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MINISTRY OF HEALTH
Department of National Health
Laboratory and Diagnostic Services

LAB DIGEST

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How the National Calibration Center is Saving the Ugandan Government Millions!



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EDITOR'S NOTES

Dear Reader,

Welcome to the second edition of the Lab digest. In the pursuit of scientific excellence, precision and accuracy stand as pillars upon which our daily operations are built. This reliability hinges significantly on one essential practice: equipment calibration.

Consider the ramifications of a single piece of miscalibrated equipment. It can set off a chain reaction of errors, affecting not

just a single test but potentially influencing the outcomes of results and diagnostics. The cost of these errors can be astronomical, both in terms of resources and credibility.

In this edition of the Lab Digest, we focus on equipment calibration. You will find articles detailing the NHLDS journey to establishing the only National Equipment calibration center in Uganda, the step by step jour-

ney, and progress so far and how much this center saves in terms of government spending.

Don't miss the key highlights in the news section and our staff spotlight of the month.

Don't forget to send feedback, we would love to hear from you.

*Sincerely,
The Lab Digest Editorial Team
Kagere Dianah
Senior Public Relations Officer*



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Remarks from ED/ Commissioner



Dear Reader,

I welcome you to our second edition of the Lab Digest focusing on Calibration of Laboratory equipment as a fundamental aspect of our diagnostic service delivery.

Calibration ensures that our equipment operates with precision, accuracy and reliability. The importance of this process cannot be overstated, as it directly impacts the quality of results and therefore the accuracy of medical diagnoses and patient care.

Healthcare professionals rely on diagnostic tools to make informed decisions about patient treatment. Whether it is a simple blood pressure monitor or a complex MRI machine, the accuracy of these instruments can mean the difference between a correct diagnosis and a misdiagnosis, between effective treat-

ment and prolonged illness. This is why calibration is not just a technical necessity but a moral imperative.

The Department of National Health Laboratory and Diagnostic Services of Ministry of Health, in its commitment to advancing the standards and practices of calibration across all our facilities, it has set its objectives to ensure accuracy and precision, capacity building, implementing standards, promoting accountability and collaborating with stakeholders.

In the recent years, we have made significant strides, however, we recognize that continuous improvement is necessary. Advances in technology and the increasing complexity of diagnostic equipment require us to stay ahead of the curve. Calibration also requires investment, not just in terms of equipment but also in terms of training and

quality assurance. The department is vigilant against complacency and ensuring that calibration becomes a routine part of our healthcare operations rather than a response to issues as they arise. By prioritizing calibration, we not only enhance the quality of our healthcare services but also reaffirm our commitment to the well-being of the communities we serve.

I hope you enjoy your read as you delve deeper into the subject of equipment calibration.

Dr. Susan Nabadda
Commissioner Health
Services-NHLDS – MoH / Chief
Government Pathologist



HOW THE NATIONAL CALIBRATION CENTER IS SAVING THE UGANDAN GOVERNMENT MILLIONS!



According to NHLDS Bio Medical Engineer Abdu Mutaka, the National Metrology Laboratory also known as National Calibration Center saves government over 3.2 billion Uganda Shillings (USD 855,000 @ROE 3800) annually. These savings come from calibrating government equipment used in the health laboratory sector, agricultural sector, and water and environment sector. The savings continue to increase as the National Calibration Center

expands its scope and makes significant progress in Uganda and the surrounding region.

In this edition of the May Lab Digest, we bring you the journey of the national Calibration center, as birthed from the Ministry of Health Engineering Department.

Calibration is the process of adjusting and verifying the accuracy of measurement instruments to ensure they provide precise

and reliable results. In laboratory and diagnostic services, calibration is crucial because it ensures that the instruments used for tests and measurements are accurate and consistent. This accuracy is essential for obtaining valid test results, diagnosing medical conditions correctly, ensuring patient safety, and maintaining compliance with regulatory standards. Regular calibration helps prevent errors, reduces uncertainties, and en-



hances the overall quality of laboratory and diagnostic services.

