THE HEALTH PRESS

ZNPHI
ZAMBIA NATIONAL
PUBLIC HEALTH INSTITUTE

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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

Dear Readers,

I am pleased to present the second issue of The Health Press Zambia for 2025.

In the second quarter of the year, Zambia continued its response to Mpox, a significant public health threat with cross-border transmission dynamics. First identified in monkeys in 1958 and humans in 1970 in the Democratic Republic of Congo (DRC), Mpox was long regarded as a rare, self-limiting illness restricted to forested regions of Central and West Africa. However, over the past two decades, the global epidemiological landscape has shifted. In 2022, multiple countries outside Africa, particularly in Europe, the Americas, and parts of Asia, reported large outbreaks, confirming the virus's capacity for sustained human-to-human transmission and challenging long-held assumptions about its geographic limits. As of June 2025, Zambia had recorded 138 confirmed Mpox cases, with three (3) deaths, representing a case fatality rate of 2.2%.

This issue features an editorial on genomic surveillance, a vital tool for detecting, monitoring, and responding to public health threats such as Mpox. We examine potential applications in resource-limited settings and emphasise the urgent need for Africa to invest in genomics and genomic surveillance through multisectoral collaboration and public–private partnerships.

To further inform frontline healthcare workers, researchers and the general public about the epidemiological, clinical, and temporal characteristics of Mpox, we present a case series report on the recent outbreak in Nsama District. This study, involving four epidemiologically linked household members, highlights the risk of intra-household transmission and underscores the importance of timely case identification, specimen collection, and active contact tracing.

In addition, we feature an original research article on road traffic accidents in Zambia, based on a retrospective analysis using Epidemic Intelligence from Open Sources (EIOS). As in many resource-limited settings, accurate reporting on road traffic accidents remains a challenge. This article demonstrates the potential of integrating open-source intelligence with traditional surveillance systems to enhance road safety monitoring and guide targeted interventions.

Finally, this issue presents summary statistics on key notifiable diseases tracked by ZNPHI, including acute flaccid paralysis, Mpox, measles, anthrax, bilharzia, typhoid fever, and others.

It is my hope that the evidence and insights shared in this issue will contribute to informed public health action and strengthen our collective capacity to safeguard national health security.

Prof. Roma Chilengi

Director General - Zambia National Public Health Institute

ZNPHI SPEAKOUT

Why Africa Must Invest in Genomic Surveillance for Health Security

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Introduction

Genomic surveillance has emerged as a powerful tool in public health, revolutionizing how countries detect, monitor, and respond to health threats. The COVID-19 pandemic offered the most compelling example of how genomics and genomic surveillance can directly inform public health actions and deliver measurable impact[1]. During the pandemic, genomic surveillance played a pivotal role in generating valuable data on the novel coronavirus, SARS-CoV-2.[2] It enabled the rapid sequencing of the virus's genome, tracking of transmission patterns, and monitoring of genetic mutations that could affect virulence, transmissibility, treatment outcomes, and vaccine efficacy.[3] These insights allowed policymakers around the world to make timely, evidence-based decisions.[1] Moreover, the prompt sequencing and global sharing of the SARS-CoV-2 genome set the stage for the fastest vaccine development in human history. What began as a mysterious pneumonia in Wuhan, China, led to Pfizer producing a vaccine candidate in about 7 months, and within a year, vaccines were being rolled out for emergency use worldwide.[4]

Potential Use Cases for Genomic Surveillance Are Vast

The potential applications of genomics span nearly every aspect of public health, from outbreak detection to the control of endemic diseases.[5] While pandemic response has been a major focus of genomic surveillance, the use cases for genomic surveillance extend well beyond emergencies. It plays a critical role in addressing emerging and re-emerging public health challenges [6]. For instance, pathogen genomics is essential in monitoring antimicrobial resistance (AMR) by identifying resistant strains and informing treatment strategies. It also aids in tracking the emergence and spread of drug-resistant malaria parasites and supports the de-velopment of more effective HIV treatments and vaccines.[7]

Another promising application lies in wastewater and environmental surveillance. Genomic sequencing can detect and monitor pathogens circulating silently within communities, serving as an early warning system for outbreaks. This method is not only non-invasive but also cost-effective, allowing for continuous monitoring of public health threats at the population level before they escalate.[6,8]

In the context of vaccine-preventable diseases (VPDs), genomics can significantly enhance traditional surveillance systems. It enables characterization of circulating strains, facilitates the monitoring of genetic mutations that may affect vaccine efficacy, and supports the design of next-generation vaccines tailored to specific regional variants.[7,9] For example, genomic data can guide the periodic updating of measles, rotavirus, and pneumococcal vaccines to ensure efficacy against locally dominant strains.[6,9]

Moreover, integrating genomics into the surveillance of endemic diseases such as malaria, tuberculosis, and HIV can transform disease control and elimination efforts. For malaria, genomic sequencing provides insights into parasite population structures and resistance patterns, allowing for more targeted interventions. In tuberculosis, genomics can pinpoint transmission hotspots and track multidrug-resistant strains with greater accuracy[10]. For HIV, sequencing helps identify resistance mutations, guides individualized treatment regimens, and informs vaccine development by mapping the diversity of viral strains across populations.[6]

These use cases demonstrate that genomic surveillance is not just a tool for outbreak response, as was evident during COVID-19, but a fundamental component for building more resilient, data-driven public health

systems.

Investing in Genomics and Genomic Surveillance is non-negotiable for Africa.

Africa bears the highest burden of infectious diseases globally and reports over 100 public health emergencies each year. [11] For instance, the continent accounts for 94% of the world's malaria cases and 95% of malaria-related deaths. Furthermore, Africa shoulders 40% of the global burden of Neglected Tropical Diseases, with every country on the continent facing at least one endemic NTD.[12] Endemic diseases such as HIV, tuberculosis, and malaria continue to cause substantial morbidity and mortality across the continent.[13] This complex and diverse pathogenic landscape demands robust surveillance systems capable of providing real-time insights into pathogen evolution and transmission dynamics. Yet, historically, disease surveillance in Africa has relied heavily on traditional microbiology and serology methods, which lack the precision, speed, and scalability required for timely public health decision-making.[7]

Before the COVID-19 pandemic, genomic sequencing capacity was either limited or non-existent in many African countries, leading to dependence on overseas laboratories. This reliance often resulted in significant delays in data generation, analysis, and response, undermining the ability to act swiftly during outbreaks.[14] Several structural and technological barriers continue to impede progress. Establishing and maintaining sequencing facilities requires significant financial investment, and the shortage of trained personnel to operate, analyze, and interpret genomic data remains a significant constraint.[1] The lack of bioinformatics expertise, essential for transforming raw sequencing data into actionable public health intelligence, is one of the most pressing bottlenecks. Genomics is as much a data science as it is a laboratory science. However, many countries across the continent face a scarcity of skilled bioinformaticians, limited access to high-performance computing infrastructure, and unreliable internet connectivity, which hampers cloud-based analysis.[7,15] Additionally, challenges related to data sharing, harmonized standards, and customs delays in procuring laboratory reagents further constrain the effective use of genomics in real-time public health decision-making.[15]

Addressing these challenges requires sustained and substantial investment. For Africa, investing in genomics and genomic surveillance is not optional; it is essential for building resilient health systems that can detect, respond to, and ultimately control both emerging and endemic public health threats. Moreover, substantial investment in genomics will help bridge the genomic divide, positioning Africa to contribute to global health security.

Leveraging partnerships and networks will be critical.

The COVID-19 pandemic not only revealed vulnerabilities in global health systems but also served as a powerful catalyst for scientific innovation and technology transfer. Since 2019, Africa has made notable progress in building genomic capacity, progress that was mostly accelerated by the urgency of the pandemic.1 Fast forward to 2025, infrastructure initially established for COVID-19 genomic surveillance has since been used to identify the Mpox Clade 1b variant, monitor cholera outbreaks across seven countries, and support responses to Marburg virus in Rwanda and Ebola in Uganda.[1]

However, fully unlocking the potential of genomic surveillance will require continued commitment, strategic investment, and, crucially, strengthened collaboration through regional and global partnerships will be essential.[1] Partnerships offer opportunities for technology transfer, skills development, and coordinated resource mobilisation, which are vital for low- and middle-income countries, particularly in Africa.

In the aftermath of COVID-19, a number of global and regional networks have emerged to support these efforts. The International Pathogen Surveillance Network (IPSN), established two years ago, now comprises nearly 350 partners across more than 105 countries, working collectively to expand equitable access to genomic tools and expertise.[1] On the African continent, the Africa Pathogen Genomics Initiative (Africa PGI), launched in 2020, has focused on five key areas: creating enabling mechanisms, democratizing access to sequencing, especially in high-burden countries, strengthening regional and global networks, promoting data sharing, and enhancing data utilization for public health action.[1,16,17]

At the national level, Zambia has taken significant steps to scale up genomic capacity by launching the Pathogen Genomic Surveillance Strategy for Zambia (2025-2029) and establishing the Zambia Genomic Sequencing Consortium in 2025. These efforts aim to strengthen end-to-end capabilities, from the identification of priority pathogens, expanding use cases to

sampling, laboratory processing, genome sequencing, data analysis, storage, and sharing. The strategy prioritizes the development of a national genomic surveillance network, workforce development and retention, a robust supply chain, laboratory quality management systems, and sustainable partnerships. It is aligned with global and regional frameworks, including the World Health Organization's Global Genomic Surveillance Strategy for Pathogens with Pandemic and Epidemic Potential (2022-2032) and the Africa CDC's Pathogen Genomics Surveillance Policy Framework. A core aspiration of Zambia's strategy is to achieve integration of pathogen genomics across the human-animal-environmental interface to enhance evidence-based public health decision making anchored in the One Health Approach.

