



ONE IDI 2021

Science Fair Report

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FOREWORD

The Woman Inside is a 1978 drama film that portrays the actions of a tough Vietnam veteran who wants to have a sex-change operation. Her aunt and others struggle to understand why she would want to do such a thing. Far-fetched as this may sound, *The Woman Inside* is somewhat analogous to undertaking Scientific Research without engaging the public to understand the 'what' and the 'why' of research and the whole scientific enterprise. The Infectious Diseases Institute (IDI) promotes public discussion and dissemination of scientific research on its various social media platforms, in addition to hosting the IDI Science Fair (SF). The SF is an annual event held in the One IDI week in the month of February.

With the ongoing COVID-19 pandemic, IDI's Research Programme elected to host the 2nd annual Science Fair (SF) virtually. In keeping with the One IDI culture; a mind-set of proactively seeking and creating synergies between the Institute's programmes, the SF 2021 highlighted individual and collective research contributions towards better health care in resource limited settings. The SF 2021 attracted over 600 registered attendees from over 10 countries across the world including the US, Nigeria, Kenya, UK, Pakistan and India.

Herein, we detail how and what the Research Program jointly disseminated with the Global Health Security (GHS), Training & Capacity Development Program, Health Systems Strengthening (HSS), Prevention Care, Treatment Programmes as well as The Academy- for Health & Innovations. The public immensely benefited from shared learnings and innovated service delivery models for ensuring continuity of essential businesses during the pandemic. I hope that you too will find this report of the SF 2021 an enlightening read.



Dr. Andrew D Kambugu MB.ChB,
M.Med (Int. Medicine) FRCP (London)

**The Sande-McKinnell Executive
Director**

Infectious Diseases Institute, College of
Health Sciences, Makerere University.



THROUGH RESEARCH TO IMPLEMENTATION; THE ROLE OF IDI

Introduction



Barbara Castelnuovo

Head of Research Program IDI

The Research Program aims to consistently produce outstanding, internationally recognized scholarship body of scientific work) in

infectious diseases that influences global policy and practice, with emphasis on building research capacity of Africa's scientists. The aim is to achieve control of HIV/AIDS and opportunistic infections (OIs) as well as prepare and respond to global health security threats. The Science Fair is one of the Program's innovations to catalyze utilization of its research products as part of the knowledge translation process. The Science Fair leverages the One IDI Culture that fosters a unified front of its six technical programs which innovate and harness data to deliver health systems strengthening and capacity development models for resource limited settings.

Theme for Day 1 "Through research to implementation; the role of IDI" took our audience on the journey of different and relevant research themes categorized as E-health and Innovations and

Global Health Securities, HIV-Co-Morbidities, Pharmacokinetics, Implementation Science and HIV Prevention, Data Science and Bioinformatics in HIV and COVID-19 Prevention.

Data science and its utility in bioinformatics and genomic research as well as health care and research capacity development played a pivotal role in all the sessions, since they are a major strategic pillar in the IDI strategic plan 2018-2023.

On Day 2, the Science Fair hosted a "Meet and Mentor day" with a panel session with our expert scientists fostering interest in investigative science, leadership and management of research projects as well as work-life balance. This was followed by (add number) breakout mentoring sessions in virtual rooms attended by mentors and mentees.

The high attendance of the Science Fair was driven by a sense of curiosity and commitment of local and international participants turned the Research Program into a "North Star" guiding personal and governmental decisions in matters of healthcare and research. Read on....

Access session presentations here: <https://bit.ly/32czpGG>

Day 1 Statistics

4

SUBTHEMES

23

SPEAKERS

13

PRESENTATIONS

759

REGISTERED

Day 2 Statistics

14

MENTORS

10

PANELISTS

476

MENTEES

648

ATTENDEES

“

A mentor enables a person to achieve. A hero shows what achievement looks like. "

-John C. Mather

E-HEALTH, INNOVATIONS SESSION 1: AND GLOBAL HEALTH SECURITY

Dr Issa Makumbi, Manager of Uganda's Public Health Emergency Operations Centres, chaired this session, as representative of the Ministry of Health. Dr. Makumbi emphasised role and need for locally generated research evidence as well as research discussion/dissemination platforms like the annual IDI Science Fair, to shaping health policy and programming strategy.

E-Health and Innovations in Surveillance and Management of Pandemics



Dr Parker-Rantashi Rosalind

Director of the Ugandan Academy for Health Innovations IDI

Rosalind discussed a thought-provoking question on whether or not Africa is Leapfrogging in E-health implementation.

She benchmarked her arguments on documented gaps presented in Data from the GSMA State of the Industry report (2017) and the Economist, which detail the rate of technology adoption, access to electricity and mobile-phone penetration in highly and low-resourced settings respectively.

Rosalind presented opportunities for digital health and Artificial Intelligence(AI) systems in RLS using statistics on health data explosion, mobile money banking, increasing computing power and social media data.

This background introduced the role of digital health in a pandemic, using IDI's contributions to e-health innovations in the COVID-19 pandemic including the Call4Life that uses the Interactive voice response technology (IVR) to aid inter-communication with patients and community in health information dissemination, reminders to adhere to ART medication and symptom reporting. Call4Life is also deployed for COVID surveillance and case management as well as evaluation of nutritional gaps in PLHIV / pregnant women during the COVID19 outbreak and lock down.

The presentation highlighted the ClinicARTAccess software system that aided continuity of essential HIV/AIDS Prevention, Care and Treatment (PCT) services during the early period of COVID-19 when government had restricted public movement. The system allows PLHIV to pick ART from community pharmacy and communicates information back to the facility. The system is undergoing integration with Call4Life to do automated patient appointments. This will further mitigate against COVID related challenges in HIV loss to follow up.

Recommendations:

Policy makers should consider adopting the use of Digital Health in public health emergencies. Existing tools can be the starting point since they are quick and cost effective to scale up. Investment in increased digital health literacy and supportive infrastructure is important, partly to support response to alerts generated from the system in real time. Utilization of data out-puts of eHealth is also a key consideration provided internet coverage is improved.



Mohammed Lamorde

Head Of Department IDI Global Health Security,
FRCP,PHD

This presentation highlighted that globally preparedness for epidemics and pandemics is weak – 40.2%. *Global Health Security Index – Johns Hopkins University October 2019.*

Dr. Lamorde spoke on the development of a Global Health Security Program at IDI focussed on i) Biosafety and Biosecurity and Laboratory systems, ii) Epidemiology and Laboratory Infection Prevention Control, Case Management and Medical Countermeasures.

With support from the US Centers for Disease Control and Prevention, IDI established preparedness teams in West Nile districts to prevent detect and respond to priority zoonotic diseases using a One Health approach. In addition, during preparedness for Ebola virus disease population movement patterns among travellers from DRC and Rwanda were mapped to prioritize interventions to mitigate the risk of spread of the outbreak into Uganda.

Within hospital settings, a serosurveillance research platform was set-up to study causes of fever in admitted patients including zoonotic infections or outbreak prone illnesses.

During the COVID-19 pandemic, the program developed a mentorship cascade for infection prevention and control that was used nationally and produced alcohol-based hand rub to support hand hygiene as a primary measure reduce infections in health care settings. Several peer reviewed publications authored by the IDI GHSP staff were presented, including of an advanced platform for clinical research during outbreaks (JMEDICC).

