health Sciences) have combined resources that exceed those inherited as the increased recognition given to the component disciplines has resulted in an expansion in the number of departments and thus teaching faculty and other staff. This expansion along with increased networking, cooperation and collaboration among the four schools has translated to a greater capacity within College

- than existed in the old Faculty of Medicine. Further, the joint use of existing facilities and resources (e.g. the basic science, pathology and computer laboratories, and the Medical Library) of the former institutions instead of the building or acquisition of new ones for the new schools has resulted in increased efficiency within the College.
2. **Pedagogical expertise:** MUCHS is also building the necessary capacity for its new PBL curriculum. To this end it sent six academic staff to Maastricht University to acquire the necessary skills to adapt and implement the curriculum review and change. Further, it empowered these staff members on their return by putting them in-charge of the various Task Forces that were established to implement, monitor and modify the change to the PBL curriculum. MUCHS also facilitated their role as change agents by recruiting other faculty into the Task Forces which have acted in a Training of Trainers model. The recruited teachers have acquired new skills and are now training a wider circle of colleagues on the PBL Curriculum.
 3. **Access to Information:** The Albert Cook Medical Library was established in by Dr Albert Cook in 1924 and is a branch of the Makerere University Library Services. It has increased its capacity by developing the following programs:
 - a. Partnerships with several institutions and organizations (Case Western Reserve University, Yale University, Kent, Surrey and Sussex Knowledge Services, Partnership in Health Institutions, Satellite and Healthnet, MacMaster University and Dreyfus Health Foundation). These partnerships have increased the Library's capacity through exchange visits, logistics support, donation of books, journals and CD-ROMS, provision and maintenance of equipment, wireless internet access, provision of PDAs, access to online databases (Medline, OVID etc) and electronic resources (MD Consult, Access Medicine etc).
 - b. The Health Information Outreach Program established in 2003. This program is directed at making the Library facilities available to rural health-workers thereby improving the quality of care in these areas. So far seven districts have been covered.
 - c. Publication of the Uganda Health Information Digest. This publication is a digest of relevant health information produced by a team of doctors and librarians. It is distributed periodically to all stakeholders in health care provision, including community leaders and policy makers in up-country areas.
 4. **Collaborations with partners:** The Infectious Diseases Institute (IDI) is a registered NGO that is owned by Makerere University. It is governed by an independent International Board of Directors and receives both public and private funds. The primary focus of the Institute is strengthening the care and treatment of patients with HIV/AIDS and other infectious diseases in Uganda and the region. Its activities are divided into: training; research; prevention, care and treatment; laboratory services; and outreach. The IDI's excellent facilities also provide training and research opportunities mainly for medical officers and allied health workers. Undergraduate health science students also rotate through the Institute for one week in their fifth year.

The facilities provided by the Institute to upscale investigations and diagnosis at several District Health Centers have also improved the standard of training medical students undertaking their COBES posting.

5. **Research:** The African Journal of Health Sciences is a peer-reviewed journal started with seed money from the Faculty of Medicine to ensure that the results of its research and clinical findings are available to the international community. The journal now receives articles from all over Africa and has gained a wide readership.
6. **Specialist training:** Recognizing the need for more specialists in disciplines that are particularly lacking, the Ministry of Health is considering promoting incentives to attract students into those areas. Resources for such a capacity-building step have not been identified.

Medical School Enrolment Capacity

MUCHS medical school enrolment capacity has only minimally increased from 110 students to 120 over the last 30 years. There is also a Bachelor of Dental Surgery program into which 16 students are enrolled yearly. During the same period the population of the country has increased from 18 million to 30 million. While the College is eager to increase enrolment, part of its new strategic plan, it will not do so until finances are secured to make the necessary infrastructure and staffing additions to ensure that education is not compromised.

The scholarship provided to 90 of the students in the medical school class provided by the MOH is worth approximately \$1000 and has been on the decline in recent years. The remaining students are private (fee-paying) students of which 20 are from Uganda and 10 from foreign countries (mainly neighboring Kenya). These private students pay \$1000 and \$1500 respectively which fees were below the estimated cost of training (not stated) and much less than the \$5000 paid by private medical students in Kenya. Even this higher tuition does not fully cover the cost of educating each student. The MUCHS has a total of 150 academic staff for its 1000 undergraduate students, a lecturer to student ratio of approximately 1:6.

In 2008, there were 121 new students enrolled in the School of Medicine. Counting those in other undergraduate programs, the total enrolment of new undergraduate students in the College is 275 for that academic year. Postgraduate Masters and PhD students in its four schools numbered 132 that year.

Faculty Capacity

Basic Science Faculty

School of Biomedical Sciences (SBS) i.e. Basic Science Faculty

The SBS has a shortage of basic science faculty, and this is particularly severe in the pre-clinical departments (see Table 1 on page 22). Despite this the School of Biomedical Sciences has built capacity to service all undergraduate programs and several of the Masters programs in the MUCHS.

Capacity Building in Basic Science Faculty

The following identifiable steps are being taken by the College to build capacity in these departments:

1. Joint appointments: are available between the basic science and clinical departments to encourage clinicians with the relevant skills to teach in the former departments.
2. Exposure to basic sciences in a clinically relevant context: Embedding basic science into the problems of the PBL curriculum from year one ensures that undergraduate students learn the clinical relevance of the basic sciences early in their training and may be more likely to attract them to those disciplines than with the previous traditional curriculum.
3. Promoting research with external partners: Several of the departments in SBS have research and professional linkage programs with international institutions which have resulted in capacity building in terms of equipment, funding, and institutional recognition.
4. Graduate program training: The College provides Masters of Science programs in Human Anatomy, Physiology, Molecular Biology, Pharmacology, Medical Illustration and Clinical Chemistry and attracts postgraduate research students from other faculties in the University (especially Veterinary Medicine), other African countries, and the UK and USA (especially from the collaborating international institutions). The SBS also runs the Master of Medicine Programs in Pathology, Microbiology and Forensic Pathology. The Master of Laboratory Medicine program is expected to start soon.
5. Research: The latest College Strategic Plan includes promoting research as one of its seven goals by developing and operationalizing a college-wide research agenda by 2010. To that aim, it plans research methodology training workshops. SBS academic staff are encouraged to seek and secure personal and collaborative grants. Publications from these would improve their chances of promotion and also attract highly qualified and motivated postgraduate students into their Masters programs with the hope that these students would then stay on as Faculty. This effort has already led to an increase in recruitment of academic staff into the Department of Anatomy.

Cross-Over and Visiting Faculty

Whilst it is possible for academic staff to cross over from one department or faculty to another at MUCHS, in practice this is rarely done. Indeed, in recent times only two faculty have crossed over, one from medicine to physiology and another from surgery to public health.

By virtue of its numerous research collaborative projects, MUCHS has several Visiting Faculty a year who participate in both undergraduate and postgraduate teaching activities. These activities contribute significantly to the quality of education available at MUCHS as well as encourage the local faculty to maintain their own skills at the cutting edge.

