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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

It is my pleasure to present the Quarter 2, 2026 issue of The Health Press. This issue brings together a governance-focused editorial, a clinical research article, a surveillance system evaluation, and our regular quarterly disease summary. Together, these contributions continue to demonstrate Zambia's commitment to evidence-based public health practice and to strengthening the systems that protect the health of Zambians.

The editorial, Surveillance as a Governance Imperative: Renewing Zambia's Commitment to Non-Communicable Disease Risk Factor Monitoring, reflects on the launch of the second WHO STEPwise Approach to NCD Risk Factor Surveillance (STEPS) survey in April 2026, nearly a decade after the first. It revisits the findings of the 2017 survey, considers what nine years of demographic and social change may mean for Zambia's risk factor profile, and calls for the timely and accessible dissemination of the forthcoming results. Coming ahead of World No Tobacco Day, the editorial also draws attention to tobacco and nicotine use as a priority, and enduring, risk factor for non-communicable disease.

This issue also features a prospective cohort study on the effect of pterygium excision on corneal astigmatism at the University Teaching Hospitals Eye Hospital in Lusaka. The study followed patients before surgery and at two and six weeks postoperatively, and found significant improvement in both corneal astigmatism and best corrected visual acuity following excision with conjunctival autograft, while noting that the time to full stability requires further follow up. The findings add locally generated evidence to a body of literature where there is not yet consensus and reinforce the value of surgical management for this common condition.

A surveillance system evaluation of measles and acute flaccid paralysis surveillance in Southern Province, conducted against the backdrop of the province's elevated measles case fatality rate, is also presented. The evaluation found the system to be simple, useful, and well accepted by those who operate it, while identifying meaningful gaps in data completeness, timeliness, and accuracy, along with operational challenges in specimen transportation and programme financing. These findings offer practical direction for strengthening vaccine preventable disease surveillance in the province and beyond.

Finally, the surveillance summary of priority diseases and events for the second quarter of 2026 shows that the Integrated Disease Surveillance and Response system continued to perform strongly, with all provinces exceeding the national completeness and timeliness targets. At the same time, the data on cholera, diarrhoeal disease, and other priority conditions remind us that sustained vigilance and targeted response remain essential.

The contributions in this issue, as in every issue, reflect the dedication of researchers, field epidemiologists, clinicians, and public health practitioners across Zambia. I thank the authors, peer reviewers, and editorial team for their continued commitment to scientific rigor, and I encourage policymakers, practitioners, and partners to engage with the evidence presented here to guide action that improves health outcomes for all Zambians.

Prof. Roma Chilengi

Director General - Zambia National Public Health Institute

Editorial

Surveillance as a governance imperative: Renewing Zambia's commitment to non-communicable disease risk factor monitoring

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Introduction

The capacity to generate timely, representative, and actionable health data is among the most consequential determinants of a nation's ability to respond to its disease burden. In the domain of non-communicable diseases (NCDs), this capacity has historically been constrained across low- and middle-income countries by insufficient surveillance infrastructure, fragmented reporting systems, and the competing prioritisation of acute communicable disease programmes (1). Zambia has not been exempted from these structural challenges. However, the official launch of the country's second World Health Organization (WHO) STEPwise Approach to NCD Risk Factor Surveillance (STEPS) survey in April 2026 represents a meaningful step toward addressing this deficit. The 2026 STEPS survey is a nationally representative study designed to collect data from approximately 5,800 adults aged 18 to 69 years across all ten provinces of Zambia (2). Conducted under the leadership of the Ministry of Health in coordination with the Zambia National Public Health Institute (ZNPHI), and supported technically by the WHO, the survey employs standardised instruments to assess behavioural risk factors, physical measurements, and biochemical indicators. Its value lies not only in the data it will generate, but in the institutional commitment it represents that evidence, rather than assumption, must underpin Zambia's NCD response.

What the First Survey Told Us

The 2017 STEPS survey, the first nationally representative assessment of NCD risk factors in Zambia, documented a substantial and multifaceted burden. Insufficient fruit and vegetable consumption was reported in 90.4 percent of respondents. The prevalence of overweight and obesity stood at 24.4 percent, while hypertension and diabetes were recorded at 18.9 percent and 6.2 percent, respectively. Notably, 48.2 percent of respondents carried two to three concurrent risk factors, and 10.4 percent carried four or more, underscoring the compounding nature of NCD vulnerability within the population (3,4).

The survey further elucidated significant sociodemographic patterning in risk factor distribution. Urban residents were 71 percent more likely than their rural counterparts to carry multiple risk factors, reflecting the epidemiological transition accompanying rapid urbanisation. Women demonstrated a 24 percent higher likelihood than men of accumulating a greater number of risk factors, and adults aged 50 to 69 years were 3.58 times more likely than those aged 18 to 34 to present with a high risk factor burden(4). These gradients are not incidental; they define the populations and settings toward which targeted interventions must be directed.

Nine Years On: Why the 2026 Survey Matters

With NCDs currently accounting for approximately 30 percent of all deaths in Zambia, the public health imperative for updated surveillance data is unambiguous (2). A single cross-sectional survey can establish baseline prevalence, but only a repeat survey can reveal trends in risk exposure and disease outcomes over time. Between 2017 and 2026, Zambia has undergone marked demographic and socioeconomic shifts, including rapid urbanisation, changes in dietary composition, and the proliferation of novel tobacco and nicotine delivery products such as e-cigarettes and shisha.

For example, the 2017 STEPS survey found that 19 percent of adults aged 18 to 69 years had raised blood pressure, 24 percent were overweight or obese, 10 to 11 percent were current daily tobacco users, and more than 90 percent consumed fewer than five servings of fruits and vegetables per day (3). Whether these transitions have intensified clustering of risk factors or have shifted the NCD risk profile in other directions cannot be determined without the comparative lens that a follow-up survey in 2026 will provide.

The timing of this issue relative to World No Tobacco Day, observed annually on 31 May, affords an opportunity to draw specific attention to tobacco and nicotine use as a priority NCD risk factor. This year's WHO campaign theme, Unmasking the Appeal: Countering Nicotine and Tobacco Addiction, addresses the deliberate design of emerging nicotine products to attract new users and circumvent established regulatory frameworks (5). In the context of Zambia, where the 2017 survey documented a daily tobacco use prevalence of 10.7 percent among adults, the trajectory of this indicator over the intervening nine years carries direct implications for national cancer, cardiovascular, and respiratory disease programmes (2,3).

The Governance Imperative

The 2026 STEPS survey is positioned at a critical juncture in Zambia's health planning cycle. The National Health Strategic Plan 2022 to 2026 identified NCD prevention and control as one of five strategic health priorities (4). As the terminal year of that plan approaches, the availability of updated risk factor data is essential to any credible evaluation of progress against stated targets. In the absence of such data, the design of the subsequent strategic cycle risks being informed by epidemiological assumptions that no longer accurately reflect population health status.

ZNPHI's coordination of the 2026 survey reflects the institution's evolving mandate as the analytical and scientific authority within Zambia's public health system. The translation of surveillance outputs into policy-relevant intelligence, encompassing the identification of priority risk factors, the characterisation of at-risk populations, and the monitoring of programme effectiveness, lies at the core of this mandate. The STEPS survey is an opportunity to demonstrate the operational and analytical capacity of this architecture at national scale.

A Call for Timely Dissemination

The value of any surveillance exercise is ultimately determined not by the quality of its data collection but by the speed and breadth of its dissemination. Zambia's public health community, its clinicians, programme managers, district health officers, and community health workers, cannot act on findings they have not seen. It is therefore essential that the results of the 2026 STEPS survey are shared widely, accessibly, and without unnecessary delay.

This publication, The Health Press, is one vehicle for that dissemination. When survey findings become available, we commit to communicating them clearly and contextually to our readership across Zambia's health system. Numbers without narrative serve only statisticians. Our task, as a public health bulletin, is to ensure that every figure from the STEPS survey carries with it the human context and programmatic implication that gives it meaning.

NCDs do not announce themselves at the border. They accumulate quietly, in the pantry and the cigarette, in the sedentary commute and the unmeasured blood pressure. Zambia has chosen, with the 2026 STEPS survey, to go looking for them systematically. That is the right instinct. What we do with what we find will define the NCD response of the next decade.

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Article One

Evaluation of measles and acute flaccid paralysis surveillance systems in Southern Province, Zambia, 2022 - 2024

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Abstract

Background: The Vaccine-Preventable Disease (VPD) surveillance system in Zambia integrates routine immunization monitoring with disease surveillance to guide control measures. In 2022, Zambia recorded 422 measles cases and 37 deaths, with Southern Province recording the highest case fatality rate (11.2%), suggesting possible weaknesses in surveillance performance and outbreak response systems. This evaluation assessed the measles and acute flaccid paralysis (AFP) surveillance systems in Southern province of Zambia from 2022 to 2024.

Methods: We conducted a cross-sectional surveillance system evaluation following the Centers for Disease Control and Prevention (CDC) guidelines. We purposively selected three districts and three facilities from each district, based on measles and AFP case burden and vaccination coverage. We collected data on system's simplicity, usefulness, and acceptability from 27 participants using structured questionnaires. We also collected data from the electronic Integrated Disease Surveillance and Response (eIDSR) system and World Health Organization databases to assess, data completeness, timeliness, and accuracy. Results were summarized using frequencies and percentages.

Results: The measles and AFP surveillance systems comprised both passive and active surveillance operating across community, health facility, district, and provincial levels. The systems demonstrated high levels of simplicity (mean score: 84.6%), usefulness (90.5%), and acceptability (90.8%). However, surveillance performance was limited by suboptimal data quality, with mean completeness of 66.7%, timeliness of 51.1%, and data accuracy of 50%. We also identified key operational challenges of inadequate specimen transportation and insufficient program funding.

Conclusion: The measles and AFP surveillance systems in Southern Province are functional, simple, acceptable, and well-integrated into routine services. However, significant gaps in data quality limit their effectiveness for early outbreak detection and timely public health response. Strengthening data management, specimen transport, and sustainable program financing will be critical to improving surveillance performance and accelerating progress toward vaccine-preventable disease control and elimination targets.

Keywords: Acute Flaccid Paralysis (AFP), measles, surveillance systems, vaccine-preventable disease, Zambia.

Introduction

Vaccine-preventable diseases (VPDs) remain a major cause of morbidity and mortality, particularly among children under five years, despite reductions in disease burden through immunization (1). Globally, an

estimated 14.5 million infants remained zero-dose in 2023, while the World Health Organization (WHO) African Region continues to experience recurrent outbreaks of measles and circulating vaccine-derived poliovirus (cVDPV), largely driven by declining immunization coverage and disruptions following the COVID-19 pandemic (2–4).