Recommendations:

Outbreaks will certainly occur, so alongside measures for early detection, surveillance and infection prevention and control, capacity for evaluating drugs and vaccines to mitigate these risks should continue.

Addressing AMR in Uganda through Programmatic and Research Efforts at IDI



Shevin Jacobs

Senior Clinical Lecturer at Liverpool School of Tropical Medicine
(LSTM) and Global Health Security Department Team Lead at IDI

Dr Shevin Jacob highlighted antimicrobial resistance (AMR) as an ongoing global health threat with >700,000 annual deaths attributable to infections caused by drug-resistant strains. If left unchecked, this threat could result in 10 million AMR-related annual deaths by 2050, leading to a reduction of 2-3.5% in global Gross Domestic Product (at a global cost of \$100 trillion).

Global efforts to address the AMR crisis have been initiated through multilateral (like the tripartite alliance of the WHO, OIE and FAO) and bilateral (including the Global Health Security Agenda and the Fleming Fund) initiatives. Moreover, the WHO has introduced the Global Antimicrobial Resistance Surveillance System (GLASS) to enable AMR-related data collection, analysis and sharing among countries, including Uganda.

Dr Jacob elaborated on Uganda's milestones under the UK government-funded Fleming Fund (FF) project which aims to improve surveillance of AMR and antimicrobial use and consumption (AMU/C) in human and animal health through a One Health approach.

Through this work, FF has supported the enrolment of Uganda onto the WHO GLASS platform, establishment of the AMR National Coordinating Centre, finalisation of the Nation Action Plan for AMR, designation of the National Microbiology Reference Laboratory, selection and capacity building for AMR surveillance sites and submission of AMR data for National WHO GLASS reporting. This work has occurred in synergy with related IDI efforts under the CDC-funded Global Health Security Partner Engagement Project.

In the area of research, IDI is the implementing partner for the Drivers of Resistance in Uganda and Malawi (DRUM) project, funded by the UK Medical Research Council and sponsored LSTM.

DRUM's aim is to understand drivers of transmission for multi-drug resistant bacteria, particularly extended spectrum beta lactamase (ESBL)-producing *E. coli* and *K. pneumoniae*, in Ugandan and Malawian communities.

In Uganda, the main study under DRUM is the Study of water sanitation and hygiene (WASH) and AMR in Uganda (SWAR-U). Currently underway, SWAR-U includes surveillance of AMR bacteria from human, animal and environmental samples in household sampling frames within Kampala and Hoima selected along gradients of human and animal population density. Extracted DNA from isolated bacteria will be sequenced at the Wellcome Sanger Institute in the UK.

In addition, mixed methods are being used to characterise WASH behaviour for faecal exposure. These quantitative and qualitative data will be used to inform an agent-based model that will enable the team to understand how movement of specific AMR markers within the community may be affected by putative intervention strategies.

Another DRUM-related project, DRUM+ (funded by Grand Challenges Africa and sponsored by IDI) will focus on understanding linkages in AMR drivers between paediatric and peripartum patients hospitalised with sepsis at Hoima Regional Referral Hospital and their households.

DRUM overview



- **Overall aim:** To understand drivers of ESBL *E. coli* (ESBL-E) and *K. pneumoniae* (ESBL-K) transmission
- **Study settings:**
 - Uganda (SWAR-U; DRUM+)
 - Malawi (SWAR-M)
- **One-Health approach incorporating:**
 1. Human health
 2. Animal health
 3. Exposure to environmental contamination
 4. Water, sanitation, and hygiene (WASH) practice
 5. Antibiotic usage

SESSION 2: HIV CO-MORBIDITIES

Xpert Ultra for TB Diagnosis: Clinical Diagnostic Accuracy



Lydia Nakiyingi

MMED, PhD,
Principle Investigator-IDI

Lydia is Uganda's Principal investigator on the multicenter clinical trial (10 sites in 8 countries) that evaluated the clinical diagnostic accuracy of Xpert Ultra, an automated molecular test for pulmonary tuberculosis (TB)

The research aimed to provide clinical accuracy information for Xpert Ultra test for detection of tuberculosis including drug-resistant tuberculosis, given the limitations of

the available regular Xpert MTB/RIF assay particularly, imperfect sensitivity for paucibacillary disease (e.g HIV TB, early TB disease etc) and RIF-resistance detection in heteroresistance and in paucibacillary specimens.

The primary objective of the study was to compare the performance of the two diagnostic tools for TB – Xpert Ultra and the regular Xpert MTB/RIF assay – for detection of culture-positive pulmonary TB in new TB suspects. The study also compared the performance of the two TB diagnostic tools (Xpert and Xpert Ultra) in detecting resistance to rifampicin, one of the anti-tuberculous drugs, which when found represents multi-drug resistant TB.

Enrolled study participants fell into two categories- i) The Case detection group (adults 18 years and above, with clinical suspicion of pulmonary TB for more than 2 weeks and without prior exposure to any TB treatment); ii) the multi-drug resistance (MDR) group who consisted of adults 18 years and above, with clinical suspicion of pulmonary TB for more than 2 weeks and highly suspected to have resistance to the antituberculosis drugs. A total of 1753 participants were enrolled across all study sites. Results showed that Xpert Ultra sensitivity was superior to regular Xpert, with Xpert Ultra sensitivity 17% higher than that of regular Xpert in smear negative PTB participants, and 13% higher among HIV-infected individuals. However, the high sensitivity was at the expense of specificity which was significantly lower with the Xpert ultra test compared to regular Xpert, implying that Xpert Ultra is affected by previous TB disease. Xpert Ultra performance was also found to be non-inferior to regular Xpert in detection of rifampicin resistance TB.

Utility of Findings

With findings that Xpert Ultra has better sensitivity than regular Xpert in detection of tuberculosis and is non inferior in detection of rifampicin resistance (particularly in diagnosis of smear negative TB and HIV TB), Xpert Ultra could improve diagnosis of TB in these patients population. The findings contributed to the body of evidence that was used by the World Health Organisation to come up with the current recommendation on the use of Xpert Ultra test as an initial diagnostic test for all adults and children with signs and symptoms of TB where resources allow. The implementation considerations of the World Health Organisation can be found in the WHO report; WHO/HTM/TB/2017.04 for use of Xpert/MTB/RIF Ultra in TB diagnosis.

SESSION 2: HIV CO-MORBIDITIES

Cryptococcal Meningitis Research and Treatment: A Peek Into the Future



David Meya,
MBChB, MMED, Ph.D.
Associate Professor of Medicine IDI

Assoc. Prof Meya gave the audience a glimpse into the future of care and treatment of Cryptococcal Meningitis (CM), stemming from documented evidence and experiences. CM remains a complex OI with high mortality (10-15% of all HIV deaths globally) and a need to consider studies that aim to understand the impact of a bundle of care for CM including Brain Oximetry,

Lactate monitoring, and intracranial pressure (ICP) control is critical. Prof Meya's hinged his study background on the high HIV burden in Africa and the fact that ART Test & Treat are disproportionate to CrAg screening implementation.

