UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM

Field Epidemiology and Laboratory Leadership Tracks
Cohort 2023, Summary Book

THE REPUBLIC OF UGANDA
MINISTRY OF HEALTH

U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

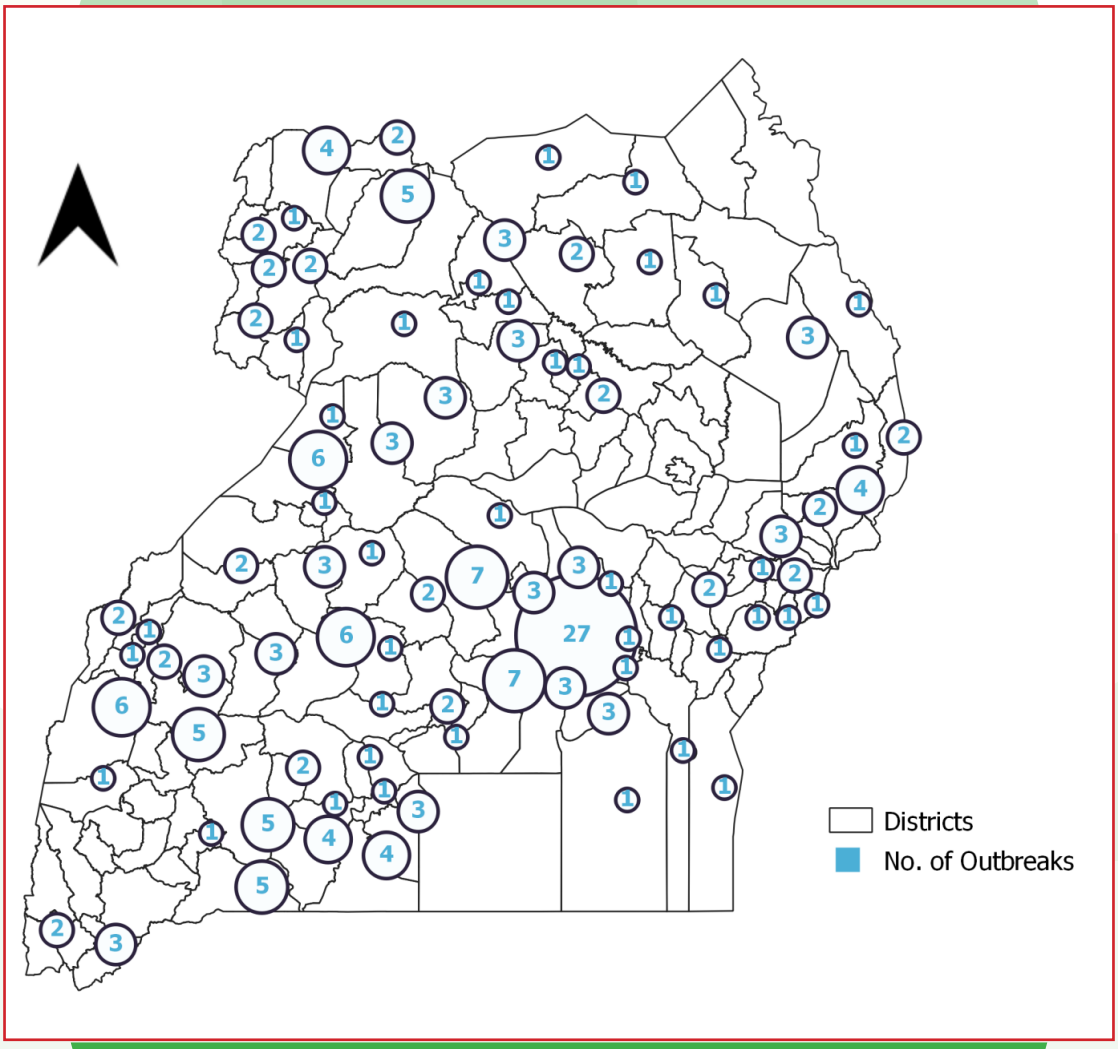
Makerere University
School of Public Health

UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAMME (UPHFP)

A Public Health Workforce Capacity Building Initiative of the Ministry of Health in collaboration with Makerere University School of Public Health, Baylor College of Medicine, and the US Centers for Disease Control and Prevention

UPHFP TRACKS

- Field Epidemiology
- Laboratory Leadership
- Monitoring and Evaluation
- Health Informatics
- Health Economics
- Implementation Science



Map showing outbreak investigations carried out by Fellows over the Fellowship period, 2015 – 2024

DISCLAIMER

The Public Health Fellowship Program (PHFP) is funded by the US Centers for Disease Control and Prevention (US CDC) through the Public Health Workforce Cooperative Agreement number NU2GGH001353-04, and improvement of health security and building of International Health Regulations (IHR) Core Capacities project number NU2HGH000046. The contents of this report are solely the responsibility of the authors and do not necessarily represent the official views of the US Centers for Disease Control and Prevention, Ministry of Health, Makerere University School of Public Health or Baylor Uganda

PREFACE

The Uganda Public Health Fellowship Program (PHFP) has enrolled 134 Fellows in Advanced Field Epidemiology Track since inception in 2015; and 17 Fellows in the Laboratory Leadership Track since inception in 2023. Since 2015, Fellows have contributed immensely to disease detection and control by conducting outbreak investigations, analyzing public health surveillance data, evaluating public health surveillance systems and conducting projects including epidemiological studies, capstone projects and quality improvement projects. The last year of the red eyes outbreak in the country followed by the Mpox outbreak witnessed the value of having frontline responders deployed within short notice by the Ministry of Health. In the process of response, Fellows have generated valuable information which has and shall be used to streamline detection and response to future outbreaks in the country.

In addition, Fellows have made numerous award-winning presentations at national and international conferences. Fellows have made significant appearances in the local media, contributing feature articles on key topics of public health and laboratory system importance.

The production of policy briefs and publication of the Uganda Public Health Bulletin, where Fellows have participated very effectively as editors and article contributors is another tremendous achievement. Thirty-six issues have so far been produced since the commencement of the program. In addition, Fellows have continued to contribute to the production of the Malaria Quarterly Bulletin, National TB and Leprosy Program Bulletin, and Weekly Epidemiological Bulletin where the fellows and other MoH epidemiologists and officers publish valuable public health information for consumption by the public and the scientific world.

The program has 65 manuscripts submitted to reputable peer-reviewed journals; 157 of which have so far been published.

In this book, we present to you the profiles of Cohort 2023 Fellows and their achievements over the two-year period of training while placed within priority programs or institutions of the Ministry of Health.

Dr. Olaro Charles
Director General Health Services

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Adams Kamukama

MBChB (MUK), MPH (MUK), & Advanced Field Epidemiology Fellow

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Host Institution: Public Health Emergency Operations Center (PHEOC)

Host Site Mentors:

1. Dr. Issa Makumbi
2. Mr. Joshua Kayiwa
3. Mr. Edirisa Junior Nsubuga

Dr. Adams' Profile

Dr. Adams Kamukama is a seasoned epidemiologist with a medical background and a Master of Public Health degree. He is passionate about global health security, public health emergencies, and emergency medical services.

During his 2-year fellowship in Advanced Field Epidemiology, Dr. Kamukama was based at the Public Health Emergency Operations Center (PHEOC), Uganda's central hub for coordinating public health emergency preparedness, response, and recovery. His training at PHEOC equipped him with advanced knowledge and practical skills in emergency coordination and response. He demonstrated strong leadership, proficiency in handling large datasets, and expertise in interpreting data to guide decision-making. Dr. Kamukama also supported the Event-Based Surveillance (EBS) unit through monitoring and triaging community health signals, contributing to early detection and timely responses to public health threats.

Host site achievements:

- **Mpox Response:** Served as the lead during the Mpox outbreak response in Nakasongola District, September–November 2024).
- **Epidemiological Bulletin:** Led the preparation of Uganda's national weekly epidemiological bulletin, which informs stakeholders about the country's public health status.
- **Supportive Supervision:** Conducted Integrated Disease Surveillance and Response (IDSR) support supervision and mentorships for health centers in Kiryandongo, Mubende, Bunyangabu, and Madi-Okolo districts.
- **Joint External Evaluation (JEE):** Acted as a rapporteur during the 2023 JEE at Speke Resort Munyonyo.
- **AVoHC-SURGE Training:** Participated in the Africa CDC/WHO training for 100 emergency responders, focusing on strengthening response teams during emergencies.

Fellowship Achievements

Outbreak Investigations

- Lead investigator:
  - Cholera outbreak in Kayunga District, 2023.

- **Contributor:**
  - Anthrax outbreak in Ibanda District, 2023.
  - Blackwater fever outbreak in Bukomansimbi District, 2024.

Surveillance

- **Analysis of DHIS2 Surveillance Data:**
  - Trends of road traffic injuries in Uganda, 2012–2023.
  - Performance of emergency medical services in Uganda, 2020–2023.
- Led mortality surveillance efforts in Isingiro District, 2023.

Publications

- **Lead Author:**
  1. Cholera outbreak linked to contaminated river water in Kayunga District, Uganda, June–August 2023 (Under review, BMC Infectious Diseases).
  2. Descriptive analysis of trends of road traffic injuries in Uganda, 2012–2023 (Under internal review).

- **Co-Author:**
  1. Sudan Virus Disease Super-spreading in Uganda, 2022 (BMC Infectious Diseases).
  2. Anthrax outbreak investigation in Ibanda District, 2023 (Under review).

Editorial Contributions

- Edited the UNIPH Epidemiological Bulletin (Volume 8, Issue 4, 2023).
- Published three articles in the UNIPH Epidemiological Bulletin:

  1. Cholera outbreak in Kayunga District, 2023.
  2. Road traffic injury trends in Uganda, 2012–2023.
  3. Emergency medical services assessment in Uganda, 2020–2023).

Conference Presentations

- The 9th National Field Epidemiology Conference (2023), Kampala.
- The 23rd Uganda Society for Health Scientists Annual Conference (2024), Kampala.
- The 3rd National Health Promotion Conference (2024), Kampala.
- The 10th National Field Epidemiology Conference (2024), Kampala.

Key skills and competencies gained

- Outbreak investigation and response.
- Designing and implementing epidemiological studies and intervention projects.
- Analyzing and interpreting large datasets.
- Scientific writing and public health communication.
- Leadership and mentorship.
- Strengthening disease surveillance systems.

Next Steps

Dr. Kamukama aspires to advance his career in epidemiology, disease surveillance, public health emergency preparedness and response, and emergency medical services. His goal is to contribute to strengthening the global health security agenda.

Summary of Cholera Outbreak Investigation in Kayunga District

Background: Cholera is endemic in Uganda. On July 19, 2023, the Ministry of Health declared a cholera outbreak in Kayunga District after four family members died within eight days and confirmation of Vibrio cholerae by culture. We investigated the outbreak to determine the magnitude and its mode of transmission and generate evidence to inform interventions.

Methods: We defined a suspected case as: onset of acute watery diarrhea during June 24–August 29, 2023 in a resident of Kayunga District aged ≥2 years. A confirmed case was a suspected case with Vibrio cholerae cultured from stool. We described cases, conducted an environmental assessment and performed an un-matched case-control study in Lusenke Village which was the epicenter of the outbreak. We used logistic regression to identify factors associated with cholera infection.

Results: We identified 78 case-patients (34 suspected and 44 confirmed); 10 (13%) of whom died. Males were more affected than females (attack rate (AR)=2.4 vs 1.6/1,000). Lusenke Village was most affected (AR=41/1,000). The outbreak

began following a funeral of the index case in Kayonjo, an inland village on July 1, 2024. Eleven days later, cases were reported in the distant Lusenke Village. We observed evidence of open defecation, bathing, and washing clothes along the river banks where water for drinking and domestic use was harvested. Using unboiled/untreated river water domestically (AOR=4.5, CI=1.2-17) and drinking it in addition to using it domestically further increased the likelihood of cholera infection (AOR=17, CI=3.8-78).

Conclusion: This was likely a propagated outbreak triggered by a funeral of a suspected case whose source of infection was unknown and amplified through contamination of river water used and drank by village members. The outbreak ended within one week after a public health ban on drinking and use of River Nile water, community sensitization and providing prophylactic antibiotics.

Keywords: Cholera, Outbreak, Kayunga District, River Nile, Uganda

PICTORIAL AND NARRATIVE

Dr. Adams Kamukama (brown jacket) coordinating sample transportation during the Cholera outbreak investigation in Kayunga District, 2023

Dr. Adams Kamukama (brown jacket) attending the rapid response team meeting during the Cholera outbreak investigation in Kayunga District, 2023

Dr. Adams Kamukama (pink shirt) demonstrating the use of the community hand washing facility during the Cholera in Kayunga District, 2023

Dr. Adams Kamukama (in brown jacket) supervising sample collection during Black water fever outbreak investigation in Bukomansimbi District, 2024

Dr. Adams Kamukama (brown jacket) engaging family members of children with Black water fever in Bukomansimbi District, 2024

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Yasiini Nuwamanya

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Host Site: Uganda National Expanded Program on Immunization (UNEPI), Ministry of Health

Host Site Mentors:

1. Dr. Atugonza Ritah

Dr. Yasiini's profile

Now a polished field epidemiologist, I hold a Master of Public Health degree, a postgraduate Diploma in Clinical Trials, and a Bachelor of Medicine and Bachelor of Surgery degree with a strong background in the public health sector. I have a particular interest in infectious disease epidemiology, vaccines, and immunization.

During the fellowship I was hosted at the Uganda National Expanded Program on Immunization (UNEPI); recently rebranded into the Vaccines and Immunization Division of the Ministry of Health. The vision of UNEPI is a Ugandan population that is free of vaccine-preventable diseases with a mission to reduce morbidity, mortality, and disability due to vaccine-preventable diseases in Uganda. The major goal is to ensure that every child and high-risk group is fully vaccinated with high-quality and effective vaccines against the target diseases in line with the recommended strategies.

Achievements at the Host site

At UNEPI, I supported the data and surveillance subcommittee, participating in various projects and activities such as outbreak investigation and response, evaluation of the routine immunization program performance, support supervision and mentorship, development of policy documents, grant writing, and scientific communication as highlighted below:

I started the quarterly public health bulletin for UNEPI, facilitating the timely dissemination of public health information and social mobilization. The bulletin was pivotal in mobilizing for mass vaccination campaigns, including the second phase of the first-ever national preventive yellow fever mass vaccination campaign in April 2024, and the Big Catch-Up vaccination exercise in November 2024.

As managing editor, I developed the concept for the UNEPI bulletin and successfully sourced funding from the Infectious Diseases Institute (IDI) with the support of the UNEPI program manager to kick-start the production. I have since overseen the publication of two issues of the bulletin from February to October 2024.

I authored three articles and co-authored several in the UNEPI quarterly bulletin including:

- Effect of PCV10 on Trends of Pneumococcal Meningitis in Children Under Five Years, Uganda, 2003–2022
- Performance of the National Expanded Programme on Immunization by Antigen
- Persistent gaps in immunization coverage: closing the gaps using Quality Improvement Approaches

- Integrated Child Health Days (ICHDs) postponed to November 2024: Fast-tracking the Big Catch-Up Vaccination Exercise
- Updated Routine Immunization Schedule: Key Messages for stakeholders

- Rotavirus vaccine planned switch from Rotarix to Rotasiil: Introducing a 3-dose Rotavirus vaccine schedule
- Uganda Yellow Fever Preventive Mass Vaccination Campaign Phase 2, April 2-8, 2024

I contributed to the development of an operational plan for the nationwide 'Big Catch-Up' vaccination exercise that aimed to ensure that 90% of the eligible population were up-to-date with their routine immunization.
Subsequently, I supervised the implementation of the Big Catch-up in Mubende District in North Central Uganda, overseeing a successful exercise.

I led measles outbreak investigations in Budaka, Butebo, Terego, and Sembabule districts; determining outbreak magnitude and risk factors. The findings informed subsequent mass vaccination campaigns and interventions to strengthen routine immunization in the districts. After the measles outbreak investigations, I oversaw the mass measles-rubella vaccination campaigns across all four districts, excelling at the national target of 95% coverage and successfully controlling outbreaks.

I took part in developing the operational plan for phase 2 of Uganda's Yellow Fever Preventive Mass Vaccination Campaign. Specifically, I served as an editor for the accompanying field guide and talking points tailored for various stakeholders, including district health teams and implementing partners. Additionally, I compiled the technical package for national supervisors, which became a key reference for training and implementation of the YFPMVC at the district level.

I led a readiness assessment for the second phase of the national Yellow fever mass vaccination campaign across three districts in western Uganda—Bushenyi, Mitooma, and Rubirizi—supporting their preparations for a successful vaccination campaign. During the implementation, I served as the national supervisor for Kyotera District, which emerged among the eighth best-performing districts, achieving 83% coverage compared to the national average of 75%.

I participated in the revision of the national EPI Health Management Information Systems (HMIS) tools. Specifically, I recommend a birth cohort-based child health register for better longitudinal data capture which was adopted in the new EPI HMIS tools.

I co-led the monitoring and evaluation of the effectiveness of the Tickler Box innovation in Luwero District and Smart Paper Technology in Masindi District in reducing immunization dropout rates.

I contributed to an article in the Ministry of Health report to H.E. the president of Uganda, on the performance of routine immunization programs. Specifically, my article highlighted the pneumococcal conjugate vaccine's impact on bacterial meningitis trends in children under five.
I analyzed the spatial distribution of suspected measles outbreaks in Uganda to inform targeted and proactive interventions by the Uganda National Expanded Program on Immunization including the development of the national measles preparedness and response plan, 2024.

I contributed to the Health System Strengthening-III GAVI grant application, which was successfully awarded. Specifically, I participated in responding to reviewers' comments and refining the document.

I served as the deputy team lead for the Hoima health region during the WHO-led Post-Introduction Evaluation (PIE) of new vaccines introduced in Uganda's routine immunization system for children under 2 years in 2022, focusing on Masindi and Kiryandongo districts. I contributed to data collection tool review, report writing, and findings dissemination to national immunization stakeholders.

I attended and actively participated in majority of the scheduled UNEPI and subcommittee meetings during which I made several presentations of my work on data and surveillance and contributed to discussions on other topics.

In recognition of my expertise and contributions to the immunization program, I was nominated to the National Certification Committee on Polio Eradication (NCC) for Uganda, which consists of independent experts responsible for assessing and verifying national documentation on polio-free status and reporting to WHO regional certification committee with improvement recommendations.

Fellowship program-specific achievements

In addition to leading three measles outbreak investigations under the host site, I led three others as part of my assignments during the fellowship.

- Food poisoning at a funeral in Buyengo Town Council, Jinja District, February 2024
- Anthrax outbreaks in Western Uganda District, April 2023, during which I investigated the role of illegal meat dealers in spreading human anthrax infections
- Measles outbreak in Sembabule District, July-August 2024

Participated in six other outbreak investigations:

- Anthrax outbreak in Ibanda District, April 2024, during which I led the investigation of illegal meat dealers in spreading anthrax infections
- Measles outbreak in Bundibugyo District, 2023
- Cholera outbreak in Kayunga District, 2023
- Measles outbreak in Terego District, 2024
- Multi-Drug Resistant TB outbreak in Kayunga District, 2024
- Mpox outbreak in Kampala Metropolitan area (Kampala, Wakiso and Mukono districts), 2024

Analyzed pediatric bacterial meningitis sentinel surveillance data and assessed the effect of 10-valent pneumococcal conjugate vaccine on the trends of pneumococcal meningitis among children under 5 in Uganda from 2003—2022, to generate evidence of the effectiveness of the PCV10 routine immunization program.

Presented at six local conferences during 2023-2024

- Anthrax outbreaks in Western Uganda: the role of illegal meat dealers in spreading the infection at the 9th National Field Epidemiology Conference, November 2023, and the National Quality Improvement Conference, March 2024.
- Effect of 10-valent pneumococcal conjugate vaccine on the trends of pneumococcal meningitis among children under five years in Uganda, at the 23rd conference of the Uganda Society of Health Scientists, August 2024, and National Health Promotion Conference, October 2024.
- Food poisoning outbreak caused by Aeromonas bacteria at a funeral in Jinja District, at the 18th Joint Annual Scientific Health Conference, October 2024, and the 10th National Field Epidemiology and 2nd Laboratory Leadership Conference, November 2024.