Comprehensive VPD surveillance integrates country, regional, and global systems to meet WHO standards (5). In Zambia, VPD surveillance was historically embedded within the Health Management Information System, focusing on measles and acute flaccid paralysis (AFP) surveillance for polio to enable rapid outbreak response (6,7). Its purpose has since evolved to include monitoring immunization performance, including identifying zero-dose children, evaluating interventions, and informing vaccination strategies and policy (7,8).

In Zambia, routine immunization coverage declined from 75% (2018) to 65% (2024), fueling recurrent outbreaks (9,10). In 2022, the country reported 422 measles cases and 37 deaths, while circulating vaccine-derived poliovirus type 2 (cVDPV2) continued to be detected through environmental surveillance (11,12). Southern Province recorded the highest measles case fatality rate (11.2%) (11). These outbreaks suggest weaknesses in surveillance that may delay case detection and response. Although surveillance system evaluations have been conducted in several African countries, evidence from Zambia, particularly at the subnational level, remains limited. We therefore evaluated the measles and AFP surveillance systems in Southern Province to assess their performance and identify strengths, gaps, and opportunities for improvement.

Methods

Study Design Setting

A descriptive, cross-sectional evaluation of surveillance system attributes was conducted in February 2026 using the CDC surveillance system evaluation approach for Field Epidemiology Training Program (FETP) to obtain contextual and in-depth explanations to the observed performance indicators (13,14).

Study site and setting

Southern Province is one of Zambia's ten provinces, with a projected total population of 2,804,849 people and bordering two countries; Zimbabwe and Botswana. Both AFP and measles case-based surveillance is implemented across all 15 districts (7,15). The fully immunized under 1 and under 2 coverages in Southern Province in 2024 were 80% and 66%, respectively (16).

Study population and sampling techniques

A multi-stage stratified purposive sampling was used to select three districts (Choma, Pemba, Siavonga), and three facilities from each district. This selection was done to represent varying disease burden and surveillance performance levels, including vaccination coverage. Participants included surveillance focal persons and clinical staff per facility (27 total), plus district surveillance officers.

Data Collection

Data for this evaluation were collected using quantitative methods. This involved extraction of measles and AFP data from the registers, case investigation forms, Notification of disease form 2 (ND2) reports and Integrated Disease Surveillance and Response (IDSR) reports to obtain report timeliness, data completeness and accuracy. Data on the demographic variables (age, sex and residence), date of symptom onset, vaccination status (for measles), and stool collection dates (for AFP) were collected to check data completeness. Additional data were collected from the facility staff using structured questionnaires, with a 5-point Likert-scale. Similarly, supplemental observations of facility surveillance operations and practices, documents and walls were made.

Data analysis

Data were analysed using quantitative methods. Surveillance data from District Health Information System-2 (DHIS2)/electronic-IDSR were used to assess completeness (measured as proportion of expected reports submitted, and completed case investigation forms), timeliness (number of reports submitted meeting weekly deadlines; measles 48hr investigation, 72-hr specimen transit time, 7-day results turnaround time; AFP: 7-day notification, 48hr investigation, and stool adequacy). Accuracy was calculated as percentage agreement between source documents and eIDSR records. Simplicity, usefulness, and acceptability were evaluated using with weighted mean Likert-scale scores. Analyses were conducted using R version 4.6.0 (R Foundation for Statistical Computing, Vienna, Austria). Findings from structured observations and checklist assessments were summarized descriptively to document surveillance processes, available resources, operational challenges, and inform recommendations for strengthening the

surveillance system.

Ethical considerations

Written consent was obtained from the Provincial Health Director, and verbal permission from participants. Data were de-identified. The evaluation was conducted as part of routine public health surveillance system assessment. Formal letter of introduction from the Director General ZNPHI was provided.

Results

Description of participants

From the twenty-seven (27) facility participants, the mean age (SD) was 35.7 years (6.0) (Table 1). The majority were female (55.6%) and Registered Nurses (40.7%), who are more clinical oriented than surveillance. The majority of facilities included were rural health centres (88.9%).

Table 1: Characteristics of study participants (N = 27) from 3 facilities in Choma, Pemba, Siavonga districts in 2026

Characteristics	Number (%)
Age in years [Mean (SD*)]	35.7 (6.0)
Gender	
Male	12 (44.4)
Female	15 (55.6)
Position	
Registered Nurse/Midwife	11 (40.7)
Clinical Officer (General)	3 (11.1)
Environmental Health Technologist	10 (37.0)
Public Health Nurse	1 (3.7)
Laboratory Technologist	1 (3.7)
Community Health Assistant	1 (3.7)
Experience in surveillance [Median years (IQR)]	4 (2,8)
Level of facility	
Health Post	3 (11.1)
Health Centre	24 (88.9)

*SD – Standard Deviation; †IQR – Inter-quartile Range

Description of the Surveillance system structure for Measles and AFP in Southern Province

The Measles and AFP surveillance systems in Southern Province have similar workflow, and are integrated in the routine health service delivery, utilizing the same staff at all levels. They are mixed (both active and passive), starting from lower community levels leading up to the Provincial level, which links up to the National level (Figure1).

Community Level

At community level, the community-based volunteers (CBVs) gather surveillance data from the community through event-based surveillance (EBS) and report to the health facility, where the surveillance focal person makes follow up on these events for confirmation. The CBVs send alerts through phone calls, and submit weekly reports to the facility surveillance focal point person.

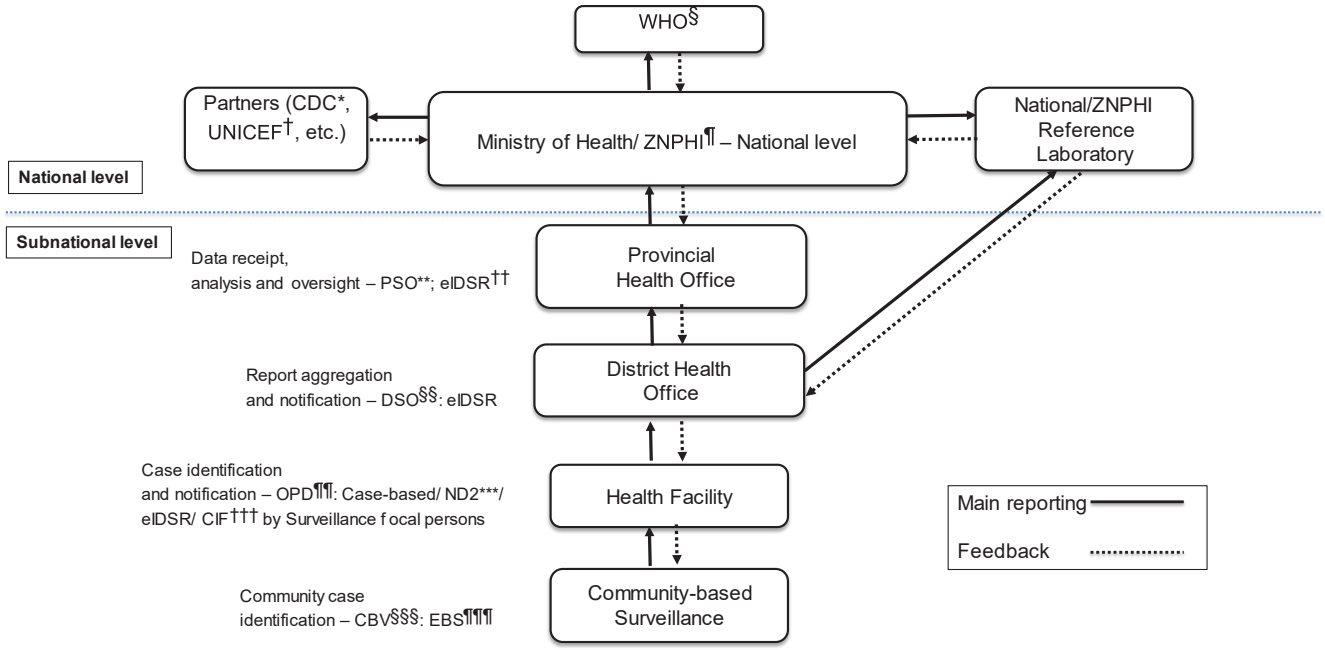

Figure 1: Flow Diagram of the VPD surveillance systems reporting and feedback structure in Southern Province.

*CDC – Centres for Disease Control and Prevention; †UNICEF – United Nations International Children's Fund; §WHO – World Health Organization; ¶ZNPHI – Zambia National Public Health Institute; **PSO – Provincial Surveillance Officer; ††eIDSR – electronic Integrated Disease Surveillance and Response; §§DSO – District Surveillance Officer; ¶¶OPD – Out-patient department; ***ND2 – Notifiable disease form 2; †††CIF – Case investigation form; §§§CBV – Community-based volunteer; ¶¶¶EBS – Event based surveillance

Facility Level

At health facilities, clinicians screen patients and record suspected cases in Outpatient department (OPD)/ In-patient department (IPD) registers. Surveillance focal persons immediately enter data into eIDSR. Case investigation forms guide measles/AFP investigation, and samples are collected from suspected cases. Measles samples are transported by the district laboratory to Lusaka, while AFP samples are handled by Environmental Health Technologists (EHTs). Notifications are made via phone text/WhatsApp to district surveillance officers, supported by weekly ND2 reports which are entered into eIDSR. Before 2024, facilities sent scanned ND2 reports via WhatsApp.

All the health facilities visited had at least one qualified staff who was trained or oriented in measles and AFP surveillance, and all the facilities have Measles and AFP case definitions stuck on walls in the OPD, but the surveillance system flow charts were seen only in a few facilities. Similarly, all sampled health facilities had copies of IDSR (physical or electronic). All staff at facilities were involved in the surveillance system at one or more steps of the cycle.

District and Provincial Levels

The district surveillance officer was responsible for aggregation of the situation reports and sending them to the provincial surveillance officer for onward submission to the National level. Currently, facilities are able to enter the weekly reports directly into the electronic IDSR, which are viewed and accessed by the district, provincial and National levels.

IDSR Reporting Performance

Siavonga was the least performing district with an average weekly reporting rate and timeliness of 67.8% and 61%, respectively. Majority of the districts were above 80% reporting rate and timeliness, with a provincial average of 91.5% completeness and 81.7% timeliness (Figure 2).

