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IN THIS ISSUE

About the HEALTH PRESS

The Health Press is an open-access and peer-reviewed public health bulletin published by Zambia National Public Health Institute (ZNPHI). It was founded with the mission of offering a forum for the exchange and dissemination of health-related research and knowledge in Zambia and around the world. Its goals include spreading information on Zambia's public health security status and guide policy direction on health security in the country. The issue of the Health Press typically includes a research article, outbreak investigation, field notes and epidemiological bulletin. A new issue is published quarterly online and can be accessed at https://thp.znphi.co.zm/index.php/thehealthpress.

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FOREWORD

It is my pleasure to present the Quarter 4, 2025 issue of The Health Press, which brings together timely analyses, programmatic evidence, and applied public health insights that speak directly to Zambia's evolving health security landscape. This issue reflects our Institute's commitment to evidence-informed action, and the translation of research into policy and practice.

The editorial, Building Enduring Health Security Systems: Insights from the 2025 Conference on Public Health in Africa, situates Zambia's priorities within broader continental discussions on sovereignty, sustainability, and system strengthening. As highlighted during the Conference on Public Health in Africa held in Durban, health security can no longer be approached as a series of emergency responses. Instead, it must be institutionalised through strong National Public Health Institutes, interoperable data systems, routine use of advanced surveillance tools, and predictable domestic financing. These themes resonate strongly with Zambia's ongoing efforts to consolidate gains made during recent outbreaks and to embed preparedness within routine health system functions.

This issue also features a detailed case investigation of a suspected drug-resistant tuberculosis patient in Chongwe District. The article highlights the critical importance of accurate and timely molecular diagnostics in guiding appropriate clinical and public health responses. By demonstrating how stepwise use of GeneXpert technologies prevented misclassification of extensively drug-resistant tuberculosis, the investigation highlights the value of laboratory capacity, adherence support, and rigorous case management in high-burden settings. Such applied field investigations are central to strengthening surveillance, protecting communities, and ensuring efficient use of limited resources.

Further, the issue presents early programmatic results from the implementation of long-acting injectable Cabotegravir for HIV pre-exposure prophylaxis in Livingstone District. The findings provide encouraging evidence of high uptake, a favourable short-term safety profile, and zero HIV seroconversions during follow-up, while also drawing attention to the need for integrated sexually transmitted infection prevention and robust pharmacovigilance. As Zambia continues to expand access to innovative HIV prevention tools, locally generated evidence such as this is essential for guiding scale-up, refining service delivery models, and safeguarding public trust.

Complementing these articles is a surveillance summary of priority diseases and events reported in 2025. The trends presented reinforce the persistent burden of malaria and tuberculosis, while also highlighting seasonal and localized increases in conditions such as typhoid fever and anthrax. These patterns emphasise the importance of timely surveillance, subnational analysis, and coordinated response.

Collectively, the contributions in this issue exemplify the role of The Health Press as a platform for disseminating credible, locally relevant public health evidence. I commend the authors, reviewers, and editorial team for their dedication to scientific rigor and clarity. I encourage policymakers, practitioners, researchers, and partners to engage with the insights presented, reflect on their implications, and apply them in advancing Zambia's public health agenda.

Prof. Roma Chilengi

Director General - Zambia National Public Health Institute

Editorial

Building Enduring Health Security Systems: Insights from the 2025 Conference on Public Health in Africa

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Introduction

The Conference on Public Health in Africa (CPHIA), held in Durban, South Africa, from October 22nd to 25th, 2025, marked a turning point in Africa's public health narrative. Discussions moved decisively beyond emergency response toward sovereignty, sustainability, and system strengthening. Across plenaries and technical sessions, one message was consistent: Africa's health security will best be secured by stable institutions, sovereignty over data, and predictable financing.

Recent global health shocks exposed structural weaknesses but also demonstrated what works. Countries with strong public health institutions, timely surveillance, and clear leadership responded more quickly and recovered more quickly (1,2). CPHIA 2025, therefore, challenged Member States to consolidate crisis-driven gains into routine, nationally owned systems. Health security was framed not as a technical aspiration, but as a core development and governance choice.

The Role of National Public Health Institutes

National Public Health Institutes (NPHIs) were identified as the backbone of preparedness. Their role extends beyond outbreak response. NPHIs integrate surveillance, laboratories, emergency operations, research translation, and coordination across sectors. Evidence shows that countries with empowered public health institutions achieve greater coherence and speed during crises (1).

The continental emphasis on measurable performance was particularly notable. The 7-1-7 framework: detecting outbreaks within seven days, reporting within one day, and initiating response actions within seven days, has shifted preparedness from static capacity assessments to accountability for speed (2). This approach exposes real system bottlenecks, including delayed sample transport, fragmented data, and under-resourced subnational response.

For Zambia, the lesson is clear. Preparedness must be institutionalized, measured, and there must be continuous learning and improvement . Timeliness should be tracked routinely. NPHIs must be enabled to lead, and not only convene during crises.

Data System Interoperability

CPHIA 2025 reinforced that data is at the core of emergency preparedness. Digital health systems are expanding across Africa, yet many remain fragmented and donor-dependent. This fragmentation undermines real-time decision-making. Interoperability is therefore not optional. It is foundational (3).

For Zambia, the priority is to formalize a national interoperability agenda anchored by the NPHI and aligned with health information governance frameworks. This will allow event-based surveillance, laboratory systems, emergency operations, and program datasets to communicate seamlessly. Interoperability reduces duplication and avoids additional reporting burdens. It is not an abstract goal; it is the infrastructure that enables speed. Without interoperability, early detection and rapid response remain limited (2,3).

Genomic sequencing as routine surveillance

ZNPHI's side event on the operationalization of genom-

ic sequencing in Zambia resonated strongly with the conference's broader emphasis on sovereign capabilities. Advances during COVID-19 demonstrated how sequencing enables real-time tracking of variants and transmission pathways (4). Zambia's experience shows that genomic capacity can evolve from crisis response into a regional public good when supported by skilled workforce development and data-sharing governance. However, sequencing capacity alone is insufficient. Impact depends on integration into routine surveillance, defined turnaround times, interdisciplinary collaboration, and clear pathways from data to action (4).

Financing Health Security as a Public Good

Perhaps the most consequential discussions at CPHIA 2025 focused on financing. The message was unambiguous. Resilience without predictable financing is fragile. Emergency reallocations cannot substitute for sustained investment.

Countries were encouraged to expand fiscal space through innovative domestic mechanisms, including digital services taxes, sin taxes, pooled procurement, and efficiency gains through transparency and anti-corruption reforms (5,6). Evidence shows that such mechanisms can generate revenue and improve outcomes when well governed (5).

Health financing was also framed as a political decision. Strong governance, efficient procurement, and accountability determine whether resources translate into results (7). Importantly, preparedness was linked to Primary Health Care (PHC) and Universal Health Coverage (UHC). Resilient systems are built on strong PHC platforms that enable prevention, trust, and early detection (8).

For Zambia, financing preparedness as a public good that is protected during fiscal shocks will be essential to sustaining recent gains.

Call to Action

CPHIA 2025 offered clarity. The tools are available. The evidence is strong. What remains is implementation. For Zambia, five priority actions stand out. First, institutionalise timely outbreak monitoring using the 7-1-7 framework. Second, implement a governance-led national interoperability roadmap. Third, integrate genomic sequencing into routine surveillance to enable faster decision-making. Fourth, align regulatory and procurement reforms to strengthen access and system resilience. Finally, secure predictable domestic financing anchored in primary health care and universal health coverage as national development priorities.

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Article One

Case Investigation of a Suspected Drug-Resistant Tuberculosis Patient in Chongwe District, Zambia: Importance of Accurate Molecular Diagnostics for Resistance Profiling

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Abstract

Background: Recurrent tuberculosis in patients with prior treatment default raises significant concern for acquired drug resistance, including multidrug-resistant (MDR) and extensively drug-resistant (XDR) strains. This report details the investigation of a 44-year-old male retreatment case in Zambia, initially suspected of XDR-TB. The case underscores the critical role of advanced molecular diagnostics in accurately defining resistance profiles and informing appropriate clinical and public health responses.