The national Metrology laboratory is part of the Department of National Health Laboratory and Diagnostic Services and provides calibration services to the sector to ensure it delivers quality results.

“We are the service team for the laboratory equipment, they use the equipment and we ensure that these machines are functioning well,” Eng. Mutaka explains.

In January 2008, Uganda ratified the Maputo Declaration on Strengthening of Laboratory Systems with among other things to develop a consensus on key considerations which included developing key guidelines for maintaining and servicing laboratory equipment across the African Laboratory network.

With the expansion of laboratory and diagnostic services in Uganda, the need for a dedicated Calibration bio medical engineers became evident. Additionally,

laboratories were growing in number and applying for certification thereby expanding the calibration need.

The Ministry of Health through its Engineering Department and with requests from NHLDS for equipment management and maintenance requested for service engineers. PEPFAR through USAID/ Uganda SUSTAIN activity responded by recruiting engineers for seven workshops located in Mbale, Lira, Gulu, Hoima, Mbarara, and Kabale. Concurrently, the CDC, through the Infectious Diseases Institute (IDI), recruited two Senior Biomedical

Engineers, one of them was Abdu Mutaka for the Central region, based at the Ministry of Health’s Wabiggalo Central workshop. Engineer Mutaka’s role included overseeing all laboratory workshops and equipment maintenance across the country. His leadership and expertise have been instrumental in the development and success of the National Metrology Laboratory, which he continues to lead to this day.

“When the biomedical engineers were recruited, they were given vehicles to ease their movement and there were also capacity gaps since Lab equipment maintenance was a new area for many. The American International Health Alliance then came on board and brought in trainers to build the team’s capacity. AIHA also had a partnership with the College of Lorima that brought in more trainers from Canada, Philippines and USA,” adds Eng Mutaka.

By February, 2016 Central Public Health Laboratories was in the process of shifting from Wandegaya to its new home in Luzira. To improve accessibility, the calibration team was also moved from the Wabiggalo Central workshop to Luzira.

“We initially faced resistance on the certification of the work the engineers were doing. The ministry leadership then started thinking about starting the Calibration Lab to monitor the engineers’ work. We asked for space, personnel, and the ministry of health constituted a team that benchmarked in Kenya to understand what was needed to start a calibration center. We were allocated space by the ministry in the building where we are and the team from America as well as the ministry engineers started the work,” Eng Mutaka adds.

Before the establishment of the calibration center, the Ugandan government had to send equipment to Kenya, South Africa,



and the USA for repairs, as the Uganda National Bureau of Standards was neither certified nor equipped to handle laboratory equipment repairs.

In 2017, the center also coordinated capacity-building workshops for biomedical engineers, focusing on non-automated equipment and cold chain maintenance, among other areas. This initiative led to the refurbishment of the mortuary at the Jinja Referral Hospital, which had been previously written off by the government due to cold chain issues and high repair costs. The refurbishment cost only UGX 1.8mn Uganda shillings and it is still functional to date. This achievement marked a significant milestone for the center, significantly boosting its impact on the health sector.

“As continued the trainings, we realized we didn’t have documents or guiding documents or curriculum. The ministry of Health together with Kyambogo University teamed up to start the development of the biomedical engineering curriculum for none automated lab equipment. It was approved and adopted by the National

Curriculum center as a national resource for training engineers to date. The team then embarked on development of standard operation procedures, equipment maintenance guidelines aligned to International Standards Organization (ISO) parameters,” Eng. Mutaka passionately adds.

CDC also continued to support the capacity development of the center through sponsoring biomedical engineers for training in other countries, to date over five biomedical engineers have benefited from this initiative.

