

Kenya Research Collaboration Opportunities

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UC Global Programs for Research and Training Kenya**

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Session Objectives

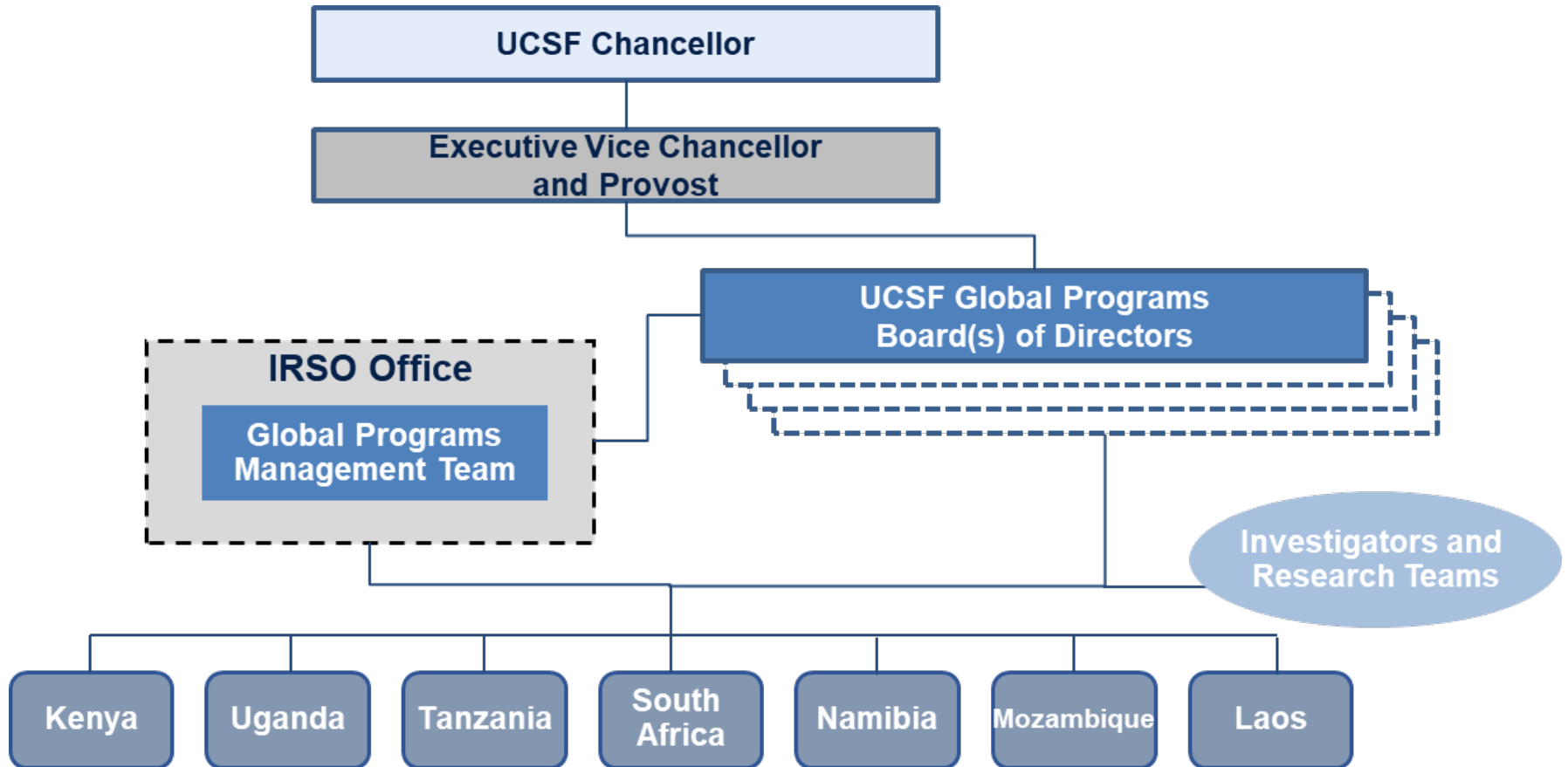
- Describe Global Programs Kenya support model and active UCSF projects
- Highlight ongoing UCSF health informatics work in Africa supported through Global Programs Kenya
- Present collaboration opportunities with partner entities in Kenya across government, academia, and civil society
- Discuss potential areas of interest of UCSF faculty for growth and collaboration in Kenya

Global Programs NGO Offices



- Affiliated entities registered in foreign countries that are wholly owned and controlled by UCSF
- Registered in each country as NGOs, each governed by a Board of Directors (majority of Board represented by UCSF faculty and staff)
- The main objective of Global Programs is to assist in the creation of sustainable health-care education and infrastructure, leading to the measurable enhancement of the quality of life among people affected by HIV/AIDS and other illnesses or disabilities

Global Programs Setup at UCSF



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About Global Programs Kenya

- Global Programs for Research & Training was established to facilitate expanded presence and operations for UCSF researchers and its affiliates in Kenya
- Global Programs officially began operations in September 2015
- Global Programs Kenya currently has two offices in Kenya – in Nairobi and in Kisumu – which provide support for UCSF projects and studies in Kenya

What support does Global Programs provide?

