



## FOSTERING CONTINUOUS IMPROVEMENT OF PUBLIC HEALTH LABORATORY SERVICES IN UGANDA: IDI'S CONTRIBUTION (2018-2020)

### INTRODUCTION

The Infectious Diseases Institute (IDI) houses a state of the art laboratory - the Core Laboratory (CL) - certified by the College of American Pathologists (CAP) and accredited by the Uganda Ministry of Health (MoH) as a lead partner in strengthening laboratory systems.

In line with its 5-year (2018-2023) goal of 'providing high-quality lab services at IDI to meet both clinical and research demands, to support the sustained improvement of lab capacity across Uganda with systems of assured and consistent quality' to conduct routine testing, specialized

clinical research trials, and detection of virulent pathogens of epidemic outbreak nature.

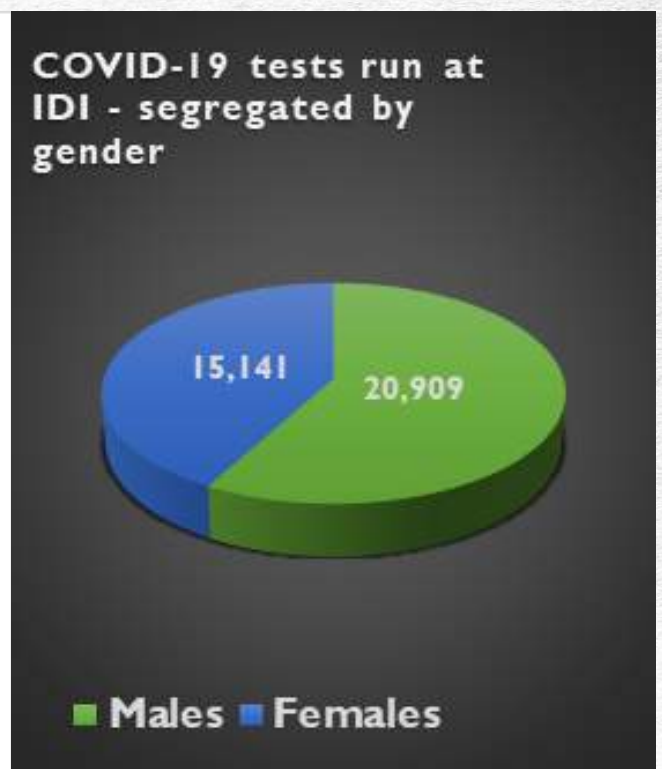
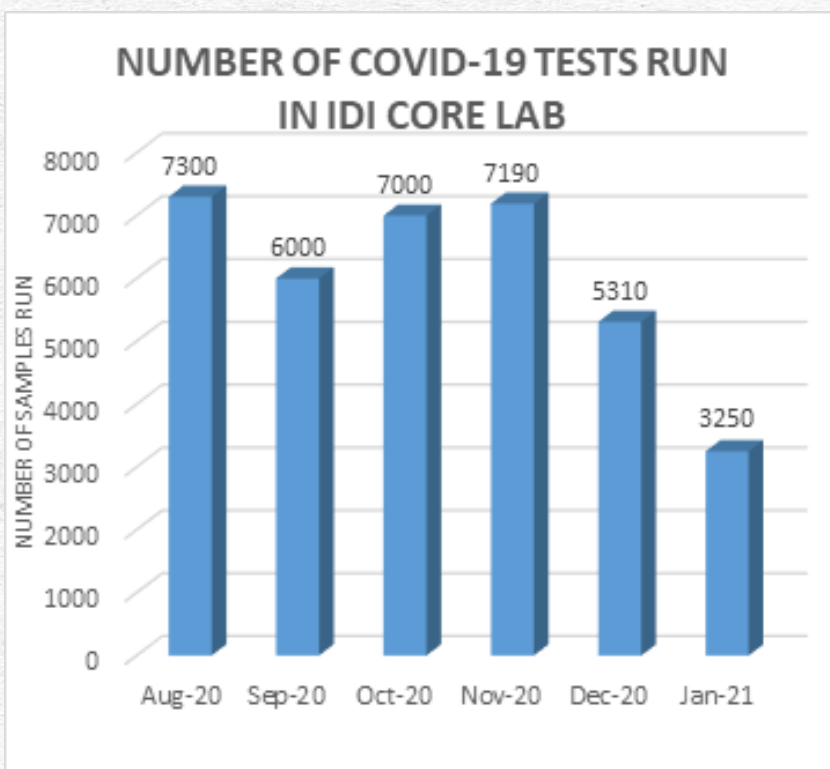
To match internationally standards for clinical laboratory methodologies and clinical applications, the CL has maintained a 25-year record of conducting at least 01 internal audit, 04 external audits annually, besides bi-annual inspections by the College of American Pathologists (CAP), to incorporate the latest best practices. Further, the CL continuously improves its technology and automation to increase productivity and enhance testing turnaround time (TAT).

