

*Celebrating two decades of improving
access to quality healthcare in Zambia*

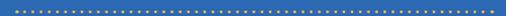


Annual Report 2020 - 2021

**Centre for Infectious Disease
Research in Zambia**



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Vision

A Zambia and a region, in which all people have access to quality healthcare and enjoy the best possible health, including a life free of AIDS.

Mission

To improve access to quality healthcare in Zambia through innovative capacity development, exceptional implementation science and research and impactful and sustainable public health programmes.

Our Core Values

✓ Accountability

Our staff members are expected to acknowledge and assume responsibility for their actions, products, decisions, and policies.

✓ Equality

CIDRZ is committed to fairness and equality in the workplace.

✓ Honesty

Our staff members are expected to be consistently truthful and straight-forward.

✓ Productivity

Efficient and effective engagement of staff members on all targets and outputs.

✓ Respect

For all staff members, partners, and stakeholders with whom we share common goals while recognising and respecting individual differences.

✓ Transparency

Demonstrated through dialogue that enables discussion of issues in an open, constructive, honest, and problem-solving oriented manner.



Who We Are

The Centre for Infectious Disease Research in Zambia (CIDRZ) is an independent non-governmental Zambian organisation committed to answering key research questions relevant to Zambia and the region. We support local ownership of high quality, complementary, and integrated healthcare research and services within the Zambian public health systems and facilitate clinical, research, and professional development training.

This year, as we celebrate 20 years of CIDRZ, we continue a journey of on-going collaboration with the Government of the Republic of Zambia (GRZ) and its ministries. Our longevity and success are in great part attributed to our long-standing relationships with leading local and international universities, foundations, and partner organizations. CIDRZ ensures that the latest research methodologies are used to answer locally relevant questions to improve healthcare delivery. We also support diverse fellowship programmes for Zambian scientists and researchers aimed at building knowledge and skill to drive evidence generation to support health policy development.

Over the past two decades, our focus areas have evolved organically, shifting from primarily an HIV-human immunodeficiency virus focus, to encompass other infectious diseases, such as enteric pathogens, which contribute significantly to morbidity and mortality particularly for children and the immunocompromised. Our work cuts across diverse populations, targeting those most at risk of infection or poor outcomes. We leverage our expertise in social and behavioural change, health systems' strengthening, laboratory, and supply chain to support improved health systems service delivery.



Message from the CEO

I am pleased to present the CIDRZ annual report for 2021 - celebrating two decades of CIDRZ' work in Zambia. This report presents over 70 different awards our teams have supported throughout the past year. Our work cuts across different facets of Zambia's public health priorities, from health systems strengthening for the Corona Virus Disease (COVID)-19 response, to ongoing technical support for HIV prevention and service delivery, to new innovative research in the enteric and social science space.

Over the past two years, CIDRZ joined the world in its efforts to combat the devastating COVID-19 pandemic. We were honoured to see our very own Chief Scientific Officer, Professor Roma Chilengi, appointed as the Special Advisor to the President on COVID -19. Prof. Chilengi later joined the President, Mr Hakainde Hichilema, during the relaunch of the COVID-19 vaccination programme. By end of FY 2021, Zambia had recorded 2.4 million cases of COVID and had fully vaccinated 422,867 individuals. Through persistent displays of teamwork and resilience, CIDRZ has continued to support the public health campaign against COVID-19, working closely with the MOH and our funders. Our COVID-19 response work has included promotion of vaccination programmes and key behaviour change campaigns to help reduce virus spread.

We actively supported the Lusaka Health Provincial Office in the COVID-19 vaccination campaign by creating awareness with a focus on People Living with HIV (PLHIV) and medical staff. With funding from Gavi, the Vaccine Alliance, we provided technical assistance (TA) to MOH to develop standard operating procedures (SOPs), training materials and tools, and trained healthcare worker supervisors on COVID-19 vaccination across the country.

I would like to express my sincere gratitude to all our Partners and Funders that have contributed material, technical and financial resources to support our diverse portfolio aimed at ensuring a Zambia, and a region, in which all people have access to quality healthcare, enjoying the best possible health. May this 20-year, celebratory annual report ring in a new decade of continued CIDRZ evolution and sustainability in the country and the region.

As we press on, please remember that we have a battle to win, and fighting COVID-19 is a collective responsibility that requires all of us to take personal responsibility for our own actions, particularly as we compliment government efforts in protecting us from the pandemic.

Chief Executive Officer – Izukanji Sikazwe

Message from the Board Chair

Looking back over the past 20 years, the evolution and growth of CIDRZ is quite remarkable. We are a strong and independent local organization that has endured transitions in the funding landscape and leadership, however we have remained a steadfast resource and partner to the Government and People of Zambia.



This report celebrates two significant milestones, completing 20 years of health research and services in Zambia and the successful close-out of a five-year multimillion dollar grant that helped Zambia achieve the 90:90:90 UNAIDS targets for HIV epidemic control in September 2020.

Despite many setbacks and losses in 2021, CIDRZ remained resilient by adapting our interventions through teamwork and continued partnership with our key stakeholders and funders. One of the major highlights of 2021 was the smooth closure of a five-year \$100 million award funded by the United States (US) Presidents Emergency Plan for AIDS Relief (PEPFAR) and the Centers for Disease Control and Prevention (CDC). The ACHIEVE programme, aimed at ensuring epidemic control through sustained decreases of new infections and mortality along the entire HIV care continuum, and focussed on building capacity at the provincial, district and facility level. By the end of the five years, CIDRZ successfully transitioned its role to MOH healthcare providers, and now solely focusses on TA at district and provincial level.

CIDRZ worked with many stakeholders to address health disparities across health segments including diarrheal diseases, tuberculosis (TB), cervical cancer and HIV for children, adolescents, women, and men, both in rural and

urban areas. Through MOH facilities, we provided technical support and capacity building to manage and implement HIV related services. Community Health posts and men's clinics were also established to improve access to quality health services and support MOH to fill existing gaps.

Our hard-working team of researchers continued to seek answers and add to scientific evidence and solutions by studying non-communicable diseases (NCD), diarrheal diseases in children and adults, TB diagnosis and HIV.

On Behalf of the CIDRZ Board of Directors, I would like to thank our Partners and Funders and the CIDRZ Executive, Management and Staff for their contribution and ongoing dedication and commitment towards achieving CIDRZ goals and objectives for the year 2021.

I look forward to continuing our collaborative efforts in the future to sustain our commitment to providing quality healthcare for all Zambians.

Board Chairman – Bradford Machila

CIDRZ is looking forward to continuing its collaborative efforts in the future to sustain its commitment to providing quality healthcare for all Zambians.

Board of Directors



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Betrice Grillo

Chartered Accountant; Managing Partner; Fellow Zambia Inst. Chartered Accountants; Member Certified Accountants, UK



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Consult Pediatrician; Director Pediatric Centre of Excellence, Zambia



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Professor of Tropical Medicine, Oxford University; Chair WHO Malaria Policy Advisory Committee



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Director General Zambia National Pension Scheme Authority; Member Inst. Directors Zambia; Assoc. Chartered Inst. Of Arbitrators UK & Zambia



Patrick Wanjelani

Chartered Accountant; Director Blue Light Risk Management Ltd; Fellow of Chartered and Certified Accountants



Dr. Charles B Homes, MD, MPH

Co-Director of the Center for Global Health; Visiting Associate Professor in the Department of Medicine at Georgetown University Medical Center.



Chris Mubemba, MSc

Engineer, Director of Transmission Development Zesco Ltd; Chartered Engineer of Institute of Engineers



Kondwa Sakala-Chibiya

LLB, Lawyer Messrs J.B. Sakala; Member of Institute of Directors Zambia



Dr. Michael Saag

Professor of Medicine; Associate Dean of Global Health; Director of Gorgas Center of Geographic Medicine; Director of CFAR UAB

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Dr. Theodora Savory
Dir. Monitoring and Evaluation/COP
ACHIEVE & PROUD-Z



Ms. Cheryl Rudd
Dir. Primary Care and Health Systems Strengthening



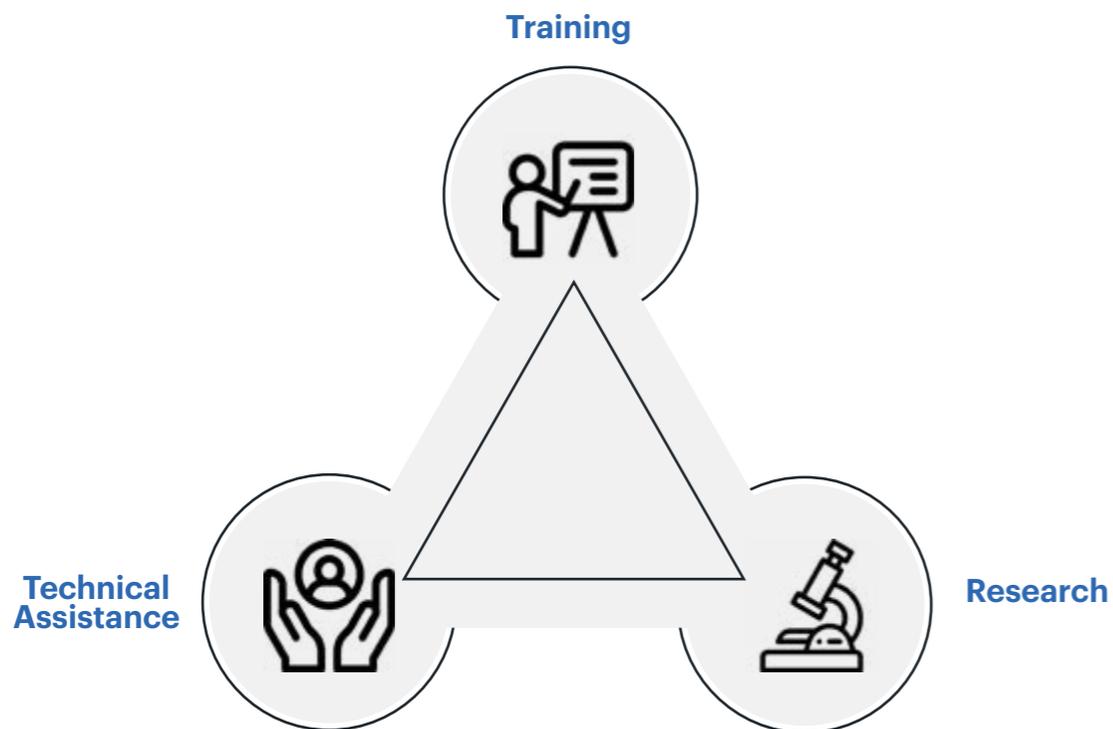
Dr. Monde Muyoyeta
Dir. Tuberculosis



Emmanuel Lumbwe
Dir. Internal Audit

CIDRZ Work in FY2021

CIDRZ has a three-pronged approach to achieving our mission and vision in Zambia. Direct service delivery programmes feed and generate research questions, which in turn lead to research findings that are quickly translated into training and implemented. We present the work support in the CIDRZ Financial Year 2020/2021 (October 2022- September 2021) by thematic department.



ADULT HIV CARE, TREATMENT, & PREVENTION

Over the past 20 years, CIDRZ has supported the scale up of HIV care and treatment services from 615 recipients of care (ROC) in one facility at the beginning of ART provision in 2004 to 302,000 ROC (1/3 of the national volume) in Lusaka Province in 2021, with all facilities providing test and treat services. We increased physical space in supported facilities through renovations and prefabricated structures to improve provider-patient interaction and ensure ROC confidentiality. CIDRZ built capacity in the four supported Provincial Health Offices (PHO) to manage and implement HIV related services and gradually transition the delivery of services to ROC (Direct Service Delivery) to MOH providers. In 2021, CIDRZ still provides Technical Assistance (TA) to the Lusaka Province. Capacity building activities (training, on site orientations and mentorship) have been an integral part of CIDRZ support towards transitioning to MOH, combined with Quality Improvement (QI) initiatives and implementation of innovative strategies. Over the past year, we continued to roll-out community health posts, bringing HIV services closer to the people and establish men's clinics to address challenges of access and acceptability of health services for men.

ACHIEVE: Achieving Control of the Epidemic in Zambia/Capacity Building and Strengthening Implementation of HIV Combination Prevention and Treatment Services in Zambia

Funder: U.S. Center for Disease Control and Prevention

Time Period: October 2016 - September 2021

HIV Testing and Prevention Services

Access to testing was done through targeted interventions such as HIV risk screening, HIV self-testing, index testing and Social Network Strategy (SNS). Increased case finding and linkage to treatment was achieved for men through outreach in hotspots, starting community posts and men's clinics in strategic locations and improved privacy solutions. We increased capacity of testers through training, mentorship, exchange visits and technical support, 88% of testing sites and 86% of testers were certified. In 2021 we recorded 462,899 HIV tests, 38,481 HIV positives were identified, of which 98% were linked to ART.

CIDRZ scaled up pre-exposure prophylaxis (PrEP) to all supported sites and improved condom distribution. We developed a toolkit for PrEP implementors and championed a model for PrEP scale-up in pregnant and breast-feeding women (PBFW). In 2021, CIDRZ trained 1,399 health care workers (HCW) and community health workers (CHW) in PrEP, 11,225 ROC were initiated, while 12,815 maintained adherence to PrEP. We adapted a training package for first-line gender-based violence (GBV) care, trained 224 HCW and stakeholders and supported the development of referral structures with key stakeholders in GBV response. Social Behaviour Change Communication strategies included development and printing of information, education, and communication (IEC) materials, radio/television scripts, and stakeholder engagement with community leaders and civil society organizations (CSOs).



HIV Adult Care and Treatment

In 2021, adult HIV care and treatment focused on rolling out a comprehensive retention package that included peer-patient pairing, client appointment systems, customer care training, antiretrovirals (ARVs), the Healthy Me package and SMS reminders. Our goal was to improve ROC retention in public health facilities to above 95%, we reached 89% retention and 94% of the treatment current (Tx Curr) targets. CIDRZ supported the COVID-19 MOH response through the placement of 80 HCW and volunteers at COVID-19 treatment centres, distributed personal protective equipment to all 137 facilities, supported Infection Prevention Control (IPC) activities in Lusaka Provincial Health Office (LPHO) (36 sites) and Southern Provincial Health Office (42 sites) and COVID-19 vaccination for PLHIV (7.3% of Tx Curr) and HCW (>50% fully immunized).

Paediatric Care, Treatment & Prevention from Mother to Child Transmission

CIDRZ supported the LPHO to scale-up various interventions targeting epidemic control. Key among these was the Know Your Child's HIV Status strategy which has become routine practice in most supported facilities. This strategy helped reach over 1,000 children and adolescents with HIV(C/ALHIV) and link them to care and treatment. We also implemented Direct Observed Therapy (DOT) for children failing treatment with the goal of improving the 95% HIV suppression target. This resulted in a viral load (VL) suppression increase from 66% to 89% in previously unsuppressed children, who would have otherwise been changed to second line drugs. HIV exposed infant follow-up has been enhanced by training staff in cohort monitoring to promote infant follow-up until 24 months and/or when there is no more risk of HIV infection through breastmilk. CIDRZ supported training of 160 HCW and has continued to offer onsite mentorship; we also trained mentor mothers in peer-pairing. Final outcomes for HIV exposed infants improved from 63% in Q1 to 74% in Q4.

The Common Element Treatment Approach (CETA)

CETA is a behavioural treatment approach used for common mental health issues like depression, anxiety, and alcohol dependency in PLHIV. The implementation process started in October 2020 in Kanyama Level one hospital as a model site for sites and was scaled up to 22 sites in Lusaka, Western, Southern, Eastern provinces, as well as clinical research sites (CRS). To date, 50 counsellors have been trained, 75 ROC have completed CETA and 113 are actively undergoing CETA with teams established at PHO and facility levels. Additionally, reporting systems have been designed and data is being collected through the DHIS2. Due to the COVID-19, pandemic tele-CETA was implemented, the first results show an increase in retention after completion of CETA.

Cervical Cancer

The cervical cancer prevention programme, in close collaboration with LPHO, supported cervical cancer screening using both visual inspection with acetic acid (VIA) and human papillomavirus (HPV) testing in 35 established sites. The program surpassed its 80% target for 2021, with a 94% achievement for screening, of those that were identified as positive, 90% received treatment. The programme trained an additional 55 providers while ensuring all equipment was functional. Mentorship and QI activities ensured smooth and uninterrupted service provision. Data quality was enhanced through regular data reviews and audits. Cervical cancer and ART interdepartmental meetings strengthened service integration and improved screening of women living with HIV (WLHIV). The programme continues to provide TA to government.

Key Population Investment Fund Program (KPIF)

The KPIF programme continued combination HIV prevention, HIV case identification using SNS, rapid ART initiation, differentiated service delivery (DSD) for client retention and viral suppression. The programme continued capacity building of key population (KP) CSO partners to address GBV and other structural barriers among KPs. In 2021, a total of 1,321 KP were reached (KP_PREV) and tested, 1,259 were tested with an HIV positivity yield of 36.3%. VL coverage and suppression improved from 71% to 93%. Out of 802 KP who tested HIV negative, 725 were initiated on PrEP (90.4% coverage). Programme successes included high HIV yield, high uptake of treatment, sustained PrEP uptake and improved VL coverage and suppression. However, the high mobility of KP and silent transfers of ROC on treatment continues to make tracking difficult.

Voluntary Medical Male Circumcision (VMMC)

We supported VMMC in 30 static sites in Lusaka and Western province, circumcising 80,905 individuals against a target of 67,134, this compared to 67,949 VMMCs in 2020 despite the COVID-19 pandemic. Positivity remained less than 1%, fourteen clients tested HIV positive and were linked to and initiated on ART. We trained 78 mobilisers in

demand creation using a Human Centred Design (HCD) approach, they were also trained in SmartCare for data capture. We conducted ten ShangRing trainings for staff, 198 providers were trained, additionally, 11 Western Province staff participated in quality assurance (QA) and improvement training. We piloted a Lignocaine/ Bupivacaine (LiB) combination anaesthetic drug in DSD transitioned sites for improved prolonged pain management, the pilot was successful with no adverse events and has been endorsed by MOH for national roll-out through targeted provider training.