I led the protocol development for the national immunization coverage mini-survey to evaluate the routine immunization program and determine factors associated with the uptake of immunization services in Uganda. Subsequently, I won a grant of 85,000 USD from the US CDC in partnership with IDI for the Uganda National Institute of Public Health (UNIPH) to conduct the survey. I successfully coordinated the survey in all the fifteen designated health regions of Uganda, during August-September 2024.

Presented to two international audiences

- Anthrax outbreaks in Western Uganda: the role of illegal meat dealers in spreading the infection, to the Global Health Center (GHC), US Centers for Disease Control and Prevention (CDC) Web and Content Development Team in CDC Atlanta. The presentation was incorporated into a documentary showcasing work done with funding from the US government for presentation to the US

congress, in July 2024.
- Cost-effectiveness of preventive strategies for human anthrax infections in Uganda, during the international Data-to-Policy technical exchange session organized by Vital Strategies in collaboration with CDC foundation, November 2024.

Excellence awards

- Best abstract at the 23rd conference of the Uganda Society of Health Scientists, August 2024
- Best poster presentation at the 18th Joint Annual Scientific Health Conference, October 2024

Mentor for the fifth cohort of the Intermediate Field Epidemiology Training Program.

Wrote and published two newspaper articles in the New vision

- Prevent liver cancer; get vaccinated against Hepatitis B!
- Save your child from brain dysfunction; vaccinate against meningitis now!

Editor for Issue 1 of volume 9 of the quarterly Uganda Public Health Bulletin; a public health communication channel ran by the Uganda National Institute of Public Health.

I am a lead author of five articles in the Uganda Public Health Bulletin; a national public health communications channel run by UNIPH. These included:

- Anthrax outbreak in Western Uganda: the role of illegal meat dealers in spreading infection, August 2022—April 2023
- Food poisoning caused by Aeromonas bacteria at a funeral in Buyengo Town Council Jinja District, February 2024
- Uganda switches from Rotarix rotavirus vaccine to Rotasiil: Introducing a 3-dose Rotavirus vaccine schedule into the routine immunization program, March 2024
- Uganda Yellow Fever Preventive Mass Vaccination Campaign Phase 2, April 2-8, 2024
- World Health Awareness Days, and International Health Days, for April-June 2024: International Cesarean Awareness Month, April 1-30, World Hemophilia Day, April 17, World Malaria Day, April 25, World Immunization week April 1-30, World Asthma Day, May 7, World Hypertension Day, May 17, World Preeclampsia Day, May 22, World Blood Donor Day, June 9, and World Sickle Cell Day, June 19.

Implemented a Quality Improvement Project on reducing the dropout between the first and second doses of measles-rubella vaccine, among children aged 18-59 months at Masaka Regional Referral Hospital, Uganda, July–December 2024.

Conducted an epidemiological study on predictors of Mortality among Children ‹5 years Admitted with Bacterial Meningitis at Pediatric Bacterial Meningitis Sentinel Surveillance Sites, Uganda, 2003–2022.

Led a TB/HIV epidemiological study on Interval from TB diagnosis and treatment initiation, and factors associated with treatment outcomes among TB patients in high-volume health facilities in North-Central Uganda, 2018-2022.

Research supervisor for the household survey on excess mortality due to COVID-19 in Uganda, March-April 2023.

Wrote two policy briefs

- Reducing Mortality from Snakebite Envenoming in Uganda, A policy brief
- Cost effectiveness of prevention strategies for human anthrax in Uganda

Publications in peer-reviewed journals

- Lead author of an article titled “Effect of 10-valent pneumococcal conjugate vaccine on trends of pneumococcal meningitis among children under five years in Uganda, 2003-2022”, that was published in the BMC infectious diseases Journal.
- Co-authored a manuscript titled “Ebola disease outbreak caused by the Sudan virus in Uganda, 2022: a descriptive epidemiological study” that was published in the Lancet journal.
- Lead author for a manuscript titled “Food poisoning outbreak caused by Aeromonas

bacteria at a funeral in Buyengo Town Council Jinja District, February 2024", currently under peer-review in the BMC infectious diseases Journal.

- Lead author for two other manuscripts titled 'predictors of Mortality among Children <5 years Admitted with Bacterial Meningitis at Pediatric Bacterial Meningitis Sentinel Surveillance Sites, Uganda, 2003–2022' and ***"Anthrax outbreaks in Western Uganda: the role of illegal meat dealers in spreading the infection"*** are under internal review.

Summary of my award-winning descriptive study:

Effect of 10-valent pneumococcal conjugate vaccine on the trends of pneumococcal meningitis among children under five years in Uganda

Background: Pneumococcal meningitis, a vaccine-preventable disease caused by Streptococcus pneumoniae (Spn) is the leading bacterial meningitis in Under Five children. In April 2014, Uganda introduced routine immunization with 10-valent Pneumococcal Conjugate Vaccine (PCV10) for infants. The target coverage for herd immunity is ≥90% with three doses (PCV10-dose 3). We assessed the effect of PCV10 introduction and coverage on the trends of pneumococcal meningitis in under five children.

Methods: We analyzed laboratory-confirmed pediatric bacterial meningitis (PBM) data at two high-volume WHO-accredited sentinel surveillance hospitals in Kampala City and Gulu District, from 2003–2022. We used confirmed cases to estimate the minimum incidence of pneumococcal meningitis in the host districts and calculated annual incidence of pneumococcal meningitis per one million populations, and the proportion of confirmed PBM attributable to Spn. We divided the study period into 2003–2013 (pre-PCV10) and 2014–2022 (post-PCV10), and conducted interrupted time series analysis using autoregressive integrated moving average models for the effect of PCV10 on trends of pneumococcal meningitis and PBM attributable to Spn. We analyzed reported PCV10 data in DHIS2 from 2014–2022 for annual PCV10-dose 3 coverage. Results: Among the 534 confirmed PBM cases, 331(62%) were pneumococcal meningitis; 227(69%) from Gulu District and 104(31%) from Kampala City. The majority (95%) of the isolates were not serotyped. The majority (57%) were male and unimmunized (98%); median age=14(IQR=6-27) months with most (55%) aged ≥12 months. The case-fatality rate was 9%. During Pre-PCV10 period, the overall incidence of pneumococcal meningitis in the host districts increased; slope change=1.0 (95%CI= 0.99999, 1.00001). which declined in post-PCV10 period (2014–2022) by 92% from 86 cases /1,000,000 in 2014 to 7/1,000,000 in 2022, slope change= -1.00006 (95%CI=-1.00033, -0.99979). Whereas there was an immediate decline in the proportion of confirmed PBM attributable to Spn in the host districts, level change=-1.84611(95%CI=-1.98365, -1.70856), an upward trend was recorded from 2016–2022, slope change=1.0 (95%CI=0.99997, 1.00003). During 2015–2022, PCV10-dose 3 coverage was largely >90% for Gulu District and 52-72% for Kampala City.

Conclusion: The PCV10 routine immunization program reduced the incidence of pneumococcal meningitis in Kampala City and Gulu District. There was no effect on the confirmed PBM proportionately attributable to Spn. Kampala City persistently recorded PCV10-dose3 coverage <90%. We recommend enhancing serotyping and periodic nasopharyngeal carriage surveys to ascertain the maximum vaccine effectiveness and monitor Spn serotypes, and strengthening routine immunization in Kampala City.

Key lessons learnt during the fellowship

During the fellowship, I learnt and developed the following skill sets:

- Outbreak Investigation and response including designing and instituting appropriate interventions
- Designing and conducting epidemiological studies
- Evaluation of public health surveillnce systems
- Designing and implementing Quality Improvement Projects

- Decision modelling for health econmonic evaluation
- Scientific writing including writing abstracts, and manuscripts
- Writing policy briefs
- Designing and writing for public health bulletins
- Non-scientific communication including writing newspaper articles
- Data management, analysis and interpretation using such sofware as STATA, Epi-Info, Excel and Quantum Geographic Information System (QGIS)
- Presentation skills and dissemination of scientific findings
- Mentorship skills
- Team leadership and coordination skills
- Networking and lobbying skills

Next Steps

Working with the Ministry of Health and/or partner organizations, I hope to use my newly acquired skills and knowledge to advance Uganda's health security agenda, by strengthening public health surveillance to ensure prompt detection and control of outbreaks at source. I also intend to use my mentorship skills to build capacity of fellow health workers in public health surveillance in Uganda and beyond; with particular emphasis on routine health data use. Above all, I am looking forward to furthering my career as a field epidemiologist for maximum contribution to towards the attainment of Global Health Security.

PICTORIAL AND NARRATIVE

Meeting the Chairperson and DHO of Rubirizi District to strategize for the Yellow Fever Preventive Mass Vaccination Campaign at Rubirizi District, March 2024

Mentoring Masaka City District and HSD surveillance teams on electronic Disease Surveillance and Response (eIDSR), September 2024

Making a conference presentation at the 10th National Field Epidemiology Conference, November 2024

Brainstorming session with the QI team during root cause analysis for the high MR1-MR2 at Masaka Regional Referral Hospital, June 2024

Responding to a comment from the audience during the dissemination of preliminary findings of the national immunization coverage mini-survey at Uganda WHO offices, December 2024

Happy mentor: pausing for a photo with my mentees under cohort 5 of the Intermediate Field Epidemiology Training Program (IFETP-Intermediate) at their graduation ceremony at the Source of the Nile Hotel, Namanve, Wakiso District, September 2024

Presenting at the 23rd conference of the Uganda Society of Health Scientists, August 2024

Receiving the award for the best abstract under vaccines and immunization at the 23rd conference of the Uganda Society of Health Scientists, August 2024

Receiving the award for the best poster presentation at the 18th joint annual scientific health conference, October 2024

Receiving the certificate of completion of Decision modelling for health economic evaluation at Sheraton Istanbul City Center Hotel, Turkey in October 2024

Interviewing parents who lost two children during the food poisoning outbreak investigation in Jinja District, February 2024

Disseminating preliminary findings of the food poisoning outbreak investigation to the Jinja District Task Force, February 2024

Leading community entry during the excess mortality survey in presence of Julie Harris, the former resident advisor, March 2023

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Rek John

MBChB (MUST), MSc Epidemiology (LSHTM), FETP Graduate

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Host Site: : National Malaria Elimination Division, Ministry of Health, Uganda

Host Site Mentors:

1. Dr. Jimmy Opigo
2. Dr. Catherine Maiteki

Rek John's profile

I hold a Bachelor's Degree in Medicine and Surgery – Mbarara University of Science and Technology and a Master's in Epidemiology – London School of Hygiene and Tropical Medicine, University of London. With the Advanced FETP, I am now a well-grounded epidemiologist. My passion lies in supporting malaria elimination efforts, through innovative surveillance, data-driven strategies, and epidemiological practices.

During the fellowship, I was attached to the National Malaria Control Division, now, the National Malaria Elimination Division (NMED). The NMED provides overall leadership for malaria control in Uganda. Through the in-service training at the NMED, I have attained great skills in leadership, outbreak investigation, and response including data analysis and interpretation, advocacy, multisectoral coordination, and engagement. Additionally, I have acquired skills in outbreak investigation and response having led and participated in outbreak investigations, rapidly developed malaria outbreak response SOPs to counter future malaria outbreaks, and been involved in malaria program reviews and grant application activities. I have also participated in document development including the Uganda Antimalarial Resistance Management Strategy, the Uganda Malaria Death Reduction Strategy, and the Accelerated Malaria Elimination Strategy. Currently, I am involved in developing the protocol to evaluate the Uganda malaria surveillance system.

Achievements at the Host site

- Revitalized the production and dissemination of weekly surveillance reports.
- Initiated production of the monthly malaria surveillance status update report.
- Participated in the rapid assessment of the malaria situation in the country following the 2022 malaria outbreaks across the country.
- Participated in the country's malaria strategic plan mid-term review
- Led the data analysis and preparation of presentations for the malaria expert review meeting.
- Nominated to lead the development and presentation of malaria information products at the Ministry of Health Strategic Committee meetings.
- Presented at several strategic committee meetings, providing updates on the malaria situation in the country.
- Nominated to support the Incident Management System (IMS), with data analytics, surveillance, and epidemiology during the malaria outbreak response in 2023
- Led a team to implement a rapid assessment of the malaria surveillance system – to support the IMT response to the outbreaks.
- Led the development of the malaria epidemic response SOPs. The SOPs will be disseminated and rolled out to the rest of the country in Q1 of 2025.

- Led a study to characterize severe malaria complications in patients admitted with malaria in the malaria epidemic districts, a demand from the Ministry of Health strategic committee meeting.
- Participated in the Global Fund Grant Cycle 7 application process, and successfully wrote a concept note for sustenance of malaria sentinel surveillance sites across the country. This was funded
- Participated in the national malaria commodity quantification activity
- Participated in the antimalarial resistance strategy development activities
- Contributed to the development of the Uganda Malaria Elimination Strategy
- Contributed to the malaria surveillance system assessment efforts, to inform the next malaria strategic plan
- Developed an outbreak detection online tool, using monthly data to complement the weekly data detection method
- Developed materials for district-led malaria outbreak response. These were deployed in Serere, Kibuku, Butaleja, Bugiri, and Amolatar districts
- Trained district leaders and malaria partners on malaria outbreak investigation, community parasite prevalence surveys and mortality surveillance in the context of malaria outbreaks
- Participated in a panel discussion at the MiM 8th Pan African Conference, April 2024, Kigali, Rwanda
- Nominated to attend four training activities:
  - Kigali, Rwanda: WHO Malaria Epidemiological Stratification workshop, December 2023.
  - Dakar, Senegal – Science of Defeating Malaria, Harvard University and University Cheikh Anta Diop of Dakar, June 2023.
  - Pnong Peng, Cambodia: South to South Malaria Surveillance Practice Exchange, National Centre for Parasitology, Entomology and Malaria Control (CNM), March 2024.
  - New Orleans, USA - Malaria Molecular Surveillance, Imperial College, London, November 2024.

Fellowship program-specific achievements

- Led one outbreak investigation: Cholera outbreak in Namayingo District, June 2023.
- Participated in three other outbreak investigations:
  - Anthrax outbreak in Ibanda District, April 16 to 29, 2023
  - Mpox outbreak in Mukono District, Kampala Metropolitan Area, October 30–November 9, 2024
  - Mpox outbreak in Nakasongola District, Sept 30 to Oct 13, 2024
- Analyzed surveillance data to describe Malaria in Kampala Capital City Authority between 2020 and 2023
- Presented at two local conferences
  - The 9th and 10th Field Epidemiology conferences
- Published three newspaper articles
  - Death by Malaria: Understanding the disease path to fatality.
  - Why you should care about health data reporting from your health service provider.
  - Malaria likes travelers even more. Take extra precautions.
- Published two articles in the NIHP bulletin
  - Cholera outbreak associated with drinking contaminated lake shore water, Namayingo District, Uganda July – August 2023.
  - Increasing cases of Malaria in Kampala City, Uganda. Descriptive analysis of surveillance data, Jan 2020 to Dec 2023.
- Conducted a Continous Quality Improvement study "Utilizing Quality Improvement to Improve Medical Certification of Cause of Death at Lira Regional Referral Hospital in Uganda"
- Conducted an HIV epidemiological study on the incidence and risk factors of Infant HIV infections in Kampala and Wakiso districts of Uganda, 2022 – 2023.
- Submitted a manuscript for publication to a peer-reviewed journal titled 'Cholera outbreak associated with drinking contaminated lake shore water, Namayingo district, Uganda, July-August 2023.

Summary of Epidemiological Study:

Multiple Complications in Patients Admitted with Severe Malaria in Epidemic Districts of Uganda, May to July 2023: An Epidemiological Study

Background: Severe malaria, manifesting as a dysfunction of one or more organs, is a fatal form of malaria and is one of the leading causes of morbidity and mortality in Uganda. Between 2021 and 2023, Uganda experienced malaria epidemics in over 50 districts, resulting in high admissions and reported deaths. This study aimed to characterize severe malaria manifestations in hospitalized patients from the malaria epidemic districts in Uganda.

Methods: We analyzed data from a line list of all patients hospitalized due to malaria in 27 high-volume health facilities in 11 epidemic districts between May and July 2023. Patient demographics, clinical characteristics, pre-hospital treatments, severe malaria manifestation, and treatment outcomes were described as proportions. Using multivariable regression, we identified risk factors for multiple complications.

Results: We line-listed 1,936 patients. The median age was 5 years (range 1-89), 54% (1,044) were ‹5 years old, and 51% (994) were females. The case fatality rate was 0.7% (14). Sickle cell anemia was the most common comorbidity in 77% (83/107) of patients with comorbidities. Most patients reported a fever (97%, 1,882), and 48% (924) had received pre-admission treatment for their symptoms. Unknown medicines accounted for the most pre-admission treatments received at 47% (550), in addition to oral paracetamol, 24% (281), and antimalarials 20% (236). Up to 75% (1443) of the patients had danger signs. 2,715 complications were reported80% (2,157) were in children ‹10 years, and 74% (2017) presented as ≥2 complications. The most common complications were low blood sugar, 22% (609), severe anemia, 19% (510), jaundice 12% (321), and blackwater fever 11% (306). Independent risk factors for multiple complications were age; ‹5 years [aOR=2.2, 95% CI=1.6-3.1] and 5≤15 [aOR=2.7, 95% CI=1.9-3.9]; having comorbidities [aOR=4.4, 95% CI=1.8-11]; and a danger sign of severe malaria at admission [aOR=10.1, 95% CI=7.6-13.5].

Conclusion: Multiple complications of malaria were common but mainly in children in the malaria epidemic settings. Younger age, comorbidities, and danger signs were predictors for multiple complications. Clinical teams must fully assess patients for all possible malaria complications for effective treatment.

Key lessons learned during the fellowship

During the fellowship, I learned and developed the following skill sets:

- Outbreak Investigation and response
- Evaluation of surveillance systems
- Designing Quality Improvement Projects
- Designing and implementing projects
- Data management, analysis, and interpretation using EpiInfo and STATA
- Creating, editing, visualizing, analyzing, and publication of geospatial data using QGIS
- Scientific writing (for Abstracts Manuscripts, Policy Briefs, and short articles)
- Presentation skills and dissemination of findings
- Developing a policy brief
- Leadership, Teamwork, Multisectoral engagement, Community engagement, and lobbying skills

Next Steps

Following the fellowship, I am better placed to identify public health challenges, highlight them to relevant authorities, and lead change. I am therefore embarking on a change process to lead mentorship, surveillance, and research for malaria elimination in Uganda.

PICTORIAL AND NARRATIVE

Rek (standing) during district entry meeting with the District Health Officer Kapchorwa to introduce the Mortality Surveillance Study, and study team, March 2023

Team meeting to review the days' activities following field visits for the Mortality Surveillance Study in Kapchorwa District: March 2023

Rek (extreme right) sharing malaria surveillance data to inform the development of the Uganda Malaria Death Reduction strategy at the World Health Organization Head Quarters, Kampala, December 2024

Attending the leadership course in Science of Defeating Malaria at CIGASS (International Centre for Research and Training in Applied Genomics and Health Surveillance, University Cheikh Anta Diop of Dakar, June 2023.

Dr. Rek (first left) during the South to South Surveillance Practice Exchange program field visit at SiemPang Health Centre, Stung Treng Province, Cambodia

Dr. Rek (with tag) and a fellow FETP from Cambodia pose for a photo during a field visit to learn from Village Malaria Workers and Mobile Malaria Workers

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Edith Namulondo

Bsc.QE (Mak), MSC.Biostat. (Hasselt, Belgium), PGDME (UMI) & Advanced Field Epidemiology Training

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Host Institution : Division of Health information, Ministry of Health

Host Site Mentors:

1. Mr. Paul Mbaka
2. Dr. Andrew Kwiringira

Edith Namulondo's profile

Edith is a fully-fledged field epidemiologist, she hold a master's degree in Biostatistics with a background in Statistics with a particular interest in public health emergency response.