Given Africa's disproportionately high burden of infectious diseases, investing in genomics is not just strategic, it is essential.[16] Strengthening genomic capacity will not only accelerate the generation of timely genomic data but also enable its translation into actionable public health strategies.[1] To achieve this, governments, regional institutions, and international partners must prioritize long-term investment in genomics infrastructure, workforce development, and interoperable data-sharing systems. Only through sustained collaboration and shared responsibility can Africa realise the full potential of the use of genomics to improve health outcomes and strengthen health security.

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Original Research Article One

Mpox in Kayamba Village, Nsama District, Zambia : A Case Series Report

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Abstract

Background: Mpox is a zoonotic viral disease historically endemic to Central and West Africa, with recent emergence in non-endemic regions, including Zambia. On May 27, 2025, Nsama District recorded its first suspected Mpox case, prompting an investigation into a household cluster in Kayamba Village. This case series study aimed to describe the epidemiological, clinical, and temporal characteristics of the affected household cluster.

Methods: A descriptive case series study was conducted involving four epidemiologically linked household members (one confirmed and three probable cases). Demographic and outpatient clinical data were collected via a structured questionnaire in KoboToolbox and clinical record review. Specimens from the confirmed case were processed at the Zambia National Public Health Reference Laboratory. Data were cleaned in Microsoft Excel and analyzed using R statistical software.

Results: Four Mpox cases (three males, one female) were identified in a seven-member household (median age: 34.5 years; range: 13–44). The index case, a 44-year-old HIV-positive male, tested PCR-positive. Symptom onset ranged from May 27 to June 17, 2025. One additional adult male was HIV-positive. Time from symptom onset to healthcare ranged from 1 to 17 days. The household secondary attack rate was 50% (3/6).

Conclusion: The investigation confirmed localized household transmission of Mpox in Nsama District, involving four epidemiologically linked cases. It demonstrated significant intra-household transmission and heightened risk among people living with HIV. Timely case identification, specimen collection, and active contact tracing are critical to containment. Continued surveillance and community engagement are essential, particularly during the 21-day observation period following the last case, to prevent wider transmission and guide public health response.

Keywords: Mpox, household transmission, case series, HIV comorbidity, Zambia

Introduction

Mpox, caused by the monkeypox virus (Orthopoxvirus genus), is a zoonotic disease of increasing global public health concern [1]. First identified in monkeys in 1958 and subsequently in humans in 1970 in the Democratic Republic of Congo (DRC) [1, 2], Mpox was long considered a rare, self-limiting illness confined to forested regions of Central and West Africa [1]. However, over the past two decades, the global epidemiological landscape has shifted. In 2022, multiple countries outside Africa, particularly in Europe, the Americas, and parts of Asia, reported significant outbreaks, highlighting the virus's capacity for sustained human-to-human transmission [1, 3]. These events underscored the need for global surveillance and challenged long-standing assumptions about Mpox's geographic limitations.

Regionally, the burden of Mpox in sub-Saharan Africa remains underreported and under-researched [4]. Countries such as the DRC and Nigeria have documented recurring outbreaks [5], yet weak surveillance systems, limited laboratory infrastructure, and clinical similarities with other febrile rash illnesses (e.g., measles

and chickenpox) contribute to frequent misdiagnosis and underdiagnosis [6]. Furthermore, many questions remain unanswered regarding the virus's transmission routes, the potential for asymptomatic spread, environmental reservoirs, and the efficacy of available countermeasures, including vaccines and antivirals, in African populations [7]. These knowledge gaps hinder timely detection and evidence-based control strategies, particularly in rural or resource-limited settings.

In Zambia, Mpox has not historically been recognized as a notifiable disease, and no endemic transmission had been documented until recently [8]. However, the emergence of suspected and confirmed cases in different parts of the country, including rural areas, has raised concerns about silent transmission chains and gaps in surveillance. Understanding the transmission dynamics, risk factors, and clinical presentations of Mpox in the Zambian context is vital for national preparedness and regional public health response. Given the cross-border mobility and environmental similarities with endemic regions, Zambia faces increasing vulnerability to the spread of Mpox.

On May 29, 2025, a suspected Mpox case was reported at Kampinda Rural Health Centre (RHC) in Nsama District, Northern Province, a district with no prior Mpox history. This triggered an urgent field investigation. During the investigation, four epidemiologically linked cases (one confirmed, three probable) were identified within a single household in Kayamba Village. This event represents the first documented household cluster in the district and provides critical insights into the potential community transmission of Mpox in rural Zambia. The purpose of this study was to describe the epidemiological, clinical, and temporal characteristics of the four Mpox cases within a single household in Kayamba Village, Nsama District, from May to June 2025. Specifically, the study sought to: (1) determine the likely mode and sequence of transmission within the household, (2) identify potential within-household risk factors or shared exposures, (3) characterise the clinical spectrum and outcomes of all cases in the cluster, and (4) calculate the household secondary attack rate.

Methods

Design

A descriptive case series design was used to document and analyse the four epidemiologically linked Mpox cases within a single household.

Study Setting

The study was conducted in Nsama District, which borders the Democratic Republic of Congo, and has an estimated population of 87,347 [9,10]. Investigations primarily focused on Kampinda Rural Health Centre (RHC) and the nearby Kayamba Village, which was identified as the epicenter of the household cluster. Kampinda, one of the smaller communities within the district, has a population of approximately 12,229 [10]. It is surrounded by rural landscapes and is part of a network of villages including Mikose, Roma, and Kabuta, all situated within a 20-25 km radius [10].

Case definitions

The following case definitions were employed for this investigation, based on national guidelines [8] and tailored for the local situation:

- **Suspected Case:** Defined as the presence of clinically compatible signs and symptoms in an individual with a reported exposure or travel history to the Kampinda zone.

- **Probable Case:** Characterized by clinically compatible features and a documented epidemiological link to a laboratory-confirmed case, in the absence of laboratory confirmation.

- **Confirmed Case:** A laboratory-confirmed diagnosis of Mpox infection through real-time Polymerase Chain Reaction (PCR) for viral DNA.

Data collection

Data relevant to this investigation were obtained from both primary and secondary sources. A structured questionnaire administered to household members using KoboToolbox captured demographic information (e.g., age, sex, household size), clinical details (e.g., dates of symptom onset, signs and symptoms), and exposure history (e.g., travel, animal contact, or interaction with symptomatic individuals). Secondary data were extracted from the outpatient department (OPD) medical records at Kampinda Rural Health Centre and the district-level Mpox line list, supplementing information on symptom presentation and healthcare utilization.

Skin lesion swabs were collected from the index case by the District Rapid Response Team (RRT) prior to the arrival of the investigation team. These were tested using real-time PCR at the Zambia National Public

Health Reference Laboratory, and the results informed case classification and linkage to the other household members.

To ensure data quality, the team developed a standardized questionnaire, conducted daily checks for completeness and consistency, and held regular debriefings to address discrepancies. All collected data were securely uploaded into KoboToolbox, with restricted access, and managed according to standardized procedures for cleaning and verification.

Data Analysis

Data collected via KoboToolbox were exported in CSV format and first processed in Microsoft Excel for cleaning, including checking for completeness, correcting entry errors, and standardizing variable formats. The cleaned dataset was then imported into R statistical software (version 4.4.1) for analysis.

Descriptive statistics were used to summarize demographic characteristics, clinical features, and symptom onset timelines. Categorical variables such as sex, symptom presence, comorbidities, and case classification were tabulated. Continuous and temporal variables, including age and the interval between symptom onset and health facility visit, were analyzed using measures of central tendency and case-by-case timelines. The household secondary attack rate (SAR) was calculated based on the number of new cases among susceptible household members. Key outputs included summary tables of case characteristics and visual timelines to illustrate the interval between symptom onset and healthcare seeking.

Results

Case Descriptions

Four epidemiologically linked mpox cases were identified within a single household in Nsama District, Zambia. One case was laboratory-confirmed, and three met the probable case definition. Age ranged from 13–44 years, with a median age of 34.5 years. Symptom onset occurred between May 27 and June 17, 2025. Clinical characteristics are summarized in table 1.

Symptom Onset and Facility Visit

Figure 1 shows the interval between symptom onset and subsequent health facility visit for each case. The time lag varied across individuals, ranging from within a day to 17 days.

Secondary Attack Rate

A total of 7 individuals resided in the affected household. One individual was identified as the index case, leaving 6 susceptible household contacts. Among these, 3 developed probable Mpox (the brother, sexual partner, and child), resulting in a household Secondary Attack Rate (SAR) of 50%.