Tuberculosis (TB)

CIDRZ provided technical support to the TB programming to Lusaka, Chongwe, Kafue, and Chilanga Districts in collaboration with the LPHO and the CIDRZ TB LON programme. Special focus was on support for active case finding both in the community and the facility and TB Preventive Therapy (TPT). Onsite clinical meetings, monitoring through situation rooms, and data quality assurance were conducted to improve indicators. TPT improved from 41% to 92% coverage through collaborative QI projects in nine high volume facilities. To ensure complete, accurate, and correct data entry, data collection tools were developed. Ninety nine percent of HIV positive ROC were screened for TB with a 14.1% positivity yield, additionally 99% of TB ROC received HIV testing.



HIV DSD SI- Long-Term Technical Service Providers of The Global Fund HIV Differentiated Service Delivery Strategic Initiative

Funder: The Global Fund to Fight AIDS, Tuberculosis and Malaria | **Time Period:** July 2021 - December 2023

This programme implements DSD models targeted at reaching men through community HIV prevention and treatment posts and men's clinics as referral points for management of advanced HIV disease. Both models have shown to increase uptake of men into HIV services. CIDRZ' early achievements in 2021 include participation in the national DSD task force, assigning a task team to track implementation of the DSD roll-out with CIDRZ as the local TA partner. Through regular coordination meetings between the World Health Organization (WHO) and the Zambia country team as well as in-country meetings between stakeholders we have created a harmonized activity-based workplan with timelines for implementation of the implementation toolkit, geographical mapping, and site assessments.

VMMC NEXT Zambia: Piloting Interventions to Generate Demand for Resistant Segments of Voluntary Medical Circumcision in Zambia

Funder: DesireLine | **Time Period:** November 2019 - December 2022

VMMC NEXT was designed to inform and frame a foundation for sustainable VMMC services in Zambia. CIDRZ' role is to provide implementation expertise, leveraging our extensive relationships across the health systems, at the national, provincial and district levels. Over the last two years, CIDRZ was responsible for coordinating engagement with local stakeholders toward uptake of existing and innovated implementation models for 15-29-year-olds and the new models for 10-14-year-olds. CIDRZ engaged in several HCD co-creation workshops to develop new segmentation models for three resistant segments including older men, opinion leaders and influencers, and religious figures within the communities. This was key to increasing awareness, and uptake of, VMMC services amongst these populations. Through this programme, CIDRZ also successfully conducted in depth interviews with key stakeholders to inform the transition/sustainability plan, piloted a novel SMS system to engage circumcision hesitant clients, and rolled out the segmentation approach across four new provinces.

ZCAP- Feasibility and preliminary effectiveness study of a transdiagnostic cognitive behavioural therapy treatment approach for alcohol misuse integrated within HIV care in Zambia.

Funder: National Institute for Health (NIH), United States | **Time Period:** August 2018 to December 2020

There is high misuse of alcohol among those who drink it in Zambia, particularly among PLHIV. Depression, anxiety, trauma, and other conditions often co-exist with alcohol misuse. The trial found that CETA could be integrated into routine HIV care and delivered by trained lay counsellors. Preliminary results suggest that both Brief Interventions and CETA can address alcohol misuse. CETA more effectively addressed unhealthy alcohol use for those presenting with

non-alcohol substance use, depression, and trauma. Benefits of CETA were directly proportional to number of co-existing morbidities. The team disseminated results to Zambian, American, and global audiences through a CIDRZ online seminar on mental health 9 December 2020, the Columbia University Seminar on Global Mental Health on 28 April 2021, and the virtual 4th Annual RSA Scientific Meeting/ISBRA Congress on 23 June 2021.

STRATEGIC INFORMATION

The Strategic Information (SI) department provides data collection, reporting, analysis, monitoring and evaluation (M&E) and data management services to both research and programmatic activities. In the past year, SI provided the MOH and the US CDC with data management capacity building TA to improve reporting. Over the past 20 years, the unit has evolved from data collection and reporting in a few sites, to supporting over 600 sites; extending its scope of work to software development, data analysis, M&E expertise, HIV surveillance, systems deployment, and training.

The department has remained innovative and adapted to the changing landscape in HIV programming and increasing research support needs. SI staff have a diverse skillset that positions it to cater to growing data science and computational epidemiology needs. The department is now focusing on growing its grant and proposal writing skills, to ensure future sustainability.

PROUD-Z: Provincial Ownership to Uplift Delivery of HIV/TB services in Zambia

 **Funder:** U.S. Center for Disease Control and Prevention

 **Time Period:** October 2020 to September 2025

MORE-ZM - DHIS2

On the DHIS2 front, the MORE-ZM, short for Harmonized Monitoring & Reporting, designed by CIDRZ, was successfully implemented to support reporting of PEPFAR and US CDC indicators in Lusaka, Southern, Eastern and Western Provinces. The data, reported at facility and community levels, is collected monthly and is used to report to US CDC and MOH on performance, as well as quarterly to PEPFAR through DATIM. The reporting of this data after collection and verification was automated in 2021, thereby greatly reducing manual hours and the risk of error. This implementation has also built data management and system administration skills among MOH staff.

SMARTCARE

CIDRZ, as one of US CDC's TA partners, supported the development and deployment of SmartCare in the past year. Through engagement with Electronic Medical Record (EMR) - SmartCare Legacy end-users, we developed a robust system requirements document. This was followed by rigorous appraisal of report implementation and how it aligned with PEPFAR M&E and reporting guidelines. A total of 26 reports were worked on in 2021, nine of these reports were developed and implemented for the first time to support decision making at facility level in the management of ART. The reports included appointment management services for improved ROC retention, management of ART drug regimens and support for transitioning from paediatric to adult ART. We have also continued to provide technical support to LPHO ensuring that EMR systems are always running the most recent software versions, and up to date on routine and ad-hoc reporting requirements.

Case Based Surveillance (CBS)

CBS follows an HIV positive ROC over time. Under PROUDZ, CIDRZ supported the redevelopment of the SmartCare (EMR) protocol and CBS SOP that underpins the implementation of CBS 2.0. CBS 2.0 is a process that focusses on data

management and analytics, which is a departure from the previous process that focused on deployment of Internal Communications & Technology infrastructure. CIDRZ also supported the migration of CBS repositories from PHOs in Western, Lusaka, Eastern, and Southern provinces to the National Data Warehouse. This changed so that CBS could begin utilising existing infrastructure for sustainability. CIDRZ assisted in the development of a data analysis plan for CBS, a first in the history of the programme, to provide the foundation for all future analysis.

Recent Infection Surveillance (Recency)

CIDRZ, in collaboration with MOH and US CDC, supported the national Recent Infection Surveillance programme through leading the Continuous Quality Improvement (CQI) component. In collaboration with partners and stakeholders, CIDRZ provided surveillance data for immediate public health action. CQI activities were conducted in Lusaka, Copperbelt, Central, and Southern provinces in a phased approach starting in the Q2 FY2021. Due to the COVID-19 pandemic there was a reduction in HIV VL testing centres and a prioritisation of testing for Severe Acute Respiratory Syndrome (SARS) Covid Virus (Co-V2) Co-V2 samples over VL samples. In addition, there were frequent equipment breakdowns, and stock-outs of VL reagents and consumables at hub and polymerase chain reaction (PCR) labs leading to backlogs of VL samples.

By the end of August 2021, a total of 351 facilities were approved to conduct recent infection surveillance with 6,504 recency tests conducted from 16,417 eligible clients, representing 41% coverage (all four provinces). Successes in 2021 include increased qualified laboratory staff in the tester pool from 136 at the beginning of the year to 344 at the end, and the activation of three hub-laboratories. CIDRZ also conducted an innovative data use workshop, which led to the release of dashboards hosted on Power BI and the Implementing Partner (IP) monthly reporting tool now migrated to DHIS2. This work also laid the foundation for enhanced data analytics and use including geospatial mapping applications to map clusters of recent infection.



TUBERCULOSIS

The TB Department, started in 2006, has as a well-established technical team with wide experience in the rapid scale-up of TB services, research, and prisons health interventions. The unit is organized into programmatic work, implementation research, and clinical trials research. Under this structure, the unit collaborates with multiple partners in government and non-governmental organisations at the local, regional, and international level. In 2021, with a staff of 59, the unit's extensive portfolio of work has been supported by funding through numerous competitive grant processes.

USAID TBLON Project- Tuberculosis Local Organisations Network (LON)

Funder: Unites States Assistance for International Development (USAID)

Time Period: March 2020 to March 2025

CIDRZ was awarded the TB Local Organisation Network (TBLON) activity which is being implemented in Lusaka and Southern Provinces. The activity goal is to support the prevention, care, and treatment of TB in Zambia.

TBLON uses a health systems strengthening approach, aimed at reaching the most at-risk TB populations. This is done through increased demand for TB preventive, diagnostic and treatment services, greater diagnostic yield, and improved patient linkage to treatment and preventive services, and improved treatment outcomes. The activity uses a collaborative, adaptive, and learning approach to address bottlenecks in TB programming at various levels

TB LON COVID-19 Response

The USAID TBLON activity received additional funding to support the nationwide COVID-19 response. The overall objective was to improve vaccine coverage and case management of ROC with COVID-19. Specific achievements include recruitment of 60 short terms nurses to support the COVID-19 response, training of 60 HCW on general COVID-19 management and 17 HCW on critical care management. It also facilitated the donation of oxygen delivery supplies, medication and medical supplies to the MOH, and provided technical support.



FujiLAM Prospective Evaluation



Funder: [Foundation for Innovative New Diagnostics \(FIND\)](#)



Time Period: [June 2020 to April 2022](#)

This quantitative study evaluates the FujiLAM, a new generation LAM test, to determine sensitivity and specificity among PLHIV. In addition, the study will also evaluate Vistect, a qualitative point of care CD4 count, to determine its sensitivity and specificity compared to the current gold standard, Flow Cytometry.

FujiLAM Qualitative Evaluation



Funder: [University of Heidelberg](#)



Time Period: [December 2019 to April 2021](#)

This qualitative study evaluates the FujiLAM, a new generation LAM test. The study is being done in collaboration with Heidelberg University. The study uses qualitative methods like interviewing key informants (ROC, HCW, leadership in TB programmes in Zambia) and hosting Focus Group Discussions (FGDs) at the facility level.

TB Reach Wave 7



Funder: [World Health Organization \(WHO\) - Stop TB Partnership/TB REACH](#)



Time Period: [February 2020 to September 2021](#)

The goal of the project was to improve TB case detection in children 0-14 years using proven active case finding strategies specific to children. The project was implemented at two high volume facilities in Lusaka Urban district, Kanyama and Chawama First Level Hospitals, with Matero and Chipata First level hospitals used as control sites.

Project activities included using the childhood TB sensitization guide, screening of children at the fast-track clinic, sputum collection using gastric lavage and access to digital Chest Xray (CAD4TB) and Urine LAM (a new diagnostic test using urine samples). A total of 481 children were diagnosed with TB during the study, meeting 192% of the project target. The project achieved a 10 % childhood TB notification with 26.5% initiated on TPT.

Google Health AI- Validation of Google Health Artificial Intelligence in TB and COVID Screening and TB Diagnosis in Zambia.



Funder: [Bill and Melinda Gates Foundation](#)



Time Period: [May 2021 to November 2022](#)

The main purpose of the study is to investigate the value of Google's TB algorithm, comparing normal versus abnormal samples with their COVID-19 algorithm, as a triaging test amongst presumptive TB ROC to reduce the total cost of diagnosis and increase patient throughput. We aim to show that the algorithm achieves a performance of 90% sensitivity and 65% specificity in presumptive TB ROC in Zambia.

This is a two-phase prospective study aiming to enrol 2,433 participants from Chainda South Clinic, Kanyama and Chawama Level one Hospitals. During the initial phase, we will enrol 500, or no more than 50 TB diagnosed ROC, while the main cross-sectional study will be used to determine the sensitivity and specificity of Google's TB algorithm.

IMPLEMENTATION SCIENCE

The CIDRZ Implementation Science Unit operates at the interface of high-quality research and health service delivery. The unit aims to maximise the reach, effectiveness, equity, and sustainability of CIDRZ programmes, and to identify programmatically impactful questions to rigorously examine through the lens of implementation science research. Since the unit's inception in 2018, it has established expertise in understanding the impact of HIV service delivery innovations introduced in Zambia's PEPFAR program, including HIV case finding, test and treat, and serving KPs, as well as looking ahead to the future of achieving non-communicable disease integration and universal health coverage in Zambia. To ensure growth and sustainability, the unit serves as a local capacity building resource, and partners with collaborators from Zambia and around the world.

Leveraging Person-Centred Public Health to Improve HIV Outcomes in Zambia (PCPH)

Funder: Bill and Melinda Gates Foundation

Time Period: October 2017 to May 2022

The PCPH study aims to test the effect of a series of interlinked interventions to improve HIV care and, thus, improve ROC retention, experience, and HIV viral suppression. Our approach is to train HCW on Patient Centred Care (PCC) skills in 24 sites and provide mentorship to facilities who receive training on PCC. The study has also integrated data on ROC experience into data review meetings to improve quality of care and lastly, has provided incentives to facilities based on how well they improve those experiences.

SKILLZ- Reaching 90-90-90 in Adolescents in Zambia using our SKILLZ

Funder: U.S. National Institute of Health

Time Period: May 2018 to June 2023

SKILLZ is a quasi-experimental study in up to 46 communities randomly assigned (1:1) to either the SKILLZ GIRL package (including different components of the program) or regular school-led comprehensive sexuality education programs (CSE). The overall purpose of the SKILLZ study is to, over 18 months, assess the impact of the SKILLZ GIRL Package, which is aimed at both HIV-infected and uninfected adolescent schoolgirls, on the outcomes of HIV testing and contraceptive uptake continuation for pregnancy prevention. This study is being conducted across 46 high-population density areas in Chilanga, Chongwe, Kafue, and Lusaka districts. The focus is on areas where CIDRZ supports government MOH clinics with ARV services, electronic data management, and youth-friendly trained clinical personnel, as well as where Grassroots Soccer has been implementing their basic SKILLZ GIRL curriculum and events in secondary schools.

TASKPEN- Mixed methods formative research and pilot testing of a task-shifted adaptation of the WHO-PEN intervention to address cardio-metabolic complications in people living with HIV in Zambia

Funder: U.S. National Institute of Health

Time Period: September 2020 to August 2022

The University of Zambia, in collaboration with CIDRZ, is establishing a care package for integrated HIV/NCD service delivery that can form part of the MOH's national HIV guidelines and be scaled nationally. This is in line with the WHO recommended package of essential NCD interventions for primary care (WHO-PEN). TASKPEN will address challenges faced by PLHIV who have cardio-metabolic complications related to HIV or its treatment. TASKPEN is doing this by improving detection and management of cardio-metabolic NCDs to improve dual HIV and NCD control and reduce cardiovascular disease risk. Additionally, it also aims to yield clinical improvement in several secondary end-points, including attending PEPFAR-supported HIV clinics in Lusaka.

DIG-COVID- DIGNITY/COVID-19 Support for Prisons

Funder: DIGNITY – Danish Institute Against Torture

Time Period: June 2020 to November 2020

Since the detection of the first COVID-19 case in Zambia in March 2020, CIDRZ coordinated the COVID-19 national response in Zambian correctional facilities (CFs). This followed the Prisons Health Advisory Committee's (PHAC) and Zambia Correctional Service (ZCS) top leadership's decision to have CIDRZ lead the response, owing to CIDRZ's outstanding leadership in supporting prisoner health in Zambia. Among CIDRZ's COVID-19 projects in CFs was the DIGNITY funded DIGNITY/COVID-19, implemented in Lusaka, Eastern

and Western Provinces, covering 26.4% (23/87) CFs in the country. Directly, the project benefited 898 ZCS officers and 6,448 incarcerated persons in the supported facilities and indirectly 411 officers and 2,301 incarcerated persons through the spill-over effect of the programme into the southern region. One of the project's critical successes was the close involvement of the MOH and Zambia National Public Health Institute (ZNPHI) in the COVID-19 response in CFs, which culminated in the establishment of express lab services for ZCS COVID-19 samples.

Mental Health CBT- Evaluation Implementation Strategies to scale up transdiagnostic approach evidence based

Funder: US National Institute of Mental Health

Time Period: January 2021 to December 2021

This study measured trainer and counsellor competency, knowledge, and fidelity following a technology delivered CETA training, and evaluated the effectiveness of technology-based service-delivery strategies. The study used a Hybrid Type 1 multi-arm parallel group randomized control design to compare the effectiveness of an evidence-based treatment (CETA) delivered

either a) in-person or b) via telephone, with c) both arms a and b compared to a third arm of a treatment-as-usual control group. We also explored the cost associated with these strategies to inform future scale-up of training and services. The study successfully trained 47 CETA counsellors, 5 CIDRZ CETA trainers, and enrolled 141 adolescent and young adults receiving CETA across five sites.

Fast Track Cities- Adapting the social network strategy to re-engage lost to follow-up key populations in HIV in Lusaka: A mixed methods implementation science study

Funder: International Association of Providers of AIDS Care

Time Period: October 2021 to September 2022

While noteworthy progress has been made to reach KPs with HIV services, retention of KPs in both PrEP and ART care has always remained a challenge. For instance, in the current KPIF program, out of 1,826 KPs initiated on ART between October 2019 and February 2021 in Chilanga, Chongwe and Kafue districts, 891 KPs were lost to follow-up (LTFU), representing a LTFU rate of 48.8%. This high rate of LTFU undermines efforts to effectively control the HIV epidemic through successful attainment of the second and third 95% – ensuring that 95% of people who know their HIV status are on treatment, and 95% of people initiated on treatment are virally suppressed. Moreso, current KP programme implementers, including government-owned clinics, contact ROC who have disengaged from care through their mobile phone numbers or physical addresses. This approach has proved less successful, as KPs often change physical locations and/or cannot be reached by phone. However, the KPs who have dropped out of care could be reached through their social networks. Therefore, assessing the utility of the adapted

SNS is critical to identifying novel ways of reaching KPs to receive HIV prevention, treatment, and care services. The study is of great relevance to Zambia, first, in view of the policy prioritization of, and increasing investment in, KP programming in Zambia, improving and adjusting implementation of KP programming is critical to ensuring the correct reach and sustainability of HIV interventions targeting KPs. Second, achieving zero new HIV infections and zero HIV-related deaths in Zambia will only be achieved if KP who have disengaged from HIV care are traced, brought back, and retained in care. As KP programs in Zambia grapple with the challenges of KP retention in care, this research will therefore generate useful evidence for guiding appropriate adaptation of the SNS, with specific focus on reaching KP who have disengaged from care. Third, as PEPFAR increases and transitions HIV programme funding to the MOH through the PHO, the findings of the research will provide guidance to strengthen MOH's ability to sustainably engage and retain KP in care.