Additionally, the ministry with support from CDC, then started on the journey to equip the calibration Lab. The team widely consulted other countries on the requirements for establishment which saw the equipment procured by 2019 and applied for accreditation. In March 2020 just before the COVID-19 lockdown, the calibration Laboratory was

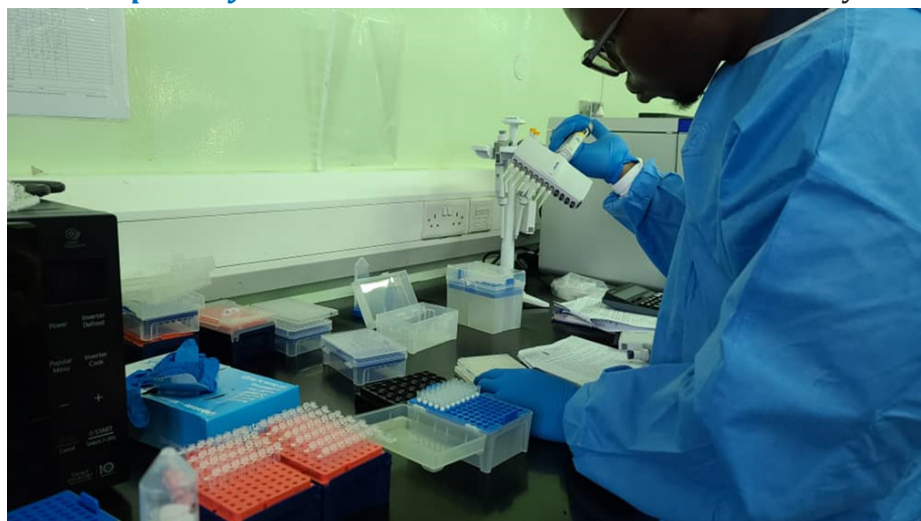
accredited by KENAS, which it has maintained this year.

“We are the only metrology lab in the region that is providing calibration services and with the biggest scope. We began with five parameters that is time, mass, Pressure and PH, Temperature (repository and storage), small volumes. The



lab has now expanded to Sound, pressure, PH, biosafety and biosecurity, particle counting, gas counting, Water testing for different grades used in the lab, ionization of water, salinity, glass and Lights,” Mutaka adds.

The Laboratory equipment is maintained periodically through check and comparison using the Kenya Bureau of Standards which also compares with another lab in Germany or South Africa under chain of traceability. The center also undertakes annual Inter lab comparisons with other labs and share the results. Intra lab comparisons among the engineers compares results and also identify training needs assessment.



Cost benefit analysis:

Uganda has over 100 regional hubs that cover over 2000 public health laboratories serviced by the team. Requests are sent from the Laboratory and the team either offers onsite or offsite support depending on the requested service. Equipment is transported to and from the workshop through the Sample transport network.

“Since we started, we are serving over 100 hubs. These would have previously been served by external service providers or taken abroad for repair. This has seen us save Uganda government a lot of money: In FY 2020/21 the amount came to USD 500,000. In FY 2021/22, it increased to USD 720,000, In FY 2022/23 it reached USD 855,000. We are yet to compute for 2023/2024,” Eng. Mutaka.

Achievements:

The Center also boasts of the following achievements;

- Attaining accreditation in 2020 and expanding its scope
- The growing recognition in the country and region. The

center has been nominated by Global Fund to act as the lead activity implementers in East Africa. Nine countries will come to Uganda to benchmark.

- Nationally, the recognition from the Health Minister, Permanent Secretary, NHLDS Commissioner and visits from other countries and development partners.
- Human resource has grown from two (2) to now fifteen (15) biomedical engineers. Compared to other labs in the region, NMC is sprinting.
- Partnerships with research labs, teaching institutions as well as the Inter ministry labs quality analysis for Ministry of Agriculture, NARO, Ministry of water and environment.

