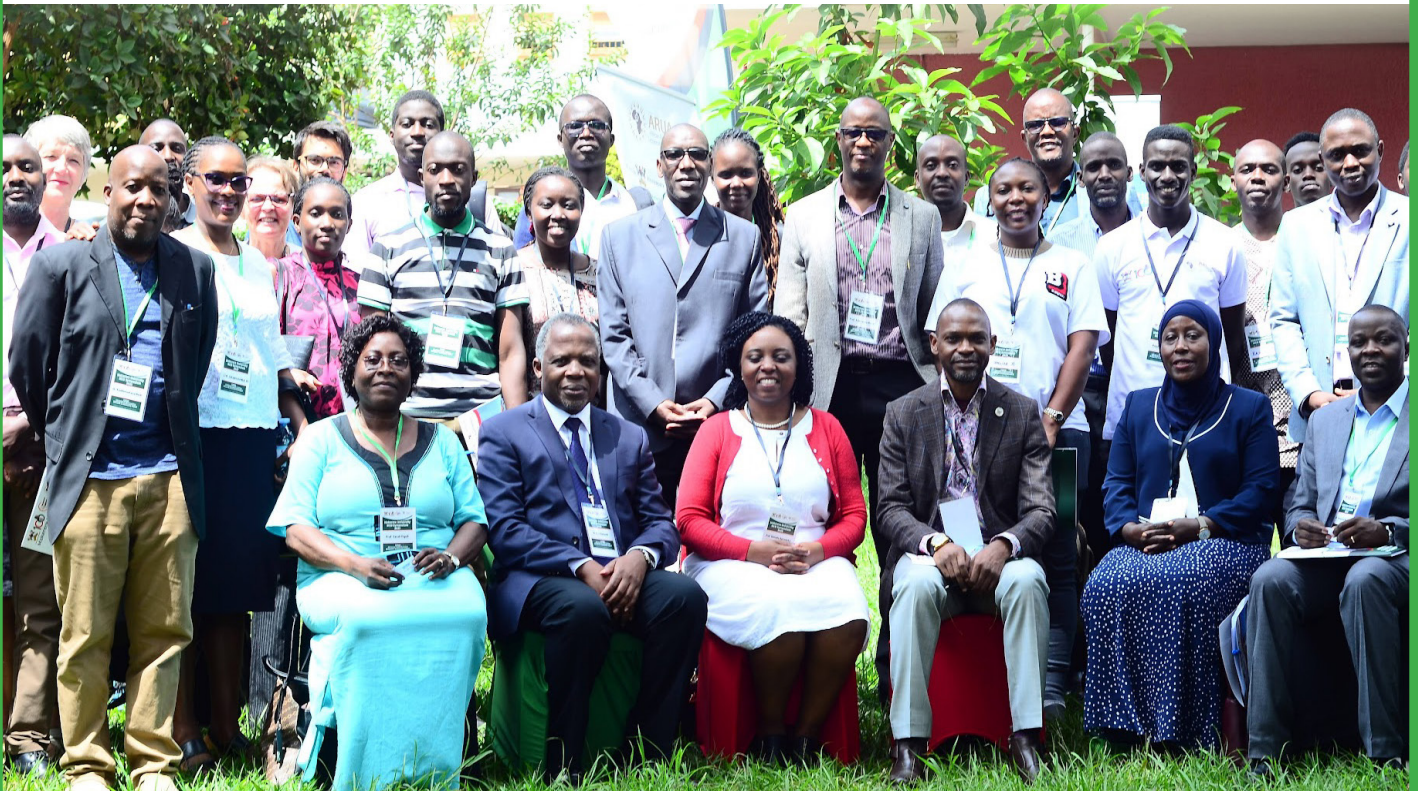




# REPORT OF THE **Non-communicable Diseases (NCDs) Symposium 2023**

Hosted By Makerere University College of Health Sciences, Kampala, Uganda



Deputy Vice Chancellor Academic Affairs, Makerere University- Prof. Umaru Kakumba (Middle), Dr Hafsa Kasule -WHO NCD Lead, Dr Bukachi Fred, University of Nairobi, Prof. Damalie Nakanjako- Principal Makerere University College of Health Sciences (MakCHS ) and all MakCHS staff, students and partners

## **Kampala: March 4, 2023**



# Non-Communicable Diseases (NCDs) Symposium 2023 Conveners



**Professor Damalie Nakanjako**, Principal-Makerere University College of Health Sciences, Kampala, Uganda



**Dr Fred Bukachi**, Director of the NCD Center for Excellence (CoE), hosted at University of Nairobi, Kenya

# Non-Communicable Diseases (NCDs) Symposium 2023 Co-Chairs



**Dr Innocent Besigye**, Senior Lecturer, Department of Family Medicine, School of Medicine, Makerere University College of Health Sciences



**Dr Isaac Ssinabulya**, Consultant Cardiologist – Uganda Heart Institute and Honorary Faculty in the Department of Medicine, School of Medicine, Makerere University College of Health Sciences



## List of abbreviations:

- ARUA:** African Research Universities Alliance
- BL:** Burkitt's Lymphoma
- ID:** Infectious Diseases
- MaKCHS:** Makerere College of Health Sciences
- MRC:** Medical Research Council
- NCDI:** Non-Communicable Diseases and Injuries
- SCD:** Sickle Cell Disease
- UCI:** Uganda Cancer Institute
- UHI:** Uganda Heart Institute
- WHO:** World Health Organisation



## Background and Objective of the Symposium

The Non-Communicable Diseases (NCDs) Symposium was convened in Kampala, Uganda on March 04, 2023 hosted and organized by Makerere University College of Health Sciences, a member of the African Research Universities Alliance (ARUA) NCD center of excellence (COE) that is hosted by University of Nairobi, Kenya

The objective of this Symposium was to provide a forum for dissemination of innovations and advances in NCDs with regards to training and research and their impact on community in Uganda and entire East African region. The theme of the Symposium was: *“Advances in NCD Training, Research & Community Impact”*.

In attendance were representatives from the Uganda Ministry of Health, Makerere University College of Health Sciences (MaKCHS), ARUA, World Health Organization (WHO), Uganda Cancer Institute, Uganda Heart Institute, Non-Governmental Organization (NGO), and Professional bodies as well as local and international NCD scientists and clinicians.

## Structure of the Symposium

It was a blended symposium where participants attended both physically and streamed online. There were both oral as well as poster presentations from the various participants.

The meeting was divided into major three sessions covering the following sub themes topics:

1) Cardiovascular diseases, 2) Renal diseases, 3) Diabetes Mellitus & other Endocrine disorders, 4) Cancer, 5) Mental Health disorders, 6) Respiratory diseases and Lung Health, 7) Sickle Cell Disease & other Hematological conditions, 8) Interactions between NCDs & Infectious Diseases, 9) Trauma, 10) Stroke and Neuroscience and 11) GIT diseases.