PAEDIATRICS, CHILD & ADOLESCENT HEALTH

The Paediatrics, Child & Adolescent Health unit has evolved over the last two years from focusing primarily on paediatric HIV prevention, care, and treatment, to focusing on other aspects of child and adolescent health, including sexual and reproductive health, and orphans and vulnerable children (OVC). In 2021, the department became partners with USAID to support the Empowered Children and Adolescents Program (ECAP) III Activity. This programme has expanded the department's work beyond medical care such as school and socio-economic support, it has been a critical addition to HIV care programming for children. In addition to this work, the team has also engaged with funding from the Global Fund and ViiV to expand other adolescent programs for prevention of HIV and support to at-risk teenage girls and boys.

HIV Self Testing (HIVST) VM Study- Feasibility and Acceptability of using a Vending Machine for Distributing SRH products

Funder: Brighton and Sussex Medical School
Centre for Global Health Research

Time Period: June 2021 to January 2022

In Zambia, studies have found high anticipated acceptability of HIVST among adolescents. Barriers to HIV Testing and Counselling include overly busy health facilities and concerns about lack of confidentiality and privacy. A common finding is that many people do not want to be counselled and tested by someone they know personally, or even access services being used by people they know. Recent studies in Zambia have also shown that HIVST has the potential to encourage individuals to reduce their number of sexual partners and require HIVST from a new partner before engaging in sexual activity. In Zambia, less than half of adolescents know their HIV status however, little is known about this phenomenon, especially among young men and women. The study successfully launched two vending machines, one in a community sports centre and another at a level one hospital. Additionally, demonstrations on how to use the vending machines were conducted with the MOH at the COVID-19 vaccine launch at both sites.



P2G -Pregnant and Parenting Adolescents Living with HIV

Funder: ViiV Healthcare Positive Action

Time Period: April 2021 to December 2023

This project targets pregnant and parenting girls living with HIV between the ages of 10 and 19 years old. The purpose is to provide mentorship and a comprehensive package tailored to help the target population become effective parents and successful adults, while improving adherence to HIV treatment and VL suppression for both mother and baby. The project objectives are to empower and promote resilience of 2,000 HIV positive adolescent mothers in 12 health facilities in Lusaka province by

2023 aiming for 95% treatment adherence for all adolescent mothers enrolled in the programme. The programme also aims to provide mentorship in leadership and decision making skills to 500 adolescent mothers using the Girls for Girls (G4G) mentorship circles program by 2023, as well as promoting 65% of young fathers' involvement in antenatal and postnatal clinic visits for adolescent mothers enrolled in the program by 2023.

USAID Empowered Children & Adolescents Program (ECAP) III

Funder: US Agency for International Development

Time Period: October 2020 to September 2021

USAID's ECAP III aims to mitigate the impact of HIV and improve the health and wellbeing of Vulnerable Children and Adolescents (VCA) through the delivery of high-impact, evidence-informed, and age-appropriate interventions customized for each VCA sub-population using a family-centred approach. During year one of the activity implementation, USAID ECAP III worked closely with the GRZ and other stakeholders at the national, provincial, and district levels to improve the social and health outcomes of vulnerable households in high HIV burden districts across the two targeted provinces, Lusaka and Eastern. At the end of 2021, USAID ECAP III implemented in 84 health facilities, supporting them with adherence counselling services to encourage treatment retention and better treatment outcomes including VL suppression. Cumulatively, a total of 87,303 beneficiaries were enrolled in the OVC comprehensive programme in 2021, representing 113% achievement of the annual target. Of the total enrolled, 6,493 VCAs received school support

in the form of school uniforms or fees, representing 144% of the annual target (4,500). Provision of school support to VCAs contributed to increased retention in school and progression among the enrolled VCAs. The activity further supported VCAs with sanitary pads to increase attendance among adolescent girls. To increase the proportion of VCAs with known HIV status, the activity continued conducting HIV risk assessments among the enrolled VCAs. This resulted in 95% of the total VCAs with reported HIV status. Of total VCAs enrolled, 8,342 were HIV positive and on treatment at the time, these were provided with supportive services including adherence counselling, VL uptake, enrolment for enhanced adherence counseling sessions and other clinical services. The activity plans to continue providing these services to all C/ALHIV for improved health outcomes.

OTZ Plus- Operation Triple Zero Plus

Funder: MAC AIDS FUND

Time Period: June 2020 to May 2021

This project set out to recruit 6,000 HIV+ adolescents into the OTZ Plus clubs from the 16 project communities. While this was initially a hard target to reach, the project successfully engaged adolescent caregivers and Neighbourhood Health Committees (NHC) from the health facilities who assisted in ensuring that these adolescents were successfully recruited. To empower ALHIV with self-health management skills, the project developed an Adolescent HIV Literacy Package and trained 32 peer educators. Every week, club members received information from the package with a total 64% successfully completing all chapters by May 2021. In October 2020, the My Safe Space App development began via engagement

with MOH, Provincial, District and Health Facility key staff and adolescents and peer educators from the project communities to develop content. In March 2021, we partnered with pharmaceutical company mPharma to provide sexual and reproductive health (SRH) products to adolescents through the app, allowing young people to purchase products online and collect in their ten pharmacy outlets within communities. However, because of the new Cyber Bullying Law which prohibits young people from accessing and purchasing 'obscene' images/products on social media platforms, our mobile app can only be accessible to young people aged 18 years and above.

MAC SEEAL- Strengthening Economic Empowerment to Adolescents Living with HIV

Funder: MAC AIDS FUND

Time Period: June 2021 to May 2022

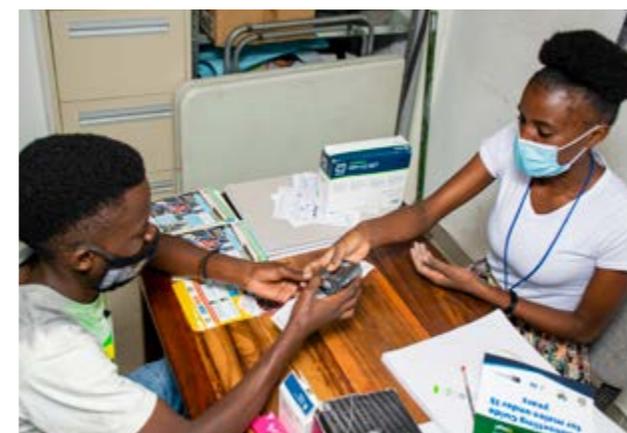
The MAC SEEAL project provides sexual reproductive health rights (SRHR) information and services to ALHIV in Lusaka, Chongwe, and Kaoma Districts. With new funds under MAC SEEAL, this project continues the OTZ Plus programme objectives with an emphasis on economic empowerment initiatives including teaching income generating skills such as bead-making, face masks, reusable sanitary pads, as well as supporting linkage to markets. We will support formation of savings groups and provision of financial literacy training and improve access to SRHR within communities. We will partner with mobile networks to use them as distribution points for SRH products such as condoms, oral contraceptives, HIV self-test kits and brochures. We will scale up My Safe Space App and engage motivational speakers to host live webinars and talks on the app to provide mentorship to adolescents.

MOH Global Fund ASRHR- Adolescent Sexual Reproductive Health Rights and Comprehensive Sexuality Education (CSE)

Funder: The Global Fund to Fight AIDS, Tuberculosis and Malaria

Time Period: January 2020 to December 2020

The CSE Project engaged 34,148 adolescents and young adults between the ages of 10 and 24 in three Districts of Western Province: Mongu, Sesheke, and Limulunga. The main objective of the project was to curb new HIV infections, early child marriages, teen pregnancies, substance abuse and sexual GBV among young people. A curriculum was delivered to provide young people an opportunity to learn more about themselves, how they feel about sexuality and relationships, what their personal values are, and what is happening to their bodies. It was also intended to help youth think about their future, setting up plans and goals, while developing an understanding of their relationships. The adolescent peer educators conducted daily CSE sessions at facility youth friendly spaces, schools and in communities in the 20 sites, and worked closely with DHO, facility staff, community/traditional leaders such as the NHC Chairpersons and Indunas.



PRIMARY CARE/ HEALTH SYSTEMS STRENGTHENING (HSS)

The Primary Care/Health Systems Strengthening Department provides TA and innovative approaches to improve primary care and strengthen health systems. The department has been working with the MOH Child Health and Nutrition Unit since 2010, supporting initiatives in the Expanded Programme on Immunisations (EPI), such as the introduction of new vaccines and system design. The department has also led projects in water, sanitation and hygiene (WASH), behaviour change, health facility infection prevention and control, and collective impact approaches to improve coverage. The department has been heavily involved in the roll-out and scale-up of COVID-19 vaccine delivery.

The department began with one grant and over the past decade has implemented almost twenty different initiatives with Government. The department takes a hands-on approach to providing TA, at times this role takes more of a backstopping approach, but often it involves in-depth mentorship and follow-up, working directly with HCW where they are, to provide the support needed.



COVAX Technical Assistance for COVID-19 Vaccine Delivery Preparation and Readiness

Funder: Gavi, the Vaccine Alliance

Time Period: January 2021 to December 2021

The COVID-19 TA grant provides TA to the MOH in COVID-19 vaccine delivery preparation and readiness. CIDRZ is active in all technical committees for vaccination roll-out and was part of the planning and preparation of the national vaccine introduction. The project provided TA to develop the National Vaccine Deployment Strategy for COVID-19 vaccination. SOPs, training materials and tools. The project supported, and was involved in training, 465 HCW on COVID-19 vaccination across the country. The project seconded a national senior logistician to aid in the acceptance, deployment and tracking of COVID-19 vaccines in the country and supported the GRZ in

conducting the Zambia Immunisation Technical Advisory Group (ZITAG) meetings to guide COVID-19 vaccine policy and decision-making. The project also provided support to the MOH M&E department to conduct onsite trainings in 50 districts to strengthen the capturing and reporting of COVID-19 vaccination data in the DHIS2 tracker. To better understand vaccine hesitancy, the project partnered with Cavendish University to conduct a survey to inform strategies to improve vaccine demand; analysis of the data is underway.

UNICEF EPI-Optimisation (EPI-OPT) project

Funder: United Nations International Children's Emergency Fund -UNICEF Zambia

Time Period: September 2019 to July 2021

The EPI-OPT project brings together a consortium of partners (CIDRZ, Churches Health Association of Zambia (CHAZ), UNICEF), working collectively with the GRZ, towards the common goal of improved, equitable coverage rates. CIDRZ has been implementing EPI-OPT in 316 EPI Southern Province health facilities.

To improve the immunisation supply chain and logistics performance, the direct delivery of vaccines to health facilities was conducted monthly in all EPI health facilities in Southern Province. MOH district pharmacists and Maternal and Child Health clinics (MCH) in-charges provided mentorship to health facility staff during vaccine delivery. The redesigned supply chain system delivered 2,440,261 doses. DHO began to support their own vehicles and drivers for self-distribution during the project, adding to its ongoing sustainability.

During monthly vaccine delivery, the project noted positive changes in attitudes, practices, and handling of vaccines. However, some health facilities still show gaps in timely submission of data, adhering to the immunisation schedule, and timely completion of micro plans. These issues were discussed in data review meetings and efforts to improve these practices continue; staff attrition and a lack of knowledge sharing contribute to these gaps. A refresher training for unfamiliar staff and newly commissioned health facilities was done to assist with these issues. Consistent communication between health facilities and districts requires continued mentorship to ensure improvement. The project has ended but ongoing support is being provided through the Gavi HSS award.

Health Systems Strengthening Programme

Funder: Gavi, the Vaccine Alliance

Time Period: September 2020 to September 2022

This project expands the EPI-OPT project (described above) to Western Province, working towards the same objectives: strengthening and improving EPI knowledge and skills of HCW at lower levels on vaccine and supply chain management and data quality; improving the immunisation supply chain and logistics performance; improving EPI programme monitoring and data quality, visibility and use for continuous improvement; and improving demand for immunisation services.

During 2021, Western Province inception began with training 273 health facility staff in vaccine and supply chain management and data quality. This was followed by training all health facilities in the electronic supply chain management system, Logistimo, of which 282 HCW in

Western Province and 66 in Southern Province were trained. CIDRZ and UNICEF procured 640 tablets to support the Logistimo rollout. Utilisation on Logistimo has been high in Western Province (80%), while Southern Province has stagnated (15%), because as of the end of the fiscal year only a part of the province had been trained.

The project conducted a baseline impact evaluation in Southern Province using Lot Quality Assurance Sampling (LQAS). District MOH enumerators were trained in six districts and 685 household surveys were conducted. End line and analysis will take place in the coming year.



The Polio/COVID-19 EOC- Zambia Emergency Operations Centre (EOC) support

Funder: The Bill & Melinda Gates Foundation

Time Period: March 2020 to January 2021

Polio/COVID-19 EOC provided administrative and operational support to the Zambia national Polio EOC, including basic support services. The project contributes to the eradication of polio by supporting the emergency outbreak response in Zambia, however due to the COVID-19 epidemic the grant expanded to cover the COVID-19 response as well. A command post for outbreaks was established, as well as renovations at the MOH's Child Health Unit. The EOC hosted experts to assess the polio and COVID-19 situation through active surveillance, providing guidance and monitoring of activities. The team was

responsible for the development of SOPs and guidelines for providing daily updates on COVID-19 and analysis of data from across the country.

The EOC team assessed preparedness to conduct vaccination rounds and monitored implementation progress and coverage. The polio outbreak response completed at the close of 2020 because no new poliovirus cases were recorded over a period of six months, a celebratory achievement for Zambia.

Gavi Partnership Engagement Framework (PEF) Technical support to improve immunisation services in Zambia

Funder: Gavi, the Vaccine Alliance

Time Period: September 2019 to June 2021
July 2021 to December 2022

CIDRZ is supporting the MOH's EPI to strengthen health systems and build capacity to catalyse sustainable efficiencies and change, to improve coverage and equity. CIDRZ is providing sustainable TA in strategic areas to improve immunisation services, working to build capacity and transfer skills to GRZ staff.

PEF support provided critical TA to the immunisation programme at national and subnational levels. Highlights include supporting seven ZITAG meetings to review and guide the MOH on various immunisation recommendations. Technical support was provided to ensure that all vaccine shipments were received and reported, including receiving regulatory approval, waivers, and applications for import permits. CIDRZ supported four biannual child health weeks and supportive supervision for routine immunisation, as well as for the MR SIA, the Intimate Partner Violence (IPV) catchup campaign, the HPV vaccine, and COVID-19 vaccination. Further, CIDRZ supported the MOH in conducting the HPV/IPV Post Introduction Evaluation in North Western, Muchinga, and Lusaka Provinces. The project provided ongoing support in all EPI activities and TWGs.

BASIC SCIENCE & LABORATORY

The Basic Science and Laboratory department has been supporting the MOH through capacity building to ensure improved quality health care services to the public. This is done by improving access for microbiology diagnostics, detection and prevention of antimicrobial-resistant bacteria, and quality actionable data in government hospital laboratories. The department currently supports 12 hospital laboratories, seven of which are human health and five of which are animal health. Specifically, the department has supported procurement of reagents and equipment, renovation of sentinel laboratories, advanced microbiology training for laboratory staff, on-site mentorships, coordination support to the national Antimicrobial Resistance Coordinating Committee (AMRCC), among others. The department is also leading research on antimicrobial resistance (AMR) to profile current national trends and understand the key drivers to inform national AMR stewardship interventions.

LIFE- Laboratory Innovation for Excellence

 **Funder:** United States Centers for Disease Control

 **Time Period:** October 2018 to September 2023

CIDRZ LIFE has continued to work closely with MOH, CDC, and other IPs to ensure that all VL and early infant diagnosis hub laboratories achieve operational capacity. This includes conducting centrifugation of whole blood and storage of frozen plasma prior to Central Laboratory transport for testing. All activities were delivered in accordance with the 2018-2022 National Biomedical Laboratory Strategic Plan. The project continued to provide technical support to the hub staff, ensuring timely and quality register completion mentorship. Working with American Public Health Laboratories (APHL), we continue to facilitate the installation of Laboratory Information Systems (LIS) to improve pre-analytic process (sample registration), analytical process (laboratory testing activities), and post-analytic activities (results-return) through installation and support. Through partnership with the MOH, CDC and other IPs, the project continues working towards improving sample referral and result return systems. Wits Health Consortium has successfully supported LIFE with eLabs implementation in 578 health facilities. The team created an interactive dashboard for visualisation and tracking of indicators and statistics from the data captured from facilities with LIS.

The implementation of eLABS has enabled accurate data capture, allowing samples to be tracked from collection through testing and results return, highlighting turnaround time gaps at individual sites. Through partnership with the MOH and IPs, the project continues working towards improved sample collection. We encouraged the use

of dedicated vehicles/motorbikes and drivers/riders in published schedules for transport from VL hubs to PCR laboratories as well as from VL hubs to facilities.

CIDRZ LIFE has been working towards strengthening the M&E system for courier services and quality management system interventions. We aligned our efforts with MOH goals, ensuring data is in electronic form and can be accessed in a timely fashion for evidence-based decision making. We are currently working on a comprehensive system that will replace current tools, integrate systems, and increase productivity and efficiency. The system will include mobile app, location trackers, web data entry app, and dashboards.

In collaboration with FIND, HE2RO, MOH, and the Pathology and Laboratory Services unit, we have strengthened data-driven diagnosis and laboratory network planning through optimisation analysis. The model's recommended outputs will be adopted for implementation and planning by MOH. Working with MOH, CDC and Clinical and Laboratory Standards Institute we continue to (1) assist accredited medical laboratories to maintain their ISO 15189 accreditation and (2) mentor laboratories to apply /attain accreditation, (3) improve and strengthen waste management systems at over 20 testing facilities to manage medical and infectious waste, and (4) installation of solar power backup systems at 121 health facilities health facilities across the country.