The CL operates in a One IDI approach, where sister Technical Programs source its support, besides the Ministry of Health of Uganda, local and international academic research institutions and individual research fellows. The outbreak of COVID-19 in December 2019 was an opportunity for growth and expansion for the CL, to support national and global preparedness and response to infection prevention and control (IPC). To date, the CL has registered several milestones in enhancing disease laboratory TAT for COVID-19 testing, strengthening human capacity at the forefront on COVID-19 IPC, sustaining laboratory services for other communicable and non-communicable diseases as well as answering research questions.

## Contribution to the national COVID-19 testing strategy:

The CL participates in providing policy and technical level support to the COVID-19 Incident Management Case Management and Infection Prevention and Control (IPC) Pillars. The Uganda MoH recognized the high-quality COVID testing outputs of CL (Proficiency Test score was above 90% as of April 2021).

- In August 2020, CL started running SARS-Cov-2 sample tests, registering 7000+ tests
- In September 2020, CL was accredited by Uganda’s MoH to run SARS-Cov-2 COVID samples referred from its facilities
- CL was further qualified by MoH to handle SARS-Cov-2 tests for the country’s Very Important Persons (VIPs)
- CL supported the national supply of logistics to 09 (COVID-19) testing hub laboratories alongside HR deployment of subject matter experts

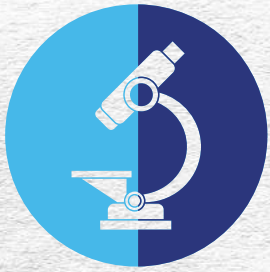


**Contributing to Public Health Laboratory Systems Strengthening** by the Ministry of Health and health facilities supported by the United States Presidents Emergency Plan for AIDS Relief (PEPFAR) partners, faith-based medical networks, and COVID-19 related expert teams.

- The CL leveraged its CAP inspections and accreditation experiences to support MoH to institutionalize Public Health Laboratory Certification on the WHO SLMTA and accreditation on the ISO 15189:2012 accreditation standard.
- CL supported processes to vet and deployed expert staff to the national hub laboratories to troubleshoot and resolve issues of QMS implementation towards accreditation.
- CL supported the District Health Teams to conduct quarterly supervision visits to enhance sample transportation network from other health facilities to the hub, within its geographic catchment area.

**Supporting sustainability and scaling of the laboratory accreditation and certification program:** Together with the IDI GHS and HSS Programs, CL continues to support the scale-up and sustainability of the laboratory accreditation and certification program through training, mentorship capacity of the health facility staff and support departments.

- Training and mentorship of national biomedical engineering technicians (from Wabigalo Central and Arua Regional workshop) to service automated and auxiliary lab equipment thereby reducing equipment down time in IDI supported sites.
- Supported 02 hub labs in Kampala-Wakiso districts and 08 hub labs in West Nile to enhance QMS standards thereby reducing the viral load TAT from 30-60 days to 21 days in a period of 5 weeks as of August 2019.
- Supported District Health Teams (DHT) to convene quarterly coordination meetings with hub staff.
- Supported training of 1,371 laboratory health workers in 28 districts (Central, West Nile, Mbale regions) in the implementation of Laboratory Continuous Improvement processes.
- Supported the servicing, fuelling, repairs and purchase of 2T oil lubricants for 10 motorbikes.
- Supported 10 hub riders and their back-up riders to deliver samples to hubs and results back to health facilities in a timely manner.
- Supported the purchase of personal protective equipment (PPE) for hub laboratory staff.
- Supported infrastructural maintenance at the 10 hub labs to meet and sustain the requirements of the ISO 15189:2012.



## IDI CORE LABORATORY THROUGH THE LENS

CAP accreditation certificates as proof of Core Lab's diagnostics and research capacities.



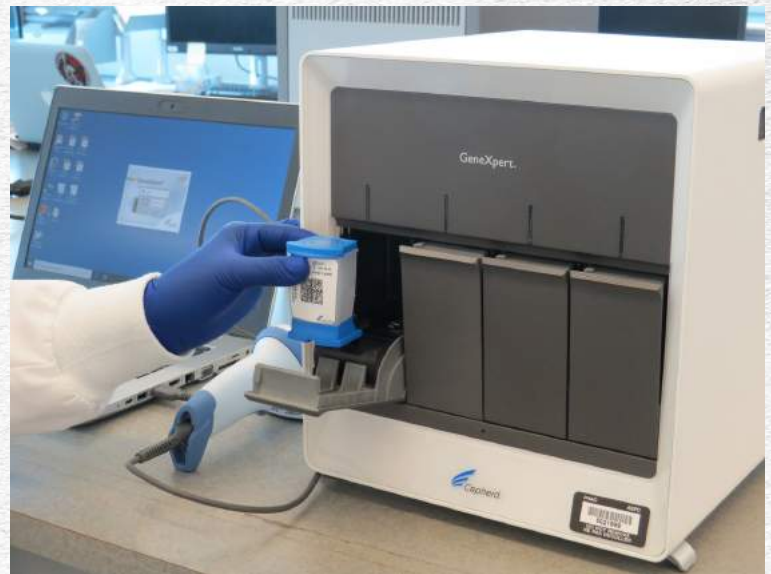
Core Laboratory suite of clinical hematology analyzers and information systems.