*The first session of the symposium was moderated by Dr Mark Kaddu Mukasa from Department of Internal Medicine*

## Opening Remarks

The Symposium opening remarks were given by Prof. Damalie Nakanjako, the Principal, Makerere University College of Health Sciences. In her remarks, Prof. Nakanjako thanked and welcomed all the participants for honoring the invitation to come and attend the symposium.

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*She informed participants that ARUA (African Research Universities Alliance) has been instrumental in supporting the symposium. ARUA is a network of universities from different countries, but with a common vision. This network aims to enhance research and graduate training in member universities through a number of channels including setting up of Centres of Excellence (CoEs) to be hosted by the member universities.*

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She further informed the participants that ARUA brings teams together from academic institutions in Africa to work together so that members are cognizant of what is going on in terms of research and training in the various institutions, share experiences, dialogue and exchange of information and good practices as this is more sustainable than working as individual programs or projects within individualized institutions. Prof. Nakanjako thus noted that this NCDs symposium was evident of this cause and efforts.

In her concluding remarks, Prof. Nakanjako emphasized that ARUA was not a project, but rather a network of research intensive academic institutions in Africa and working together to promote research and its impact in Africa and globally.

## Remarks from Dr Fred Bukachi, Director of ARUA CoE at University of Nairobi, Kenya



cutting themes are gender, education & mentorship, communication & dissemination and engagement with the public.

Dr Bukachi informed participants that the center has had some successes: 1) supported research and training 2) has been able to give out small grants up to 30,000 UK pounds to different researchers within the 5 universities, 3) supported this NCD Symposium and other workshops within the region, 4) built more partnerships and networking which has been fairly successful in the last 2 to 3 years, 5) had a short private online course (Uniwell short course) looking at indoor pollution with the University of Birmingham (and we are hoping to extend this course to the rest of the partners in the region).

Dr Fred Bukachi thanked the organizers of the symposium for inviting him. He informed participants that the ARUA Center for Excellence (CoE) in NCDs is a hub hosted at the University of Nairobi, Kenya was launched in December 2022.

This network is a partnership including Makerere University (Uganda), University of Nairobi, University of Dar-es Salaam, the University of Ghana (Ghana), University of Ibadan (Nigeria), University of Rwanda, and the University of Witwatersrand (South Africa). The NCD CoE collaborates with MakCHS and other partners including University of Glasgow and University of Leicester in the United Kingdom. He further noted that the vision is to build more partnerships, and strengthen networking. The Centre's research areas on NCDs has been framed around three broad areas of: 1) Prevention, 2) Early detection & control, and 3) Big data . The other cross

***He invited Makerere University students to participate in the Erasmus plus mobility program when the call is made where through student exchange, they award up to 150 scholarships.***

Dr. Bukachi also mentioned some ongoing activities and future plans including: The NCD Symposium that was taking place at the time, the Regional NCD Symposia, the 4th Biennial Conference planned to be held at the University of Lagos from 15 to 17 November 2023; and the continuous grant applications & collaborations (with the new collaborations of University of Birmingham and Columbia University).

He concluded his remarks by reporting that there was a new collaboration, the International Collaboration Exchange program which was about to be signed with an investor from Columbia in New York, which aims to support students electives. He thus encouraged students to be on the look out when these calls are made as this is a great opportunity for them to improve through these student exchange programs.

#### **Questions raised:**

*Noted that from the research themes, Rehabilitation and occupational health were missing.*

*Requested Dr Bukachi to share the Flyer for the Lagos ARUA Annual meeting scheduled in November.*

## **Remarks from the Guest of Honour, Dr Umaru Kakumba, Deputy Vice Chancellor for Academic Affairs of Makerere University (also acting Vice Chancellor at the time of the symposium).**



In addition, Prof. Kakumba called upon researchers and academics to spearhead the translation of research into knowledge and practice within the communities and among policy makers. He also encouraged collaboration with the private sector to support research and training initiatives. He appreciated the role of universities in fostering the international collaborations, training and research; the local collaborations between the universities, agencies of government and the community in working together to solve health issues.

Prof. Kakumba welcomed members to the Symposium. He noted that this was an important symposium because NCDs were noted as a global health burden and a disaster, subjecting many people to an economic burden especially in developing countries. This was a serious concern to the academia, researchers and health care systems. He also observed that awareness of NCDs was low among people and that the symposium had brought forth the great work done by academia and researchers to handle and prevent NCDs.

Prof Kakumba noted that many families were sacrificing a lot of resources in handling members with NCDs and he called on for behavioural change. He requested for youth to support the prevention and fight against NCDs.

In his concluding remarks, Prof. Kakumba appreciated the effort from the leadership of Professor Nakanjako and ARUA for the excellence in working together with Makerere University. He thanked the other partners from various universities that were supporting research and the efforts made to improve health in the community. He then declared the NCDs Symposium 2023 officially open.

## **Remarks from the Commissioner Non Communicable Diseases, Ministry of Health Dr Frank Mugabe from the Ministry of Health represented the Commissioner for NCDs, Dr Charles Oyo.**



Regarding the National Priority Areas for NCDs Research and Training, he highlighted that NCDs are a major cause of mortality at 71% of the global burden according to the WHO Report of 2021. He pointed out that each year, 15 million people between 15 and 69 years of age die of NCDs in low and middle income countries, which is regarded as premature death. He listed some of the common NCDs in Uganda as; cardiovascular diseases, diabetes, mental health diseases, neurological diseases, sickle cell diseases. He indicated that Uganda is one of those countries that still consume a lot of alcohol and it's estimated that, 10% of Ugandans who consume alcohol live with alcohol related disorders. He also noted high tobacco use and substance use. Physical inactivity especially in the urban setting was a factor in the increase of NCDs as well. In the Ugandan population of those below 40 years, accidents are contributing 70% of the early deaths, to which NCDs are contributing 50%.

### **Research and Training:**

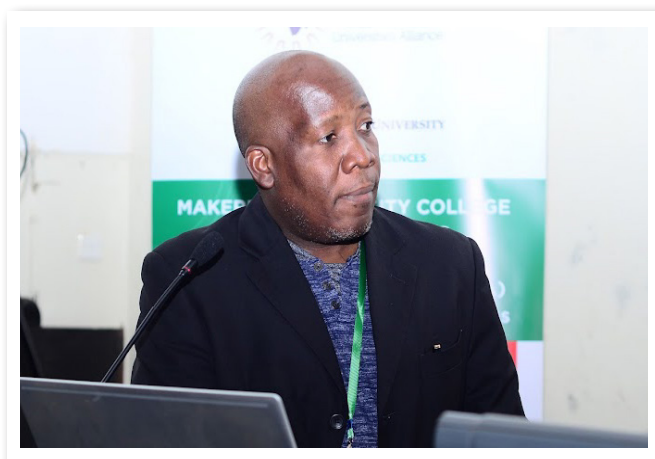
The commissioner NCD informed the participants that the Ministry was conducting a second National Risk Factors Survey facilitated by WHO and Makerere University School of Public Health. He also called for a multi-sectoral approach to fight the NCDs involving the business community, media, civil society, affected families, and society to invest in what is needed. There is need for schools to get involved to talk about NCDs in classes and lecture rooms with a focus on prevention.