Zambia Anti-Microbial Resistance (ZAMR) Program

 **Funder:** Fleming Fund

 **Time Period:** August 2019 to March 2022

AMR is a global problem, compromising country ability to treat infectious diseases, as well as reversing many gains in health and medicine. At the 68th World Health Assembly (WHA) in May 2015, the WHA endorsed a global action plan to tackle AMR, including antibiotic resistant and other urgent drug resistant bacteria.

The Fleming Fund country grant is currently working with MOH structures including National Multisectoral Steering Committee (NMSC), AMRCC, ZNPHI, and other national stakeholders to ensure Zambia quickly achieves targets set in the global and national AMR action plans. The grant supports critical activities in surveillance of AMR bacteria in Zambia, with the primary objective to support GRZ strengthening and scale-up of quality AMR diagnostics and antimicrobial use surveillance activities in GRZ hospitals. All these coordinated activities are aimed at improving

quality and quantity of actionable data that will be used to inform national policy on detection and prevention of AMR bacteria.

To date, the grant continues to support 12 hospital laboratories to strengthen capabilities in microbiology, with the expectation of generating high quality data. Facilities supported include seven human health and five animal health laboratories. Each sector has a reference laboratory, the University Teaching Hospital (UTH) for Human Health and Central Veterinary Research Institute for Animal Health. Specifically, the grant has supported procurement of reagents and equipment, renovation of sentinel laboratories, advanced microbiology training for laboratory staff, on-site mentorships, coordination support to the national AMRCC, among others.

WHO INSTI- Support University Teaching Hospital (UTH) in HIV Drug Resistance Surveillance work for the Ministry of Health

 **Funder:** The Global Fund to fight AIDS, Tuberculosis and Malaria

 **Time Period:** August 2019 to December 2021

The WHO INSTI project provided funding for CIDRZ to support to the University Teaching Hospital (UTH) to conduct HIV Drug Resistance Surveillance work in partnership with the MOH. Clinic and laboratory staff were trained on the HIV Drug Resistance Surveillance protocol, including enrolment, sample collection, and storage prior to initiation. Across collected samples, 4,500 were tested for VL and those that passed the criteria (>=1,000 copies/ml) were tested for HIV drug resistance for reverse transcriptase, protease and integrase inhibitors by genotyping. The nationally representative HIV Drug Resistance surveillance study conducted with MOH leadership and close collaboration with CIDRZ, showed low levels of integrase strand-transfer inhibitor (INSTI) resistance in adults who were either newly initiating ART or who had been on ART. Comparable results were observed

in children who were ART experienced. The findings will be used to revise national ART treatment guidelines in Zambia and call for close monitoring of PI and INSTI resistance development.

CIDRZ will provide TA to strengthen the UTH sequencing labs to reach optimal capacity for future HIV DR studies by addressing equipment and storage shortages and providing backup supplies. CIDRZ will train UTH staff on HIV DR at the CIDRZ laboratory, training will be reinforced through hosting CIDRZ staff at UTH, as well as through ongoing reference sample testing at both sites to ensure competency and readiness.

MBIRA-Mortality from Bacterial Infections Resistant to Antibiotics (MBIRA) study

 **Funder:** London School of Hygiene and Tropical Medicine

 **Time Period:** August 2020 to May 2022

The MBIRA study is a prospective study that collected data through January 2022 in ten hospitals in different African countries. The goal was to quantify the association between AMR status and clinical outcomes (mortality and length of hospital stay) for inpatients with proven Gram-negative bacteraemia (all Enterobacterales except *Salmonella* species). Bacteraemic hospital inpatients (with infections caused by relevant species of Gram-negative bacteria) and matched uninfected inpatient controls will be recruited prospectively in participating hospitals. We aim to recruit a total of 1,200 bacteraemic patients (120 per hospital) with two matched inpatient controls per case. All age-groups (adult, children, and neonate) will be eligible for inclusion, the study aims to recruit consecutive cases over the study period. Non-infected controls will be randomly selected from all concurrent hospital inpatients matched by ward, age-group, and length of stay. The expected outcome is that the study will provide the first patient-level evaluation of AMR impact in bacteraemia across sub-Saharan Africa.

Highlights >>>



Assisted MOH in implementing the first national HIV drug resistance surveillance conducted in Zambia



Helped build capacity at the UTH virology laboratory to conduct future HIV drug resistance testing



Assisted MOH in determining prevalence of baseline HIV integrase mutations prior to wide availability of DTG

REPRODUCTIVE, MATERNAL, NEONATAL & CHILD HEALTH (RMNCH)

Since its inception, the RMNCH department has been working with the MOH and other stakeholders conducting novel research and delivering programmes in the field of safe motherhood, newborn health, and cervical cancer. The Department has participated in the development of numerous national guidelines, including the Service Standards for Health Institutions Providing Neonatal Care in Zambia (2020), Kangaroo Mother Care (2018), National Essential New-born Care Course (2017), among others. Through funding from the NIH/ National Institute of Child Health and Human Development (NICHD) Global Network for Women's and Children's Health Research, Zambia was the first to evaluate the impact of the WHO Essential Newborn Care and Neonatal Resuscitation Programme protocol on neonatal mortality and stillbirth rates in 2006. In the last year, the Department has received funding from new donors, expanding its operations in the field of medical equipment validation, postnatal growth restrictions, use of AI for early detection of disease, and others.



ACCHIVE – Advancing Cervical Cancer Screening in HIV positive women

Funder: Swiss National Science Foundation

Time Period: October 2019 to September 2022

To address cervical cancer (CC) high incidence and mortality, this study aims to develop an evidence-based CC Prevention and Care Cascade to monitor scale-up of CC screening across ART programmes in Southern Africa that already integrate CC screening services. The study, which will utilize both qualitative and quantitative data, has the following objectives: (1) develop an internationally agreed-upon CC Prevention and Care Cascade to monitor scale-up of CC screening across SA ART programmes that integrate CC screening services, (2) test the CC Prevention and Care Cascade, where we will study the full continuum of CC service provision, and identify gaps, and (3) perform an in-depth, multifaceted analysis to identify bottlenecks, facilitators, and barriers to providing CC care.

The qualitative component of the study was conducted between September and November 2020. A total of 17 FGD (with 140 participants) and 18 in-depth interviews were conducted across Lusaka, Lundazi, and Chipata Districts. Preliminary findings from the FGDs and IDIs were used to inform the creation of a survey used to assess associations between CC services and key predictors. The cross-sectional survey will be administered to 976 women accessing ART services across eight health facilities in Lusaka and Chongwe districts. The survey is scheduled to begin during Q1 of 2022 and will last four months.

Esther Linkage- Linkage Partnership to Control Cervical Cancer in Southern Africa

Funder: Esther Switzerland Partnership Project Grant

Time Period: January 2021 to December 2021

In Zambia, there is a lack of systematic provision and monitoring of Cervical Cancer (CC) prevention and care. The implementation of record linkage methods adapted to local resources will allow care providers to routinely assess the CC cascade. This will assist to identify bottlenecks and underserved populations. This project, established capacity for probabilistic or machine learning based linkages of health records in Zambia and South Africa. The ongoing COVID-19 pandemic remains a stressor affecting staff capacity. Therefore, with the methods trained, task shifting at the partnering

institutions will allow to better allocation of available resources. The results from our linkage document shows that WLHIV care often do not undergo screening for CC and that the burden for CC is especially high in black women and in women living with HIV. The causes for this are multifactorial and were discussed at the international stakeholder meeting. Recommendations to overcome these shortcomings have still to be developed at additional stakeholder meetings.

Diagnostic test accuracy of a mobile colposcope (Gynocular™), HR-HPV testing, and VIA for detection of high-grade squamous intraepithelial lesions of the cervix in women living with HIV.

Funder: Esther Switzerland Partnership Project Grant & NIH/leDEA Network

Time Period: October 2018 to July 2022

The main objective of this study is to determine the diagnostic test accuracy of the Gynocular™ colposcope and validate the Swede score in a population of WLHIV. Additionally, this study aims to develop an AI algorithm for early detection of women with cancerous and pre-cancerous lesions, monitor disease progression, and provision of treatment. During the study, 375 HIV-positive women will be enrolled and followed-up for up to 36 months. During this period, the study participants will attend baseline and follow-up visits, undergo screening for cancerous and pre-cancerous lesions using VIA, Gynocular colposcope, and histopathology obtained through punch biopsies, sexually transmitted infection screening, and monitor for disease progression. The study has enrolled all participants and will begin the 36-month follow up visits during Q1 of 2022.

Antenatal Car (ANC) Syphilis- Syphilis Treatment in Pregnancy in Zambia: Treatment Rates and Pregnancy Outcomes

Funder: University of Alabama at Birmingham

Time Period: October 2021 to March 2022

Syphilis is a leading cause of morbidity and mortality in pregnant women and their infants. The barriers to effective treatment and prevention must be overcome to improve outcomes for these women and their children in Zambia and other Sub-Saharan African countries. This pilot project aims to gather preliminary data about barriers to treatment and birth outcomes of syphilis in pregnancy in Zambia. The study's objective is to quantify treatment rates and birth outcomes among pregnant women with syphilis diagnosed at ten urban/semiurban ANC clinics in Zambia.

Low-Cost Pulse Oximetry for Oxygen Saturation Measurement in Neonates

Funder: Skarkman Centre for Global Health, University of Alabama at Birmingham

Time Period: October 2021 to December 2022

Hypoxemia in the newborn is frequently unrecognized by clinical examination alone. Therefore, detection of low oxygen levels in the neonate is essential as hypoxemia may be the only sign of an underlying respiratory or cardiac disease process. High-cost of pulse oximeters prohibit the implementation of screening and monitoring programs in low-and-middle income countries (LMICs). The purpose of this study is to test the accuracy of a low-cost pulse oximeter, in the measurement of oxygen saturation in newborns. We propose this study to test a low-cost pulse oximeter for use in newborns take place in the postnatal wards at the University Teaching Hospital in Lusaka, Zambia.

ENTERIC DISEASE

The Enteric Disease and Vaccine Research Unit started in 2013 with a small cohort study aimed at describing the immunogenicity of Rotarix™ among Zambian children. The unit expanded its portfolio of pathogen foci to include other diarrheal pathogens (Shigella, Enterotoxigenic Escherichia coli (ETEC), and V. Cholerae), non-diarrhoeagenic pathogens including, HIV, Hepatitis B, Epstein-Barr, SARS CoV-2, and Arbo viruses. The unit has also expanded its research laboratory capacity to include molecular platforms (qPCR), microbiology, immunology (enzyme-linked immune absorbent spot (ELISPOT), enzyme-linked immunosorbent assay (ELISA)), multiplex molecular or immunology platforms (Magpix-Luminex™, LAMP, NOVODIAG, MEEDAT), and whole genome sequencing (Miseq and MiniON). The unit operates a network of clinical trial sites across Lusaka and Ndola and has pioneered a Human Challenge Model for evaluating rotavirus vaccines. This capacity means that the unit can conduct a diverse portfolio of research spanning basic science, clinical trials (vaccine and other therapeutics) to translational research.

ChoVaxim- Profiling Immunological Characteristics of a Population at Risk of Cholera before and after 1st and 2nd dose of Oral Cholera Vaccine.

 **Funder:** The European and Developing Countries Clinical Trials Partnership

 **Time Period:** July 2018 to December 2021

Killed whole-cell oral cholera vaccines (OCV) are becoming part of standard cholera control and prevention in countries continuously affected by cholera such as Zambia. However, we do not yet understand the immune profiles of individuals who have received this vaccine. Therefore, this study determines whether Shanchol (OCV) can elicit a competent specific immunological response against cholera in Zambian individuals. We enrolled a cohort of 223 participants between the ages of 18 and 65, from whom serum samples were collected at baseline, day twenty-eight before administration of the second dose, and consecutively at 6, 12, 24, 30, 36, and 48 months. Some of the specific objectives include determining cholera specific antibody titres at baseline (prior vaccination) and vaccine wane off at 6, 12, 24, 30, 36, 42 and 48 months post second dose of OCV. We also wanted to investigate whether vitamin A deficiency, being HIV positive and having certain genetic characteristics such as blood group status reduces the uptake (immunogenicity) of OCV. The study results will help us recommend the use of OCV to policy makers as an added preventative and control method of future cholera outbreaks. This study

enabled us to understand the duration of protection conferred by both one and two dose regimens and will consequently help us to predict if, and when, the booster doses should be given. In the previous year, sample collection was completed with follow-up through month 48. Laboratory experiments were also concluded. We have finalised data analysis and writing of manuscripts, three have been submitted to PLOS One for publication. One of the manuscripts characterises the immunogenicity and wane-off of immunity to OVC while the other determines the influence of HIV and retinol status on uptake of OVC. PLOS One will publish one of the submissions, we are currently waiting for a decision on the other two manuscripts. Dissemination of results to study participants and volunteers as well as to district and provincial leaders in Central Province has been completed. Abstract presentations have also been shared at various conferences including the recently held European and Developing Countries Clinical Trials Partnership (EDCTP) Conference and the Zambia National Health Research Conference.

ROVAS 2- A randomised controlled trial of two versus three doses of Rotarix vaccine for boosting and longevity of vaccine immune responses in Zambia

 **Funder:** The European and Developing Countries Clinical Trials Partnership

 **Time Period:** April 2018 to March 2022

Rotavirus vaccines perform sub-optimally in LMICs. The ROVAS-2) assesses safety and immunogenicity of three dose Rotarix to provide data for evidence-based policy on rotavirus vaccines in Zambia. The study began in April 2018 and as of September 2021 started participant close out. The study has generated findings on syphilis, child growth, SARS-CoV-2, histo-blood groups, and postnatal cytomegalovirus.

ETVAX III- An Epidemiological surveillance study to determine the incidence of ETEC in children and infants in Lusaka

 **Funder:** The European and Developing Countries Clinical Trials Partnership

 **Time Period:** March 2020 to February 2025

ETEC is one of the major causes of moderate-to-severe diarrhoea (MSD) among children both globally as well as in Zambia, and unfortunately there is currently no licensed vaccine available on the market. The overall aim of this study is to document the burden of ETEC associated diarrhoea in Zambian children under the age of three. This study seeks to determine diarrhoea aetiology, calculate the incidence of moderate-to-severe ETEC-associated diarrhoea, and describe the frequency of ETEC colonisation factors and enterotoxin types in children under three years of age in Zambia. The prospective, longitudinal, and observational study was conducted in five clinical research sites: Chawama General Hospital, Matero

General Hospital, Chainda South Clinic, George Clinic and Kanyama General Hospital. We launched the study by conducting a household census within the catchment areas of participating health facilities for a total of 4,065 surveyed households. This was followed by passive 12-month diarrhoea surveillance at each participating health facility. We expect that the data collected will help detect seasonal variations of the disease burden. Additionally, data collected through the census and surveillance are required for the design of an anticipated phase three trial of the leading ETEC vaccine (ETVAX®) that will be evaluated in Zambia from 2023 onwards.

ETVAX Project- A Phase 1 age descending placebo controlled clinical trial to examine the safety, tolerability, and immunogenicity of an oral inactivated ETEC Vaccine (ETVAX®) with dmLT adjuvant in healthy adults and children in Zambia.

 **Funder:** The European and Developing Countries Clinical Trials Partnership

 **Time Period:** January 2019 to December 2023

We evaluated ETVAX®, an oral inactivated Enterotoxigenic Escherichia coli vaccine containing four E. coli strains over-expressing the major colonization factors CFA/I, CS3, CS5, and CS6, and a toxoid (LCTBA). This vaccine has previously been evaluated in adults and children and has been shown to be safe and highly immunogenic. The single site, double blind, placebo-controlled, age-descending trial that evaluated ETVAX® in 40 healthy adults, 60 children aged 10-23 months and 146 aged 6-9 months was conducted at Matero Clinical Research Site between March 2020 and April 2021. Thirty adults received one dose of vaccine +10 µg dmLT and ten received placebo. Children received

three doses of either 1/8 or 1/4 of the adult dose + 2.5 µg dmLT or placebo. Three doses were administered on study days 1, 15 and 90. Safety data was evaluated as solicited and unsolicited events in the seven days following vaccination through 28 days after the third dose. This was done primarily in adults who received one dose, followed by older children, and finally in the infant cohort. Immunogenicity was assessed through evaluation of pre and post vaccination antibody titres. Plasma IgA and IgG antibody responses to LTB were assessed. Plasma IgA and faecal secretory IgA antibody responses to CFA/I, CS3, CS5, CS6 and LTB, and IgG response to LTB were also assessed.

Human Infection Challenge (HIC) Rota study- Human challenge with live-attenuated rotavirus to assess next-generation rotavirus vaccines in Africa

Funder: Medical Research Council- UK through Imperial College of Science, Technology and Medicine

Time Period: September 2020 to August 2023

Despite the widespread roll-out of several vaccines against rotavirus (RV), RV diarrhoea continues to be a significant cause of diarrhoeal disease morbidity and mortality in many parts of the developing world. Recognizing challenges associated with oral RV vaccination, several parenteral vaccines are currently in development. The HIC Rota study assesses protection against RV infection and investigates immune correlates of protection following vaccination with a novel injectable VP8 subunit RV vaccine used alone or in combination with oral RV vaccines. The trial is being conducted in collaboration with the Imperial College London and PATH. The study received all ethical and regulatory approvals from University of Zambia Biomedical Research Ethics Committee (UNZABREC), Zambian Medical Research Authority (ZAMRA) and National Health Research Authority (NHRA) prior to beginning recruitment. The first participant was enrolled on 28 April 2021. Since then, the trial team has successfully enrolled and randomised over 50% of the target sample size. As one of the few developing countries conducting

Human Infection Challenge studies, the trial team was invited to share highlights from the study at the HICVac consortium annual meeting. To build capacity among Zambian scientists, the trial set-up real time quantitative PCR capacity to track and quantify viral shedding, PBMC isolation and storage, in-vitro cell culture and immune cell stimulation and profiling assays using ELISPOT.

Highlights >>>

- Establishment of an EDVRU Clinical Research Site at Chawama General Hospital

MEEDAT- Impact of environmental enteric dysfunction and human cytomegalovirus infection on immune responses to rotavirus vaccines among Zambian Infants

Funder: The Bill & Melinda Gates Foundation

Time Period: May 2021 to November 2021

The aim of this study is to assess if environmental enteric dysfunction (EED) and human cytomegalovirus infection at the time of infant vaccination is negatively associated with RV vaccine immunogenicity. This will be achieved with the measurement of serum biomarker levels using the newly built Micronutrient and Environmental Enteric Dysfunction Assessment Tool (MEEDAT) which is a multiplexed immunoassay capable of measuring biomarkers associated with micronutrient deficiencies, growth faltering and inflammation. Currently all stool samples have been tested for EED markers and the MEEDAT machine has now been set up in preparation for serum marker measurement.