Table 1: Household-Level Mpox Case Summary for Kapanda Village Outbreak, Nsama District, May–June 2025

Name	Age/Sex	Date of Onset	Symptoms	Comorbidity	Classification
Index	44/M	27-May-2025	Fever, rash (itchy vesiculo-pustular lesions), headache, sore throat, eye irritation	HIV Positive	Confirmed
Brother	34/M	27-May-2025	Fever, rash (itchy vesiculo-pustular lesions), lymphadenopathy, headache	HIV/AIDS	Probable
Sexual partner	35/F	28-May-2025	Fever, rash (itchy vesiculo-pustular lesions) covering face, groin and feet.	None	Probable
Child	13/M	17-Jun-2025	Fever, rash (itchy vesiculo-pustular lesions), lymphadenopathy	None	Probable

M = Male; F = Female; HIV = Human Immunodeficiency Virus; AIDS = Acquired Immunodeficiency Syndrome
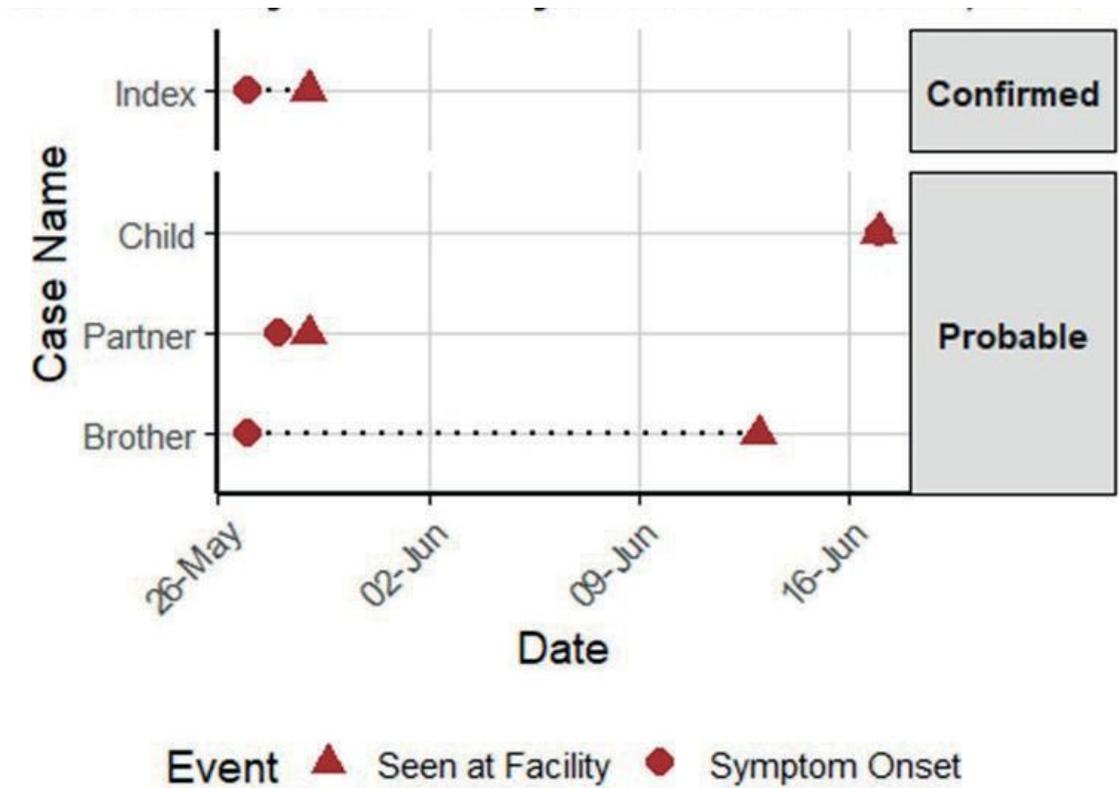
Figure 1: Timeline of Mpox Symptom Onset and Health Facility Visits by Case, Kayamba Village, Nsama District, Zambia: May-June, 2025

Discussion

This study presents the first documented Mpox outbreak and, specifically, the first detailed epidemiological and clinical characterization of a household cluster in Northern Province, Zambia. This is significant as it marks a notable shift in the region's epidemiological landscape, providing evidence of community transmission in a rural setting where Mpox had no prior documented history [8]. Our findings contribute substantially to the limited body of knowledge on Mpox in sub-Saharan Africa, particularly in rural and previously unaffected areas of Zambia, highlighting the evolving threat and the need for heightened surveillance.

A detailed epidemiological assessment supports the identification of the 44-year-old male as the index case, based on laboratory confirmation and his role as the earliest identified symptomatic individual. However, given that his 34-year-old brother developed symptoms on the same day and also resided in the household, the possibility of co-primary cases or alternative transmission pathways cannot be definitively excluded. One plausible scenario is that both adult males were exposed simultaneously to a common external source and developed symptoms concurrently. Alternatively, the brother, who had delayed presentation to the health facility, may have been the primary case and transmitted

the virus to the confirmed case through close contact. Another possibility is that the 35-year-old female sexual partner, who developed symptoms one day later, introduced the infection into the household and subsequently infected both adult males.

Due to these uncertainties and overlapping timelines, caution is warranted in designating a definitive index case. This complexity underscores the challenges inherent in pinpointing the precise index case in real-world outbreak investigations, especially in close-contact settings. Nonetheless, the confirmed case's immunocompromised status and the sequence of subsequent probable cases suggest a high likelihood of intra-household transmission via close physical contact and shared living spaces.

The clinical spectrum observed across all four cases was largely consistent with known Mpox presentations described globally, commonly including fever, painful and itchy vesiculo-pustular lesions, lymphadenopathy, and headache [1,2]. Furthermore, some cases presented with involvement of oral and genital mucosa, which is also a recognized feature of Mpox. Notably, the index case exhibited the most severe symptoms and a full-body rash, a likely consequence of his immunosuppressed state. This observation reinforces the critical importance of Antiretroviral Therapy (ART)

adherence and diligent monitoring for opportunistic infections, including Mpox, in populations living with HIV [11,12], providing real-world evidence of this interaction from an African context.

The calculated Household SAR of 50% within this household setting underscores the high infectiousness of Mpox in close-contact environments [1,2]. This finding is at the higher end of reported household secondary attack rates for Mpox, particularly for Clade IIb, observed during the 2022 global outbreaks, where SARs often ranged from 10% to 30% in many household settings [12,13]. The elevated SAR in this cluster likely reflects the intense and prolonged close physical contact among family members sharing a living space, compounded by the immunocompromised status of the index case, which might have led to increased viral shedding and transmissibility. This finding emphasises the urgent need for rapid case identification, immediate isolation of infected individuals, and thorough contact tracing to mitigate further spread, particularly in settings with high household occupancy [11,12].

Public Health Response and Implications

Following the identification of the household Mpox cluster, a coordinated public health response was rapidly implemented by the District Health Office and the RRT. Core outbreak control activities included immediate case isolation, contact tracing, risk communication, and targeted community sensitization within Kayamba Village.

Active surveillance was established among all household members and extended to the surrounding community. As of July 2nd, 15 days had passed since the symptom onset of the last identified case (June 17, 2025). No additional suspected or confirmed Mpox cases were reported during that period.

While the absence of new cases was an encouraging sign, it was considered premature to declare the outbreak contained, as the full 21-day maximum incubation period recommended by the World Health Organization (WHO) had not yet elapsed [15,16]. Continued active monitoring and heightened community awareness were regarded as critical for the early detection of any further transmission.

The public health response demonstrated the value of rapid mobilization, use of clinical case definitions, and community engagement in limiting potential spread. Ongoing vigilance was emphasized to prevent escala-

tion and ensure timely intervention.

Limitations

This investigation faced some limitations that may have affected the completeness and interpretation of findings. First, only one of the four reported cases was laboratory-confirmed due to limited specimen availability and logistical constraints during the early phase of the response. As a result, the classification of the remaining three cases relied on clinical and epidemiological criteria, which, although consistent with WHO definitions [17], introduces some uncertainty in case confirmation.

Second, recall bias may have influenced the accuracy of symptom onset dates and exposure histories, as data collection was conducted retrospectively through interviews. To minimize this, interviews were conducted as soon as the investigation team arrived, and respondents were probed using a structured tool to enhance recall consistency.

Third, the small sample size limited the ability to draw broader statistical inferences or detect subtle transmission patterns. However, as a descriptive case series, the primary goal was to characterize the cluster, not to generalize findings beyond the household.

Lastly, incomplete testing of all household members meant that asymptomatic or subclinical infections may have gone undetected. Active symptom monitoring and repeated follow-ups helped mitigate this by ensuring all symptomatic individuals were promptly evaluated and classified according to standard criteria.

Despite these limitations, the investigation yielded valuable insights into household transmission dynamics, clinical patterns, and public health response needs in a rural Zambian setting.

Conclusion and Recommendations

Our investigation confirmed localized household transmission of Mpox in Nsama District, involving four epidemiologically linked cases. This highlighted the critical role of timely diagnosis, specimen collection, effective contact tracing, and prompt isolation in controlling the spread of infection. The identification of comorbidities, particularly HIV, among two adult cases underscored the need to prioritize vulnerable populations during outbreak response.

Although no additional cases were reported within 15 days following the last symptom onset on June 17, 2025, the outbreak remained under surveillance and could not yet be declared contained. We emphasized the essential need for continued vigilance throughout the full 21-day incubation period, consistent with WHO criteria for outbreak closure, to ensure early detection of any new cases and confirm interruption of transmission.

To support outbreak control and prevent further spread, we recommended that active surveillance activities, including case finding, contact monitoring, and health facility alerts, be maintained for the duration of the outbreak. We also recommended strengthening diagnostic capacity, including improving health facility readiness for timely specimen collection and laboratory confirmation, to expedite case classification and public health response. Integration of Mpox symptom screening into routine HIV care services was crucial to facilitate early identification among high-risk individuals. Furthermore, we advised enhanced risk communication and community engagement strategies, utilizing culturally appropriate messaging, to encourage early reporting and reduce stigma. Finally, we proposed the establishment of a district-level Mpox outbreak preparedness plan to improve future response capabilities, including rapid mobilization, logistics management, and contact tracing protocols.

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Original Research Article Two

Road Traffic Crashes in Zambia: A Retrospective Descriptive Analysis Using Epidemic Intelligence from Open Sources

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Abstract

Background: Road traffic crashes (RTCs) remain a significant public health challenge in Zambia. In the first quarter of 2023 alone, 9,035 crashes and 600 deaths were reported, a 14.3% increase in fatalities from the same period in 2022. However, underreporting is a persistent problem. A local capture-recapture study found that individual data sources captured only 12-19% of fatalities, with combined sources improving completeness to just 37%. To address this gap, the Epidemic Intelligence from Open Sources (EIOS), a web-based platform aggregating media reports for real-time event detection, may offer a valuable complementary data source. This study aimed to describe the epidemiology of RTCs in Zambia using EIOS data and assess their potential to support existing surveillance systems.