Dr Frank Mugabe concluded that there is need to create more opportunities for dissemination of the research findings and sharing them with policy makers. He thus invited members with any NCD related data to share it with the MoH because it was in the process of reviewing the Health Management & Information System (HIMS ) tools and the treatment policy.



# Presentations

*Session Chair*



**Dr Mark Kaddu-Mukasa**

## **Overview of Cardiovascular research and training in Uganda Presented by Dr Isaac Ssinabulya, Consultant Cardiologist at Uganda Heart Institute**



**Dr Isaac Ssinabulya**

He shared findings from the Uganda NCDI Poverty Commission Report which stated that: NCDIs comprise a large share of the burden of disease in Uganda. NCDs also occur at younger ages in Uganda, the burden of NCD conditions is very diverse, the poor suffer disproportionately from NCDIs, most NCDI deaths occur outside of health facilities, NCDIs represent a major gap in achieving UHC, and domestic funding for NCDIs is limited.

***He informed participants of the current research and 2-3 year fellowship training at the Uganda Heart Institute. The other available***

***training programs include : Adult Cardiology, Pediatric Cardiology, Cardiac Critical Care, Cardiac Anesthesia, Cardiac Surgery, Cardiac Nursing. Each program takes a maximum of 2-3 fellows per year.***

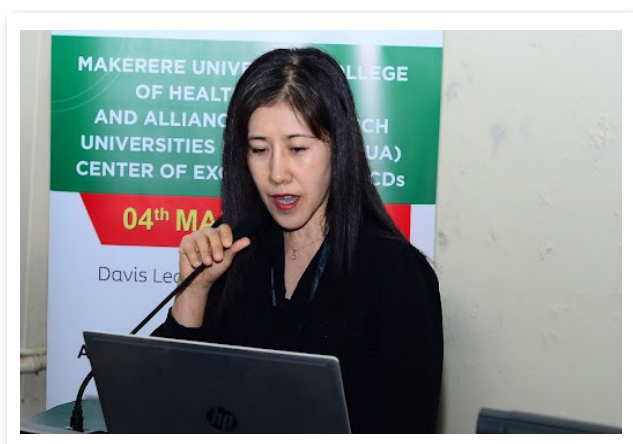
**Research:** Reported that research there has been generated interest on CVD and a critical mass has been trained collaboratively including 4 PhDs, 26 master students, 4 non degree research, & 4 fellows that have been supported for advanced training. There has been great improvement in CVD research capacity building as well, several publications have been published from CVD research and innovations conducted. There have been spill overs from trainees taking lead in other NCD areas like renal diseases, and cancer.

**Collaborations:** Some of the ongoing collaborations include: Case Western Reserve University and University Hospitals Case Medical Center, McMaster University, The University of Cape Town, Children's National Medical Center, University of Toronto, Madras Medical Mission, Amrita Institute of Medical Sciences and Research, Riley' Children's Hospital, Chain of Hope- UK, Gift of Life International, and Salam centre Sudan.

Community engagement: UHI introduced a PEN-Plus Model which builds upon WHO-PEN. Reported that this is an integrated health service delivery for severe/advanced chronic NCDs at the first-referral health facility level. PEN-Plus trains mid-level providers (general doctors, clinical officers & nurses) to provide advanced-level care, ensures availability & access to advanced NCD care for the poorest and most vulnerable populations.

He concluded by emphasizing the need to pay attention to the increase in the hypertension among the young population. He encouraged the approach of training and control in communities so that even low cadre health workers to be able to screen, control and manage those screened.

## **Detecting sub-clinical anthracycline therapy related cardiac dysfunction in patients attending Uganda Cancer Institute: The SATRACD study** *Presented by Dr Zhang Wan Zhu, Uganda Heart Institute.*



Anthracycline plays a major role in cancer treatment in SSA. In Uganda, ATRCD patients typically present with symptomatic heart failure and carry a poor prognosis. She noted that at the Uganda Cancer Institute, the majority of patients only receive screening ECHO prior to therapy. She noted that there was limited data on follow-up cardiac evaluation, burden and predictors of subclinical and clinical ATRCD and there were local guideline for monitoring and management of ATRCD to date.

Key findings & their clinical/public health implications: High incidence of ATRCD in Ugandan cancer patients; with most of them at the subclinical stage or asymptomatic clinical stage. She highlighted the importance of cardiac monitoring program, which is lacking in Uganda. Patients who were diagnosed with sub-clinical ATRCD at the end of the anthracycline therapy and patients with HIV infection were at high risk of developing clinical

ATRCD. Echo screening for subclinical ATRCD at the end of the anthracycline therapy should not be omitted, especially in cancer patients who live with HIV.

**1**

***For Future perspectives and practice, it was recommended that:***

- A** All the patients who receive anthracycline therapy should at least go through Echo screening at the baseline and at the end of the therapy, particularly HIV positive patients.
- B** Echocardiography assessment should be repeated after 6 months of completion of anthracycline therapy.

**2**

***For Future research, she recommended:***

- A** A prospective multi-center cohort study: in Uganda and SSA population.
- B** Investigate further the risk factors of ATRCD, identify the cost effective cardiac surveillance tools and protocols.
- C** A local cardiac monitoring protocol tailored to the limited resources.

She concluded by stating that without regular cardiac monitoring, these patients will live with silent risks of cardiovascular diseases until they present with another heart failure later in their life.

### **Questions raised:**

*How can the results of the study be translated into Practice in rural health facilities in Uganda and Africa as a whole considering that the settings that the rural Uganda is resource limited?  
Members requested for the Echo to be started at other centers like Mbarara and other regional referral hospitals?*

***The second session was moderated by Dr Innocent Besigye from Department of Family Medicine***

## **Session Chair**



**Dr Innocent Besigye**

## **Diabetes Mellitus and Tuberculosis – A Clinician and immunologist’s dilemma**

***Presented by Dr Phillip Ssekamatte, Internal Medicine Department***

In his presentation, he emphasized Pathogenesis of Diabetes Mellitus and TB infection, Immuno-pathology underlying DM-TB, the PROTID trial and the conducted various Case-studies where it was found out that: 1) more research was required to describe relationships between plasma LBP and dyslipidemia in T2DM, 2) Hyperglycemia in pregnancy (HIP) was common among young Ugandan women, and 3) Smoking and alcohol use more frequent in TBI-DM than in no TBI-DM individuals.