Clinical Faculty

The severe shortage of clinical science faculty at MUCHS is overcome in part by its partnership with the Mulago Hospital Consultants, who are employed by the Ministry of Health and are mandated to teach by their contract. The Hospital Consultants are in the majority. The overall Makerere: Mulago teaching faculty ratio is about 1:5 although the exact ratio varies from department to department. While they are busy clinicians, Mulago Consultants are enthusiastic about teaching both the undergraduate and postgraduate medical students, recognizing that the Makerere academic staff have the overall responsibility for directing the undergraduate health science education. Despite this, recruitment of both categories of teaching faculty is very slow due to the very slow turn-over of existing positions and the lack of additional posts declared by the employing authorities (University and the Ministry of Health) every year. It appears, however, that there is an adequate pool of interested and appropriately trained candidates for the available positions; hence advertised posts are always oversubscribed.

Capacity Building in Clinical Faculty

MUCHS has the following strategies in place to build professional and research capacity in the clinical sciences:

1. Building professional capacity
 - a. The MMed (Residency Training) Programs

The Masters in Medicine programs at The School of Medicine described above are directed at producing specialists that cater to the healthcare and health education needs of the country. Despite the fact that many trainees at this level are required to pay tuition, the enrolment remains robust.
 - b. Professional training linkages for resident and consultant staff.

MUCHS has facilitated several linkages with other academic medical institutions in developed countries (in Europe, United States and South Africa) for the purposes of improving the skills set of its consultant and resident staff in clinical science specialties.
 - c. Promotion of multi-disciplinary practice and research

The SOM established the Child Health and Development Centre ten years ago with a mandate to promote holistic understanding and responses to children and women's health needs through multi-disciplinary and multi-sectoral research teaching and partnerships. It is involved in research and care of children with HIV/AIDS and in Human Papilloma Virus vaccine research in young girls.
2. Building Research Capacity

- a. There are also numerous clinical research linkages with international NGOs and medical institutions. Several of these linkages have research offices and laboratories onsite and provide opportunities for academic staff and postgraduate students to carry out cutting-edge research. Grants are also available to both Mulago and Makerere medical staff (by open competition) who wish to carry out research projects. Most of these linkages are in HIV/AIDS, Tuberculosis, Cancer and Malaria.
- b. Residents on the MMed program are also part of Makerere efforts at building research capacity. This is achieved in two different ways. First, the program has a research component which has to be carried out by the Resident and is usually published, and secondly the residents participate in research projects undertaken by their senior colleagues. Residents who carry-out outstanding research are usually encouraged to consider staying on at MUCHS to continue their work.
- c. MUCHS also encourages the acquisition of PhD degrees by its residents and staff. Some of these are done entirely at MUCHS whilst others are sandwich programs with Western universities. Due to the difficulties in securing the finances required to undertake PhD degrees, the MUCHS has secured international funding for selected students. This funding includes their salaries and laboratory expenses both in Makerere and at external sites as is relevant. Presently, five students are undertaking this degree.

The Site Visit Team observed that, similar to other pioneer SSA Medical Schools, majority of faculty at Makerere and Mulago are alumni. This is probably because these schools train the majority of medical graduates in their country. This situation brings with it both the advantage of the school and its teaching hospital having very committed staff, and the disadvantage of in-breeding. Fortunately, the summation of both at this time is positive, but the situation has to be closely monitored to detect any change in future.

Research Tied to Teaching Capacity

Since the clinical teachers are also the researchers at the College all efforts noted above to increase research capability should serve to increase capacity in teaching by attracting and retaining academic staff. The availability of several research initiatives and grants ensures that opportunities abound for staff interested in research. In addition there is a core group of scholars in medical education itself among the faculty. The College has supported their further training and encourages research on pedagogical methodology. Research success in this field as well as recognition for it may contribute in the same way to capacity.

Capacity Building of Allied Health Services Programs

The MUCHS runs four other undergraduate programs in response to the Ministry of Health's request for more health-workers from other cadres. The programs enrolled students for the 2008/9 session and are: Bachelor of Pharmacy (35 students), Bachelor of Dentistry (25 students), Bachelor of Science in Nursing (21 students), Bachelor of Medical Radiology (17 students), and Bachelor of Environmental Health Science (65 students). Moreover, the College has built capacity in multidisciplinary health teams by integrating the curricula of these programs in their first two years and by sending the students out in teams to the COBES sites.

Infrastructure Capacity Building

Two new buildings (the Infectious Disease Institute in 2002, and a Department of Pharmacy building) have been recently completed, but little other construction has occurred since the mid-1970's. However, several facilities have been remodeled. At this time the main lecture theatre is being renovated and remodeled to enable it to be used at a teleconference center.

Continued Challenges for Capacity Building

1. **Funding** – The problem of shortage of funds from the government for the MUCHS is steadily getting worse year by year as Makerere must share education funding with more schools at all levels.
2. **Facilities** – Facilities at the MUCHS are barely adequate for the current teaching and training workload and preclude the much-needed increase in enrolment to meet the MOH targeted health care worker numbers.
3. **Accommodation** – All departments are working out of cramped accommodations.
4. **Lack of a collaboration research agenda** – Despite the numerous collaborative research and professional initiatives going on at MUCHS there was no obvious coordinating unit for these projects. Such coordination is highlighted in the College's latest strategic plan, and there is a designated Task Force on research.
5. **Shortage of teaching faculty** – There is a severe shortage of teaching staff at MUCHS, especially in the School of Biomedical Sciences.
6. **Physician Tracking** - The MUCHS and MOH do not formally track medical graduates. The problem of internal migration from needed posts to the private sector or in non-clinical positions in NGOs is reported to be more concerning than emigration outside of Uganda.

Medical School Innovations for Rural Capacity

The MUCHS has developed the COBES program to address the need to increase healthcare capacity in rural areas. This program, described in detail elsewhere in

this report, has seen its first two classes of graduates. Anecdotally, more students chose to practice in underserved rural areas after graduation than had before COBES implementation. Figures regarding this outcome will be forthcoming.

National HRH Strategic Plan

The College of Health Science has developed its programs of training and created a Strategic Plan as of 2009 to address Phase III (2011-2013) of the MOH HRH plan, which calls for scaling up “with the aim of supplying and maintaining an adequately sized, equitably distributed, appropriately skilled, motivated and productive workforce matched to the changing: population needs and demands, health care technology and financing.”¹³ It has done so with its interdisciplinary training of health care workers, community-based training, and deliberate development of leadership and management skills.