Methods: A descriptive case investigation was conducted in Chongwe District, Zambia, in June 2025. Quantitative data were extracted from clinical and laboratory records of the index patient and close contacts, including demographic characteristics, tuberculosis treatment history, and molecular diagnostic results. Qualitative data were collected through structured interviews with the patient, a primary caregiver, and a healthcare worker to explore treatment adherence barriers and care experiences. Laboratory confirmation and drug resistance profiling were performed using GeneXpert MTB/RIF Ultra and GeneXpert MTB/XDR assays. Quantitative data were summarized using descriptive statistics, while qualitative information was thematically synthesized and integrated narratively to contextualize clinical and public health findings.

Results: The index case was confirmed to have Tuberculosis but was found to have mono-resistance to Isoniazid only. No resistance to Rifampicin, Fluoroquinolones, or Group A second-line drugs was detected, thus not meeting the XDR-TB or MDR-TB case definitions. All three close contacts were screened and tested negative for Tuberculosis. Qualitative interviews revealed that prior treatment default was driven by livelihood demands, travel distance, and early symptom resolution. Structured adherence support during retreatment facilitated successful treatment completion.

Conclusion: The investigation confirmed isoniazid mono-resistant TB, not XDR-TB, in a retreatment case with a history of default. Rapid molecular diagnostics were essential for accurate resistance classification and clinical guidance. The findings reinforce the necessity of enhanced adherence support and robust laboratory capacity to effectively manage drug-resistant tuberculosis in high-burden settings.

Keywords: Extensively Drug-Resistant Tuberculosis, XDR-TB, Case Investigation, GeneXpert, Contact Tracing, Zambia, Chongwe District

Introduction

The global tuberculosis (TB) epidemic continues to be shaped by the persistent threat of drug-resistant strains, complicating treatment and control efforts worldwide. In 2022, an estimated 410,000 individuals developed

multidrug- or rifampicin-resistant TB (MDR/RR-TB), with only approximately 40% accessing appropriate treatment (1). Among these, an estimated 25,000 cases met the definition for extensively drug-resistant TB (XDR-TB), a severe form of the disease characterized by resistance to rifampicin, a fluoroquinolone, and at least one Group A second-line drug (1,2). The high mortality and extended, complex treatment regimens associated with drug-resistant TB, particularly XDR-TB, underscore the critical importance of timely and precise diagnosis to optimize patient outcomes and prevent further transmission (3, 4).

The World Health Organization (WHO) African Region carries a significant and disproportionate burden of both drug-susceptible and drug-resistant TB (1). Zambia, within this region, reported an estimated incidence of 12,000 MDR/RR-TB cases among notified pulmonary TB patients in 2022, though the precise contribution of XDR-TB remains under-ascertained due to limited diagnostic capacity (1,5). In high-burden settings, risk factors for acquired drug resistance, including previous treatment default, inadequate therapy, and poor adherence, are common, heightening the suspicion for MDR/RR-TB in retreatment cases and necessitating robust diagnostic protocols (6,7).

Rapid molecular diagnostics have transformed the landscape of TB management. The widely used GeneXpert MTB/RIF Ultra assay enables prompt detection of Mycobacterium tuberculosis and rifampicin resistance, a key proxy for MDR-TB (8). However, GeneXpert MTB/RIF Ultra does not detect resistance to isoniazid or second-line agents. The introduction of the GeneXpert MTB/XDR cartridge represents a significant advancement, allowing for the simultaneous identification of resistance to isoniazid, fluoroquinolones, and second-line injectables in a single test, thereby facilitating the rapid differentiation of pre-XDR and XDR-TB from less resistant forms (8, 9).

At the local level, Chongwe District reflects the national challenge. For the reporting period 2023–2024, Chongwe District recorded an average annual TB notification rate of 156 per 100,000 populations, with treatment success rates for drug-susceptible TB averaging 87% (10). However, outcomes for retreatment cases and those with any drug resistance have been less favorable, with success rates approximately 15–20% lower, highlighting the amplified risk and complexity of managing such cases in this high-burden setting.

In June 2025, Chongwe District Health Office in Zambia was alerted to a 44-year-old male patient with a history of TB treatment default presenting with symptoms suggestive of recurrent TB. The patient had initially been diagnosed with drug-susceptible pulmonary TB in 2022 but defaulted after three months of treatment. He was subsequently retreated successfully in 2024, with culture-based drug susceptibility testing (DST) at that time confirming susceptibility to both isoniazid and rifampicin. Given the strong epidemiological link between treatment interruption and the development of drug resistance, particularly the risk of progression to MDR/RR-TB this recurrence triggered a systematic diagnostic workup to rule out evolving resistance, including the possibility of XDR-TB. This report details the subsequent public health investigation, which utilized a stepwise molecular diagnostic approach to definitively characterize the drug resistance profile, guide appropriate clinical management, and implement necessary infection control measures.

Methods

Study Design Setting

A descriptive case investigation was conducted in June 2025 at Chongwe Referral Health Centre and within the patient's community in Libuko Village, Chongwe District, Zambia. Quantitative data were systematically extracted from the patient's medical and laboratory records, including treatment history and diagnostic results. This was complemented by structured interviews with the patient and relevant healthcare providers to contextualize treatment adherence challenges and care-seeking experiences.

Case Definitions

A Multidrug or Rifampicin-Resistant Tuberculosis (MDR/RR-TB) case was defined as a patient with TB caused by Mycobacterium tuberculosis that is resistant to at least rifampicin (2). An Extensively Drug-Resistant Tuberculosis (XDR-TB) case is defined as a patient with MDR/RR-TB that shows additional resistance to any fluoroquinolone and at least one other Group A second-line drug (e.g., bedaquiline, linezolid). For this investigation, a suspected drug-resistant TB case was defined as a patient with a history of previous TB treatment and poor outcomes (e.g., default or recurrence) presenting with symptoms suggestive of active TB, warranting advanced testing to rule out or confirm drug resistance patterns, including MDR-TB and XDR-T.

Laboratory Methods

Laboratory testing followed a stepwise molecular diagnostic protocol aligned with the rationale of ruling

out evolving drug resistance in a retreatment case with prior default. An initial sputum sample from the index case was tested using the GeneXpert MTB/RIF Ultra assay, which confirmed the presence of M. tuberculosis with no rifampicin resistance detected. Given the patient's history of recurrent TB and prior treatment default key risk factors for acquired resistance and despite a 2024 phenotypic DST result indicating full susceptibility, further testing was warranted to exclude resistance beyond rifampicin. A fresh sample was therefore tested using the GeneXpert MTB/XDR assay at the Chongwe District Hospital laboratory. This test simultaneously investigates resistance to isoniazid, fluoroquinolones (levofloxacin, moxifloxacin), and second-line injectables (amikacin, kanamycin), providing a broader resistance profile essential for classifying pre-XDR or XDR-TB. Sputum samples from identified close contacts were screened using the GeneXpert MTB/RIF Ultra assay.

Data Collection

In this investigation, data collection involved both quantitative and qualitative methods. Quantitative data were systematically extracted from medical records and laboratory registers using a structured form. Captured variables included demographic details (age, sex, occupation, HIV status), TB treatment history (dates, regimens, outcomes), molecular diagnostic results (GeneXpert MTB/RIF Ultra and MTB/XDR), and contact tracing outcomes. Qualitative data were collected through structured interviews with the index patient, one primary caregiver (spouse), and one attending healthcare worker to explore treatment adherence barriers, care experiences, and clinical management practices, thereby contextualizing the quantitative findings.

Data Analysis

The analysis was primarily descriptive. Qualitative information from interviews and record reviews was synthesized and presented narratively to contextualize the case history and adherence factors. Quantitative data from laboratory results and contact tracing were summarized in tables. Data organization and descriptive analysis were performed using Microsoft Excel.

Ethical Considerations

Verbal informed consent was obtained from the patient and all contacts prior to interviews and sample collection. Patient confidentiality was maintained throughout the investigation.