Lactate Monitoring: From his findings obtained from 622 participants, 51% (319/622) who had Cerebrospinal Fluid (CSF) lactate measurement suggested that patients with index CM, presenting with a high (CSF) lactate measurement of >5 mmol/L or more, were likely to present with altered mental status, seizures, elevated intracranial opening pressure, higher CSF white cells and lower CSF glucose. This, in comparison to those with mid-range (3.1 to 5 mmol/L) or low (≤ 3 mmol/L) CSF lactate levels. CSF lactate > 5 mmol/L is therefore associated with excess mortality

Brain Oximetry: Study outcomes from 121 consenting participants on cerebral oxygen saturation (RSO2) measurements within 14 days of CM diagnosis, showed a 27% relative reduction in 30-day mortality per 5% increase in initial RSO2. Therefore oxygen status could be optimized by increasing volume status, supplemental oxygen, lowered threshold for blood transfusion, and controlling ICP, all of which could potentially improve survival.

TB and Cryptococcal meningitis co-infection: He went on to show that individuals with cryptococcal meningitis who had concurrent TB infection had a higher risk (approximately 1.5 times) of death.

Cryptococcal meningitis treatment trials. Dr. Meya briefly highlighted an update on ongoing clinical trials to shorten the course of treatment for cryptococcal meningitis and noted that the trial had enrolled almost 98% of participants who were receiving single dose Ambisome vs 7 days of Amphotericin deoxycholate with a background of flucytosine and fluconazole. A second ongoing trial highlighted the use of an oral formulation of Amphotericin, which is progressing well.

Conclusions:

Brain oximetry and lactate measurement are potentially viable biomarkers for predicting outcomes to inform ART related clinical decisions for CM patients on ART. Currently, the approach to ART management among ART-experienced CM patients is still lacking in published evidence to guide clinical decisions. Based on the study findings, there is need to review and strengthen TB screening protocols for TB/CM co-infection in patients with advanced HIV. Potentially there will be shorter course antifungal regimens if the data are favourable. There is need to consolidate research platforms for building local capacity to ask and answer questions that solve our global and local health problems.

SESSION 2: HIV CO-MORBIDITIES

Universal Access to TB Care Services



Stella Zawedde-Muyanja

(MBChB, MPH) , IDI Research Department

Universal access to TB care services will be achieved when all people get the TB services that they need without facing financial risk and when those services are of sufficient quality to meet their needs. The drive to achieve universal access to TB care services underpins the WHO End TB strategy, which aims to provide TB treatment services to 90% of all people with incident TB and reduce global TB deaths to less than 5% by 2035.

Recent progress made towards these targets has however been curtailed by the COVID-19 pandemic which caused a 43% (95% CI 34– 53) reduction in case notification and an estimated 14% (95% CI 11–16) increase in TB-related deaths in Uganda last year. In the aftermath of this pandemic, it is imperative for us to rapidly restore and expand TB care services if we are to achieve the End TB targets. The presenter outlined three IDI projects for expanding the reach of TB care services.

Together with the National TB & Leprosy Program (NTLP), supported by USAID and University Research Council, IDI developed and implemented a patient-centered (discrete) model for community based MDR-TB care. Upon interviewing 103 patients with MDR-TB regarding their preference on care providers, different locations for care provision and different support mechanisms for attending monthly clinic visits, majority preferred home based care by a trained community healthcare worker with travel vouchers. Trust and confidentiality motivated the choice. Cost alleviation by the voucher system improved clinic visits.

To expand TB care services, IDI (supported by the WHO STOP TB Partnership) deployed Implementation and Evaluation projects in Kampala and Northern Uganda's private health sector. A research component is embedded in the implementation TB screening and sputum collection, followed by linkage to public sector for GeneXpert testing through the hub system. The research component is evaluating the impact of 'time to diagnosis' and 'cost incurred while accessing TB care'. Other research outcomes are specificity and sensitivity of CAD4TB software in aiding detection of PTB chest X-ray readings.

Future Direction:

With support from USAID, IDI will conduct the prevalence of Bovine TB in the Karamoja sub-region, North East Uganda. Interventions suiting nomadic populations in this region will be developed based on evidence, to increase access to TB care services among.

SESSION 2: HIV CO-MORBIDITIES

The NIH u54 Grant #USEAHAMRC - 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



Christine Sekaggya
(Wiltshire, MBChB, MMED, Ph.D., FCP (ECSA))
Research Scientist at IDI and Internal Medicine Physician at Mulago National Referral Hospital.



Miriam Nakalembe
(MBChB, MMED OBGYN, PhD)
Clinical Researcher at IDI.



Aggrey Semeere
(MBChB, MMED (Int.Med), MAS, FCP (ECSA))
Physician and Researcher at IDI

Various research projects were carved out of a grand (NIH U-54 consortium) capacity-building grant coordinated by IDI and implemented across several countries in East Africa (Uganda, Kenya, Rwanda, Tanzania, Malawi, Botswana) in collaboration with Universities of California San Francisco, Harvard Med School, Duke and Cornell, NY. Two Principal Investigators (PIs) - Jeffrey Martin, MD, MPH at the University of California, San Francisco at University of San Francisco California and Andrew Kambugu, MBChB, MMed at the Infectious Diseases Institute, Kampala, Uganda - provide oversight. This grant was awarded to comprehensively and sustainably address three major public health problems. First, is the high morbidity resulting from cervical cancer and Kaposi Sarcoma (KS) in sub-Saharan Africa. The second is a lack of/limited number of specialized African researchers to combat deficiencies in HIV-associated cancer control are scarce in sub-Saharan Africa.



Miriam Laker Oketta
MBChB, MSc, DTM&H, DPPM
Medical Doctor and Clinical Research Scientist at the IDI



Hellen Byakwaga,
MBChB, Ph.D.
(Research Scientists at IDI)

The third is a dented research infrastructure problem that affects impactful cancer research at a multi-country level. Lastly, the lack of effective research networks in sub-Saharan Africa - most groups work in silos often unaware of the existence of each other. The PIs therefore set out to achieve three objectives;

- To create a collaborative network among U.S.- based and East African-based scientists and institutions: the USEAHAMRC,
- To bolster the career development of our emerging African principal investigators, U.S.-based junior investigators and others in the USEAHAMRC in the performance of research related to HIV and virus-related cancers
- To conduct novel research - led by our emerging African principal investigators - related to the prevention, early detection and efficient linkage to care for virus-related cancers

The researchers shared ongoing innovations to improve care and treatment of KS in the ART era,

- Free biopsy services for the patients with KS suspected lesions
- Applying artificial intelligence for KS diagnosis via machine learning algorithm
- Pre-treatment navigation to enhance linkage to oncologic care

Take Home Message for the Policy Makers

Cervical cancer prevention through Village Health Team members led community mobilisation and screening using HPV testing is feasible and highly acceptable. Thus, the community-based approach has potential to increase uptake of cervical cancer screening in Uganda and other low-income countries. Scaling up this community approach should be considered as the fight against cervical cancer moves forward. The unacceptably poor survival of HIV-infected adults with KS in the ART era calls for better management of this malignancy through a multi-faceted approach that includes early detection, improved access to diagnosis, and access to better chemotherapy.