Key Points: Capacity

- a. ***Achievements/Strengths*** - The College of Health Sciences model adopted by MU **combines resources across several disciplines** and enables strategic planning for growth both within the University and outside through international partnerships. **The physical plant of CHS and Mulago is solid** (<50 yrs old); many new combined clinical/research facilities have been built in recent years through these international partnerships. The teaching facilities require updates in equipment and technology; some renovations are already underway (anatomy lab and main lecture hall). Capacity for **specialist training at Mulago is also very well developed** with MMed programs in most disciplines.
- b. ***Challenges*** - **More clinical and basic science staff are needed** - both teaching clinical staff at Mulago hospital and “academic staff” at MUCHS must be augmented to provide training to students in multiple disciplines. **Greater support for students wishing to pursue specialist training** (MMed) programs is also essential. **Greater support for research** is needed – particularly expansion beyond Makerere’s excellence in HIV, TB, and malaria to include other locally-important conditions such as pneumonia, gastroenteritis, and malnutrition. Finally, **greatly increased support for facilities, students, and staff will be needed** when the scale-up phase of the MOH strategic plan for HRH goes into implementation in 2012.

¹³ MOH Investment Strategy 2009-2020

- c. ***Opportunities*** – The College’s **extensive international partnerships** are likely the result of MU’s academic reputation, Uganda’s reputation as a stable country on the rise, and Kampala’s increasing cache as a metropolitan center of global development activity. MU has the opportunity to capitalize on this strength not only to further develop its capacity but also to provide an example of healthy and strategic partnerships for other institutions in Africa. Finally, MUCHS can **collaborate with other Ugandan medical schools, MOH, and others** to ensure that funds for increased HRH capacity are forthcoming from the planned realignment of the national budget to four priorities: health, education, infrastructure, and agriculture.

Retention

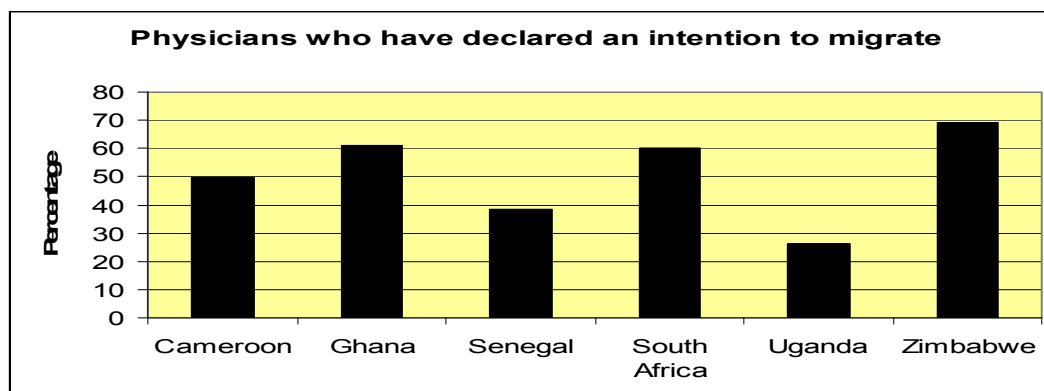
History of Retention

Common perception and collective wisdom hold that Uganda’s physician workforce problem is predominantly one of distribution within the country rather than one of emigration or “brain drain.” Accordingly, most current retention strategies tend to focus on creating more favorable conditions for practice in rural and underserved areas.

The SAMSS team was unable to identify any prior retention strategies, either from the MOH or MU-FOM whose successes or failures might have informed current planning. It was noted that Idi Amin called for mandatory community service by all Ugandan physicians but this was never enforced even during the height of his power. Amin also reportedly proclaimed that physicians should not attempt to split their time between public and private practice but, in response to his order to physicians to “make up your minds,” many simply chose to leave the country altogether.

According to current MOH figures, 70% of physicians practice in urban settings which serve about 15% of the population (MOH Strategic Plan, 09 Suppl). Further aggravating this situation, the rate of physician absenteeism at district hospitals and rural clinics is about 40%. Another problem is the high rates of HIV infection and death among physicians. In one study of the Makerere School of Medicine class of 1984, death was the number one cause of physician workforce attrition with 30% of the cohort deceased. Most of these deaths were HIV-related (Dambisya). Again, common perception among leaders in the MOH, MUCHS, and NGOs such as the Capacity Project was that physician migration to other countries was not a high-priority issue. Of course, all problems and priorities are relative and the problem of brain drain must be seen in regional context. According to the 1984 cohort study above, “only” 30% of graduates were working outside Uganda and although a recent WHO study (Awases) showed similar levels of intention to migrate (26%) in Uganda, intentions of physicians in other Sub-Saharan countries were far greater:

Table 2: Declared physician intention to migrate, 2002 (Awases)



Indeed, Uganda’s emigration factor (percentage of physicians emigrating to one of four main “recipient” countries) may be even lower than the above 20-year estimate for the class of 1984 or estimated rates of intention to emigrate (Mullan). On the other hand, this emigration factor still gives Uganda a rank of 4th highest among other nations in the Sub-Saharan region:

Table 3: Emigration of physicians by source country

Source Country	Location of Physician’s Practice		Emigration Factor *
	Recipient Country **	Source Country	
Ghana	791	1,842	30.0
South Africa	6,993	30,740	18.5
Ethiopia	359	1,971	15.4
Uganda	195	1,175	14.2
Nigeria	4,053	30,885	11.6
Sudan	622	4,973	11.1

*The emigration factor was computed as $[A \div (A+B)] \times 100$, where A is the number of physicians from a source country practicing in the recipient countries and B is the total number of physicians practicing in the source country

**The recipient countries are the United States, the United Kingdom, Canada and Australia.

Source: Mullan, F. (2005) *The Metrics of the Physician Brain Drain* NJEM 353:17; 1810-1818

These findings notwithstanding, general focus of retention strategies has been on uncovering what motivates Ugandan doctors to work and stay in rural areas with the apparent strategic intent that greater recruitment and retention in these areas will also ameliorate the problem of emigration.

Public Service in Uganda and Public Sector Retention Strategies

A 2007 MOH study of 681 health care professionals (including 71 physicians) in 18 districts, half of which were remote or “hard-to-reach,” delved deeper into issues of job satisfaction and intentions of health workers to stay in their posts (MOH Satisfaction and Intent to Stay, 2009). With regards to satisfaction, 57% of

physicians stated that they were most likely to leave their post within two years, 46% said they would leave if they felt they could, and only 37% reported they were satisfied overall with their jobs. Complementary data from the WHO in 2004 detailed top motivators to stay in Uganda (Awases). The majority of the respondents (83.5%) reported better salaries, fringe benefits such as subsidies for housing, cars, or other goods and services (54%), a more pleasant and caring working environment (36%), a more reasonable workload (30%), and better quality of educational and training opportunities (29%), as factors that would encourage physicians to stay in their country.

To address these concerns, the MOH has proposed incentives to match these specific areas (MOH Motivation and Retention Strategy for HRH 2008). First and foremost, salaries and benefits must be improved, particularly for those serving in hard-to-reach areas. Second, leadership and management skills must be taught during professional training as essential “real-world” skills – too often, young physicians are placed into situations of conflict or complexity that they are unable to deal effectively with given their life experiences and lack of specific training. Third, the work environment for public service jobs must be safe (adequate security and precautions to prevent transmission of HIV) and conducive to effective practice (adequate basic medical supplies as well as reliable utilities, gas for ambulances, etc). Finally, opportunities for career development must be made available and continuing education and career progression must be planned and encouraged (not just available).