Results

Case Characteristics

The index case was a 44-year-old HIV-negative male resident of Libuko village in Chongwe District, whose medical history was significant for two previous episodes of tuberculosis, as shown in table 1. His initial diagnosis in 2022 was marked by incomplete treatment and documented non-adherence, followed by a subsequent diagnosis in 2024 from which he completed a full course of treatment in March 2025. In June 2025, he re-presented with clinical symptoms indicative of a TB recurrence. An initial GeneXpert MTB/RIF Ultra test confirmed the presence of high levels of Mycobacterium tuberculosis but detected no resistance to Rifampicin. Given the patient's history of recurrent disease and prior treatment default, which are established risk factors for evolving drug resistance, laboratory personnel escalated the diagnostic workup. Consequently, further testing was initiated using the GeneXpert MTB/XDR cartridge to comprehensively investigate the potential for more extensive drug resistance, including Isoniazid, fluoroquinolones, and second-line injectables.

Table 1: Characteristics of the Index Case and Household Contacts, Chongwe District, Zambia, 2025

Category	Details
Index Case	
Age	44 years
Sex	Male
HIV Status	Negative
Occupation	Farmer
TB History	
First Episode (2022)	Diagnosed with drug-susceptible pulmonary TB. Defaulted from treatment after 3 months. DST* (2022) result unavailable.
Second Episode (2024)	Diagnosed with drug-susceptible pulmonary TB based on culture DST from UTH† (susceptible to INH§ and RIF¶). Successfully completed treatment in March 2025.
Current Episode (June 2025)	Presented with cough, fever, and night sweats. GeneXpert MTB/RIF Ultra: MTB** Detected (High), Rifampicin resistance NOT Detected.
Household Contacts (n=3)	
Contact 1	Spouse, 38 years, Female, HIV†† Negative, No history of TB.
Contact 2	Child, 12 years, Male, HIV Negative, No history of TB.
Contact 3	Child, 8 years, Female, HIV Negative, No history of TB.

*DST- Drug Susceptibility Test; †UTH – University Teaching Hospital; §INH – Isoniazid; ¶RIF – Rifampicin; **MTB, Mycobacterium Tuberculosis; ††HIV- Human Immunodeficiency Virus

Qualitative results

Interviews with the patient, his spouse (the primary caregiver), and a healthcare worker provided critical context for his treatment history. The patient attributed his 2022 default to practical and perceptual barriers:

"When the rains came, I had to travel far to my field. I also started feeling better, so I thought I was cured and stopped going to the clinic." - Patient

The spouse described the familial struggle, stating: *"I struggled to convince him to return. He said the journey was too long when he had farm work to do."* – Spouse

The successful 2024 treatment episode was facilitated by structured support. The interviewed healthcare worker noted,

"Its only after we assigned a community volunteer for Directly Observed Therapy that his attendance became consistent. This intervention proved pivotal" – Healthcare Provide

Laboratory Findings

The drug susceptibility profile for the index case, as determined by GeneXpert MTB/XDR testing, is summarized in Table 2. The results confirmed the presence of Mycobacterium tuberculosis with mono-resistance to Isoniazid. No resistance was detected to Rifampicin, fluoroquinolones, or Group A second-line drugs. Consequently, the case was classified as Isoniazid mono-resistant tuberculosis and did not meet the definitions for either MDR-TB or XDR-TB.

Table 2: Results of GeneXpert MTB/XDR drug susceptibility testing for a suspected XDR-TB case, Chongwe District, Zambia, 2025.

Drug Category	Specific Drug	Resistance Detected
First-Line Drugs	Isoniazid (INH*)	Yes
	Rifampicin (RIF†)	No
Fluoroquinolones	e.g., Levofloxacin	No
Group A Second-Line	e.g., Linezolid	No

*INH – Isoniazid; †RIF – Rifampicin

Contact Tracing Outcomes

A total of three (3) close contacts were identified from the patient's household. All three (100%) were successfully screened and tested using the GeneXpert MTB/RIF Ultra assay. All contacts tested negative for Tuberculosis. The outcomes of the contact tracing are presented in Figure 1.

Figure 1: Contact tracing and screening outcomes for a suspected XDR-TB case investigation, Chongwe District, Zambia, June 2025

Public Health Actions Taken

The patient was promptly referred to the MDR-TB centre at Chongwe District Hospital to initiate a standardized treatment regimen for Isoniazid mono-resistant tuberculosis. Comprehensive health education was provided to both the patient and his caregivers, covering essential topics including TB transmission mechanisms, the critical importance of strict treatment adherence, and practical infection prevention measures to minimize transmission risk within the household. Additionally, despite all contacts initially testing negative, a follow-up plan was established whereby they were advised to seek immediate medical attention if they develop any symptoms suggestive of TB and were thoroughly educated on the specific signs and symptoms to monitor.

By the time of the closure of this investigation, the patient showed significant improvement. Clinical symptoms like cough and fever had subsided, indicating a good response to treatment.

Discussion

This investigation of a suspected XDR-TB case in Chongwe District ultimately confirmed a case of Isoniazid mono-resistant TB. While this outcome is less severe than initially feared, it presents several critical lessons for the TB control program in Zambia. The initial suspicion for XDR-TB, while not aligning with the strict definition which requires confirmed MDR-TB as a prerequisite, was clinically justified given the patient's history of treatment default, a significant risk factor for acquired drug resistance (3). The stepwise diagnostic approach was effective. The absence of rifampicin resistance on the initial GeneXpert MTB/RIF Ultra test effectively ruled out MDR-TB, and consequently, XDR-TB was no longer a possibility. The subsequent MTB/XDR test was therefore not to "rule out XDR-TB" but to identify the specific pattern of resistance (in this case, INH mono-resistance) and to rule out resistance to key second-line drugs, which would classify the strain as "pre-XDR" if MDR were present. This nuanced use of diagnostics ensured accurate classification.

The patient's history underscores the imperative for robust TB program management, with a strong emphasis on adherence counselling and patient support mechanisms, such as Directly Observed Therapy (DOT), especially for retreatment cases (8). The qualitative findings suggest that practical barriers like livelihood needs are key drivers of default, indicating that support packages need to address these socioeconomic factors.
A key strength of this case investigation was the rapid and complete contact tracing and screening. The fact that no secondary cases were detected is reassuring and suggests that the period of infectiousness may have been limited or that infection control measures post-diagnosis were effective.

Conclusion

This investigation successfully ruled out MDR/XDR-TB in a suspected case, instead confirming Isoniazid mono-resistant TB. No secondary transmission was identified among close contacts. The case highlights the critical role of advanced molecular diagnostics in the accurate classification of drug-resistant TB and un-

derscores treatment default as a major risk factor for drug resistance.

Recommendations

Based on the investigation, key recommendations are proposed. For the National TB Program, it is crucial to scale up the use of GeneXpert MTB/XDR cartridges for rapid, extensive resistance detection and to strengthen adherence support by addressing socioeconomic barriers. The Chongwe District Health Office should maintain high suspicion for drug resistance in retreatment cases, institutionalize effective contact tracing, and train staff on MDR/XDR-TB diagnostics. For Laboratory Systems, genotypic results in complex cases should be confirmed with phenotypic culture and drug susceptibility testing to identify resistance beyond molecular assay coverage.

Limitations

This investigation has several limitations. Firstly, the small number of identified contacts limits the generalizability of the transmission findings. Secondly, the focus was solely on active tuberculosis disease; without testing for latent TB infection (LTBI), it remains possible that some contacts were infected. Thirdly, and most critically, drug resistance profiling relied solely on genotypic (GeneXpert) methods. While highly accurate for the specific genetic mutations they target, these tests do not constitute a full phenotypic drug susceptibility profile. No confirmatory phenotypic culture and DST was performed following the MTB/XDR result. Specifically, the absence of rifampicin resistance was determined solely by the GeneXpert rpoB probe result, without a follow-up culture-based DST to definitively rule out rifampicin resistance through phenotypic methods, which remains the gold standard (7). Finally, the findings are based on a single case investigation.