During the fellowship, she was attached to the Division of Health Information under the Ministry of Health, whose mandate is to manage the national health data (collection, analysis, and interpretation of health data to monitor public health trends).

Through the trainingshe has attained great skills in leadership, outbreak investigation, and response including data analysis, interpretation, and use. She led and participated in outbreak investigations, the revision of data tools and documents and dissemination of information.

Achievements at the Host site

At the Division of Health Information, I participated in and led several projects and activities including:

- Dissemination of the Integrated Disease Surveillance and Response Guidelines – 3rd Edition (IDSR) to 5 districts of Serere, Pallisa, Mitooma, Kaliro and Masaka
- Revision of the data collection and reporting tools
- Participated in a training of trainers on the revised data collection tools
- Participated in 4 routine Data Quality assessments
- Participated in the analysis and compilation of the quarterly reports
- Trained staff at Jinja Regional Referral Hospital in medical certification of cause of deaths to improve mortality surveillance
- Participated in development of atandard operating procedures for the ICFDH-CY of assessment of disability into national EMRS and DHIS2
- Designed and implemented a Quality Improvement Project to improve death notification surveillance at Jinja Regional Referral Hospital

Fellowship program-specific achievements

- Led two outbreak investigations:
  - Measles outbreak in Kiryandongo Refugee settlement, October 2023
  - Mpox outbreak in Namayingo District, November 2024
- Participated in three outbreak investigations:
  - Anthrax in Ibanda District
  - Cholera in Kayunga District
  - Mpox in Nakasongola, Wakiso, Mukono Districts and Kampala City
- Participated in other studies:
  - Excess mortality survey in Uganda
  - Profiling the TB patients in 6 purposively selected regions of Uganda, June 2024
  - Uganda cross-sectional min-national survey to determine immunization coverage and factors associated with immunization uptake in Uganda, August 2024
- Trained and mentored Cohort 24 frontline

FETP

- Analyzed surveillance data from DHIS on diabetes in Uganda between 2015 to 2022
- Presented at three local conferences
  - The 9th and 10th National Field Epidemiology Conference
  - The 25th Uganda Society for Health Scientists conference
- Published two newspaper articles
  - Measles outbreaks in Uganda, the why and how, September 2023
  - Measles Rubella dose 2 uptake and factors associated in Namutumba District, April 2024
- Editor of Issue 3 Volume 8 UNIPH July-September, 2023, Epi-bulletin
- Published two articles in the UNIPH bulletin
  - Measles outbreak in Kiryandongo Refugee settlement, October 2023
  - Why research on herbal Medicine should be promoted, February 2023
- Participated in the group HIV study: Incidence and Predictors for Mother to Child Transmission of HIV in Uganda, January 2022 to December 2023: A Retrospective Cohort Study of Kampala City and Wakiso District
- Submitted a manuscript for publication to peer reviewed journal titled 'Measles outbreak in Kiryandongo Refugee settlement, October, 2023'.

Summary of Epidemiological Study:

Measles-Rubella dose 2 vaccination uptake and associated factors among children aged 18–24 months in Namutumba district, Uganda

Background: Measles remains a major public health concern, especially in regions with vaccination coverage rates below 95%. Two doses of the Measles-Rubella vaccine (MR) are administered to children ‹2 years; dose 1 (MR1) is administered at 9 months while dose 2 (MR2) at 18 months after birth. In 2023, MR2 uptake was 23% in Namutumba district, compared to the national uptake of 35%, both falling short of the ≥95% national target. We assessed MR2 vaccination uptake and identified factors affecting it among children aged 18–24 months in Namutumba district in April 2024 to guide targeted interventions.

Methods: We conducted a cross-sectional study in Namutumba district using a multi-stage sampling procedure. At the first stage, we randomly selected six out of 20 sub-counties, at the second stage we selected three villages within each selected sub-county using simple random sampling. At the third stage, we systematically sampled households with children aged 18–24 months in each village, using lists of households provided by the village health team registers. Within each selected household, we identified one caregiver of a child aged 18–24 months to interview using a structured questionnaire. We estimated the MR2 uptake by calculating the proportion of children who received the vaccine according to their vaccination cards. We summarized sociodemographic characteristics, exposure factors and vaccine status using frequencies and proportions. We used logistic regression model to identify factors associated with MR2 vaccination status using adjusted odds ratios (AOR) and their 95% confidence intervals (CI) to summarize effect measures. Weights were calculated based on probabilities of selection at different levels of sampling and were applied in analysis to ensure sample representativeness of the target population.

Results: A total of 350 caregivers from 350 households were interviewed. Most caregivers (86%, n=300) were mothers of the children. The median age of the caregivers was 29 Years, IQR (17, 62) years. The majority (54%, n=188) had attained primary education level. The estimated MR2 coverage was 22% (n=77). The caregiver's level of education (aOR=1.8, 95% CI 1.4–3.0), awareness of MR vaccination (aOR=9.9, 95% CI 2.5–40), and delivering from a health facility (aOR=6.7, 95% CI 1.5–30) were significantly associated with MR2 uptake.

Conclusion: The MR2 uptake in Namutumba district was low compared to the national target of ≥95%. Caregivers who had lower than secondary education, those unaware of MR vaccination, and those who did not deliver from a health facility were significantly associated with incomplete vaccination against measles. There is a need to create awareness campaigns for the community emphasizing the importance of the MR2 vaccination.

Key lessons learnt during the fellowship

- Outbreak Investigation and response including institution of interventions
- Designing and implementing Quality Improvement Projects
- Data management, analysis and interpretation using such sofware as STATA, EpiInfo and QGIS
- Scientific writing (for Abstracts, Manuscripts, Policy Briefs and short articles)
- Presentation skills and dissemination of findings

Next Steps

With the competencies gained, I hope to be able to continue to serve within the Ministry of Health in the realization of improved global health and prompt response to public health emergencies and threats.

PICTORIAL AND NARRATIVE

Edith (standing) presenting to the DTF chaired by the RDC, Kiryandongo District during the measles outbreak, October 2023

Edith (green dress) orientating the Jinja Regional Referral Hospital staff about death surveillance in January 2024

Edith (kaki jacket) during the orientation of the data assistants in the "measles-rubella vaccine uptake and associated factors" data collection, Namayingo District, April 2024

Edith (standing) facilitating a Frontline FETP sessionfor cohort 24, May 2024

Edith and collegues donned for Mpox investigation at the Entebbe ETU, September,2024

Daniel Kadobera, Resident Advisor (Middle) mentoring fellows; Edith (right) during Mpox outbreak in Nakasongola District, October 2024

Edith (standing) presenting on behalf of Uganda, the HIV tools being used during the Epidemiological Tools Meeting, Johannesburg, December 2024

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Brian Kibwika
BEHS, MPH (Mak) & Advanced Feld Epidemiology (UNIPH)
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Host Institution: Baylor Foundation Uganda – Global Health Security Directorate
Host Site Mentors:
Dr. Peter James Elyanu

Brian's profile

Now a field epidemiologist, I hold a master's degree in Public Health with a background in Environmental Health Science and a particular interest in the implementation of event-based surveillance systems in Public Health.

During the fellowship, I was attached to the Global Health Security program at Baylor Foundation Uganda, whose mandate is to improve prevention, early detection, and effective response to public health threats.

Through the in-service training, I have attained great skills in leadership, outbreak investigation, and response including data analysis, interpretation, and use. I have led one outbreak investigation and participated in four others. I have also been involved in several activities including policy brief writing, integrating COVID-19 vaccination into the national schedule, coordinating mass Yellow Fever vaccination, mortality surveillance, documenting proceedings from the Joint External Evaluation (JEE) for assessment and testing of IHR core capacities and responding to the Ebola outbreak in Mubende and Kassanda Districts.

Achievements at the Host site

At Baylor Foundation Uganda, I participated in, and led several projects and activities including but not limited to:

- Conducting regional co-creation to integrate COVID-19 vaccination into the national routine structure.
- Supervising Yellow Fever vaccination campaign in Bunyoro Region
- Led a continuous quality improvement project on the initiation of intensive Adherence Counselling at the Centre of Excellence clinic.
- Deployment as the regional epidemiologist for Bunyoro Region Public Health Emergency Operations Centre.
- Coordinating event-based surveillance activities in 9 districts of the Bunyoro Region

Fellowship Program-specific achievements

Led one outbreak investigation:

- Anthrax outbreak associated with handling and/or consuming meat from animals that died suddenly - Ibanda District, Uganda, May 2023.

Participated in four other outbreak investigations:

- Food poisoning caused by Aeromonas bacteria at a funeral in Buyengo Town Council in Jinja District, February 2024
- Lessons from an imported Cholera Outbreak, Elegu border point, Uganda, January 2024: A 7-1-7 approach
- Rotavirus outbreak linked to poor hygiene practices at a babies home in Mpigi District, 2023
- Rift Valley Fever Outbreak in Nakaseke District, Central Uganda, July 2023

Participated in other studies:

- Excess mortality survey in Uganda and led the Fort Portal City and Kabarole District team, March 2023
- Using EMR Data to Profile Persons Newly Diagnosed with HIV in Uganda, January 2022-December 2023.- Analyzed mortality surveillance data from the Iganga Mayuge Health and Demographic Surveillance Site, 2005-2021

Presented at three local conferences

- Anthrax outbreak associated with handling and/or consuming meat from animals that died suddenly - Ibanda District, Uganda, May 2023 at the 9th National Field Epidemiology Conference and the 18th Joint Annual Scientific Conference, 16th-18th October 2024
- A descriptive analysis of deaths occurring within a population-based cohort, Eastern Uganda, 2005–2021, at the 10th National Field Epidemiology Conference, 21st November 2024.

Published one newspaper article

- Reporting deaths; does it even matter? August, 2023

Editor for the Issue 3 Volume 8 PHB July-September, 2023, Epi-bulletin

Published two articles in the PHB

- Anthrax outbreak associated with handling and/or consuming meat from animals that died suddenly - Ibanda District, Uganda, May 2023
- A descriptive analysis of deaths occurring within a population-based cohort, Eastern Uganda, 2005–2021

Designed and implemented a Quality Improvement Project to improve the initiation of Intensive Adherence Counselling at the Centre of Excellence clinic, Baylor Foundation Uganda, May-December 2024

Participated in the group HIV study: -Using EMR Data to Profile Persons Newly Diagnosed with HIV in Uganda January 2022-December 2023.

Submitted a manuscript for publication to a peer-reviewed journal titled 'Anthrax outbreak associated with handling and/or consuming meat from animals that died suddenly - Ibanda District, Uganda, May 2023'.

Summary of Epidemiological Study:
A descriptive analysis of deaths occurring within a population-based cohort, Eastern Uganda, 2005–2021

Background: Globally, nearly half of all deaths are not recorded which tends to underestimate the burden of disease in the general population or particular sections of it. Using routinely updated data from the Iganga-Mayuge Health and Demographic Surveillance Site (IMHDSS), we explored the place of death and described the characteristics of the deaths to guide interventions for health programming.

Methods: The cohort is from 65 villages in Iganga and Mayuge Districts located in Eastern Uganda. Data on all deaths that occurred between 2005 and 2021 within the IMHDSS were abstracted from the electronic database for inclusion in the study. Data on the place of death (community or hospital); the deceased's demographic characteristics (age at death and sex) and assigned cause of death were abstracted. Descriptive statistics including counts and percentages were calculated, with bar graphs and pie charts. Mortality rates were calculated using the annual mid-year population sizes of the cohort for the study period. Annual mortality trends were presented as line graphs and tested for significance using Mann-Kendall analysis.

Results: A total of 8,036 deaths were recorded in the 16 years, of which, most deaths, 4424 (53%), occurred among males and 4867 (60%) occurred in the community. The overall mortality rate was 6.1/1,000, with an increasing trend by age group. Males had a higher mortality rate, 6.6/1,000 (t = 0.5147, p = 0.0055), than females, 5.6/1,000 (t = 0.3225, p = 0.0035). The age group ≥80 had the highest mortality rate of 100.2/1,000 population. Most deaths from communicable diseases were due to Malaria (42%), while for non-communicable diseases, most were cardiovascular (42%). As age at death increased, the proportion of community deaths increased from 55% in the <1 year old to 90% in the ≥101 years old.

Conclusion: The highest mortality rates were among males, and adults aged 80 years and over, occurred in the community and due to communicable diseases. Malaria, HIV/AIDS, cardiovascular disorders, and cancer were the leading causes of death. We recommend Ministry of Health programmes targeted at improving health-seeking behavior to reduce community deaths, mainly due to preventable communicable diseases.

Key lessons learnt during the fellowship

During the fellowship, I learnt and developed the following skill sets:

- Public health program leadership
- Outbreak Investigation and response including institution of interventions
- Designing and implementing Quality Improvement Projects
- Data management, analysis, and interpretation using such software as STATA, EpiInfo, and QGIS
- Scientific writing (Abstracts, Manuscripts, Policy Briefs, and short articles) and publishing.
- Presentation skills and dissemination of findings

Next Steps

With the competencies gained, I have been integrated into the Global Health Security program at Baylor Foundation Uganda where I will grow and ensure prompt response to public health emergencies and threats.

PICTORIAL AND NARRATIVE

Brian (brown jacket) giving remarks during the launch of the Yellow Fever preventive mass vaccination campaign in Kakumiro District, June 2023

Brian (brown trouser) donning in preparation for an interview with a cluster of cholera cases in Adjumani District, February 2024

Brian (check shirt) conducting a border health assessment visit in Elegu, Amuru District, February 2023

Supporting during the Field Epidemiology Training Program of the intermediate training, 2024

Brian(right) conducting IPC training during a Rotavirus outbreak response at a facility serving a baby's home in Mpigi District, August 2023

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Mariam Komugisha
BVET (MUK), MPH (MUK), Advanced Field Epidemiology Fellow
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Host Site: : Department of Integrated Epidemiology, Surveillance and Public Health Emergencies (IES & PHEs)
Host Site Mentors:
1. Dr. Stella Maris Lunkuse
2.Dr. David Muwanguzi

Dr. Mariam's profile

Iam an accomplished epidemiologist. I hold a Master of Public Health with a background in Veterinary Medicine with interests in zoonotic diseases and the implementation of the One Health approach to public health.

During the fellowship, I was attached to the Department of Integrated Epidemiology, Surveillance and Public Health Emergencies (IES), whose mission is to strengthen surveillance, for early detection of diseases and conditions, streamline reporting mechanisms, and timely investigation of disease outbreaks at all levels to ensure timely initiation of appropriate public health response.

Through the in-service training, I have attained great skills in leadership, outbreak investigation, and response including data analysis, interpretation, and use. I have led one outbreak and participated in four others. I have also been involved in several national document formulations including the framework for multi-hazard preparedness and response to public health emergencies (EMPRPHE), September 2023.

The training has empowered me with great knowledge and skills in public emergency coordination and response. I have attained leadership skills, worked with big data sets, and interpreted them for proper use. I also supported the event-based surveillance (EBS) unit at the PHEOC where I monitored and triaged public health signals in the communities thereby contributing to early detection, preparedness, and response to public health emergencies.

Achievements at the Host site

- Participated in the development of the framework for multi-hazard preparedness and response to public health emergencies (EMPRPHE), September 2023.
- Participated in the 'National training of trainers on National technical guidelines of the 3rd Edition IDSR'.
- Facilitated health worker training in on 3rd edition Integrated Disease Surveillance and Response (IDSR) technical guidelines in Ngora, Mbarara and Bududa districts.
- Participated in the scoping mission workshop on Epidemic Preparedness and Response (EPR) flagship initiatives in Uganda.
- Presented on IDSR and surveillance of animal bites reporting during a workshop on application of One Health approach in rabies surveillance August 29-30, 2023
- Supported the team working on the zoonotic disease technical area during an internal Joint External Evaluation
- Conducted the district and health facility technical surveillance support supervision using the supervision tool Site Improvement Monitoring tool (SIM) in Fort Portal City to identify gaps following IDSR training and

identify opportunities for improvement.
- Actively participated in the meeting on the 'Integrated Disease Surveillance work plan dissemination' held at Imperial Royale hotel, Kampala on June 8, 2023.
- Participated in the AVoHC-SURGE training organised by the Ministry of Health in collaboration with the World Health Organisation.

Fellowship program-specific achievements

Led one outbreak investigation:

- Rift Valley fever outbreak among animal handlers in Nakaseke District, 2023

Participated in four other outbreak investigations:

- Anthrax outbreak in Ibanda District
- Mpox outbreak in Kampala City and Mityana District
- Ebola Sudan Virus Disease outbreak in Mubende and Kassanda districts

Analyzed electronic Public Health Emergency Management surveillance data:

- On trends and distribution of Rift Valley fever outbreaks in humans in Uganda, 2016–2023

Presented at three local conferences

- The 9th ,10th National Field Epidemiology and 1st National Laboratory Leadership Conference (NFEC).
- The Uganda Society for Health Scientists Annual Scientific Conference (USHS), August 2024.

Wrote and published two newspaper articles

- How drug misuse in livestock farming affects human health
- Work together to end deadly but preventable rabies by 2030

Editor of the Uganda Public Health (UPHB) bulletin issue 2 volume 9, 2024, and published 3 articles:

- Outbreak of Rift Valley fever among herdsmen linked to contact with infected fluids in Nakaseke District, July 2023
- Descriptive analysis of Rift Valley fever outbreaks in humans in Uganda, 2016–2023
- Birth preparedness and complication readiness among pregnant women in a population-based cohort in Eastern Uganda, 2006–2018

Designed and implemented a QI study on the Improvement of the reporting rate of suspected and confirmed animal rabies in Luwero District, Uganda

Manuscripts (lead author):

- Outbreak of Rift Valley fever among herdsmen linked to contact with body fluids of infected animals in Nakaseke District, Central Uganda, June–July 2023-Under peer review at PLOS global public health
- Trends and distribution of Rift Valley fever outbreaks in humans in Uganda reported through the electronic Public Health Emergency Management, 2016–2023-Under review

Co-authored 3 other manuscripts

Key skills and competencies learned from the fellowship

- Conduct outbreak investigation and response activities
- Design and implementation of interventional projects
- Big data analytics and interpretation
- Scientific writing and presentation
- Leadership and mentorship
- Evaluation and strengthening of disease surveillance systems

Next steps:

With the skills and competencies, I have gained, I hope to further my career in the field of epidemiology, disease surveillance, and big data analytics in order to strengthen the global health security agenda.

Summary of Descriptive Study:

Trends and distribution of Rift Valley Fever Outbreaks in Uganda, 2016–2023

Background: Rift Valley Fever (RVF) is a viral zoonosis that occurs sporadically in Uganda. Several RVF outbreaks have been reported in Uganda but little is known about its patterns and distribution. We evaluated the trends and spatial distribution of RVF outbreaks in Uganda from 2016 to 2023 to guide programming.

Methods: We analyzed RVF surveillance data from the electronic Public Health Emergency Management (ePHEM) database of the Uganda Ministry of Health (MoH) from 2016–2023. The database is an open-source, multilingual, modular application used by the National Public Health Emergency Operation Centre (PHEOC) to manage all the outbreaks in the country. The Integrated Disease Surveillance and Response (IDSR) guidelines define a confirmed RVF case as any patient testing positive for either anti-RVF immunoglobulin M(IgM) Enzyme-Linked Immunosorbent Assay (ELISA) antibodies or Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) test. We abstracted data of all RVF cases reported between 2016–2023. We did descriptive analysis and tested trends using the Mann-Kendall test.

Results: Forty-three RVF outbreaks were reported resulting in 340 cases (116 confirmed) and 42 deaths in Uganda from 2016–2023. The western region reported the highest number of cases 302 (89%), and deaths 31(74%). There was a non-significant increase (p=0.73) in the number of RVF outbreaks reported from 1 in 2016 to 8 in 2023 with most outbreaks (13) reported in 2018. RVF outbreaks occurred in all four regions of the country, with the highest number reported in the western region 27 (63%), followed by the central region 12 (28%). Twenty-six (60%) of the outbreaks were reported in the cattle corridor districts with Mbarara 4 (9%) and Kiruhura 4 (9%) districts reporting the highest number of outbreaks. Most outbreaks 29 (67%) were reported during the annual dry season of January to February and June to August.