Bank



- Open and manage local bank account
- Pay staff and vendors in local currency
- Distribute petty cash for program activities

Hire



- Act as local employer of record
- Ensure tax withholding, payment, and reporting
- Ensure compliance with local labor laws

Procure



- Identify and communicate with potential vendors
- Ensure affordable procurement and speedy delivery
- Sign contracts governed under a foreign jurisdiction

Logistics



- Coordinate local travel for staff and partners
- Host meetings, trainings, and other events

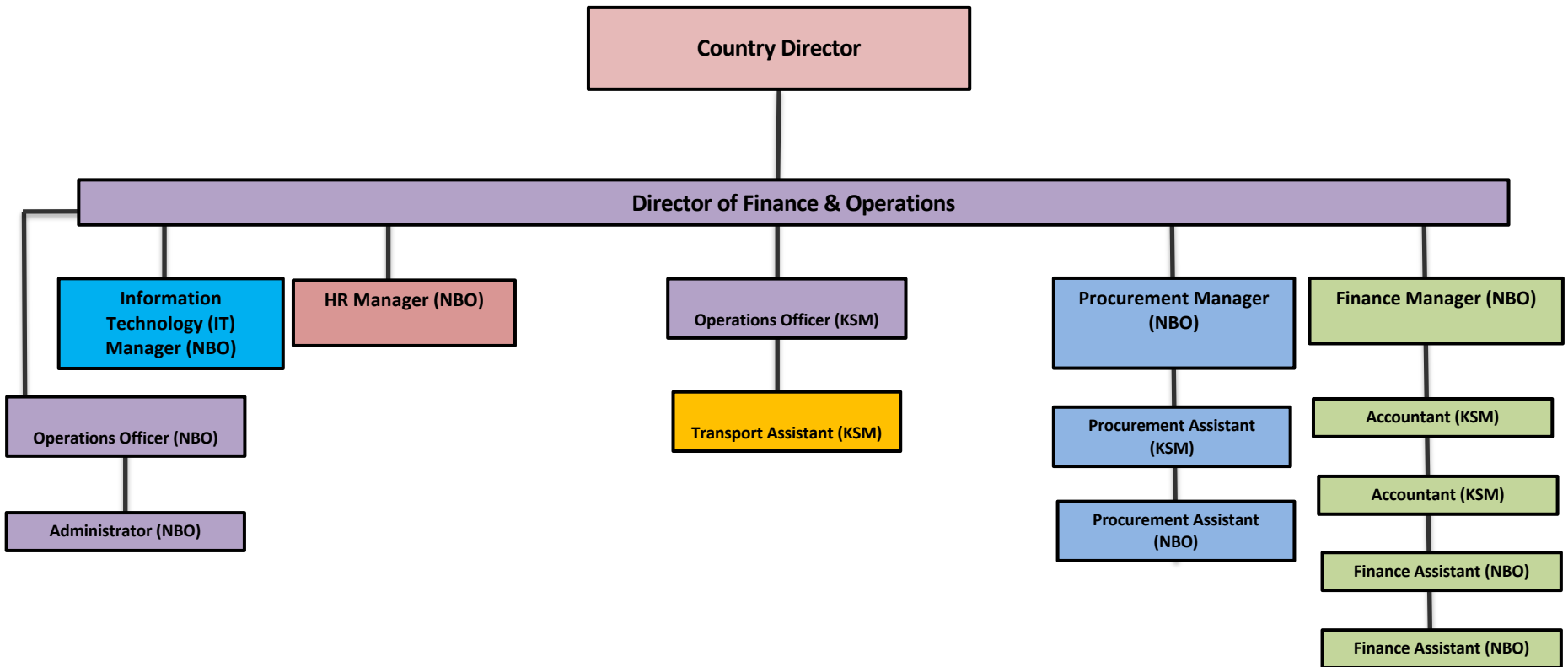
Partner Support



- Assist local partners with award management, as needed
- Ensure local participation in national stakeholder strategy development

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GP Kenya – Operations Team



Global Programs Kenya Support

- We currently provide logistical, financial, operational and administrative support to over 30 UCSF research projects including:
 - Large multi-million dollar awards for Global Strategic Information in the Institute for Global Health Sciences (IGHS) focused on improving epidemiological surveillance for HIV
 - Research studies such as the SEARCH study, led by the HIV, Infectious Diseases and Global Medicine Division, a cluster-randomized trial testing prevention and treatment strategies to reduce HIV incidence and HIV-associated mortality
 - Other UCSF Kenya studies include research on food security and related HIV outcomes, maternal and child healthcare, tobacco cessation, mental health issues and COVID-19 infection control among others

GP Kenya – UCSF Projects Snapshot

Department	No of projects
Institute for Global Health Sciences	39
Bixby Center for Global Reproductive Health	4
Department of Medicine	9
Department of Psychiatry	2
Department of Epidemiology and Biostatistics	2
School of Nursing	2
Department of Pediatrics	1
Proctor Foundation (Ophthalmology)	1

**UCSF HEALTH INFORMATICS HUB:
*SUPPORTING UCSF'S GLOBAL HEALTH INFORMATICS NEEDS***

**BY: DAVID MUGUME
DEPUTY DIRECTOR, GLOBAL HEALTH INFORMATICS
GLOBAL PROGRAMS FOR RESEARCH AND TRAINING**

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Who We Are

- 40+ informaticians with multi-disciplinary expertise
- Extensive experience building and maintaining collaborative relationships with ministries of health, local partners, universities and international donors
- Strong integration with IGHS Global Strategic Information's surveillance and monitoring and evaluation programs

General software and app development

Data integration, pipelines and linkages

Policy and governance

Big data and data warehouses

Electronic medical records (EMRs)