PHARMACOKINETICS,

SESSION 3: IMPLEMENTATION SCIENCE AND HIV PREVENTION

Pharmacokinetic Studies (HIV, TB and More); Ensuring the Right Dose for Safe and Effective Treatment



Catriona Waitt

Reader (Associate Professor) in Clinical Pharmacology Wellcome Clinical Research Career Development Fellow IDI

Pharmacokinetics can be understood as 'what the body does to the drug' – how a medicine is absorbed, distributed through the body, metabolised and then eliminated.

The action of many drugs is dependent on reaching the right concentrations in the blood, but if you have too little, the drug might not work, and if you have too much, you might get side effects. So, it is really important to look in a particular population to see if the right concentrations of drugs are reached, because there might be variation due to different genetics, different diet, different body weight and so forth. IDI has six areas of excellence in pharmacokinetics (PK) understand factors behind drug-drug and drug-population interactions, including Antiretrovirals and **Anti-TBs PK**.

The **VirTUAL** (Vulnerable population TUBerculosis Antiretroviral) trial, directed by Dr Waitt, aims to determine the optimal dose of **ATV/r** when used in combination with RIF-based TB treatment in children, adolescents, pregnant or breastfeeding women. The capacity building component of this study is supporting 2 PhD and 4 MSc students under IDI's expert supervision. Their efforts are examining several PK models to predict dosing in special populations among other aims.

Policy Relevance:

People on second line, atazanavir (ATV/R) containing regimens are still at risk of getting TB, and at the moment, there is no data to show how these drugs can be used together. At the moment, it is necessary to switch a patient to the older, less well tolerated drug IPV/R and then double the dose, bringing more side effects and many more pills. Even with DTG on the scene, ATV/R will remain important for some patients.

The methods are novel, in terms of the relationship between the mathematical approaches and the carefully designed clinical studies. This means that we will really be able to understand drug-drug interaction, and in addition to answering the question of Atazanavir, it will also help us develop the methodology to efficiently study other complex drug-drug interactions.

The **SAEFRIF** trial under PI Sekaggya Christine aims to determine the effect of high-dose rifampicin on antiretroviral therapy (DTG & EFV) and the safety of high-dose rifampicin in TB-HIV co-infected patients on ART. Findings will be presented in March at CROI 2021.

The **RIFT** trial is evaluating the safety & pharmacokinetics of high dose rifampicin in Ugandan adults with suspected TB meningitis. The **HARVEST** trials focused Advanced HIV, opportunistic infections, TB meningitis.

Public/Policy Relevance:

Evidence at hand suggests that the dose of rifampicin, a major component of first-line TB treatment, is actually far too low. Increasing dose from 10mg/kg to 35 mg/kg seems to achieve better results without significantly more side effects. All of these studies are generating evidence which will have direct relevance to treatment guidelines for these groups of patients.

The **MILK**, **DoIPHIN-1** and **DoIPHIN-2 PK** studies focus on Pregnancy, Breastfeeding & other 'special' populations.

Public/Policy Relevance:

It is essential that information is gained about drugs in the populations where they will be used. So many changes occur in pregnancy that we need to know whether the drug is safe, whether it works, and whether the right concentrations are reached in the blood in pregnancy. If such studies are not done, it means that when a pregnant or breastfeeding woman requires a medication, it is being used without evidence to support the safe and effective use, and this itself brings risks, which can actually be substantially higher than the risk of doing the studies. This group of studies has built capacity and developed methodology and partnerships, in addition to the evidence produced.

The CAPA CT II study aims to develop scientist capacity in Early phase/ Healthy volunteer studies, PK and emerging infectious diseases. The CAPA CT II leverages the DoI ACT and REVISTA projects with trained PK experts to conduct 'Early phase/ Healthy Volunteer' studies. Drs Lamorde, Walimbwa and Waitt are lead investigators.

Public/Policy Relevance: Early phase studies done in either healthy volunteers, or individuals who are stable on a particular long-term medication, are important to give information about safety and dosing, before moving into the slightly higher risk of patients who have the disease. This is quite a new area in Uganda, but again, these studies offer capacity building opportunities, so that as well as answering the scientific questions, there is lasting impact in ability to undertake this kind of work.

The **PHINX** trial is examining the PK of isoniazid and the safety of PG-determined isoniazid dosing in **TB-HIV** co-infected persons.

Public/Policy Relevance: Looking at the patient's genetics before starting treatment is important in this era. A few years ago this would have been unheard of, because there simply was not capacity to do that kind of testing in that time frame.

The **DRIVE1/2** and **DoublNG** is a longitudinal pharmacokinetic study on hormonal contraceptives in HIV-infected Ugandan women on ART.

Public/Policy Relevance: These are another example of where genuine, real-life clinical mysteries are investigated among the population where the challenges occur. As well as results, capacity building and partnership is notable.

Future Directions: Formation and functionalization of the IDI Pharmacology Working Group to address priority areas in pharmacogenetics, clinical trials, public engagement, pharmacokinetics, pharmacovigilance, Bioanalysis

HIV Prevention Service Delivery in the Context of Key Populations in Sub-Saharan Africa



Timothy Muwonge
MBChB, MPH (Head of
Programs - HIV
Prevention Research) IDI



Andrew Mujugira
MBChB, MSc, MPH, PhD,
Senior Research Scientist
IDI

A detailed background of IDI's PrEP studies (2008-2021) provided context for the presentation. High quality data from the Partners PrEP Study contributed to US Food and Drug Administration approval, and WHO global recommendations, of Truvada for PrEP. Since 2017, the IDI has specialized in research among key populations including HIV serodiscordant couples, male, female and transgender sex workers, adolescent girls and young women, male partners of HIV-positive pregnant women, transgender men and women, fisher folk, and people who use drugs.

Our studies address key population prevention gaps highlighted in the UNFPA report titled, "Uganda: The Status of HIV Prevention in 2017". Additionally, they address the need to generate evidence to address barriers to prevention access including the scale-up of proven 'PrEP community service delivery models' for stigmatized key populations.

Policy Considerations

- Health policymakers should implement strategies to strengthen uptake and use of combination prevention interventions, including PrEP
- PrEP demand creation strategies will improve PrEP utilisation among key populations
- Health worker sensitization training is important to overcome barriers to PrEP use among key populations



Nelson Kalema

M. Med (Internal Medicine), MAS (Epi-Biostat., Implementation Science)
Program Impact Specialist supporting Data Utilization and Dissemination,
Health Systems Strengthening Department, IDI

This presentation showcased strategies by the IDI's Health Systems Strengthening (HSS) Program to leverage peer-reviewed Implementation

Science approaches to enhance HIV care at IDI-PEPFAR supported facilities. On behalf of the HSS, Dr Nelson Kalema discussed application of Implementation Science through the lens of two novel public health interventions that aimed to improve - Retention in ART Care and Assisted Partner Notification (APN).

The APN was innovated to enhance HIV testing and linkage to care by enabling a process of finding and testing partners of newly identified index HIV+ persons. Through APN trained providers offer support to index HIV+ persons to disclose their HIV status either in person or anonymously to their sexual partner(s), notifying them of potential exposure to HIV. The provider then offers HIV testing to their partner(s) and links them up to ART care if positive or prevention services if negative. Finding the missing and untested PLWH is one of the chronic challenges to the broader HIV epidemic control strategy. Several studies, - in Kenya, Tanzania, Malawi, Botswana, Cameroon, including trials, found partner testing services to be effective for increasing uptake of partner testing as well as identifying and treating new persons living with HIV.