He concluded by listing the future research questions grouped in 2 themes: Diagnosis and Therapeutics & HIV; the questions listed were: 1) What is the most reliable test for TB infection diagnosis in individuals with DM? 2) Challenges with monitoring and classifying the DM in TB diseases? 3) To what extent do immunomodulatory therapies influence TB-DM comorbidity? 4) What is the influence of HIV/DM co-morbidity on TB infection and disease risk and treatment outcomes?

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## Research and Training Programs for Sickle Cell Disease (SCD) at Makerere College of Health Sciences

*Presented by Professor Sarah Kiguli and Dr Ruth Namazzi, Paediatrics Department.*

These talked about the research and training programmes in SCD at the College of Health Sciences. They informed participants that Africa bears a highest burden of SCD with a large number of children who remain undiagnosed, and hence do not even contribute to the statistics. There is a limited trained work force in the care for SCD patients. They emphasized that all people need to work together to get evidence and give care as a team. They noted that there has been an increase in SCD related research in Uganda and beyond in the past 10 years; with studies including clinical trials, cohort



studies, implementation science and genetic studies. They reported the sources of funding for SCD research were mainly external and the local funding was from the Makerere Research and Innovations Fund (MakRIF). Reported that the NOAHRM trial findings led to the approval and registration of hydroxyurea for treatment of sickle cell disease in children in Uganda.

The other haematology disorders being studied included anaemia caused by malaria and hematological malignancies. It was emphasized that training for SCD was key in improving outcomes which has been incorporated into undergraduate and post graduate training programmes. In addition, they mentioned the need for capacity building for SCD research to

support PhD and master students' training This has been delivered as part of the biomedical courses as well as clinical apprenticeships on the ward with an aim to recognise the SCD symptoms and referrals as needed. They concluded by mentioning two ongoing SCD research projects:

- 1) Vitamin D Supplementation in Children with Sickle Cell Disease -VIDS and**
- 2) Strengthening Capacity for Clinical Care, Research & Training in SCD (SCRT Project)** and the College of Health Sciences hematology fellowship program that was currently being accredited by Uganda Medical and Dental Practitioners' Council.



# Cancer Research and Training in Department of Surgery

*Presented by Prof Moses Galukande, Surgery Department.*

**Prof Galukande gave some historical perspectives that Burkitt Lymphoma, an aggressive non-Hodgkin lymphoma, was first described by Dennis Burkitt in 1958 in Ugandan children.**



**Research:** Participants were informed about ongoing graduate research on cancer related themes. “Since 1974 to 2022, 264 dissertations have been written, 33 (12.5%) out of 264 are cancer related, and the top 4 cancers are: Breast cancer (22), Prostate cancer (5), Oesophagus cancer (3) and Colorectal (3)” he said.

**Faculty Driven Research:** Prof Galukande reported five (5) ongoing PhDs related to cancer (Drs. Herve, Mbiine, Kituuka, Sekitoleko, and Makumbi) who are focusing on Stem cell Therapy, Ethics, Carcinogenesis (Bladder and Breast) and Neuro trauma. Reported that breast cancer and prostate cancer were the top researched cancers by Faculty. *Collaborations and funding:* He mentioned that members received funding from the Makerere RIF and through collaborations with IARC - ABCDo, IARC - ABCDE, Minnesota, Cambridge and Toledo, and participated in development of cancer guidelines of: Breast (which has been done thrice), esophagus cancer, Stomach cancer and Prostate cancer. Reported that in cancer; 1 PhD was completed, 5 PhD were in progress and 38 breast cancer manuscripts have been published since 2003 to date.

Prof. Galukande concluded by stating the future research priorities & opportunities as: 1) Breast Cancer to become top on cancer research among women in Uganda, 2) Tumor biology (disparities in epidemiology) and 3) Contextual evidence because there need for Uganda’s own data.

# Overview of Cancer Research and Training Programmes at Uganda Cancer Institute



Presented by Dr Nixon Niyonzima, Director Research and Training, Uganda Cancer Institute. Dr. Niyonzima began by giving a brief background of Uganda Cancer Institute (UCI); It was established in 1967 (56 years ago) as a collaboration with the NCI, started as a treatment centre for Burkitt Lymphoma, was a facility of early combination chemotherapy trials, received autonomy in 2016 and is now an East Africa Centre of Excellence in Oncology care.

Overview of cancer in Uganda. He reported that: There are 34,008 new cases of cancer in Uganda per year, UCI receives only 20% of these cases (6,000 to 7000, 600(10%) children), 30% of the patients with Cancer are HIV positive, survival is low for most cancers, majority present in stage III and IV disease. Number of cancer patients are seen increasing over years, an estimated 77-90% of all breast cancers present with stage III/IV disease.

UCI offers a Comprehensive Cancer Care: Medical oncology, Gynaecological-Oncology, Surgical Oncology, Paediatric Oncology, Palliative care/rehabilitation, Research and training, Laboratory, Radiation Oncology, Nuclear Medicine. UCI is planning regional a Cancer Surveillance to expand cancer registration in Uganda at 5 PBCR which will feed into National Cancer Registry. These are Kampala Cancer Registry, Mayuge Cancer Registry, Arua Cancer Registry, Gulu Cancer Registry and Mbarara Cancer Registry.

**Research and Training:** Research priorities are: Comprehensive Cancer surveillance, (epidemiology, aetiology), Clinical research, Implementation Science research (uptake of evidence-based practices), Catalyse basic and translational cancer research (Research lab, Biorepository), Clinical Trials, Mentorship, & Networks and collaborations.

## Innovations:

**1-** There has been development of novel and cost-effective Therapies. All these are with the relatively less toxic COM regimen – Cyclophosphamide, Vincristine and Methotrexate and the question is can we improve this therapy?

**2-** Developing Novel Therapies for BL where they are developing mouse xenograft models to study tumor evolution in BL to understand mechanisms of resistance and test new therapies/new cost-effective combinations.

## Expanding Cancer Research:

Clinical trials, New and affordable diagnostics, ctDNA/liquid biopsy, Radiation Oncology, Implementation science research, cost effectiveness studies, estimating the unmet need for cancer services, Prevention and control research, Africa cancer genomics, Diversity and phylogeny of oncogenic viruses, Oncogenome in viral associated cancers, Immune responses (CD4+ and CD8+ T cell repertoires) in cancer patients with and without HIV, establishment of cohorts to study cancer risk factors, clinico-pathologic characteristics, and survival and Economics of cancer.

Research and Training infrastructure: Pathology laboratory and Biorepository, receive more than 5000 patient specimens per year, Comprehensive Cancer Care Centre, 7000 new cancer patients per year, Regional Cancer

Centres, Research laboratories, have highly trained and qualified staff, linkage to MakCHS as the academia, they have a Research Ethics committee, Scientific Review Committee and an Institutional Biosafety Committee.