Methods: We conducted a retrospective descriptive analysis of RTCs reported through EIOS between January 2023 and April 2025. News articles were identified using tailored search terms for RTCs, injuries, and deaths. Relevant reports were manually reviewed, and key data such as time, location, vehicle type, fatalities, and seasonal patterns were extracted into a structured dataset. Descriptive analysis was performed using Microsoft Excel.

Results: We analysed 51 unique road traffic crashes from 251 identified articles. Most crashes (57%) occurred during the rainy season, with Lusaka accounting for the highest share (27%). Multiple vehicle incidents were predominant (59%). Luano District, although contributing only 2% of crashes, accounted for 26% of total deaths. Crashes peaked during evening hours (31%), followed by the afternoon (27%). Sundays recorded the highest crash frequency (24%). Each crash involved a median of 5 people (IQR 2–9), 1 death (IQR 0–3) and 1 injury (IQR 0–5).

Conclusion: The EIOS data provided novel insights into spatial and temporal patterns of RTCs. While it tends to capture more severe or widely reported events, potentially underrepresenting rural areas with limited media coverage, it still shows promise as a complementary surveillance tool to traditional sources. Integrating open-source intelligence with traditional surveillance systems may strengthen road safety monitoring and inform more targeted interventions.

Key words: seasons, accidents, public health, Zambia, retrospective studies, epidemic intelligence from open sources.

Background

Road traffic injuries (RTIs) and road traffic crashes (RTCs) are a persistent public health challenge worldwide (1–3). The WHO's 2023 report estimates that 1.19 million road traffic deaths occurred globally in 2021, a 5% decline since 2010, yet road injuries remain a major issue, with many resulting in long-term disability (4). The burden of road traffic mortality and morbidity is not evenly distributed. Low and mid-

dle-income countries (LMICs) bear a disproportionate share, accounting for over 90% of global road traffic deaths, despite possessing only about 54–60% of the world's registered vehicles (5). Among young people aged 5 to 29 years, RTCs are the leading cause of death, underscoring their devastating impact on the most productive population segments (6).

Africa has the highest road traffic fatality rate, estimated at 26.6 deaths per 100,000 population, significantly higher than the global average of 17.4 to 18.2 deaths per 100,000 (7). Vulnerable road users (pedestrians, cyclists, and motorcyclists) are particularly affected due to urbanisation, poor road infrastructure, and weak enforcement of traffic laws (6). The Sustainable Development Goals (SDGs) recognised this crisis. Target 3.6 aimed to halve global deaths and injuries by 2020, and Target 11.2 calls for safe, affordable, accessible transport systems by 2030 (8). Despite this, many African countries, including Zambia, face challenges in controlling RTCs due to a lack of reliable, timely, and comprehensive data (9,10). These limitations cause discrepancies between official figures and international estimates. For example, Zambian police recorded 2,163 deaths in 2021 (12), while WHO estimated up to 3,654 deaths (6). In countries like Malawi and Ethiopia, studies show that up to half of all road traffic deaths go unreported (13,14).

Zambia continues to experience a high burden of RTCs. The Road Traffic and Safety Agency (RTSA) reported 32,396 crashes in 2021, leading to 5,307 serious injuries and 2,163 deaths, a 28% increase in fatalities from 2020 (1,690 deaths from 28,484 crashes) (15). Pedestrians accounted for 49% of the 2021 fatalities (12). The RTSA data for the first quarter of 2023 shows 9,035 crashes and 600 deaths, a 14.3% increase in fatalities compared to the same period in 2022, despite fewer crashes (16). Crashes mostly occur in urban areas, but fatalities peak on highways (12). Risk factors include speeding, misjudging clearance, failure to keep to the nearside, and disobeying traffic signs (17). Night travel bans on public service vehicles have reduced deaths, but stronger enforcement and better infrastructure are still needed (12).

Another challenge in Zambia is the fragmentation of data sources. Official crash data rely mainly on police records (15,18), which are underreported due to limited follow-up, definitional inconsistencies, and administrative disincentives (9,19). Other sources like hospitals, civil registration and vital statistics (CRVS), emergency services, insurance companies and local au-

thorities are not routinely integrated, limiting national data accuracy (9). The capture-recapture method has been applied in Zambia and other African countries to estimate the true burden by comparing multiple data sources (9). Findings consistently show that official systems miss many fatalities. To address these gaps, alternative sources are gaining attention.

Social media, news reports, and digital open-source data offer supplementary, real-time surveillance (20–24). In Kenya, Twitter analysis revealed crash patterns not captured in official records (25). The WHO's Epidemic Intelligence from Open Sources (EIOS) platform aggregates digital public information to support real-time surveillance (26).

Originally developed for infectious diseases, EIOS has shown potential for non-communicable events like RTCs (26–28). These platforms can deliver more timely, granular, and cost-effective data than traditional systems, aiding hotspot detection and responsive interventions (26,29,30). However, challenges remain in terms of data validation, representativeness, privacy, and the need for robust analytical frameworks to ensure that open-source data can be reliably used for decision-making (26,29,30).

In Zambia, existing studies on road traffic crashes have predominantly relied on routine data sources such as police and hospital records (9,15,18). While these data are valuable, they are often faced with data quality issues. Despite the growing interest in road safety, the use of media monitoring platforms like EIOS remains underutilized. Given the frequent reporting of severe RTCs in digital media, EIOS is a promising, yet underused tool for supplementing official sources. This study aims to address that gap by determining the epidemiology of road traffic crashes in Zambia using EIOS data.

Methodology

Study design and setting

We conducted a retrospective descriptive analysis of data on road traffic crashes reported through the Epidemic Intelligence from Open Sources (EIOS) platform. The study was conducted in Zambia, a landlocked, middle-income country with an estimated population of 21.7 to 21.9 million people in 2025 (31). Data on RTCs from January 2023 to April 2025 were included in the analysis.

In Zambia, EIOS is integrated into the national public health surveillance system to support real-time epidemic intelligence. Within the platform, two functional boards focusing on human and animal health support epidemic intelligence under the Integrated Disease Surveillance and Response (IDSR) strategy. This framework combines indicator-based surveillance (IBS) and event-based surveillance (EBS) for early outbreak detection. At the national level, data on signals and events are maintained in an Excel log sheet, updated daily by two epidemiologists at the Surveillance and Disease Intelligence Cluster of the Zambia National Public Health Institute (ZNPHI). Monitoring occurs daily from 8:00 am to 5:00 pm, and events are also entered into the Event Management System (EMS tracker) as part of the EBS process.

Epidemic intelligence from open sources

The EIOS initiative offers a web-based system that leverages natural language processing and machine learning techniques for public health intelligence (PHI) activities (32). The system scans thousands of articles daily from various sources on the web and processes them through a pipeline that involves language detection, geolocation and entity recognition, tagging, categorization and deduplication. The outputs are displayed as articles and are accessible via a flexible interface that allows individuals and teams to apply custom filters to find information of interest. Many countries have adapted EIOS to their specific surveillance needs, including Zambia, where the system supports both human and animal health monitoring.

Study population and sampling

The study included articles on RTCs in Zambia, captured through the EIOS media monitoring platform. We used purposive sampling to identify articles relevant to the study objectives. Articles were selected based on predefined inclusion criteria and a customized search strategy that was applied to the EIOS data stream. A total of 251 articles met the criteria and were included in the final analysis.

Inclusion and exclusion criteria

The study included news articles on road traffic crashes (RTCs) involving motor vehicles such as cars, buses, trucks, and motorcycles that resulted in at least one reported injury or death (Appendix 1). Articles were sourced from the Zambia human health board, a user-defined workspace or environment that allows users

to organize, monitor, and analyse selected content from the EIOS data stream. Reports had to include key details such as the date and location of the incident, type of crash, number of vehicles involved, and the number of individuals injured or killed. Articles that reported on more than one incident were excluded due to missing or aggregated information that could not be disaggregated. Reports capturing other forms of crashes, such as boats, airplanes, and trains, were not included.

Data Collection for Road Traffic Crashes

We customized the date filter by backdating the period from January 1, 2023, and April 30, 2025. The geographic filter was set to Zambia, and we developed a customized search string to identify relevant reports on RTCs. The final search string used was:

("road traffic accident" | "car crash" | "bus accident" | "truck accident" | "motorcycle crash" | "vehicle collision" | "road accident" | "traffic collision") + ("injury" | "injuries" | "fatality" | "fatalities" | "death" | "deaths" | "killed" | "accident") + - ("train" | "plane" | "aircraft" | "helicopter" | "boat"). A total of 251 articles were generated using the customized key search words. We further streamlined our search to four main categories such as Disasters, Outcomes, Populations, and Societal factors. Data on RTCs (Appendix, pg. 16, Fig. 6) were manually reviewed and extracted from the platform and structured into a dataset for subsequent analysis.

Variables

The dataset included key variables related to RTCs, such as the date, time, and location of each incident; the type of incident; the number of vehicles and individuals involved; the number of injuries and fatalities; as well as whether the crash occurred during rush hour and in which season. Rush hour was defined as the peak traffic periods of the day: 7:00 am to 8:00 am and 5:00 pm to 6:00 pm. Time-of-day categories were based on definitions from the Britannica Dictionary (33), with morning defined as 5:00 am to 12:00 pm, afternoon as 12:00 pm to 5:00 pm, evening as 5:00 pm to 9:00 pm, and night as 9:00 pm to 4:00 am. We further defined rainy season as November to April and dry season as May to October.