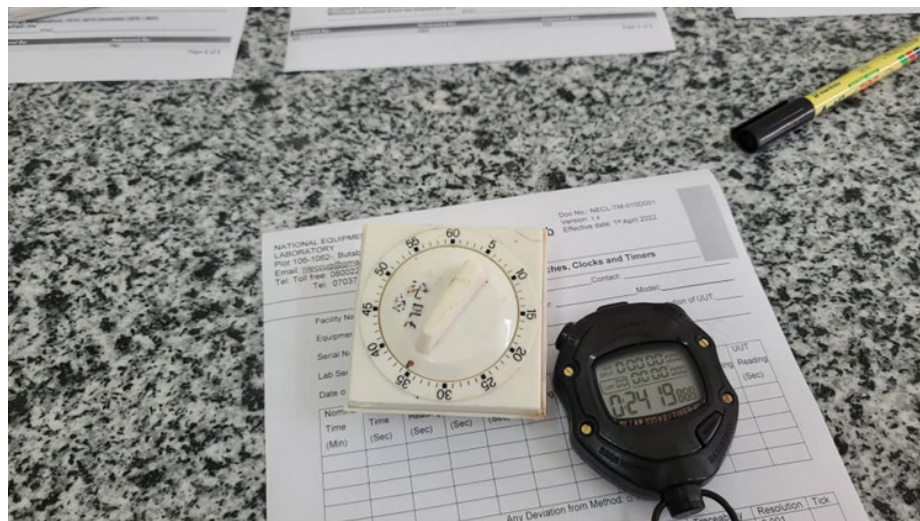
These achievements have not been without challenges. As the demand increases, the need for human resources to meet the demands continues to grow which stretches the available teams across the country.

“We began with 100 hubs, my team is spread thin to serve the growing needs. We also get artifacts from all over the country

and do not want to mix which requires additional space. The growing need for calibration requires us to expand the lab to what is needed which requires high throughput standards. We need to get tools that answer the needs and standards for the metrological services. The standards we are using were procured in 2016-2017, and yet the level of degrading is high making them due for replacement,” Eng. Mutaka adds.

Opportunities for growth:

The Department envisions a National Metrology Laboratory that is referenced by other East, Central and Southern African countries. This will also mean that the center becomes the lab calibration and traceability to labs and health facilities around the region.





Eng. Mutaka takes the New CDC Country Director, Dr. Mary Adetunke Boyd, around the calibration Center this month.



An overview of one of the Labs at NHLDS.



A sysmex Sp50 used to make slide automatically for Malaria microscopy.



NEWS HIGHLIGHTS

National launch of the Community CheckNow HIV Self-test kit.



NHLDS team led by Commissioner Dr. Susan Nabadda joined other health partners at Kololo ceremonial grounds for the National Launch of the Community CheckNow HIV self-test kit in a significant step towards enhancing HIV testing accessibility and awareness.

The launch was graced by the Vice President of Uganda, HE Jessica Alupo, alongside other dignitaries including Minister for Presidency Hon. Milly Babalan-