Other important “push and pull” factors were described by key informants at the MOH, National Health Service Commission, and the Capacity Project as well. An important factor that pushes physicians away from public service is the onerous process of applying for the available jobs. In response to Structural Adjustment Program requirements, the Ugandan health sector became very decentralized in its recruitment and hiring processes. Previously, posts available in all districts were advertised by the MOH, applications were made to one entity, and all new hires were oriented together before disbursing as a cohort to their posts. Now, individual districts are responsible for all of these processes and, despite their dire need of physicians, they lack the finances, skills, and coordination to effectively recruit, hire, orient, and retain new physicians. Moreover, once a physician does obtain a public service job, he or she may not receive a first paycheck for 6-12 months. Obviously, the “pull” of physicians from well-organized and resourced NGOs or other international organizations such as the WHO is considerable in this setting. Similarly, private practice or even private entrepreneurship in private business are often seen as preferable alternatives to working in public service.

Tracking the career paths of physicians in the public sector is very difficult and underscores the overall lack of coordination in HRH management at the country level. A tracking study for physicians undertaken in 2004 demonstrated that new graduates from medical school were more likely to work in the communities where they had grown up but long-term tracking is very difficult as many medical officers

only register in their first post. Furthermore, there is evidence to suggest that even those physicians registered in community posts do not actually work in the registered locations. Recent data have shown an overall 40% absentee rate for health workers resulting in 51,465 days lost and costing 300 million Uganda Shillings (about \$167, 000).

By Facility Level		By Cadre	
Hospital	39%	Medical Officers	40%
HCIV	42%	Clinical Officers	44%
HCIII	40%	Nurses/Midwives	49%
HCII	40%	Other Clinical/Technical Staff	41%
		Pharmacists	50%
		Laboratory	33%

Source: Uganda Service Provision Assessment Survey 2007 (March 2008) 491

Faculty of Medicine Retention Strategies

As noted above, the MOH plan to increase physician retention in rural communities includes better training in “real world” skills such as leadership and management. Of course the need to modify pre-service (undergraduate) training extends well beyond these skills and, fortunately, many innovations in the new curriculum at Makerere have incorporated these concerns. Prior to implementing the new curriculum, a “needs assessment” of communities (including patients, clinical and hospital workers) was undertaken to see what was expected of new graduates. Community members indicated they expected better communication skills as well as clinical and research skills that reflected their needs rather than those typical of large, urban universities. Accordingly, the new curriculum places emphasis on “service-based learning” which encourages students to remain relevant to the communities they visit during their COBES rotations. While it is too early to determine if these changes have had the intended effect of increasing initial placement and long-term retention in rural communities, examples of student projects (such as a hand sanitation after toileting project which has spread across several districts) and attitudes from current students are encouraging. As one student explained, “before COBES, I wanted to work in a well-equipped center, now I feel greater satisfaction from working in the community.” Many others agreed, one adding, “At tertiary hospital, you only see patients for 10 minutes each, then never again – in community you get to know people. I want to practice public health and community development along with clinical medicine.” Of course, there are limitations in this approach – another student noted that orientation to first-year exposures was too unstructured and several senior clinician-educators at Mulago hospital expressed similar concerns about the unstructured nature of the COBES experience as well. These concerns are being addressed with program enhancements.

At the post-graduate level, specialty training (or registrarship) can be seen as a tool for retaining physicians in Uganda while enabling them to advance their careers and contribute to either rural communities or the university community. Unfortunately, the costs of undertaking such training (which lasts for a minimum of 3 years after completion of internship) are prohibitive. The government has backed away from sponsoring student training generally and currently pays stipends and expenses (including tuition for the MMed degree) for 20-30 registrars each year. Without MOE funding, graduates can sometimes find assistance from districts, although it is unclear how often this happens given the lack of resources in these communities. If these options fail to materialize, graduates are faced with paying for the training out-of-pocket. Policies have been discussed to specifically create more support for training in shortage specialties like ENT, anesthesia, neurology, and psychiatry but none have been enacted as yet.

Faculty recruitment and retention

Recruitment and retention of adequate faculty (“academic staff”) for quality instruction is a major problem at Makerere University, yet few strategies are in place to address this issue. Each department has about 14 posts total (all ranks combined) but these are very difficult to staff given inadequate numbers of specialists and poor remuneration. Currently, less than half of all posts for academic staff are filled and the entire School of Medicine has only nine full professors. Clearly, some programs have had greater success than others – radiology does not have critical shortages but anesthesia does. Motivation to join or stay on academic staff includes a genuine love of teaching, allegiance to the institution and its tradition/reputation, and strong desire to stay in Kampala.

Currently, there is no pathway for promotion for educational or clinical productivity although increased emphasis on “quality assurance” in education has resulted in a movement to develop a “track and reward” program to improve the salary of staff (in any school of the university) who demonstrate consistent excellence in teaching. Opportunities for faculty development are available but must be sought-out and often created on an individual basis – some faculty get leadership training by chairing a curriculum taskforce or through training to become a PBL facilitator or educationalist (several faculty have obtained masters degrees in education from the University of Maastricht through a grant to promote student-centered learning, and another participated in the FAIMER Institute training on leadership and education). These opportunities notwithstanding, promotion and tenure are highly research-dependent and advancement without significant publications is generally not possible. Certainly, there are many opportunities to become involved in research at Makerere. Most junior academic staff began their research as registrars in post-graduate training leading to a thesis for the MMed degree but there are also some limited post-doctoral positions in the Infectious Disease Institute known as “Sewankambo Scholars” – currently five in total. International collaboration and

“twinning” with many other prestigious Northern universities such as Yale, Johns Hopkins, UCSF, University of Minnesota, and the Karolinska Institute has also supported the careers of many faculty members. Most junior faculty, however, find it difficult to obtain adequate support to conduct original research and at times even excellent research is not rewarded with publication or funding if it does not fit into priorities for funders such as HIV, TB, or malaria.

Finally, while there is no formal “clinical educator” track within MUCHS, clinical staff at Mulago Hospital essentially function in this role although they are appointed and employed by the MOH rather than the university or MOE. While academic staff earn slightly more than Mulago staff, as noted above there are far fewer clinicians employed by Makerere. Unfortunately, the total number of clinicians is still far too small to manage the high clinical demands and teach at the high educational standards that bring satisfaction to clinical faculty. MOH sets the number of clinical posts available at Mulago based largely on budgetary prerogatives but the Health Services Commission is charged with naming appointees. While the pay for these positions is lower than that in private practice, there are usually many applications for one post and, sadly, these “runner-up” applicants cannot be “tapped” for other leadership positions in other referral hospitals due to decentralization and protocols for recruitment and hiring.