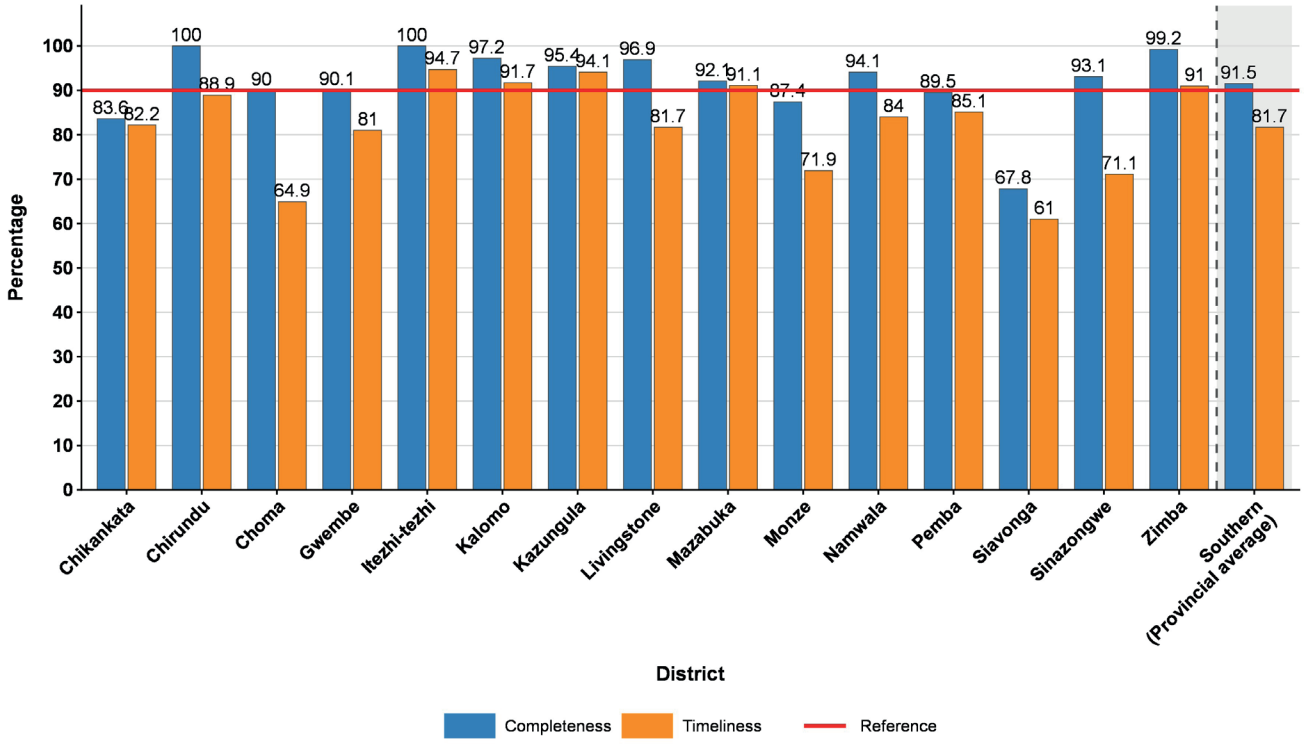

Figure 2: Completeness and timeliness of reporting by district in Southern Province, 2024.

Measles case detection timeliness, 2022 - 2024

Table 2 shows a summary of the provincial performance of measles case detection timeliness. The province performed poorly in case identification within 48hrs of onset of symptoms, averaging at 33%. Only 2 districts had reached at least 50% timeliness. This finding suggests delays in care-seeking or case detection especially at community level. Sample transportation timeliness to the reference laboratory was also low at 73%, with only 6 districts reaching over 80%. The results turnaround time at the reference laboratory was good, with nearly all districts receiving results within 7 days.

Table 2: Measles case detection summary for Southern province, 2022 – 2024

District	Case detection within 48hrs of onset of symptoms (%) (Target: 80%)	Sample transportation within 72hrs (%) (Target: 80%)	Results TAT within 7 days (%) (Target: 80%)	Overall timeliness (%) (Target: 80%)
Chikankata	25	75	100	75
Choma	35	97	97	100
Gwembe	0	67	100	100
Kalomo	55	64	90	81.8
Kazungula	31	69	81	81.3
Livingstone	22	56	100	66.7
Mazabuka	39	85	89	84.6
Monze	20	70	90	90
Namwala	38	86	88	95.2
Pemba	9	64	100	63.6
Siavonga	25	100	100	100
Sinazongwe	45	36	100	59.6
Itezhi-tezhi	10	86	86	95.2
Chirundu	32	65	71	67.1
Zimba	50	100	100	100
Provincial	**33**	**73**	**89**	**82**

Key:
Green: ≥ 80%
Yellow: 50 – 79%
Red: < 50%

AFP surveillance timeliness performance, 2022 - 2024

The sensitivity for AFP cases in the province, as depicted by the annualized non-Polio AFP rate had increased from 3/ 100,000 population in 2022 to 8/ 100,000 population in 2024 with all the districts being above 3/ 100,000 in 2024. In 2022, however, Pemba, Zimba, Itezhi-tezhi and Chirundu were silent. Stool adequacy, on the other hand, was noted to be the biggest challenge for the province, with majority of the districts being below 80% in all the 3 years, putting the provincial average at 61%, 72% and 80% in 2022, 2023 and 2024, respectively. However, the provincial picture showed a steady increase in performance over the years under review. The province had performed well in timeliness of case notifications, at 97% in 2022, before dropping to 70% in 2024. Table 3 gives a performance summary across all the districts.

Data Timeliness

The timeliness of both AFP and measles detection and notification were poor, with an average score of 45.2% (Tables 4 and 5). The majority of the districts in the province (60%) reported AFP cases after 7 days of onset of paralysis, and the majority did the investigation after 48 hours of notification.

Table 3: AFP surveillance and notification summary for Southern province, 2022 – 2024

District	2022				2023				2024			
	Annualized NP AFP rate/1,000 (Target: 3)	Stool adequacy (%) (Target: 80%)	Cases reported <=7 days onset of paralysis (%) (Target: 80%)	Investigated <=48 hours of notification (%) (Target: 80%)	Annualized NP AFP rate/1,000 (Target: 3)	Stool adequacy (%) (Target: 80%)	Cases reported <=7 days onset of paralysis (%) (Target: 80%)	Investigated <=48 hours of notification (%) (Target: 80%)	Annualized NP AFP rate/1,000 (Target: 3)	Stool adequacy (%) (Target: 80%)	Cases reported <=7 days onset of paralysis (%) (Target: 80%)	Investigated <=48 hours of notification (%) (Target: 80%)
Chikankanta	5	50	100	100	12	40	40	100	14	100	100	100
Choma	1	100	0	0	1	0	0	0	8	90	90	100
Gwembe	6	0	100	100	8	67	67	60	8	67	67	100
Kalomo	2	100	100	50	3	75	50	25	8	50	40	80
Kazungula	2	67	100	67	8	83	83	33	6	40	20	100
Livingstone	2	50	50	50	1	100	100	100	6	100	100	100
Mazabuka	3	67	100	100	11	69	38	69	4	100	75	100
Monze	3	50	25	25	1	100	50	50	5	67	50	100
Namwala	3	50	100	100	7	80	40	60	4	100	100	100
Pemba	0	0	0	0	6	100	67	33	22	91	91	100
Siavonga	27	75	0	25	7	0	0	100	3	0	0	100
Sinazongwe	3	50	100	100	8	67	67	83	10	100	88	100
Itezhi-tezhi	0	0	0	0	9	100	100	100	12	88	50	100
Chirundu	0	0	0	0	9	67	67	100	21	75	63	100
Zimba	0	0	0	0	4	100	50	100	4	50	50	100
Provincial	**3**	**61**	**60**	**55**	**5**	**72**	**55**	**68**	**8**	**80**	**70**	**98**

Key:

Data Completeness

A review of the records (case investigation forms, registers and ND1/ND2 reports) showed an above average data completeness at 66.7%. Majority (7/10) of the sampled case-based forms had missing fields, mostly on vaccination status (Tables 4 and 5).

Data Accuracy

For data accuracy, the case-based entries in registers which were compared with IDSR/ DHIS2 reports in the last 12 months, showed that the majority were not matching (75%) (Table 4).

Simplicity

The mean simplicity score was 84.6%, representing a generally easy to use surveillance system. All facilities had case definitions for both AFP and measles stuck on their walls in the OPD/ screening rooms. However, 78% reported a moderately considerable amount of time was spent analyzing, preparing and disseminating surveillance data and information (Table 4).

Usefulness

The mean score of systems' usefulness was 90.5%, with the majority finding the system very useful for early detection of outbreaks (83%), for monitoring disease

trends over time (78%), and for identifying and monitoring high-risk and the under-immunized communities (56%). Nearly all participants (94%) reported that they had used surveillance data to inform public health action in the last 12 months, and most of them cited the utilization in mapping children for measles and Polio vaccination campaigns (Table 4).

Acceptability

Facility staff were mostly self-motivated and understand the importance of measles and AFP surveillance, despite no incentives being provided for such activities. With a mean score of 90.8%, surveillance for measles and AFP was generally acceptable among facility staff (Table 4).

Table 4: *Summary of surveillance system attribute assessment findings from 3 facilities in Choma, Pemba, Siavonga districts between 2022 and 2024*

Attribute	Positive Finding	Negative Finding
Usefulness		
Outbreak detection	94.4% very/extremely useful	5.6% not useful
Feedback mechanisms	94.5% very/extremely useful	5.6% moderately useful
Identification/monitoring high-risk communities	83.3% very/extremely useful	16.7% moderately/ not useful
Data used for public health action	94.4% yes	5.6% no
Simplicity		
Case definition/ identification of cases	94.4% easy	5.6% not easy
Completing forms	77.8% easy	22.2% not easy
Reporting flow	94.5% easy/very easy	5.6% very difficult
Time spent analyzing/ preparing data	88.9% moderate to little time	11.1 % too much time
Data completeness, timeliness and accuracy		
Completeness of case-based forms	30% above 90%	70% below 80%
Weekly report completeness	66.7% above 90%	6.7% below 80%
Monthly report completeness	86.7% above 90%	6.7% below 80%
Timeliness of weekly reports	33.3% above 90%	26.7% below 80%
Measles cases detected ≤48h	0% above 90%	100% below 80%
AFP cases reported ≤7 days	13.3% above 90%	60% below 80%
AFP records matching (ND2 vs IDSR)	25% matched	75% unmatched
Acceptability		
Value for routine work	83.3% extremely valuable	5.6% moderately valuable
Integration into routine workflow	83.3% fully integrated	16.7% partially
Reasonable addition to workload	61.1% yes	38.9% no
Motivation to participate	88.9% yes	11.1% no
Willingness to continue participating	100% yes	0% no

Table 5: Summary of surveillance performance attributes (N =27) from 3 facilities in Choma, Pemba, Siavonga districts between 2022 and 2024

Key

Attribute	Average Percent	Grade
Mean Usefulness score	90.5%	Very good
Mean Simplicity Score	84.6%	Good
Mean Data Completeness score	66.7%	Poor
Mean Timeliness score	51.1%	Poor
Mean Data Accuracy score	50%	Poor
Mean Data Quality score	55.9%	Poor
Mean Acceptability score	90.8%	Very good

Grading

S/N	Score (%)	Grade
1	90–100	Very good
2	70–89	Good
3	< 70	Poor

Overall system performance rating: 80.5% – Good

Discussion

This VPD surveillance system evaluation assessed the performance of the measles and Acute Flaccid Paralysis (AFP) surveillance systems in Southern Province, Zambia, from 2022 to 2024. Overall, the system demonstrated a number of strengths, including high acceptability among health workers, strong perceived usefulness, and relatively good reporting completeness. However, there were still a number of important gaps identified in data quality, timeliness of case detection and investigation, and operational resources.