IDI in partnership with CDC, and Rakai Health Sciences Program (RHSP), therefore developed and rolled-out a 1-year pilot program of Assisted Partner Notification in Kiboga and Rakai districts to inform feasibility and plans for a national scale-up.

A descriptive study by Katherine B. et al reviewed these pilot data from 7 health facilities in Kiboga, April - October 2016, to determine proportions of partners who had been contacted, tested for HIV and linked to ART care as well as predictors of successful contacting & testing of partners.

From 464 index HIV+ PLWH 660 partner contacts were elicited, of these 51% (334/660) were successfully reached, 58% (193/334) tested - 32% (61/193) found HIV+, 92% of whom (56/61) being new and 89% (50/56) linked to care. NNT - the number of index clients needed to interview to identify one HIV+ sexual partner was 7.6 The odds of successful contacting improved with: full contact information, current vs. old relationship(partner), and casual (one-off) vs. regular partner. While predictors of successful testing included assisted disclosure, HCW disclosure and current vs. past partner relationship.

Similar results were observed in a roll-out in urban Kampala settings, where 81% of elicited contacts were notified but only 48% were tested, however, among those tested - APN gave a yield of about 30%, and up to 96% of those who tested positive were linked to care. Important to note that 0.9% (354) participants reported gender-based violence (GBV) associated with APN suggesting a need for vigilant monitoring and support services.

Lessons

- The APN strategy is feasible, effective and safe in Ugandan settings.
- Government health policies directing APN implementation should consider strong linkages to Gender Based Violence strategies

“

Sciences provide an understanding of a universal experience, Arts are a universal understanding of a personal experience... they are both a part of us and a manifestation of the same thing... the arts and sciences are avatars of human creativity”

-Mae Jemison

Implementation Science to enhance HIV care at the Health Systems strengthening-Retention in ART Care.

IDI leveraged implementation science approaches of stakeholder engagement and innovation to enhance Retention in ART Care. The Kampala region (Kampala and Wakiso districts) PEPFAR mechanism offers the unique challenge of high day-time populations from other regions accessing care in Kampala, currently the mechanism serves more than 214,000 PLWH. At high-volume Kampala Capital City Authority (KCCA) facilities more than 200 patients are reviewed per day, and congestion may lead to long waiting time for the stable and unstable patients, risks poor retention and poses data collection-reporting challenges.

Based on these challenges, the current Ministry of Health (MoH) strategic direction is to differentiate models of ART delivery according to patient needs in order to improve ART adherence and retention in care.

And so IDI with KCCA innovated a Community-based Differentiated Service Delivery model to enhance ART service delivery and retention in care for stable patients in care.

Intervention principles that informed innovation design aimed to 1) decongest, reduce waiting time, improve QoC for stable and unstable patients, enhance retention for all persons in care, improve data collection, reporting and safety - all with the input from stakeholders (partners and patients.)

Community based DSDM was operationalized in May 2016 at private pharmacies within the city that would serve as drug pick-up points for the stable HIV patients at IDI-KCCA care facilities. Pharmacies open Mon to Thurs till 8pm, Saturday till 2pm. Clients seen at facility twice a year, or PRN.

Pharmacies were considered for inclusion if they were NDA licensed, had a competent supervising pharmacist, drug storage facilities, were easy to access, & secure.

Six (6) such pharmacies were selected.

Clients were eligible if they were adults > 20yrs, had good adherence history, being on standard ART > 2yrs; not being with child; or major OIs .

Governing instruments were sanctioned by representatives of the KCCA, PLHIV interest groups, pharmacy directors (owners), National Drug Authority, Pharmaceutical Society in Uganda (PSU), the AIDS Control Program (ACP) under a MoH-approved technical working group (TWG). Specifically, the TWG developed key tools, a database and spearheaded stakeholder engagements.

To improve the timeliness in tracking, reporting and monitoring of the program.

The Academy - Health Innovation and Impact, at IDI (<https://theacademy.co.ug/index.php/art-access/>)

developed and integrated a digital based mHealth approach layered within the model to facilitate real time communication between all three platforms:

- improve timely monitoring (who is enrolled today) and feedback (generation of reports - number/proportion enrolled) on performance and
- to track client care management (e.g., client excluded based on exclusion criteria)

The ART access App links the facility EMR platform to the community pharmacy refill process and the IDI central server database and can be accessed on web or smart phone in real time.

As of June, 2020, over 9926 clients had cumulatively been enrolled into the community pharmacy refill model. Data comparisons by gender between the community and facility-based ART access models indicate that a higher proportion of males enrolls for former more than the latter.

It is important to note that this model did not adversely affect Viral load suppression, appointments were kept 98% of the time, waiting time was less than 10 minutes, and client feedback surveys were - swift, flexible, with all reporting they would like to continue accessing their ART through this model.

In addition, the model came in handy during the government instituted COVID-19 lock down.

Pharmacies already enrolled in the program, were requested to support walk-in refills of previously unregistered clients who were stranded. Most clients returned to their facilities when the lockdown was lifted.

Also, for a limited time this model was extended to include community local council homes, churches, schools and other client-informed pick-up points to reach stranded clients who could not travel to their facilities for ART.

IDI acknowledges the technical and financial support of the American people through PEPFAR, CDC, and the leadership of MoH- Uganda, NASTAD, KCCA, Makerere University. The IDI is indebted to the PLHIV and healthcare providers who are enabling the health systems strengthening based on implementation science evidence.

DATA SCIENCE AND

SESSION 4: BIOINFORMATICS IN HIV AND COVID-19 PREVENTION

Data Driven HIV Prevention Among Young Adults in Uganda: Development of a Customized HIV Risk Self-Assessment tool



Agnes Kiragga
B.Stat, MSc, Ph.D.
Head of Statistics at IDI

This project provided a background and justification for the need to apply data science and machine-learning techniques to inform HIV

prevention through profiling sexual behaviour risk among Ugandan youth. The goal was to enable early identification of young persons at risk of HIV acquisition in Uganda using a customized risk.

Data scientists affiliated to the Infectious Diseases Institute (IDI), Makerere University Computer Science and IDI's African center of Excellence (ACE), The Medical Concierge Group (TMCG) for Telehealth services developed a customized HIV risk self-assessment tool SIDARISK www.sidarisk.com. The SIDARISK tool can be used to identify individuals at high-risk of HIV acquisition including young men and facilitate early linkage to care, thereby contributing to elimination of HIV/AIDS. Using data driven approaches and application of machine learning techniques, data scientists explored Uganda Demographic Surveys and AIDS Indicator Survey data with over 40,000 records and developed the SIDARISK score that will be tested among youth in Kampala district. Following risk assessment, young persons with high risk of HIV acquisition will be referred to the nearest health facility for HIV testing and or pre-exposure prophylaxis (PrEP) services.

Policy Considerations/Recommendations

Data driven approaches and machine-learning techniques have a role in epidemic control efforts and are applicable to other public health problems.