Statistical analysis and data triangulation

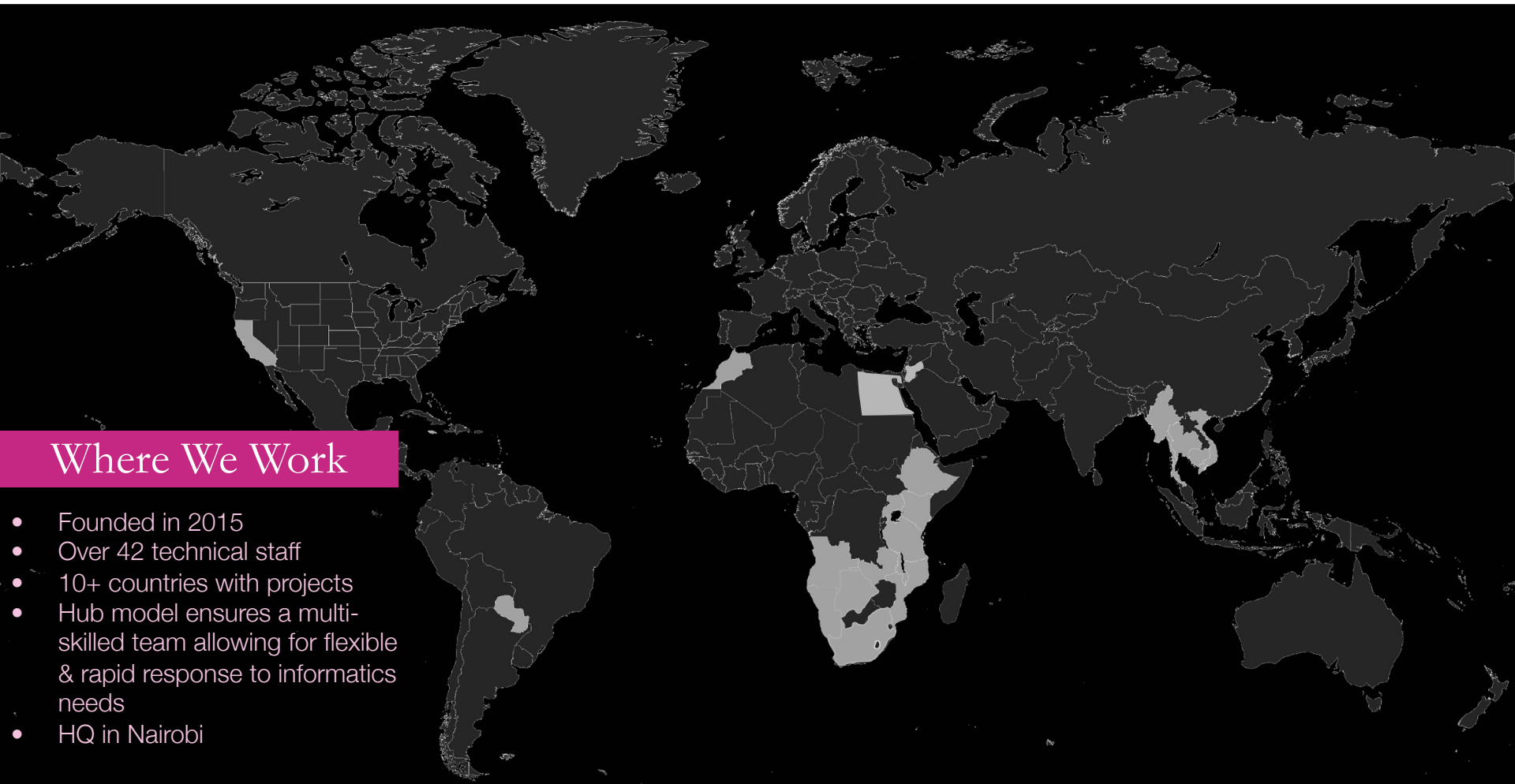
Data visualizations and dashboards

Machine learning

Interoperability and data exchange

Server and cloud infrastructure





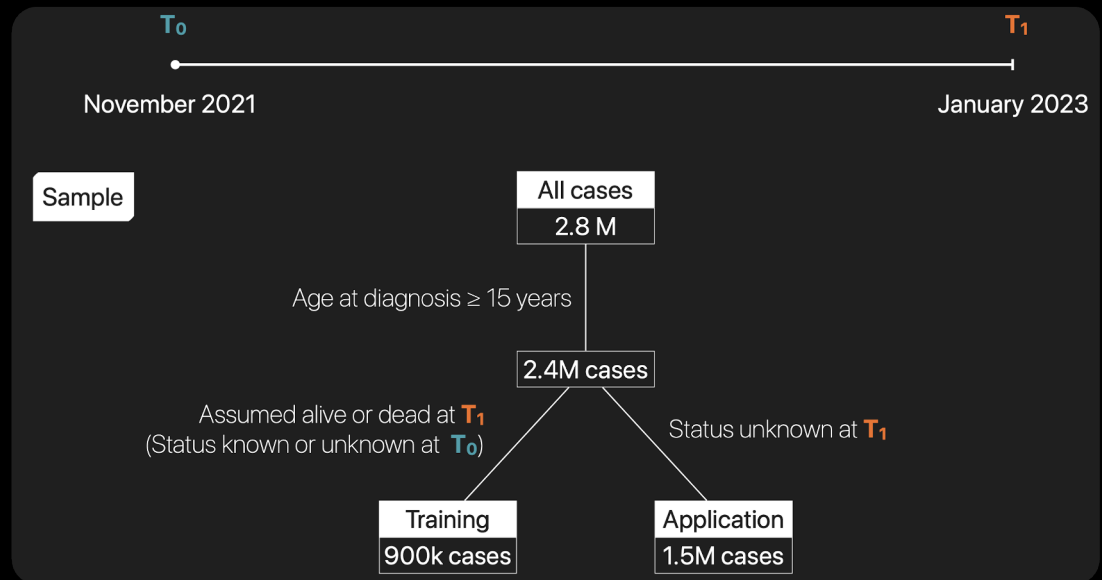
Where We Work

- Founded in 2015
- Over 42 technical staff
- 10+ countries with projects
- Hub model ensures a multi-skilled team allowing for flexible & rapid response to informatics needs
- HQ in Nairobi



Machine Learning to Predict 1-year HIV Mortality


- Can we predict whether individuals who have have fallen out of HIV care may have died?
- We used 900k records of know status to train a model which we applied onto 1.5m “unknown” cases
- These predictions help to get a better sense of the HIV epidemic



Final results not yet out


Kenya Case Based Surveillance

- In CBS Kenya, we consolidate data in order to provide timely and accurate information on the HIV epidemic in Kenya.
- We provide CBS dashboards and CBS course materials that help multiple stakeholders make informed decisions about addressing the HIV epidemic in the country.



