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**AAHCI Leadership Initiative (ALI) - Academic Health Centers
in Eastern Africa: Leadership and Vision Amidst
Challenges and a Pandemic**



Guest Editorial by

**William M. Macharia,
MD, MSc**
ASSOCIATE DEAN
RESEARCH
FACULTY OF HEALTH
SCIENCES - EAST AFRICA
Aga Khan University



Evans Amukoye, MD
SENIOR PRINCIPAL
SCIENTIST
ACTING DIRECTOR,
SCIENTIFIC PROGRAMS,
PARTNERSHIP AND
GRANT MANAGEMENT
*Kenya Medical
Research Institute*



**Harun Kimani
MD, PhD**
AG. DEAN, SCHOOL
OF MEDICINE
Kenyatta University



**Damalie Nakanjako,
MBChB, MMED, PhD**
DEAN, SCHOOL
OF MEDICINE
*Makerere University
College of Health
Sciences*



**Robinson Ssebuufu,
MBChB, MMed, FCS
(ECSA)**
DEAN, FACULTY OF
CLINICAL MEDICINE
AND DENTISTRY
*Kampala International
University*

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PERSPECTIVE



BY William M. Macharia, MD, MSc
Associate Dean Research
Faculty of Health Sciences – East Africa
Aga Khan University

East African countries have not been spared by the global ravage of COVID-19, which has now seen 27 million infected with more than a million deaths globally over the last nine months. Reporting on COVID-19 cases has been erratic or non-existent in Southern Sudan, Burundi, and Tanzania. Kenya and Uganda have recorded nearly 40,000 cases and 650 deaths. This has presented the region with challenges and opportunities in nearly equal measures. Nearly all sectors have witnessed disruptions across clinical services, education and research activities – encompassing the tripartite mission of academic health centers. There has been much speculation on the extent to which the pandemic would adversely affect low-income countries, especially Sub-Saharan Africa, in view of fragile economies and poor health infrastructure. The ability of academic health centers to provide required leadership at this trying time has been stretched to an extent rarely witnessed.

The commentaries presented in this issue of *Leadership Perspectives International* demonstrate numerous similarities in approach used to limit the rate of community spread while protecting the socio-economic livelihoods for Kenya and Uganda citizens. The early introduction of internal and external travel restrictions, public education on face masks, sanitization, and social distancing appear to have paid dividends as the toll, so far, has been below projections.

The pandemic challenge appears also to have opened doors for some important innovations necessary for coping with this dire situation, even occurring at a time of scarce imports, limitations in the global market, and restricted flights. Among those cited by the authors are repurposing of TB geneXpert and HIV PCR equipment to diagnose SARS Cov-2; local manufacturing of viral transport media; and the production of primers, PPEs, and sanitizers with automated dispensers. To transform a new intensive care unit at Kenyatta University into the main national COVID-19 treatment center required enormous effort and input in training of technical staff and establishing an infectious diseases unit. Such inputs from the central government might not have been as rapidly

acquired were it not for the pressure of the pandemic.

Probably the most outstanding contribution by all the academic health centers has been the role their faculty have played in national COVID-19 task forces that advise governments on all aspects of resources, forecasting, and disease control and management. Faculty members also have been ensuring continuity of the medical education programs, which increased utilization of digital platforms such as Zoom and Webinar to avoid disruption of masters and doctoral programs. The way these digital platforms have been embraced suggests they will most likely outlast the pandemic.

While regular research has been disrupted markedly during the pandemic, the Eastern African region has witnessed an increase in COVID-19 research grants. This has tested the ability of ethics review committees at academic health centers in the region to cope with higher volumes of grant applications with very tight timelines. This exposed research management weaknesses within our systems and produced changes in processes in order to attract valuable grants. This and other innovations forced by need may be considered the silver lining of the pandemic as they are likely to become permanent features of our academic health centers.

As the countries anticipate flattening of the COVID-19 curve and relaxing curfews to enable their economies to reopen in coming months, our regional governments have, without doubt, come to realize the critical role academic health centers play in national economies as well as maintenance of safety. Countries that are largely self-sufficient in human capital cope better, even in situations of limited resources, as they can more readily innovate under duress. These positive developments will position the Eastern Africa region better in attaining more equitable global partnerships.

“...our regional governments have, without doubt, come to realize the critical role academic health centers play in national economies as well as maintenance of safety.”



Evans Amukoye, MD

Senior Principal Scientist
Acting Director, Scientific
Programs, Partnership
and Grant Management
Kenya Medical
Research Institute

Kenya Medical Research Institute (KEMRI) is a state corporation established 40 years ago with the responsibility of researching human health. It has 11 centers across the country and focuses on six programs—biotechnology; traditional medicine and drug development; infectious and parasitic; public health and health system; non-communicable diseases; and sexual and reproductive, adolescent, and child health.