Country Retention Strategy

As mentioned above, the Ugandan MOH has invested substantial resources into the creation of a robust plan for HRH development and management. While funding to implement many of the proposed elements of the plan is not yet secured, there is general support from the President and Parliament to advance health as one of four major national priorities: health, education, infrastructure, and agriculture. Once specific goals for each of the three other areas are set (as they are for health and HRH), the national budget should be aligned to implement plans to achieve these goals as priorities for national development. Given that insufficient health workforce capacity has been recognized by the MOH as the major constraint to scaling up services to improve health, the Uganda HRH Strategic Plan 2005-2020 emphasizes a step-wise approach to improving health through increased capacity and retention of healthcare workers, including physicians.

Key Points: Retention

- a. ***Achievements/Strengths*** – The College’s curriculum emphasizing real-world skills and a team-based approach should improve physicians’ ability to practice in ways that are relevant to underserved communities in Uganda. The MOH has also conducted extensive assessment of their HRH

needs and created a comprehensive, evidence-based strategic plan for increasing retention.

- b. ***Challenges/Weaknesses*** – **Shortages in academic staff** at Makerere existed prior to curricular reforms and these may be even worse now that a resource-intensive PBL approach has been deployed and other health professional students are taught alongside medical students. Similarly, the **MOH currently lacks adequate funds to staff and equip** rural physician posts and it is not clear that increased funding to support the comprehensive HRH strategy will become available at critical junctures in implementation.

- c. ***Opportunities*** – Makerere has been very savvy to date in forging ahead with **innovation while enduring budget cuts from MOE**, mostly through international collaborations. **Continued strategic development** could leverage their international reputation to build greater support for faculty development and retention. The MOH is also poised to achieve great successes with their **HRH strategy** and must leverage all possible forces (including considerable international support) to increase national spending for health over the next 10 years

Conclusion

Makerere College of Health Sciences teaching faculty includes a dynamic group of medical educators who have led the University in learner-centered curricular reform. While housed in a venerable institution of higher learning, the College of Health Sciences and Makerere University itself do not fit the norm of a staid old institution resting on its laurels. Rather, Makerere continues to prove itself to take a cutting edge, socially responsible approach to education. It has responded to the health care workforce needs of the country by developing an interdisciplinary approach to teaching and learning with a strong, substantial community-based component to its curriculum. It is well-positioned to model novel approaches to medical education in resource-constrained environments as a semi-autonomous, interdisciplinary College with many well-established international research partners on its campus.

APPENDIX 1

DESIGN AND STRUCTURE OF THE CURRICULUM¹⁴

This curriculum provides for student centered learning, and encourages critical thinking and problem solving through PBL. It advocates for integration of learning experiences and is community oriented. It also includes non-traditional subjects like management and communication.

1. Curriculum Design:

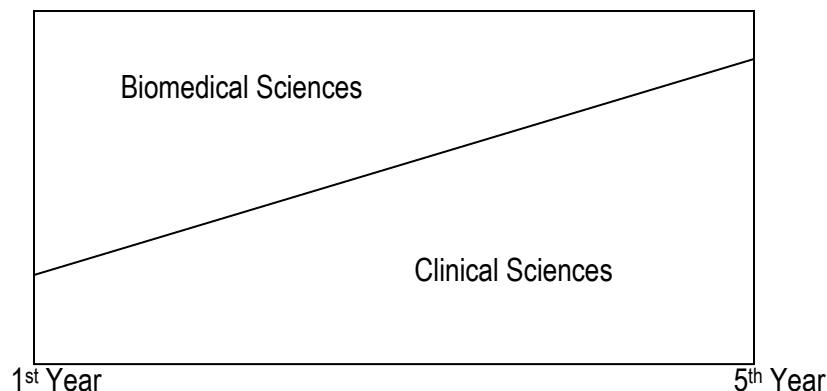
a) Integration Since the human beings function as an integrated whole, the learning experiences must be as contextual and holistic as possible in order to enable the health worker to deal with an individual rather than a body part or a disease process. This is ensured in the curriculum design through two levels of integration.

i) The horizontal integration: This breaks down boundaries between disciplines like: Anatomy, Physiology, Biochemistry and provides a package of learning experiences of the Biomedical Sciences. This does away with the compartmentalization and eliminates repetition of subject content. The Horizontal integration goes hand in hand with the vertical integration.

ii) The Vertical integration: The vertical integration ensures that all levels of the learning spiral, thus students are exposed to Basic Sciences, Clinical experiences and Community health activities right from first year.

Biomedical Sciences are covered in the first 3 years and continue into the clinical clerkships. Conversely the clinical experience starts small and broadens out into the clerkships (Figure 1). The community exposure is constantly applied in appropriate doses through out the programme.

Figure 1 demonstrates Biomedical Sciences and Clinical Sciences Integration



¹⁴ Extracted from "Makerere College of Health Sciences: MBChB Curriculum, 2003"

b) Active Student Learning through PBL

There are several methods of student learning, each with its advantages and disadvantages. Problem Based Learning has been identified as that which best encourages active student learning, critical and analytical thinking, learning in context, problem solving and self-directed learning. For this reason the proposed curriculum is student centered which encourages active student learning through PBL.

c) Early Clinical Exposure

Early clinical exposure is important in helping the students integrate and apply Biomedical Sciences to patient management. It is proven to be a strong stimulus to learning.

Early clinical exposure is gained through paper cases, simulated clinical cases, actual clinical cases and skills lab.

d) Community Based Education and Service (COBES)

COBES is vital for contextual learning and management of community health problems. It also acquaints and familiarizes the students with the environment in which they are required to operate upon qualification. COBES is provided for in the proposed curriculum through district community teaching sites.

c) The Spiral Curriculum

Four main themes are represented in the various phases of the learning experiences. These are:

- The Normal structure and Functions (phase 1)
- The Abnormal structure and Functions (phase 2)
- Clinical practice (phase 3)
- Community medicine (phases 1, 2 and 3)

All 4 themes are introduced at level 1 in various degrees of depth. New information in the next level is introduced in such a way that there is a link with the information obtained from the previous level. Previous learning, therefore acts as building blocks, as students “walk” their way through from phase 1 to Phase 3.

2. Curriculum Structure:

The curriculum is organized into Courses and Blocks.

a) The Courses

These represent the subjects to be learned. Each has Course Objectives, course content, mode of delivery and contact hours. The course content is integrated and is developed by interdisciplinary teams of subject experts.

The course content is influenced by the following factors:

- Course objectives which are based on the health needs of the population.
- Level of learning in the spiral of the curriculum
- Time available in the academic calendar

- Approval by Content experts

The instruction and learning of the agreed course content is guided by problems developed by the interdisciplinary teams.

b) The Learning Blocks

Related courses are organized into an examinable set called the Learning Block. Courses are the building units of a block. The “Blocks” are the building units of the curriculum. The objectives of the Blocks are similar to the program objectives, which are usually expressed as competencies. These competencies are in turn based on the population’s health needs and other priorities addressed by the program.

The proposed blocks contain two to three courses and therefore last from 5-15 weeks. The semesters are made up of 1-2 blocks.