## **Future research and Training infrastructure:**

Research laboratories, Bone Marrow Transplant, Biorepository, Research spaces/offices, Surgical services and ICU, Training centre, Conference centre and Reference clinical laboratories Concluded by giving challenges UCI was facing:

- 1- High Patient burden on; staffing – quality and quantity, infrastructure, and equipment,
- 2- Funding for the regional cancer centres,
- 3- Financing and budgetary constraints, high costs of training cancer specialists,
- 4- Inadequate resources (financing),
- 5- Limited Human Resource capacity,
- 6- Limited infrastructure, and
- 7- Large number of patients/heavy clinical load.

# **Cervical Cancer Prevention and Early detection**

***Presented by Miriam Nakalembe, Associate Professor, Obstetric & Gynaecology Department***

**Prof. Nakalembe informed participants of the on-going projects:**



**1-** United States-East Africa HIV-Associated Malignancy Research Center for Career Development and the Prevention, Early Detection and Efficient Linkage to Care for Virus-related Cancers.

**2-** The East Africa Consortium for HPV and Cervical Cancer in Women living with HIV/AIDS (EACHC).

Prof Nakalembe gave highlights from the study entitled “A Public Health Approach to an Integrated Cervical Cancer Prevention Program in Uganda and Kenya”.

Noted that they have proved that a public health approach for Cervical Cancer screening with self collection of specimen for HPV testing and treatment within the community was feasible and acceptable. This was purposed to mop up HPV vaccination for girls who did not get either HPV1 or 2 during the school vaccination campaigns in conducted in recent years.

She noted that this was in response to an evaluation of the MOH community approach to integrated Cervical Cancer prevention.

## **Reported the following Program activities:**

**1-** Screening in Health fairs have been conducted: Uganda and Kenya.

**2-** Community Outreach and Mobilization (Focus group discussions to develop tailored messaging, trained Village Health Teams (VHTs), and community mobilization Strategy. 3) Mobile Treatment set up in sub-county health center.

## **Other ongoing studies:**

1) Effect of SARS-CoV-2 infection on Immune responses to HPV infection among HIV infected women. 2) Role and



clinical significance of unconventional gamma delta cells in cervical cancer and HIV-1 co-infection. 3) Barriers and facilitators of cervical cancer screening literacy among HIV-infected women in care at rural public health facilities in Eastern Uganda.

She concluded by recommending innovative approaches to increase awareness and access to early detection and diagnosis, and setting up points of care for cervical cancer care diagnostics. Prof. Nakalembe thanked and acknowledged many people for their heroic work in this study, but paid a special mention to the Uganda colleagues Edward Mbidde, Miriam Laker, Jackson Orem and Victoria Walusansa.

# Liver CANCER

***Presented by Professor Ponsiano Ocama, Internal Medicine  
Department***

Prof Ocama reported that he started conducting studies of Liver Cancer in 2009 when they observed that many young people were succumbing to Liver cancer at Mulago hospital. At that time, it was found out that up to 7071 patients had died of liver cancer from the Cancer Registry records. His group has received funding from NIH to conduct a study in Liver cancer which is a lethal type of cancer, to enhance the investigation capacity and understanding the epidemiology of liver cancer in HIV patients.

He formed the H2U consortia where 2 projects were established. One was a case control study (study sites were Mulago hospital, UCI and Lacor hospital), and the second one was to screen and conduct surveillance in patients who were at risk of developing liver cancer. The aim is to ascertain the possibility of detecting small cancers that could be amenable to early treatment.

In Project 1, out of the 441 recruited patients, it was found out that majority died within one month from the time of diagnosis, and only 7.9% cases were ascertained alive by 12 months post enrollment. In Project 2, screened 2,000 HIV positive patients from IDI, and did similar evaluations like those in project one, and picked out those who were at the risk of obtaining liver cancer where they recruited 1,950 patients and followed up 400 patients for 4 years. At 6 months follow up they were found with liver cancer.

Eventually the H2U consortia expanded and became H2A because it started working with other countries in Africa like Senegal. The objectives are similar and have expanded to Project 3 focusing on HIV cohort and Project 4 focuses on schistosomiasis HBV nested study. If these 2 projects are conducted, they would be able to inform clinical practice and policy regarding treatment eligibility looking at the biomarkers.

Collaborators include John Sokins, Glasgow, Liverpool, Cambridge London School, and in Uganda (Mbarara University, UVRI, Vector Control Disease unit).



### **Questions raised:**

*Asked whether that high increase in the 50% increase in liver cancer in women may have been driven by alcohol?*

*Wondered whether the neurological work the team handling Diabetes were doing could be extended to vascular biology just to look at the immune responses in those patients with TV, HIV and diabetes*

***The third session was moderated by Dr Isaac Ssinabulya, Uganda Heart Institute***

## **Session Chair**



**Dr Isaac Ssinabulya**

## **Kidney disease in Uganda**

***Presented by Dr Robert Kalyesubula, Physiology Department***

Reported that 800 million people are estimated to have CKD worldwide. One in 10 people has kidney disease, 13% of adults in sub-Saharan Africa have some form of kidney disease and 50% of adults living with CKD do not know they have it.

Reported that they have conducted kidney studies in Uganda and findings have been published. Emphasized that: Kidney disease kills people in Uganda, and management of Kidney disease is very costly.

The Uganda Kidney Foundation has been established whose mission is to prevent kidney diseases and care for patients with kidney diseases in Uganda. Reported some of the activities the Foundation has done including; Advocacy and Collaborations through: meeting the politicians, engaging international partners, training Institutions, engaging local communities & patients, involving clinicians, developed research capacity and infrastructure, to improve and expand NCD Care.

The Foundation established a 'local solutions-Balamu NCD Project' whose activities have been integration and scaling up NCD services in Nakaseke district. Reported that this was a community health-worker centered model and the activities done are:

- 1-** set up three NCD Clinics,
- 2-** trained 20 Community Health Workers,
- 3-** screened 16,000 self reported NCDs (HTN, DM, CRD, CKD), and
- 4-** set up Pocket Doctor Booklets as part of community education.

He concluded by providing a future perspective:

- 1- Scale up services,
  - 2- seek political support,
  - 3- train more experts,
  - 4- International collaboration and Partnership for Kidney care,
  - 5- set up transplant center(s), 6) set up local & regional training programs and
  - 7- advocate for Health Insurance.
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## **Global Priority Areas for Research & Training in**

### **NCD WHO Cluster** *Presented by Dr Kasule Hafisa, Technical Officer of NCDs, World Health Organisation, Uganda Country Office.*

Began by calling upon members to translate research into practice. Noted that the missing link needed to be bridged.

Reminded members that there was a high burden of NCDs affecting 41 million people each year, and accounts for 74% of global diseases. Seventeen million of these are below the age of 70, or considered to be premature deaths, and among these ones 86% were in low and middle income countries like Uganda. Emphasized that NCDs were not a disease of the rich, it was also affecting those in developing countries, with 77% deaths in low and middle income countries.