The Institute works closely with the Ministry of Health programs through its membership in various technical working groups and in providing services for and on behalf of the ministry. Key among these is a molecular laboratory, which has the largest capacity in the country to conduct viral load for people living with HIV/AIDs. This is the same equipment that has been converted for use in our COVID-19 response.

With the advent of a coronavirus outbreak, the Institute stepped up and used its resources across the country to test for the virus. The automated molecular diagnosis for HIV and RT-PCR across its centers have been availed for this purpose. To help in the fight against this pandemic, KEMRI increased capacity at its incubation center for production of hand sanitizers (sodium hypochlorite antiseptic) and virus transport media. The Institute is now beginning production of primers and is in the process of optimizing its rapid-diagnostic test kits, as well as validation of commercial kits. While we prepare for vaccine trials by a KEMRI/Oxford team, our scientists also are

“...we have worked very closely with the Africa CDC and other regional bodies for support, sharing experiences, and as part of the African initiative to be self-reliant in the provision of healthcare.”

researching to produce an in-house candidate vaccine antigen. It seems COVID-19 was a wake-up call for the Institute to increase its innovation research portfolio.

Scientists at the Institute also have been supporting the country and national government by supporting policy influenced by evidence-based medicine, changing practices by our presence in various technical working groups, and translating research findings produced in our incubation center. Because most fieldwork was halted, our scientists have had more time to refocus on COVID-19 research. Internal research grants attracted 59 proposals, the national research fund had over 60 applications, with FLAIR 7 applications among others.

During this pandemic, we have contributed to building the country's capacity to diagnose COVID-19 by training laboratory managers from 46 out of 47 counties in the country on biosafety, sample collection, and diagnostics. We also trained clinicians and laboratory staff from the public and private sectors and other laboratories. Together with JICA, we trained laboratory managers on strengthening laboratory preparedness and building resilience to public health emergencies in East Africa countries. To achieve our goal, we have worked very closely with the Africa CDC and other regional bodies for support, sharing experiences, and as part of the African initiative to be self-reliant in the provision of healthcare.

Going forward, we will need to address other challenges, especially building next-generation research leaders, increasing funding, and strengthening our knowledge and grants management.

Most importantly, there is also a need to find better means of making policymakers understand the link between research and development, hence the need to increase funding and support for science.



**Harun Kimani,
MD, PhD**

Ag. Dean, School
of Medicine
Kenyatta University

Our academic health center at Kenyatta University has been adversely affected by the onset of COVID-19. The university medical school was closed, and an attempt to teach students online had limited success as many come from far-flung villages. The hospital, which serves as our teaching facility, has been turned into a national center for COVID response.

The hospital is independently managed by a board, on which the university is well represented by the dean, the vice-chancellor, and a university council representative. The governance structure is intended to allow for university ideas and opinions to be included in the hospital's operations; however, this is not always the case. The ministry of health, as the government's representative, has more influence, and we are working cordially with hospital management for a more inclusive policy to serve both patients and students learning at the facility.

The university teaching hospital is a center of excellence in treating and isolation of confirmed cases of the coronavirus infection. The institution is newly constructed, which allows for ample available space. We did not need to evacuate other patients, other than those who were receiving follow-up cancer treatment. There have been challenges due to a lack of personnel and a lack of training on infection prevention and control. We have since composed panels to interview and recruit different cadres of staff to offer services in the academic health center and at the national level, where more health workers are required.

The infectious disease unit has been constructed and fitted with the necessary equipment to prevent the spread of coronavirus as well as manage critically ill patients. In Kenya, a large proportion of those infected present with mild symptoms and the rate of spread has not been rapid; thus, health facilities have been able to cope. Unfortunately, there have been reports of health workers contracting the disease from their patients. This can be attributed to inadequate personal protective equipment where cases reach health facilities and are treated before

being confirmed, lack of training, weak guidelines on management and treatment of cases in an African setup, and poor funding of activities to deliver care and treatment.

The country and the health system in Kenya are pioneering home-based care for the management of COVID-19 cases. This has been brought about by many cases with mild symptoms. Home care is envisioned as a means to reduce the burden on health facilities, but it also risks increasing community spread. Thus, caregivers require intensive training; and our academic health facility is at the center of this effort. As an academic-led health facility, we hope that epidemiologists can be able to map-out interventions that work in an African environment and culture, accelerate testing, and prepare to vaccinate our population once the vaccine is available. Our academic health center is well-positioned to participate in clinical trials, as we have numerous coronavirus-infected patients and our catchment population is young and can volunteer for vaccine trials.