Conclusion: There was an increase in the number of reported outbreaks of RVF in Uganda annually since 2016. The continued spread indicates a need for more widespread risk communication about RVF in both humans and animals particularly in regions and districts reporting a high number of outbreaks. We recommend strengthening RVF surveillance during the rainy season to better understand the true burden of the disease.

Keywords: Rift Valley fever, outbreak, trend, spatial distribution, Uganda

PICTORIAL AND NARRATIVE

Mariam (black jacket) conducting a discussion during an outbreak of Rift Valley fever in Nakaseke District, 2023

Mariam (red and black shirt) and colleagues inspecting one of the affected farms during an Anthrax outbreak in Ibanda District, 2023

Mariam (Right) and colleagues after donning during Mpox investigation in Kampala Metropolitan Area (KMA), 2024

Mariam (Khaki Jacket) talking to pupils on prevention and control of Mpox during an outbreak response in Mityana District, 2024

Mariam (Left) interacting with the health worker (Middle) during Ebola Disease investigation and response in Kassanda District

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Benigna G. Namara
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Host Institution: Division of Vector-Borne and Neglected Tropical Diseases, Ministry of Health
Host Site Mentor:
Dr. Alfred Mubangizi

Benigna's Profile

I am Benigna Gabriela Namara, a microbiologist and epidemiologist holding a Bachelor's degree in Medicine and Surgery, and Masters' degrees in Public Health and Medical Microbiology from Makerere University. I also hold a postgraduate diploma in Monitoring and Evaluation from Uganda Management Institute and a fellowship in Advanced Field Epidemiology from the Uganda National Institute of Public Health. During the fellowship, I was hosted at the Division of Vector-borne and Neglected Tropical Diseases (NTDS), at the Ministry of Health.

Achievements at the Host site

While at the division, I was introduced to the day-to-day operations of the different NTD programs and partnerships that support them. This has taught me the value of advocacy, fundraising, and partnerships for combatting NTDs and has given me valuable insights on how to contribute to this agenda.

While there I participated in several projects and activities including but not limited to:

- Chaired a workshop to develop and update HMIS tools for Neglected Tropical Diseases
- Chaired a workshop to develop manuals for training on Neglected Tropical Diseases for different health worker cadres
- Chaired a workshop to discuss and plan sustainability of the supply chain for NTD commodities
- Analysed and shared data on the frequency of occurrence of NTDs as reported in DHIS2
- Led the evaluation of NTD data in DHIS2
- Participated in the Onchocerciasis elimination celebration activities in Bushenyi District and Fort Portal City.
- Participated in the Schistosomiasis Expert Committee meeting.
- Co-chaired discussions with Implementing partners to discuss how to integrate missing NTD program data into DHIS2, existing challenges, and possible ways forward
- Assisted with the review of the protocol for the upcoming Trachoma survey
- Provided technical guidance for scientific writing and publication of NTD data

Fellowship program-specific achievements

Outbreak investigations

I led three outbreak investigations:

- Food poisoning outbreak at a secondary school in Mukono District, July 2023
- Mental illness among migrant domestic workers returning from the Middle East, 2019–2023
- Mpox outbreak in Mayuge and Nakaseke districts, 2024

Participated in three other outbreak investigations:

- Anthrax outbreak in Ibanda District, 2023
- Strange illness characterized by shaking legs in

Bundibugyo District, 2023
- Mpox investigation in Nakasongola, Mukono, Wakiso and Kampala districts, 2024

Descriptive studies

Conducted three descriptive studies

- Mass drug administration for schistosomiasis and soil-transmitted helminths: coverage and outcomes, 2013–2023
- Regional variation of TB diagnostic practices and treatment outcomes in Uganda, 2022
- Assessing trends of Water Hygiene and Sanitation indicators at household level and mortality from related diseases in a population-based cohort from Eastern Uganda, 2005–2022

Epidemiologic studies

Conducted two epidemiological studies

- Characteristics, treatment outcomes, and factors associated with death among patients with visceral leishmaniasis in Uganda, 2019–2024
- TB diagnostic practices and associated factors in Uganda, 2022

Conferences

Presented at four local conferences

- Uganda Society for Health Scientists conference (UGSHS)
- Joint Annual Scientific Health Conference (JASH)
- The 9th National Field Epidemiology Conference
- 10th National Field Epidemiology Conference

Three of my abstracts were accepted at two reputable international conferences

- The Union World Conference on Lung Health, 2024
- The International Conference on Infectious Diseases (ICID), 2024

Newspaper publications

Wrote and published two newspaper articles

- How Neglected Tropical Diseases become public health emergencies
- The sexually transmitted infestations not even condoms will protect you from

Bulletin publications

Was an editor for the July–September 2023 issue of the NIPH bulletin

Wrote and published three articles in the NIPH bulletin:

- Food poisoning outbreak at a secondary school in Mukono District, July 2023
- Mental illness among migrant domestic workers returning from the Middle East

Manuscripts

Submitted five manuscripts for publication to peer-reviewed journals and they are under review

- Food poisoning at Nakanyonyi Senior Secondary School in Mukono District, July 2023
- Trends of coverage and outcomes of Mass Drug Administration for schistosomiasis and soil-transmitted helminths in Uganda, 2013-2023
- Diagnostic practices and associated factors among TB patients in Uganda, 2022
- Characteristics, Treatment Outcomes and Associated Factors among Patients with Visceral Leishmaniasis, Uganda, 2019–2024
- Incidence, perceptions, and experiences of mental illness among domestic workers returning to Uganda from the Middle East, 2019–2023

Continuous Quality Improvement (QI) projects

- Implemented a QI project to improve Mortality surveillance and reporting at Kayunga Regional Referral Hospital, 2024
- Conducted a baseline assessment for mortality surveillance quality improvement at Arua Regional Referral Hospital, 2024

HIV study

- Conceptualized and led a group HIV study to characterize persons newly diagnosed with HIV at four regional referral hospitals in Uganda, 2024

National surveys

- Led a team to conduct an immunization coverage survey in Mityana District, 2024
- Led a team to conduct a COVID-19 excess mortality survey in Kayunga District, 2023
- Led a team in the North Central Region as part of a national survey to characterize Tuberculosis cases and conduct contact tracing across six regions, 2023

Other projects

- Conducted CMEs on mpox at primary schools in affected districts and among humanitarian worker groups, 2024
- Conceptualized and designed a project to evaluate the IDI/CDC WASH Cares project, 2023
- Participated as a rapporteur at "The Uganda Multisectoral Internal Assessment for International Health Regulations" 25th–29th September 2023

Key skills acquired from the fellowship

- Design and implementation of surveys
- Outbreak investigation and response
- Evaluation of surveillance systems
- Designing and implementing quality improvement projects
- Quantitative data analysis using software such as STATA, Epiinfo
- Geospatial data analysis and presentation using QGIS
- Qualitative data analysis
- Policy brief formulation
- Economic analysis of public health interventions
- Public speaking, knowledge sharing, and presentation of findings

Summary of Descriptive study:

Characteristics, treatment outcomes and factors associated with death among patients with visceral leishmaniasis, Uganda, 2019–2024

Background: Visceral leishmaniasis (VL) is endemic in Uganda afflicting mainly the Karamoja Region, bordering Kenya. The World Health Organization (WHO) targets to eliminate VL as a public health problem by reducing case fatality to ‹1%. However, the current burden of VL is largely undocumented rendering the target undeterminable. We describe VL patients in Uganda over the last 6 years, their treatment outcomes, and associated factors to inform targeted interventions towards meeting WHO's target.

Methods: We abstracted data of VL patients from January 2019–May 2024, from the main treatment center located in Amudat District, Karamoja, including: socio-demographics, clinical characteristics including co-morbidities, treatment and treatment outcomes. We determined factors associated with VL death.
Results: Of 972 patients, 670 (69%) were male, 742 (76%) were ≤18 years and 373 (38%) were from Kenya. Most Ugandans were from Moroto District (434/599; 72%). The highest number of cases was in 2022 when 80% were Ugandan, while in previous years (2019–2021), more were Kenyan. Commonest symptoms were fever (98%), night sweats (77%), and abdominal swelling (72%), and the average duration of illness was 2.6 months (SD=0.3 months). Severe anemia was common (512/972; 53%) and among the patients tested for co-infections, 175/969 (18%) were co-infected with malaria and 185/593 (31%) with HIV. For most patients (898/972; 92%), this was their index VL episode. Almost all (957/972; 98%) patients were cured and most (743/972; 76%) were treated with the first-line regimen. The case fatality ranged from 2% (2020–2021) to 0% (2023–2024). Being HIV positive was associated with VL death (aOR 10, 95%CI 2.2-50).

Conclusion: This study reveals progress towards the elimination of VL as a public health problem in Uganda while highlighting the importance of cross-border transmission from Kenya. Screening and treatment of co-infections, especially HIV is necessary to mitigate death among VL patients.

Keywords: Visceral Leishmaniasis, Uganda, characteristics, treatment outcomes, case fatality.

PICTORIAL AND NARRATIVE

Benigna (center) with the NTD team after a successful workshop to update HMIS tools for NTDs

Benigna (black) breaking barriers to gain access to key informants (herbalists) during an outbreak investigation on the strange disease in Bundibugyo District

Benigna (second left) co-chairing a meeting to discuss mortality reporting at Kayunga Regional Referral Hospital

Endorsement by the U.S Mission Uganda during an outbreak investigation in Bundibugyo District

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Daniel Orit
MBChB (MAK), MPH (MAK), MMed-Internal Medicine (MAK), Fellowship in Field Epidemiology **Email:** dorit@uniph.go.ug
Telephone: +256777322263 / +256702224706
Host Institution: : Ministry of Health, National Malaria Control Division (NMCD)
Host Site Mentor:
Dr. Gerald Rukundo

Dr. Daniel Orit's profile

Physician, with additional training in public health, field epidemiology, and has special interest in infectious diseases surveillance and response. He holds a Bachelor's degree in Medicine and Surgery (MBChB), a Masters of Medicine in Internal Medicine, a Masters of Public Health and a fellowship in Field Epidemiology.

Prior to joining the fellowship, Daniel worked as a clinician in a regional referral hospital, for close to a decade. Desiring to have a greater impact on health outcomes of both individuals and populations, he decided to transition his career into the public health domain.

During the fellowship program, he was attached to the National Malaria Control Division (NMCD) of the Ministry of Health, whose mandate is to provide quality assured services for malaria prevention and treatment to all people in Uganda. While at NMCD, he monitored and evaluated malaria indicators, conducted weekly surveillance for malaria, reviewed surveillance data and made recommendations to improve malaria control and treatment interventions, conducted mentorships and support supervisions, contributed to writing weekly malaria bulletins, and review of malaria epidemic surveillance and response guidelines.

As a fellow, Daniel led and participated in a number of outbreaks (Strange neurological illness (Denga Denga outbreak in Bundibugyo, Cholera outbreak in Namayingo Islands, Anthrax outbreak in Isingiro, Mpox outbreak in Mayuge-Mbarara, Measles outbreak in Kiryandongo), and projects (Establishing mortuary surveillance for early detection of emerging health threats, Improving death notification and certification at Soroti Regional Referral Hospital and determining interval from TB diagnosis to treatment initiation at high volume facilities in central Uganda), including: evaluating surveillance systems, conducting operational research for program improvement, and implementing quality improvement projects among others. From this experience, he has improved his skills in outbreak detection and response, scientific writing, oral presentation, leadership skills, and routine surveillance data analysis. Additionally, the fellowship has broadened his view of health care beyond the clinical environment and has taught him to integrate both his clinical and public health backgrounds.

Host Site Achievements:

- Consultant on the Presidential Malaria Initiative Uganda Malaria Reduction Activity (PUMRA) under USAID during the baseline assessment in Northern Uganda, a key activity to improve the malaria response in high-burdened districts.

- Consultant on the Program for Accessible health, Communication and Education (PACE) activity during the landscaping activity to address community-level stock-outs of Integrated Community Case Management (ICCM) commodities in Uganda.
- Led the writing and dissemination of the weekly malaria bulletin.
- Supported routine weekly analysis of malaria epidemic surveillance to monitor upsurges in malaria cases.
- Participated in the review and development of a scorecard system for key malaria indicators.
- Participated in the preparation and execution of the national malaria day colloquiums in 2022 and 2023.
- Trained health workers on drawing malaria normal channels for disease surveillance.
- Participated in conducting malaria death audits at health facilities.
- Participated in training of health workers on malaria case management using the current guidelines.

Program-Specific Achievements:

- Won a TEPHINET grant to pilot a study focusing on establishing an improved mortuary surveillance system for early detection of emergency health threats in Uganda.
- Led one outbreak investigation: Strange neurological illness (Denga-Denga) affecting young females in Bundibugyo District.
- Participated in other outbreak responses and public health emergencies, including: Cholera outbreak in Namayingo District, Anthrax outbreak in Ibanda District, Mpox outbreak in Mayuge and Mbarara districts.
- I evaluated the anthrax surveillance systems in Isingiro District.
- Trained and mentored one cohort of the Intermediate-Field Epidemiology Training Program.
- Conducted a descriptive analysis of surveillance data on "Trends of intermittent preventive treatment utilization for malaria in pregnancy, Uganda, 2017–2022". Currently the manuscript is under peer review.
- Additionally, the results from the descriptive analysis, served as a basis for a continuous quality improvement project being implemented at Buvuma HC IV with support from the Infectious Disease Institute implementing partner in Buvuma District.
- Conducted an epidemiological study on evaluating the effects of mass drug administration for malaria on malaria morbidity and mortality indicators during the Ebola outbreak in Kasanda District, Uganda, November 2022.
- Conducted a study on Survival status and predictors on neonatal mortality among neonates admitted in the NICU Soroti Regional Referral Hospital (SRRH), 2022–2024.
- Implemented a quality improvement project on Improving Death Notification and Certification at SRRH, Using a Quality Improvement Approach, 2023–2024.
- Conducted a study on establishing an improved mortuary surveillance system for early detection of emergency health threats in Uganda.
- Authored five manuscripts: I am the lead author in one and co-authored four which are under peer review.
- Presented my work at four conferences including: the 9th and 10th National Field Epidemiology Conference, the 18th JASHC conference, and the 2024 World Malaria Day Scientific Colloquium.
- Published two articles in the UNIPH quarterly bulletin and was an editor of volume 8, issue 4, Oct-Dec 2023, Uganda National Institute of Public Health Epidemiological bulletin.
- Wrote and published an article titled "Malaria during pregnancy: Challenges in control and need for urgent action" in the New Vision paper.

Key lessons learned during the fellowship

- Oral presentation skills: dissemination of findings, scientific conferences (national and international), colloquiums.
- Outbreak investigation and institution of effective control measures.
- Best practice approaches to public health

emergencies.

- Scientific writing and communication skills: abstracts, manuscripts, newspaper articles, editing of bulletins.
- Data management, analysis (using Epi info, STATA, QGIS), and interpretation.
- Designing and implementing of projects.
- Leadership and team management skills
- Community engagement
- Editorial and writing skills for scientific articles.

Next Steps

With the competencies gained, I hope to continue serving within the Ministry of Health or related organizations and programs in the realization of improved global health security and prompt response to public health emergencies and threats.

Summary of Epidemiological Study:

Evaluating outcomes of mass drug administration for malaria during the Ebola outbreak in Kasanda District, Uganda, November 2022–January 2023

Background: Ebola and malaria both present as febrile illnesses, making diagnosis difficult. During Ebola Virus Disease (EVD) outbreaks, suspected malaria cases are often reported as Ebola alerts which strains the health system thus increasing malaria-related morbidity and mortality. Mass Drug Administration (MDA) of antimalarials can reduce malaria morbidity in emergencies like EVD outbreaks. During the 2022 EVD outbreak in Mubende and Kasanda Districts, round one of MDA was implemented. We aimed to assess the outcome of MDA in Kasanda District.

Methods: We abstracted data on coverage and impact of round one of MDA for malaria from the antimalarial Dihyroatemesisnin-Piperaquine (DP) drug distribution records tool, EVD alerts record tool and District Health Information System 2 (DHIS2) for the 5 implementation sub-counties of Kasanda District. Data on trends of malaria morbidity indicators (total malaria cases, total positivity rates, OPD suspected malaria fevers), EVD alerts and coverage during the pre-MDA (weeks 33-week 48, 2023) and intra-MDA (week 49, 2023-week 6, 2024) periods were obtained from the above-listed tools. We estimated MDA coverage as the proportion of persons who received DP. MDA outcomes on malaria morbidity indicators and EVD alerts during pre-MDA versus intra-MDA period were estimated as a relative percent change using an interrupted time series regression model.

Results: Round one MDA coverage in the targeted 5-sub-counties was 88% (122,704/139,437). The total malaria cases decreased by 6.7% (95% CI 4.2% -12.3%) during week 1, and further declined in week 6 post-MDA by 43% (95% CI 34% - 52%). Test positivity rate declined by 13% (95% CI 7% -16%) during week 3 and declined further throughout all MDA weeks. Outpatient cases with suspected malaria fevers decreased by 23% (95% CI 17% -35%) during week 1 and declined further throughout MDA weeks. The Ebola alerts decreased by 8.8% (95% CI 5.2% -15.1%) at week 1 and declined further 79% (95% CI 63% - 88%) by MDA week 6.

Conclusions: One round of MDA during EVD outbreak in Kasanda District resulted in a significant reduction of malaria morbidity indicators. The MDA implementation approach is an appropriate public health intervention in the context of EVD epidemic outbreak, especially in malaria-endemic areas like Kasanda District.

Keywords: Mass Drug Administration, Sudan Ebola Virus Disease, Malaria trend indicators.

PICTORIAL AND NARRATIVE

Dr. Daniel investigating the Denga Denga disease outbreak in Bundibugyo. Young females were presenting with symptoms of failing to walk and shaking movements of the lower limbs.

Fellowship equipped me with presentation skills. Here I was presenting my poster presentation during the JASH conference

Making a presentation on behalf of UPHFP to his Excellency the American Ambassador William Popp

Taking a boat ride with colleagues to investigate the Cholera outbreak in Namayingo Islands

Supporting graduates of the Intermediate fellowship program

Making a presentation during one of the scientific conferences (9th NFEC)

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dorothy Aanyu
BBLT, MPH (MUK) & Advanced Field Epidemiology Fellow (UNIPH)
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Host Institution: Kampala Capital City Authority (KCCA)
Host Site Mentor:
1. Dr. Daniel Okello Ayen
2. Dr. Alex Ndyabakira

Dorothy Aanyu's Profile

Dorothy Aanyu is an experienced epidemiologist who holds a Bachelor of Biomedical Laboratory Technology and Master of Public Health from Makerere University Kampala. During 2023-2024, she undertook and completed the Advanced-Field Epidemiology Training Program (FETP) during which time she was hosted at the Kampala Capital City Authority (KCCA).

Achievements at the Host site

While at KCCA, she played a significant role in the operational aspects of surveillance in the urban settings, an opportunity that has been a game-changer for her career. She gained skills in leadership, outbreak investigation and response including data analysis, interpretation, and use. She led two outbreaks and participated in five others.