Non-Replicating Rotavirus Study (NRRV)- A phase 3 double-blinded randomized active comparator-controlled group-sequential multinational trial to assess the safety, immunogenicity, and efficacy of a trivalent rotavirus P2-VP8 subunit vaccine in prevention of severe rotavirus gastroenteritis in healthy infants

Funder: PATH with support from The Bill & Melinda Gates Foundation

Time Period: April 2019 to June 2024

The aim of this study is to assess the safety and immunogenicity of a new parenteral RV vaccine. Trivalent RV P2-VP8 subunit vaccine (TV P2-VP8) is a trivalent RV VP8 subunit with a tetanus toxin P2 epitope and fusion proteins adsorbed to aluminium hydroxide adjuvant. The TV RV P2-VP8 subunit vaccine is produced in E. coli and adsorbed onto aluminium hydroxide (0.5625 mg/dose). Each 0.5 mL dose, to be administered intramuscularly, contains thirty µg of each of the three antigens (derived from a P [4], a P [6] and a P [8] strain of rotavirus), for a total of 90 µg of subunit protein. The three antigens are derived from DS1, 1076 and Wa strains, respectively. Infants will be randomized to receive either the active comparator which

is Rotarix® and for the placebo a clear, colourless, locally licensed Oral Rehydration Solution or the infant will receive intramuscular TV P2-VP8 with the placebo of normal saline and followed up for two years. It has been proposed that this vaccine will be superior to the currently used Rotarix in alleviating the burden of severe RV infection. The study is being conducted in Zambia, Malawi, and Ghana. In Zambia, the study is being conducted in Lusaka's Matero and George health facilities and currently has 662 participants enrolled from the 990 projected participants. Individuals will be followed up for two years as we wait for interim analysis results on P2-VP8 efficacy. The enrolment period is expected to finish in April 2022.

ROTA-biotic- ROTA-biotic: Measuring the impact of rotavirus vaccines on paediatric antibiotic usage

Funder: Wellcome Trust through Amsterdam Institute for Global Health and Development (AIGHD)

Time Period: June 2020 to May 2023

This study, being conducted in both Ghana and Zambia, seeks to evaluate the impact of RV vaccinations on antibiotic usage by quantifying the incidence of community antibiotic usage in the first two years of life as a primary objective. It will also profile the microbiome composition of the vaccinated infants and of the unvaccinated, who form the control group. The study has two groups, a vaccinated cohort that will give prospective information on antibiotic usage for infants enrolled in the parent trial, and the community cohort arm that will inform on the background incidence of community antibiotic use. The vaccinated cohort is further divided into two groups, in one, the participants are followed up weekly for antibiotic usage

data while in the other, participants are not subjected to medication or weekly follow up, but have their samples collected at specific timepoints. The study is being conducted in three Zambian research sites: Matero Level One Hospital, George Clinic and Chanda South Clinic. The control group is at Chanda South Clinic research site, where 109 of the targeted 132 participants have been enrolled. George and Matero have the vaccinated cohort, 435 of the 1,100 participants enrolled. The collected samples, stool, and urine will be used for metagenomic sequencing and urine antibiotic metabolites analysis respectively.

ShigOraVax Project- Early Clinical Development of an Oral Shigella Vaccine Through Phase II Study in Africa

Funder: European and developing countries clinical trials partnership (EDCTP)

Time Period: October 2019 to September 2024

Shigella infection is among the leading causes of childhood diarrhoea, estimated to cause as much as 164.7 million cases annually, of which 163.2 million occur in developing countries. The Enteric Disease Vaccine Research Unit (EDVRU) at CIDRZ showed that Shigella was the second leading attributable cause of MSD in Zambian children under five years of age. There is currently no licensed vaccine against Shigella, which is unfortunate because it could be a cost effective and reliable way to decrease the morbidity and mortality in the face of poor WASH facilities.

A multidisciplinary, international consortium has been assembled to develop a safe, effective, and affordable Shigella vaccine along the development pipeline into late clinical development. The consortium includes the European Vaccine Initiative (Germany); MSD-Wellcome

Trust, Hilleman Laboratories (India); Leiden University Medical Centre (Netherlands); Gothenburg University (Sweden); Groupe de Recherche Action en Santé GRAS (Burkina Faso); and CIDRZ. Among the activities to be conducted on the ShigOraVax are epidemiological baseline studies in Burkina Faso and Zambia to provide accurate and specific epidemiological Shigella disease burden data to guide the implementation of the clinical trials. In Zambia, the baseline studies began in September 2020. During the reporting period, 1,400 participants were enrolled, and a community census was completed in November 2020. These participants were followed up both actively (through monthly home visits) and passively (at the health facility). Currently, these participants have been followed up for ten of the 12 months. Surveillance continues for the next two months, after which we will be analysing the incidence of Shigella in the community.

Wellcome Trust Fellowship- Profiling innate and adaptive immune responses to rotavirus vaccination and influence of cytomegalovirus in Zambia infants

Funder: The Wellcome Trust

Time Period: September 2018 to March 2022

This is a PhD level project awarded to Ms Natasha Laban (Wellcome Trust International Training Fellowship 211356/Z/18/Z) nested within a RV randomized control trial and registered with LSHTM. The objectives are to profile cellular innate and adaptive immune responses to RV vaccination and to investigate the influence of viral coinfection on infant responses. This study began in 2018 and successfully achieved cellular sample collection from the targeted 100 young infants from six weeks to one year of age. The study has documented cytomegalovirus exposure and set up viral ELISA and cellular assays. Laboratory and data analysis for this project is ongoing and will generate information that can inform understanding of currently deployed RV vaccines and future vaccine designs.

SOCIAL AND BEHAVIOURAL HEALTH SCIENCE

The Social and Behavioural Science department (SSRG) was established to provide TA and support to CIDRZ' departments and partner organizations to contribute to research as well as to impactful and sustainable health programmes. The unit's vision is to produce high quality research that adds to the relevance and sustainability of priority health programmes in Zambia and the region, as well as the global body of knowledge on public health.

SSRG's strong expertise in design and implementation of qualitative studies is the foundation for various disciplines including ethnography, phenomenology, and grounded theory. Together with the SI and Analysis departments, SSRG has led various mixed method studies to address key social and behavioural questions.

In the last year, the department provided technical and direct research support to ten in-house studies across different themes including adolescent health, mental health, TB, EDVRU, IS and RMNCH. Directly under the department are eleven studies ranging from HIV, COVID-19, NCDs, WASH and diarrhoeal disease.

Alcohol biomarkers- Improving measurement of alcohol consumption among HIV-affected youth in sub-Saharan Africa: evaluation and implementation of biomarkers

 Funder: **National Institute of Health**

 Time Period: **May 2020 to April 2025**

This is a five-year NIH K-grant, which will evaluate the accuracy of an alcohol urine rapid test to identify adolescents living with, or at risk of, HIV who may have high risk behaviours. Because preventing adolescent HIV is a high priority in Zambia, and alcohol fuels HIV transmission, this project has important public health significance.

COVID-19 HYGIENE HUB

 Funder: **London School of Hygiene and Tropical Medicine**

 Time Period: **August 2020 to November 2021**

The COVID-19 Hygiene Hub is a TA grant set up by the London School of Hygiene and Tropical Medicine (LSHTM). The COVID-19 Hygiene Hub was established as a free service that supports actors in LMICs to rapidly design evidence-based hygiene interventions to combat COVID-19. CIDRZ' Dr. Anjali Sharma, Jenala Chipungu and Nobutu Muttu are listed as Technical Advisors at the Hub and contribute to the development of materials while supporting national COVID-19 hygiene prevention efforts.

PENDA- Evaluation of the hygiene and behaviour change coalition for COVID 19 prevention

 Funder: **International Centre for Diarrhoeal Disease Research, Bangladesh**

 Time Period: **January 2021 to February 2022**

COVID-19 has made persons with disabilities even more vulnerable as they face a greater risk of infection and are prone to suffer severe circumstances leading to hospitalization, intensive care, or even death. These risks are heightened with age or with the presence of underlying medical conditions. The aim of this project is to evaluate the inclusiveness, effectiveness, and outcome of Human and Behaviour Change Coalition (HBCC) interventions (designed to limit risk of COVID-19 among the general population) for persons with disabilities, older people, and caregivers in Zambia. The project will be conducted in Mwense, Monze and Mongu districts. Data collection methods will include both quantitative and qualitative methods.

SanQol Project

 Funder: **World Vision USA**

 Time Period: **October 2020 to March 2022**

The goal of this project, in alignment with the World Vision WASH Learning Agenda, is to better capture WASH impacts on broad aspects of well-being to promote the quality of World Vision's work to generate additional revenue and ensure that our programmes maximize impact.

The primary objectives are to determine and broadly define what individuals value about sanitation, to estimate the impact of higher-quality sanitation on quality of life, to understand what aspects of sanitation are most important to vulnerable groups, including women, those with physical disabilities, and the poor, and to assess potential determinants of the sustainability of WASH in HCFs, including the application of World Vision's citizen voice and action approach.

WB HBCC Project- Exploring the Effect of COVID-19 on Service Uptake among Lusaka Sanitation Program Customers

 Funder: **World Bank**

 Time Period: **February 2021 to December 2021**

This project aimed at understanding the relationship between COVID-19 and the uptake of sanitation services, namely pit desludging and sewer connections. In addition, we sought to explore handwashing with soap behaviours in relation to the COVID-19 pandemic. The output from this work led to marketing strategies to improve the uptake of sewer connections in Emmasdale and Chaisa compounds. The marketing materials, including art for posters, t-shirts, call cards, dust coats and the logo have been completed. The Lusaka Water and Sewage Company will launch these to promote their sewer connection services.

Generic Branding

 Funder: **London School of Hygiene and Tropical Medicine (LSHTM)**

 Time Period: **January 2021 to September 2021**

Since the start of the COVID-19 pandemic in Zambia, multiple IEC materials and strategies have been disseminated to the public by members of the risk communication and community engagement (RCCE) committee to create awareness about the novel coronavirus, prevention measures and care-seeking options. To complement these efforts, CIDRZ, in collaboration with the London School of Hygiene and Tropical Medicine (LSHTM,) implemented a communication campaign that promoted the uptake of four key behaviours to reduce the transmission of COVID-19: handwashing with soap, mask-wearing, social distancing and surface cleaning. The campaign presented these behaviours as a 'password' used to get lives back to normal: Hands-Face-Space-Surface. The password symbolizes access into a world where protective habits are practiced returning to a COVID-19-free world. The mass-media campaign was delivered through TV, radio, social media, posters, and billboards.

The evaluation demonstrated that two-month campaigns using behavioural science and creative processes, rather than straightforward educational techniques, led to a 9% increase in uptake of prevention behaviours.

Stigma MTNC- Ending Stigma and Discrimination: Assessing community mental health among COVID survivors and front-line health care workers in Zambia

 Funder: **National Research Foundation (NRF)**

 Time Period: **August 2021 to August 2022**

The purpose of this project is to understand and address COVID-19-related stigma and mental health issues among survivors and frontline HCW in COVID-19 hotspot communities of Zambia. Other objectives include assessing the geographical coverage of mental health services in Zambia for these populations in the epicentres, Nakonde and Lusaka districts; and assessing the acceptability and feasibility of remote digital mental health service provision during the COVID-19 pandemic.

KP STIGMA- Barriers to HIV Prevention and Treatment Services for High-Risk Young Men

 Funder: **US National Institute of Health**

 Time Period: **January 2021 to December 2021**

Intersectional stigma contributes to increased risk of HIV infection and decreased use of healthcare for those living with HIV. Our programmes aim to identify drivers/facilitators and manifestations of intersectional stigma against high-risk young men in clinical settings. This is done through policy reviews and in-depth qualitative interviews with high-risk young men, healthcare providers, and key stakeholders.

MAF- Zambia Screen Project

 Funder: **MAF through Vitol Foundation**

 Time Period: **January 2020 to March 2023**

The SCREEN project, funded by the Vitol Foundation, is a three-year programme creating and disseminating health films in Zambia. The health topics covered in these films include teenage pregnancy, men's engagement in MCH, adolescent mental health, and exploring gender and equal relationships. CIDRZ developed the baseline survey instrument and analysed the data collected by the implementing organization, SafAIDS. Findings show

that more girls than boys are engaged in CSE and other SRH clubs. Knowledge, norms, and practices on the film topics show variation by age (15-17 vs 18-19), gender and district (Kabwe, Kapiri Moshi, Senanga, Mongu). These findings will inform intervention delivery. MAF reports that the findings have compelled them to think about how to attract boys and young men to SRH programs.

AgeCo- Ageing and Comorbidities among HIV infected and uninfected adults attending primary care clinics in Lusaka, Zambia (Age-Co Study)

 Funder: **The University of Sussex**

 Time Period: **August 2020 to August 2021**

As the number of people ageing with HIV in sub-Saharan Africa is increasing, they are likely to have a disproportionately high incidence of major NCD and reduced health-related quality of life. Therefore, there is an urgent need to understand how to best manage the huge oncoming burden of ageing PLHIV and their associated health problems. Our statistical analysis of electronic medical data (Smart Care) showed that time on ART and increased body mass index were independently associated with a higher prevalence of elevated blood pressure among PLHIV. In in-depth interviews, HIV patients had a better understanding of NCDs, and ageing compared to HIV negative adults. Lack of integrated

services delayed health-seeking and increased treatment fatigue among PLHIV. The elderly were stigmatized as being witches or as a burden unable to care or provide for themselves. HCW requested more training and tools for the management of NCDs, including the latest NCD guidelines and policies. They perceived NCDs as a disease for the rich and feared drug dependency. These findings were discussed in a virtual workshop held on 24 June 2021, on 'The Challenge of Ageing with HIV in Africa' with Zambian and international participants. The final resolutions were consolidated in meeting with MOH and provided new research direction.

Avert Young Voices

 Funder: **Vitol**

 Time Period: **January 2020 to September 2021**

The decline in HIV incidence among adolescents and young people (AYP) aged between 15 & 24 in sub-Saharan Africa needs to be accelerated to end the AIDS epidemic by 2030. Interactive digital health interventions show promise to improve uptake of HIV services among AYP. The Young Voices project aimed to pilot-test a theory-based, empirically grounded web-based application designed to increase condom-related knowledge, SRH communication, and healthier choices, among young Zambians. A pre-post quasi-experimental evaluation of the

user-driven, interactive 'Be in the Know Zambia' (BITKZ) application was conducted through online surveys and in-depth phone interviews (IDIs). Our findings showed that despite high baseline awareness of SRH among Zambian AYP with internet access, BITKZ provided modest gains in: condom-related knowledge (35%), resistance to peer pressure (3 times more), and intention to test for STIs and/or HIV (>20%). Findings were disseminated in the NHRA/ZAMBART symposium on adolescent health.

Phone KAP- COVID-19 Knowledge Attitude and Practices (KAP) and Needs in Zambia

Funder: Accelerating the Sustainable Control and Elimination of Neglected Tropical Diseases (ASCEND)

Time Period: January 2020 to April 2021

Given the exponential growth of COVID 19 cases and related deaths in-country, there is an urgent need to tailor appropriate risk communication to promote prevention behaviours and timely care-seeking in the country. Both the WHO and the MOH recommend a KAP survey, which is within the remit of the Risk Communication and Community Engagement. The overall purpose of this research was to provide information on the COVID-19 related KAP in all 10 provinces. This information provided the basis for the RCCE Committee led by the MOH and the ZNPHI to design prevention, control, and mitigation measures that are responsive to the needs of Zambians across the nation.

Raise- Research to Enhance the Adaptation and Implementation of Health Systems Guidelines (RAISE)

Funder: World Health Organization

Time Period: January 2019 to January 2021

Zambia developed the Multisectoral Cholera Elimination Plan (MCEP) to eliminate cholera by 2025, five years ahead of the global 2030 target. This study aimed to assess the translation of MCEP into action and the potential of these actions to achieve cholera elimination by 2025. The study found that MCEP implementation is on track for early detection, rapid emergency response and OCV implementation in cholera hotspots. However, progress on WASH, and effective mechanisms of coordination have faltered without adequate funding and managerial authority allocated to the position of the national coordinator. At international levels, donor interest in cholera elimination is needed to move beyond current Global Task Force on Cholera Control support for OCV procurement

and placement of technical and resource mobilization personnel in Zambia. NGOs need to advocate to redirect project funds to cholera hotspots to align with multi-sectoral cholera elimination plans. At national level, the positions of national coordinator and focal point persons must be funded for cross-disciplinary mainstreaming of the cholera elimination programme into policies, budgeted annual workplans, and implementation within the various ministries. Budgets must include costs for human resources, infrastructure, logistics, and frequent scheduled coordinating meetings to discuss the current implementation status, evaluation of results, and adaptation of strategies according to lessons learned.

NETWORK TRIALS

Through the Clinical Trials Unit (CTU), CIDRZ has contributed to the field of HIV research and gained valuable experience in efficiently conducting clinical trials for four NIH/NIAID-sponsored HIV networks, including the HIV Vaccine Trials Network (HVTN), HIV Prevention Trials Network (HPTN), Microbicide Trials Network (MTN), and AIDS Clinical Trials Group (ACTG). We achieved this success by leveraging the University of Alabama at Birmingham (UAB) Center for AIDS Research (CFAR) Administrative Core to provide the primary infrastructure for coordination of ongoing research efforts at the Alabama CRS located in Birmingham, Alabama.

University of Alabama at Birmingham (UAB) Clinical Trials Unit (CTU) Core Matero CRS

 **Funder:** National Institute for Health (NIH), United States |  **Time Period:** December 2020 to November 2021

During the reporting period, this award supported regulatory, clinical, data, laboratory, and implementation activities for the following CTU affiliated studies: HVTN 705, HVTN 405/HPTN 1901, CoVPN 5001, CoVPN 3008 and ACTIV-2/5401. In 2020, CIDRZ was awarded new CTU Core funding which will run for seven years effective 1 December 2020. The last cycle of CTU Core funding ended 30 November 2020.