Financial support: This work was supported by the Makerere Research and Innovation Fund (MAKRIF).

Leveraging Virtual Reality Technology for COVID-19 Control



Daudi Jjingo
Ph.D.
Programme Director/PI for the Ugandan NIH H3Africa Bioinformatics Training Programme (BRECA) at IDI.

Focus was drawn to Virtual Reality (VR) innovations at the ACE/IDI and its role in scientific discovery,

training, communication, and collaboration. The presenter provided a tantalizing glimpse into what exists or may lie ahead in VR-based tools to enhance human memory in autism, addiction recovery, chronic pain management, exercise & rehabilitation, distraction for fearful and pediatric patients, mental illness: phobias, stress, anxiety, post-traumatic stress disorder, depression as well as Alzheimer's and other cognitive deficits. Presentations showed VR to be cheaper given it synthetic environments, able to create multiple scenarios, improving retention and safety thereby making learning easier and faster.

As pioneers in elaborate VR systems in Uganda, ACE presented its focus areas including making presentations at conferences to enhance VR awareness/demand creation, training frontline health workers in management of COVID-19 patients (RIF project), delivering medical training (thyroidectomy), developing content for VR-based medical training curricula and customizing VR platforms for local use.

Conclusions

Having advanced the entertainment/gaming industry, VR will increasingly become affordable, advancing other aspects of life including education, and health care. VR is a viable collaboration tool in accelerating scientific discovery in healthcare and biomedical science.

Assessing Knowledge, Attitudes, Perceptions, and Skills Towards the Use of Face Masks: A Community- Level Perspective in Uganda



Gerald Mboowa

Bioinformatics Scientist at The African Center of Excellence
in Bioinformatics & Data Intensive Sciences, IDI

Published studies show that the use of face-masks by the general public is of potentially high value in limiting community transmission of infectious diseases including COVID-19. The presenter designed a cross-sectional study during July 2020, with an aim of assessing knowledge, attitudes, perceptions, and practices toward the use of face-masks by high-risk groups in health, Small and Midsize

Enterprise (SMEs) sectors as well as the uniformed police force in Kampala district, Uganda.

The study was premised on an identified gap in scarcity of literature regarding the use of face-masks in Uganda. Evidence knowledge, attitudes, perceptions, and practices toward mask use in healthcare and community-level could guide the national face-masks policy and strategy recommendations.

Study Participants: High-risk groups/individuals included essential services and business owners who continued operating during the COVID-19 government's restrictive response (aka lockdown).

Study sites: (i) Major Police Stations in Central, Old Kampala, Katwe, Mulago, Kanyanya, and Wandegaya (ii) Mulago National Referral Hospital; (iii) Kampala's major SME markets of Owino, Nakasero, Bugolobi, Nakawa, Kalerwe, Kasubi, and Wandegaya.

Findings: 644/659 enrolled participants completed the survey questionnaires, with a response rate of 98%. The average age of the participants was 35.1 years; less than half, 40.2% were within 24–33 years of age, and 52.8% were male.

Most participants knew about COVID-19. Participants who were illiterate (below primary level education) and those 64 years & older were less likely to perceive the use of face-masks as a good protective measure than those younger than 64 yrs.

Males were 39% less likely to perceive use of face-masks as a good protective measure than females.

Conclusion:

By July 2020, Ugandan high-risk groups had good knowledge, optimistic attitudes and perceptions & relatively appropriate practices toward COVID-19. Continuous health education programs aimed at improving COVID-19 knowledge are helpful for encouraging optimistic attitudes & perceptions. Targeting health education to certain demographic groups, particularly, the men, elderly, and persons with no formal education could leverage mask use and other IPC measures.

Reference: Mboowa, Gerald, et al. "Face-Masking, an Acceptable Protective Measure against COVID-19 in Ugandan High-Risk Groups." The American journal of tropical medicine and hygiene (2020): tpmd201174.



Atwine Mugume

Data Scientist at The African Center of Excellence in Bioinformatics & Data Intensive Sciences, IDI

The study aimed to explore the type of discussions, facts, sentiments, myths Ugandans shared about COVID-19, and identify top Twitter influencers on COVID-19 as well.

Twitter was preferred because of the amounts of information that can be made available concerning different aspects of life. This is besides Twitter's high volume of 320M active users & about 6M tweets daily. Methods: Geotagged information to return-tweets from Uganda was mined between 1st March, 2020 - 30th October, 2020 using #COVID19UG, #COVID-UG, #COVID19_UG. Twitter data was divided into three sub categories, Before Lockdown, During and After lockdown. Data analysis focused on words and contexts generated by Twitter influencers who had been selected basing on Account age (how long the account has been active > 5yrs), Follow Ratio (the ratio of following/followers - 0.3), and Engagement Ratio (Relates total number of tweets versus public engagement - higher ratio = more engagement - 1.5).

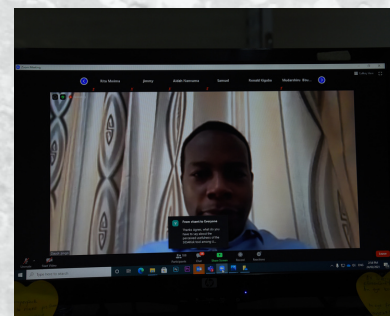
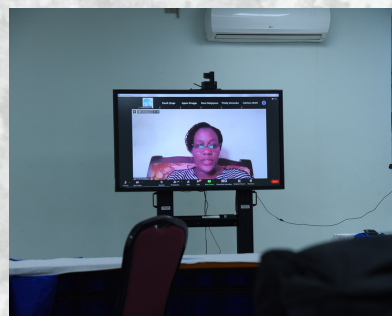
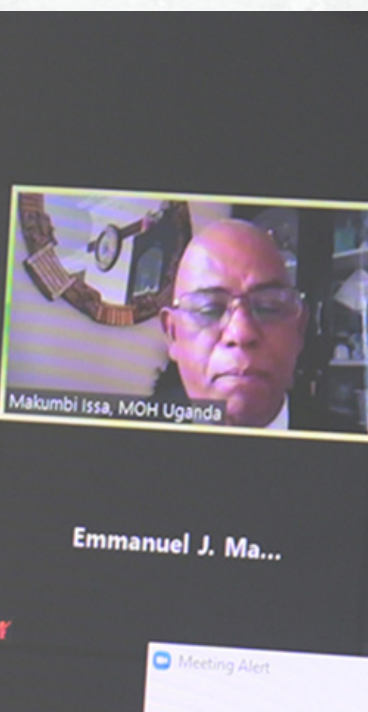
Selection biased Influencer tweets without location, in local languages or censored by Twitter based on association with COVID-19 myths. The study also excluded a population that discussed COVID-19 on non-Twitter social media platforms.

Findings: #COVID was the most used hashtag featuring over 350,000 times in April 2020 - the second month of lockdown. Hydroxyl chloroquine + eating garlic featured highest in tweet discussions concerning myths. COVID19-related sentiments gradually diminished between March and July 2020, peaking again in October 2020.