REPUBLIC OF KENYA
MINISTRY OF HEALTH

Absolutely Free!



IMPLEMENTING HIV CASE-BASED SURVEILLANCE (CBS) IN KENYA
eLearning Course

County: All

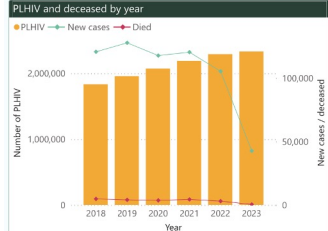
2,333,842 PLHIV

62%

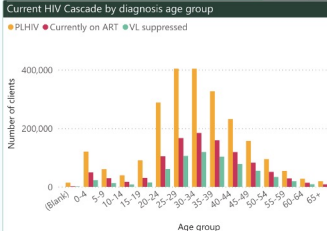
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Clear Filters

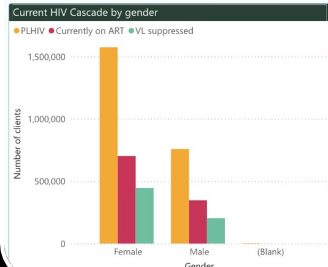
PLHIV and deceased by year



Current HIV Cascade by diagnosis age group



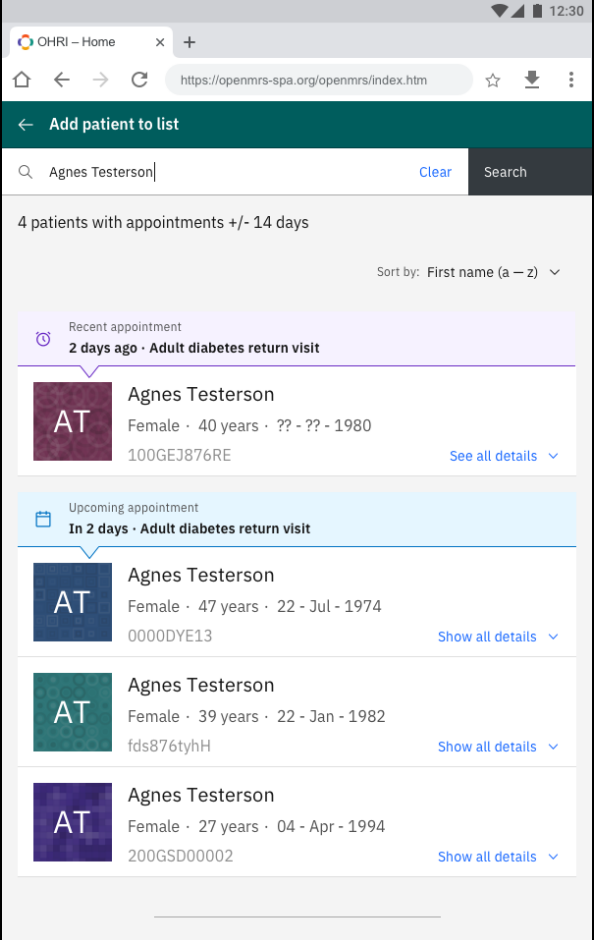
Current HIV Cascade by gender



County	PLHIV	Ever Initiated on ART	Currently on ART	VL sup
Baringo	12,523	9,778	5,304	
Bomet	7,105	6,277	4,331	
Bungoma	53,134	43,789	21,743	
Busia	71,682	67,251	32,372	
Elgeyo Marakwet	7,594	6,821	3,426	
Embu	19,092	16,294	10,156	
Garissa	1	0		
Homa Bay	226,250	188,299	124,046	
Isiolo	32	17	0	
Kajiado	27,516	23,440	13,694	
Kakamega	88,723	58,165	30,381	
Kericho	11,015	9,107	6,607	
Kiambu	90,389	60,675	34,285	
Kitui	41,129	34,457	24,087	
Kisumu	20,094	12,819	8,843	
Kisii	47,953	36,492	25,311	
Total	2,333,842	1,786,901	1,049,123	

Technical Assistance Platform (TAP) work in Kenya

- Using our experience in building the OpenMRS HIV Reference Implementation (OHRI), we are providing support in upgrading KenyaEMR to OpenMRS version 3.x
- Currently supporting Patient Identity Management efforts in Kenya by using our vast experience in implementing MPIs in other countries. We will review the current status and plan on how to enhance to fit the national use case
- We are also supporting the tooling and providing capacity building to the development of the National Health Data Dictionary



The screenshot shows a web browser interface for the OpenMRS system. The address bar displays the URL <https://openmrs-spa.org/openmrs/index.htm>. The page title is "OHRI - Home". The main content area shows a search for "Agnes Testerson" with a "Clear" button and a "Search" button. Below the search bar, it indicates "4 patients with appointments +/- 14 days" and "Sort by: First name (a - z)".