She was also involved in a number of projects and activities including but not limited to:

- The rollout of the Measles-Rubella vaccination in Kampala City, 23rd -27th June 2023. She was a parish supervisor during this activity in Makindye Division.
- Led the investigation on surge of reported Typhoid disease cases in Kampala City, May-June 2023.
- Led the active case search for Cholera cases in Katwe Parish, Makindye Division, July 2023
- Participated in the Pan respiratory disease surveillance Training of trainers, August 2023
- Coordinated the training and roll out of the 3rd eIDSR guidelines in Kampala City, August-September 2023
- Coordinated the rollout of Ebola Virus vaccination for health workers in Kampala City, September 2023
- Participated in a WHO EPR Flagship Initiatives Scoping Mission, September 2023
- Participated in the review and update of the Kampala City HIV strategic plan, September-October 2023

Fellowship program-specific achievements

1. **Led two outbreak investigations whose findings were disseminated through bulletin articles, conference presentations and manuscripts:**
- Rotavirus outbreak at a Babies' Home in Mpigi District, August 2023
- Conjunctivitis outbreak at School X in Kampala City, March 2024

2. **Participated in four other outbreak investigations:**
- Anthrax outbreak in Ibanda District, March-May 2023
- Mental illness among returnees from Middle-east countries, March 2024
- Food poisoning in Jinja District
- Mpox investigation in Mukono and Wakiso districts

3. **Conducted two descriptive studies**
- Urban health: An assessment of Kampala City, 2018-2022
- Treatment outcomes among Tuberculosis patients across six regions of Uganda

4. Led a National Survey to characterize Tuberculosis cases and conduct contact tracing across six regions in November-December 2023

5. **Conducted two epidemiological studies**
- Prevalence and Risk Factors of Occupational Diseases among Sanitation Workers in Kampala City, 2024
- Prevalence and associated factors of tuberculosis among contacts of active tuberculosis patients

6. **Presented at three local conferences**
- Rotavirus outbreak at a Babies' Home in Mpigi District at the 9th National Field Epidemiology Conference and the 3rd USHS conference
- Conjunctivitis outbreak at School X in Kampala City at the 10th National Field Epidemiology Conference

7. **Wrote and published two newspaper articles**
- Is the air you breathe at your home making you sick? What 3 simple changes can you make to be safer?
- Why Ugandans need to start recycling

8. **Was an author for the October-December 2023 issue of the NIPH Epi-bulletin?**

9. **Wrote and published two articles in the NIPH bulletin**
- Rotavirus outbreak at a Babies' Home in Mpigi District, August 2023
- Conjunctivitis outbreak at School X in Kampala City, March 2024

10. Implemented a QI study on improvement of Mortality surveillance at Mbarara Regional Referral Hospital and noted a ›50% improvement in death notification. She also participated in the baseline assessment for mortality surveillance quality improvement at Lira Regional Referral Hospital.
11. Conducted a group HIV study on the Impact of DQAs on PMTCT indicators in Mubende sub-region
12. Writing a group policy brief on the control of tickborne disease in Uganda.
13. Submitted a manuscript for publication to peer peer-reviewed journal titled 'Rotavirus outbreak at a Babies' Home in Mpigi District" and have four others under internal review titled
- Trends and Distribution of Urban Health Indicators in Kampala City, 2018-2022
- Investigation of an Outbreak of Conjunctivitis at School X in Kampala City, March 2024
- Prevalence Contact Tracing Yield and Associated Factors for Tuberculosis Diagnosis among Contacts of Active Tuberculosis Cases in Uganda, 2023
- Tuberculosis Treatment Outcomes and Associated Factors across Six Regions of Uganda, 2023

14. Trained and mentored four vibrant FETPs in Cohort 24 of the frontline epidemiology training program
15. Coordinated the immunization coverage survey in Kampala City, September 2024
16. Supervised the data collection for the excess mortality survey in Kampala City

Key lessons learnt during the fellowship

During the fellowship, I learnt and developed the following skill sets:
- Outbreak investigation and response including institution of interventions
- Evaluation of surveillance systems
- Designing and implementing Quality Improvement Projects
- Data management, analysis, and interpretation using such software as STATA, EpiInfo, and QGIS
- Policy brief formulation
- Economic analysis for projects
- Scientific writing (for Abstracts, Manuscripts, Policy Briefs and short articles)
- Presentation skills and dissemination of findings

Summary of outbreak investigation:

Investigation of an Outbreak of Conjunctivitis at School X in Kampala City, March 2024

Background: On March 11, 2024, Kampala Capital City Authority received an alert of an increase in the number of conjunctivitis cases at School X in Rubaga Division, Kampala City. We investigated the outbreak to determine the scope of the outbreak, identify factors associated with its spread, and recommend control measures.

Methods: We defined a case as redness of one or both eyes and any of the following: tearing, swelling, itching, or discharge in a pupil or staff of school X from March 5-31, 2024. The school had 148 staff and 1,800 learners, 700 of whom were in the boarding section. We identified cases by reviewing health records at the school. We calculated attack rates by age, sex, class, and dormitory using staff and pupils of the infant school as the source population. We also conducted staff interviews and an environmental assessment. We matched case-patients to controls by residence and identified factors associated with the spread of conjunctivitis in the school using logistic regression.

Results: We found 175 cases of conjunctivitis, 167 of whom were pupils and 8 were staff. The mean age for case-patients was 11.4 years (range 5–45 years). Attack rates(%) (AR) were similar in females and males (10 vs 8.4). Pupils in the boarding section were more affected than day scholars (AR:23) with residents of Alpha dormitory more affected than other dormitories (AR:50). Pupils in P4-P7 were the most affected compared to lower class groups (AR:17). We found that being a boarding scholar (aOR=10, 95%CI: 2.1-51) increased the odds of conjunctivitis. Persons who washed their hands at arrival back at the dormitory/ home (aOR= 0.38, 95%CI: 0.16-0.91) and pupils in classes P4-P7 (aOR= 0.34 95%CI: 0.14-0.77) were protected against conjunctivitis. We observed that most dormitories were congested with pupils sleeping in triple decker beds, the average living space per pupil was 3m2 compared to the 5m2 recommended by Ministry of Health. Hand washing facilities were also not well distributed.

Conclusion: The outbreak was likely facilitated by dormitory congestion and poor hand hygiene practices. Boarding scholars were most affected; regular hand washing and attending upper classes were protective. Education and awareness of good hand hygiene measures could mitigate the risk of similar outbreaks in the future.

Keywords: Conjunctivitis, outbreak, congestion, hand hygiene

- Led the writing and dissemination of the weekly malaria bulletin.

PICTORIAL AND NARRATIVE

Dorothy (brown jacket) responding to the Kiteezi landfill collapse in Kampala, August 2024

Disseminating results from the QI study on improving mortality surveillance to Mbarara Regional Referral Hospital staff

Taking a boat from Sowe island in Mukono District as part of the Mpox case investigation team, November 2024

Dorothy (blue skirt) conducting data collection for immunization coverage survey in Kampala city

Dorothy (Middle) celebrating with the four Frontline-FETPs I mentored during their graduation ceremony

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Innocent Ssemanda
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Fellowship in Field Epidemiology (UNIPH)
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Host Institution: Ministry of Health, AIDS Control Program (ACP)
Host Member:
: Dr. Mina Nakawuka

Dr. Innocent Ssemanda's Profile

As a Field Epidemiologist at the Uganda National Institute of Public Health, I have led numerous outbreak investigations, including measles, food poisoning, anthrax, and Mpox. With a master's degree in public health and expertise in epidemiology, I have spearheaded the integration of non-communicable disease screening into HIV care. My work has involved capacity-building for health workers, policy development, and scientific writing. My exceptional leadership, operational excellence, and commitment to data-driven decision-making have made me a valuable asset in Uganda's public health landscape. Prior to my current role, I served as a Quality Improvement Specialist at Population Services International, where I honed my project management skills. My primary interests include Global Health Security and Strengthening Health Systems.

During the fellowship, I was attached to the AIDS Control Program (ACP), a unit within the Ministry of Health in Uganda. The ACP's mandate is to provide leadership for the public health response to HIV/AIDS in core areas such as:

- HIV/AIDS Surveillance
- Policy Formulation
- Resource Mobilization
- Capacity Development
- Setting Standards and Quality Assurance

Through this in-service training, I have developed strong skills in leadership, outbreak investigation, and response, including data analysis, interpretation, and application. I have led two outbreaks and participated in five others. Additionally, I have been involved in national programs, including the Joint External Evaluation of the Progress of the International Health Regulation Policy Implementation.

Achievements at the Host Site

At the AIDS Control Program (ACP), I was attached to the Adult Care and Treatment unit, where I participated in and led several key activities, including:

- **Integration Evaluation:** Evaluated the integration of non-communicable diseases (NCDs) and cervical cancer screening among people living with HIV into routine HIV clinics across the country.
- **National Dissemination:** Participated in the national dissemination of the 2022 Consolidated HIV and AIDS Guidelines.
- **Protocol Drafting:** Contributed to drafting the 2024 Uganda Population-Based HIV Impact Assessment (UPHIA) protocol.
- **Mpox Impact Assessment:** Led the assessment of the impact of the Mpox outbreak on the HIV population.
- **Pilot Evaluation:** Participated in the evaluation of data from the first NCD integration pilot conducted in four health facilities within Kampala.

- Mortality Reporting Assessment: Led and supported the assessment of HIV-related mortality reporting at nine regional referral hospitals across the country.
- Data Quality Assessment: Led a team of fellows to assess the impact of the 2022 PMTCT Data Quality Assessment (DQA) on subsequent data quality.
- Research Publication: Authored and published an article on the importance of herbs and other foods in the treatment of HIV and AIDS.
- Data Analysis: Analyzed trends of TB preventive therapy uptake and completion among HIV patients using data from DHIS2, with results disseminated at three conferences and published in a local bulletin.
- Viral Load Study: Conducted a study at Butabika Hospital on the prevalence and factors associated with viral load suppression among mental health patients.

Fellowship Program Specific Achievements

- **Health Worker Training:** Facilitated training in enhanced surveillance and reporting for health workers in Butaleja District.
- **Quality Improvement Project:** Designed and implemented a QI project on acute febrile illness surveillance at Jinja Regional Referral Hospital.

Outbreak Investigations

Led Two Outbreak Investigations:

- Cholera Outbreak: Elegu Point of Entry, January 2024.
- Mpox Outbreak: Nakaseke, Adjumani, and Iganga districts, September 2024.

Participated in Five Other Outbreak Investigations:

- Anthrax outbreak investigation in Ibanda District.
- EVD outbreak in Masaka District.
- Food poisoning outbreak at a school in Mukono District.
- Food poisoning incident at a funeral in Jinja District.
- Measles outbreak at Panyadoli refugee settlement in Kiryandongo District.

Additional Contributions

- Mortality Notification Study: Designed and implemented a QI study on improving mortality notification at Mbale Regional Referral Hospital.
- Training Cohort Support: Supported the training of a cohort of 23 frontline FETP fellows, 20 of whom graduated on time.
- Lead Author: Served as the lead author for the Uganda Public Health Bulletin Volume 8, Issue 1.
- Conference Presentations: Presented at six local conferences, including:
- Joint Scientific Annual Conference
- 25th Uganda Society of Health Scientists Annual Conference
- National Field Epidemiology Conference
- PEPFAR Summit
- National TB Conference

Publications

- Published Works:
- Two newspaper articles.
- One manuscript in the BMC Public Health journal.
- Two bulletin articles in the UNIPH Epi-bulletin.

Summary of Descriptive Study

Uptake and Completion of Tuberculosis Preventive Therapy among People Living with HIV on Antiretroviral Therapy in Uganda, 2020–2023

Introduction: In 2015, Uganda adopted the World Health Organization (WHO) guidelines for Tuberculosis Preventive Therapy (TPT) among people living with HIV (PLHIV). The country has implemented several initiatives to scale up TPT, including its integration into HIV care services. The WHO target for both initiation and completion of TPT among PLHIV in care is 90% by 2035. This study describes trends and spatial distribution of TPT uptake and completion, as well as reasons for non-completion among PLHIV in Uganda.

Methods: We extracted and analyzed national and subnational aggregated data on TPT among PLHIV on Antiretroviral Therapy (ART) as reported through the District Health Information System Version 2 (DHIS2) from January 2020 to December 2023. TPT eligibility, initiation, and completion rates were calculated. Reasons for non-completion were categorized as loss to follow-up, TB diagnosis, stopping due to side effects, and death while on TPT. Trends were analyzed using the Mann-Kendall test, and spatial distribution was described by region over time. A p-value of ‹0.05 was considered statistically significant.

Results: By June 2023, 1,330,693 PLHIV on ART were eligible for TPT, of which 87% (1,157,703) had been initiated and 92% (1,065,086) of those initiated had completed TPT treatment. Between January 2020 and December 2023, uptake of TPT increased from 21% of eligible PLHIV to 89%, while completion increased from 91% to 96%. Of the 92,617 (8%) ART clients who did not complete their TPT regimen, 29,435 (37%) were lost to follow-up, 2,356 (3%) died, and 1,589 (2%) were diagnosed with TB.

Conclusion: Uganda is close to achieving the WHO TPT initiation target and has already met the target for TPT completion among PLHIV. It is important for the Ministry of Health to maintain high initiation rates of TPT among newly enrolled PLHIV.

Key Lessons Learned During the Fellowship

Throughout the fellowship, I developed the following skill sets:

- Outbreak Investigation and Response: Including the institution of interventions.
- Evaluation of Surveillance Systems.
- Designing and Implementing Quality Improvement Projects.
- Data Management, Analysis, and Interpretation: Utilizing software such as STATA, EpiInfo, and QGIS.
- Scientific Writing: For abstracts, manuscripts, policy briefs, and short articles.
- Presentation Skills: Effectively disseminating findings.
- Networking and Lobbying Skills.

Next Steps

With the competencies gained, I aim to join the Africa CDC and TEPHINET field epidemiologists' roster, allowing me to apply my hard-earned skills toward enhancing global health and responding promptly to public health emergencies and threats.

PICTORIAL AND NARRATIVE

Sensitizing the community in Kakijerere village, Ibanda district, during the Anthrax Outbreak associated with eating dead animal meat, May 2023

Discussing with colleagues from different ministries during the Joint External Evaluation at Speke Resort Common Wealth Hotel, Munyonyo, September 2023

Introducing the Mbale RRH medical staff to the HMIS form 100 during the entry meeting for the CQI project on mortality notification, October 2023

A Joint Task force meeting at Elegu point of entry during the imported cholera outbreak, January 2024

Orienting a team of research assistant in Gulu during the excess mortality survey, March 2024

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Kizza Dominic Kateregga
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Host Site: Uganda National Expanded Program on Immunization, Ministry of Health
Mentor: Dr Atugonza Rita

Dr. Kizza's profile

Now a fully qualified field epidemiologist, Dominic is a medical doctor with a master's degree in Public Health. He holds a Bachelor's degree in Medicine and Surgery from Mbarara University of Science and Technology (MUST) and a Post graduate diploma on principles of clinical trials from University of Montifeller, Paris, France and Master of Public Health (MPH) from MUST.

Prior to joining the fellowship, Dominic practiced as a general practitioner at both private not for profit and public health facilities. His exposure to public health was when he participated in medium term fellowship at Makerere School of public health a decade ago. He then pursued a masters in public health and later joined the Field Epidemiology Track Program. He is passionate about outbreak investigations and treating populations.

During the fellowship he was attached to the Uganda National Expanded Program on Immunization. This gave him more understanding of preventive medicine through vaccination of children and high-risk populations.

Through the in-service training, Dominic has attained competencies in several areas of public health and epidemiology such as: Outbreak investigation and response, alert management, data analysis, evaluation of surveillance systems, quality improvement and assurance, scientific writing, and research. He led three outbreak investigations and participated in four others. He participated in several other activities including the revision of data tools, growing expertise in the E-health Knowledge and Skills project, Mini Survey on the uptake of immunization in Uganda, among others

Achievements at the Host site

At the Uganda National Expanded Program on Immunization, he participated in a number of projects and activities including but not limited to:

- Led the Growing Expertise in E-health Knowledge and Skills evaluation project on two innovations aimed at reducing immunization dropout rates in Masindi and Luweero districts. Tickler box system was found to be more effective than smart paper technology (SPT) in reducing immunization dropout rates in Luweero District.
- Participated in the analysis and compilation of the quarterly bulletins on vaccine-preventable diseases and EPI updates.
- Participated in the revision of EPI HMIS tools with the data and M and E team at UNEPI.
- Participated in the Phase II Yellow fever mass vaccination as central supervisor for Mitooma District where we achieved 97% coverage above the national target of 90%.
- Led Measles outbreak investigation in Kikuube District, in July 2024.

Fellowship program-specific achievements

- Led two outbreak investigations
  - Measles outbreak investigation in Bundibugyo, June 2023
  - Mpox outbreak in Mayuge District, September 2024.
- Participated in three other outbreak investigations:
  - Anthrax outbreak in Ibanda District
  - Anthraxoutbreak in Kyotera District
  - Investigation of a strange illness in Kyotera District, in 2003.
- Analysed data from the Iganga Mayuge Health Demographic Surveillance Site to assess the Mortality due to vaccine-preventable diseases among under five-year-old children in Iganga and Mayuge districts
- Designed and implemented a continuous quality improvement (CQI) project to reduce immunization dropout rates in Bamunanika HCIII. Dropout rates reduced from 41% to 9% (below the national target of 10%) over a period of 6months
- Participated in Excess mortality survey in Uganda following COVID-19 as team lead for Dokolo District team, March 2023.
- Participated in the Uganda cross-sectional min-national survey to determine immunization coverage and factors associated with immunization uptake in Uganda, August 2024
- Presented at three conferences:
  - The 9th and 10th National Field Epidemiology Conference
  - The 25th Uganda Society for Health Scientists conference,
- Published one newspaper article: Mpox Explained: How to protect yourself and what to watch out for.
- Wrote and published one article in the Uganda Public Health Bulletin: Measles outbreak investigation in Bundibugyo, June 2023
- Submitted a manuscript for publication to peer reviewed journal titled 'Measles outbreak in Bundibugyo District, June 2023'.

Summary of Descriptive Study:

Mortality due to vaccine-preventable diseases among children under 5 years from a population-based cohort in Eastern Uganda, 2008 to 2022

Background: Uganda is among the Sub-Saharan countries with high under-five mortality (U5M) rates. Over time, the U5M rates have reduced from 137 to 40/1000 live births from 2007 to 2022 which is still above the 2030 Sustainable Development Goal (SDG) target of 25/1000 live births. Interventions such as routine vaccination are expected to reduce U5M rates. We assessed the mortality trends in vaccine-preventable diseases among U5 in eastern Uganda from a population-based demographic surveillance cohort from 2008 to 2022.

Methods: We conducted a descriptive analysis of U5 children who died and reported in surveillance data from the Iganga-Mayuge Health and Demographic Surveillance Site (IMHDSS) between 2008 to 2022. Demographic Surveillance system works by monitoring individuals, households and residential units in a well-defined geographic area. We calculated mortality proportions and rates by cause, age and sex. We analyzed data using STATA version 14. We used line graphs to show trends over time and conducted trend analysis using the Mann-Kendall test for trends.

Results: A total of 3,564 children ‹5 years died during the period 2008 to 2022. The average annual mortality rate was 31/1000 live births. The mean age of the children was 5.6 months (Range 0 — 49, SD 0.13). The majority 1,926 (54%) had a verbal autopsy (VA), and most (37%) of the VAs were in children 0-11 months. A total of 244 (13%) of the children died due to vaccine-preventable diseases. Diarrheal diseases were the leading cause of death at 47% (115), pneumonia at 26% (64), meningitis at 17% (39), and measles at 10% (26) among the VPNs. There was a decreasing non-significant mortality trend among U5 due to vaccine-preventable diseases.

Conclusion: U5M due to vaccine-preventable diseases in Eastern Uganda has not decreased significantly over the years as expected. Diarrheal diseases were the leading cause of death among vaccine-preventable diseases. There is need to enhance strategies targeting combating vaccine-preventable diseases in Eastern Uganda.

Key lessons learnt during the fellowship

During the fellowship, I learnt and developed the following skill sets:

- Outbreak Investigation and response and institution of control measures
- Leadership and management skills
- Designing and implementing Quality Improvement Projects
- Data management, analysis, and interpretation.
- Scientific writing (for Abstracts, Manuscripts, Policy Briefs, and newspaper articles)
- Presentation skills and dissemination of findings
- Evaluation of surveillance systems
- Multisectoral collaborations

Next Steps

With the competencies gained, I hope to be able to continue to serve in different upcoming outbreak responses as an Epidemiologist with passion for treating populations.