The surveillance systems were found to be relatively simple and well-integrated into routine health service delivery. The case definitions were easy to understand and reporting tools easy to complete. Simplicity is critical for effective surveillance systems because complex reporting procedures often discourage timely reporting and reduce system participation (14). Similar findings have been reported in surveillance system evaluations conducted in Ghana and Nigeria, where standardized case definitions and integrated reporting systems improved usability among frontline health workers (17,18). However, a lot of participants reported spending a considerable amount of time analyzing and disseminating surveillance data, signaling a call for more improvements in digital reporting tools and connectivity to further streamline reporting processes and reduce the reporting burden on health workers.

Surveillance data had reportedly been used for public health action within the previous 12 months, including identifying high-risk communities and guiding vaccination campaigns. These findings demonstrate that the surveillance system is capable of generating actionable information for disease control efforts. This is in keeping with the central role of VPD surveillance systems in informing immunization strategies and outbreak responses highlighted in earlier studies (5). In Zambia, surveillance data have been increasingly used to guide supplementary immunization activities (SIAs) and identify zero-dose populations, particularly following disruptions to routine immunization services in the wake of the COVID-19 pandemic (8).

Despite the strengths in simplicity and usefulness, substantial weaknesses were identified in data quality. Data completeness for case-based investigation forms was below acceptable standards. Additionally, a large proportion of discrepancies were identified between facility registers and electronic IDSR/DHIS2 reports. Data quality challenges are a common limitation in surveillance systems across many low- and middle-income countries and significantly affects the reliability of epidemiological analyses (19,20). In Tanzania, incomplete reporting and discrepancies between paper-based and electronic reporting systems were identified to reduce the accuracy of surveillance data (21). Some of the identified causes of identified system causes include inadequate staffing, resource-limitation and limited feedback and capacity building from higher levels.

The timeliness of case detection and reporting for both measles and AFP were sub-optimal, with only one-third of measles cases detected timely and majority of AFP cases notified late. Despite the AFP surveillance sensitivity (non-polio AFP rate) being adequate, stool adequacy remained below the 80% threshold in most districts. Stool adequacy is a critical indicator of time-

liness for confirming poliovirus infection, and low performance may compromise the ability of the system to detect poliovirus circulation promptly (20).

These delays in case detection could point to gaps in community awareness, delayed care-seeking practices, transportation barriers, and weak community-based surveillance, despite the reported functional EBS systems. This poses a risk of continued disease transmission before public health interventions are implemented. Similar delays in case detection have been seen in other surveillance system evaluations in sub-Saharan Africa (5).

Resource availability also emerged as one major operational challenge affecting surveillance performance. Health workers frequently reported using personal funds to purchase airtime and internet bundles to submit surveillance reports. In addition, transportation constraints were frequently reported for both specimen transportation and supervisory activities. Most facilities reported no deliberate fund allocation towards surveillance activities and neither functional motorbikes nor fuel allocations were made available. These negatively impacts on the utilization of the surveillance systems. An earlier study on the implementation of IDSR in Lusaka also highlighted these transportation barriers (6). These challenges are consistent with other evaluations done in Africa, where transportation constraints frequently delay specimen shipment and investigation activities (18,20). Operational challenges have been documented in surveillance system evaluations across sub-Saharan Africa. Inadequate funding, weak data management systems, and limited trained workforce have been identified as major barriers to optimal surveillance performance (20,22). Addressing these logistical barriers is essential to ensure timely laboratory confirmation and effective outbreak response. Sustainable financing mechanisms will therefore be necessary to ensure consistent surveillance system functioning.

The perceived acceptability of the surveillance system among health workers was very high (90.8%), amid the highlighted operational shortfalls. This indicates strong willingness among staff to continue participating in surveillance activities, mostly due to self-motivation and understanding the importance of the surveillance. High acceptability is an important attribute because it promotes consistent participation and reporting within the surveillance system (14). However, there was notable discrepancy between high acceptability and poor data quality, which would be explained by inadequacy in both human and financial resources indicators. This suggests that motivation alone may not be sufficient to ensure optimal system performance. Continued training, supportive supervision, and improved resources will therefore be necessary to translate staff commitment into improved surveillance outcomes.

Limitations

This evaluation had some limitations. Firstly, there was limited generalizability: the study included a relatively small sample of districts and health facilities, which may limit the generalizability of the findings to the entire province. We used purposive sampling to capture districts with different epidemiological profiles, which helped ensure a good degree of representation of diverse surveillance experiences. Secondly, the reliance on self-reported responses from health workers on some indicators especially usefulness and acceptability, may be subject to reporting bias and/ or social desirability bias. Lastly, there was potential data quality bias due to missing and/ or incomplete records. Despite these limitations, the evaluation used findings from multiple data sources, including document reviews, and data audits, which strengthened the reliability of the results.

Conclusion

From this evaluation, it was concluded that the core surveillance framework for measles and AFP in Southern province is operational, and capable of supporting public health decision making. However, key weaknesses in data quality, delays in case detection and investigation, logistical challenges in specimen transportation, and limited financial and operational support limit their ability to fully support early outbreak detection and response. Measures for improved data quality, strengthened supervision and training, enhanced transport and digital infrastructure, and reinforced community level surveillance are paramount. Without addressing these gaps, the system risks delayed outbreak detection and sustained transmission, jeopardizing the global and national VPD elimination goals.

Recommendations

Arising from the evaluation findings, a prioritized list of targeted recommendations was made for the province.

Data Quality: The Provincial Health Office (PHO) should mandate all District Surveillance Officers (DSOs) to conduct quarterly data quality audits in 100% of health facilities by April, 2026. This is to

achieve >95% agreement between source registers (e.g., ND2) and DHIS2/eIDSR for key variables (e.g., vaccination status, age) and 100% completeness on case investigation forms. The DSOs should also conduct quarterly mentorship of clinical staff on case definitions and notification protocols to improve case detection timeliness and reporting. To improve sample transit times, the PHO should consider establishing a dedicated specimen transport fund by the end of 2026; a recommendation to submit a costed operational plan to the Ministry of Health and partners (e.g., WHO, CDC) to secure a dedicated budget line should also be considered.

Information and Technology Infrastructure: The PHO, in partnership with the MOH IT department, should conduct an audit of facility-level digital infrastructure by quarter 2, 2026. The immediate priority will be to ensure 100% of high-burden facilities have reliable internet connectivity (e.g., via upgraded modems or negotiated data bundles) to support real-time eIDSR reporting.

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Article Two

Effect of pterygium excision on corneal astigmatism at University Teaching Hospitals, Eye Hospital, Lusaka, Zambia

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Abstract

Introduction: A pterygium is a fibrovascular growth that extends from the conjunctiva to the cornea. It causes tractional forces which result in a flattened cornea, typically causing astigmatism. The study objective was to evaluate the effect of pterygium excision on corneal astigmatism.

Methodology: This was a prospective single arm cohort study which was conducted at the University Teaching Hospital from May 2024 to March 2025. A total of 46 participants were recruited yielding 48 eyes with primary pterygium. Adult pterygium patients ≥18 years were evaluated before surgery and at 2 and 6 weeks postoperatively for best corrected visual acuity, keratometry, and refractive astigmatism.

Results: Of the 48 eyes recruited, one eye was excluded due to loss to follow, hence 47 eyes were analysed. The mean age of the participants was 47.85 years, with the oldest and youngest participants aged 74 and 24 years, respectively. The results revealed best corrected visual acuity (BCVA) improved from 0.27±0.25 before surgery to 0.19±0.15 ($p<0.001$) and 0.14±0.12 ($p<0.001$) at 2- and 6-weeks post-surgery, respectively. The mean corneal astigmatism was 2.62±2.75D preoperatively. The mean corneal astigmatism at 2 and 6 weeks was 0.47±1.10 and 0.01±0.50D at 6 weeks post-operation. Significant differences in BCVA and astigmatism were maintained even between the 2 and 6 week post-operatively.

Conclusion: Pterygium excision with autograft leads to a significant reduction in astigmatism and improvement in BCVA. Stability in BCVA and astigmatism was not established by week 2 postoperative follow up, highlighting the need for further follow-up assessments.

Key words: Best Corrected Visual Acuity, Keratometry readings

Background

A pterygium is a common fibrovascular degenerative condition whereby the fibrovascular connective tissue of bulbar conjunctiva grows over the cornea in a wing-like shape (1). The term comes from the Greek word pteros, meaning "butterfly wing" (2). The prevalence of pterygium globally is 12%, according to the 2018 meta-analysis, which looked at 68 articles (3). There is an increase in the prevalence of pterygium noted near the equator and the development of pterygium has been closely associated with exposure to ultraviolet light (4).

Pterygium causes flattening of the cornea horizontally towards its' apex, leading to tear pooling, which worsens the induced astigmatism (5). The severity of pterygium and its impact on vision depends on how much it affects the visual quality (6). Surgical excision combined with conjunctival autografting is considered the definitive treatment for pterygium due to its lower recurrence risk, ; alternative approaches like the bare sclera technique are associated with significantly higher rates of recurrence (7, 8)

The improvement in pterygium-induced astigmatism occurs immediately after excision, and it is also noted that corneal topography becomes steeper (6). Studies have shown that it takes about one to three months for

corneal astigmatism and refractive power to stabilize post excision and autograft (9) While other studies have shown that corneal topography stability is achieved within one-to-two-month post-excision and autograft (9-10) showed that postoperative keratometry readings stabilized within 2 months post pterygium excision and no significant change was observed at 4 months postoperative. There is no consensus on the time to corneal astigmatism stability post pterygium excision. Astigmatism as an indication for pterygium excision is uncommonly used by many ophthalmologists world over (11) and Zambian ophthalmologist are no exception. This study evaluated the effect of pterygium excision on corneal astigmatism at University Teaching Hospitals- Eye Hospital (UTHs-EH). Specifically, the study compared the corneal astigmatism before and after pterygium excision; determined the difference in cornea astigmatism after pterygium excision at two and six weeks; and compared the visual acuity before and after pterygium excision.

Materials and Methods

Study Design and Site

This prospective, single-arm cohort study was conducted at the University Teaching Hospitals-Eye Hospital in Lusaka. Because all participants received the same intervention, a single-arm design was employed.