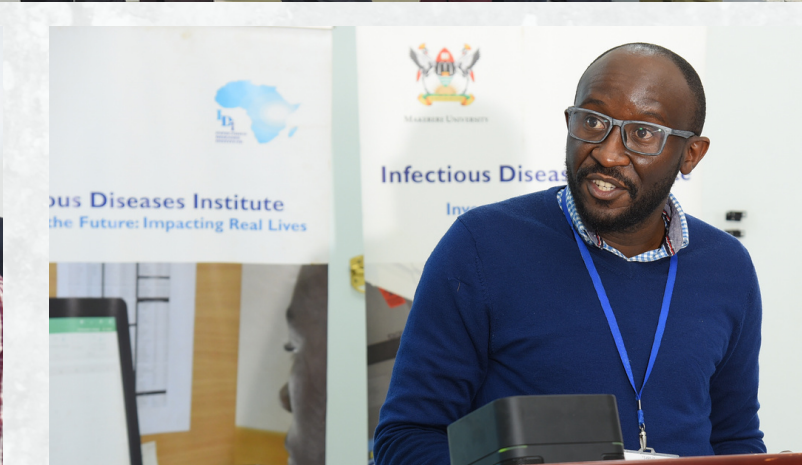
Lessons: Social media data mining has great potential to inform response towards COVID-19. Collecting and analyzing citizen's sentiments has capacity to inform selection of most useful prevention measures for COVID19. Twitter subscribers who qualify to be influencers have a potential in mass sensitization on COVID-19 prevention measures if equipped with the correct information.



ON THE SCREEN PARTICIPANTS



IN -PERSON PARTICIPANTS





"BEHIND THE SCENE" EXPERIENCE

“

My most memorable experience is the feeling of not being able to pull off the fair during our second last meeting. Imagine we were supposed to be wrapping up preparations during this meeting but emotions were all over the place and nothing seemed to be finalised. But hey, I believe that was our lift-off and look what happened, an amazing science fair, very memorable and an excellent learning experience. A great team sticking together and for the first time pulling off a great virtual experience.



EDWARD ONEN

“

I noticed that whereas there are advantages associated with working in big numbers especially as a committee, it is also true that it has certain challenges related to the same. For example, at the inception of our organizing committee, we took a little longer to steady our ship “if you know what I mean?”. However, we were blessed with a confident, self-driven and a very patient captain Paul K. Gonza, who steadied the ship and steered us swiftly and assuredly towards the #IDIScienceFair2021.



HENRY ONEN

“

The great teamwork, diverse skillset and resilience enabled us to pull off such a seamless science fair. I am forever grateful for the opportunity to work, learn and tap into this versatile selfless workforce.



AIDAH NANVUMA

“

The team worked tirelessly even past working hours. I remember our team responding to requests and emails even past mid night. All this was in the spirit of having a successful science fair 2021.



MAWAZI ODOA

“

The communications and Programs Documentation team widely disseminated and shared the science fair with very appealing profiles pictures which motivated participants to register, sent out invitations to people to participate. This boosted the numbers of people hence making the event colourful.



STEPHEN OKOBOI

“

A Virtual Science Fair required innovation in the ‘behind the scenes’ of IT. Software development and web design is my passion, so I enjoyed the challenge. The event organizers shared their dreams and desires. I had to turn them into reality as quickly as possible, with such perfection that minimises the need for pre-test runs given the limited time at hand. I had to intersect with Researchers and Communications teams daily, which put my soft skills to test. For the first time at IDI, our IS department pulled off a big One IDI event virtually without any errors and inconveniences to the end users. Thank you all for believing in me



MEDI SEKITYA

“

A Science Fair Event Coordinator is like a driver of a car with manual gears, you have to use all the gears. Keeping in mind that in the engine of your car all the cylinders are firing. So, you have to continually lean into the beautiful possibilities that arise out of collective action of members from the different departments by not judging your way forward, but by designing a way forward after looking in all the directions of the contribution from each member



PAUL GONZA

PANELISTS' EXPERIENCES

I looked forward to the session. My enthusiasm was rewarded by a good mentee turn-up and their active engagement. I shared a bit of my own career journey and made three take-home messages, followed by an interactive segment (Q&A). What struck me were the pragmatic nature of the mentees questions. These were related to time management approaches, dealing with rejection, building lasting networks, handling subordinates with sub-optimal performance, and balancing passion with the real-world concern of remuneration. On the whole, it was a worthwhile and rewarding the interaction!

„ ANDREW KAMBUGU

From my perspective, it was a great privilege to be part of the panel. Whilst we had prepared quite extensively for the event, I particularly enjoyed the freshness of the discussion - particularly some of the 'unexpected' questions from our chair, such as which are our favourite 3 Apps or what we would do as an alternative career if we were not in science. I think it was also important for younger scientists to know, as there can be a pressure to conform to some kind of 'stereotype' of what they think a senior researcher should be, and that can be harmful. The smaller groups were rewarding - I think there was a nice balance between giving the mentees space and time to bring their questions and me talking.

„ CATRIONA WAITT

It was lots of fun chatting with the panelists and hearing their perspectives. As I recall, we did not experience background noise or chatter from unmuted microphones. Participant discipline in muting mics and video was much better than I have experienced on other Zoom fora. It was a straightforward virtual experience including the breakout rooms. It was a little challenging monitoring questions in the chat box in real time, but manageable. I am already looking forward to hanging out with these stellar scientists in 2022 (God willing).

„ ANDREW MUJUGIRA

The panelist experience was great. Although we were aware of the themes, we did not have the exact questions, and I think that was great because the answers were really spontaneous and not prepared like a lecture. Overall, it was a privilege to be part of the panel and it also helped me to know more about apps. I have now downloaded the Bible App to make my third essential one, I had no idea they even existed, I still use my heavy traditional book! A big hand clap for the IT team, I have never seen anything so well organized.

„ BARBARA CASTELNUOVO

This was my first time to participate in an online panel of this kind. I didn't know what to expect and despite the guidance given by the fantastic chair, I wouldn't have prepared well enough for what I think was a wonderful and relaxing experience yet filled with inspiring insights. By the way, I am still thinking about some of my answers to the questions like, what I would do if I was not a scientist. Did I talk about how much I love baking?

Overall the virtual panel mentorship did work well. I liked the mix of backgrounds/experiences (local and foreign), the slightly different levels at which we are, and the different research areas (research genres). Can we endeavor to have this diversity as much as possible?

„ AGGREY SEMEERE

"Good teachers affect eternity; they can never tell where their influence stops."

-Henry Adams

I really enjoyed the session in the car! I was using two service providers on two separate devices so I could hear what the listeners were receiving. I really enjoyed listening to my colleagues' back stories because often all we get to see are the awards and the accolades but are almost never the paths they have had to walk (the opportunities and disappointments) to get to the prize. I loved best hearing non-science and non-career questions and responses. For instance, mentioning your "The 3 Apps" and "The ideal career".

The question about the bad mentorship experience. The fact that I had to think for a while before it came back to me made me realise that even bad things that sometimes take centre stage in our lives, eventually become a distant memory. Discussions opened Pandora's Box (maybe unintentionally) and we did not have enough time to exhaust it. The research department should consider directly addressing non-doctor career concerns regularly in some of its forums.

On balancing work-career lifestyles, there was a lot of mother's guilt (children vs career) and even discussion about timing reproduction as working class/executives. Overall, it was a lovely experience. Andrew, your moderation was excellent and I believe the panellists had wonderful chemistry.