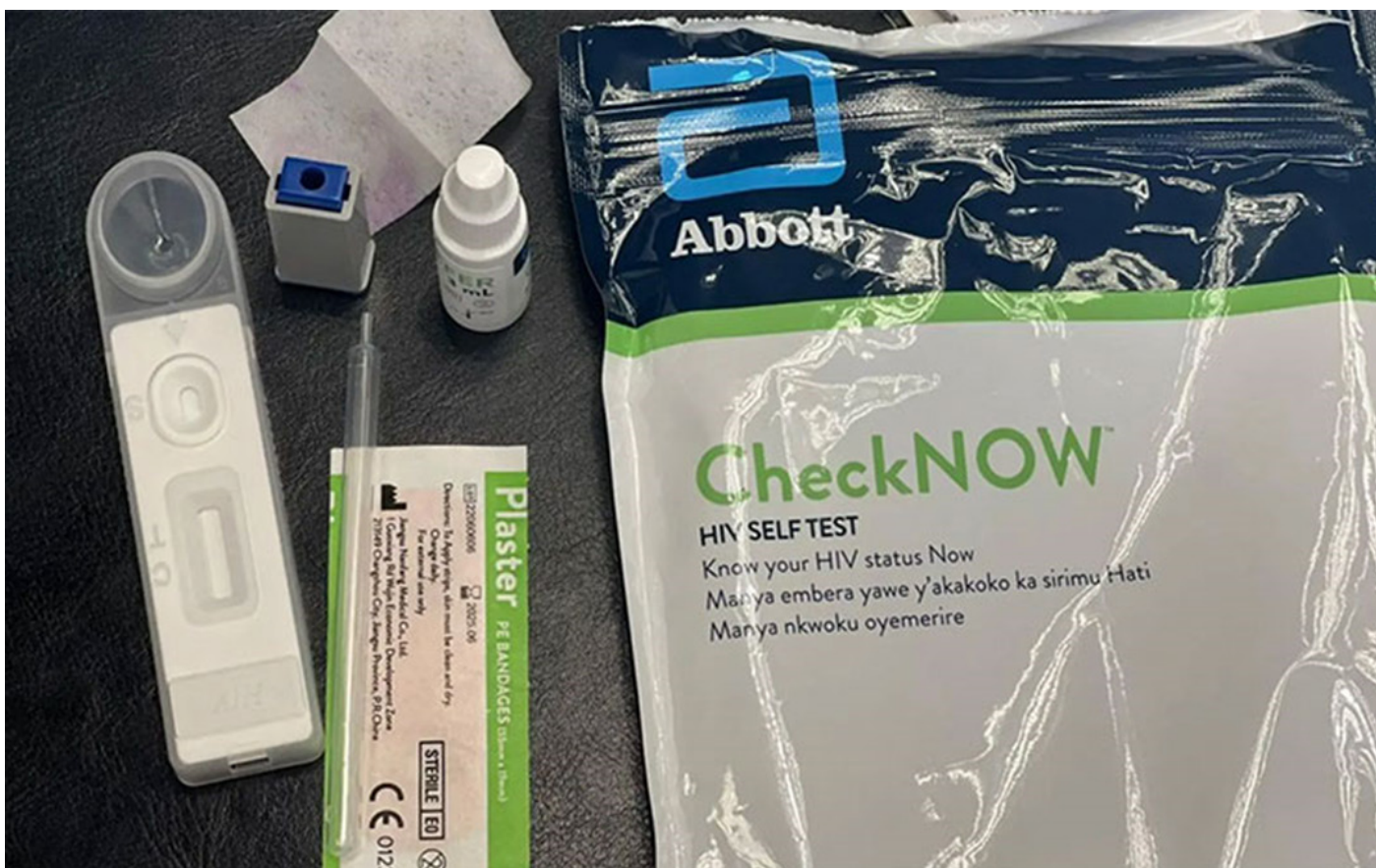
da, Health Minister Dr. Ruth Jane Aceng, and MoH Director General Dr. Henry G. Mwebesa.

Implemented in partnership with LifeCare Diagnostics, the initiative is under theme “Closing the Unmet Need for HIV Testing.” This pioneering self-test kit empowers individuals to ascertain their HIV status promptly and conveniently, within the comfort of their own environment. By facilitating real-time testing,

the initiative aligns with the overarching goal of achieving the UNAIDS 95:95:95 target by 2030.

In addition to the launch, the NHLDS team extended its commitment to community health by providing complimentary testing services to the public which underscores NHLDS’ dedication to combatting HIV/AIDS and fostering a healthier, more informed society in Uganda.