The search results are categorized into "Recent appointment" and "Upcoming appointment".

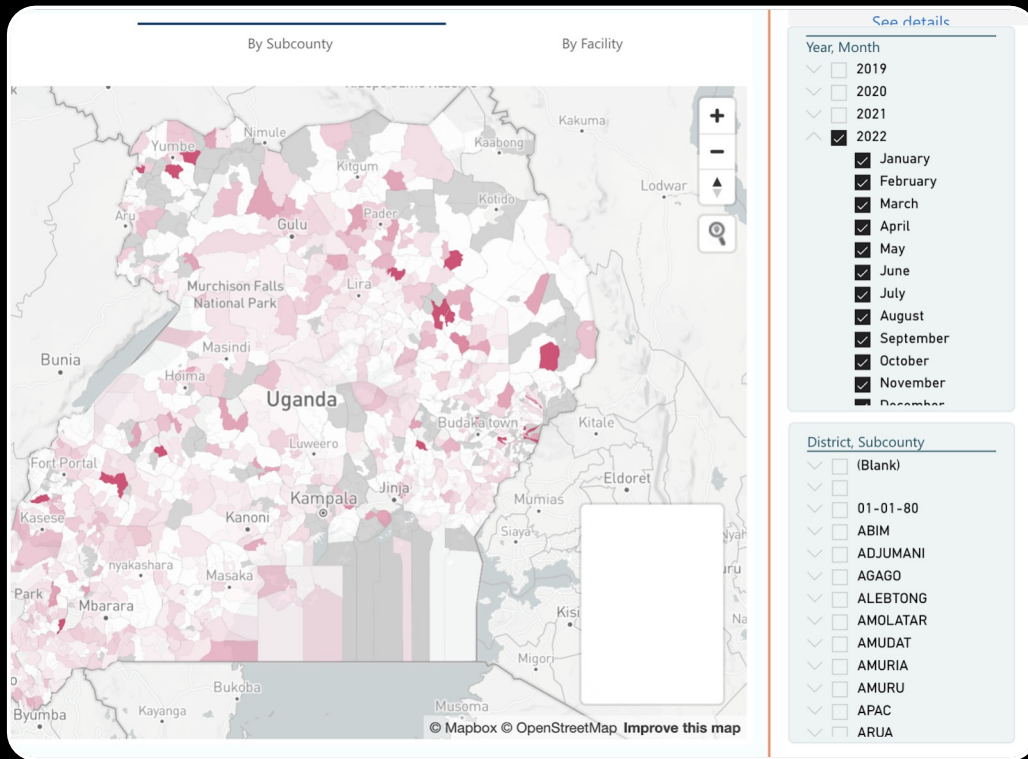
Recent appointment: 2 days ago - Adult diabetes return visit

AT	Agnes Testerson
Female · 40 years · ?? - ?? - 1980	
100GEJ876RE	See all details

Upcoming appointment: In 2 days - Adult diabetes return visit

AT	Agnes Testerson
Female · 47 years · 22 - Jul - 1974	
0000DYE13	Show all details
AT	Agnes Testerson
Female · 39 years · 22 - Jan - 1982	
fds876tyhH	Show all details
AT	Agnes Testerson
Female · 27 years · 04 - Apr - 1994	
200GSD00002	Show all details

Surveillance of new HIV Infections in sub-Saharan Africa



- As we edge towards epidemic control, new HIV infection surveillance helps to understand and plug gaps in HIV prevention programs.
- We provide analysis data for directing Public Health Response in identified hotspots
- Reports and Dashboards for indicator analysis and Quality Improvement

Scalable and Reliable UCSF-IT Compliant Cloud Infrastructure

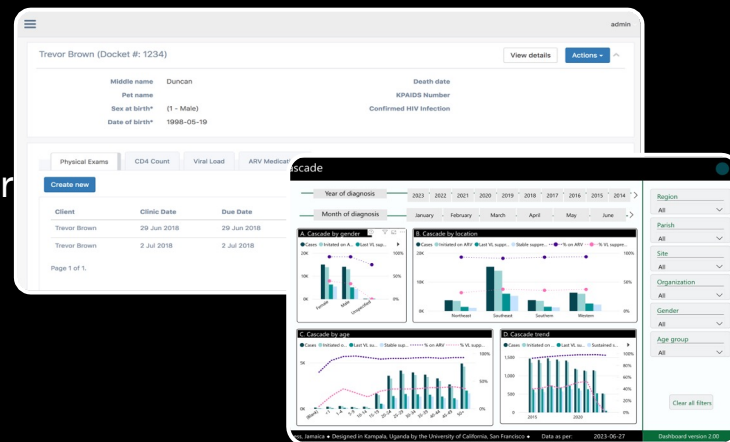
- We have secure server resources that scale to support any HIS needs, from very small to very large as your programme grows
- We have a dedicated team of server managers that maintain the infrastructure and ensure the highest uptime, performance, and security
- Fully compliant with UCSF-IT security and procurement requirements



 Microsoft Azure

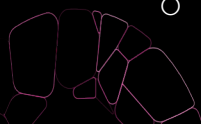
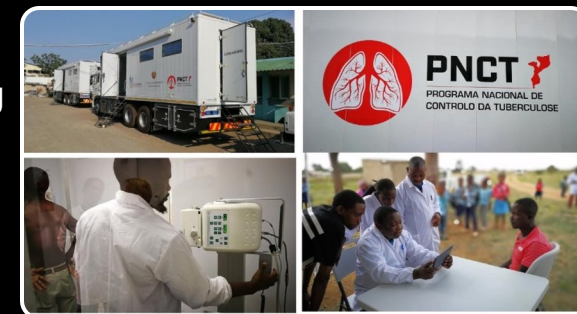
Other Projects Supported by Kenya through the Informatics Hub