Study population and Sampling Method

The study population consisted of 46 patients scheduled for pterygium surgery, yielding a sample size of 48 eyes selected via consecutive sampling; for individuals with bilateral presentation, each eye was evaluated independently.

Eligibility criteria

Eligible participants included adults aged 18 and older with primary pterygium. Conversely, individuals with recurrent pterygium, a history of ocular trauma, or prior ocular surgeries were excluded.

Intervention and follow-up

Under local anesthesia administered in the subconjunctiva, the pterygium with the Tenon capsule was excised from the cornea and scleral bed. An autologous conjunctival graft was harvested from the superiotemporal bulbar conjunctiva to replace the conjunctival defect created by the pterygium removal. The researcher performed the pterygium surgeries. The participants were given oral ciprofloxacin and paracetamol postoperatively to take for 5 days. They also began to use a steroid antibiotic eyedrop such as dexamethasone chloramphenicol on day one post-operation for a period of 4 weeks.

At each visit, the participants underwent visual assessments, BCVA, autorefraction, and slit lamp examination.

Data Collection and Management

Semi-structured questionnaire was administered and baseline data was collected from all the participants, which included slit-lamp examination and fundoscopy, uncorrected and best-corrected visual acuity assessments and autorefraction RK-800 model. The pterygium length from the limbus onto the cornea was measured and graded from I-3 as outlined by Sarkar and Tripathy (6) with grade 1, less than 2mm, grade 2, 2-4mm and grade 3, greater than 4mm.

Data Analysis

All the data obtained at each visit were recorded on the patients' information sheet and transferred to Microsoft Excel and later exported to Statical Package for the Social Sciences (SPSS) version 27 for analysis. Repeated measures Analysis of Variance (ANOVA) was used to assess for significance of the change in the means before and after surgery. Post hoc paired t -test was used to assess the significant pairs after ANOVA was found significant.

Ethical Consideration

Written informed consent was obtained from the participants. The study was reviewed and formally approved by the University of Zambia Biomedical Research Ethics Committee (Ref: 4621-2023) and the National Health Research Authority (Ref: NHRA1104/07/04/2024). Accordingly, this research was conducted in strict adherence to the ethical principles outlined in the 1964 Declaration of Helsinki and its later amendments

Results

Characteristics of participants undergoing pterygium excision

Of the 46 participants included in the study, 37 were females representing 79 % of total participants and the mean age of the participants was 47.85 years, with the oldest and youngest participants aged 74 and 24 years,

A total of 48 eyes were recruited within the study period and one eye was excluded at final data analysis due to missing data post-operatively. Majority of the eyes had grade 2 pterygium (78%) with a mean length of extension from the limbus into the cornea of 3.35 ±1.16 mm (19%) (Table 1).

Table1: *Baseline characteristics and measurements of participants undergoing pterygium excision at University Teaching Hospitals -,Eye Hospital, Lusaka, Zambia in 2024 (N=47)*

Characteristic	n (%)
Sex	
Male	10 (21.3)
Female	37 (78.7)
Pterygium grade	
Grade 2	37 (78)
Grade 3	10 (21)
Age	
Mean	47.85 years
Standard deviation	10.63
Length	
Mean	3.35mm
Standard deviation	1.04
Pre-op Best Corrected Visual Acuity (LogMAR)	
Mean	0.27
Standard deviation	0.25
Pre-op refractive cylinder	
Mean	-2.97D
Standard deviation	2.71D
Pre-op Astigmatism	
Mean	2.67D
Standard deviation	2.75D

Best Corrected visual acuity

Best corrected visual acuity (BCVA) was assessed with a Snellen chart and subsequently converted to logMAR values for statistical analysis. The mean pre-operative best corrected visual acuity was 0.27± 0.24 logMAR. The BCVA improved post-op to 0.19±0.15 and 0.14±0.12 at 2 and 6 weeks respectively, which was statistically significant (p-value = 0.001). There was a statistically significant difference between BCVA at 2 and 6 weeks postoperatively (p- value= 0.006).

Table 2: Change in Best Corrected Visual Acuity for the participants undergoing pterygium excision

Mean Best Corrected Visual Acuity (± SD)			Repeated Measures ANOVA p-values		
Pre-operation baseline	2 weeks post operation	6 weeks post operation	Baseline vs 2 weeks	Baseline vs 6 weeks	2 vs 6 weeks
0.27±0.25	0.19±0.15	0.14±0.12	<0.001	<0.001	0.006

Corneal astigmatism

Table 3 illustrates a significant reduction in cornea astigmatism after pterygium excision from a mean of 2.62±2.75D to 0.01±0.50D at 6 weeks post-surgery (p-value = 0.001). A significant difference in the mean astigmatism was also noted at 2 weeks post operation and at 6 weeks (p-value= 0.006).

Table 3: Change in astigmatism for participants undergoing pterygium excision at University Teaching Hospitals -,Eye Hospital, Lusaka, Zambia in 2024 (N=47)

Mean Cornea astigmatism			Repeated Measures ANOVA p-value		
Pre-operation	2 weeks post operation	6 weeks post operation	Baseline vs 2 weeks	Baseline* vs 6 weeks	2 vs 6 weeks
2.62±2.75	0.47±1.10	0.01±0.50	<0.001	<0.001	0.006

ANOVA: Analysis of Variance.
Pre-op: Pre operation (pre operative).
Post-op: Post operation (post operative).
SD: Standard deviation.
N: Number of participants.
vs: Versus (comparison).

Association of astigmatism and pterygium length among participants undergoing pterygium excision

Table 4 shows the mean change in astigmatism in relation to pterygium length. There was no statistical difference in mean astigmatism between pterygium length of 2mm or less compared to those greater than 2mm at all-time points in this study (p-values > 0.05).

Table 4: Association of astigmatism and pterygium length for participants undergoing pterygium excision at University Teaching Hospitals,Eye Hospital, Lusaka, Zambia in 2024 (N=47)

Operation stage		Mean Astigmatism (Diopter)		
		≤2mm	>2mm	p-value
Pre-operation	baseline	-1.86	-2.75	0.43
Post operation	2 weeks	-0.29	-0.51	0.63
	6 weeks	-0.18	0.019	0.33

mm – millimetre

Discussion

This study looked at the change in astigmatism and the BCVA before and after pterygium excision and autograft surgery. Stability in astigmatism was assessed by comparing the two-week and six-week post-surgery time intervals. The mean BCVA at pre-op was 0.27±0.25, which later improved to 0.14±0.12 post-operation. A statistically significant mean change in astigmatism post-operation was noticed at both two-week and six-week post-operation.

The demographic features of the participants are comparable with studies done in other African countries. The mean age for the participants in this study was 48 years which is similar to the studies done by Kumah et al (13) and Amoah, K, et al. (6) whose mean age was 41 and 47 years, respectively. In this study, there were more female participants than male participants which could be due to the great concern and awareness of cosmesis issues among women (13). In contrast, a study done in Kano Nigeria by Lwan et al., (7) had a population of male patients almost twice that of females which was similar to the findings by Zheleva and Voynov's (16).

The improvement in the mean BCVA postoperatively observed in this study are comparable to the finding in a study done by Shastry et al., (15), in which the mean BCVA in LogMAR at baseline was 0.22 ± 0.16, whereas that at 12th week post-surgery was 0.11 ± 0.09 and the improvement was statistically significant. Zheleva and Voynov's (16) study from Bulgaria revealed that the mean uncorrected visual acuity before surgery improved significantly as well as the BCVA following pterygium. The study by Misra, et al. (16), showed that both unaided and BCVA showed significant improvement at one month after surgery, and that this level persisted at three months. These findings implied that one month following surgery, visual acuity stabilized. In the current study there was a significant change in the BCVA between 2- and 6-weeks post operation showing that there is still ongoing change in astigmatism beyond two weeks.

Pterygium induces with-rule the corneal astigmatism in the majority of the cases (18). The pterygium induced corneal astigmatism is also attributed to the size of the pterygium and the pooling of tears (17-18). There was significant improvement in corneal astigmatism after pterygium excision. These finding are similar to the reduction what was also observed in a Ghanaian study among cooks at a school (14). In their study, the corneal astigmatism decreased from a baseline of 1.26D to 0.84D after surgery with a P value <0.001. The corneal astigmatism at 2 weeks and 6 weeks post-surgery was statistically significant in the current study, implying that corneal astigmatism stability was not achieved at 2 weeks post-surgery. Conversely, a Ghanaian study by Amoah et al. (6) reported that corneal astigmatism stabilized by week six.. Our findings confirm that corneal

remodelling and subsequent astigmatic shifts continue actively beyond the immediate two-week postoperative period.

In a study by Kam, et al., (19), corneal astigmatism stability post pterygium excision was observed at one week after surgery. The current study astigmatism stability was not achieved at 2 weeks post-surgery. Other studies revealed that cornea astigmatism was achieved at one month and at 3 months post-surgery (9-18). These findings show that there is no consensus in literature concerning the time to when cornea astigmatism stability is achieved post pterygium surgery.

The current study showed significant improvement in astigmatism and best corrected visual acuity after excision of the pterygium. It has been shown that, after pterygium surgery, interventions like prescription glasses, intraocular lens measurements, or laser keratometric procedures may lead to residual refractive error and a poor visual outcome before keratometric stability is achieved (7). Hence, patients presenting with pterygium and seeking refractive correction procedures such as spectacle prescription and cataract surgery could be advised to undergo pterygium excision for that optimal visual outcome of the refractive procedure thereafter.

In the current study the relationship of pterygium size and astigmatism was explored at different time points. There was no significant difference in mean astigmatism between pterygium less than or equal to 2mm in length compared to pterygium with greater than 2mm. However, the mean astigmatism (1.86D) for pterygia with less than or equal to 2mm was lower than that of pterygia greater than 2mm (2.75D). In contrast studies have found astigmatism to be significantly different in pterygia of less than 2mm compared to those greater than 2mm (16).

Study limitations

Significant improvement in corneal astigmatism and visual acuity was observed in the study. However, the lack of follow-up to assess the recurrence rate of pterygium and overall change in astigmatism in the long term limits the extrapolation of the study. A four-week and or more than six-week post-operation assessment would also have improved the ability to identify when astigmatism stabilizes.

Policy and practice implication

Eye care policies should promote timely surgical management of visually significant pterygia to reduce refractive errors and improve visual outcomes because pterygium excision significantly reduces corneal astigmatism. Therefore, clinicians should consider pterygium excision as an effective intervention for reducing corneal astigmatism and improving vision.

Significant improvement in best-corrected visual acuity occurred after pterygium excision. Therefore, policies should support access to pterygium surgery as part of visual rehabilitation services. Eye care providers should include the potential visual benefits of surgery in patient counseling.