Data analysis and processing

We cleaned and analysed data using Microsoft Excel version 2019. Pivot tables/charts were used to summarise the dataset, and descriptive statistics: counts, fre-

quencies, and proportions. Median values were used to summarize the number of people involved, injuries and deaths as the data were not normally distributed.

Results

Table 1 presents the descriptive characteristics of RTCs reported through EIOS in Zambia between January 2023 and April 2025. A total of 51 unique road traffic crashes (RTCs) were identified, involving 583 individuals, of whom 237 (40%) were injured and 125 (21%) died. Each crash involved a median of 5 people (IQR 2-9), 1 death (IQR 0-3), and 1 injury (IQR 0-5). Most crashes (57%) occurred during the rainy season, involved multiple vehicles (59%), and occurred outside the peak traffic times (71%).

Table 1: Characteristics of road traffic crashes in Zambia reported through EIOS* (January 2023 to April 2025), n = 51

Continuous variables	Frequency	Median (IQR)
Number of people involved	583	5(2-9)
Number of deaths	125	1(0-3)
Number of injuries	237	1(0-5)
Categorical Variables	**Frequency**	**Proportion (%)**
Season	-	-
Dry	22	43
Rainy	29	57
Number of vehicles involved	-	-
Multiple vehicles	30	59
Single vehicle	20	39
Unknown	1	2
Rush Hour	-	-
Yes	15	29
No	36	71

* EIOS - Epidemic Intelligence from Open Sources

Distribution of Road Traffic Crashes by Time of Day

Figure 1 shows the distribution of road traffic crashes (RTCs) across different times of the day. The highest proportion of crashes occurred during the evening (31%), while the night period had the lowest proportion (18%).
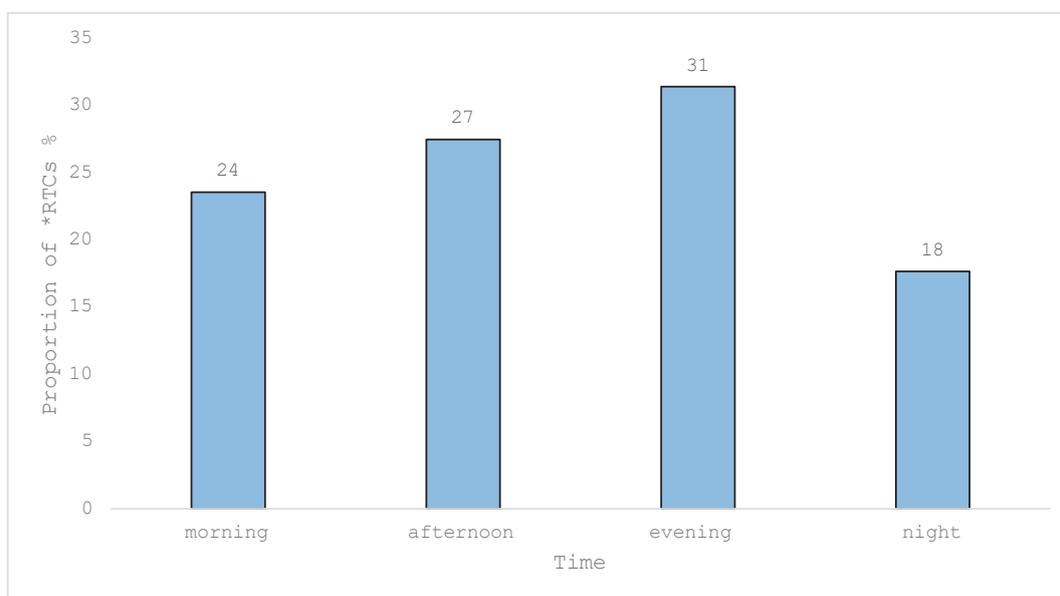

Figure 1: Distribution of road traffic crashes in Zambia by time of occurrence, January 2023 to April 2025 (n = 51)
*RTCs -Road Traffic Crashes

Proportion of deaths from road traffic crashes by time of day

Figure 2 presents the proportions of deaths from RTCs in Zambia by time of occurrence. The highest number of deaths occurred in the morning (54%) followed by night (21%).
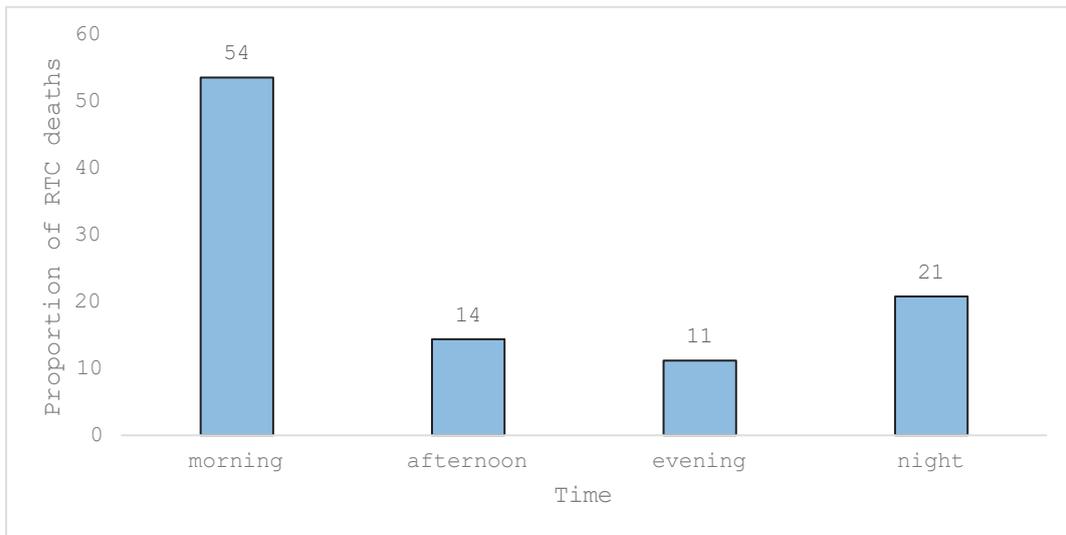

Figure 2: Proportion of deaths from RTCs by time of occurrence, Zambia, January 2023 to April 2025 (n=125)

Distribution of road traffic crashes by day of the week

The highest proportion of RTCs (Fig 3) occurred on Sunday (24%), followed by Thursday (18%). The lowest proportion of RTCs was recorded on Saturday (8%).
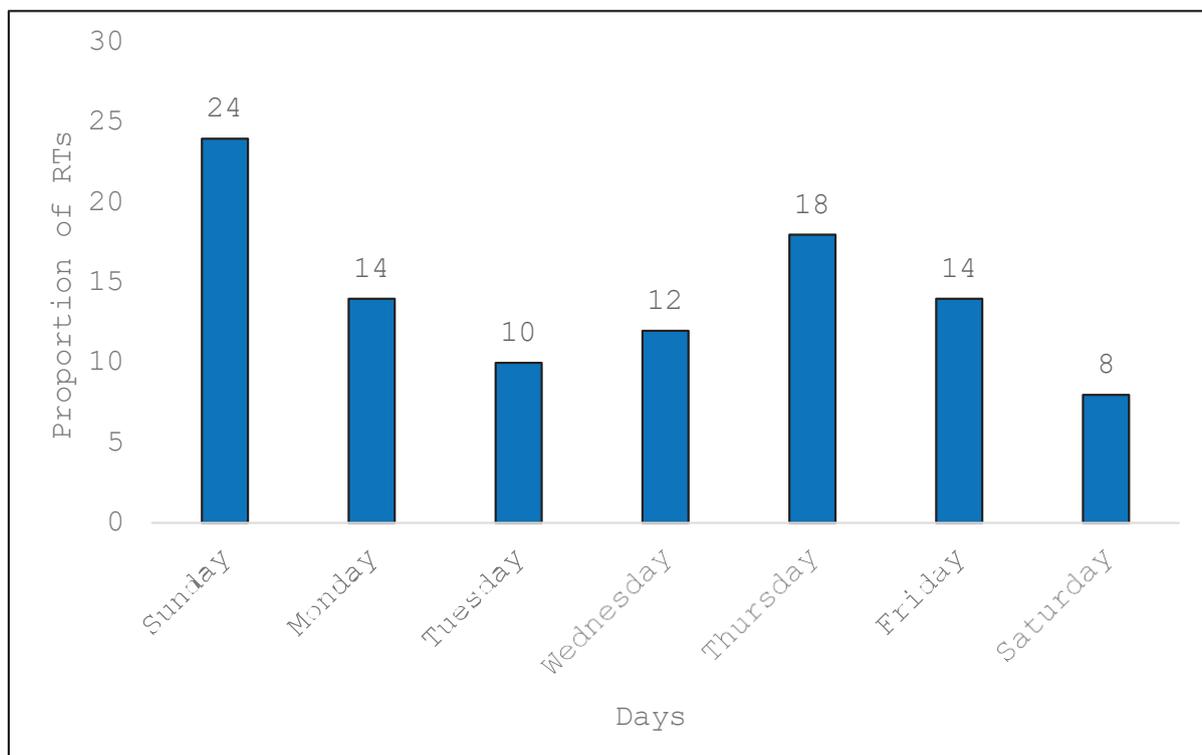
Figure 3: Distribution of road traffic crashes by day of the week, Zambia, January 2023 to April 2025 (n =51)

Distribution of RTCs and deaths by district

Table 2 displays the distribution of RTCs, and fatalities varied across districts. Road traffic crashes (RTCs) were most frequently reported in Lusaka District, which accounted for 27% (14/51) of all crashes. Luano District recorded the highest number of fatalities, contributing 26% (32/125).