- Developing the HIV data pipeline in Jamaica
 - Developed an electronic medical records system in for HIV and an integrated database and reporting system
 - Supports deduplication, linkage between testing and treatment, lost-to-follow-up tracking, high confidentiality and reporting



- Working towards eradication of malaria in Namibia
 - Development of a malaria surveillance system for rapid reporting of malaria cases within 24 hours
 - Digitised tools to enable identification, reporting, geo-tagging and tracking of malaria cases, samples, results and prevention materials using tablets

- Measuring tuberculosis prevalence in Southern Africa
 - An HIS solution with instant data exchange connection to Imaging and Diagnostics inside a mobile truck to assess prevalence of TB in Mozambique and Eswatini
 - Automation to quickly identify presumptive TB cases without any manual interactions



How Global Programs Supports the Informatics Hub

Project level

- Support recruitment and management of project staff (both technical and ops)
- Provide administrative and logistical support for all their activities
- Control expenditure and disbursement of resources in accordance with established procedures and in compliance with Sponsor requirements
- Procure goods, works and services and support asset tagging and inventory management as per organizational policy and Sponsor requirements
- Provide IT support for security of data, network access, backup systems and application support

Organizational level

- Support relationship management and engagement with government, donor and partners
- Ensure compliance to government, donor and organizational requirements

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Kenya at-a-Glance

Key Country Statistics (2021)

- Population - 53,005,614
- Population Growth Rate - 1.9%
- Life Expectancy - 61 years
- GDP per capita - \$2,081.8
- Health Expenditure (% of GDP) - 4.29
- Out of pocket expenditure (% of current health expenditure) - 24.06%

Source: <https://data.worldbank.org/country/kenya>



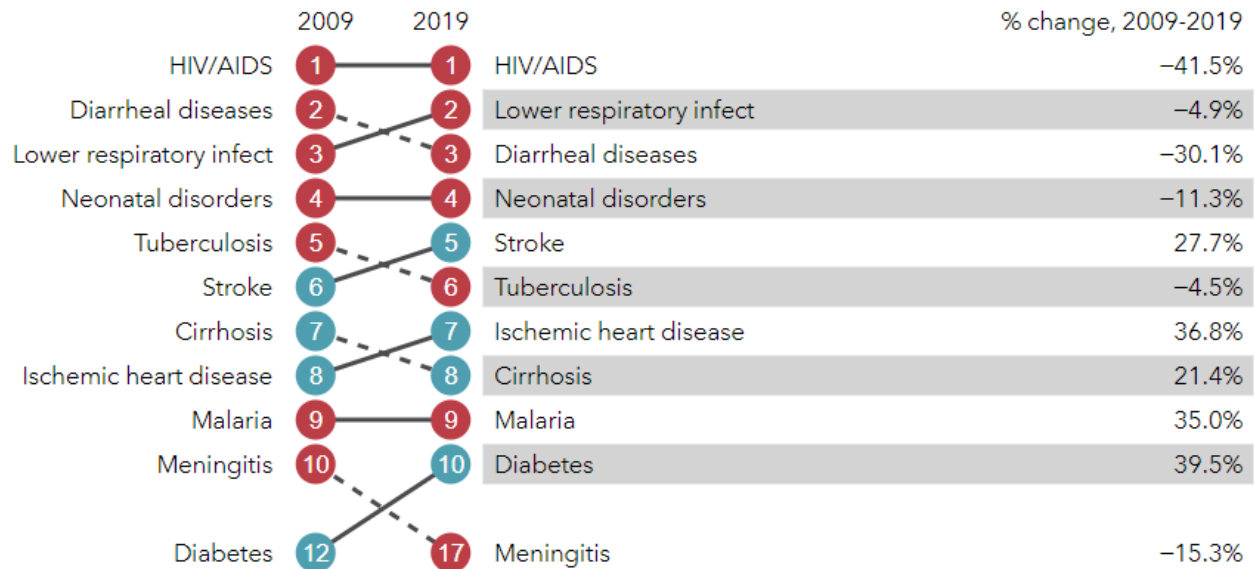
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Kenya's Mortality Burden

What causes the most deaths?

- Communicable, maternal, neonatal, and nutritional diseases
- Non-communicable diseases
- Injuries



Top 10 causes of total number of deaths in 2019 and percent change 2009-2019, all ages combined