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Article Two

Early program results of long-acting Cabotegravir Pre-exposure prophylaxis in Livingstone District, Zambia: uptake, safety, and sexually transmitted infection screening findings from routine records

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Abstract

Background: HIV remains a global public health concern, particularly in sub-Saharan Africa, where the rate of HIV acquisition is unacceptably high, despite advances in treatment and prevention strategies. Long-acting injectable Cabotegravir (CAB-LA) is a notable development in pre-exposure prophylaxis (PrEP). This study aimed to assess early CAB-LA PrEP uptake, safety, and STI screening results from routine records in Livingstone District, Zambia.

Methods: A retrospective cohort study was conducted using secondary data from the medical records of recipients of care aged 16-69 who received at least two CAB-LA injections at Livingstone University Teaching Hospital, Maramba, and Mahatma Gandhi Urban Clinics between July 2024 and January 2025. Data was collected from medical records on demographic characteristics, HIV seroconversion rates, newly detected syphilis cases, side effects, and adverse reactions. Descriptive statistics were employed to analyse the data.

Results: A total of 224 recipients of care were enrolled in this study, 53.6% were female, with a median age of 32 years (IQR 26-41). Most had secondary education (73.2%), belonged to the general population (79.0%), and were single (50.0%); 45.5% were unemployed. No HIV seroconversions were observed during the follow-up period. Syphilis positivity was low at baseline (1.1%), which increased to 11.2 % at visit 2, with the highest rates among Adolescent Girls and Young Women (AGYW) (18.2%), followed by the general population (11.2%) and Female Sex Workers (FSW) (10.5%), before declining to below 10% at later visits. Mild side effects occurred in 4.9% of participants, mainly injection-site reactions, with no adverse drug reactions or discontinuations.

Conclusion: CAB-LA PrEP shows promising HIV prevention outcomes and a favourable safety profile over six months. The transient rise in syphilis highlights the need to strengthen integrated STIs prevention and pharmacovigilance alongside CAB-LA scale-up.

Introduction

The human immunodeficiency virus (HIV) epidemic continues to be one of the world's most urgent public health concerns, especially in sub-Saharan Africa (1). Approximately 40.8 million individuals worldwide were living with HIV, and about 1.3 million new cases were reported as of 2024 (2,3). HIV prevalence is still high, particularly in Eastern and Southern Africa, despite tremendous advancements in expanding access to

antiretroviral medication (ART) and prevention measures (4). Persistent infection rates underscore the need for innovative, user-friendly HIV prevention strategies to improve health outcomes (1).

Pre-exposure prophylaxis (PrEP) involves the use of antiretroviral drugs by HIV-uninfected individuals to lower HIV acquisition risk (5). The World Health Organization (WHO) recommended oral PrEP with tenofovir disoproxil fumarate (TDF) in 2015 for those at substantial risk of HIV (6). Despite its high effectiveness, uptake is hindered by challenges such as daily pill burden, stigma, privacy issues, and inconsistent access to healthcare (7,8).

Long-acting Cabotegravir (CAB-LA) is a long-acting injectable used as a PrEP method. It addresses limitations in HIV prevention by requiring administration only every eight weeks (9). This integrase strand transfer inhibitor has shown superior efficacy in reducing HIV infections in HPTN 083 and HPTN 084 studies, with reductions of 69% and 90%, respectively, among cisgender men, transgender women, and cisgender women in sub-Saharan Africa (10). CAB-LA received FDA approval in 2021 and WHO endorsement in 2022 (1).

In early 2023, following global endorsements, Zambia was among the five countries to receive a donation of CAB-LA from the US Government through the President's Emergency Plan for AIDS Relief (PEPFAR) (11). This initiative positioned Zambia as the second country globally to provide injectable PrEP. The initial implementation commenced in a phased approach, starting with six sites across five districts: Lusaka, Kitwe, Chibombo, Nakonde and Mazabuka (11). Furthermore, informed by the initial findings, additional sites were targeted to accommodate an increased number of individuals for CAB-LA uptake and to expand the inclusion of other populations, of which Livingstone was among the included districts (11). In this expanded implementation phase, Livingstone District selected three health facilities, which included Livingstone University Teaching Hospital (LUTH), Maramba, and Mahatma Gandhi urban clinics as the first sites to implement the early CAB-LA program. This intervention is in line with Zambia's National HIV Strategic Framework, aiming to enhance access to biomedical HIV prevention tools for populations at the highest risk.

CAB-LA is an effective and safe HIV prevention option, with mainly injection-site reactions, offering advantages over oral PrEP through infrequent dosing, greater privacy, and better acceptability among key populations such as adolescent girls and young women (12–14). However, its successful implementation relies heavily on maintaining user retention and administering timely injections. Missed doses can compromise drug levels, diminish protection, and heighten the risk of resistance to integrase inhibitors if HIV infection occurs during the tail phase after discontinuation (14).

Offering additional PrEP choices can enhance uptake and efficiency in HIV prevention by promoting individual preferences as well as choice. The WHO endorses HIV rapid diagnostic tests (RDTs) for those starting or continuing long-acting injectable PrEP (15). Additionally, it recommends frequent screening for sexually transmitted infections (STIs) among PrEP users, although optimal frequency lacks evidence (16). A meta-analysis of 38 studies revealed pooled positivity rates of 20% for chlamydia, 17% for gonorrhea, and 7% for syphilis (16). Increased STI screening frequency as a measure to prevent new infections may help improve the quality of life and reduce morbidity in recipients of care.

Moreover, the implementation of CAB-LA in diverse subpopulations has not been extensively evaluated, posing challenges particularly in low- and middle-income countries like Zambia. Thus, this study evaluated the early program findings of the long-acting CAB-LA injections in Livingstone, Zambia, focusing on critical factors such as uptake, short-term safety, and STIs screening. The findings of this study contributed to evidence-based decision-making regarding the potential inclusion of Cabotegravir injections in national HIV prevention initiatives.

Methodology

Study Design

This study employed a retrospective cohort study to assess the early program findings of the Cabotegravir injection PrEP method for HIV prevention in Livingstone district of Zambia. The cohort comprised of recipients of care who were initiated on CAB-LA injections PrEP between July 2024 and January 2025. This period corresponded to approximately six months following the introduction of CAB-LA PrEP in Livingstone District, reflecting early programmatic implementation. The retrospective cohort approach allowed for real-world program performance of CAB-LA uptake using clinical records from program sites.

Study Setting

The study was conducted in Livingstone District, Southern Province, Zambia, specifically in the urban area of Livingstone City. Data was collected at the district's main hospital and clinics selected to offer CAB-LA PrEP in the expansion implementation phase in the district. The primary sites were two urban health centers; Maramba Clinic and Mahatma Gandhi Clinic. The LUTH, a tertiary referral center was also included. These facilities serve as access points the local population.

Follow-up visits reflected the routine CAB-LA PrEP delivery schedule used in Zambia. Visit 1 represented the baseline initiation visit, during which eligible recipients of care received the first CAB-LA injection following HIV testing and clinical assessment. Visit 2 occurred approximately one month (30 days) later and constituted the second initiation (reinjection) visit, confirming continuation on CAB-LA. Visits 3 and 4 represented subsequent maintenance visits scheduled at approximately two-month (60 days) intervals.

Eligibility Criteria

Before the administration of CAB-LA, providers assess a recipient of care's eligibility by screening for contraindications, specifically through an HIV eligibility screening algorithm that included ruling out HIV infection using two parallel HIV rapid diagnostic and nucleic acid (NAT) tests.

Inclusion Criteria

Eligible recipients of care were identified through a review of CAB-LA initiation registers and individual medical and follow-up records. Participants were enrolled consecutively to minimize selection bias.

The study included recipients of care aged 16 years and above who received at least two CAB-LA injections between July 2024 and January 2025 at LUTH, Maramba Clinic, or Mahatma Gandhi Urban Clinic.