Our students also have been adversely affected by the outbreak, as undergraduate students can no longer attend their classes. Post-graduate students are continuing their education via Zoom and do their defenses online. We are working with partners in North America to produce modules for training post-graduate students in family medicine, including on COVID-19 management.

“ The country and the health system in Kenya are pioneering home-based care for the management of COVID-19 cases. ”



**Damalie Nakanjako,
MBCChB, MMED, PhD**

Dean, School of Medicine
Makerere University
College of Health Sciences

The School of Medicine at Makerere University College of Health Sciences, created in 1924 as a Faculty of Medicine, is the oldest and leading medical school in Eastern Africa. The School of Medicine, at Mulago National Referral and Teaching Hospital Complex, provides training, research, and patient care as its major mandates. Our medical school has produced the country's most influential leaders in healthcare, research, and politics. My vision is to continue creating an environment that develops life-long learners and transformational leaders in science and innovation to meet our community's health needs in the 21st century.

The school has increasingly provided groundbreaking research to improve health since the 1950s in multiple ways. Burkitt lymphoma was first detected in Uganda, initially described as a sarcoma of the jaw and subsequently, in 1962, discovered to be a distinct form of Non-Hodgkin lymphoma [1-3]. This led to the establishment in 1967 of a dedicated cancer research institute, the Uganda Cancer Institute (UCI) [4]. Similarly, in 1970, research on Kaposi's sarcoma was conducted in Uganda by Dr. Kyalwazi through early immunological studies, where a striking impairment in the delayed hypersensitivity response to dinitrochlorobenzene was noted in patients with a "malignant" type of tumor [5]. Fast forward to 1985, when "Slim disease" was described by three Makerere University scientists as a new disease associated with HTLV-III infection [6]. Subsequently, the 1999 landmark HIVNET 012 study showed that single-dose Nevirapine at the onset of labor and a single dose to the infant led to a 42 percent reduction in maternal to child HIV transmission, providing the developing world with a cheap and simple option to protect thousands of children born by HIV-infected mothers [7, 8].

These health innovations and research have continued, including several studies to improve the diagnosis and treatment of HIV and associated opportunistic infections in hospitals and communities [9-13]. More recently, a KIR B centromeric gene

(2DS5) present in Ugandan women was reported to be protective against pre-eclampsia, a leading cause of maternal mortality in the country [14, 15]. Consequently, several centers of excellence in healthcare training and research have emerged, including, but not limited to, the Infectious Diseases Institute (IDI), the Makerere Lung Institute (MLI), the Makerere University Infection and Immunity (MUII), and the Makerere University Joint AIDS Program (MJAP).

Health scientists at Makerere University continue to provide invaluable support to national health priorities, including current contributions to the national response to the COVID-19 pandemic. Our scientists constitute half of the national COVID-19 task force [16, 17]. The Schools of Medicine, Public Health, Biomedical Sciences, and Health Sciences, and the Infectious Diseases Institute at Makerere University's College of Health Sciences have been at the forefront of COVID-19 innovations in diagnostics, case management, surveillance, modelling impact, and public health interventions against the spread of the pandemic [16, 18, 19]. Several faculty in the medical school won competitive research awards from the Makerere University COVID-19 Research and Innovations Fund to support multidisciplinary approaches to control the spread of SARS-COV2 and the impact of the disease [19]. Additionally, throughout the COVID-19 pandemic, we have scaled up our virtual learning opportunities. We now provide our learners with virtual opportunities for interactive clinical discussions through online tutorials, clinical grand rounds and mini rounds, journal clubs, and various webinars.

In addition to serving as researchers and scientists, medical doctors trained at Makerere University have contributed to Uganda in political leadership roles. These invaluable leaders include: the late Dr. Samson Kisekka, who served as prime minister (1986 - 1991) and vice president of Uganda (1991 - 1994); Stephen Malinga, the former minister for disaster relief and refugees in the Ugandan cabinet (2011 - 2013); Ruhakana Rugunda, our current minister of health in the Ugandan cabinet (since 2013); Crispus Kiyonga,

“ Health scientists at Makerere University continue to provide invaluable support to national health priorities, including current contributions to the national response to the COVID-19 pandemic. ”

the minister of defense in the Ugandan cabinet (since 2006); Specioza Kazibwe, a surgeon, women's activist, and former vice president of Uganda from 1994 until 2003; Gilbert Bukenya, a former vice president of Uganda (2003 – 2011); Christine Ondo, who served as minister of health (2011 – 2013) and has been chairperson of the Uganda AIDS Commission since 2014; Maggie Kigozi, the former executive director of the Uganda Investment Authority; and the current minister of health, Dr. Jane Ruth Acheng [20].