HVTN 705 – A multicentre, randomized, double-blind, placebo-controlled phase 2b efficacy study of a heterogenous prime boost vaccine regimen of Ad26. Mos4.HIV and aluminum phosphate-adjuvanted clade C gp 140 in preventing HIV-1 infection in women in Sub Saharan Africa

 **Funder:** Janssen Vaccines & Prevention B. V. (Leiden, The Netherland) |  **Time Period:** September 2018 to June 2022

The HVTN 705 'Imbokodo' Study kicked off in 2017 and was activated at CIDRZ Matero Clinical Research Site in 2018. The primary objective of the study was to evaluate the efficacy of the Ad26. Mos4.HIV and aluminium phosphate-adjuvanted clade C gp 140 vaccines in preventing HIV infection in women residing in Sub Saharan Africa who received the first three immunizations per protocol. The second primary objective of the study was to evaluate the safety and the tolerability of this vaccine regimen. At CIDRZ Matero CRS, we enrolled a total of 107 HIV uninfected woman between 18 to 35 years of age at risk of HIV infection. The participants were tested for HIV every three months for a maximum of

36 months, and they received vaccinations at months 0, 3, 6 and 12. All participants were offered comprehensive prevention methods including PREP referrals and post-exposure prophylaxis access. By June 2020, all participants in the study had completed vaccinations. When the last participant had their month 24 visit (9 to 18 months after their third vaccination), primary interim analysis was done. Results confirmed that the vaccine is safe and tolerable, though it did not provide enough protection against HIV. Study results have since been communicated to study participants, CIDRZ is in the process of unblinding and exiting study participants.

leDEA Network

 **Funder:** University of Bern/ National Institute of Health

The International epidemiology Databases to Evaluate AIDS (leDEA) is a multi-country collaboration, established in 2006 by the National Institutes of Health, that collects observational data representing over 2.2 million people living with and at risk for HIV, from clinical centres and research groups in 44 countries. leDEA data are collected from 7 geographic regions and coordinated by centres in Asia-Pacific, the Caribbean, Central and South America region, Central, East, Southern, and West Africa, and North America. CIDRZ has been contributing to leDea Southern Africa for over 14 years. In addition to contributing data, CIDRZ also runs several leDea funded research studies, as described below.

leDEA Liver Fibrosis- Liver Fibrosis in Zambia HIV- hepatitis B virus (HBV) Co-Infected Patients: A Long-Term Prospective Cohort Study.

 **Time Period:** October 2013 to December 2025

This study is being funded by the NIH through leDEA (University of Bern). The main aims of the study are to determine the prevalence of significant levels of liver fibrosis in HIV-HBV patients in Zambia using non-invasive tests; to identify the predictors of significant fibrosis among HIV-HBV patients; to assess the impact of ART on the progression of liver fibrosis in HIV-HBV patients in Zambia, and to determine the rate and predictors of HbsAG seroclearance in ART treated HIV-HBV. At CIDRZ the study is being conducted at Kanyama Level One Hospital where we have enrolled a total of 243 participants. The follow up study procedures include routine liver ultrasound tests, CT scans and measurement of liver enzymes as well as other Hepatocellular Carcinoma biomarkers. As of September 2021, the study recorded a retention rate of over 80%.

DTG-switch study- Longitudinal analysis of virologic failure and drug resistance at and after switching to dolutegravir-based first line ART regimen

 **Time Period:** January 2020 to December 2022

The study is being sponsored by the National Institute of Health through the University of Bern. The purpose of this study is to recruit and characterize the short- and long-term outcomes of first-line switch to Dolutegravir (DTG)-based ART in Africa in representative populations. DTG is a second-generation integrase strand transfer inhibitor, and it is widely used in high-income countries and is recommended by the WHO as an alternative first-line ART regimen. We will assess the incidence of virologic failure and the contribution of drug resistance to virologic failure after the switch. The study will also seek to determine the incidence of neuropsychiatric,

metabolic, and other side effects of the DTG-based ART when it is associated to TAF or TDF in African patients, who have not yet been fully addressed. As of 30 September 2021, a total of 1,410 participants were enrolled across the three study sites namely Kalingalinga Clinic, Kanyama Level One Hospital and Matero General Hospital. As of the same date, over 90% participants were retained in the study. An analysis of 48 weeks visits data is scheduled to take place in February 2022. We anticipate conducting 96 weeks visits between May 2022 and December 2022 after which a complete analysis of study data will be done.

leDEA NCD: The Burden of Noncommunicable Diseases (NCDs) Among HIV Positive and Negative Adults in Southern Africa

 **Time Period:** August 2019 to August 2024

The leDEA NCD study is funded by the NIH through leDEA, University of Bern and the study is expected to run for five years. The objective of the study is to improve the current knowledge on the epidemiology and intersection between HIV and NCDs including cardiovascular, metabolic, kidney and liver diseases among 1,200 HIV positive and HIV negative adults in Zambia and Zimbabwe. Study participants undergo comprehensive clinical examinations and laboratory tests, including lifestyle and behavioural risk factor assessments for physical activity, diet, and mental health every year.

leDEA SRN- Sentinel Research Network for leDEA: A Prospective Cohort of People Living With HIV

 Time Period: August 2020 to August 2025

The Sentinel Research Network for leDEA Study is a multi-regional project funded by the National Institute of Health through the University of Bern, Switzerland and the study is expected to run for five years. It will be implemented in 12 countries with a pilot began in November 2020 in Zambia, Brazil, India, Rwanda, Kenya and Cote d' Ivoire. The objective of this project is to establish a network of research sites dedicated to capturing and analysing standardized data among several LMICs. Through this network, studies will be implemented focussing on cardiovascular disease, mental health, alcohol and substance use disorders and liver diseases.

leDEA AYANI- Adolescents and Young Adults Network of leDEA (AYANI)

 Time Period: August 2020 to August 2025

The AYANI is a nested cohort funded by NICHD through the University of Cape Town, South Africa in collaboration with the University of Bern, Switzerland. This project seeks to enrol ALHIV aged between 15-24 years across countries including Brazil, Haiti, Honduras, Togo, Tanzania, Kenya, Côte d'Ivoire, Philippines, Thailand, South Africa, and Zambia. AYANI aims to investigate how care transitions, key comorbidities and conditions, mental health challenges and social environmental factors impact the outcomes of antiretroviral therapy adherence, viral suppression, care engagement and mortality among ALHIV. Prospective data on these key factors will be collected in this cohort over the next 5 years.

EMERGING DISEASES

In 2021 emerging infectious diseases remained at the forefront of public health awareness. Emerging infectious diseases are defined as new infections among populations or geographies. Over the past twenty years CIDRZ has been at the forefront of infectious disease response- focusing primarily on HIV and TB. Over the past year CIDRZ remained agile in its pivot to support the GRZ and its response to COVID-19. To help meet this challenge, CIDRZ has supported ongoing research, TA, and community awareness programs to support the response by government. As we look to the future, CIDRZ is committed to its continued focus on emerging infectious diseases expanding our support and work to include antimicrobial resistance, SARS, and Middle East Respiratory Syndrome (MERS) as well as through investment into vaccine development and vaccine research.

HVTN 405 HPTN 1901 Protocol Funding



Funder: [National Institute for Health \(NIH\), United States](#)



Time Period: [June 2020 to November 2021](#)

The HVTN 405/HPTN 1901 observational study was funded by the National Institute of Health through the HIV Vaccine Trials Network and HIV Prevention Trials Network. The study was also conducted across other clinical trial sites in Malawi, Mozambique, South Africa, and North and South America. The primary objective of the study is to identify the serologic reactivities that differentiate SARS-COV-2 infection from vaccination. At CIDRZ the study was conducted at Chainda South Clinic, an additional site under Matero Clinical Research Site. 12 participants aged between 18 and above were enrolled and followed up for 12 months. Blood and nasal swab specimens were collected at months 0, 2, 4 and 12. 100% of participants were retained as of 30 September 2021 and exit visits are scheduled to start in October 2021.

RAMP- Clinical Profile of COVID-19 in People Living with HIV (PLHIV)- in Lusaka- A Retrospective Observational Study



Funder: [National Institute for Health \(NIH\), United States](#)



Time Period: [August 2020 to August 2025](#)

The project is funded by the National Institute of Health through the HIV Vaccine Trials Network (HVTN). The HVTN runs a Research and Mentorship Programme (RAMP) which aims to increase the participation of African American/Black American and Latin American individuals in HIV prevention research both as participants and researchers. CIDRZ was awarded the RAMP project under the short-term project category. The project seeks to profile the clinical presentation of COVID-19 among PLHIV. This will be done by collecting COVID-19 patients' data for patients who were admitted to the isolation wards during the COVID-19 second wave. Medical details of the patients will be accessed and assessed from the isolation centres and patients whose information may be missing from the files will be contacted so they can provide required information. For asymptomatic PLHIV who were admitted, clinical data will be collected with the aid of the MOH contact tracing team. Data collection kicked off in September 2021 and is expected to run until November 2021 and data cleaning and analysis will follow and are scheduled to be finalized by December 2021.

COVID-19 Prevention Network Site Preparedness Funding



Funder: [National Institute for Health \(NIH\), United States](#)



Time Period: [January 2021 to November 2021](#)

This funding was used to set up prefabricated infrastructure and to purchase non-protocol specific supplies and equipment (i.e., vehicle) used during the CoVPN 5001 and HVTN 405/HPTN 1901 study implementation. The funding was also used to cover study staff time and community engagement activities, as well as the purchase of talk time and other relevant services to support communication during pre-study activities.

CoVPN 5001- A Prospective Study of Acute Immune Responses to SARs-COV-2 Infection



Funder: [National Institute for Health \(NIH\), United States](#)



Time Period: [January 2021 to November 2021](#)

The 5001 Observational Study was funded by the National Institute of Health through the COVID-19 Prevention Network (CoVPN). The primary objective of the study was to generate standardized datasets, characterising the quality, magnitude, and kinetics of humoral immune responses to SARS-COV-2 infection in asymptomatic and symptomatic participants (both hospitalized and non-hospitalized). These participants experience a range of clinical outcomes to prepare for similar assessments during best immune preventive strategy trials. At CIDRZ, the study was conducted at Chainda South Clinic with an additional location for Matero CRS, a total of 46 participants were enrolled and followed up for two months. Blood and saliva samples, nasal swabs, nasal wash and stool (optional) were collected at days 0, 2, 7, 14, 21 and 28. All participants completed their exit visits by 30 September 2021, and the study recorded a retention rate of 100%.

Crown Coronation- An international, Bayesian platform adaptive, randomized, placebo-controlled trial assessing the effectiveness of candidate interventions in preventing COVID-19 disease in adults. CROWN CORONATION



Funder: [The Bill & Melinda Gates Foundation through Washington University](#)



Time Period: [May 2020 to December 2021](#)

This study assesses the effectiveness of the Measles/Rubella vaccine in prevention of COVID-19 in individuals repeatedly exposed to SARS CoV-2 virus. The study has participating sites in Ghana, South Africa, the United Kingdom (UK), USA, and Zambia. In Zambia, the study involved HCW across selected hospitals including The Levy Mwanawasa University Teaching Hospital (and COVID-19 centre), Matero, Chilenje and Chelstone First Level Hospitals. Enrolments started in November 2020 and the 500-enrollment target of vaccinated participants was met in May 2021. Follow-up was completed by November 2021 and the study closed out at the end of that December. Sample processing and data analysis are expected to be completed by Q1 2022. This study will provide information on how effective the Measles/Rubella vaccine is in

preventing COVID-19, and it will provide potential research opportunities on whether the measles vaccine can be used as an adjuvant to the existing COVID-19 vaccines.

Being a live attenuated vaccine, the Measles/Rubella can induce a robust innate immune system response. Additionally, the vaccine can activate a more specific adaptive immune system. Such priming of the innate immune system may lead to a better initial response to a SARS-CoV2 challenge, enabling the host to rapidly suppress the invading virus. The measles virus shares structural similarities with the SARS CoV-2 virus, thus antibodies against it may offer cross protection against COVID-19.

Ethical dilemmas in times of COVID 19: Screening and tracing methods in the Zambian context

Funder: Royal Society of Tropical Medicine and Hygiene

This study uncovered several ethical and practical considerations. For example, the need to take various ethical concerns in the management of COVID-19 seriously; the need to balance practical concerns with ethical behaviour; and the need for a framework to health care professionals navigate ethical dilemmas arising from the pandemic.

The practical concerns included taking stock of what is available versus what is used and what group of people it is used for; how much information on COVID-19 cases in one particular community should be shared to avoid

Time Period: October 2020 to October 2021

stigmatization/discrimination of another community; how much and what kind data we embed in our own management programs; ensuring that resources that are donated or budgeted for the pandemic are used prudently and on the most needed things; prioritizing different groups that should receive attention; involvement of the community especially in the community management of COVID-19 and in adhering to preventative measures.

The most important outlook of the individual rights and choices during pandemics is that protecting oneself is as important as is protection of the public.

Informational and structural barriers to uptake of preventive behaviours among healthcare workers working in both isolation and non-isolation sites during COVID 19 in Zambia

Funder: Royal Society of Tropical Medicine and Hygiene

We conducted an exploratory qualitative study to gather HCW perspectives on their knowledge and skills, attitudes, and ability to practice preventive behaviours in the context of COVID-19 in Zambia. We sought these perspectives to inform interventions that can reduce the risk of COVID-19 transmission among HCW. We conducted 20 in-depth interviews with HCW in two facilities, ten from the main isolation centre and ten from a non-isolation centre in Lusaka, the epicentre of COVID-19 in Zambia. All participants were nurses serving in different departments.

Time Period: December 2020 to December 2021

The majority (65%) of our HCW were female (n= 13), single, and in the 20–35 age range. We organised our results on the three overarching themes captured by our interview guide – knowledge and information needs, experiences of handling patients during COVID-19, and recommendations for COVID-19 prevention and management. The goal of this project is to inform a policy brief that will be shared with relevant stakeholders. The brief will investigate HCW welfare as they work through the COVID-19 pandemic and prepare for future pandemics.

Zambia NCDI Commission Project

Funder: The Leona M. & Harry B. Helmsley Charitable Trust

The Global Lancet Commission on Reframing NCDs and Injuries for the Poorest Billion ("The Lancet NCDI Poverty Commission") was launched in 2015 with the aim of assessing the nature of the NCDI burden amongst the poorest billion people in the world. They did this by setting up country-specific commissions to develop actionable pro-poor pathways for NCDI intervention expansion. With funding from The Lancet NCDI Poverty Commission, a 22-member Zambian NCDI commission, chaired by Permanent Secretary - Technical Services at MOH, was set up in 2019 with its secretariat hosted at CIDRZ. The

Time Period: January 2019 to June 2022

mandate of the Zambian NCDI commission was to identify priority disease conditions and interventions, cost them, and propose a phased implementation approach for addressing NCDIs in-country towards achieving the poorest billion global health agenda. Using the Delphi method, the commission has prioritised 56 disease conditions from the Zambia Global Disease Database, interventions have been identified and costed. A technical report draft highlighting actionable recommendations is being reviewed for finalisation.

HBV Functional Cure- Hepatitis B functional Cure mechanisms in HIV (HEPMEC) study.

Funder: University of Alabama/ National Institute of Health

This project is a collaboration between UAB, CIDRZ, and University of Zambia (UNZA). The aim of this project is to evaluate the long-term outcomes of chronic HBV infection treatment with and without HIV coinfection in Zambia. A prospective cohort study design is proposed to ascertain episodes of HBV functional cure, describe the dynamics of cccDNA (the HBV reservoir) changes during treatment of HIV-HBV and HBV mono-infection, and investigate mechanisms of immune reconstitution in the liver

Time Period: September 2019 to August 2021

TRAINING UNIT

In line with the CIDRZ mission "to improve access to quality healthcare in Zambia through capacity development, exceptional implementation science and research, and impactful sustainable public health programmes," the Training Unit endeavours to implement different training programs to provide a platform for capacity development for different skills levels. Under the current year, in addition to the existing programmes, the Training Unit participated in a new activity called the USAID – Youth lead activity. The goal is to work with and build capacity for youth in partnership with the Ministry of Youth, Child, and Sports. The current training activities include:

- 1. CIDRZ PhD Fellowship
- 2. CIDRZ-HealthCorps Fellowship
- 3. MSc by Research Studentship
- 4. Internship
- 5. Global Health Corps
- 6. USAID - Youth Lead



CIDRZ PARTNERSHIPS

CIDRZ works closely with the Government of the Republic of Zambia, and local and global donor and research organizations to improve the health outcomes of Zambians. Our valued partners include:

- Ministry of Chiefs and Traditional Affairs
- Ministry of Community Development and Social Welfare
- Ministry of General Education
- Ministry of Health
- Ministry of Home Affairs
- Ministry of Local Government and Housing
- Zambia Correctional Service

- Cancer Diseases Hospital
- University Teaching Hospital
- University of Zambia

- Avert
- Centers for Disease Control and Prevention (CDC)
- Columbia University
- Crown Agents
- DesireLine
- Dignity - Danish Institute Against Torture
- European & Developing Countries Clinical Trials Partnership (EDCTP)
- Foundation for Innovative New Diagnostic (FIND)
- Fred Hutchinson Cancer Research Center
- Gavi, the Vaccine Alliance
- Global Fund
- Global Health Corps
- Imperial College of Science, Technology & Medicine
- International Association of Providers of AIDS Care
- International Centre for Diarrhoeal Research
- Johns Hopkins University
- London School of Hygiene & Tropical Medicine

- M-A-C AIDS Fund of Tides Foundation
- National Heart, Lung, and Blood Institute
- National Institute of Health (NIH)
- National Institute of Mental Health
- Research Center Borstel- Leibniz Lung Center (RCB)
- Stop TB Partnership
- Swiss Tropical and Public Health Institute
- The Amsterdam Institute for Global Health and Development (AIGHD)
- The Bill & Melinda Gates Foundation
- The Royal Society of Tropical Medicine & Hygiene
- The Washington University
- United Nations Childrens Fund (UNICEF)
- University of Alabama (UAB)
- University of Bern
- University of California, San Francisco
- University of Heidelberg
- University of Maryland, Baltimore
- University of Oxford
- University of Rochester
- University of Sussex
- University of Zambia
- USAID
- ViiV Healthcare Limited
- Wellcome Trust
- World Bank
- World Health Organisation
- World Vision

FINANCIALS

* Full Financial Statements are available at cidrz.org or by request.