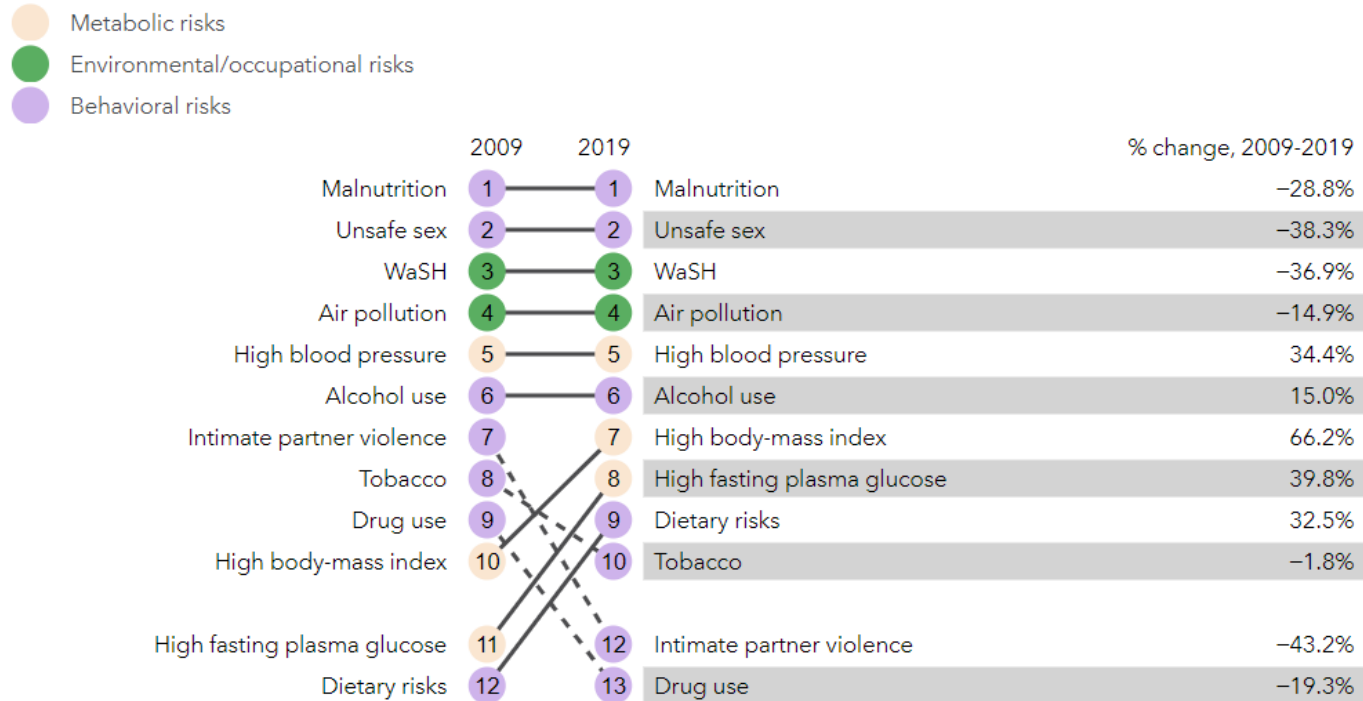
Reference: Institute for Health Metrics and Evaluation. Website: <https://www.healthdata.org/kenya>

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Health Risk Factors

What risk factors drive the most death and disability combined?