Reported that over 80% of the NCDs were cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes. The 4 share common risk factors. These have common behavioural structures that is tobacco use, alcohol consumption and unhealthy diet with high sugar and salt. She reported that over 1.8 million people die simply by using tobacco directly, at over 1.2 million deaths occur for being exposed to tobacco, 1.8 million deaths occur annually due to sodium excess.

Dr Kasule called upon researchers to ensure that policies and practices should be grounded in the best scientific knowledge. The WHO strategy is that all partners work together to consider science, technology and broader

knowledge to choose the best evidence and tools for improving global health. She noted that WHO research agenda is to ensure decisions and actions for addressing NCDs are grounded in evidence from research. Interventions must follow the evidence-based research and addressing the NCD risk factors.

The aim is to generate knowledge and help to translate this knowledge into action through innovative approaches, in the context of low and middle income countries. In addition, the other aspect is to support low and middle income countries to build capacity for epidemiological and health systems.

Emphasized strengthening the links between health research and health policy and practice. Dr Kasule concluded by stating that there was need for a National Research Agenda on NCDs so that information is generated that can guide policy, practice and resource allocation.

## Research and Training Programs in Mental Health

*Presented by*

**Dr Kalungi highlighted the many ongoing research projects on mental health, to mention a few:**



**Dr. Allan  
Kalungi,  
Psychiatry  
Department**

- 1- The medium- to long-term EBOLA associated Psychological Distress and psychosocial problems in Mubende District in central Uganda (Ebola+D Project), PI is Associate Prof. Eugene Kinyanda.
- 2- Developing Group Support Psychotherapy, PI is Dr. Etheldreda Nakimuli Mpungu.
- 3- The Burden of Alzheimer's disease on caregiver Stress and coping in the Ugandan Population, PI is Associate Professor Noeline Nakasujja.

### **The current evolving research projects:**

- 1- 'Disease and Power: Teachings from Africa'. Collaboration with Prof Alex Broadbent who is a Director at the Centre for Philosophy of Epidemiology, Medicine and Public Health, at Durham University, United Kingdom by Assoc. Prof. Winstons Muhwezi.
- 2- The Burden, Lived experiences of HIV Stigma and associated factors among HIV infected Adolescents. A mixed methods study in Uganda by Dr Justine Diana Namuli.
- 3- An HIV Education Program for improvement in HIV knowledge for Adolescents with Intellectual Disability in a pilot study to develop and assess an HIV training program for adolescents with mild to moderate in Entebbe, Uganda, the PI is Dr. Anita Arinda. Reported that there are 12 Ph.D students and 21 Graduates in training.

# Advances in stroke/neurological training, research and community impact

*Presented by Associate Professor Mark Kaddu-Mukasa, Internal Medicine Department*



Dr Mark Kaddu-Mukasa reported an increase in stroke related research and publications over the years. He noted that Ischemic stroke has better survival probability in 30 days. Due to the high burden of neurological impairment and interventions needed like hydroxyurea, recommended the testing of hydroxyurea or other available disease-modifying interventions to address these challenges.

From the ongoing study, he noted that there was a general downward trend in communicable disease diagnoses and an upward trend in NCD diagnoses over the study period.

## Recommended:

- 1- Improving outcomes of acute stroke admissions across Africa is an urgent imperative.
- 2- Clear understanding of the patient-related predictors of acute stroke fatality is needed to help tailor management algorithms to avert stroke deaths.
- 3- An appraisal of system-related factors such as stroke services availability within hospitals is also required to help identify gaps for resource allocation for optimal stroke care.

## Stroke care requirements:

CT or MRI scans, Angiography, Electrocardiography,

Carotid doppler ultrasonography, Stroke unit, Intravenous thrombolysis, Mechanical thrombectomy, Neurosurgical decompression therapy for severe strokes, availability of physiotherapy, Occupational therapy, and speech therapy for post-stroke rehabilitation, medications including anti-hypertensives, insulin and oral hypoglycaemics, antiplatelets, anticoagulants, statins, and mannitol.

Training: from the MEPI 2013-2016, the program has supported 12 Master of Medicine with research focused on various neurological disorders and stroke (6 in

Internal Medicine, 2 in Psychiatry, 4 in Pediatric and child health); 2 PhD fellows and 2 neurology fellows trained and attained neurology fellowships.

*Currently under the Stroke R01 and D43 grants:* In the D43 grant (10 Masters of Medicine research have been supported (6 have completed & 4 are ongoing), 5 PhD supported are ongoing, 2 Junior faculty in Neurology research training) and in the R01 stroke grant (14 Masters of Medicine research training have been supported (8 have completed and 6 are ongoing).



## Paediatric Neurosciences at Makerere

*Presented by Dr. Rodney Ogwang represented Dr Richard Idro, Paediatrics Department*



### Reported the conducted studies as follows:

**1-** Studying the effects, mechanisms and interventions to improve the long-term neurocognitive and developmental outcomes of brain injury in children conducted by Dr Richard Idro, Associate Prof Nakasujja, Dr Robert Opoka and Dr Paul Bangirana.

**2-** Nodding Syndrome in Africa. Reported that Uganda was winning the Nodding Syndrome war which was managed by: Investment in vector control (done through mapping, larviciding, aerial spraying) and Mass drug administration. They have had a strategy of: 'bringing it all together' where groups bring all available results together as multidisciplinary expertise.

**3-** Another study has been focusing on Brain Injury in Sickle Cell Anaemia.

**4-** The other study is the Brain Safe Trial, Hydroxyurea for Neurological and Cognitive Protection in Pediatric Sickle Cell Anemia in Uganda: A single arm open label trial, "BRAIN SAFE II". The aim of this study is to evaluate the effectiveness of Hydroxyurea on reducing the burden of stroke and cognitive impairment in children with sickle cell anemia.

It was reported that there has been capacity building through infrastructure and human resource development in the nodding syndrome study (technicians, 1 in research management, 4 master of science students, and 4 Ph.D. students)

They have also supported 8 PhD and Post Doc students in the other studies.



## Participation in everyday life – A randomized controlled trial of mobile phone-supported and family-centred rehabilitation after stroke in Uganda.

*Presented by Susanne Guidetti, Professor in Occupational Therapy, Centre of Excellence for Sustainable Health, (CESH) NCDs.*

Susanne Guidetti reported that the conducted studies are in 2 phases: Phase 1: The program studied the people who had had stroke, related and the team's experience of using ICT in Sweden, Denmark and Uganda in order to develop a model for an intervention. Phase 2: Developed and tested an intervention, where ICT has been used as support in rehabilitation for people who had stroke and their relatives in a feasibility study with RCT design in Uganda and for a group of people in Sweden (without control group). Funded by the Swedish Research Council

(VR) Several manuscripts have been published from these studies.

### Current studies:

Study 1 will explore the impact of stroke in a rural population in Uganda. Earlier studies only have included samples from urban areas, less access to rehabilitation in rural areas and there is a need to investigate the impact of and the recovery process after stroke.