The student will either start with Combination A in semester I or then take Combination B in semester II or the vice versa.

c) Phases

The learning experiences are organized into 3 Phases, which spiral into each other:

- Phase 1 Predominantly covers principles of learning or teaching methodologies and foundations of medical education, the normal structures and functions. It extends over four semesters and two recess terms
- Phase 2 Predominantly exposes the students to Pathophysiology. It extends for two semesters and one recess term.
- Phase 3 Is dominated by clinical experience. It extends for four semesters and one recess term

Community Based Education and Service (COBES) is cross cutting. It is scheduled for in every year except the final year.

APPENDIX 2

GRADUATE PROFILE AND LEARNING OUTCOMES

The program is designed to produce doctors who:

- Are equipped with the necessary scientific and professional knowledge, skills and attitudes to deal with the health care problems of individuals, families, urban and rural communities, in Uganda and else where.
- Are motivated to work in both urban and rural primary health care settings in Uganda and elsewhere and who can find professional and personal satisfaction in such work
- Are able and motivated to work in health care teams to the benefit of the people of the community.
- Are able to educate and motivate individuals, families, urban and rural communities, in Uganda and else where to take personal responsibility for their health
- Can think critically and creatively to deal with the health care problems of communities, families and individuals and have the necessary knowledge and skills to do research appropriate to the needs of the community
- Are equally committed to the prevention as to the management of illness and are capable of understanding health care problems in their biological, psychological and socio-economic context
- Are self-directed and lifelong learners who will be able to adapt to changing circumstances in Uganda, and elsewhere keep up with development in their profession and have the necessary motivation and background to acquire relevant specialized qualifications to fulfill the needs of the country and to advance their own careers
- Exhibit high levels of ethical and administrative insight, skills and integrity and
- Are more committed to the person than to the disease and display social responsibility

SPECIFIC OUTCOMES

On completion of the undergraduate medical education and training program, the doctor must have knowledge, skills and attitudes as outlined below.

a) Knowledge outcomes

The program must produce a doctor who has essential knowledge necessary for medical practice, including knowledge of:

- Biomedical sciences as a foundation for clinical medicine
- Psychological, social, environmental, spiritual and cultural factors that contribute to illness and disease of individuals, families and communities.
- Principles of health promotion and disease prevention

- A clinical reasoning process that leads to problem solving
- Pathophysiology of common problems encountered in medical practice
- How to make a comprehensive assessment based on illness and disease
- How to make a comprehensive and shared management plan which includes:
 - ❖ Management of presenting problems
 - ❖ Management of ongoing chronic problems including rehabilitation
 - ❖ Modification of help-seeking behaviour of patients, families and communities
 - ❖ Opportunistic health promotion
- The principles of rational therapeutics
- Rational use and ordering of basic and special investigations
- Common problems encountered in health care
- Health care problems encountered in primary, secondary and tertiary health care
- Epidemiology and biostatistics
- Health service management and administration
- Ethical issues relevant to medical practice

b) Skills outcomes

The program must produce a doctor who has essential skills that are required for medical practice, including the following:

- Communication skills including:
 - ❖ Language skills
 - ❖ Computer skills
 - ❖ Interviewing skills
 - ❖ Writing skills
 - ❖ Referral skills
 - ❖ Team work
- Clinical skills including:
 - ❖ History taking
 - ❖ Performance of a physical examination
 - ❖ Assessment of a patients' mental state
 - ❖ Performance of side room tests and procedures
 - ❖ Interpretation of findings
 - ❖ Making a comprehensive assessment based on illness and disease
 - ❖ Formulation of a comprehensive and shared management plan
 - ❖ Counseling skills including basic counseling and counseling of patient with HIV and AIDS

c) Attitudinal /Behavior outcomes

The program must produce a doctor who has an appropriate attitude for medical practice, such as the following:

- Commitment to the person rather than disease or special technique
- Awareness of the subjective aspects of medicine, that is, sensitivity to feelings, thoughts, concerns and expectations of patients and also awareness of own values, attitudes and feelings
- Ability to listen actively with empathy in order to appreciate the purpose and intentions of patients
- Ability to build trust through being worthy of trust
- Ability to negotiate agreements that honestly reflect interests of both doctor and patient
- Respect for cultural diversity and patients' beliefs
- Positive approach towards primary health care and community-based education and service
- Understanding the general code of conduct of a doctor towards patients
- Appreciation of health as a human right
- Understanding the doctors' responsibilities towards his colleagues and other members of the health care team

APPENDIX 3

CURRICULUM IMPLEMENTATION STRUCTURE

This depicts allocation of time to various curricular activities. The activities and their symbols are shown below:

- Clinical Sessions are shown as Cl.H (Clinical hours)
- Overview lectures and seminars are shown as LH (lecture hours)
- Skills laboratory activities, practicals and clinical exposure are shown as PH (practical hours)
- Tutorials sessions are shown as TH (tutorial hours)
- Self directed learning is shown as SH (self-study hours)

1 Clinical hour = 1 contact hour

1 Lecture hour = 1 contact hour

2 Tutorial hours = 1 contact hour

2 Practical hours = 1 contact hour

2 Self study hours = 1 contact hour

1 Credit Unit = 15 contact hours

Year 1

Block 1

Semester I	LH	Cl.H	TH	PH	SH	CH	CU
FOM 1111 Introduction to Health Professionals Education & Ethics	3	5	18	12	44	45	3
FOM 1112 Cells and Tissues	5	10	30	20	70	75	5
FOM 1113 Blood & Body Fluids	5	10	30	20	70	75	5
FOM 1114 Principles of Nursing and First Aid	2	6	12	8	24	30	2
Total							15

Block 2

Semester II	LH	Cl.H	TH	PH	SH	CH	CU
FOM 1212 Digestion, Nutrition & Metabolism	5	10	30	2	70	75	5
FOM 1211 Cardiovascular & Respiratory System	5	10	30	20	70	75	5
FOM 1213 Foundations of Behavioral Sciences	5	10	30	20	70	75	5
Total							15

Block 3

Recess Term	LH	Cl.H	TH	PH	SH	CH	CU
FOM 1311 Introduction to Community Health I	2	12	24	32	36	60	4
FOM 1312 Introduction to Community Health II	2	12	24	32	36	60	4
Total							8

Year 2

Block 1

Semester I	LH	Cl.H	TH	PH	SH	CH	CU
FOM 2111 Endocrine	5	10	30	20	70	75	5
FOM 2112 Reproductive and Urinary	5	10	30	20	70	75	5
FOM 2113 Head & Neck	5	10	30	20	70	75	5
Totals							15

Block 2

Semester II	LH	Cl.H	TH	PH	SH	CH	CU
FOM 2211 Principles of Microbiology & Pathology	5	10	30	20	70	75	5
FOM 2212 Neurolocomotor	5	10	30	20	70	75	5
FOM 2213 Community Diagnosis and Communication	3	6	18	12	42	45	3
FOM 2214 Material Science	2	6	12	8	24	30	2
Total							15

Block 3

Recess Term	LH	Cl.H	TH	PH	SH	CH	CU
FOM 2311 Blood, and Body Fluids Disorders	3	6	18	12	42	45	3
FOM 2313 Pharmacology and Therapeutics	5	10	30	20	70	75	5
Totals							8