Table 2: Distribution of RTCs and deaths by district, Zambia, January 2023 to April 2025 (n for RTCs = 51; n for deaths =125)

District	RTCs* n=51 (%)	Deaths n=125 (%)	District	RTCs* n=51 (%)	Deaths n=125 (%)
Chama	1 (2)	0 (0)	Mpika	1 (2)	4 (3)
Chilanga	1 (2)	1 (1)	Mpongwe	1 (2)	2 (2)
Chipangali	1 (2)	1 (1)	Namwala	1 (2)	4 (3)
Chirundu	3 (6)	10 (8)	Ndola	2 (4)	0 (0)
Chisamba	1 (2)	2 (2)	Nyimba	1 (2)	0 (0)
Kabwe	1 (2)	1 (1)	Petauke	1 (2)	0 (0)
Kafue	1 (2)	4 (3)	Rufunsa	1 (2)	0 (0)
Kalomo	2 (4)	0 (0)	Serenje	1 (2)	12 (10)
Kalulushi	1 (2)	4 (3)	Lusaka	14 (27)	11 (9)
Kapiri Mposhi	3 (6)	10 (8)	Luano	1 (2)	32 (26)
Kitwe	1 (2)	2 (2)	Lundazi	1 (2)	1 (1)
Liteta	1 (2)	3 (2)	Luwingu	1 (2)	0 (0)
Livingstone	1 (2)	0 (0)	Masaiti	1 (2)	1 (1)
Mazabuka	2 (4)	5 (4)	Mumbwa	1 (2)	1 (1)
Mkushi	3 (6)	12 (10)	Monze	1 (2)	3 (2)

*RTCs - Road Traffic Crashes

Discussion

This study analysed the epidemiology of road traffic crashes (RTCs) in Zambia using EIOS data. While many of the studies cited for comparison utilized routine data sources such as hospital and police records (19,34–36), our analysis relied on open-source media monitoring through the EIOS platform. Compared to official RTSA statistics (16), EIOS identified fewer crashes but provided more granular detail. This is especially useful in Zambia, where routine data may be incomplete or delayed. Our results show clear seasonal variation in road traffic crashes (RTCs), with most incidents occurring during the rainy season. A

hospital-based study in Monze, Zambia, also found that 43.4% of road traffic fatalities occurred during the rainy season (19). While that study focused on fatalities, our findings align with broader research showing that rainfall increases crash risk. For example, U.S. data show a 34% higher risk of fatal crashes during the rainy season (35,36). In contrast, a Ugandan study found nearly equal crash rates between rainy and dry seasons (37). These patterns suggest that targeted rainy-season interventions such as improved road maintenance, public awareness campaigns, and stricter speed enforcement are critical for reducing RTCs.

A study in Nigeria reported that single-vehicle (SV)

crashes made up 61.7% of incidents, while multiple-vehicle (MV) crashes accounted for 38.3% (38). SV crashes were more frequent, but MV crashes caused more severe injuries and fatalities (38). Our study contrasts this finding. The MV crashes were more common than SV in Zambia. This difference likely reflects local traffic patterns and road use. Given the higher harm potential of MV crashes, efforts should prioritize enforcing traffic laws, promoting safe driving, and improving infrastructure in busy areas.

While road traffic crashes (RTCs) in high-income settings like the United States often peak during morning and afternoon rush hours (19), our analysis reveals a distinct pattern. In this study, the highest number of RTCs occurred during the evening period, with the night period accounting for the most fatal crashes. These findings are consistent with RTSA reports from 2020 and 2021, which showed that the highest number of crashes occurred between 18:00 and 20:00 hours (15). The elevated crash frequency during evening hours may be attributed to increased traffic volume, reduced visibility, and the onset of driver fatigue (39). Meanwhile, the higher fatality burden during night hours is likely driven by a combination of high-speed travel on less congested roads, impaired driving, particularly alcohol use, poor street lighting, and the absence of road markings (39). These findings suggest that while crash prevention strategies must address evening traffic risks, reducing fatalities will require targeted nighttime interventions, including improved road lighting, stricter enforcement against impaired driving, and community-level awareness on nighttime travel risks.

Temporal patterns of road traffic crashes (RTCs) vary across regions, influenced by travel behaviour, infrastructure, and enforcement practices. Several studies across Africa report varied temporal patterns of RTCs related to weekdays and weekends. For example, higher crash rates over weekends have been observed in Congo and South Africa, often linked to more open traffic flow and different travel behaviours (40–42). In contrast, Ethiopia reported most fatal RTCs during weekdays, influenced by work and school travel patterns (43). In our study, we found that most RTCs occurred on Sundays, unlike RTSA official data, which shows higher crashes on Fridays and Saturdays (15). This reflects the influence of local socio-cultural factors and media reporting patterns.

Another key finding from our analysis is the disproportionately high fatality burden observed in Luano, a rural district, despite a higher number of crashes being reported in Lusaka, an urban area. This rural-urban disparity mirrors broader national trends reported by the RTSA, which show that while 76% of crashes occur on urban roads, a greater proportion of fatalities 58% are recorded on rural or inter-district roads (15). The higher death toll in rural areas like Luano may be attributed to high-speed impacts, delayed emergency response, and limited access to quality post-crash care. In contrast, although Lusaka experiences more frequent crashes, the severity is often lower due to factors such as reduced average vehicle speeds and quicker access to emergency services (44). This contrast is further supported by findings from Monze district, where over 90% of road traffic deaths occurred before reaching a health facility, underscoring the critical gaps in rural emergency response systems (19). In Tanzania, a study found high injury rates on rural roads, exacerbated by poor infrastructure and limited emergency response (34). These findings underscore the urgent need for tailored interventions in rural settings, including improved road infrastructure, strengthened emergency care systems, and targeted road safety education, to address the substantial burden of road traffic injuries outside urban centers.

This study is not without limitations. As with other forms of social media monitoring, EIOS relies on unstructured data from media houses, which may vary in accuracy, completeness, and geographic coverage. Manual abstraction of reports increases the potential for duplication or omission of incidents. In addition, media sources often capture only the initial reports; outcomes such as hospital deaths or long-term disabilities are rarely followed up. The relatively low number of reports identified may also underestimate the actual scale of road traffic crashes, particularly in rural or low-media coverage areas. We also recognize that EIOS may disproportionately capture severe or dramatic crashes that are more likely to be reported in the media. This introduces a selection bias, limiting the generalizability of our findings to all road traffic crashes occurring in Zambia. Nonetheless, the level of detail in these media reports, such as timing, location, and number of people involved, highlights the platform's value as a complementary data source, especially where routine surveillance is delayed or incomplete. Despite these limitations, open-source platforms like EIOS show considerable promise for enhancing road traffic injury surveillance and informing targeted interventions.

Conclusion

This analysis demonstrated that social media monitor-

ing platforms such as EIOS can serve as useful complementary tools for RTC surveillance in Zambia. While the total number of reported incidents in this study likely underestimates the national burden, the captured data is novel and provides unique, location-specific insights, including patterns not easily observed in traditional data sources. By capturing timely and incident-specific information, EIOS offers a valuable, real-time perspective on road traffic risks, particularly in settings where traditional reporting systems are limited or delayed. There is a need to strengthen Zambia's road traffic surveillance by integrating social media monitoring with traditional data systems. This would enhance real-time monitoring and support more informed decision-making. Given the higher risk of fatalities in rural districts, targeted investments in emergency response infrastructure and trauma care are critical. Interventions should also focus on evening and weekend risk periods, including improved road infrastructure, increased enforcement, and behavioural campaigns addressing fatigue and alcohol-related driving

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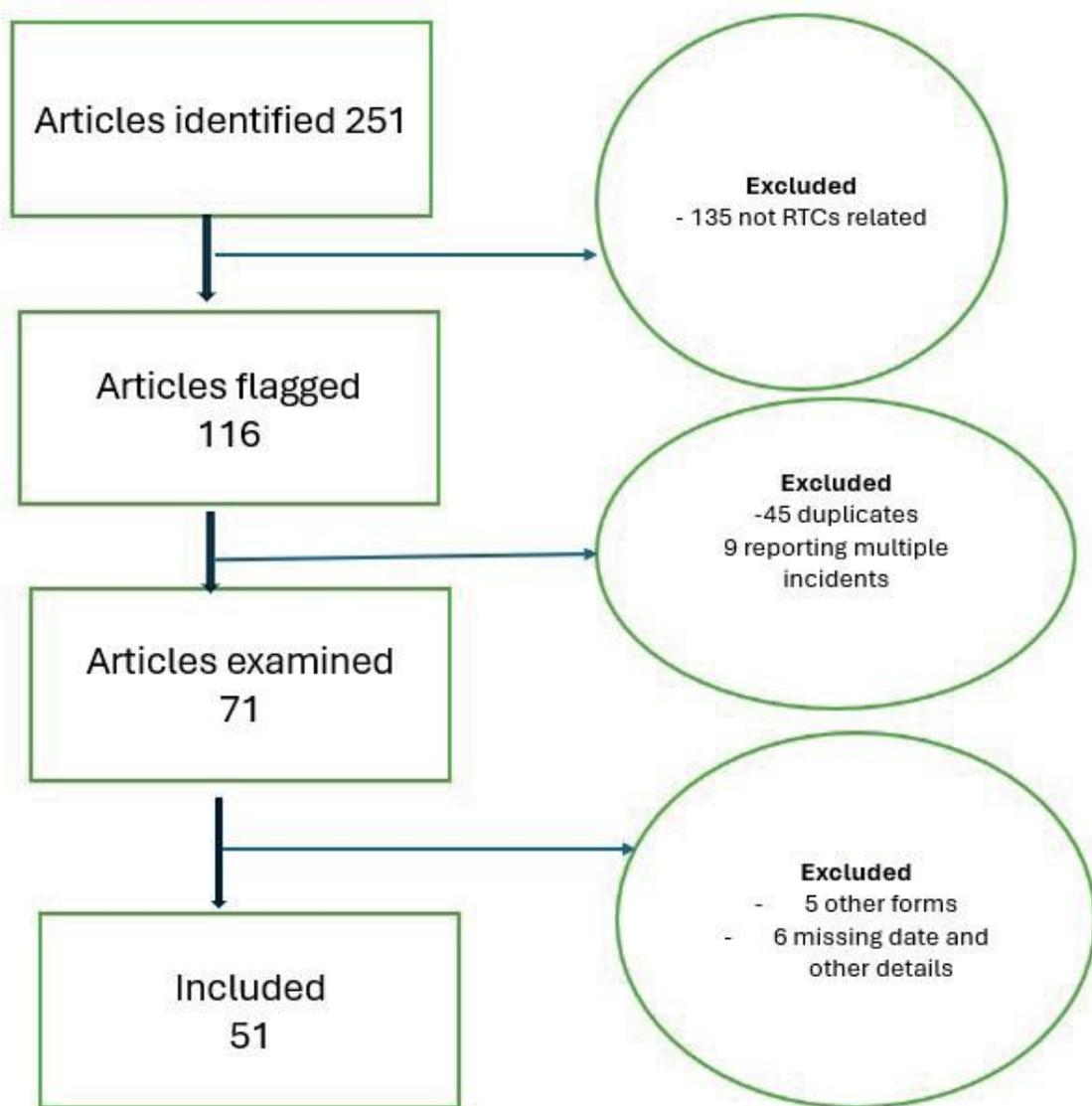
Appendix