### Study 2 will be a full scale RCT evaluate the F@ce intervention.

Study 3 and Study 4 will be a part of a process evaluation of the implementation process in line with MRC guidelines. Principles of the F@ce intervention: 8 weeks intervention aiming to increase functioning in daily activities for persons living with the consequences of stroke, and participation in everyday life for persons with stroke and their family members. The participants will practice the target activities in their home environment supported by mobile phone calls and SMS.

## An overview of advances in investigational methodologies in Infectious Diseases relevant for NCD research and training in Uganda

*Presented by Dr David Kateete, Immunology and Microbiology Department*



relevant to NCDs and IDs.

Working with other universities through a Collaborative African Genomics Network comprised of Baylor College of Medicine, Houston, Texas, University of Botswana (Baylor Children's Clinical COE) and Makerere College of Health Sciences (Baylor Children's Clinical COE).

### Reported that:

the African scientists have found out that HIV-1 infection shows phenotypic heterogeneity in disease progression where more graduate students, took center stage in the study. Single variant enrichment analysis revealed a variant rs145985036 in the NLRX1 gene to be associated with HIV disease progression.

### Training:

Reported that in 2019 formal bioinformatics graduate training (Master's & PhD) at Makerere started. The programs attract approximately 70 applicants per year, and are internationally appealing. 220 applications in 3 years have yielded to 76 registered students with 64 masters and 12 Ph.D. (Uganda (189), Kenya (10), Tanzania (5), Somalia (4), Rwanda (02), South

Dr David Kateete started by noting the interaction between NCDs and Infectious Diseases (IDs) is well established and evolving (Helicobacter pylori and peptic ulcer disease; Hepatitis B/C viruses and chronic liver disease; Infectious agents and cancer; COVID-19 and Obesity, DM).

Dr Kateete noted that both NCDs and IDs have underlying genetic factors, many largely unexplored that however there are modern molecular approaches that can elucidate genetic risk factors underlying NCDs/IDs. Africa has a high genomic diversity.

### Collaborations:

Through H3 Africa to build capacity in Africa for Genomics and Environmental Health Research

Sudan (2), eSwatini (2), Nigeria (2), Cameroon (2), Ghana (1) and Congo-Brazzaville (1).

**Reported that:** Data science has gained prominence and popularity over the last 5 years; it is the discipline 'that deals with vast volumes of data, using modern computational tools and techniques to find unseen patterns. This combines the application of Computer Science/IT, Mathematics/Statistics, and specific domain expertise (in this case 'Health Sciences') into a single discipline that focuses on uncovering actionable insights hidden in big data.

The project "Makerere University Data Science Research Training to Strengthen Evidence-Based Health Innovation, Intervention and Policy (MakDARTA)", a multidisciplinary partnership between Makerere University & John Hopkins has the following training objectives: 1) establish Higher degree training (MS & PhD) in health data science, 2) provide postdoctoral training

that will enable Ugandan H3Africa alumni to transition into faculty and/or independent data science research leaders, and 4) train Makerere faculty to enhance their capabilities for data science research and mentorship of data science trainees.

They have also participated in: Curriculum Review / development with the School of Public Health: training health researchers in AI/ML; reviewed bioinformatics programs to 'Bioinformatics & Health Data Science'; Trained Researchers in AI/ML: Masters and PhD Trainees. 4 PhD trainees will depart to JHU, 8 Master's trainees doing research in health data science. Recruited 2 PhD trainees (biology/health background).

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## TRIAD – Trauma, Injuries, and Disability Unit

*Presented by Frederick Oporia, Trauma Injury Control Center, School of Public Health*



**Background:** The TRIAD at MakSPH is the only unit in Uganda with focus on injury prevention research, Track record of injury research, and research capacity building and strong national & international collaboration and partnerships.

Personnel of the Unit include: Head of Unit, 3 PhD Fellows, 4 Research Associates and others. Its objective is to contribute to the reduction of the injury burden in Uganda by strengthening research capacity on injuries and their medical, social, and economic consequences to individuals, communities, and the country.

Field of research, training, and service: Unintentional injuries: Road traffic injuries, drowning, burns, falls, poisoning, occupational injuries and Intentional injuries (Violence): Suicide and self-harm, Interpersonal violence, collective violence, Gender based violence, violence against children and Disability and rehabilitation

Why they exist?

**1-** To study the high burden of injuries in the country, with over 5 million people succumbing to injuries every year, every six seconds, someone dies from an injury with over 50 million people remaining with disabilities and

**2-** to capture data because of insufficient research capacity to drive prevention and management. Noted that injuries require a multidisciplinary approach. According to the Uganda Annual Health Sector Performance Report 2017/2018, the burden of injuries in Uganda indicated that



injuries were the leading causes of hospital admission and mortality rated at 5.60%. Emphasized that the injury pyramid was basically what was not seen (death, permanent disability, hospitalization, and missing work or school).

Partners: Bloomberg Philanthropies, Uganda Police Force, KCCA, The Johns Hopkins University, The George Institute for Global Health, Stellenbosch University, University of Rwanda, University of Malawi, Freiburg University, The US CDC, Imperial College London, MRC – UK, Transaid, GIZ and Uganda government ministries: Health, Works and Transport, OPM etc

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## Trends of Orthopaedic trauma in the last decade

*Presented by Dr. Sekimpi Patrick, Orthopaedics Department*



According to the WHO World Report on Road Traffic Injury Prevention, Geneva, 2022. Road Traffic Accidents (RTAs) were among the leading causes of death in 1990 ranking the 9th in 1990, and in 2020 RTAs ranked the 3rd.

During the period between August 2004 to July 2005, 1398 (39%) of the 3585 individuals involved in RTAs had musculoskeletal injuries.

According to the Annual Uganda Police Force Reports (2010-2021), it reported an increase in RTA. It was reported that the majority occur within Kampala Metropolitan area with 53.3% reported in 2010, 54.5% in 2011, 38% in 2020 and 39% in 2021. According to study commissioned by the Parliamentary committee of Health: a number of admissions to Regional Referral hospitals including Mulago were due to trauma and is steadily increasing each year.

**Reported that:** other causes of trauma admissions were: Gunshot wounds, Falls from

trees, Domestic violence and Assault.

In the Orthopaedic Department, Mulago Hospital, a steep increase in fragility fractures was noted, mainly around the hip and spine due to HIV/ HAART associated osteoporosis. Because of increased Ugandan life expectancy, the focus is on early fixation and mobilization and use of C-ARM during fixation.

### Concluded by recommending: 1)

establishing data systems for research purposes. 2) promoting inter-institutional collaboration in data sharing, policy development. 3) Police vigilance/ road safety awareness are needed. 4) planning for an organized Transport system . 5) A multi-disciplinary approach in patient management. 6) establishing an effective referral systems (with regional and national trauma centers of excellence). and 7) Training at all levels and also consider sub-specialty/ fellowship training and think of a Curriculum review.