PICTORIAL AND NARRATIVE

Dominic Disseminating GEEKS' findings: Smart Paper Technology Vs Tickler Box in reducing immunization dropout rates

Dominic (extreme right) with the Bundibugyo District Health Team after debriefing on findings and recommendations following Measles Outbreak Investigation

Dominic interviewing Kyotera District residents during an Anthrax outbreak response

Participating in the Epidemiological disease modelling at Source of the Nile Hotel, Jinja

Dominic presenting findings of Measles outbreak investigation in Bundibugyo at the 9th NFEC conference, Hotel Africana.

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Dr. Lawrence Tumusiime
MBChB (GUM), MPH (UMU), Advanced Field Epidemiology Fellow (UPHFP)
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Telephone: +256779712458/ +256750027210
Host Site: Reproductive and Child Health Department
Mentor: Dr. Mutumba Robert

Dr. Lawrence's Profile

Dr. Lawrence Tumusiime is an accomplished field epidemiologist. He holds a master's degree in Public Health with a medical background. With particular interest in public health approach to maternal and child health interventions.

During the fellowship, he was attached to the Reproductive Health Division (RHD) under the Maternal and Child Health (MCH) department of the Ministry of Health. RHD is mandated to guide the planning, standardization, implementation, monitoring, and evaluation of Reproductive Health services provided by the government, nongovernmental organizations (NGOs), faith-based organizations (FBOs), community-based organizations (CBOs), private for-profit sectors and communities in Uganda.

Through the in-service training, he attained great skills in leadership, outbreak investigation, and response including data analysis, interpretation, and use. He led three outbreaks and participated in two others. He was also involved in several national document formulations including the MISP/SRH Addendum to the National Disaster Risk Management Plan, Human Rights-Based Action Plan for Family Planning/Sexual Reproductive Health, Adolescent &Youth health implementation guidelines and ANC SOP, National MPDSR Trainer's guide and targeted orientation of Regional MPDRS Coaches/Mentors, management guidelines of small sick newborn babies, and development of guidelines for establishing a standard neonatal intensive care unit.

Achievements at the Host site

At the Reproductive Health Division, I participated in and led several projects and activities including but not limited to:

- Participated in the review and update of Adolescent & Youth health implementation guidelines and Antenatal Care Standard Operating Procedures May 30- June 2, 2023.
- Participated in the review of management guidelines of small sick newborn babies, and the development of guidelines for establishing a standard neonatal intensive care unit.
- Supported finalizing the Draft National MPDSR Trainer's guide and targeted orientation of Regional MPDRS Coaches/Mentors. We finalized the National MPDSR Trainers' Guide and updated, Standardized MPDSR Training Slides to guide MPDSR training activities in the country.
- Undertook the national Training of Trainers (ToT) on new reproductive health commodities (Heat Stable Carbetocin, Tranexamic Acid, Combipack, and Hormonal IUD); from June 26 to June 30, 2023.
- Participated in the review and Integration of the Minimum Initial Service Package (MISP) for Sexual and Reproductive Health (SRH) into the National Emergency Disaster Preparedness and Response Plan

- Participated in the validation of the draft Human Rights Based Approach (HRBA) Action plan for Sexual Reproductive Health
- Participated in the mentorship on comprehensive emergency obstetric and newborn care, and supported functionality of theaters at health centers at level IV in the West Nile region
- Coordinated the rollout of new and lesser-used commodities (Heat Stable Carbetocin and Tranexamic acid) for post-partum hemorrhage prevention and treatment.

Fellowship program-specific achievements

Led three outbreak investigations:

- Anthrax outbreak associated with consumption and handling of meat from suddenly dead cattle, Kabira Sub-County, Kyotera District, Uganda, June–December 2023
- Unusual Deaths Investigation, Kyotera District, Uganda, August 2023
- Mpox case investigation in Mityana, Kampala, Wakiso, and Mukono districts, October 2024

Participated in two other outbreak investigations:

- Anthrax outbreak associated with handling and consuming meat from animals that died suddenly, Ibanda District, Uganda, May 2023
- Mpox case investigation in Bwera town, Kasese District, September 2024.

Analyzed surveillance data from DHIS2 on trends and distribution of maternal sepsis, Uganda, 2018-2022

Presented at four local conferences and one international

- Trends and distribution of maternal sepsis, Uganda, 2018-2022 at the 9th National Field Epidemiology Conference and 2nd Uganda National Digital Health Conference
- Anthrax outbreak associated with consumption and handling of meat from suddenly dead cattle, Kabira Sub-County, Kyotera District, Uganda, June–December 2023, at the 22nd Uganda Society of Health Scientists Conference and the 10th National Field Epidemiology Conference
- New and Lesser Used Medicine for Post-Partum Hemorrhage in Uganda, a Case Study of Rwenzori Region, 2024 at the Global Health Practitioner Conference 2024

Was a lead author for Issue 3 Volume 8 July-Sept Uganda Public Health Bulletin

Wrote and published two articles in the Uganda Public Health Bulletin

- Anthrax outbreak associated with consumption and handling of meat from suddenly dead cattle, Kabira Sub-County, Kyotera District, Uganda, June–December 2023
- Trends and distribution of maternal sepsis, Uganda, 2018-2022

Designed and implemented a QI study on improving Mortality Reporting through Death Notification at Hoima Regional Referral Hospital in Uganda, Using a Quality Improvement Approach, January–June 2024

Did an HIV epi study on Incidence and Predictors for Mother to Child Transmission of HIV in Uganda, January 2022 to December 2023: A Retrospective Cohort Study of Kampala City and Wakiso District

Participated in the excess mortality survey on 'Estimating the Impact of COVID-19 on All-Cause Mortality in Uganda'. I supervised the data collection process in the Kabaale District in Kigezi region

Participated in the Tuberculosis survey on Surveillance and Characterization of Tuberculosis across Six Regions of Uganda, 2022

Conducted an epidemiological study on Determinants of Puerperal Sepsis among Women at Public Health Facilities of Nwoya District, Northern Uganda, 2024

Submitted two manuscripts for publication to peer-reviewed journals

- Anthrax outbreak associated with consumption and handling of meat from suddenly dead cattle, Kabira Sub-County, Kyotera District, Uganda, June–December 2023, submitted to one health outlook journal

- Trends and distribution of maternal sepsis, Uganda, 2018-2022, submitted to the International Journal of Gynecology and Obstetrics

Participated in training and mentorship of FETP-Frontline health workers across the country
Presented in one and participated in 3 National Task Force meetings.

Participated in the Uganda cross-sectional min-national survey to determine immunization coverage and factors associated with immunization uptake in Uganda, August 2024

Summary of an outbreak investigation:

Anthrax outbreak associated with consumption and handling of meat from cattle that suddenly died in Kyotera, Uganda, June–December 2023

Background: In November 2023, Kyotera District reported a strange illness, characterized by itching, rash, swelling, and skin lesions which was later confirmed as anthrax. We investigated to assess its magnitude, identify potential exposures, and propose evidence-based control measures.

Methods: A suspected cutaneous anthrax case was defined as acute onset of skin itching or swelling plus ≥2 of: skin reddening, lymphadenopathy, headache, fever or general body weakness in a resident of Kabira sub-county, June–December 2023. A suspected gastrointestinal anthrax case was defined as acute onset of ≥2 of: abdominal pain, vomiting, diarrhea, mouth lesions or neck swelling in a resident of Kabira sub-county, June–December 2023. A confirmed anthrax case was a suspected case with Bacillus anthracis PCR-positive results. To identify cases, we reviewed medical records and conducted community active case-finding with the help of village health team members. We conducted a case-control study and used logistic regression to identify risk factors of anthrax transmission.

Results: Results: We identified 63 cases (46 suspected and 17 confirmed); 48 (76%) were male. Of these, 55 cases (87%) were cutaneous and 8 (13%) were gastrointestinal, with a mean age of 42 years. Overall attack rate was 3.1/1,000; males were more affected (AR=4.5/1,000) than females (AR=1.5/1,000). Case-fatality rate was 19% (n=12). Among the suspected cases, 18 (29%) sought care from health facilities; 33 (52%) were managed by traditional healers. Compared to individuals who neither ate meat nor had contact with dead animals, those who had contact and consumed meat had higher odds of anthrax infection (OR=20.9, 95% CI: 8.8-49.8), followed by those who only consumed meat (OR=5.81, 95% CI: 2.12-15.9).

Conclusion: The anthrax outbreak in Kyotera District was primarily attributed to the consumption and handling of meat from cattle that had suddenly died. Poor health-seeking behavior and seeking care from traditional healers likely contributed to the high CFR. Implementing inspection protocols for cattle before slaughter, instituting widespread vaccination campaigns against Bacillus anthracis in livestock, and community sensitization on healthcare seeking might prevent future outbreaks.

Keywords: Anthrax, Cutaneous, Gastrointestinal, Outbreak, Uganda

Key lessons learnt during the fellowship

During the fellowship, I learnt and developed the following skill sets:

- Outbreak investigation and response, including the implementation of interventions
- Evaluation of surveillance systems
- Designing and implementing projects for quality improvement
- Data management, analysis, and interpretation using such software as STATA, EpiInfo, and QGIS
- Scientific writing (for Abstracts, Manuscripts, Policy Briefs and short articles)
- Presentation skills and dissemination of findings
- Networking and lobbying skills
- Training and mentoring skills

Next Steps

With the skills and competencies, I have gained, I hope to further my career in the field of epidemiology, disease surveillance, and data analytics to strengthen the global health security agenda

PICTORIAL AND NARRATIVE

Investigating Anthrax outbreak in Kyotera District, Uganda, June–December 2023

Orienting health workers at Hoima Regional Referral Hospital on death notification

On board, Kenya Airways with the Executive Director RCRA-Uganda heading for the global health practitioner conference 2024 in Kenya

Donning for Mpox investigation at the Entebbe ETU, October,2024

Training Research Assistants (RA) and the head of community health services of Kabale District during excess mortality survey

Group photo with the training of trainers' participants of the new and lesser-used medicines for post-partum hemorrhage from Rwenzori region

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM FIELD EPIDEMIOLOGY TRACK COHORT 2023

Susan Waako
BSN (MUK), MPH (MUK), Advanced Field Epidemiology Fellow (UPHFP)
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Telephone: +256774835047/ +256704417210
Host Site: AIDS Control Program, Ministry of Health
Mentor: Dr. Kadama Herbert

Susan Waako's profile

Susan Waako is a field epidemiologist with a Master of Public Health and a background degree in Nursing Science both from Makerere University Kampala. Before the fellowship, I worked with the Uganda Ministry of Health as a regional EPI surveillance officer for Jinja Region in support of human resource surge capacity for the polio response and routine surveillance activities during 2022.

During the fellowship, I was attached to the Uganda National AIDS Control Program (ACP), Ministry of Health. The program directs and guides the implementation of the HIV/AIDS control and prevention strategy. Its core mission is to provide the highest possible level of HIV care services to all people in Uganda through the delivery of promotive, preventive, curative, palliative, and rehabilitative health services at all levels. Core responsibilities include coordination of activities geared at the control and prevention of HIV/AIDS, resource mobilization, capacity development, and monitoring and evaluation. Others are coordinating activities of partners in HIV programming in Uganda, including identifying priority areas and guiding operations.

Through the two years of in-service training, I have been able to strengthen my competence skills in leadership, outbreak investigations and response, risk communication, scientific writing, partner coordination, and mentorship.

Achievements at the Host site

At ACP, I was attached to the pre-exposure prophylaxis program and while there I participated in and supported several projects and activities including but not limited to:

- Participated in the development of the national demonstration concept and road map for event-driven pre-exposure prophylaxis (PrEP) piloting in Uganda
- Analysed PrEP surveillance data in the PrEP tracker, 2017-2022
- Participated in the development of the national Event Driven Pre-Exposure Prophylaxis (ED PrEP) training materials.
- Participated in the first-ever national PrEP target setting using the PrEP IT tool.
- Coordinated the weekly and bi-weekly ED PrEP performance review meetings during the pilot phase and scale-up phase respectively.
- Participated in the development of a Change Package (desktop aid): To Improve Uptake & Continuity of Pre-Exposure Prophylaxis (PrEP) in Uganda.
- Participated in the development of the national private pharmacy PrEP distribution point guide and training manual in preparation for its launch.
- Participated in evaluating the performance of the ED PrEP piloting sites and implementing partners following scale-up
- Participated in the national ToT for PrEP pilot

sites during the pilot phase and implementing partners during the scale-up phase.
- Participated in updating the national Technical Guidance on Pre-Exposure Prophylaxis (PrEP) for Persons at Substantial Risk of HIV Infection in Uganda

Fellowship program-specific achievements

Led one outbreak investigation

- Blackwater fever cases in Bukomansimbi district, February 2024

Participated in six other outbreak investigations

- Anthrax outbreak associated with handling and consuming meat from cows that died suddenly, Ibanda District, February–April 2023
- Anthrax Outbreaks in Western Uganda: the role of illegal meat dealers in spreading the infection, August 2022–April 2024.
- Measles outbreak facilitated by suboptimal vaccine coverage and health facility crowding, Bundibugyo District, Western Uganda, February–June 2023
- Cholera outbreak associated with drinking contaminated lake shore water, Namayingo District, Uganda, July–August
- Mpox outbreak in Isingiro and Mbarara districts, October 2024
- Mental illness among migrant domestic workers from Uganda in the middle-East, 2019-2023

Analyzed surveillance data from PrEP tracker

- Pre-exposure prophylaxis initiation and its associated factors among Adolescent Girls and Young Women in Uganda, 2017–2022

Presented at three local conferences and attended one international workshop

- The 9th and 10th National Field Epidemiology Conference and at
- The 23rd Annual Uganda Society for Health Scientists Scientific Conference.

Participated in a Decision Modeling for Health Economics Evaluation Workshop held in Istanbul, Turkey in which together with my colleague we presented a policy brief on the cost-effectiveness of preventive strategies for human anthrax in Uganda: a health sector perspective

Published two newspaper articles in the New Vision

- HIV among adolescent girls and young women, a ticking time bomb for Uganda
- Cholera outbreaks a continued public health threat to Ugandans

Wrote and published one article in the UPHB

- Pre-exposure prophylaxis initiation and its associated factors among Adolescent Girls and Young Women in Uganda, 2017–2022

Editor of the Uganda Public Health Bulletin volume 8, issue 1, January to March 2023

Implemented a QI study to Improve Death Notification at Kalisizo Hospital, Uganda using a Quality Improvement Approach, December 2023–May 2024.

Other activities

- Submitted a manuscript for publication to peer-reviewed as lead author journal titled "Pre-exposure prophylaxis initiation and its associated factors among Adolescent Girls and Young Women in Uganda, 2017–2022
- Conducted an epidemiological study on factors associated with risky sexual behaviors among adolescent girls and young women attending the outpatient clinics at Fort Portal Regional Referral Hospital, June 2024
- Participated in a group HIV study titled: Impact of data quality assessment on PMTCT indicators at selected health facilities, September 2025.
- Excess mortality survey in Uganda where I supervised a team of 8 research assistants in data collection in Luuka District.
- Uganda cross-sectional mini-national survey to determine immunization coverage and factors associated with immunization uptake in Uganda.
- Participated in the multisector Joint External Evaluation for Uganda for International Health Regulation, 2023

Summary of Descriptive Study:

Pre-exposure prophylaxis initiation and its associated factors among Adolescent Girls and Young Women in Uganda, 2017–2022

Background: In Uganda, the HIV incidence among adolescent girls and young women (AGYW) aged 15-24 years has remained high. Despite the several studies done in relation to AGYW and HIV, little is known about their male sexual partners (MSP). We characterized MSP of AGYW in Fort Portal Regional Referral Hospital, located in the South Western Region of Uganda in June 2024.

Methods: We conducted a cross-sectional study among AGYW attending the outpatient clinic at Fort Portal Regional Referral Hospital in Fort Portal City. We used systematic sampling and every 5th AGYW at the outpatient unit was approached for enrollment into the study. We collected data on demographic and other characteristics of both AGYW and their MSP (most recent) using a semi-structured researcher-administered questionnaire. We summarized the data on AGYW and their MSP characteristics as frequencies and proportions.

Results: A total of 355 AGYW participated in the study. Of these, 214(60%) were aged 20-24 years, 261(74%) were in sexual relationships, and 43(12%) reported being HIV positive. Of the 261 AGYW in male sexual relations, 189(74%) reported having MSP who were older than them with the majority 141(75%) aged 25 years and above. A total of 198(76%) of the AGYW reported having MSP who disclosed their HIV status to them, of whom 27(10.3%) were HIV positive. Of the 27 AGYW with HIV-positive MSPs, 9(3%) reported being in sero-discordant relationships. More than two-thirds 181(69%) of the AGYW reported having circumcised MSP. 72(32%) and 57(22%) of the AGYW reported having MSPs who were businessmen and boda-boda riders respectively; 84(32%) used recreational drugs prior to sexual encounter; and only 13(5%) consistently used condoms.

Conclusion: A high number of AGYW reported being HIV positive with some in sero-discordant relationships. AGYW were in sexual relationships with MSPs who were older, most being boda-boda riders with limited use of condoms suggesting the need for the Ministry of Health (MoH) to scale up HIV prevention programs among boda-boda riders as a priority population that is likely to transmit HIV to AGYW. MoH may need to strengthen social behavior change communication programs on correct and consistent condom use among AGYW and other priority populations.

Key lessons learnt during the fellowship

The two years of the fellowship have developed the following skill sets:

- Outbreak investigation and response including institution of interventions
- Evaluation of surveillance systems
- Designing and implementing Quality Improvement Projects
- Data management, analysis, and interpretation using software as STATA, EPIInfo, and QGIS
- Scientific writing for abstracts, manuscripts, policy briefs, and short articles
- Presentation skills and dissemination of findings
- Networking and lobbying skills
- Coordination of projects at all levels of the health system
- Coordination of implementing partners

Next Steps

As a fully-fledged field epidemiologist, I will continue to serve within the Ministry of Health or implementing partners in realization of improved global health while promoting prompt response to public health emergencies and threats.

PICTORIAL AND NARRATIVE

Susan (middle) mentoring FETP Intermediate mentees cohort 5 at Jinja Regional Referral Hospital, June 2024.

Susan (black boots) spearheading a morning debrief together with Ministry of Health team in Bukomansimbi District during the Blackwater fever investigation, February, 2024

Talking to an illegal meat dealer about signs of anthrax in animals during anthrax outbreak in Ibanda District, April 2023

Receiving a certificate following attending a Decision Modeling for Health Economics Evaluation Workshop in Istanbul, Turkey, October 2024

Fun yet scary at the same time: here I was navigating through the hills of Nyahuka, Bundibugyo District using a suspension swinging bridge to find measles cases

Presenting at 23rd annual Uganda Society for Health Scientists Scientific Conference, 2024 at Four Points Hotel

Participating in the 9th National Field Epidemiology Conference, 2023.

Training FETP Intermediate mentees Cohort 5 at Hotel Brovad in Masaka City, July 2024

Sailing to Sigula Island, Namayingo District in during the cholera outbreak, July 2024

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM LABORATORY LEADERSHIP TRACK-COHORT 2023

Priscilla Belbir Atim

BBLT (MUK), MSc. MBS (MUK) and) & Fellowship in Public Health Laboratory Leadership (UNIPH/ MOH)

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Telephone: +256774505696

Host Institution: Infectious Diseases Institute (IDI) Core Laboratory

Host Site Mentor: Dr. Benard Ssentalo Bagaya

Priscilla's Profile

I hold a Master of Science degree in Molecular Biology and a Bachelor's degree in Biomedical Laboratory Technology, both from Makerere University. I have a keen interest in infectious diseases, laboratory systems strengthening, laboratory quality assurance, and translational laboratory research. My passion lies in understanding drug resistance dynamics and leveraging laboratory data to play a crucial role in diagnosing and tracking infectious diseases.

During the fellowship, I was attached to the Infectious Diseases Institute (IDI) Core Laboratory—a College of American Pathologist (CAP) accredited laboratory where I was also employed as a laboratory supervisor. The IDI Core Lab conducts over 300,000 tests annually, playing a vital role in supporting clinical trials. It serves as a designated Division of AIDS (DAIDS) network laboratory site and is involved in various studies such as the International Maternal, Pediatric, Adolescent AIDS Clinical Trials Network, International Maternal, Pediatric, and Adolescent AIDS, The HIV Prevention Trials Network, AIDS Clinical Trials Group. The data generated by the IDI Core Lab has significantly informed HIV care and management policies in the country.