Conclusion

Results of this study show that Pterygium excision with autograft leads to a significant reduction in astigmatism and improvement in BCVA. This shows that pterygium excision has a beneficial effect on reducing corneal astigmatism, thereby enhancing visual acuity and corneal astigmatism. The study findings, can be helpful in maximising the outcome of procedures that aim at enhancing vision such as cataract surgery and refraction in those with concomitant pterygium by first advocating for pterygium excision. Eye health professionals should incorporate pterygium assessment and management before elective refractive procedures. These results contribute to the growing body of evidence supporting the efficacy of pterygium surgery in improving ocular health outcomes.

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Competing interest

The authors declare no competing interests exist.

Consent

Written informed consent was obtained from all participants according to the international standards.

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Summary of priority diseases and events in Zambia

Intergrated disease surveillance report (IDSR) timeliness and completeness

Nationally, 44,512 health facilities and surveillance sites were expected to report to the IDSR system during Q2 2026. Reports are received and collated at the district and provincial levels before submission to ZNPHI. Timeliness and completeness of weekly reports are the primary indicators of surveillance system quality. Table 1 summarises completeness and timeliness rates by province for Q2 2026.

Table 1: IDSR report completeness and timeliness rates by province Q2 2026 April–June 2026)

Province	Expected Reports (N)	Completeness n (%)	Timeliness n (%)	Met ≥80% Target?
Central	4821	4774 (99.03%)	4623 (96.84%)	Yes
Copperbelt	5473	5401 (98.68%)	5355 (99.15%)	Yes
Eastern	5575	5543 (99.43%)	5248 (94.68%)	Yes
Luapula	4210	4181 (99.31%)	4122 (98.59%)	Yes
Lusaka	2964	2904 (97.98%)	2744 (94.49%)	Yes
Muchinga	2210	2209 (99.95%)	2189 (99.09%)	Yes
Northern	4199	4179 (99.52%)	4053 (96.98%)	Yes
Northwestern	4615	4424 (95.86%)	4170 (94.26%)	Yes
Southern	6019	5932 (98.55%)	5727 (96.54%)	Yes
Western	4680	4530 (96.79%)	4246 (93.73%)	Yes

* *Completeness:* percentage of expected reporting health facilities/surveillance sites that submitted data regardless of submission timing. National target ≥80%.
† *Timeliness:* percentage of reporting health facilities/surveillance sites that submitted reports on time. National target ≥80%.

Muchinga Province recorded the highest completeness (99.95%) and timeliness (99.09%), while Western had the lowest completeness (96.79%) and North-Western the lowest timeliness (94.26%). All provinces nonetheless exceeded the WHO/MOH target of at least 80% for both indicators.
These results indicate a high-quality surveillance system capable of reliably detecting and tracking disease events across Zambia.

Featured Diseases

1. Cholera
Description

Cholera is an acute diarrhoeal disease caused by infection with the bacterium Vibrio cholerae (1). It is transmitted through contaminated water and food and can cause severe dehydration and death within hours if untreated. Children, the elderly, and those with underlying health conditions are most at risk (1). Zambia has experienced recurrent cholera outbreaks, particularly in peri-urban areas with limited access to safe water, sanitation, and hygiene (WASH) infrastructure (2). Surveillance is essential to enable rapid case detection, outbreak response, and

interruption of transmission (2).

Epidemiological Summary

During Q2 2026 (Weeks 14 - 26), a total of 261 suspected cholera cases were reported nationally, of which 93 were confirmed (35.63% confirmation rate). 14 deaths were recorded, representing a case fatality rate (CFR) of 5.36%. Lusaka Province was the primary hotspot, accounting for most confirmed cases and deaths (Figure 1). Cholera transmission was most intense during Weeks 14 and 15, with a peak of 64 suspected cases in Week 9, before declining in the rest of the quarter (Figure 2).

Figure 1: Distribution of suspected cholera cases by province, Q2 2026.

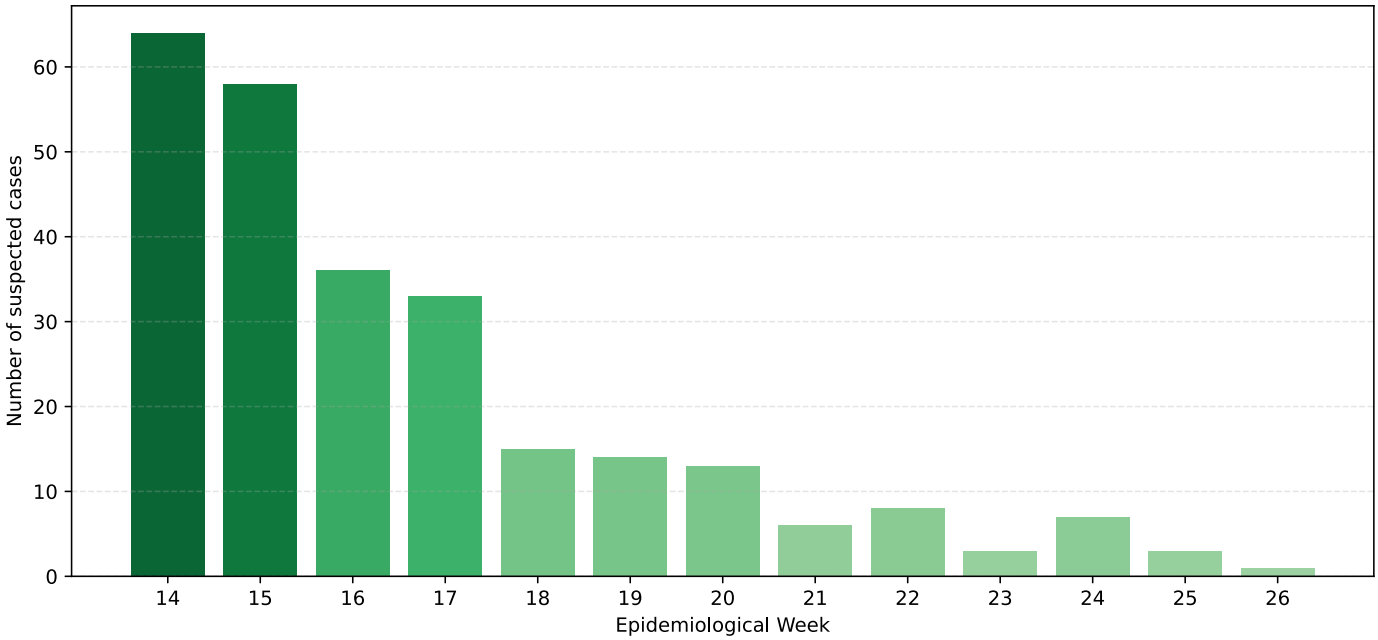

Figure 2: Weekly suspected cholera cases, Zambia, Q2 2026.

Recommendations

- Provincial and district health teams in Lusaka should maintain active case finding, oral rehydration therapy (ORT) provision, and household water treatment promotion in affected communities.
- Water and sanitation authorities should conduct targeted water quality testing in cholera-affected (Lusaka) areas to identify contamination sources.
- Health workers are advised to enforce standard precautions and report all suspected cases within 24 hours per IDSR protocols. More information is available at: www.znphi.co.zm

2. Diarrhoeal Diseases (Non-Bloody and Bloody)

Diarrhoeal diseases both non-bloody (acute watery diarrhoea) and bloody (dysentery) represent a significant proportion of the communicable disease burden in Zambia (3). Non-bloody diarrhoea is most caused by viral and bacterial pathogens transmitted via the faecal-oral route, contaminated water, and poor food hygiene (4,5). Bloody diarrhoea (dysentery) is typically caused by Shigella species or enterohaemorrhagic Escherichia coli and is associated with higher morbidity and risk of complications (6). Children under five years of age and communities with limited WASH access are most vulnerable (6). Both conditions share the same underlying risk factors and prevention strategies (4,5,6).

Epidemiological Summary on Diarrhoea Non-Bloody

Non-bloody diarrhoea was the highest-burden non-malaria disease in Q2 2026, with 351,542 suspected cases reported nationally. Of these, 6,363 were confirmed and 7 deaths were recorded (CFR 0.11%). Copperbelt Province recorded the highest case concentration, followed by Central Province (Figure 3). Case counts remained consistently high throughout the quarter (approximately 25,000 – 26,000 cases per week), suggesting sustained endemic transmission rather than a discrete outbreak (Figure 4).

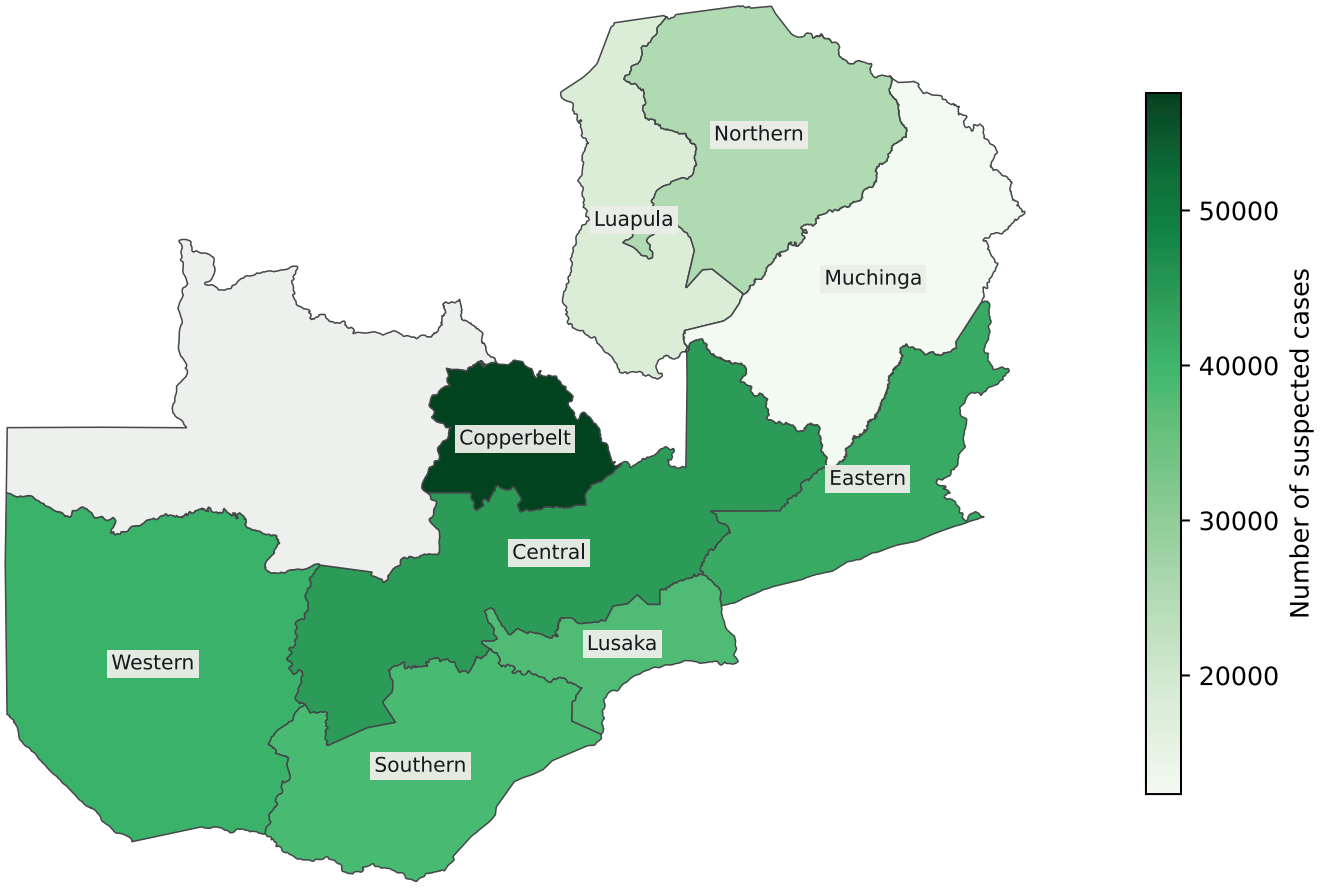

Figure 3: Distribution of suspected non-bloody diarrhoea cases by province, Q2 2026