CONSOLIDATED STATEMENT OF INCOME AND EXPENDITURE AND OTHER COMPREHENSIVE INCOME

	2021 Kwacha	2020 Kwacha
Programme income	796,354,303	710,773,102
Programme expenses	(683,738,742)	(591,570,363)
Operating surplus	112,615,561	119,202,739
Other income	105,588,746	55,915,447
Administrative expenses	(207,039,625)	(156,702,285)
Results from operating activities	11,164,682	18,415,901
Finance (expense) income	(25,123,420)	52,597,609
(Deficit) surplus for the year	(13,958,738)	71,013,510
Tax (expense) credit	(482,338)	215,606
(Deficit) surplus for the year after tax	(14,441,076)	71,229,116
Items that will not be reclassified subsequently to profit or loss		
Transfer of excess depreciation	345,316	198,286
Total comprehensive (loss) surplus for the period	(14,095,760)	71,427,402

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

ASSETS	2021 Kwacha	2020 Kwacha
Non-current assets	71,075,582	69,765,800
Property Plant and Equipment	-	-
Investment in subsidiaries	25,160	335,080
Deferred tax asset	71,100,742	70,100,880
Current assets		
Inventories	6,446,206	5,735,290
Trade and other receivables	94,762,122	31,334,131
Financial assets – Held to maturity	24,492,854	72,505,419
Cash and cash equivalents		
-Restricted	138,192,602	145,896,451
-Un-Restricted	40,351,159	31,865,691
	304,244,943	287,336,982
TOTAL ASSETS	375,345,685	357,437,862
Reserves and grants		
Revenue Reserves	143,109,636	157,205,396
Capital Grant	28,790,154	28,098,600
Revaluation Reserve	10,131,890	5,948,665
Total equity	182,031,680	191,252,661
Liabilities		
Current liabilities		
Deferred Income	130,942,284	86,893,390
Trade and other payables	62,199,302	79,291,811
Income tax payable	172,418	-
	193,314,004	166,185,201
TOTAL LIABILITIES	193,314,004	166,185,201
TOTAL EQUITY AND LIABILITIES	375,345,685	357,437,862

CONSOLIDATED STATEMENT OF CASHFLOWS

ASSETS	2021 Kwacha	2020 Kwacha
CASH FLOWS FROM OPERATING ACTIVITIES		
(Deficit) surplus for the year	(13,958,738)	71,013,510
Adjustments for:		
Depreciation charge	13,453,214	15,407,101
Impairment of trade receivables	4,412,221	919,781
Interest income	(10,488,152)	(12,156,892)
Loss on disposal of property and equipment	11,785,106	10,853,853
Exchange Losses(gains)	35,611,572	(40,440,717)
Operating cashflows before movement	40,815,223	45,596,636
Changes in working capital		
Decrease(increase) in inventories	(710,916)	2,743,412
(Increase)decrease in trade and other receivables	(67,840,212)	8,896,448
Decrease in long term payables	-	(6,465,676)
Increase in deferred income	44,048,894	8,413,367
(Decrease)Increase in trade and other payables	(17,092,509)	25,909,257
Net cash (utilised)generated in operating activities	(779,520)	85,093,444
CASH FLOWS FROM INVESTING ACTIVITIES		
Interest received	10,488,152	12,156,892
Project Grant	691,525	(381,915)
Reduction(Increase) in financial instruments	48,012,565	(25,562,427)
Capitalisation of CIDRZ Limited	-	-
Purchase of property and equipment	(22,019,531)	(37,430,842)
Net cash (used)generated in investing activities	37,172,711	(51,218,292)
Net increase in cash and cash equivalents	36,393,191	33,875,152
Cash and cash equivalents at 1 October 2020	177,762,142	103,446,273
Exchange differences	(35,611,572)	40,440,717
Cash and cash equivalents at 30 September 2021	178,543,761	177,762,142

PROGRAMME INCOME

Programme Income	2021 Kwacha	2020 Kwacha
LIFE	174,806,723	118,893,513
ACHIEVE	157,512,449	354,813,507
USAID ECAP III(SDVCA)	63,540,937	-
USAID TB LON	59,554,114	9,238,662
ZAM AMR	49,526,371	11,357,835
PROUD Z	32,314,536	-
GATES PCC	28,215,881	28,879,153
ETVAX PROJECT	20,227,353	26,668,392
GAVI	19,132,186	7,254,103
NRRV	15,867,946	19,814,412
SHIGORA VAX	14,169,939	11,535,023
PASS THROUGH FUNDS	12,583,037	-
NIH TASKPEN	10,344,413	-
leDEA	10,196,151	7,146,005
ROTAVAC TRIAL	8,099,700	6,025,491
GENERIC BRANDING	7,251,737	-
WHO HIV	6,865,743	5,068,703
CORONATION STUDY	6,716,904	-
Mental Health	6,606,344	9,835,921
HVTN	5,974,485	7,279,402
VMMC	5,077,285	2,093,477
LAM FRESH/ FUJILAM	4,291,060	1,628,578
NIH - CTU	3,044,462	4,063,355
SKILLS	3,037,449	3,983,085
HEPATITIS - B	2,998,773	3,566,142
TB REACH	2,546,321	3,500,309
EDCTP ROVAS 2	2,322,141	1,666,088
EDCTP CHO VAXIM	2,322,141	2,648,726
CIRCUITS	1,919,949	14,751,637
ACHIEVE ADVANCING CERVICAL CANCER SCREENING	1,094,962	1,209,780
WELCOMETRUST	744,941	2,124,281
Z CHECK	387,437	2,634,301
HIVST VM STUDY	302,783	2,789,262
CHASE	292,455	1,265,183
GYNOCULAR	124,829	1,189,134
AERAS	-	1,462,395
AVERT - YOUNG VOICES EDUCATION IN ZAMBIA	-	1,382,165
UCSF - GLADSTONE CENTER FOR AIDS	-	1,140,717
HIC - VAC	-	1,006,476
ELTON JOHN	-	3,377,407
POLIO EOC PROJECT	-	2,716,708
MOH GLOBAL FUND	-	1,807,603
ANALYSIS	-	1,671,146
INTERGRATED CAD	-	1,537,240
OTHER PROJECTS	56,340,366	21,747,782
	796,354,303	710,773,102

CIDRZ PUBLICATIONS

- Beres LK, Mody A, Sikombe K, Nicholas LH, Schwartz S, Eshun-Wilson I, Somwe P, Simbeza S, Pry J M, Kaumba P, McGready J, Holmes CB, Bolton-Moore C, Sikazwe I, Denison JA, Geng EH.** The effect of tracer contact on return to care among adult, "lost to follow-up" patients living with HIV in Zambia: an instrumental variable analysis. *J Int AIDS Soc.* 2021 Dec;24(12):e25853. doi: 10.1002/jia2.25853. PMID: 34921515; PMCID: PMC8683971.
- Beres LK, Schwartz S, Simbeza S, McGready J, Eshun-Wilson I, Mwamba C, Sikombe K, Topp SM, Somwe P, Mody A, Mukamba N, Ehrenkranz PD, Padian N, Pry J, Moore CB, Holmes CB, Sikazwe I, Denison JA, Geng E.** Patterns and Predictors of Incident Return to HIV Care Among Traced, Disengaged Patients in Zambia: Analysis of a Prospective Cohort. *J Acquir Immune Defic Syndr.* 2021 Mar 1;86(3):313-322. doi: 10.1097/QAI.0000000000002554. PMID: 33149000; PMCID: PMC7878284.
- Chilengi R, Mwila-Kazimbaya K, Chirwa M, Sukwa N, Chipeta C, Velu RM, Katanekwa N, Babji S, Kang G, McNeal MM, Meyer N, Gompana G, Hazra S, Tang Y, Flores J, Bhat N, Rathi N.** Immunogenicity, and safety of two monovalent rotavirus vaccines, ROTAVAC® and ROTAVAC 5D® in Zambian infants. *Vaccine.* 2021 Jun 16;39(27):3633-3640. doi: 10.1016/j.vaccine.2021.04.060. Epub 2021 May 12. PMID: 33992437; PMCID: PMC8204902.
- Chilengi R, Simuyandi M, Chibuye M, Chirwa M, Sukwa N, Laban N, Chisenga C, Silwamba S, Grassly N, Bosomprah S.** A pilot study on use of live attenuated rotavirus vaccine (Rotarix™) as an infection challenge model. *Vaccine.* 2020 October27;38(46):7357-7362. doi: 10.1016/j.vaccine.2020.09.023. Epub 2020 October5. PMID: 33032844.
- Chilyabanyama ON, Chilengi R, Laban NM, Chirwa M, Simuyandi M, Hatyoka LM, Ngaruye I, Iqbal NT, Bosomprah S.** Comparing growth velocity of HIV exposed and non-exposed infants: An observational study of infants enrolled in a randomized control trial in Zambia. *PLoS One.* 2021 August 23;16(8):e0256443. doi: 10.1371/journal.pone.0256443. PMID: 34424916; PMCID: PMC8382174.
- Chimoyi L, Smith H, Hausler H, Fielding K, Hoffmann CJ, Herce ME, Charalambous S.** Delivery of TB preventive therapy to incarcerated people living with HIV in southern African correctional facilities. *Public Health Action.* 2021 December21;11(4):171-173. doi: 10.5588/pha.21.0056. PMID: 34956843; PMCID: PMC8680178.
- Chisenga CC, Bosomprah S, Simuyandi M, Mwila-Kazimbaya K, Chilyabanyama ON, Laban NM, Bialik A, Asato V, Meron-Sudai S, Frankel G, Cohen D, Chilengi R.** Shigella-specific antibodies in the first year of life among Zambian infants: A longitudinal cohort study. *PLoS One.* 2021 May 27;16(5):e0252222. doi: 10.1371/journal.pone.0252222. PMID: 34043697; PMCID: PMC8158915.
- Daka V, Mubanga M, Mukanga B, Mfuno RL, Chileshe M, Machiko A, Mudenda S, Chikwanda E, Mudenda T, Simusika P, Mwale S, Musalula S.** Challenges that may impact achieving and maintaining accreditation in clinical laboratories in Zambia during the COVID-19 pandemic. *Pan Afr Med J.* 2021 Mar 19;38:290. doi: 10.11604/pamj.2021.38.290.27836. PMID: 34122717; PMCID: PMC8179981.
- Debela DT, Muzazu SG, Heraro KD, Ndalama MT, Mesele BW, Haile DC, Kitui SK, Manyazewal T.** New approaches and procedures for cancer treatment: Current perspectives. *SAGE Open Med.* 2021 August 12;9:20503121211034366. doi: 10.1177/20503121211034366. PMID: 34408877; PMCID: PMC8366192.
- Dybul M, Attoye T, Baptiste S, Cherutich P, Dabis F, Deeks SG, Dieffenbach C, Doehle B, Goodenow MM, Jiang A, Kempes D, Lewin SR, Lumpkin MM, Mathae L, McCune JM, Ndung'u T, Nsubuga M, Peay HL, Pottage J, Warren M, Sikazwe I;** Sunnylands 2019 Working Group. The case for an HIV cure and how to get there. *Lancet HIV.* 2021 Jan;8(1):e51-e58. doi: 10.1016/S2352-3018(20)30232-0. Epub 2020 November30. PMID: 33271124; PMCID: PMC7773626.
- Ehrenkranz P, Rosen S, Boule A, Eaton JW, Ford N, Fox MP, Grimsrud A, Rice BD, Sikazwe I, Holmes CB.** The revolving door of HIV care: Revising the service delivery cascade to achieve the UNAIDS 95-95-95 goals. *PLoS Med.* 2021 May 24;18(5):e1003651. doi: 10.1371/journal.pmed.1003651. PMID: 34029346; PMCID: PMC8186775.
- Elafros MA, Belessiotis-Richards C, Birbeck GL, Bond V, Sikazwe I, Kvalsund MP.** A qualitative study of patient, caregiver, doctor, and nurse views of factors influencing lumbar puncture uptake in Zambia. *Trans R Soc Trop Med Hyg.* 2021 August 5;trab124. doi: 10.1093/trstmh/trab124. Epub ahead of print. PMID: 34352890.
- Grimsrud A, Wilkinson L, Eshun-Wilson I, Holmes C, Sikazwe I, Katz IT.** Understanding Engagement in HIV Programmes: How Health Services Can Adapt to Ensure No One Is Left Behind. *Curr HIV/AIDS Rep.* 2020 Oct;17(5):458-466. doi: 10.1007/s11904-020-00522-1. PMID: 32844274; PMCID: PMC7497373.

- Herce ME, Hoffmann CJ, Fielding K, Topp SM, Hausler H, Chimoyi L, Smith HJ, Chetty-Makkan CM, Mukora R, Tlali M, Olivier AJ, Muyoyeta M, Reid SE, Charalambous S.** Universal test-and-treat in Zambian and South African correctional facilities: a multisite prospective cohort study. *Lancet HIV.* 2020 Dec;7(12):e807-e816. doi: 10.1016/S2352-3018(20)30188-0. Epub 2020 August 4. PMID: 32763152.
- Heri AB, Cavallaro FL, Ahmed N, Musheke MM, Matsui M.** Changes over time in HIV testing and counselling uptake and associated factors among youth in Zambia: a cross-sectional analysis of demographic and health surveys from 2007 to 2018. *BMC Public Health.* 2021 Mar 6;21(1):456. doi: 10.1186/s12889-021-10472-x. PMID: 33676482; PMCID: PMC7937241.
- Hosseini-pour MC, Innes C, Naidoo S, Mann P, Hutter J, Ramjee G, Sebe M, Maganga L, Herce ME, deCamp AC, Marshall K, Dintwe O, Andersen-Nissen E, Tomaras GD, Mkhize N, Morris L, Jensen R, Miner MD, Pantaleo G, Ding S, Van Der Meeren O, Barnett SW, McElrath MJ, Corey L, Kublin JG;** HVTN 111 Protocol Team. Phase 1 Human Immunodeficiency Virus (HIV) Vaccine Trial to Evaluate the Safety and Immunogenicity of HIV Subtype C DNA and MF59-Adjuvanted Subtype C Envelope Protein. *Clin Infect Dis.* 2021 January23;72(1):50-60. doi: 10.1093/cid/ciz1239. PMID: 31900486; PMCID: PMC7823071.
- Iyuu V, Technau KG, Vinikoor M, Yotebieng M, Vreeman R, Abuogi L, Desmonde S, Edmonds A, Amorissani-Folquet M, Davies MA;** IeDEA Collaboration. Variations in the characteristics and outcomes of children living with HIV following universal ART in sub-Saharan Africa (2006-17): a retrospective cohort study. *Lancet HIV.* 2021 Jun;8(6):e353-e362. doi: 10.1016/S2352-3018(21)00004-7. Epub 2021 Apr 28. PMID: 33932330; PMCID: PMC8178242.
- Jaquet A, Muula G, Ekouevi DK, Wandeler G.** Elimination of Viral Hepatitis in Low and Middle-Income Countries: Epidemiological Research Gaps. *Curr Epidemiol Rep.* 2021 Sep;8(3):89-96. doi: 10.1007/s40471-021-00273-6. Epub 2021 Jul 31. PMID: 34532216; PMCID: PMC8443244.
- Jo Y, Kagujje M, Johnson K, Dowdy D, Hangoma P, Chiliukutu L, Muyoyeta M, Sohn H.** Costs and cost-effectiveness of a comprehensive tuberculosis case finding strategy in Zambia. *PLoS One.* 2021 September9;16(9):e0256531. doi: 10.1371/journal.pone.0256531. PMID: 34499668; PMCID: PMC8428570.
- Kagujje M, Somwe P, Hatwiinda S, Bwalya J, Zgambo T, Thornicroft M, Bozzani FM, Moonga C, Muyoyeta M.** Cross-sectional assessment of tuberculosis and HIV prevalence in 13 correctional facilities in Zambia. *BMJ Open.* 2021 September27;11(9):e052221. doi: 10.1136/bmjopen-2021-052221. PMID: 34580101; PMCID: PMC8477336.
- Kane JC, Glass N, Bolton PA, Mayeya J, Paul R, Mwenge M, Murray LK.** Two-year treatment effects of the common elements treatment approach (CETA) for reducing intimate partner violence and unhealthy alcohol use in Zambia. *Glob Ment Health (Camb).* 2021 February19;8:e4. doi: 10.1017/gmh.2021.2. PMID: 34026235; PMCID: PMC8127632.
- Kane JC, Sharma A, Murray LK, Chander G, Kanguya T, Skavenski S, Chitambi C, Lasater ME, Paul R, Cropsey K, Inoue S, Bosomprah S, Danielson CK, Chipungu J, Simenda F, Vinikoor MJ.** Efficacy of the Common Elements Treatment Approach (CETA) for Unhealthy Alcohol Use Among Adults with HIV in Zambia: Results from a Pilot Randomized Controlled Trial. *AIDS Behav.* 2021 Jul 30:1-14. doi: 10.1007/s10461-021-03408-4. Epub ahead of print. PMID: 34328570; PMCID: PMC8322829.
- Kasaro MP, Chilyabanyama ON, Shah NS, Muluka B, Kapata N, Krüüner A, Mwaba I, Kaunda K, Coggin WL, Wen XJ, Henostroza G, Reid S.** Performance of Xpert[®] MTB/RIF and Determine™ TB-LAM Ag in HIV-infected adults in peri-urban sites in Zambia. *Public Health Action.* 2020 December21;10(4):134-140. doi: 10.5588/pha.20.0010. PMID: 33437678; PMCID: PMC7790492.
- Kazimbaya KM, Chisenga CC, Simuyandi M, Phiri CM, Laban NM, Bosomprah S, Permar SR, Munsaka S, Chilengi R.** In-vitro inhibitory effect of maternal breastmilk components on rotavirus vaccine replication and association with infant seroconversion to live oral rotavirus vaccine. *PLoS One.* 2020 November10;15(11):e0240714. doi: 10.1371/journal.pone.0240714. PMID: 33170860; PMCID:PMC7654788.
- Kerkhoff AD, Cattamanchi A, Muyoyeta M, Denkinger CM, Dowdy DW.** Validating novel diagnostic assays for tuberculosis in the context of existing tools. *Lancet Glob Health.* 2021 Sep;9(9):e1209. doi: 10.1016/S2214-109X(21)00306-5. PMID: 34416206.
- Kerkhoff AD, Kagujje M, Nyangu S, Mateyo K, Sanjase N, Chilukutu L, Eshun-Wilson I, Geng EH, Havlir DV, Muyoyeta M.** Pathways to care and preferences for improving tuberculosis services among tuberculosis patients in Zambia: A discrete choice experiment. *PLoS One.* 2021 August 31;16(8):e0252095. doi: 10.1371/journal.pone.0252095. PMID: 34464392; PMCID: PMC8407587.
- Khalil I, Walker R, Porter CK, Muhib F, Chilengi R, Cravioto A, Guerrant R, Svennerholm AM, Qadri F, Baqar S, Kosek M, Kang G, Lanata C, Armah G, Wierzba T, Hasso-Agopsowicz M, Giersing B, Louis Bourgeois A.** Enterotoxigenic Escherichia coli (ETEC) vaccines: Priority activities to enable product development, licensure, and global access. *Vaccine.* 2021 Jul 13;39(31):4266-4277. doi: 10.1016/j.vaccine.2021.04.018. Epub 2021 May 6. PMID: 33965254; PMCID: PMC8273896.