NHLDS at the World Malaria Day in Kibuku



NHLDS team participated at the National commemoration of the World Malaria Day in Kibuku as part of the Ministry of Health activities under the theme; “Say no to Malaria Deaths”. The community event was officiated by the Deputy Speaker of Parliament Rt. Hon. Thomas Tayemba alongside the Executive Director of Global Fund, Mr. Peter Sands and Health Minister Dr. Jane Ruth Aceng.

The event saw commitment from government and min-

istry of Health commitment to strengthening malaria control efforts, including increasing access to quality health care services, scaling vector control interventions through Residual indoor spraying, distribution of treated mosquito nets, promoting research and innovations on malaria prevention and treatment.

NHLDS team was led by the Commissioner Dr. Susan Nabadda alongside senior management team and program managers. Dr. Susan also led the Deputy Speak-

er and the official team to tour NHLDS mobile lab that was stationed at Kibuku Primary school grounds to provide testing services to the community members. She called for support from Parliament to ensure scalability of the mobile lab initiatives across the country to increase access to laboratory and diagnostic services in underserved areas of the country due to infrastructural challenges.





MoH Directive on Streamlining Capacity Building Workshops.



Dr. Diana at the launch of the 10 days of activism against Preeclampsia where she made the public announcement.

The Permanent Secretary of the Ministry of Health, Dr. Diana Atwine, has issued a directive aimed at addressing the excessive use of workshops in health sector activities.

In a letter dated May 13, 2024, addressed to all implementing partners, Dr. Atwine recommended the adoption of virtual platforms such as Zoom for meetings related to work plans and policy reviews. She emphasized that this shift would significantly reduce costs associated with

physical meetings, such as per diems and facilitation fees.

Dr. Atwine also urged that capacity-building activities be conducted at the facility level rather than in hotels, contingent upon clearance from the office of the Permanent Secretary and the Director General of Health Services.

While the letter acknowledges the importance of capacity building, it also highlights the adverse effects of in-person meetings, includ-

ing increased absenteeism, lack of concentration at work, and substantial expenses. These factors result in critical staff being away from their duty stations for extended periods, thereby negatively impacting service delivery in Uganda.

By implementing these changes, the Ministry of Health aims to enhance efficiency, reduce unnecessary costs, and ensure that health sector personnel remain focused on delivering essential services to the public.



New CDC Country Director visits NHLDS.



This month NHLDS hosted the new Uganda CDC Country Director, Dr. Mary Adetunke Boyd, for a familiarization tour. The visit also aimed to introduce her

to NHLDS' programs, laboratory and diagnostic capabilities. She was received by members of senior management team led by the Lab Director, Dr. Isaac Sse-

wanyana who presented on CDC funded initiatives and programs followed by the tour of the Laboratories.



NHLDS to Receive Accreditation from Uganda National Accreditation Services.



This month, the NHLDS team, led by Commissioner Dr. Susan Nabadda, visited the offices of the Uganda National Accreditation Services (UGANAS) and participated in a consensus meeting on the accreditation regulations, which are in their final stages of approval.

The meeting was attended by representatives from the Ministry of Water, Agriculture, Environment, NARO, URA, other private laboratories, and ASLM.

The Ministry of Health (MOH) and the Ministry of Trade, Industry & Cooperatives (MTIC) established

UGANAS during the 2022 World Accreditation and Africa Industrialization Day, under the theme ***“The Role of Accreditation in Sustainable Industrialization, Trade, and Healthcare.”***

UGANAS was created in response to the need for sustainable and affordable laboratory and diagnostic accreditation in Uganda. It is expected to reduce costs associated with accreditation while promoting health and safety in the country.

NHLDS and its reference laboratories have achieved international accreditation from various bodies, including WHO, ISO, SANAS, CAP,

and KENAS. However, obtaining these accreditations incurs significant costs, which are not sustainable.

The primary objective of laboratory accreditation is to promote sustainable and affordable laboratory and diagnostic services in Uganda. Accreditation serves as a benchmark for quality and competence, assuring that laboratories meet international standards and produce reliable results. This, in turn, enhances public health, safety, and economic development by fostering trust in the diagnostic and testing processes.