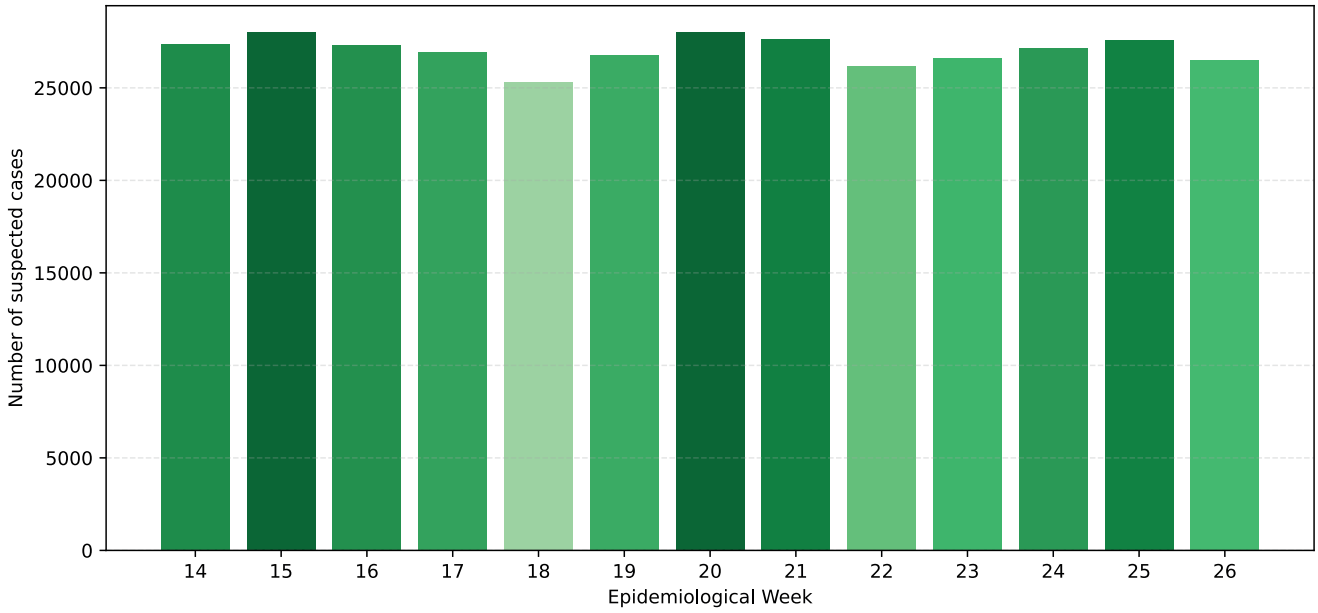

Figure 4: Weekly suspected non-bloody diarrhoea cases, Zambia, Q2 2026

Recommendations

Epidemiological Summary Diarrhoea with Blood

A total of 7969 suspected bloody diarrhoea (dysentery) cases were reported nationally during Q2 2026. Notably, zero confirmed cases were recorded against this substantial suspected case count. This is an important surveillance signal that requires investigation; it may indicate a laboratory confirmation gap, inconsistent application of the case definition at facility level, or specimen collection and transport challenges. Western and Central provinces showed the highest case concentrations (Figure 5). The number of suspected diarrhoea with blood cases shows a generally increasing trend from epidemiological week 14 to week 26, with a more pronounced rise from about week 21 towards the end of the quarter (Figure 6).

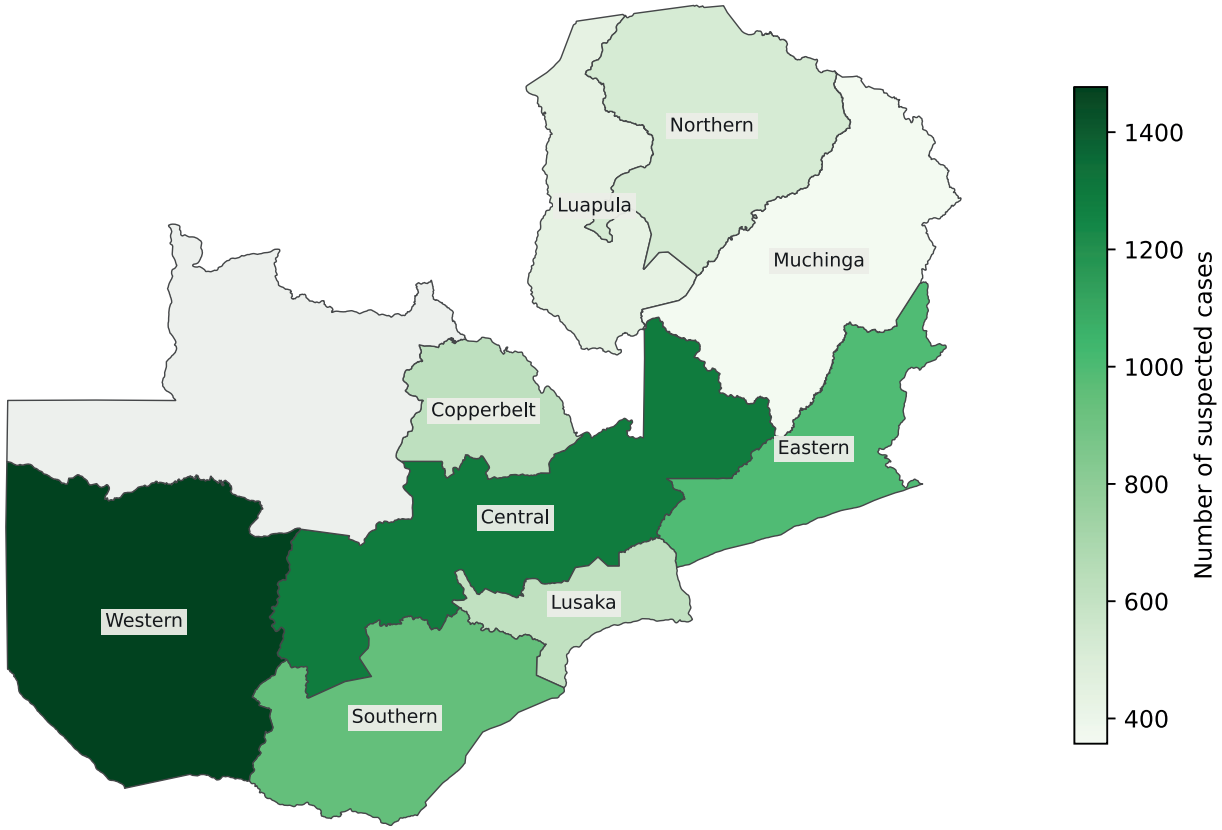

Figure 5: Distribution of suspected bloody diarrhoea cases by province, Q2 2026

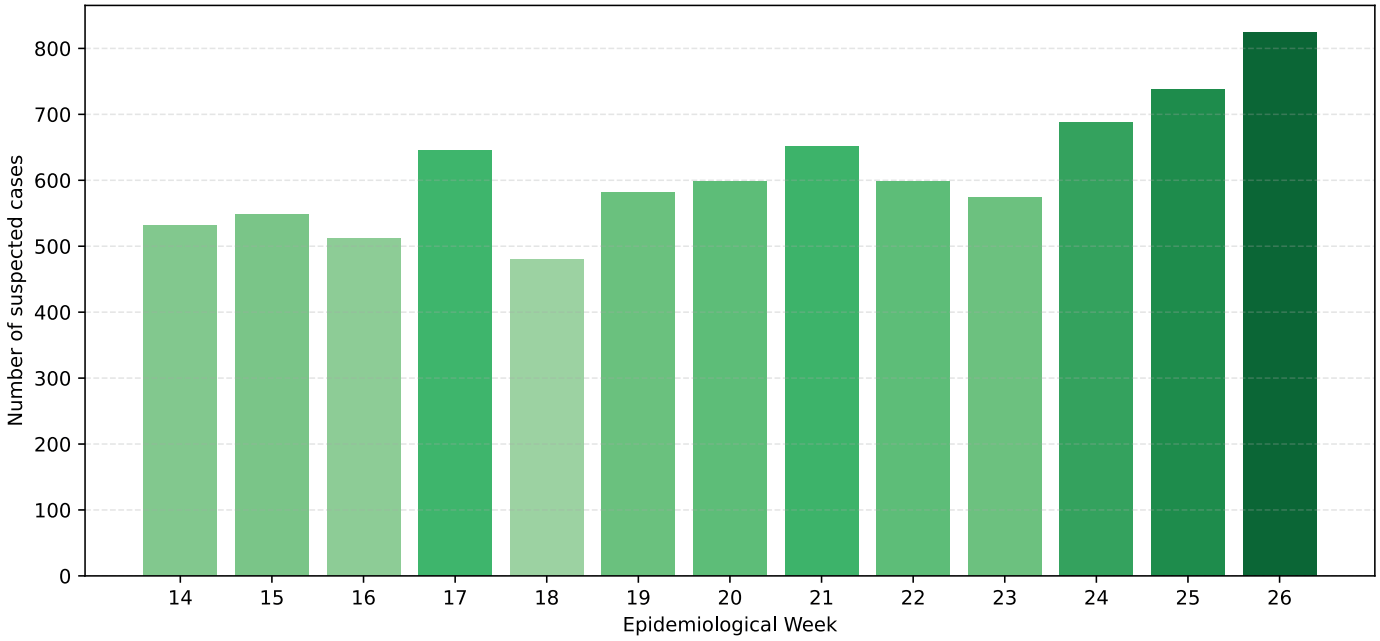

Figure 6: Weekly suspected bloody diarrhoea cases, Zambia, Q 2026

Recommendations

- Provincial health offices in Western and Central provinces should intensify community WASH interventions and health education targeting safe food handling, handwashing with soap, and safe water storage.
- ZNPHI should investigate the zero-confirmation rate for bloody diarrhoea to determine whether it reflects a true epidemiological situation or a surveillance gap in laboratory testing and case definition application.
- Clinicians should collect stool specimens from suspected dysentery cases and submit to provincial laboratories to improve confirmation rates and guide antimicrobial stewardship.