Through the in-service training, I have attained great skills in laboratory leadership and management, communication, quality management, surveillance, outbreak investigation, and response including data analysis, interpretation, and use enhancing my understanding of the national laboratory system. These experiences utilized my leadership skills to foster laboratory collaboration, communication, coordination, resource mobilization, and support for laboratory capacity building during outbreak investigations.

Host institution achievements

- Designed, shared and analysed a customer satisfaction survey
- Led the laboratory team through an audit by Pharmaceutical Product Development an organisation contracted by patient safety monitoring in international laboratories that runs clinical trial laboratory tests with the laboratory
- Designed and implemented a quality improvement project
- Chaired the validation and review of the biospecimen management and referral network curriculum in Africa as an expert reviewer before its rollout to member states. This was done with collaboration with Africa CDC.
- Facilitated training on leadership and laboratory quality management systems using a One Health approach with Africa CDC.
- Participated in the evaluation of external

quality assessment with Africa CDC, piloting the establishment of an EQA laboratory network among member states to enhance access to quality control materials and quality systems.

Fellowship program-specific achievements

Guideline review/ development

- Participated in developing and reviewing the national laboratory guidelines for emergency preparedness and response, and in creating training materials based on these guidelines.

Scientific article critique

- Critiqued two scientific articles. i.e.
- Re-testing as a method of implementing external quality assessment program for COVID-19 real time PCR testing in Uganda
- Rapid establishment of a frontline field laboratory in response to an imported outbreak of Ebola virus disease in western Uganda, June 2019

Health emergency coordination, participation and evaluation

- Coordinated laboratory response activities of two health emergencies.
  1. Suspected cyanide poisoning investigation in February 2023
  2. Suspected rotavirus outbreak investigation at Watoto Baby Home in Suubi, Mpigi district in August 2023
- Participated in three other health emergencies
  1. Suspected cholera outbreak investigation in Buvuma Island in January 2023
  2. Suspected anthrax investigation in Ibanda district in February-April 2023
  3. Anthrax outbreak response in Kyotera district in December 2023

Article submission

- Submitted six articles for publication (three in new vision and three in the Uganda Public Health Bulletin). All were published.
- Publications in the new vision included;

1. 1. Laboratories are shaping the future of healthcare services
2. An annual Physical and laboratory test Check-up: The Key to Early Detection of Non-Communicable Diseases.
3. Dangers of Unregulated Rapid Diagnostic Test Kits

- Published in the Uganda Public Health Bulletin;

1. Cyanide poisoning investigation, Terego District, Uganda, February 2023

- I was also part of the editorial team for the Uganda public health bulletin in April 2023

Manuscript submission

- Four manuscripts are undergoing clearance prior submission to a peer review journal for publication.
- Co-authored one manuscript that was submitted to a peer review journal for publication
- Undergoing clearance include:

1. Priscilla Atim, Bernard Bagaya, Samuel Gidudu, Gloria Bahizi, Patrick Ogwok, Patricia Akello, Esther Nabende, Ben Kanamwanji, Thomas Nsibambi, Daniel Kadobera, Alex Riolexus Ario (2024). Development of an Internal Quality Control Program for Rapid Diagnostic Tests at Health Laboratories in Uganda: A case study of Mubende district.
2. Priscilla Atim, Samuel Gidudu, Gloria Bahizi, Thomas Nsibambi, Bernard Ssentalo Bagaya, Andrew Kambugu, Kwabena Sarpong, Bosco Kafufu, Benedict Kanamwanju, Betty Natukunda, Edith Nekesa, David Okiror, Lucy Apeduno, Audrey Nimwesiga, Lillian Bulage, Alex Riolexus Ario (2024). Improving HIV testing kits inventory management in a high-volume testing laboratory in Uganda, 2023.
3. Priscilla Atim, Samuel Gidudu, Gloria Bahizi, Thomas Nsibambi, Bernard Ssentalo Bagaya, Andrew Kambugu, Grace Najjuka, Daisy Winfred Atuhaire, Benedict Kanamwanji, Esther Nabende, Atukunda Adela, Kabazzi Jonathan, Sylvia Joyo, Hildah Tendo Nansikombi, Daniel Kadobera, Alex Riolexus Ario 2024. Distribution of Pathogenic yeast infection cases and Species isolated from clinical samples in Uganda 2020–2024.

- Submitted for publication include

1. Dorothy Aanyu, Priscilla Atim, Brian Kibwika, Benigna Namara, Samuel Gidudu, Benon Kwesiga, Daniel Kadobera, Doreen Gonahasa, Lilian Bulage, Alex Riolexus Ario (2024), Rotavirus outbreak linked to poor hygiene practices at a Babies' Home in Mpigi District, Uganda, July - August 2023 submitted to the Journal of Tropical Pediatrics
2. Brian Kibwika; Edith Namulondo; Dorothy Aanyu; Yasiini Nuwamanya; John Rek; Dominic Kiza; Adams Kamukama; Innocent Ssemanda; Susan Waako; Mariam Komugisha; Benigna Namara; Daniel Orit; Lawrence Tumusiime; Shem Mwebaza; Leah Naluwagga Baliruno; Priscilla Atim; Anthony Kiyimba; Martha Annet Nankya; Samuel Gidudu; Richard Migisha; Doreen Nsimiire Gonahasa; Lilian Bulage; Benon Kwesiga; Alex Riolexus ArioAnthrax outbreak associated with handling and consuming meat from cows that died suddenly, Ibanda District, Uganda, February–April 2023 submitted to the PLOS Global Public Health Journal.

Abstract submission

Submitted an abstract to two national and three international conferences and was privileged to make oral presentations (physical and virtual) at one of the national and all international conferences.

The international conferences included:

1. The 9th East African Health and Scientific Conference (EAHSC) in Kigali, Rwanda. This was a physical presentation.
2. The 3rd International Conference on Public Health in Africa, Lusaka, Zambia. This was a virtual presentation
3. The HuQAS 22nd Annual Scientific Conference, Mombasa, Kenya. This was a virtual presentation.

The national conferences included:

1. The 9th National Field Epidemiology Conference, Kampala, Uganda. This was a physical presentation.

Project implementation

- Implemented three projects (two short term and one capstone)
- The short-term projects included:

1. Quality Improvement Project titled "
2. Improving HIV testing kits inventory management in a high-volume testing laboratory in Uganda, 2023
3. Descriptive study- Analyzed yeast infection data from the national microbiology laboratory information system "Distribution of Pathogenic yeast infection cases and Species isolated from clinical samples in Uganda 2020–2024"

Summary of Capstone Project:

Development of an Internal Quality Control Program for Rapid Diagnostic Tests at Health Laboratories in Uganda: A Case Study of Mubende District

Background: Internal Quality Control Programs (IQCP) ensure the accuracy and reliability of tests. Rapid Diagnostic Tests (RDTs), which are quick and easy to use account for approximately 80% of tests used in lower health facilities in Uganda. However, the implementation of IQCP for RDTs is inconsistent, leading to compromised test accuracy, non-compliance with standards, delayed error detection, and loss of confidence among laboratory clients. ISO 22870 and ISO 15189 standards mandate the development and implementation of IQCP for all tests including RDTs and require training for laboratory professionals on these protocols. This project aimed to develop RDT IQCP guidelines for public health facilities in Mubende district in July 2024.

Methods: a reviewed of existing standards and practices using a questionnaire administered to district laboratory staff; benchmarking at the Rakai Health Science Program Laboratory, an accredited healthcare facility, and implementing IQCP, which provided a framework for best practices; In-depth discussion with six Subject Matter Experts (SME) to integrate the existing standards, recommended best practices with standardized documents from

WHO and CDC to create a framework for the IQC guidelines; a comprehensive risk assessment (RA) to identify and assess potential risks associated with the implementation and maintenance of the IQC guidelines. Important factors considered in the RA included evaluating IQC material storage to determine optimal conditions for maintaining material integrity, material availability, cost considerations, control matrix, and control run frequency.

Results: IQCP guidelines, practical tools and Standard Operating Procedures (SOPs) were developed for RDTs of malaria, HIV, syphilis, serum CrAg, hepatitis B, hCG, and microscopy tests. These guidelines provide a structured approach to internal quality control and ensure that all necessary steps are taken to maintain the accuracy and reliability of RDT results.

Conclusion: These IQCP guidelines for RDTs in Mubende District are a significant step towards improving the quality and reliability of diagnostic testing in lower health facilities. These guidelines are expected to enhance compliance with international standards, restore confidence among laboratory clients and support ongoing quality control efforts.

Key lessons learned during the fellowship

The skills I gained have enhanced both my wet-laboratory and leadership capabilities, allowing me to see the bigger picture of laboratory operations during emergencies. My experiences and knowledge gained have equipped me to contribute effectively to public health efforts and laboratory systems strengthening, ensuring better preparedness and response to infectious disease outbreaks.

I have also enhanced my communication skills through articles and facilitating training sessions. Leading outbreak investigations has developed my leadership skills.

Finally, I learned to adapt to challenges that I faced during disease investigations and came up with innovative solutions and proactive approaches to address diagnostic challenges and gaps.

Next Steps

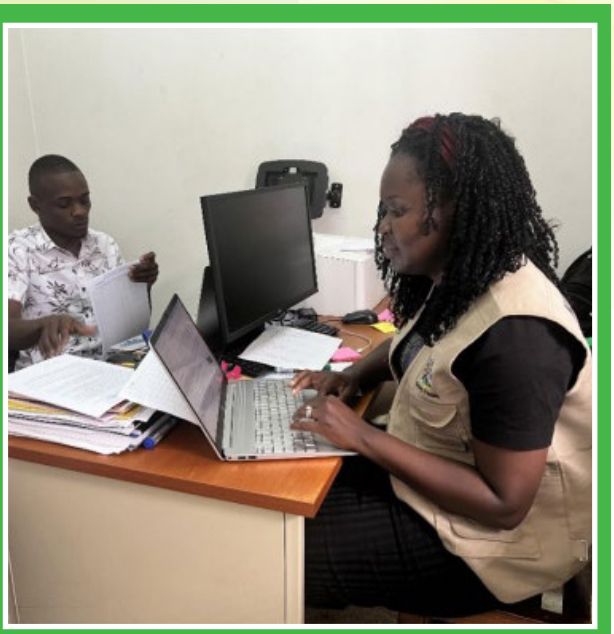
I plan to leverage the skills and knowledge I have gained to make a significant impact in the laboratory profession.

PICTORIAL AND NARRATIVE

Priscilla (white shirt) conducting interviews interview during case finding in an anthrax outbreak in Ibanda in May 2023

Priscilla (white coat) training the district veterinary tech on the se of anthrax RDTs in Ibanda district in May 2023

Participants in the training of the developed IQC RDT guidelines in Mubende district in June 2024



Priscilla meeting with the Mubende regional referral hospital quality manager during the development of RDT IQC guidelines in June 2024

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM LABORATORY LEADERSHIP TRACK-COHORT 2023

Anthony Kiyimba

BBLT (MUK), MSc ICM (MUK) & Fellowship in Public Health Laboratory Leadership (UNIPH/ MOH)

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Host Institution: Ministry of Health, National Health Laboratory and Diagnostics Services

Host Mentor: Mr. Munafu Charles

Anthony's Profile

Anthony Kiyimba is a laboratory leader and medical laboratory specialist. He holds a Master of Science degree in Immunology and Clinical Microbiology and a Bachelor's degree in Biomedical Laboratory Technology, both from Makerere University. He is interested in improving laboratory diagnostic services for infectious diseases and laboratory response to public health emergencies in the country.

During the Laboratory Leadership fellowship training, Anthony was attached to the National Health Laboratories and Diagnostic Services (NHLDS), a department of laboratory services in the Ministry of Health where he is employed as a laboratory supervisor. NHLDS offers an oversight role to all medical laboratory services within the country. Such services include both public health and clinical health care management. The department also provides stewardship for the National Health Laboratory Network to guide disease prevention and health promotion in Uganda through early disease detection.

During his in-service training, Anthony has attained knowledge, skills, and ability in coordinating laboratory disease outbreak investigations, emergency response and preparedness, scientific and non-scientific communication through writing manuscripts, newspaper articles, policy briefs, bulletin articles, and conference presentations.

Host site achievements

- Participated in the conceptualization and drafting of the upcoming guidelines on Microbiological Environmental Sampling in Healthcare Settings, 2024.
- Participated in training and mentorship of regional HIV drug resistance testing and treatment committees in Lango and Teso regions, especially on sample collection and HIV drug resistance results interpretation.

Program-specific achievements

- Co-authored the first National Laboratory Guidelines for Preparedness and Response to Public Health Emergencies.
- Led two disease outbreak investigations, with a laboratory focus
  - Anthrax in Kyotera District
  - Food poisoning, Nakanyonyi, Mukono District
- Participated in six other disease outbreak investigations
  - Anthrax in Ibanda District
  - Rabies in Masaka District
  - Cyanide poisoning in Kasese District
  - Food poisoning in Rubanda District
  - Cholera in Kayunga District
  - Black Water Fever in Bukomansimbi District

- Published an article in the New Vision on fast-tracking mobile laboratory testing. Three are under institutional review.
- Submitted additional two for publication in the Uganda Public Health Bulletin.
- Served as an editorial team member for the Uganda Public Health Bulletin, volume 8, issue 1, Jan-March 2023.
- Wrote seven manuscripts (three as lead author and four as co-author). These are undergoing institutional clearance.
- Presented his work at three conferences (one international and two national)
  - 8th World One Health Congress, Cape Town, South Africa
  - 9th National Field Epidemiology Conference, Kampala, Uganda
  - 10th National Field Epidemiology and 2nd National Laboratory Leadership Conference, Kampala, Uganda
- Conducted a continuous improvement project to enhance utilization of the electronic inventory management in managing and ordering HIV/EID/Hep B laboratory supplies at the hubs in Uganda
- Conducted a descriptive analysis of HIV viral load suppression trends among patients switched from Non-nucleoside Reverse Transcriptase Inhibitors to Dolutegravir-based therapy between 2019 and 2022 in Kampala, Uganda
- Conducted a capstone project to assess knowledge, attitude, and practices among implementers of the regionalization approach in Laboratory Services delivery at the sub-national level in Uganda, 2024

Key lessons learnt during the fellowship

- Coordination and leading laboratory response to public health emergencies/disease outbreaks
- Utilization of operational laboratory and public health data for research studies
- Scientific communications; abstracts, manuscript writing, and newspaper articles
- Editorial and writing skills for scientific articles
- Data management, analysis, and interpretation
- Presentation skills and dissemination of findings
- Designing and management of scientific and improvement projects
- Networking and lobbying
- Leadership and team management skills
- Development of policy briefs for strengthening health systems

Next steps

With the skills and competencies gained, Anthony will coordinate and respond to any public health emergency and support strengthening of laboratory systems in Uganda and beyond.

Summary of capstone project

Exploring Knowledge, Attitude, and Practices of Implementers of the Regionalization Approach in Laboratory Services at sub-national Level in Uganda, 2024

Background: In Uganda's health sector specifically laboratory services, the regionalization approach mainly consists of the devolution of technical assistance, coordination, and oversight for implementation of National Health Laboratory and Diagnostic Services to the regional referral hospitals. It also involves consolidating resources for laboratory strengthening activities through the Department of National Health Laboratory Diagnostic Services. This was to enable sustainable strengthening of national laboratory services in the country through harmonization of packages provided, standardization of quality, efficiency, and better accountability of resources provided. This study assessed the implementers' knowledge, attitude, and practices (KAP) about the regionalization approach at regional, and district levels in Uganda.

Methods: We used a qualitative research method and conducted in-depth semi-structured interviews with selected implementers to explore the knowledge, attitudes, and practices of regional and district teams towards the regionalization program. They included 2 regional referral hospital directors, 3 regional hospital laboratory managers, 11 district laboratory focal persons, 6

district hospital laboratory managers, 6 laboratory technologists/technicians, 5 hub coordinators, and 2 implementing partner regional laboratory advisors. We purposefully selected participants from 12 districts from three health regions based on their critical role in the regionalization program. We also identified the enablers and challenges faced in regionalization.

Findings: Thirty-five (35) program implementers participated in the study. All (100%) were knowledgeable about the regionalization approach in laboratory service delivery and its intended outcomes. Thirty-one (89%) had participated in at least 4/8 (50%) laboratory-led functions under the regionalization program at either the regional or district level and demonstrated a positive attitude towards the program. The main enablers included trained personnel, supportive leadership at regional referral hospitals, effective coordination from both national and regional levels, communication and collaboration within the region, and implementing partners. The major challenge identified was the delay in receiving funds to implement planned quarterly activities.

Conclusion: Regional and district implementers of the regionalization approach were knowledgeable about the program and its targeted outcomes. They demonstrated positive attitudes and practices with the program. We recommend sustaining identified enablers and addressing delays in releasing funds for activity implementation.

PICTORIAL AND NARRATIVE

Anthony (Grey jacket) during Capstone project data collection in Kwania Health Centre IV, Lango Sub-region, 2024

Anthony presenting during the second National Laboratory Leadership Conference at Hotel Africana, Kampala, Uganda, November 2024

Anthony (black jacket) presenting a poster during the World One Health Congress, Cape Town, South Africa, September 2024

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM LABORATORY LEADERSHIP TRACK-COHORT 2023

Leah Naluwagga Baliruno

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Host Institution: National Health Laboratory and Diagnostics Services, Ministry of Health

Host Site Mentor: Dr. Nakigozi Harriet

Leah's Profile

Leah Naluwagga Baliruno is a trained laboratory leader and medical laboratory specialist. She served in the capacity of President, LLP Cohort 2023, the inaugural Laboratory Leadership cohort. She holds a Master of Science degree in International Infectious Disease Management and a Bachelor's degree in Biomedical Laboratory Technology, both from Makerere University. She is particularly interested in health laboratory systems strengthening with a focus on the health laboratory workforce. She is also interested in the application of One Health in disease surveillance and outbreak investigations.

During the fellowship, Leah was hosted at the National Health Laboratories and Diagnostic Services (NHLDS), a department of laboratory services in the Ministry of Health; and where she is employed as a laboratory technologist. NHLDS offers an oversight role to all laboratory services within the country. Such services include both public health and clinical health care management. The department also provides stewardship for the National Health Laboratory Network to guide disease prevention and health promotion in Uganda through early detection of the disease.

Through the in-service training, she has attained great skills in laboratory leadership and management, communication, continuous quality improvement, disease surveillance, outbreak investigation, and response including data analysis, interpretation, and use.

Host site achievements

- Spearheaded the evaluation of the time from sample collection for Viral Load samples from "spoke" health facilities to Uganda, to receipt at the Central Public Health Laboratories for Kigezi Region from February to May 2023 and Ankole, Busoga, Teso, Karamoja, West Nile, and South and North Buganda Regions, Uganda from April to May 2023, using sample tracking data.
- Led a Continuous Quality Improvement (CQI) project to improve the time taken from collection for Viral Load samples from spoke health facilities in the Kigezi Region, to receipt at the Central Public Health Laboratories (CPHL).
- Reviewed national training materials for community training on HIV self-testing used countrywide.
- Facilitated a trainer of trainers (TOT) training for Village Health Teams (VHTs) on the use of HIV self-testing in the community, who were commissioned by the President of Uganda and the Minister of Health in Kololo.
- Supervised and provided technical support in the rollout and implementation of HIV self-testing in key and priority populations.

- Participated in national meetings including laboratory pillar, incident management team, and launch of national guidelines among others.