Only recipients of care with complete and up-to-date Visit 1 (baseline) and follow-up records were included. These records had to document required clinical and laboratory assessments, including HIV testing, syphilis testing, blood pressure, height, weight, and body mass index. Records also had to include documented laboratory results and confirmation of CAB-LA administration at the time of data collection. In addition, an up-to-date active pharmacovigilance form was required for inclusion.

Exclusion criteria

Recipients of care who received only one CAB-LA injection between July 2024 and January 2025 were excluded. Records lacking sufficient baseline or follow-up information were also excluded. This included missing clinical or laboratory assessments such as HIV testing, syphilis testing, blood pressure, height, weight, or body mass index. Files without documented laboratory results or confirmation of CAB-LA administration at the time of data collection were not included. In addition, records with incomplete or missing active pharmacovigilance forms were excluded from the study.

Study Variables

Table 1: Study Variables and Operational Definitions

Variable	Operational definition
HIV infection	New HIV* seroconversion detected during follow-up among participants who were HIV-negative at baseline (visit 1).
Syphilis infection	New positive treponemal rapid diagnostic test/ Rapid Plasma Reagent (RPR) test during follow-up. CAB-LA† is not protective against syphilis.
ADRs	Any untoward medical occurrence temporally associated with CAB-LA administration.
Side effects	Any non-serious, self-limiting symptom reported after CAB-LA administration. Such as injection-site pain, swelling, and headache.
Population category	1. AGYW (Adolescent Girls and Young Women): Female recipients of care classified by the screening tool as adolescent girls or young women. 2. ABYM (Adolescent Boys and Young Men): Male recipients of care classified by the screening tool as adolescent boys or young men. 3. FSW (Female Sex Workers): Recipients of care who self-identified or were recorded in program notes as female sex workers at enrolment. 4. GP (General Population**):** Recipients of care not classified into a key population group noted above, it included adults of both genders who access routine services and do not meet the program definition for AGYW, ABYM or FSW.

*HIV-Human Immunodeficiency Virus; †CAB-LA - Long-acting Cabotegravir

Data Sources

Secondary data were extracted from recipients of care routine medical and follow-up file and monitoring tools used by the PrEP program. Data fields included demographics, visit dates, HIV and syphilis test results, CAB-LA injection dates, side effects, and recorded adverse drug reactions. A standardized data collection tool was used to ensure accuracy and completeness.
Due to the staggered initiation of CAB-LA, only recipients of care who had been initiated on CAB-LA PrEP earlier had reached the later follow-up visits (visit 3 & 4) by the time of data collection.

Measurements

HIV status was assessed at baseline and during follow-up visits using the national testing algorithm, which includes two parallel HIV rapid diagnostic tests and nucleic acid testing while on PrEP. This approach supported early detection of any seroconversion. Syphilis screening was conducted at baseline and follow-up visits using either a rapid treponemal test or the Rapid Plasma Reagent (RPR) test, in line with Zambia's PrEP guidelines. All tests were performed by trained laboratory technicians, and results were documented in the recipients of care's medical records.

Safety monitoring was conducted through the national pharmacovigilance system. Recipients of care were actively monitored at baseline and follow-up visits, in accordance with Zambia's HIV treatment guidelines, which emphasize the detection, assessment, and prevention of adverse drug effects.

Age was recorded in years as a continuous variable and also categorized into age groups such as 16–24 and 25–34 years to allow assessment of age-specific effects. Education level, gender, population category, and marital status were recorded as categorical variables.
HIV seroconversion and syphilis status were treated as binary outcomes and coded as positive or negative.

Study sample size

This study employed a census design of the program cohort. All recipients of care that met the inclusion criteria were included. No formal sample size calculation was performed; the final sample size (n=224) was determined by the actual number of initiators during the study period.

Data Analysis

Descriptive statistics were used to summarise recipients of care characteristics. Continuous variables such as age were analysed using medians and interquartile ranges. Categorical variables, including gender, education level, population, and marital status, were reported in frequencies and percentages. Analysis was conducted using SPSS version 28.

Ethical Considerations

Privacy and confidentiality were observed, as only de-identified data was collected and encrypted with a password to avoid third-party unauthorized access. Approval from the Mulungushi University School of Medicine and Health Sciences research ethics committee (SMHS-MU1-2025-01) and the National Health Research Authority (NHRA-1848/09/01/2025) was obtained. Permission from Livingstone University Teaching Hospital and Livingstone District Health Office was sought before commencing data collection.
Results

Socio-Demographics Characteristics

A total of 224 recipients of care who met the inclusion criteria were recruited for the study. The socio-demographic dynamics of the recipients indicated that 104/224 (46.43%) were men and 120/224 (53.57%) were women. The median age of our recipients of care was 32 years (IQR 26-41); while 164/224 (73.21%) had a secondary school education level. The highest number of recipients of care were from the general population (GP) group, 178/224 (79.45%). Half, 112/224 (50.00%) of the recipients of care were single, 102/224 (45.54%) were married, and 10/224 (4.46%) were divorced. The majority of recipients of care were unemployed, 102/224 (45.54%). See Table 2.

Table 2: Socio-demographics characteristics for CAB-LA recipients in Liv District, July 2024 - January 2025 (N=224)

Variables		*N*	*%*
Age Distribution	16-26	60	26.79%
	27-37	97	43.30%
	38-48	46	20.54%
	49-59	17	7.59%
	60-70	4	1.79%
Gender Distribution	Female	120	53.57%
	Male	104	46.43%
Marital Status	Single	112	50.00%
	Married	102	45.54%
	Divorce	10	4.46%
Highest Education level	Primary	15	6.70%
	Secondary	164	73.21%
	Tertiary	38	16.96%
	No formal education	7	3.13%
Recipients of care Occupation	Government-employed	20	8.93%
	Self-employed	80	35.71%
	Unemployed	102	45.54%
	Retired	0	0.00%
	Private employment	22	9.82%
Population Category	AGYW*	22	9.82%
	FSW †	19	8.48%
	ABYM§	5	2.23%
	General population	178	79.5%
CAB-LA¶ Site	LUTH**	33	14.73%
	Maramba	121	54.02%
	Mahatma Gandhi	70	31.25%

*AGYW- Adolescent Girls and Young Women; †FSW-Female Sex Worker; §ABYM- Adolescent Boys and Young Men; ¶CAB-LA - Long-acting Cabotegravir; **LUTH – Livingstone University Teaching Hospital

HIV and Syphilis Positivity by Follow-up Visit

Table 3 shows syphilis and HIV test results among 224 recipients of care on CAB-LA PrEP across four follow-up visits, disaggregated by population category. At baseline (Visit 1), syphilis was detected in 2 of 224 recipients (0.9%), both from the general population (2/178; 1.1%), while all recipients remained HIV-negative (224/224; 100%).

At Visit 2, syphilis positivity increased to 25 of 224 recipients (11.2%). The highest burden was among the general population (19/178; 10.7%), followed by AGYW (4/22; 18.2%) and FSW (2/19; 10.5%). No cases were recorded among ABYM (0/5; 0%). At Visit 3, syphilis was detected in 11 of 149 recipients (7.4%), mainly among the general population (9/124; 7.3%), with single cases among AGYW (1/10; 10.0%) and FSW (1/13; 7.7%). At Visit 4, syphilis was detected in 4 of 56 recipients (7.1%), including 3 from the general population (3/52; 5.8%) and 1 FSW (1/1; 100%).