Year 3

Block 1

Semester I	LH	Cl.H	TH	PH	SH	CH	CU
FOM 3111 Cardio-Respiratory System & Respiratory Disorders	5	15	30	20	60	75	5
FOM 3112 Digestion, Nutrition & Metabolic Disorders	5	15	30	20	60	75	5
FOM 3114 CNS Pathology & Development Psychopathology	5	15	30	20	60	75	5
Totals							15

Block 2

Semester II	LH	Cl.H	TH	PH	SH	CH	CU
FOM 3214 Endocrine Disorders	5	15	30	20	60	75	5
FOM 3212 Reproductive & Urinary Disorders	5	15	30	20	60	75	5
FOM 3213 Tropical Infectious Diseases	5	15	30	20	60	75	5
Total							15

Block 3

Recess Term	LH	Cl.H	TH	PH	SH	CH	CU
FOM 3311 Proposal Development	5	15	30	20	60	75	5
FOM 3312 Electives at Health Delivery Units	5	15	30	20	60	75	5
Totals							10

Year 4

Block 1

Semester I	LH	Cl.H	TH	PH	SH	CH	CU
BMC 4111 Clinical Medicine 1	5	15	30	20	60	75	5
BMC 4112 Clinical Surgery 1	5	15	30	20	60	75	5
FOM 4115 Project Implementation	5	15	30	20	60	75	5
Totals							15

Block 2

Semester II	LH	Cl.H	TH	PH	SH	CH	CU
BMC 4113 Paediatrics & Child Health 1	5	15	30	20	60	75	5
BMC 4114 Obstetrics & Gynaecology 1	5	15	30	20	60	75	5
BMC 4116 Psychiatry	5	15	30	20	60	75	5
Totals							15

Block 3

Recess Term	LH	Cl.H	TH	PH	SH	CH	CU
BMC 4314 Ear, Nose & Throat	2	12	24	32	36	60	4
BMC 4315 Anaesthesia	2	12	24	32	36	60	4
BMC 4313 Ophthalmology							
Totals							8

Year 4

Block 1

Semester I	LH	Cl.H	TH	PH	SH	CH	CU
BMC 4113 Pediatrics & Child Health 1	5	15	30	20	60	75	5
BMC 4114 Obstetrics & Gynecology 1	5	15	30	20	60	75	5
BMC 4116 Psychiatry	5	15	30	20	60	75	5
Totals							15

Semester II	LH	Cl.H	TH	PH	SH	CH	CU
BMC 4111 Clinical Medicine 1	5	15	30	20	60	75	5
BMC 4112 Clinical Surgery 1	5	15	30	20	60	75	5
FOM 4115 Project proposal Implementation	5	15	30	20	60	75	5
Totals							15

Block 3

Recess Term	LH	Cl.H	TH	PH	SH	CH	CU
BMC 4314 Ear, Nose Throat	3	6	18	12	42	45	3
BMC 4315 Anesthesia	3	6	18	12	42	45	3
BMC 4313 Ophthalmology	3	6	18	12	42	45	3
Totals							

Year 5

Semester I	LH	Cl.H	TH	PH	SH	CH	CU
BMC 5111 Clinical Medicine II	5	15	30	20	60	75	5
BMC 5116 Medical Specials II	5	15	30	20	60	75	5
FOM 5113 Paediatrics & Child Health II	5	15	30	20	60	75	5
Totals							15

Semester II	LH	Cl.H	TH	PH	SH	CH	CU
BMC 5112 Clinical Surgery II	5	15	30	20	60	75	5
BMC 5115 Surgical specials II	5	15	30	20	60	75	5
FOM 5114 Obstetrics & Gynaecology II	5	15	30	20	60	75	5
Totals							15

APPENDIX 4

ASSESSMENT

Formative and summative assessment shall be conducted through MCQs, Modified essays, short notes, Objective Structure Clinical Examination (OSCE), Objective Structure Practical Examination (OSPE) and logbook

There shall be an assessment and feedback session for every student and tutor at the end of every tutorial session.

This will include:

- a) Continuous assessment during all the learning sessions. This permits immediate feedback. In addition Logbooks and case write ups will be assessed. This will contribute 40% of the mark
- b) An end of the block examination consists of:
 - Individualized Process Assessment (IPA)
 - Modified Essay Questions (MEQ)
 - Objective Structure Clinical Examination (OSCE)
 - Objective Structure Practical Examination (OSPE)

APPENDIX 5

TERMS OF REFERENCE FOR TASK FORCES

Assessment:

1. To develop an assessment plan for the Faculty (consultation with other stakeholders).
2. To develop a module for staff development in assessment.
3. To train staff and other stakeholders in assessment.
4. To monitor and evaluate the Faculty Assessment Program.
5. To improve the assessing plan for each program (using the M & E result).
6. To develop research in the area of assessment.

PBL:

1. To develop a module for staff development in PBL (concept, process etc).
2. To train staff and other stakeholders in PBL.
3. To monitor and evaluate the educational activities of the New Curriculum.
4. To further improve courses for each program.
5. To develop research in the area of PBL.

Quality Assurance:

1. To develop a faculty plan for quality assurance (in consultation with all stakeholders).
2. To develop a module for faculty development in quality assurance.
3. To train staff and other stakeholders in quality assurance.
4. To monitor and evaluate the quality assurance activities in the Faculty.
5. To further improve the quality assurance plan of the Faculty.

Research:

1. To develop a faculty plan for research.
2. To develop a module for faculty development in research.
3. To train staff and students in research.
4. To monitor and evaluate research activities in the Faculty.
5. To assist and/or train faculty in publishing their research findings.
6. To develop research in the field of education (working with all Task Forces).

Staff Development

1. To identify training needs of staff.
2. To make a faculty staff development plan.
3. To coordinate faculty development program in various areas of education.
4. To develop faculty guidelines for recruitment and promotion.
5. To guide the Faculty in developing guidelines for scholarships.

Skills Training:

1. To develop skills training plan for all programs.
2. To develop a module to staff development in skills training.

3. To train staff and other stakeholders in skills training.
4. To monitor and evaluate the Faculty skills training program.
5. To coordinate research in skills training.

COBES:

1. To develop COCES plan for all programs.
2. To develop a module to staff development in COBES.
3. To train staff and other stakeholders in COBES.
4. To monitor and evaluate the Faculty COBES program.
5. To coordinate research in COBES.

ICT:

1. To develop ICT plan for all programs.
2. To develop a module to staff development in ICT.
3. To train staff and other stakeholders in ICT.
4. To monitor and evaluate the Faculty ICT program.
5. To coordinate research in ICT.