Program-specific achievements

- Co-authored the first National Laboratory Guidelines for Preparedness and Response to Public Health Emergencies.
- Participated in customising WHO Ebola Virus Disease (EVD) laboratory training manual to cater for all Viral Haemorrhagic Fevers (VHFs).
- Led laboratory coordination in two outbreak investigation
  - Meningitis in Obongi District, 2023
  - Cholera in Kayunga District, 2023
- Participated in three other outbreak investigations
  - Cholera in Buvuma Island, 2023
  - Anthrax in Ibanda District, 2023
  - Anthrax in Kyotera District, 2023
- Published two articles in the New Vision
  - Role of the laboratory in eliminating viral hepatitis by 2030
  - Health labour analysis: the answer to health laboratory workforce dynamics
- Published additional seven articles
- (Four as lead author & three as co-author) in the Uganda Public Health Bulletin.
- Served as an editorial team member for Uganda Public Health Bulletin, volume 8, issue 3, July-September 2023.
- Authored nine manuscripts (three as lead author and six as co-author). Eight of which are undergoing institutional clearance.
- Presented abstracts at five conferences (three international and two national)
  - 9th East African Health and Scientific Conference (EAHSC) in Kigali, Rwanda, 2023.
  - 3rd International Conference on Public Health in Africa, Lusaka, Zambia, 2023.
  - HuQAS 22nd Annual Scientific Conference, Mombasa, Kenya, 2023.
  - 9th National Field Epidemiology Conference, Kampala, Uganda
  - 10th National Field Epidemiology and 2nd National Laboratory Leadership Conference, Kampala, Uganda.
- Conducted a continuous improvement project to improve sample receipt turnaround time for HIV Viral Load in Kigezi Region, Uganda, April-September, 2023
- Conducted a descriptive analysis of characterizing Vibrio cholerae isolates in Uganda between 2014 and 2023
- Conducted a capstone project to assess staffing needs of health laboratory workforce in selected health facilities in Lango sub-region, Uganda

Key lessons learned during the fellowship

- Laboratory coordination during outbreak investigation
- Designing and implementing Continuous Quality Improvement (CQI) Projects
- Data extraction from DHIS2
- Questionnaire design using Kobo Collect
- Data management, analysis and interpretation using such software as Epi Info, QGIS
- Human Resources for Health (HRH) planning and management using the Workload Indicator for Staffing Needs (WISN) tool
- Scientific writing (for Abstracts, Manuscripts, Policy Briefs and Bulletin articles)
- Risk communication
- Presentation skills and dissemination of findings
- Reviewing and editing of materials
- Mentorship and training

Next steps

With the competencies gained, Leah hopes to continue serving within the Ministry of Health, and related organizations, nationally and globally, to strengthen health laboratory systems to achieve overall global health.

Summary of capstone project:

Staffing needs assessment of the health laboratory workforce in selected health facilities in Lango Sub-region, Uganda, 2024

Background: The health laboratory workforce (HLW) plays a pivotal role in achieving Primary Health Care, Universal Health Coverage, International Health Regulations and Sustainable Development Goals for health in a country. Shortage in this workforce compromises the quality of test results used for clinical management, public health intervention and policy development. We assessed the staffing needs of the health laboratory workforce in three public health facilities in Lango Sub-region in Uganda, namely, Agali Health Center III, Ogur Health Center IV and Apac General Hospital from July 2022 to June 2023.

Methods: We collected and analyzed data on staffing needs using the Workload Indicator for Staffing Needs (WISN) assessment tool. This was a mixed-methods study. Quantitative data on existing staffing levels of HLW by cadre was obtained from the staff list from the districts; data on recommended staffing levels in Uganda; 4 laboratory staff at H/C III, 9 laboratory staff at H/C IV and 15 lab staff at General Hospital, was got from the Ministry of Public Service guidelines on staffing structure for HLW. Data on laboratory testing was abstracted from the health management information system registers 105 and 108 for the same period. Laboratory staff requirement was calculated step-by-step based on workload. Activity standards (the time it takes a laboratory to conduct core activities and associated activities) were applied to each workload component. This was based on the same standards in all similar health facilities, considering the available working time (amount of time available in a year, per cadre, for delivering health services). The differences between the actual and calculated number of health personnel were calculated to show the level of staffing shortage or surplus for a particular cadre in a given health facility. The ratio of the actual to the required number of staff was used to calculate the WISN ratio. To determine workload pressure, the surplus/deficit staff was expressed as a percentage of the staff required by WISN. The qualitative component involved administering key informant interviews (KII) to district laboratory focal persons, human resource officers and laboratory managers to identify possible factors affecting HLW in Lango sub-region to triangulate the quantitative results obtained. Transcripts were transcribed and coded according to pre-conceived themes. We presented our findings as proportions showing the WISN ratio and workload pressure.

Results: The WISN calculation showed that there was a surplus of 2 laboratory technicians with WISN ratio of 1.5 and no workload pressure (-50%) in Agali Health Center III; a shortage of 1 laboratory assistant with WISN ratio of 0.8 and high workload pressure (25%) in Ogur Health Center IV; as well as a shortage of 4 laboratory assistants, 1 laboratory technician and 1 laboratory technologist with WISN ratio of 0.5 and high workload pressure (55%) in Apac General Hospital. From the KIIs identified factors negatively affecting HLW in Lango Sub-region included high workload perception, low staffing levels, inappropriate laboratory infrastructure, and unsuitable equipment.

Conclusion: The study highlighted the imbalances of staffing in the selected health facilities including surplus and excess staff. There is an urgent need to address human resource management issues in the district to ensure efficient delivery of health services. Further WISN assessment for all the public health facilities in Lango will help to improve the distribution of the laboratory workforce in the region.

PICTORIAL AND NARRATIVE

Leah Naluwagga (right) with a colleague from FETP track reviewing laboratory data during the meningitis outbreak investigation in Obongi District, 2023

Leah (khaki jacket) demonstrating how to use an HIV self-test kit to a health facility staff in Kawempe Hospital, Uganda, 2023

Leah presenting her work at the 9th East African Health and Scientific Conference (EAHSC) in Kigali, Rwanda, 2023

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM LABORATORY LEADERSHIP TRACK-COHORT 2023

Shem Mwebaza

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Host Institution: Mildmay Uganda

Host Site Mentor: Mr. Lali William

Shem Mwebaza's Profile

Shem Mwebaza is a laboratory leader and medical laboratory specialist. He holds a Master of Science degree in Biomedical Laboratory Sciences and Management and a Bachelor's degree in Biomedical Laboratory Technology, both from Makerere University. He possesses vast experience in working with the Ministry of Health, donors and implementing partners to strengthen laboratory systems for Research & Surveillance with the aim of generating new knowledge, and preventing and detecting outbreaks.

During the fellowship, Shem was attached to Mildmay Uganda, where he was employed as a laboratory systems coordinator. Mildmay Uganda (MUg) is a registered local Non-Government Organization (NGO) that implements sub-national health systems strengthening programs that have contributed significantly to national health outcomes. MUg has modeled quality and sustainable prevention, care, and treatment of HIV and other health priorities, using a family-centered approach together with training, education, and research in Uganda.

MUg is a quality-driven organization that is ISO 9001:2015 certified. Its medical laboratory is ISO 15189:2012 certified and is a backup platform to Uganda's Central Public Health Laboratory (CPHL).

Through the in-service training, he has attained great skills in laboratory leadership and management, communication, continuous quality improvement, disease surveillance, outbreak investigation, and response including data analysis, interpretation, and use.

Host site achievements

- - At his host site, Shem was able to work with the Health Systems Strengthening team to establish a district-based competency assessment system in Mubende Region which was the first district-based competency assessment modal in the country
- - He was able to work the laboratory manager and department heads to establish an interlaboratory test comparison quality assurance scheme as a means of ensuring quality testing in the supported laboratories to enhance accreditation efforts and testing scope.

Program-specific achievements

- Co-authored the first National Laboratory Guidelines for Preparedness and Response to Public Health Emergencies.
- Led laboratory coordination in three disease outbreak investigations
  - Anthrax in Ibanda District
  - Food poisoning in Jinja city
- Participated in two other outbreak investigations
  - Cholera in Kyotera District

    - Anthrax in Kyotera District
- Published two articles in the New Vision Daily newspaper
    - Regular competence assessment needed to improve healthcare, New Vision 9, August 2023
    - Our public transport system, a public health risk, New Vision, 23 April 2024
- Published an additional four (two as lead author & two as co-author) in the Uganda Public Health Bulletin.
- Served as an editorial team member for Uganda Public Health Bulletin, volume 8, issue 3, July-September 2023.
- Wrote four manuscripts (one as lead author and three as co-author). These are undergoing institutional clearance.
- Presented his work at three conferences (one international and two national) 8th World One Health Congress, Cape town, South Africa.

9th National Field Epidemiology Conference, Kampala, Uganda

23rd Annual Scientific Conference and 25 Annual Celebrations, Kampala, Uganda

- Conducted a continuous improvement project to establish a district-based competency assessment system in Mubende Region
- Conducted a descriptive analysis of Evaluating the District Health Information System Version 2 (DHIS-2) laboratory test menu fulfillment rates in Uganda
- Conducted a capstone project to develop Laboratory Continuous Professional Development Operational Guidelines for Uganda, January-December 2024

Key lessons learnt during the fellowship

- Effective team management and collaboration: through working with district leadership, Shem has learnt how to manage diverse teams of researchers, technicians, and students.
- Critical thinking and strategic decision-making: Shem has gained experience in making strategic decisions related to laboratory work environments, research priorities, resource allocation, and experimental design. This skill set has enhanced his ability to assess risks and opportunities while keeping the broader goals of the program in mind.
- Conflict resolution: In any laboratory, conflicts can arise due to differences in opinions, approaches, or interpersonal dynamics. Out of this training program and field exposure, Shem is able mediate conflicts and find solutions that respect the perspectives of all parties while maintaining focus on the project goals.
- Shem has acquired a deeper understanding of the Role of mentor working with Mr. Lali William. He has gained insight into how to mentor junior researchers, students, or lab members effectively, to provide guidance, feedback, and professional development opportunities that can help others grow in their careers.
- Shem has acquired Critical thinking, Innovation and Problem-Solving skills, to identify and overcome logistical and operational hurdles in various work settings
- Shem has acquired skills in budgeting, Resource Management, grant writing, fundraising, and financial stewardship, which are critical skills modern laboratory environments.
- Communication Skills: Shem has mastered the Science and Art of presenting research and information clearly, whether through writing papers, delivering presentations, or interacting with different audiences.
- Building a Research Network: Through the various conferences attended, Shem has established a community of practice network with other leaders in the field. He understands the importance of building and maintaining relationships with collaborators, institutions, and industry partners.
- Resilience and Adaptability: Shem understands that set setbacks are a part of the process. He has learnt how to be resilient in the face of challenges and adapt to new situations, whether dealing with failed experiments, shifting priorities, or changes in the scientific landscape.

Next steps

- Shem plans to provide my technical assistance and expertise in laboratory systems strengthening for the country to support other laboratory professionals through mentoring and supporting other laboratory fellows as a give back in support of the program and contributing to the growth and sustainability of the Uganda National Institute of Public health.
- Currently, Shem is working as a laboratory Manager at the Coalition for Epidemic preparedness and Innovations- Uganda Virus research Institute (CEPI-UVRI) laboratory. CEPI's Centralized Laboratory Network (CLN) was launched in 2020 to provide standardized testing support to vaccine developers worldwide. The CLN is the world's largest consortium of laboratories that offers critical testing services to vaccine developers, ensuring consistency in data readouts, which streamlines the assessment of multiple vaccine candidates.

Summary of capstone project:

Development of Laboratory Continuous Professional Development Operational Guidelines for Uganda, January-December 2024

Background: Continuous Professional Development (CPD) training addresses inadequacies in the initial training programs and equip employees with up-to-date knowledge and skills relevant and current to their profession. Despite efforts by Allied Health Professionals Council (AHPC) and Uganda Medical Laboratory Technology Association (UMLTA) to ensure CPD programs reach laboratory professionals in the country, only 46% access them. We aimed at developing laboratory CPD operational guidelines for laboratory professionals in Uganda. It is hoped that the operational guidelines will outline key elements of laboratory CPD program and clarify policy and process questions that have been raised while implementing the current policies and guidelines to lead to an increase in access and utilization of the various CPD opportunities.

Method: A mix of virtual and physical meetings and workshops with key stakeholders including AHPC, UMLTA, Uganda National Health Laboratory Services (UNHLS), Implementing partners and public & private institutions will be held to for buy-in, consensus building and to identify hindering & enabling factors for CPD program accessibility. This forum selected a Technical Working Group (TWG) that spearheaded the implementation of the project. Comprehensive needs assessment and bench marking of the laboratory CPD program was done. Findings from these activities informed the comprehensive operational guidelines for the laboratory CPD program.

Results: Laboratory CPD Operational Guidelines for laboratory professionals in Uganda were developed. The guidelines were in the final review process by the Chairperson and Registrar Allied Health Professionals Council.

Conclusion: The first Operational guidelines for the Uganda laboratory CPD program were developed and are in the process of being approved by the time of writing this report.

PICTORIAL AND NARRATIVE

Shem (white shirt) demonstrates to district staff on how to collect an anthrax sample from a severed head of a cow, Ibanda District, March 2023

Shem (grey jacket) observing district staff filling a case investigation form during suspected food poisoning investigation, Jinja, 2024

Shem (grey jacket) participating in a subnational laboratory pillar meeting, Jinja, 2023

Shem (grey jacket) poses for a group photo with subject matter experts after holding a writing workshop during CPD guideline development, Mityana, 2023

THE UGANDA PUBLIC HEALTH FELLOWSHIP PROGRAM LABORATORY LEADERSHIP TRACK-COHORT 2023

Annet Martha Nankya
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Host Institution: Uganda Virus Research Institute
Host Site Mentor: Dr. Balinandi Stephen

Annet's Profile

Annet Martha Nankya is now a trained laboratory leader and a medical laboratory specialist. She holds a Master's degree in Biomedical Laboratory Sciences and Management from Makerere University and a Bachelors in Laboratory Sciences from Kyambogo University. Her professional journey has been shaped by a commitment to the One Health approach to public health, which emphasizes the interconnectedness of human, animal, and environmental health. This holistic perspective has guided my work throughout the Uganda Public Health Fellowship Program

- Laboratory Leadership (UPHFP-LLP), enabling me to address complex public health challenges effectively.

During the fellowship, she was privileged to be hosted at the Arbovirology Department at the Uganda Virus Research Institute (UVRI), an institution where she is also employed as a laboratory manager. The UVRI is an institution renowned for its cutting-edge research into human infections and diseases of viral origin. The institute not only generates critical knowledge but also provides expert advice to stakeholders, fosters partnerships for improved health outcomes, and serves as a center for training and education. Her time at UVRI offered her invaluable exposure to the complexities of arbovirus research, surveillance, and control, deepening her understanding of viral disease dynamics.

The comprehensive in-service training she received through the fellowship sharpened her skills in leadership, outbreak investigation, and data analysis. The fellowship equipped her with knowledge and practical skills to engage with diverse stakeholders and foster interdisciplinary collaboration. By embracing the One Health approach, she has developed a deeper appreciation for the critical intersections between human, animal, and environmental health. This perspective has enabled her to design and implement strategies that address public health threats holistically, ensuring sustainable health outcomes. Overall, her time at UVRI as a fellow has been transformative, preparing her to take on leadership roles in laboratory science and public health, with a focus on integrating research, policy, and practice to improve health outcomes at all levels

Host site achievements

- Managed data entry and analysis in the EPI database, ensuring weekly reporting to the Ministry of Health, WHO, and other key stakeholders.
- Trained new laboratory staff to enhance technical capacity and maintain high standards of laboratory operations.

- Facilitated training sessions in Cameroon on Yellow Fever confirmatory testing using the Plaque Reduction Neutralization Test (PRNT).
- Participated in risk assessment and mitigation activities to strengthen laboratory and public health preparedness.
- Contributed to drafting Standard Operating Procedures (SOPs) for the arbovirology laboratory to standardize and streamline workflows.
- Assisted in data collection for the National Immunization Coverage Survey, contributing to nationwide health planning and evaluation.

Program-specific achievements

- Led one outbreak laboratory investigation: Rift Valley Fever in Mbarara District, 2023
- Participated in additional three outbreak investigations
  - Anthrax in Ibanda District, 2023
  - Anthrax in Kyotera District, 2023
  - Rift Valley fever in Nakaseke District, 2023
- Published five articles in New Vision
  - Increase laboratory testing to eliminate Yellow Fever
  - Prioritize vaccination to fasten control and prevention measures against antimicrobial resistance
  - Arbovirus disease: its effective management depends on timely detection
  - Laboratory leadership: a cornerstone to strong health systems
  - Mosquitoes spread Arboviruses
- Co-authored one article published in the Uganda Public Health Bulletin
- Served as an editorial team member for the Uganda Public Health Bulletin, January-March, 2024 period
- Authored three manuscripts, two as lead author and one as co-author. These are undergoing institution clearance.
- Presented her work at three conferences (two international and one national).
  - 9th East African Health and Scientific Conference (EAHSC) in Kigali, Rwanda, 2023.
  - 3rd International Conference on Public Health in Africa, Lusaka, Zambia, 2023.
  - 9th National Field Epidemiology Conference, Kampala, Uganda, 2023.
- Conducted a quality improvement project to improve Yellow Fever testing turnaround time in Uganda
- Conducted a descriptive analysis of seasonal Influenza positivity rates, types and subtypes in Uganda, 2019-2023
- Conducted a capstone project to assess knowledge, attitudes, and practices of health care workers towards Arboviruses

Key lessons learnt during the fellowship

- Quality Improvement: Skills in designing and implementing initiatives to enhance healthcare outcomes.
- Data Management & Analysis: Proficiency with tools like KoboCollect, EpiInfo, and QGIS for data-driven decision-making.
- Scientific Communication: Strong abilities in writing abstracts, manuscripts, policy briefs, and presenting findings effectively.
- Networking & Stakeholder Engagement: Competence in collaboration, lobbying, and coordinating with stakeholders.
- Adaptability & Lifelong Learning: Strengthened resilience and a commitment to continuous professional growth.

Next Steps

With the competencies Martha has gained, she aspires to continue contributing to improved global health and timely responses by serving at the Uganda Virus Research Institute or a similar organization

Summary of the Capstone Project

Knowledge, Attitude and Practice among selected healthcare workers towards Arbovirus diagnosis

Background: The growing threat and recent outbreaks of arbovirus infections underscore the importance of robust surveillance systems capable of detecting, preventing, and responding to these epidemics. Healthcare workers (HCWs) play a pivotal role in the surveillance and control of infectious diseases with epidemic potential.

This study aimed to assess the knowledge, attitudes, and perceptions (KAP) of HCWs regarding arboviruses in public health facilities in Masaka and Sembabule districts, Uganda.

Methods: A cross-sectional survey was conducted in July 2023 across public health facilities in Masaka and Sembabule districts. Data were collected on the demographic characteristics of HCWs using a structured questionnaire designed to assess their knowledge, attitudes, and practices (KAP). The questionnaire was administered through face-to-face interviews. Scores for knowledge, attitude, and perception were computed, and the Decision Tree and Conditional Inference Tree Model 2 were utilized to identify factors influencing these outcomes.

Results: The study included 308 HCWs, comprising 23 from a regional referral hospital, 85 from Health Center IVs, and 200 from Health Center IIIs. Among the participants, 86% had never received any information about arboviruses. Only 1% demonstrated good knowledge, while 97% exhibited negative attitudes towards arboviruses. Approximately 50% had a moderate perception, and 13% displayed a good perception. Analysis revealed significant associations between the KAP of respondents and their professional experience as well as age.

Conclusion: This study underscores the urgent need for comprehensive training programs to enhance HCWs' capacity for early detection of arbovirus cases within healthcare facilities. It also highlights the importance of conducting similar studies across all healthcare facilities in Uganda to gain a more comprehensive understanding of HCWs' KAP toward arboviruses.

PICTORIAL AND NARRATIVE

Martha (grey jacket) collecting data during a national immunization coverage activity in Kibaale District, August 2024

Martha (grey jacket) training healthcare workers on Arboviruses screening in Sembabule district, September ,2024

Martha (BSC) demonstrating to laboratory professionals on performing an PRNT assay at a yellow fever regional laboratory, Cameroon, December 2023

Martha receiving a certificate of participation at the regional Yellow Fever training in Congo Brazzaville, July 2024

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