# Research and Training for respiratory diseases

*Presented by Dr. Bruce J Kirenga, Chief Research Scientist & Director Makerere University Lung Institute*



He described the Chronic respiratory diseases (lung diseases) as the chronic diseases of the airways and other structures of the lung. The Chronic respiratory diseases, cardiovascular diseases, cancer, and diabetes are the four major NCDs that account for 80% of all NCDs deaths. The major chronic respiratory diseases are: COPD, and Asthma.

Previous studies and findings from asthma studies reported that: asthma prevalence is at 11.02% in Uganda, higher in urban areas than rural areas (13% vs. 9%), prevalence of Severe Persistent Asthma at 34.6%, only 14% were using inhaled corticosteroids (ICS), 60% of Asthmatics experience less than 3 attacks per year and Asthma mortality rate is 27.3 per 1000-person years. These were revealed from 3 research studies and they have also reported in publications.

Dr Kirenga reported findings from the previous COPD studies that: prevalence of COPD in rural Uganda was at 16.2%, highest in those aged 30-39 years, 66% of COPD patients experienced  $\geq 1$  attack in year one, 34% experienced  $\geq 3$  attacks in the 1st year, and COPD mortality rate of 95.90 deaths per 1000-person years. These were revealed from 2 research studies and they have also been reported in publications.

## Research:

Informed participants that U.S and low- and middle-income Specialized Center Cooperative Agreement (U54) will characterize lung cancer epidemiology and the relationship to HIV-1 infection (Project 1), somatic mutation burden, HIV and accelerated aging (Project 2), and customization of artificial intelligence computational algorithms using radiographic chest scans based on HIV status (Project 3). At the forefront of this 3-project and 3-core based center include the establishment of national lung cancer diagnostic referral networks in Uganda and Tanzania, a unique lung cancer biorepository (Projects 1 & 2), teleradiology (Admin Core & Project 3), telepathology (Admin & Pathology Cores), technology transfer (Admin Core & Project 2), and training of early career investigators (Developmental Core).

## Training objectives are:

1) build capacity among Ugandan investigators to conduct basic clinical, epidemiological, and implementation research related to NCDs. 2) support faculty at MakCHS to initiate, lead and manage NCD Research Projects through mentored fellowship training. Training was focused on NCD research

Two training tracks i.e. (Mentored Training and Graduate Training). Selected : 9 for Non-Degree, 7 for Masters, 4 for Ph.D. (with gender of 45% as females and 55% as males).

*Revealed* that major dangers to Lung health were tobacco smoking, HIV infection, tuberculosis, COVID-19, indoor air pollution from the biomass smoke and ambient air pollution in urban areas. Medicines and diagnostic tests essential in asthma & COPD care were widely unavailable in Uganda and remain largely not affordable.

## Conclusions and Way forward



The successful symposium was celebrated by cutting a cake

The principal gave the closing remarks and urged NCD researchers, academicians, policy makers, private entities and government bodies to work together to generate and utilize evidence to guide multidisciplinary approaches and policies to prevent and manage NCDs. She also urged members work with the Ministry of Health and WHO (both represented at the symposium) to utilize the research outputs to inform national NCD policies. The principal challenged the NCD research and training groups to have an annual NCD symposium as a forum for dissemination of research findings; experience and lessons learnt and their impact to communities in the field of NCDs.

Special thanks to all the symposium delegates, co-chairs and organizing committee, presenters and all physical and virtual participants for make the 2023 MakCHS NCD symposium a success

**Rapporteur:** Ms. Evelyn Bakengesa  
**Report was reviewed and edited by**  
Dr. Innocent Besigye (Co-Chair)  
Dr. Isaac Ssinabulya (Co-Chair)  
Prof Damalie Nakanjako (Convenor)

## ANNEX 1: SYMPOSIUM PROGRAM



### MAKERERE UNIVERSITY COLLEGE OF HEALTH SCIENCES PROGRAM: NON-COMMUNICABLE DISEASES (NCD) SYMPOSIUM 2023

TIME	ACTIVITY	PRESENTER
8:00am-9:00am	Arrival of Guests and Delegates	Secretariat
<b>Session One</b>	<b>Moderator: Dr. Kaddu Mukasa Mark</b>	
9:00-9:10am	Remarks from the Principal MakCHS	Prof. Nakanjako Damalie
9:10am-9:30am	Remarks from the ARUA	Dr. Fred Bukachi
9:30am-9:50am	Remarks from the Guest of Honour	Vice Chancellor, Makerere University
9:50am-10:10am	National Priority Areas for NCDs Research & Training	Dr. Oyo Charles (Commissioner NCDs, MOH)
10:10am-10:30am	Overview of Cardiovascular disease research and training programs	Dr. Isaac Ssinabulya Dr. Doreen Nakagayi Dr. Zhang Wan Zhu
<b>10:30am-11:00am</b>	<b>Group picture and Tea Break</b>	
<b>Session Two</b>	<b>Moderator: Dr. Besigye Innocent</b>	
11:00am-11:20am	Overview of Renal disease research	Dr. Robert kalyesubula
11:20am-11:40am	Diabetes mellitus & Other Endocrine Disorders	Assoc. Prof. Andia Biraro Irene
11:40-12:00noon	Sickle Cell Disease and other hematological disorders	Prof. Sarah Kiguli Dr. Namazzi Ruth Dr. Anne Akullo
12:00-12:20pm	GIT Diseases	Assoc. Prof. Ponsiano Ocama
12:20noon-12:40pm	Cancer research programs	Assoc. Prof. Galukande Moses Dr. Nionzima Noxin
12:40pm-1:00pm	Q&A	Assoc. Prof. Ponsiano Ocama
<b>1:00pm-2:00pm</b>	<b>Lunch Break and Posters/Exhibition</b>	
<b>Session Three</b>	<b>Moderator: Assoc. Prof. Isaac Kajja</b>	
2:00pm-2:30pm	Global Priority Areas for Research & Training in the NCD WHO Cluster	Dr. Kasule Hafisa
2:30pm-2:50pm	Mental Health Disorders	Assoc. Prof. Noeline Nakasujja
2:50pm-3:20pm	Stroke and Neuroscience	Assoc. Prof. Kaddu Mukasa Mark Assoc. Prof. Richard Idro Assoc. Prof. Susanne Guidetti
3:20pm-3:40pm	Interactions between NCDs & Infectious Diseases	Dr. David Kateete Prof. Damalie Nakanjako
3:40pm-4:00pm	Trauma	Dr. Kobusingye Olive Dr. Sekimpi Patrick
4:00pm-4:20pm	Respiratory Diseases & Lung Health	Assoc. Prof. Bruce Kirenga Dr. William Worodria
4:10pm-4:30pm	Q&A	
4:30pm-4:50pm	Way forward	
4:50-5:00pm	Closure and Evening Tea	



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## ANNEX 4: PICTO-MEETING