Core Laboratory with high quality biosafety cabinets.



Mass Spectrometer for drug discovery research, poison detection and protein studies



Core Lab's GeneXpert molecular technology for MTB/RIF, SARS-Cov2 and HIV Viral Load testing.

**Collaborating with IDI's PCT and HSSD Technical Programs** to deliver high-quality HIV testing and viral load (VL) monitoring to HIV/AIDS patients including serodiscordant couples, adolescents, older adults, pregnant mothers, most at-risk populations (MARPs) and those with non-communicable diseases in line with global HIV care policies.

- 8000+ active people living with HIV receive testing services and viral load monitoring through IDI supported facilities across the country.
- CL offered routine testing services for 9,000 + HIV clinical samples per month between January and December 2020.
- Supported the CPHL to reduce the VL TAT from 21 to 14 days for all hub laboratories.

**Supporting the national hub laboratory system to improve turnaround time (TAT):** CL with PCT and HSS supported the MoH Central Public Health Laboratory improve the VL TAT for HIV sample analysis and feedback of laboratory results from 30+ days. as a result of equipment breakdown, reagent stock depletion, inefficient systems for specimen transport, and personnel shortages.

- Supporting staff trainings and mentorships in 10/100 hub facilities to reduce the viral load TAT.
- Supporting national efforts to improve the monitoring of hub riders' movements with eHealth approaches.
- Supporting clinician - laboratorian interface at hubs and lower level health facilities.

**Supporting the IDI Research Program** to run samples for Research Fellows, IDI Research Program, and specific requests from the Ministry of Health

CL, with Research Program analyses 5000+ samples, whose results inform/influence health policy and programming, investigation therapies, pharmacovigilance, and build research capacity

**Enhancing Laboratory Science:** Regularly, the CL contributes to the goal of enhancing the overall ranking of the Makerere University College of Health Sciences on the international research and publications scales. Over years, the CL collaborates with laboratory scientists and clinical trials experts to answer research questions

- Support clinical trials to run sample tests that inform their research questions.
- Supported the generation of 750+ peer reviewed and published as best practice papers.
- Supported the training of 15 Masters and 02 PhD students between 2018 and June 2021



**CORE LABORATORY SUPPORTS IDI AND OTHER INSTITUTIONS TO DETECT , DIAGONISE AND DELIVER EVIDENCE -BASED PUBLIC HEALTH PRACTICES AND RESEARCH**





# SUCSESSES

- The COVID-19 pandemic created a necessity for innovation to usher in new fields of research including research into SARS-CoV-2 tests to inform more reliable community-based diagnosis of COVID-19 in Uganda.
- Implementing a patient-centred laboratory has validated new laboratory assays to expand the test menu for better patient management.
- IDI invested in new instruments including a Sysmex XN2000 for safety testing, Abbott ARCHITECT Immunoassay analyser and 04 new freezers to enhance storage capacity.
- Institutionalizing laboratory products and services that meet the current and emerging needs of the local and global market.

## New Validated tests added to the CL Test Menu

GeneXpert HIV Viral Load test | GeneXpert HIV DNA test | GeneXpert Human papillomavirus (HPV) SARS-CoV2- PCR test | Theophylline test | RBC Folate test | CRP high sensitivity test | Vitamin B12 test | Plasma Folate test | HIV Integrase resistance testing

- Potter & Brough Capacity Pyramid Approach that emphasises a holistic and integrated approach to district laboratory strengthening (cognisance of local context, and enabling effective use of existing structures, tools and systems)
- Embracing and adapting the WHO-SLMTA approach for inspecting, auditing and certifying lower-level health facility laboratories.
- Demonstrating core values that make IDI a trusted Institution amongst development agencies and their implementing partners.
- Implementing a strong partnership strategy that enhances collaboration and complementarity to MoH, Central Public Health Laboratories and College of Health Sciences, Makerere University.
- A strong lab-training component covering key infectious diseases including malaria TB and HIV.
- An established nationwide network of hub labs on the HSSD platform to enable programmatic and financial economies of scale.