Uganda hopes to optimize more national gains from her well-trained clinicians through strategic interventions to prevent brain drain as many

researchers and clinicians are lost to 'greener pastures' due to current limited absorption capabilities of the national health workforce [21]. It is with great pleasure and enthusiasm that I serve as a clinician, scientist, trainer, and mentor to lead a team of talented Ugandans who have devoted their service to maintaining the highest quality of training, research, healthcare, and exemplary professional leadership at Makerere University's medical school.

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Robinson Ssebuufu,
MBCChB, MMed,
FCS (ECSA)

Dean, Faculty of Clinical
Medicine and Dentistry
Kampala International
University

Kampala International University (KIU) is a private chartered university in the Republic of Uganda. Founded in 2001, the University has two campuses in Uganda. The main campus is located in Kampala along Kabalagala-Ggaba road; the Western campus (KIU-WC), which hosts all the health-related programs and the University Teaching Hospital (KIU-TH), is located in Ishaka, Bushenyi District about 300km southwest of the capital city.

Uganda, like most of sub-Saharan Africa, is faced with a severe shortage of human resources for health, with more than 80 percent of the health workforce concentrated in urban settings (Ssengooba & Kiwanuka, 2017). Uganda has 12 medical schools. Only KIU has a teaching hospital, which constitutes an academic health center. The dean of the medical school doubles as the executive director of the teaching hospital.

To mitigate the health workforce shortages, KIU has improved access to health professional training and graduates vital cadres for the health sector. The KIU Faculty of Medicine is part of the School of Health Sciences (SHS) and is the largest medical school in the country, graduating more than 250 doctors annually. Also, the SHS graduates more than 1500 nurses and midwives, and more than 200 allied health professionals annually.

KIU's vision is to become a premier institution of international reputation that prepares students for work in an inclusive society. Our mission is to respond to societal needs by designing and delivering an education guided by the principles and values of respect for society, economy, and environment.

KIU's teaching hospital is a tertiary hospital with a catchment of close to one million people.

All health professional training programs at KIU have most of the clinical training done in the district and regional hospitals in addition to placements at the KIU-TH. Our students are exposed to real health problems in the communities and the immediate

impact of healthcare in these communities. Research has shown that doctors trained in communities are more likely to understand population health and accept rural posting (Bhattacharya et al., 2018). In pursuing our vision for improved population health, we appreciate the importance of equipping medical graduates with population health competencies to practice in the community. We are forging collaborations with the district health offices, national, and international partners, and engaging in community-based research.

The COVID-19 pandemic has had both negative and positive effects on academic health centers in the Eastern African region, impacting medical education and training and health services delivery in a number of ways. Universities were closed and medical students, especially those in their clinical years, and residents are missing out on clinical skills and hands-on training, which cannot be substituted with video demonstrations and e-learning. This is made worse by the lack of simulation laboratories in the region. Furthermore, patient care has been disrupted with restricted access to health services due to travel restrictions and the economic impact brought about by loss of jobs. Elective surgeries have also been suspended, and this has created a backlog. The already inadequate human, financial, and other resources have been diverted to improve capacity to manage COVID-19 cases. However even with this prioritization many hospitals face a shortage of personal protective equipment (PPE).

Although there has been an upsurge of COVID-19 related research, there is a general slump in community related research due to the fear of disease transmission. Clinical research has also been delayed or cancelled due to fewer patients.

On a positive note, the pandemic has unlocked the use of e-learning and other innovative technologies in medical education in a region that has for so long had a poor uptake of information technology in the education sector. Many academic medical centers have resorted to online learning and e-business. Staff have had to adapt in a short period of time, including

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attending online courses on how to produce and deliver online educational programs. This has also put enormous pressure on the centers to improve their infrastructure to support online teaching, learning, and other transactions. In essence, we are building a plane already in flight.

KIU-TH engages the community through village health teams (VHTs) to mobilize communities for health programs and strengthen the delivery of health services through referral and linkage at the household level. The district and regional hospitals used in training have found the presence of KIU students a vital contribution to their service delivery capacity; many are now able to reach more clients and have recruited our graduate doctors on completing internship.

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Academic health centers continue to face management and funding challenges in delivering their extended mission of training, research, healthcare, and community service. The lack of coordination between the ministries of health and education creates a mismatch between education and the realities of health service delivery (Celletti et al., 2011). Retention of the scarce human resources for health is complicated by the brain-drain from low and middle-income countries (LMIC) to high-income countries (HIC) and urban migration (Cometto et al., 2013).

Note: This article was co-authored by Patrick Kyamanywa, deputy vice chancellor of Kampala International University - Western Campus.