Appendix 1: Identification and selection of road traffic crash articles through EIOS, 2023 to 2025, Zambia

Summary of Key Notifiable Diseases

Quarter 2 Highlights

- During quarter 2, Suspected Measles cases increased nationwide, rising from 766 in Quarter 1 to 984 suspected cases.

- A total of 412 suspected Mpox cases were recorded, with North-Western Province (145) and Muchinga Province (82) reporting the highest numbers.

- The number of suspected Anthrax cases continued to decline in quarter 2, dropping from 106 to 49 cases. Western Province recorded a significant decline in suspected cases from 51 cases in quarter 1 to 11 suspected cases

- Lusaka Province recorded the highest number of suspected Typhoid Fever cases (1,542), accounting for approximately 79% of all suspected cases nationwide.

Acute Flaccid Paralysis

In Quarter 2 of 2025, a total of 70 suspected Acute Flaccid Paralysis (AFP) cases were reported nationwide, representing a slight increase from 65 cases in Quarter 1. North-Western Province recorded the highest number of suspected cases (11), followed by Luapula (10). Central, Copperbelt, Lusaka, and Southern provinces each reported 8 cases, while Muchinga recorded the fewest (2). The most significant increase was in North Western Province, rising from 6 case in Quarter 1 to 11 cases in Quarter 2, while Eastern Province experienced the largest decline, dropping from 10 to 4 cases (fig.1 and fig. 2).

AFP surveillance remains a critical tool for detecting poliovirus circulation, particularly among children under 15 years. It must be sustained through a high index of suspicion, timely case reporting, and prompt laboratory confirmation to ensure early detection and rapid response to prevent a potential polio outbreak.
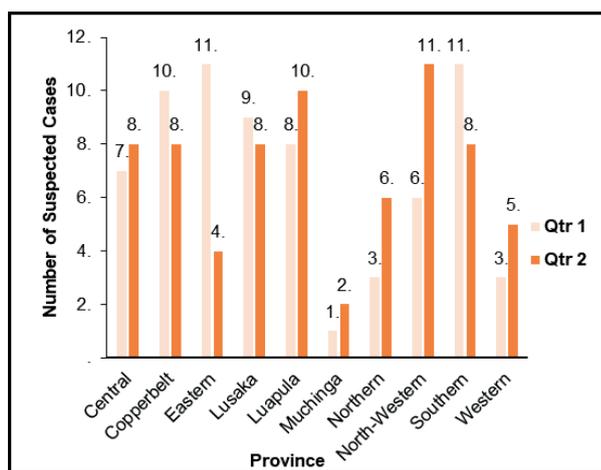
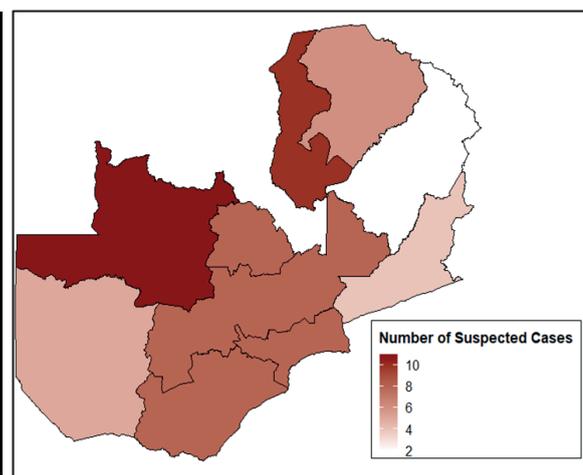*Figure 1 Quarter 2 reported suspected AFP cases per Province (Source: eIDSR, 2025).*

Figure 2 Map showing the distribution of AFP cases

Anthrax

In Quarter 2 of 2025, a total of 49 suspected anthrax cases were reported across seven provinces, a sharp decline from 106 cases in Quarter 1. Southern Province recorded the highest number (31), showing only a slight drop from 33 cases in the previous quarter. Western Province reported the largest decrease, falling from 51 cases in Quarter 1 to 11 in Quarter 2 (fig.3 and fig. 4).

Despite this decline, the public is urged to remain vigilant, particularly in endemic areas. Residents are advised to source meat only from reputable vendors, ensure it is thoroughly cooked, and promptly report any suspected anthrax cases to public health authorities.
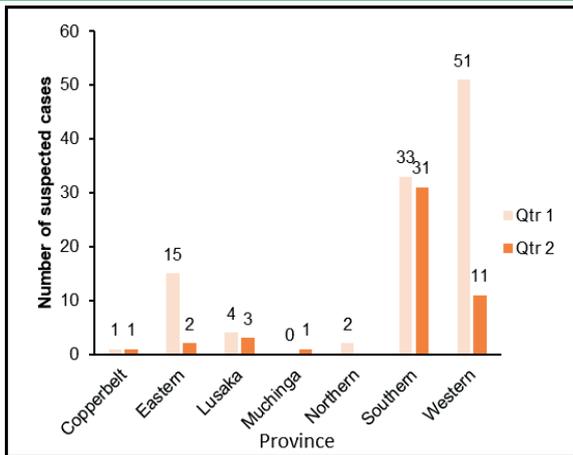
Figure 3 Quarter 2 Suspected Anthrax Cases by province (Source: eIDSR, 2025).
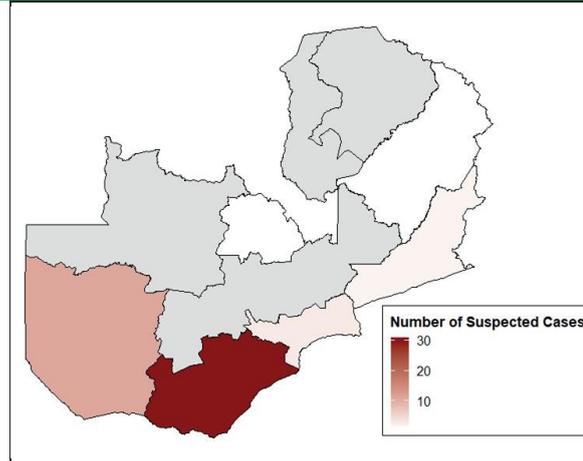
Figure 4 Map Showing the distribution of Suspected Anthrax Cases.

Bilharzia

In Quarter 2 of 2025, a total of 6,773 suspected bilharzia cases were recorded nationwide, up from 6,276 in Quarter 1. Eastern Province reported the highest number (1,127), a slight increase from 1,111 followed by North-Western (965) and Central (907), both showing quarter-on-quarter increases. Lusaka Province recorded 846 the largest reduction in suspected bilharzia cases, down from 1,176 in Quarter 1 to 846 in Quarter 2 (fig.5 and fig. 6).

Despite reductions in some provinces, suspected cases remain high, particularly in Eastern, North-Western, and Central provinces. Intensifying WASH interventions, such as promoting hygiene and sanitation, and strengthening community engagement, are essential to reduce transmission.
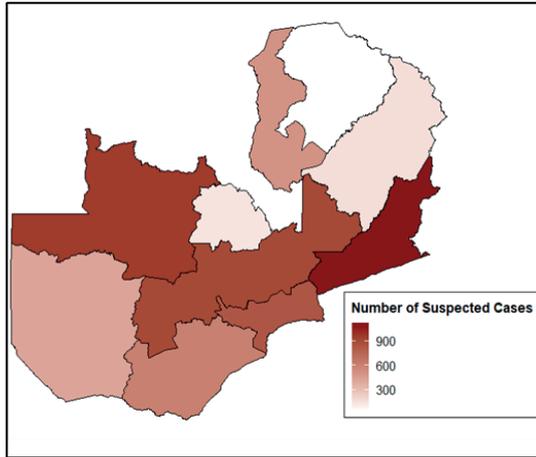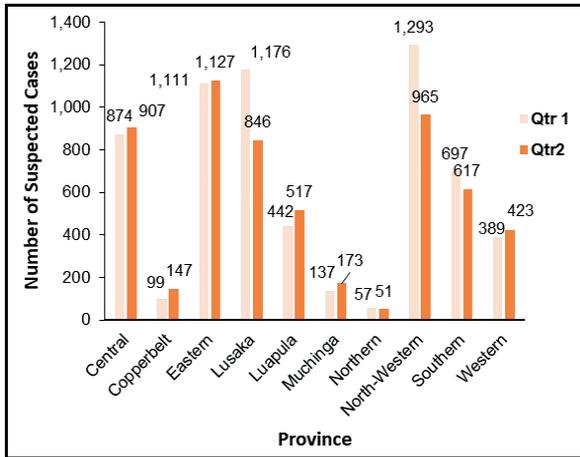
Figure 5 Quarter 2 suspected Bilharzia Cases by province (Source eIDSR, Figure 6 Map showing the distribution of suspected Bilharzia Cases 2025)

Measles

In Quarter 2 of 2025, a total of 984 suspected measles cases were reported nationwide, up from 766 in Quarter 1, continuing an upward trend. Eastern Province recorded the highest number (257), a sharp rise from 24 in the previous quarter and the most significant increase. Northern Province followed with 201 cases, though this marked a notable decline from 351 (the largest decrease). Copperbelt Province reported the fewest cases (15) (fig. 7 and fig. 8).