APPENDIX 6

UGANDA HRH STRATEGIC PLAN 2005-2020

Phase I: 2009/2010 – 2010/2011: Put in place critical elements for securing the implementation of the HWS Investment Strategy. The main action areas include:

- Establishing a fully developed and facilitated Human Resources for Health (HRH) unit in the Ministry of Health;
- Strengthening systems for recruitment of the health workforce;
- Accelerating the introduction of Health Insurance schemes to generate additional domestic finances;
- Provision of livable and furnished houses in rural and hardship areas; Alignment and streamlining of the complex governance structure of the health workforce; and
- Expanding the capacity for pre-service and post-basic training in order to increase the availability of essential health workers

Phase II: 2011/2012 – 2012/2013: Make present Health Workforce Effective, Efficient and Equitable. This will entail

- Implementing higher salaries for health workers;
- Strengthening leadership and management practices for improved performance and productivity of the health workforce;
- Implementation of sustainable schemes for improved attraction, motivation and retention of the health workforce;
- Building the capability and authority of HRH managers to readily hire, fire and/or promote health workers, depending on performance;
- Re-establishing use of standards for health worker performance; and,
- Mobilization of funds, from all sources to close funding gaps

Phase III: 2012 - 2020: Scale Up. The aim is to supply and maintain an adequately sized, equitably distributed, appropriately skilled, motivated and productive workforce matched to the changing: population needs and demands, health care technology and financing. The main action areas include:

- Strengthening monitoring, supervision and enforcement of the codes of conduct;
- Routine use of monitoring and evaluation to promote performance, effectiveness and efficiency;
- Underpinning all HRH education and training to actual demands;
- Enhancing sustainable partnerships for HRH (public/private, GOU/donors, regulatory bodies, training institutes, etc.);
- Enhancing partnerships between health service providers, the community and local leadership;

APPENDIX 7

KEY INFORMANT INTERVIEWEES

Name	Department/Organization
Achielles Katamba	Department of Medicine
Aggrey Dhabang	COBES
Ahirnbisibine Grace Miriam	College of Health Sciences
Aijura Miriam B.Pharm	College of Health Sciences
Amos Olal-Odur	Academic Registrar
Andrew Mwanika	COBES Coordinator
Babirye Juliet Allen	College of Health Sciences
Besigye Rogers	College of Health Sciences
Beyera Tito	Orthopedics
Birabwa Male D.	Pediatric Surgeon, Clinical Head Surgeon
Buwembo William	QA Team MUCHS (Anatomy Department)
Caeser Magumba Mbdbv	College of Health Sciences
Catherine Kageni	HRDD/MOH
Celestino Obua	Deputy Dean School of Biomed Science
Charles Tblugira	Dean
Christopher G. Oroch	Community Health
D.K.W. Lwamafa	Commissioner for Disease Control
Dan Klamala	Pathology
Dan Wamala	Pathology
Daniel Nkakaluwanni	College of Health Sciences
David Guwatudde	Epidemiology and Biostat
Ddungh Matovu Peter	Dept of Radiology/COBES
Douglas Sematimba	Medical Student Association
E. Delumba	Mulago Hospital
Edith Muwanga	Ass Reg/PA to DVCAA
Edith Mwondla	Ag.Univ. Principal Physiology Therapist, Head of Dept
Egwayu Nancy	College of Health Sciences
Emmanuel Bua	MOH
Francis Nfalazi	Dept. of Planning/Ministry of Health
Francis Runumi	Executive Director, Butabika Hospital
Fred Kigozi	US/FSA
Fred M. Ogene	D/E/D Nuligo Hospital
Fsave Ezati	HRDD/MOH
George Bagambisa	Deputy Director, Planning of Development D.
Godfrey Kagoro	Dept of Pediatrics, MULAGO Hospital
Hellen Aanyu Tukamuhebwa	Dept. of Psychiatry (QA member)
Henry Oboke	Personal Assistant to Vice Chancellor
Henuy Mayega	School of Public Health, Task Force, COBES
Imeldon Zimse	Speech and Language Therapy
Isla Jones	Department of Orthopedics
Issac Kajja	Deputy Dean School of Health Science
Issac Okullo	Accident & Emergency Unit, Surgeon
J. Mabweijano	

Jackson Amone	Asst.Comm. Curative
James K Tumwine	Dept of Pediatrics CHID
Jane Fraces Namatovu	Dept. of Family Medicine
Joan K	Clinical Epidemiology
John Ekudu-Adoku	Dean of Students
John T. Kalkitahi	College of Health S, Deputy Principal
Josaphat K. Byamugisha	Gynecology
Joseph Ochieng	Anatomy
Joseph V. B. Tindimwebwa	Anesthesia (Head)
Kabatoro Daphne Mbhb	College of Health Sciences
Kadourwkaja Mark	Dept. of Medicine
Kaduyu Robert	College of Health Sciences
Kalanzi Joseph	Medical Student Association, QA Team
Kasangaki Arabt	Dept of Dentistry COBES
Kiguli-Malwadde E.	Radiology (Head)
Lillian Tibatemwa-Ekirikubinza	AG VC/DVC (AA)
Lugaajju Allan	Physiology
Madewo Geoffrey	Mulago Hospital Orthopedic Dept
Maria GN Musere	University Librarian
Mugume Charles	St. Stephen's Hospital, Site Tutor
Mukunya David	College of Health Sciences
Mumba Mina Uchi	College of Health Sciences
Mutesi Anna Uwineza Mbchbi	College of Health Sciences
Mutyaba Joseph	College of Health Sciences
Muwazi Louis	Dentistry
Mwaka Amosi	Department of Pharmacology
N. K. Sewankambo	Principal College of Health Sciences
N. Masura-Mukasa	Senior Consultant
Nagawa Roy	College of Health Sciences
Nakatudde Rebecca	College of Health Sciences
Nalwogoa Joannah	College of Health Sciences
Nik Sewankambo	Principal College of Health Sciences
Nkakalukanti Daniel	Medical Student Association
Nkeramihigo Julius	Principal Assistant Secretary
Noeline Nakasujja	QA Team MUCHS (Psychiatry
Nsubuga Ronnie. MB.	Department)
Nyakoojo. B. Wilson	College of Health Sciences
Odit Amos	Cons. Physician/Cardiologist, Head
Okello M.N.	Pediatrics
Opio CK	Meal Head
Othieno Emmanuel	QA Team (MUCHS)
Rhona Baingana	Pathology
Richard Odoi Adome	QA Team (Biochemistry Department)
Robert Lukande	Dean, School of Health Sciences
Roses Galukande	Department of Pathology
Ruberwa Joseph	Chair, QA
Sam Kaggwa	College of Health Sciences
Sam Lubdga	Surgery
Sam S. Akorimo	Acting Director, Quality Assurance
Sam Zaramba	University Secretary
	DGHS-Ministry of Health

Sangadi Gilbert Elijah
Scovia N. Mbalinda
Sdungu Matour
Sendagire Cornelius
Ssentongo Hentry
Ssettabi Eden Michael
Stephen Katega
Stephen Kijjambu
Turahe Jictor
W. Nganwa
Walusimbi Mariam

College of Health Sciences
Head Nursing, Task Force Skills training
College of Health Sciences
College of Health Sciences
College of health Sciences
College of Health Sciences
Ass. Director Human Resources
Dean, School of Medicine
College of Health Sciences
Facial Surgeon
Asst. Commissioner