MINISTRY OF HEALTH

DEPARTMENT OF NATIONAL HEALTH LABORATORIES AND DIAGNOSTIC SERVICES (NHLDS)




OUR ACCREDITATION / CERTIFICATIONS

- ISO 9001 QMS certified by PECB – NHLDS
- ISO 15189 Accredited Laboratory by SANAS (M0589) – CPHL
- International Accreditation to ISO 15189 Standards by SANAS – NTRL/SRL
- International Accreditation to ISO17043 by SANAS – NTRL/SRL
- International Certification to ANSI/AICET Standards for Continuing Education and Training – NTRL/SRL
- ISO 15189 Accredited Laboratory by College of American Pathologists ; (CAP No. - 8251785) – Microbiology Lab
- Implementing ISO 17034 : 2016 and 17043:2010 - NHLDS
- ISO 17025 : 2017 Accredited by KENAS – CPHL
- WHO Prequalification Evaluation Lab – CPHL
- Implementing ISO 20387: 2018 Bio Banking General Requirements for Bio banking – Biorepository Lab

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NHLDS at the National Nutrition Summit 2024



The NHLDS (National Health Laboratory and Diagnostic Services) actively participated in the 3rd National Nutrition Forum, organized by the Office of the Prime Minister. This event aimed to promote integrated policy research and identify innovative policy solutions and investments for nutrition interventions.

Representing NHLDS, Laboratory Director Dr. Isaac Ssewanyana highlighted the organization's ongoing ef-

forts and advancements. Dr. Ssewanyana's presentation focused on the progress of NHLDS's nutrition program, now in its first year of implementation. He emphasized the need for collaborations and funding to facilitate the localization of micronutrient biomarker testing in public health laboratories.

In April 2023, NHLDS launched a program to integrate micronutrient testing within Uganda's public health laboratories. This

initiative was a response to the country's lack of mechanisms and capacity to assess the impact of existing nutrition-based interventions and to identify regions suffering from nutritional deficiencies.

The program aims to establish the capability to conduct comprehensive micronutrient evaluations, thereby supporting the National Nutrition Program and other nutrition initiatives by measuring their im-



pact and identifying at-risk communities. This initiative places Uganda ahead of many other African countries in the field of nutrition.

The week-long National Nutrition Forum brought together various actors from government agencies, development agencies, and the private sector. The event provided a platform to showcase new developments in nutrition in Uganda, fostering collaboration and innovation in addressing nutritional challenges.



NHLDS to Collaborate on UPHIA 2024.



This month, the National Health Laboratory and Diagnostic Services (NHLDS) hosted a team from the Centers for Disease Control and Prevention (CDC) to discuss and evaluate the capacity for collaboration on the upcoming Uganda Population-Based HIV Impact Assessment (UPHIA) 2024. This marks NHLDS's

inaugural participation in UPHIA, a pivotal survey conducted every six years to assess the HIV landscape in Uganda.

The meeting between NHLDS and the CDC team focused on assessing NHLDS's infrastructure, expertise, and readiness to contribute effectively to this large-scale

national survey.

Conclusion:

NHLDS's involvement in UPHIA 2024 signifies a major advancement in Uganda's fight against HIV/AIDS. By collaborating with the CDC, NHLDS aims to enhance the survey's implementation and impact, ensuring that Uganda's HIV response is informed by the most accurate and comprehensive data available. This partnership will not only strengthen the current assessment but also build a foundation for sustained improvements in public health diagnostics and interventions in Uganda.



NCD alliance calls for Integration of NCDs into community health.