----- ” MIRIAM LAKER

"MEET THE MENTOR" SESSION

The Research Program hosted a virtual "Meet-the-Mentor" session on February 25, 2021. Mentors shared nuggets of wisdom as preamble to one-one meetings in a panel discussion on various topics relating to career - life integration, mentor and mentee-relationships, and academic development. Senior Research Scientists shared their career-related lessons and mistakes that turned them into astute scientists, as well as take-away quotes of wisdom

Inspiring Women in STEM (Science Technology Engineering Mathematics)

"Slice your life like a pizza for a work-life balance. Miriam Laker

Women pursuing STEM subjects can access our social media resource [@AWiSH](#) (The African Woman in Science Hub), that aims to empower young women with skills including unlearning and re-learning Ugandan politeness, being assertive without aggression, negotiation skills, and excelling at STEM subjects" Catriona Waitt

"Sharpen your soft skills and commitment. An Ivy League university does not necessarily translate into a good researcher. Rather it is character, building networks off your mentors. Do what you do so well that your fruits set you above the rest" Andrew Mujugira

Characteristics of a Successful Mentor

Beware of mentor-malnutrition. Understand the field and style of your potential mentor and check if the two align to your vision. A mal-aligned mentor can grow you for their own agenda, to work for them. Mentorship is not a marriage. Walk away from toxic mentor-mentee relationships. Some mentors know so much and they intimidate mentees especially in patriarchal settings." Andrew Mujugira

"Start with people who interested in your success and share with you common aspects of growth in life. Iron sharpens iron. There are sparks, loss of volume and smoothening rough edges. A mentor takes a mentee to uncomfortable realms" Aggrey Semeere.

What to look for in a Successful Mentor

"A mentee must know what he/she wants in a mentor. Study the path of a potential mentor and decide if that is your desired roadmap. Find out how the mentor under consideration got where they are. Figure out what that mentor can do and what they cannot do for you. You can aim to have several mentors" **Barbara Castelnovo**

"A cow that treads gently drinks well' (African proverb). Get a mentor who does not muddy up you destiny. The journey to success is a lonely journey. The journey may be cloudy and confused at the start. However, a teachable spirit will spare you from spending 40 years in the wilderness." **Andrew Mujugira**

Who is a successful mentee?

"A successful mentee is the one who seeks to understand the Why behind the What." **Aggrey Semeere**

"Be noticed. Sit where the power is. Reputable mentors help potential mentees who sit close by to grab their attention" **Mariam Laker**

"As a mentee, do not go to the bus park without clarity of direction. Sometimes the starting point may be driving through a bush. Remember that is a process not a destiny." **Andrew Mujugira**

"A mentee should always have plan A and B in their journey through the bush or maze. Do not fear to knock on the doors of the Ivory Tower armed with a clear idea and passion'. Remain open minded and you will hear what you have never considered a viable project. Remember, you are one of the pawns on the mentor's chessboard. " **Mariam Laker**

How to help difficult mentees

"Some mentees are difficult to handle because the mentor-mentee visions are not well aligned. Honest feedback is critical in this case. Sometimes, it is wise to let go of such a mentor. I advise mentees not to go around shopping for mentors before they conceptualise practical questions." **Barbara Castelnovo**.

"It can only work if it is a relationship. Do not despise humble beginnings. Demonstrate faithfulness in the small assignments mentors give you and eventually you will be trusted with bigger assignments. Do not be like a person who lives near a river and struggles to find fish to eat. Make use of all opportunities around you." **Andrew Mujugira**

"IDI is a living opportunity for difficult and easy mentees. Cast your net wide. Pay attention to senior colleagues, listen, read, and attend research platforms to learn and figure out your strengths and valuable skills." **Barbara Castelnovo**

How can a mentee identify a niche area for a research project?

"Identify people who are published in your area of passion. Read their work and biographies". **Aggrey Semeere**

"Identify bridge-builders to connect you to the experts. Keep streamlining and sharpening your areas of passion" **Miriam Laker**

"Be upfront with your mentor on what you have done and failed to do to streamline your area of research" **Catriona Waitt**

"Research is a collaborative. It takes a whole village to do research. Do not hesitate to consult" **Andrew Mujugira**

Best advice given to you (Senior Research Scientist) by your mentor

"You can change your job to suit your personality, but you cannot change your personality to suit your job. Be yourself. **Catriona Waitt**

"Be unapologetically and authentically yourself" **Miriam Laker**

"Concentrate on positive things in people, to improve your ability to do good" **Barbara Castelnovo**

"Like a funnel, let your beginning be broad and grey, but do not get stuck in the wide top. Narrow down your focus, for what counts is your transferable skills in the narrow base." **Andrew Mujugira**

"Turn your passion into a vocation. Use the certificates and skills in your hands to achieve the passion of your heart. You cannot cook an elephant in a cooking pot, unless you chop it bit by bit." **Andrew Mujugira.**

MENTEES' FEED BACK

"It was good to hear mentors sharing their humble side of the story. It was a natural and honest. Transformational and energizing. The stories enabled us take in to good insight and enlightened good way to grow our career in research."

"It would be good to invite other scientists like Prof Kamya, Prof Sewankambo, Prof Philippa Musoke, Dr Joloba, Prof Rhoda Wanyenza, Dr Serwadda. For a long time, we have looked up to these individuals' contributions to science in Uganda."

"Mentorship should happen throughout the year o that Science Fair is a report on impact of mentorship- ice on the cake. Malaria should be part of agenda."

"My take home message was, 'Turn passion into a research vocation, and unlearn Ugandan politeness when it comes to career growth in research."

"The Science Fair should expand to include Immunology research and broad topics on how Africans can equitably be involved in scientific and technological development of tools, with an aim at tackling infectious diseases such as TB and Malaria and AMR."

"We got to know that they also had some hardships, everything is not a straight path. The research world continuously requires one to have a thick skin and resilience. Hearing about how mentors have had to build this skillset is reassuring for early career individuals who are considering joining or leaving this field."

"The Science Fair should take place quarterly and address other topics like Gender Inclusion, Grants and Strategic Project Management, Research Translation to Policy, Epidemiology and Biostatistics, Applying Emotional Intelligence to enhance Mentor-Mentee Interactions."

"The mind is not a vessel that needs filling, but wood that needs igniting".
-Plutarch

ACKNOWLEDGEMENT

This event was successful because the prolific contributions of the following

01

Event Organisers

Research Program - Paul Gonza, Henry Onen, Stephen Okoboi, Barbara Castelnuovo, Julian Paul Kabogoza, Aidah Nanvuma and others

Communication Unit - Tracy Ahumuza, Kenneth Mulindwa, Rebecca Nakitandwe, Abubaker Kazibwe

Information Services - Richard Senono, Medi Sekitty, Mawazi Odoa, Edward Onen

Global Health Security Program- Peter Babigumira, Ivan Lumu

02

Event Documentation

Programs Documentation & Utilisation Unit - Asiimwe Caroline & Nyapendi Winfred

03

Event Sponsor

Office of Executive Director - Dr Andrew Dungu Kambugu

“

The best way to find yourself is to lose yourself in the service of others."

-Mahatma Gandhi

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