Across all visits, no HIV seroconversions were observed, with all recipients testing HIV-negative throughout follow-up

Table 3: Syphilis and HIV test results for CAB-LA recipients in Livingstone District, July 2024 - January 2025

Variables			STIs (Syphilis)					HIV		
		Total	*Negative*		*Positive*		*Negative*		*Positive*	
Visits	***Population category***	*n*	*N*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Visit 1	AGYW*	22	22	100.0%	0	0.0%	22	100.0%	0	0.0%
	FSW †	19	19	100.0%	0	0.0%	19	100.0%	0	0.0%
	ABYM§	5	5	100.0%	0	0.0%	5	100.0%	0	0.0%
	GP¶	178	176	98.9%	2	1.1%	178	100.0%	0	0.0%
Total (Visit 1)		**224**	**222**	**99.1%**	**2**	**0.9%**	**224**	**100.0%**	**0**	**0.0%**
Visit 2	AGYW*	22	18	81.8%	4	18.2%	22	100.0%	0	0.0%
	FSW†	19	17	89.5%	2	10.5%	19	100.0%	0	0.0%
	ABYM§	5	5	100.0%	0	0.0%	5	100.0%	0	0.0%
	GP¶	178	159	89.3%	19	10.7%	178	100.0%	0	0.0%
Total (Visit 2)		**224**	**199**	**88.8%**	**25**	**11.2%**	**224**	**100.0%**	**0**	**0.0%**
Visit 3	AGYW*	10	9	90.0%	1	10.0%	10	100.0%	0	0.0%
	FSW†	13	12	92.3%	1	7.7%	13	100.0%	0	0.0%
	ABYM§	2	2	100.0%	0	0.0%	2	100.0%	0	0.0%
	GP¶	124	115	92.7%	9	7.3%	124	100.0%	0	0.0%
Total (Visit 3)		**149**	**138**	**92.6%**	**11**	**7.4%**	**149**	**100.0%**	**0**	**0.0%**
Visit 4	AGYW*	3	3	100.0%	0	0.0%	3	100.0%	0	0.0%
	FSW†	1	0	0.0%	1	100.0%	1	100.0%	0	0.0%
	GP¶	52	49	94.2%	3	5.8%	52	100.0%	0	0.0%
Total (Visit 4)		**56**	**52**	**92.9%**	**4**	**7.1%**	**56**	**100.0%**	**0**	**0.0%**

*AGYW- Adolescent Girls and Young Women; †FSW-Female Sex Worker; §ABYM- Adolescent Boys and Young Men; ¶GP – General Population

Safety Outcomes by Follow-up Visit

Table 4 shows that side effects were seen in 11/224 (4.91%) recipients of care, with the site of injection being noted as the most common complaint. There were no adverse drug reactions recorded during the follow-up period. From the 11 recorded side effects, 8 were recorded in Visit 2 and 3 at Visit 3, and no side effects were recorded by Visit 4. Regarding the population category of our recipients of care, all 11 side effects were observed in the general population. Headache was one of the side effects reported and recorded from 2/11 (18.2%) recipients of care with complaints of side effects. All side effects were mainly mild and did not necessitate discontinuation.

Table 4: Safety outcomes for CAB-LA recipients in Livingstone District, July 2024 - January 2025 (n=224)

		Reported Side Effects (n=224)	%	Reported ADRs*	%
Overall Safety Outcome		11	4.9	0	0.0
Follow-up Visit (V)					
	Visit 1 (Baseline)	0	0.0%	0	0.0%
	Visit 2	8	3.6%	0	0.0%
	Visit 3	3	1.3%	0	0.0%
	Visit 4	0	0.0%	0	0.0%
Population Group					
	GP†	11	4.9%	0	0.0%
	AGYW§	0	0.0%	0	0.0%
	FSW¶	0	0.0%	0	0.0%
	*ABYM***	0	0.0%	0	0.0%
Type of Side Effect††					
	Injection site reactions	11	4.9%	0	0.0%
	Headache	2	0.9%	0	0.0%
Severity/Outcome					
	Mild side effects	11	4.9%	0	0.0%
	Treatment discontinuation	0	0.0%	0	0.0%

*ADRs – Adverse Drug Reactions; †GP – General Population; §AGYW- Adolescent Girls and Young Women; ¶FSW-Female Sex Worker; **ABYM- Adolescent Boys and Young Men; ††Some recipients reported more than one symptom; categories are not mutually exclusive

Discussion

Socio-demographic Characteristics

The sociodemographic characteristics observed in this study align with those reported in other studies. Consistent with this study, Duy and colleagues identified a median age of 35 years among recipients of care willing to use and adhere to Cabotegravir (17). However, they did not include young adults in their samples. In contrast, this study included a small number of adolescent recipients of care, who constituted only 2.23% of the total sample. Notably, the median age of recipients of care in this study exceeds that reported in initial studies on Cabotegravir access in Zambia, where the median age was 24 years, with a predominance of female recipients of care(18). There is a need to sensitize younger recipients of care to use this method of PrEP as a way of reducing HIV transmission in the adolescent and younger populations, to curb the disease transmission in adolescents and young people(19,20).

A study conducted in Kenya focused on women who were either pregnant or lactating, with a median participant age of 25 years; most recipients of care had attained at least secondary education and were married (21). In contrast to this study, which had higher female participation, John and colleagues reported lower female involvement in the use of injectable Cabotegravir in Australia (22). The significant number of women accessing PrEP in this study may be attributed to the high literacy levels observed among our recipients of care, as literacy has been previously associated with factors that enhance PrEP access(23). Furthermore, women have been reported to prefer injectable PrEP because of its perceived ease of use and discretion (24,25). Our study findings suggest that women in the communities are likely to accept injectable methods of PrEP as they continue to be rolled out in the future.

HIV Infections and Related STIs for CAB-LA Injectable PrEP

The absence of seroconversion observed in this study aligns with previous research, indicating the drug's high efficacy in preventing HIV infection (24,25). However, initial findings from Zambia reported a 0.66% conversion rate among the first 600 recipients of care who were initiated and monitored (18). The observed increase in the number of recipients of care who acquired a sexually transmitted infection (STI) while receiving pre-exposure prophylaxis (PrEP) in this study is consistent with findings reported in other studies (26–29). It was observed that, there was higher contraction of STI (syphilis) first return visit (visit 2) in comparison to their second return visit (visit 3) among the recipients of care. The observed reduction may have been a result of the implementation of integrated and comprehensive services offered to recipients of care as they accessed PrEP services at their health facilities (30). It is key to note that adolescents had the highest percentage of positive syphilis cases in comparison to other population categories, suggesting that syphilis remains a public health concern in this population category (31,32). Our findings correspond with studies indicating high STI prevalence in PrEP recipients of care and low condom usage among PrEP users (26,28,33). Although this study did not assess changes in sexual behaviour among recipients of care, counselling on sexual behaviour remains essential. Recipients of care should be encouraged to use barrier methods consistently. Partner notification should be strengthened. Frequent screening for sexually transmitted infections is also important. These measures should be integrated into existing adherence programmes for individuals using CAB-LA to reduce the risk of acquiring other STIs.

Side Effects to CAB-LA

In this study, 4.9% of the respondents reported experiencing side effects, which aligns with the findings of Swindells and colleagues (34). Consistent with most studies, the most prevalent side effect was pain at the injection site, accounting for 72% of reported side effects. In addition, 18% of the recipients of care reported headaches. While Swindells et al. identified headaches as a reported side effect, they also noted weight gain and gastrointestinal-related side effects in their study. Furthermore, John et al. documented serious side effects in the Australian population (22). In earlier reports concerning Zambian recipients of care, one recipient of care experienced severe pain at the injection site and a severe rash, leading to the discontinuation of treatment (18). However, in this study, the side effects did not result in treatment discontinuation, thus demonstrating that CAB-LA may be tolerable to most of the recipients of care who are using it in our setup.

Conclusion and Recommendations

No HIV infections were detected over the 6-month follow-up period among individuals who attended documented care visits. In addition, only mild side effects, which included pain at the site of injection and headache, were observed. The study further observed an increase in syphilis infections, highlighting the need to strengthen comprehensive STI packages: screening, treatment, partner notification, condoms, and risk-re-

duction counselling for individuals receiving CAB-LA injections. Furthermore, active and passive pharmacovigilance is key to scaling up CAB-LA as a new product for HIV prevention in order to document rare side effects and adverse drug reactions. Prospective longitudinal studies with longer follow-up periods are needed to understand CAB-LA implementation in low- and middle-income countries. Future research should aim to include more representative data from the adolescent age group. Further, there is a need to understand risk factors towards the acquisition of STIs among recipients of HIV long-term PrEP interventions.