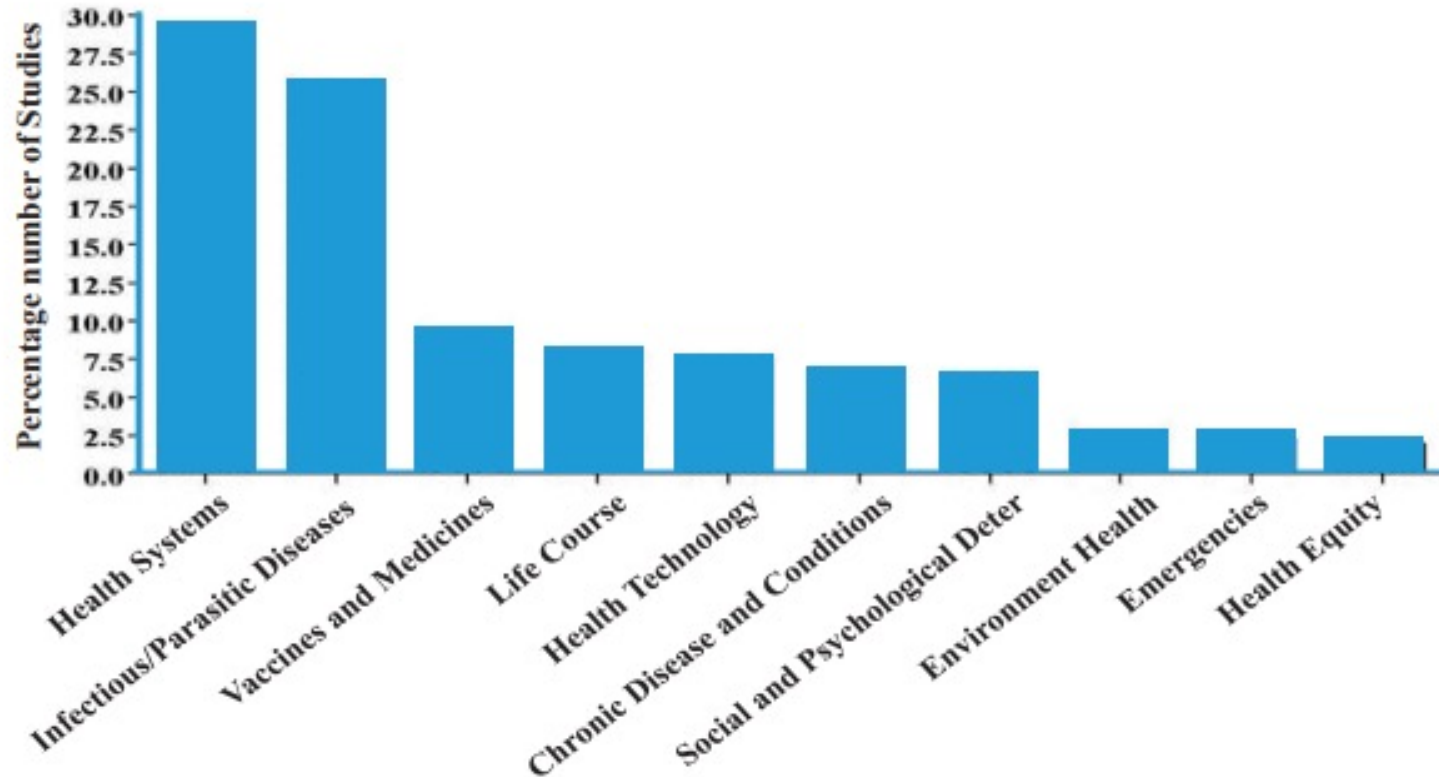


Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009-2019, all ages combined

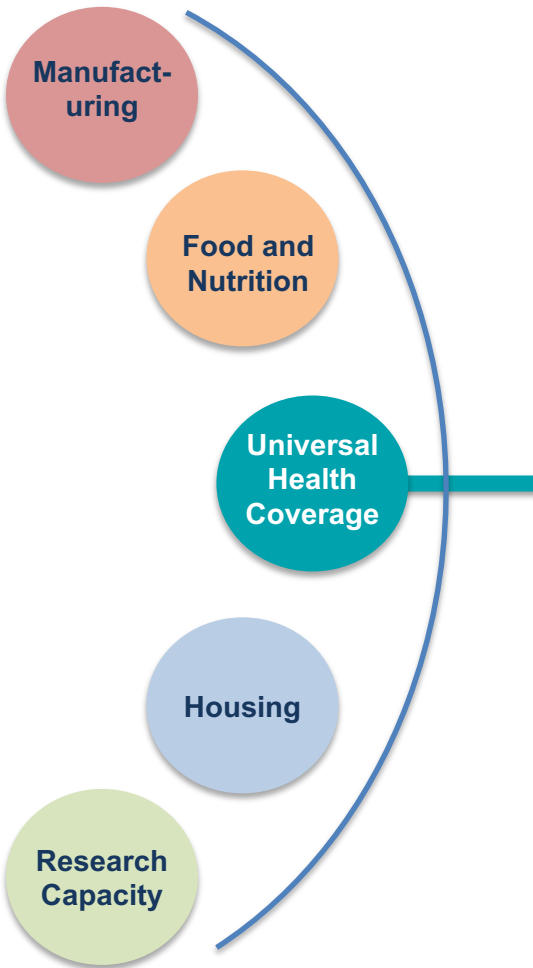
Reference: Institute for Health Metrics and Evaluation. Website: <https://www.healthdata.org/kenya>

Kenya Health Research – 1995-2015

Kenya Research Outputs by WHO's Building Blocks for Health Care Systems, 1995-2015



Kenya National Research Priorities



Universal Health Coverage – Research Priorities

- Novel health care delivery and public health systems supported by modern technologies including Information Communication Technology (ICT) and Nanotechnology;
- Promotion of healthier lifestyles and address non-communicable diseases including mental health;
- New technologies to enhance disease surveillance, prevention, diagnosis and treatment;
- Disease prevention-focusing on infectious and non-infectious diseases pharmaceuticals, vaccine development, alternative medicine and emergencies;
- Early diagnosis and treatment of diseases;
- Environmental health-focusing on water and sanitation, pollution control, occupational health and safety and effect of climate change on health.

Kenya Medical Research Institute

The Kenya Medical Research Institute (KEMRI):

- Provides leadership in health research and development
- Helps shape the national health research agenda
- Articulates evidence-based policy options, monitoring and assessing health trends
- Deals with trans-boundary health threats and disease outbreaks

KEMRI RESEARCH PRIORITIES



Health Systems Strengthening

- Universal Health Coverage research
- Precision Medicine Models
- Disease Surveillance
- Emergency and Disaster Preparedness



Public Health and Prevention

- Human Food Security and Nutrition
- Environmental and Occupational Health



Technical Areas

- Immunology
- Proteomics
- Genomics
- Mental Health and Substance Abuse



Innovation

- Drug Discovery and Pharmacovigilance
- Stem Cell Research
- Nanotechnology
- Natural products

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Local academic partners involved in Health Science Research and Education

- University of Nairobi
- Moi University
- Maseno University
- Masinde Muliro University of Science and Technology
- Kenyatta University
- Jomo Kenyatta University of Agriculture and Technology
- Aga Khan University
- Amref International University
- Egerton University
- Nazarene University
- Kenya Methodist University
- Kisii University

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University of Nairobi – Interest Areas

- Zoonotic diseases
- Machine learning for disease surveillance
- Cancer
 - Clinical capacity strengthening
 - Cancer Surveillance – Developing a national cancer registry
- Grant writing training for students and early career researchers
- Tools and training on grants management and award administration
- Opportunities for faculty and student training, fellowships, and exchanges

University of Nairobi – Proposed PI Fellowship Program

Aims of Proposed PI fellowship program:

- Address the shortage of PIs at the UoN
- Train and mentor young researchers at UoN through twinning arrangements based on shared research interests and expertise, fostering a mutually beneficial mentor-mentee relationship
- Provide training and capacity building in research methodologies, grant writing, project management, leadership skills, and responsible research practices
- Facilitate research collaboration and exchange

Thematic Areas of Interest

Disease Epidemiology
Emerging and Re-emerging Infectious Diseases
Vector-Borne Diseases
Neglected Tropical Diseases
Antimicrobial Resistance
Vaccines and Immunization
Diagnostics and Surveillance
Treatment and Therapeutics
Public Health Interventions
One Health
Non-communicable Diseases
Climate change and Health

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Masinde Muliro University of Science and Technology – Interest Areas

- Mental health and substance abuse
- Community health
- Infectious diseases
- Tools and training on grants management and award administration
- Opportunities for visiting teaching faculty (virtual or in-person)

Areas of Interest from Other Kenyan Academic Partners

- Communicable diseases
- Climate change and food security
- Non-communicable diseases
- Neglected tropical diseases
- Mining and health
- Gender and SGBV
- Reproductive health
- Dermatology

Contact Information

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QUESTIONS AND DISCUSSION

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