While declines in Northern and Muchinga are encouraging, the sharp surge in Eastern and rising cases elsewhere highlight the urgent need to strengthen immunization coverage, implement targeted vaccination campaigns, and intensify community engagement to curb further transmission.
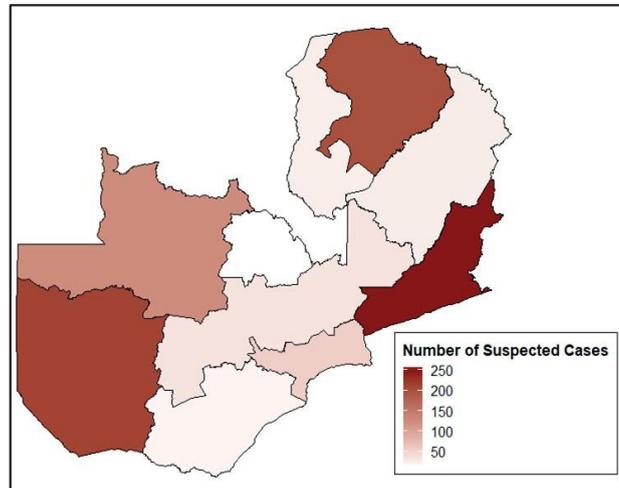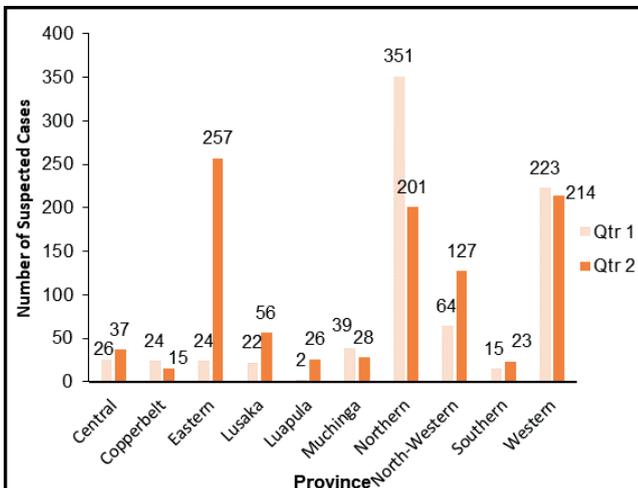

Figure 7 Quarter 2 Suspected Measles Cases by province (Source eIDSR, 2025).

Figure 8 Map showing the distribution of suspected Measles cases.

Mpox

Mpox is a viral zoonotic disease related to smallpox, spread mainly through close contact or contaminated materials. Symptoms include fever, rash, and swollen lymph nodes. The World Health Organization declared Mpox a Public Health Emergency of International Concern in 2024. In Zambia, Mpox is under active surveillance, with clinicians on alert for timely detection.

In Quarter 2 of 2025, Zambia recorded 412 suspected Mpox cases across all ten provinces. North-Western Province reported the highest number (145). Luapula recorded the fewest cases (2) (fig. 9 and fig. 10).
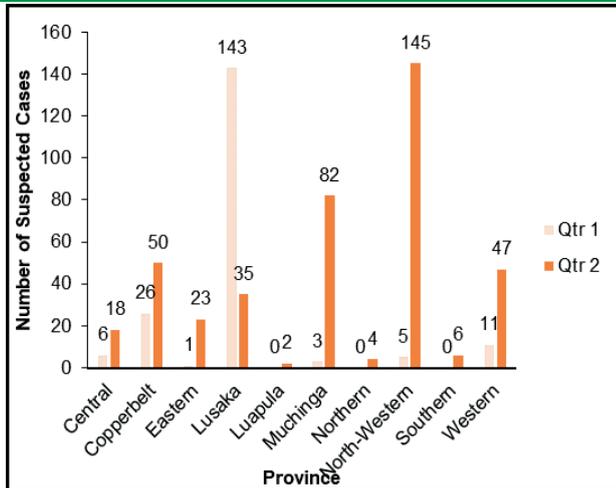

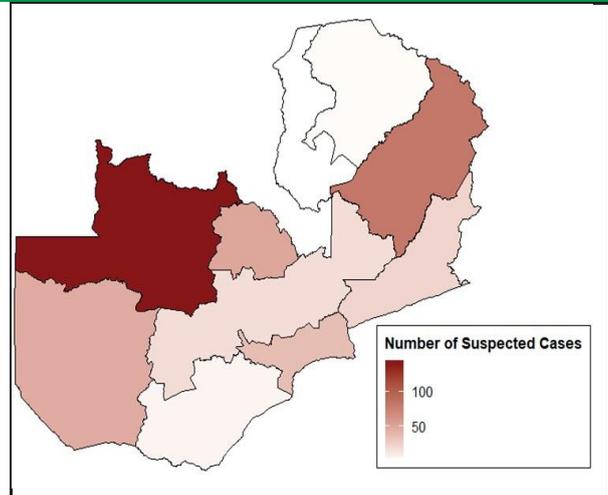*Figure 9 Quarter 2 Suspected Mpox Cases by province (Source: eIDSR, 2025).*

Figure 10 Map showing the distribution of suspected Mpox Cases.

Typhoid Fever

In Quarter 2 of 2025, Zambia reported 1,944 suspected typhoid fever cases across all ten provinces, up from 1,817 in Quarter 1. Lusaka Province recorded the largest share, rising from 1,376 to 1,542 cases and accounting for approximately 79% of all suspected cases in Q2 (fig. 11 and fig. 112).

The persistently high number of suspected typhoid fever, particularly in Lusaka, underscores the need to intensify interventions promoting handwashing and food hygiene, improving access to safe water, and strengthening community engagement to curb further transmission.
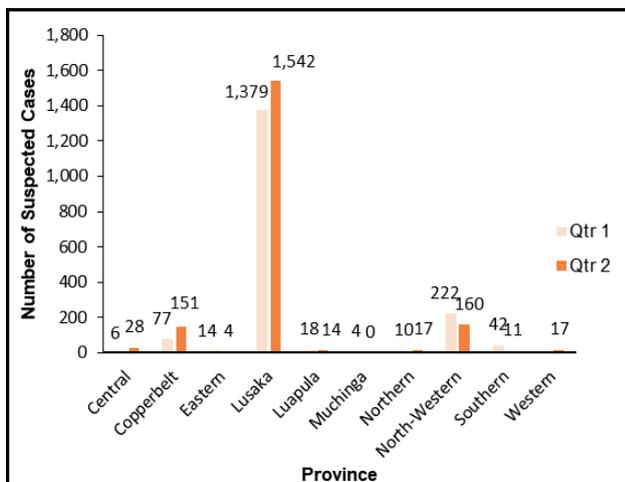

Figure 11 Quarter 2 reported suspected Typhoid Fever Cases by province (Source: eIDSR, 2025).
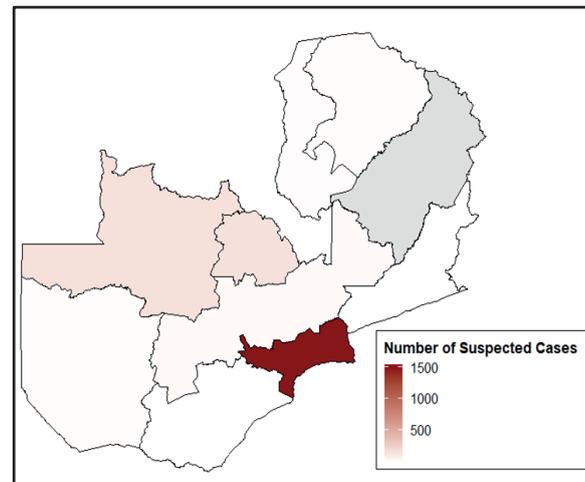

Figure 12 Map showing the distribution of suspected Typhoid Fever Cases.

Summary Report for Priority Diseases, Conditions and Events

Disease / Event	Week 14 - 26		
	Suspected	**Tested**	**Confirmed**
AFP	70	52	0
Anthrax	49	10	0
Cholera	153	133	111
COVID-19	1,326	912	19
Dog Bite	6,738	-	6,738
Dysentery	13,744	975	228.
Schistosomiasis (Bilharzia)	5,773	2,382	613
Malaria	4,328,907	4,176,655	2,353,481
Measles	984	735	241
Meningitis (Neisseria)	198	154	15
MPox	412	283	77
Tuberculosis	472,455	422,189	21,139
Typhoid Fever	1,944	1,820	50

Data used was extracted from eIDSR on 6th July, 2025.

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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