Limitations

The study had some limitations, including increased selection bias, as all eligible CAB-LA initiators were enrolled in the study. However, those records with insufficient documentation were excluded. Our data collection tool lacked the assessment part for sexual risk behaviours, as the standard CAB-LA screening tool also lacked this essential aspect of PrEP uptake. A short observation time may have reduced the likelihood of observing positive HIV results.

Conflicts of Interest

The authors declare no conflicts of interest.

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Author Contributions

Authors (Jean M Mukumbuta, Japhet Mwale, Gideon Hamwaba, and Prince Sakuhuka) contributed to the conceptualization of this work and data collection. (Jean M Mukumbuta, Japhet Mwale, Gideon Hamwaba, Benson M. Hamooya, Tumelo Muyenga, Chileshe Chilangisha, Bornwell Chilale and Prince Sakuhuka) appraised the article through the various stages of development. Benson Hamooya, Jean Mukumbuta, Bornwell Chilale, and Japhet Mwale performed the data analysis. All authors reviewed successive drafts and approved the final version.

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Summary of Priority Diseases and Events in Zambia

Trends for Priority Diseases and Events in Zambia (January - December 2025)

Malaria remained the dominant public health burden, with consistently high case counts throughout the year and pronounced increases between February and April, as well as a secondary rise from October to December. Tuberculosis was the second most reported condition, showing relatively stable monthly reporting with mild fluctuations. Diarrhoea, dog bites, bilharzia, and typhoid fever exhibited moderate but steady trends across the year. Vaccine-preventable and zoonotic diseases, including measles, Mpox, anthrax, and cholera, were reported at lower levels, with intermittent spikes suggestive of localized outbreaks (Table 1).

Table 1: Trends for Priority Diseases and Events in Zambia (January - December 2025)

	Months (January - December 2025)													
Disease/Event	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**	**Trend**
Malaria	1,408,377	1,308,805	1,469,939	1,467,076	1,736,582	1,178,402	1,272,163	727,408	643,632	843,004	703,867	869,207	13,628,462	
Tuberculosis	43,784	32,795	43,888	39,050	41,844	40,770	46,009	52,067	42,217	62,674	37,381	31,730	514,209	
Dysentery	7,575	5,871	4,749	4,135	4,990	4,597	7,302	7,277	10,086	12,838	7,418	4,601	81,439	
Dog Bite	3,077	2,331	2,195	2,097	2,536	2,133	2,659	2,300	2,437	3,161	2,521	2,575	30,022	
Bilharzia	2,096	2,118	2,085	1,891	2,132	1,802	2,336	2,099	2,227	3,104	1,717	1,542	25,149	
Meningitis (Neisseria)	63	68	38	86	56	55	83	90	121	71	21,186	32	21,949	
Typhoid Fever	531	591	622	497	694	742	754	627	839	1,013	868	666	8,444	
COVID-19	1,453	1,023	914	495	375	422	849	267	254	218	132	78	6,480	
Measles	242	247	381	294	390	174	83	139	244	148	102	105	2,549	
Mpox	72	60	70	134	128	144	235	217	415	189	58	23	1,745	
Cholera	136	266	117	55	29	57	1	68	234	123	76	86	1,248	
Anthrax	58	29	9	15	9	28	17	21	59	114	148	60	567	
AFP	28	25	29	25	24	26	26	19	36	25	20	19	302	

Source: Integrated Disease Surveillance and Response System (IDSR),15th January 2026

Trends for Priority Diseases and Events in Zambia by Province (January - December 2025)

Acute Flaccid Paralysis

Quarter 4 generally recorded lower or comparable case numbers than the first three quarters in most provinces, indicating a decline toward the end of the year. Provinces such as Eastern, Lusaka, and Copperbelt showed notable reductions in Quarter 4 compared with earlier peaks. Overall, Quarter 4 suggests stabilization or reduced AFP reporting following higher levels observed in Quarters 2 and 3 (Figure 1).

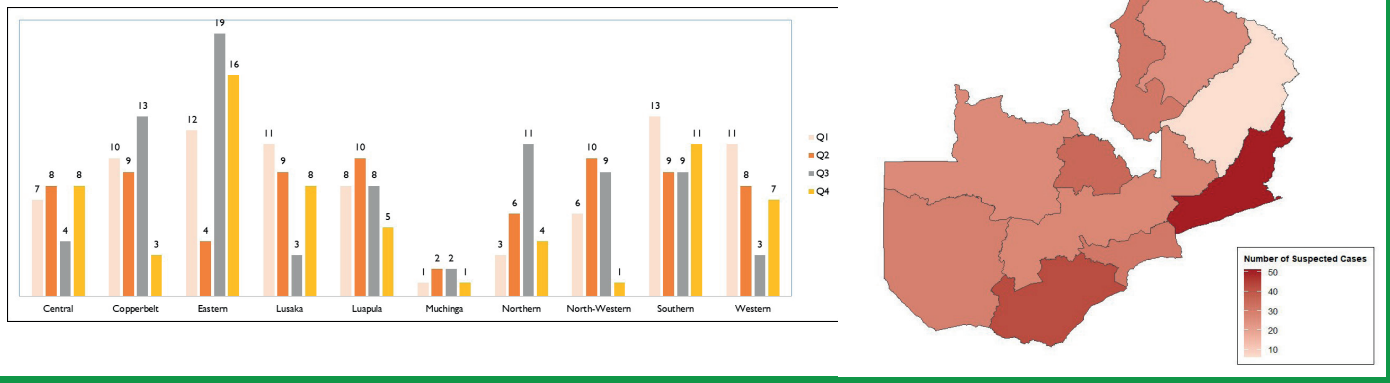
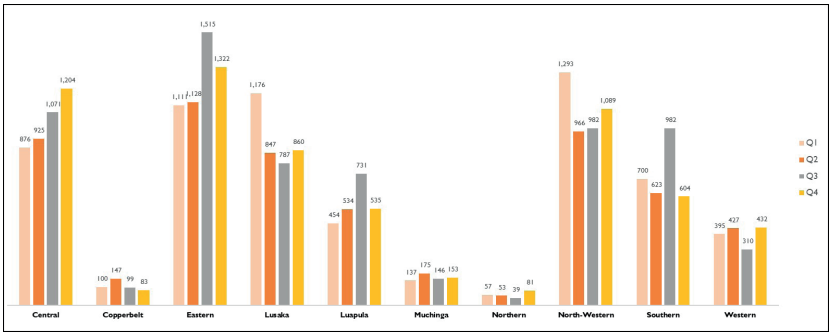


Figure 1: Suspected Acute Flaccid Paralysis (Poliomyelitis) Cases in Zambia by Province (January - December 2025)

Bilharzia

Quarter 4 showed generally lower bilharzia cases in most provinces, particularly in Eastern, Lusaka, and North-Western provinces, which had higher burdens earlier in the year. Provinces with lower cases, such as Muchinga and Northern, maintained minimal variation across quarters (Figure 2).



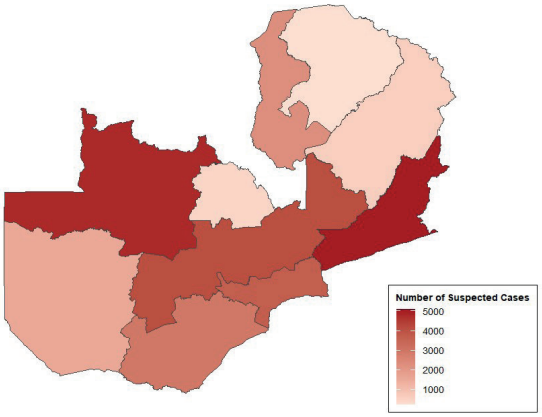
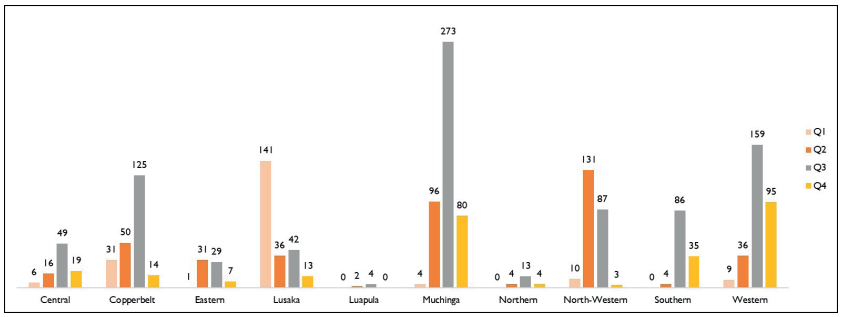


Figure 2: Suspected Bilharzia Cases in Zambia (January - December 2025)

Mpox

Compared with the earearlier quarters, Quarter 4 recorded mixed trends, with notable increases in Western Province and sustained reporting in Muchinga following a peak in Quarter 3. In contrast, several provinces such as Lusaka, Eastern, and Northern showed lower case in Quarter 4 than in Quarters 2 and 3 (Figure 3).