NHLDS hosted the Uganda National non Communicable diseases (NCDs) alliance led by the ministry of Health Commissioner on NCDs Dr. Charles Oyoo Akiya. Dr. Oyoo stressed the importance of collective commitment & collaboration with dedicated CSOs to integrate NCDs into broader community health efforts to advance this fight. The meeting was attended by Civil Society Organizations

working on NCDs to discuss integration NCDs in community health services including Sickle Cell, Cancer, Hemophilia, Parkinson, Albinism, Cerebral Palsy, Diabetes, Stroke, Autism, Down syndrome, Blind association and Alcohol.

According to WHO Country disease Outlook report 2023, NCDs are a major health problems in Uganda with the age-standardized

mortality rate across four major NCDs (Cardiovascular Disease, Chronic Respiratory Disease, Cancer and Diabetes) was 709 per 100,000 in males and 506 in females in 2021.



NRTL ED Ranked number one Microbiology scientist in Uganda.

Prof. Moses Joloba the Managing Director for NHLDS National TB Reference Laboratory, NTRL was this month ranked as the best Microbiology Scientist in Uganda by Research.com. He is among the top three Ugandan Microbiologists who made the world list. In 2nd place is JCRC executive Director, Dr. Cissy Kityo Mutuluuza and in third position was Peter Mugenyi from the Uganda National Academy of Sciences.

The research.com ranking is based on D-index metric which includes papers and citation values for a particular discipline. Prof. Joloba scored 60 D-index with 10,898 citations.



National Training on Advanced HIV Disease.

NHLDS conducted a National level Hands on training for cryptococcal Meningitis testing, care and treatment for patients with Advanced HIV Disease, AHD. The two day training was held in Entebbe and involved hands on demonstration from the trainers.



Uganda Represents at Regional Metrology Conference 2024

The Regional Metrology Conference 2024, an event bringing together experts in measurement science, took place this month, fostering collaboration and knowledge exchange among African nations. Eng. Rose Achom proudly represented Uganda from the National Calibration Center.

Eng. Achom presented and participated in discussions on advancing metrology practices and improving standards across the continent. Her contributions highlighted Uganda's commitment to precision and accuracy in measurement, reflecting the nation's strides in enhancing its metrology infrastructure.



Teams from Kenya Bureau of Standards including the Managing Director, NIST, Malawi Bureau of Standards, Nigeria Metrological Institute, Tanzania Bureau of Standards, Uganda National Calibration Center pose for a group photo.



Panel discussion on Metrology in Health Sector. Rose from the Calibration center responding to possibility of calibration of small volume micrometer pipettes.



Regional Trainings on Traceability and Verification of Equipment

NHLDS -National Calibration Center conducted on site Regional Trainings on Traceability and Verification of Equipment. These training sessions aimed to enhance the accuracy and reliability of diagnostic equipment across various health facilities. Held at the different Regional Referral Hospitals, the sessions brought together laboratory technicians, calibration technicians and quality control officers. Participants received in-depth hands-on training on best practices for maintaining equipment traceability and ensuring precise verification processes. The initiative is part of the NHLDS's ongoing efforts to uphold high standards in laboratory diagnostics, ensuring that equipment used in health facilities meets the required accuracy and reliability benchmarks.



SPOT LIGHT OF THE MONTH



ENG. ROSE ACHOM

Rose is a Biomedical Engineer with a Master's in biomedical engineering and 10 years of experience in medical equipment management.

She started her career as a Biomedical Assistant Technician at Kyambogo University in Uganda, later joined the Uganda Heart Institute from 2013 to 2016. In 2016, I joined the Uganda National Health Laboratory and Diagnostics Services as a biomedical Engineer. She is an NSF accredited biosafety cabinet field certifier, Quality manager of the National Equipment Calibration Laboratory that is 17025:2017 accredited, ISO 9001 certified lead implementer and a traceable TOT through the Kenya Technical Tutor's College.

Currently Rose is pursuing a Master's degree in Public Administration and Management, Uganda Christian University Mukono.

She loves Listening to music, Dancing, Watching movies and a little bit of traveling.





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