28. **Kunda-Ngandu EM, Chirwa-Chobe M, Mwamba C, Chipungu J, Ng'andu E, Mwanyungwi Chinganya H, Simuyandi M, Chilengi R, Sharma A.** Exploring willingness to participate in future Human Infection Studies in Lusaka, Zambia: A nested qualitative exploratory study. *PLoS One.* 2021 Jul 9;16(7):e0254278. doi: 10.1371/journal.pone.0254278. PMID: 34242320; PMCID: PMC8270142.
29. **Kunda-Ng'andu EM, Simuyandi M, Kapulu M, Chirwa-Chobe M, Mwanyungwi- Chinganya H, Mwale S, Chilengi R, Sharma A.** Engagement of ethics and regulatory authorities on human infection studies: Proceedings of an engagement workshop in Zambia. *Wellcome Open Res.* 2021 September14;6:31. doi: 10.12688/wellcomeopenres.16432.2. PMID: 33824912; PMCID: PMC7993625.
30. **Lewin SR, Attoye T, Bansbach C, Doehle B, Dubé K, Dybul M, SenGupta D, Jiang A, Johnston R, Lamplough R, McCune JM, Nabel GJ, Ndung'u T, Pottage J, Ripin D, Rooney JF, Sikazwe I, Nsubuga M, Warren M, Deeks SG;** Sunnylands 2019 Working Group. Multi-stakeholder consensus on a target product profile for an HIV cure. *Lancet HIV.* 2021 Jan;8(1):e42-e50. doi: 10.1016/S2352-3018(20)30234-4. Epub 2020 November30. PMID: 33271125; PMCID: PMC7773628.
31. **Luchen CC, Mwaba J, Ng'ombe H, Alabi PIO, Simuyandi M, Chilyabanyama ON, Hatyoka LM, Mubanga C, Bosomprah S, Chilengi R, Chisenga CC.** Effect of HIV status and retinol on immunogenicity to oral cholera vaccine in adult population living in an endemic area of Lukanga Swamps, Zambia. *PLoS One.* 2021 December2;16(12):e0260552. doi: 10.1371/journal.pone.0260552. PMID: 34855835; PMCID: PMC8639067.
32. **Mubiana-Mbewe M, Bosomprah S, Kadota JL, Koyuncu A, Kusanathan T, Mweebo K, Musokotwane K, Mulenga PL, Chi BH, Vinikoor MJ.** Effect of Enhanced Adherence Package on Early ART Uptake Among HIV-Positive Pregnant Women in Zambia: An Individual Randomized Controlled Trial. *AIDS Behav.* 2021 Mar;25(3):992-1000. doi: 10.1007/s10461-020-03060-4. Epub 2020 October8. PMID: 33033996.
33. **Mukamba N, Beres LK, Mwamba C, Law JW, Topp SM, Simbeza S, Sikombe K, Padian N, Holmes CB, Geng EH, Sikazwe I.** How might improved estimates of HIV programme outcomes influence practice? A formative study of evidence, dissemination and response. *Health Res Policy Syst.* 2020 October16;18(1):121. doi: 10.1186/s12961-020-00640-7. PMID: 33066785; PMCID: PMC7568347.
34. **Mulubwa C, Munakampe MN, Namakula H, Hernandez A, Ssekamatte T, Atuyambe LM, Birabwa C, Chemonges D, Namatovu F, Makumbi F, Tetui M.** Framing Contraceptive Use Motivations Among Adolescents and Young Adults Living in Informal Settlements in Kira Municipality, Wakiso District, Uganda. *Front Glob Womens Health.* 2021 Jul 21;2:658515. doi: 10.3389/fgwh.2021.658515. PMID: 34816215; PMCID: PMC8594010.
35. **Mwaba J, Chisenga CC, Xiao S, Ng'ombe H, Banda E, Shea P, Mabula-Bwalya C, Mwila-Kazimbaya K, Laban NM, Alabi P, Chirwa-Chobe M, Simuyandi M, Harris J, Iyer AS, Bosomprah S, Scalzo P, Murt KN, Ram M, Kwenda G, Ali M, Sack DA, Chilengi R, Debes AK.** Serum vibriocidal responses when second doses of oral cholera vaccine are delayed 6 months in Zambia. *Vaccine.* 2021 Jul 22;39(32):4516-4523. doi: 10.1016/j.vaccine.2021.06.034. Epub 2021 Jul 1. PMID: 34217572.
36. **Mwaba J, Debes AK, Murt KN, Shea P, Simuyandi M, Laban N, Kazimbaya K, Chisenga C, Li S, Almeida M, Meisel JS, Shibemba A, Kantenga T, Mukonka V, Kwenda G, Sack DA, Chilengi R, Stine OC.** Three transmission events of *Vibrio cholerae* O1 into Lusaka, Zambia. *BMC Infect Dis.* 2021 Jun 14;21(1):570. doi: 10.1186/s12879-021-06259-5. PMID: 34126945; PMCID: PMC8200794.
37. **Mwamba C, Kerkhoff AD, Kagujje M, Lungu P, Muyoyeta M, Sharma A.** Diagnosed with TB in the era of COVID-19: patient perspectives in Zambia. *Public Health Action.* 2020 December21;10(4):141-146. doi: 10.5588/pha.20.0053. PMID: 33437679; PMCID: PMC7790493.
38. **Nikanjam M, Tran L, Chadwick EG, Bwakura-Dangarembizi M, Moore CB, Samson P, Spector SA, Chakhtoura N, Jean-Philippe P, Frenkel L, Zimmer B, Bennis A, Libous J, Capparelli EV.** Impact of CYP2B6 genotype, TB therapy and formulation on efavirenz pharmacokinetics in infants and children under 40 months of age. *AIDS.* 2021 December6. doi: 10.1097/QAD.0000000000003141. Epub ahead of print. PMID: 34873089.
39. **Pry JM, Manasyan A, Kapambwe S, Taghavi K, Duran-Frigola M, Mwanahamuntu M, Sikazwe I, Matambo J, Mubita J, Lishimpi K, Malama K, Bolton Moore C.** Cervical cancer screening outcomes in Zambia, 2010-19: a cohort study. *Lancet Glob Health.* 2021 Jun;9(6):e832-e840. doi: 10.1016/S2214-109X(21)00062-0. PMID: 34019837.
40. **Reñosa MDC, Mwamba C, Meghani A, West NS, Hariyani S, Ddaaki W, Sharma A, Beres LK, McMahan S.** Selfie consents, remote rapport, and Zoom debriefings: collecting qualitative data amid a pandemic in four resource-constrained settings. *BMJ Glob Health.* 2021 Jan;6(1):e004193. doi: 10.1136/bmjgh-2020-004193. PMID: 33419929; PMCID: PMC7798410.

41. **Sikombe K, Mody A, Kadota J, Pry JJ, Simbeza S, Eshun-Wilson I, Situmbeko SR, Bukankala C, Beres L, Mukamba N, Wa Mwanza M, Bolton-Moore C, Holmes CB, Geng EH, Sikazwe I.** Understanding patient transfers across multiple clinics in Zambia among HIV infected adults. *PLoS One.* 2020 November4;15(11):e0241477. doi: 10.1371/journal.pone.0241477. PMID: 33147250; PMCID: PMC7641414.
42. **Smith HJ, Topp SM, Hoffmann CJ, Ndlovu T, Charalambous S, Murray L, Kane J, Sikazwe I, Muyoyeta M, Herce ME.** Addressing Common Mental Health Disorders Among Incarcerated People Living with HIV: Insights from Implementation Science for Service Integration and Delivery. *Curr HIV/AIDS Rep.* 2020 Oct;17(5):438-449. doi: 10.1007/s11904-020-00518-x. PMID: 32779099; PMCID: PMC7668352.
43. **Stranix-Chibanda L, Tierney C, Pinilla M, George K, Aizire J, Chipoka G, Mallewa M, Naidoo M, Nematadzira T, Kusakara B, Violaria A, Mbengeranwa T, Njau B, Fairlie L, Theron G, Mubiana-Mbewe M, Khadse S, Browning R, Fowler MG, Siberry GK;** PROMISE Study Team. Effect on growth of exposure to maternal antiretroviral therapy in breastmilk versus extended infant nevirapine prophylaxis among HIV-exposed perinatally uninfected infants in the PROMISE randomized trial. *PLoS One.* 2021 August 20;16(8):e0255250. doi: 10.1371/journal.pone.0255250. PMID: 34415933; PMCID: PMC8378741.
44. **Sukwa N, Simuyandi M, Chirwa M, Kumwimba YM, Chilyabanyama ON, Laban N, Koyuncu A, Chilengi R.** Clinical presentation of congenital syphilis in a rotavirus vaccine cohort study in Lusaka: a case series. *J Med Case Rep.* 2021 Apr 1;15(1):149. doi: 10.1186/s13256-021-02745-1. PMID: 33789741; PMCID: PMC8015191.
45. **Taghavi K, Moono M, Asangbeh S, Gillett G, Pascoe M, Manasyan A.** Strengthening global commitment to eliminating cervical cancer: What lessons from the past can we apply to the future? *J Glob Health.* 2020 Dec;10(2):020385. doi: 10.7189/jogh.10.020385. PMID: 33214893; PMCID: PMC7648905.
46. **Taghavi K, Moono M, Mwanahamuntu M, Basu P, Limacher A, Tembo T, Kapesa H, Hamusonde K, Asangbeh S, Sznitman R, Low N, Manasyan A, Bohlius J.** Screening test accuracy to improve detection of precancerous lesions of the cervix in women living with HIV: a study protocol. *BMJ Open.* 2020 December18;10(12):e037955. doi: 10.1136/bmjopen-2020-037955. PMID: 33371015; PMCID: PMC7751198.
47. **Tavaziva G, Harris M, Abidi SK, Geric C, Breuninger M, Dheda K, Esmail A, Muyoyeta M, Reither K, Majidulla A, Khan AJ, Campbell JR, David PM, Denkinger C, Miller C, Nathavitharana R, Pai M, Benedetti A, Khan FA.** Chest X-ray analysis with deep learning-based software as a triage test for pulmonary tuberculosis: an individual patient data meta-analysis of diagnostic accuracy. *Clin Infect Dis.* 2021 Jul 21;ciab639. doi: 10.1093/cid/ciab639. Epub ahead of print. PMID: 34286831.
48. **Tembo T, Koyuncu A, Zhuo H, Mwendafilumba M, Manasyan A.** The association of maternal age with adverse neonatal outcomes in Lusaka, Zambia: a prospective cohort study. *BMC Pregnancy Childbirth.* 2020 November11;20(1):684. doi: 10.1186/s12884-020-03361-5. PMID: 33176718; PMCID: PMC7659156.
49. **Tsondai PR, Braithwaite K, Fatti G, Bolton Moore C, Chimbetete C, Rabie H, Phiri S, Sawry S, Eley B, Hobbins MA, Boule A, Taghavi K, Sohn AH, Davies MA.** Characteristics and outcomes of adolescents living with perinatally acquired HIV within Southern Africa. *AIDS.* 2020 December1;34(15):2275-2284. doi: 10.1097/QAD.0000000000002683. PMID: 32910063; PMCID: PMC7674245.
50. **Velu RM, Kwenda G, Libonda L, Chisenga CC, Flavien BN, Chilyabanyama ON, Simunyandi M, Bosomprah S, Sande NC, Changula K, Muleya W, Mburu MM, Mubemba B, Chitanga S, Tembo J, Bates M, Kapata N, Orba Y, Kajihara M, Takada A, Sawa H, Chilengi R, Simulundu E.** Mosquito-Borne Viral Pathogens Detected in Zambia: A Systematic Review. *Pathogens.* 2021 August 10;10(8):1007. doi: 10.3390/pathogens10081007. PMID: 34451471; PMCID: PMC8401848.
51. **Vinikoor MJ, Hachaambwa L.** Advanced HIV disease during the 'Treat All' era in Botswana. *AIDS.* 2020 December1;34(15):2321-2323. doi: 10.1097/QAD.0000000000002701. PMID: 33196496; PMCID: PMC8137811.
52. **Vinikoor MJ.** TREAT-B: Simple Low-Cost Diagnostic Score for When to Treat Hepatitis B. *Clin Infect Dis.* 2021 September7;73(5):e1078-e1079. doi: 10.1093/cid/ciaa1820. PMID: 33277659; PMCID: PMC8423460.

ACRONYMS

AI	Artificial Intelligence
AIDS	acquired immunodeficiency syndrome
AIGHD	Amsterdam Institute for Global Health and Development
C/ALHIV	Children or Adolescents Living with HIV
AMR	Antimicrobial resistance
AMRCC	Antimicrobial Resistance Coordinating Committee
ANC	Antenatal care
APHL	American Public Health Laboratories
ART	anti-retroviral therapy
ARV	antir-retrovirals
ASCEND	Accelerating the Sustainable Control and Elimination of Neglected Tropical Diseases
AYANI	Adolescent and Young Adult Network of leDEA
AYP	adolescents and young people
BITKZ	Be in the Know Zambia
CBS	Case-based Surveillance
CC	cervical cancer
CDC	Center for Disease Control & Prevention
CETA	Common Elements Treatment Approach
CFAR	Centers for AIRS Research
CHAZ	Churches Health Association of Zambia (CHAZ)
CIDRZ	Centre for Infectious Disease Research in Zambia
COVID	corona virus disease
CQI	Continuous Quality Improvement
CRS	clinical research sites
CSE	comprehensive sexuality education
CSO	Civil Society Organizations
CTU	Clinical Trial Unit
DFID	UK Department for International development
DIGNITY	Dignity - Danish Institute Against Torture
DSD	Differentiated Service Delivery
DTG	Dolutegravir
ECAP	Empowered Children and Adolescents Program
EDCTP	European and Developing Countries Clinical Trials Partnership

EDVRU	Enteric Disease Vaccine Research Unit
EED	environmental enteric dysfunction
ELISA	enzyme-linked immunosorbent assay (ELISA)
ELISPOT	enzyme-linked immune absorbent spot (ELISpot)
EMR	Electronic Medical Record
EOC	Emergency Operations Centre
EPI	Expanded Programme on Immunisations
ETEC	Enterotoxigenic Escherichia coli
ETVAX	ETEC Vaccine
FIND	Foundation for Innovative New Diagnostic
GAVI	Gavi, the Vaccine Alliance
GBV	Gender Based Violence
GRZ	Government of the Republic of Zambia
HBCC	Human and Behaviour Change Coalition
HBV	hepatitis B virus
HCW	Health Care Worker
HIC	Human Infection Challenge
HIV	human immunodeficiency virus
HIVST	HIV self-testing
HPV	human papillomavirus
HSS	Health Systems Strengthening
HVTN	HIV Vaccine Trials Network
IEC	information, education and communication
IPC	Infection Prevention Control
IPV	Intimate Partner Violence
KAP	Knowledge Attitude and Practices
KP	Key Populations
KPIF	Key Populations Investment Fund
LIFE	Laboratory Innovation for Excellence
LIS	Laboratory Information Systems
LMIC	low- and middle-income country
LPHO	Lusaka Provincial Health Office
LQAS	Lot Quality Assurance Sampling
LTFU	Lost to follow up
MC	male circumcision

MCEP	Multisectoral Cholera Elimination Plan
MCH	Maternal and Child Health clinics
MERS	Middle East respiratory syndrome
MOH	Ministry of Health
MSD	moderate-to-severe diarrhoea
NCD	Non-Communicable Diseases
NHC	Neighbourhood Health Committee
NHRA	National Health Research Authority
NICHD	National Institute of Child Health and Human and Development
NIH	National Institutes of Health
NRRV	Non-Replicating Rotavirus
OCV	oral cholera vaccines
OVC	orphans and vulnerable children
PCC	Patient Centred Care
PCR	polymerase chain reaction
PEF	Partnership Engagement Framework
PEP	post-exposure prophylaxis
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PHAC	Prisons Health Advisory Committee's
PHO	Provincial Health Office
PLHIV	people living with HIV
PREP	Pre-exposure Prophylaxis
RCCE	risk communication and community engagement
RMNCH	Reproductive, Maternal, Neonatal and Child Health
SARS	Severe Acute Respiratory Syndrome (SARS)
SI	Strategic Information
SNS	Social Network Strategy
SOP	standard operating procedures
SRH	sexual and reproductive health
SRHR	sexual reproductive health rights
SSRG	Social and Behavioural Science department
STI	sexual transmitted infection
TA	Technical Assistance
TB	Tuberculosis
TPT	TB Preventive Treatment
UAB	University of Alabama Birmingham
UK	United Kingdom
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations International Children's Emergency Fund

UNZA	University of Zambia
UNZABREC	University of Zambia Biomedical Research Ethics Committee
USAID	United States Agency for International Development
UTH	University Teaching Hospital
VCA	Vulnerable Children and Adolescents
VIA	visual inspection with acetic acid
VL	Viral Load
VMMC	Voluntary Medical Male Circumcision
WASH	water, sanitation and hygiene
WHA	World Health Assembly
WHO	World Health Organization
WLHIV	women living with HIV
ZAMR	Zambia Anti-Microbial Resistance
ZAMRA	Zambian Medical Research Authority
ZCS	Zambian correctional services
ZITAG	Zambia Immunisation Technical Advisory Group
ZNPHI	Zambia National Public Health Institute



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