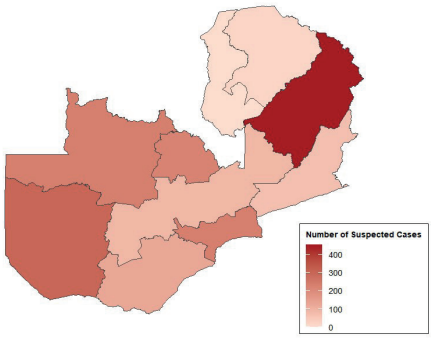
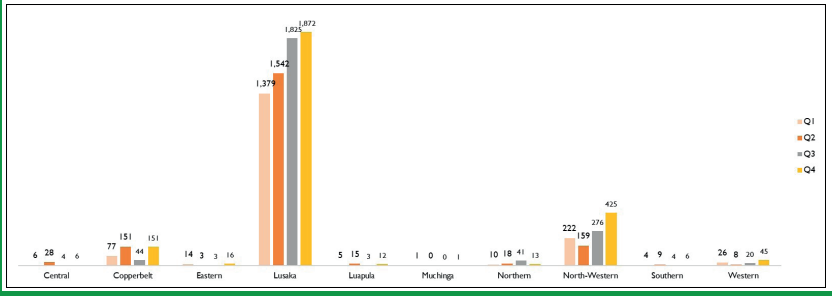


Figure 3: Suspected Mpox Cases in Zambia by Province (January - December 2025)

Typhoid Fever

Quarter 4 recorded higher cases of suspected typhoid fever than the earlier quarters in Lusaka and North-Western provinces, indicating a late-year increase. In contrast, most other provinces showed low and relatively stable reporting across all four quarters (Figure 4). Overall, Quarter 4 suggests a localized rise in typhoid fever, rather than a nationwide increase, following lower levels earlier in the year.



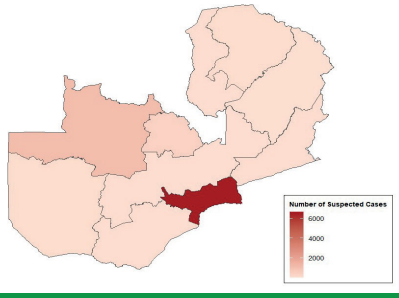


Figure 4: Suspected Typhoid Fever in Zambia by Province (January - December 2025)

Anthrax

Quarter 4 recorded a pronounced increase in the number of suspected Anthrax cases, particularly in Southern Province, which peaked sharply compared to the first three quarters. Western Province also showed higher reporting in Quarter 4, while most other provinces recorded few or no cases throughout the year (Figure 5). Generally, Quarter 4 highlights a late-year surge concentrated in the southern regions.

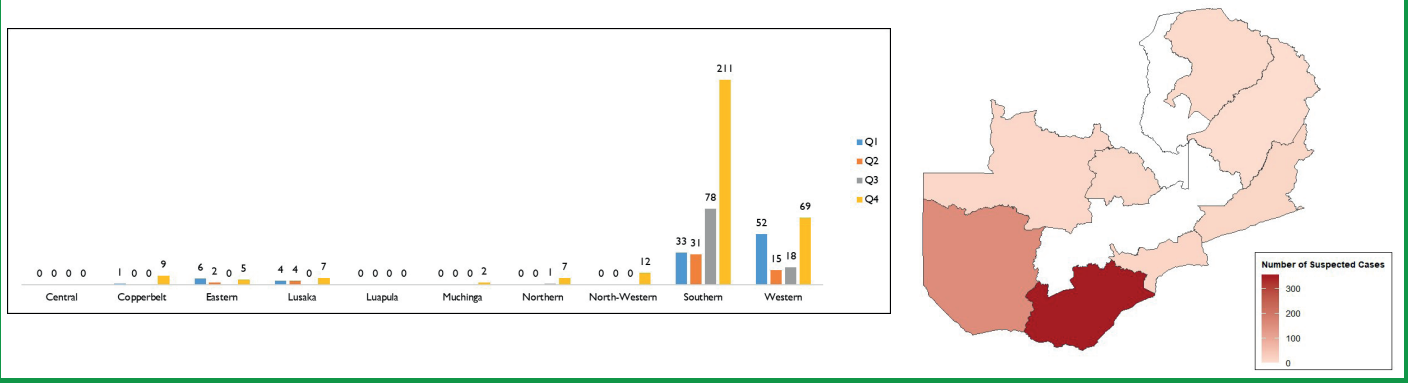


Figure 5: Suspected Anthrax Cases in Zambia by Province (January - December 2025)

Measles

Quarter 4 recorded lower cases of measles in most provinces compared with earlier quarters, particularly following peaks observed in Quarter 2 and Quarter 3 in Northern, North-Western, and Western provinces. Lusaka also showed a decline in Quarter 4 after higher reporting earlier in the year.

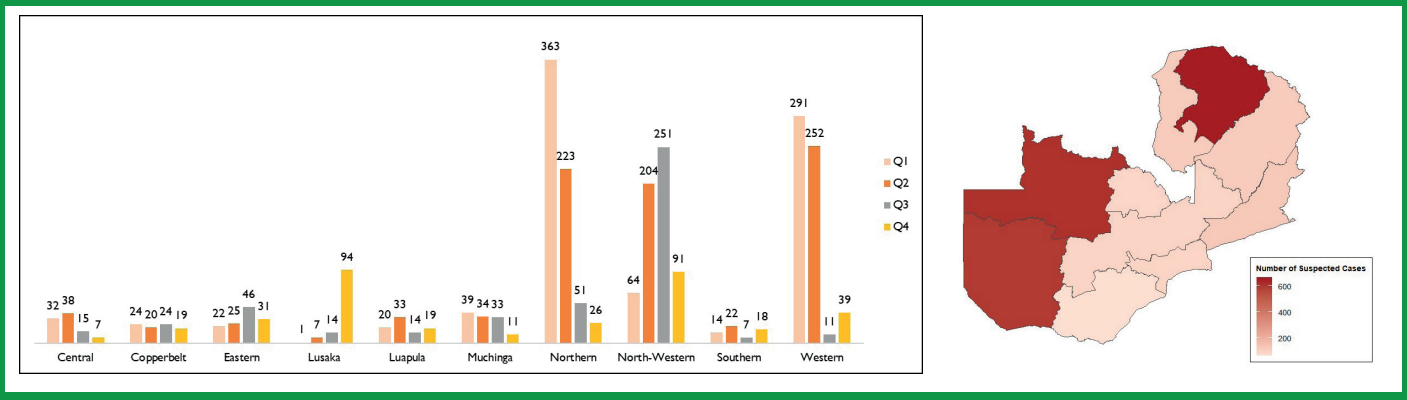


Figure 6: Suspected measles Cases in Zambia by Province (January - December 2025)

Data used was extracted from eIDSR
About eIDSR

The Electronic Integrated Disease Surveillance and Response System (eIDSR) is a disease surveillance system that is used to continuously and systematically collect, analyse, interpret, and visualize public health data. Data is collected at facility level and captured by district surveillance officers. The data reported in this bulletin was extracted from the system (except were indicated otherwise) on the aforementioned date.

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