3. Influenza Like Illness

Description

Influenza is an acute respiratory illness caused by influenza A and B viruses, which spread mainly through droplets generated when infected individuals cough, sneeze, or talk (7). In Africa influenza A (particularly subtypes such as H3N2 and H1N1) and influenza B co-circulate and are responsible for most seasonal outbreaks, with varying predominance by strain and year (8). Children under five years of age, pregnant women, older adults, and individuals with underlying chronic conditions (such as HIV, asthma, or cardiovascular disease) are at highest risk of complications, severe disease, and death. Zambia experiences seasonal influenza transmission, with peaks typically observed during cooler months and in association with changing rainfall and humidity patterns.

Epidemiological Summary

During Q2 2026, 920 suspected influenza-like illness (ILI) cases were reported nationally, with 4 confirmed cases and no associated deaths (CFR 0%) (Figure 7). Weekly suspected influenza cases fluctuate between roughly 45 and 65 from weeks 14–23, then drop sharply in weeks 24-25 before rebounding to high levels again in week 26, suggesting a brief interruption followed by renewed transmission (Figure 8).

Figure 7: Distribution of suspected influenza cases by province, Q2 2026

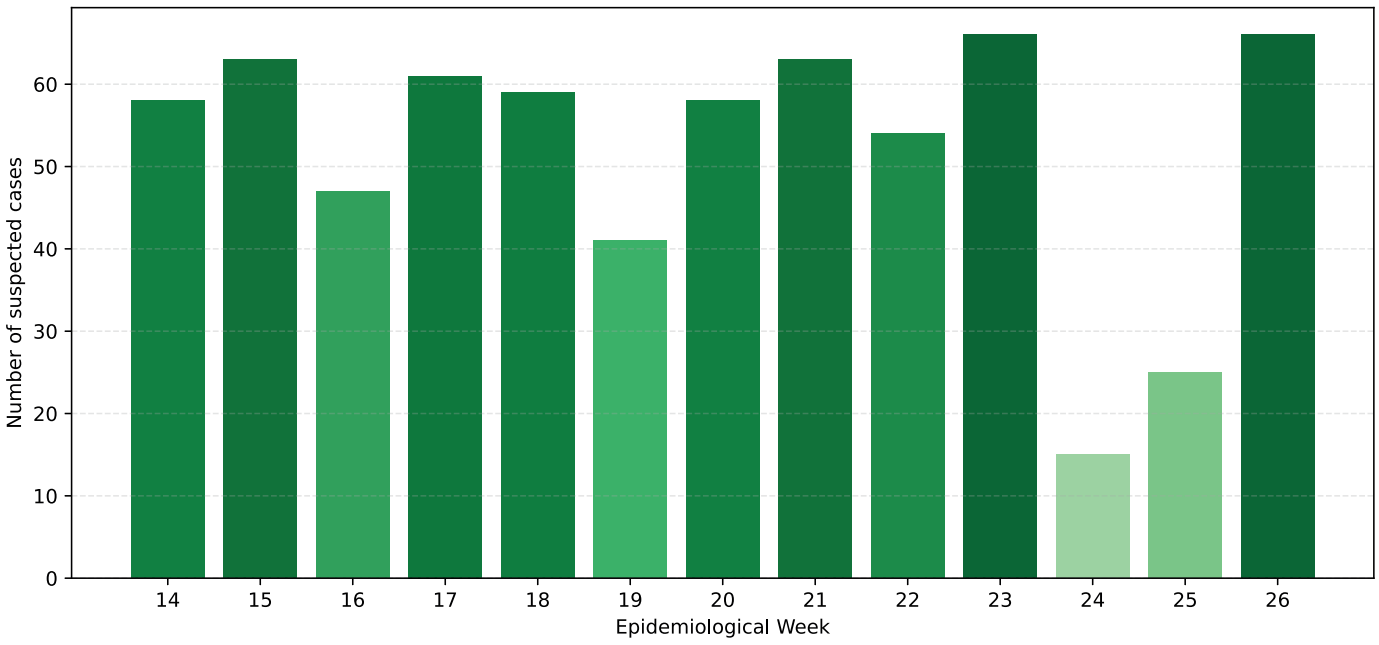

Figure 8: Weekly suspected influenza cases, Zambia, Q2 2026.

Recommendations

- Increase laboratory testing and timely confirmation of suspected ILI as well as
- Strengthen ILI subtype-specific influenza surveillance, ensuring routine reporting of influenza A(H3N2) and A(H1N1) through national systems linked to the DHIS2
- Investigate surges and implement targeted IPC where clusters are detected.
- Intensify risk communication on respiratory hygiene for high risk groups.
- Use weekly ILI trends to guide seasonal preparedness and resource planning.

4. Measles
Description

Measles is a highly contagious viral disease caused by the measles virus (genus Morbillivirus) (11). It is transmitted via respiratory droplets and can cause severe complications including pneumonia, encephalitis, and death, particularly in young children and immunocompromised individuals (11). Zambia is committed to the WHO African Region measles elimination target, and sustained measles transmission signals a vaccination coverage gap that requires urgent programmatic action (12). All suspected measles cases in children under 15 years are notifiable under Zambia's Integrated Disease Surveillance and Response (IDSR) system

Epidemiological Summary
During Q2 2026, 581 suspected measles cases were reported nationally, with 61 confirmed and 4 deaths (CFR 2.76%). Western Province continues to be the primary hotspot, accounting for the majority of cases nationally (Figure 9). Measles suspected cases remained low and relatively stable through weeks 14–21, then rise sharply from week 22 onward, with a steep, continuous increase peaking in week 26, suggesting an escalating outbreak.

Figure 9: Distribution of suspected measles cases by province, Q2 2026. Western Province recorded the highest burden, indicating a localised vaccination gap

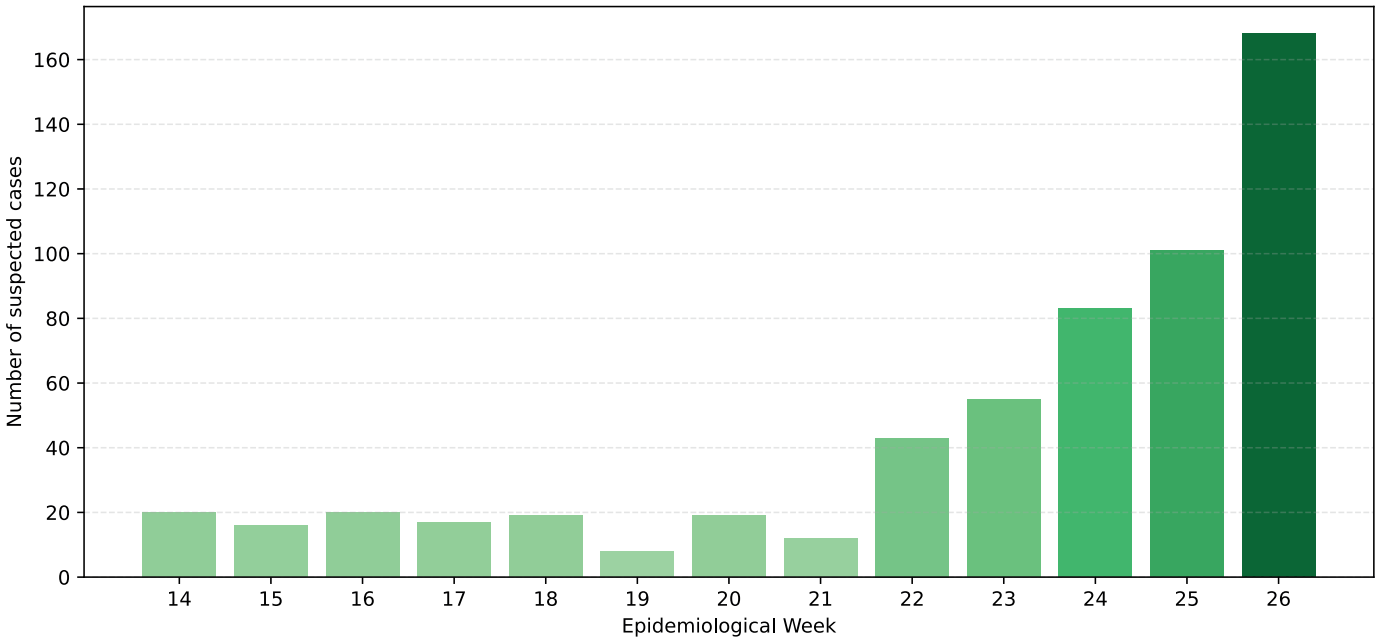

Figure 10: Weekly suspected measles cases, Zambia, Q1 2026.

Recommendations

- Investigate the outbreak rapidly and target response to affected districts.
- Conduct urgent, high-coverage measles vaccination campaigns in Western Province.
- Strengthen routine two-dose measles vaccination coverage nationally.
- Improve measles case-based surveillance and timely laboratory confirmation.
- Intensify risk communication and infection prevention measures in communities and health facilities.

5. Mpox

Description

Monkeypox (Mpox) is a viral zoonotic disease caused by the monkeypox virus (genus Orthopoxvirus) (13). It is transmitted to humans from animals (particularly rodents and primates) through direct contact with infected animals, contaminated materials, or through close human-to-human contact via respiratory droplets, skin lesions, or bodily fluids (13). Clinical presentation includes fever, rash, and lymphadenopathy (13). In July 2022 and again in August 2024, the WHO Director-General declared mpox a Public Health Emergency of International Concern (PHEIC) under the IHR, requiring heightened surveillance, case investigation, and reporting (14).

Epidemiological Summary

During Q2 2026, 37 suspected mpox cases were reported nationally, with 1 confirmed and no death reported (CFR 0%). Southern Province accounted for the highest number of suspected cases, with Western and Lusaka provinces also reporting clusters (Figure 11). Mpox suspected cases show a short-lived peak around week 19 followed by a steady decline to very low levels by week 25, suggesting that the initial surge was contained and transmission reduced.

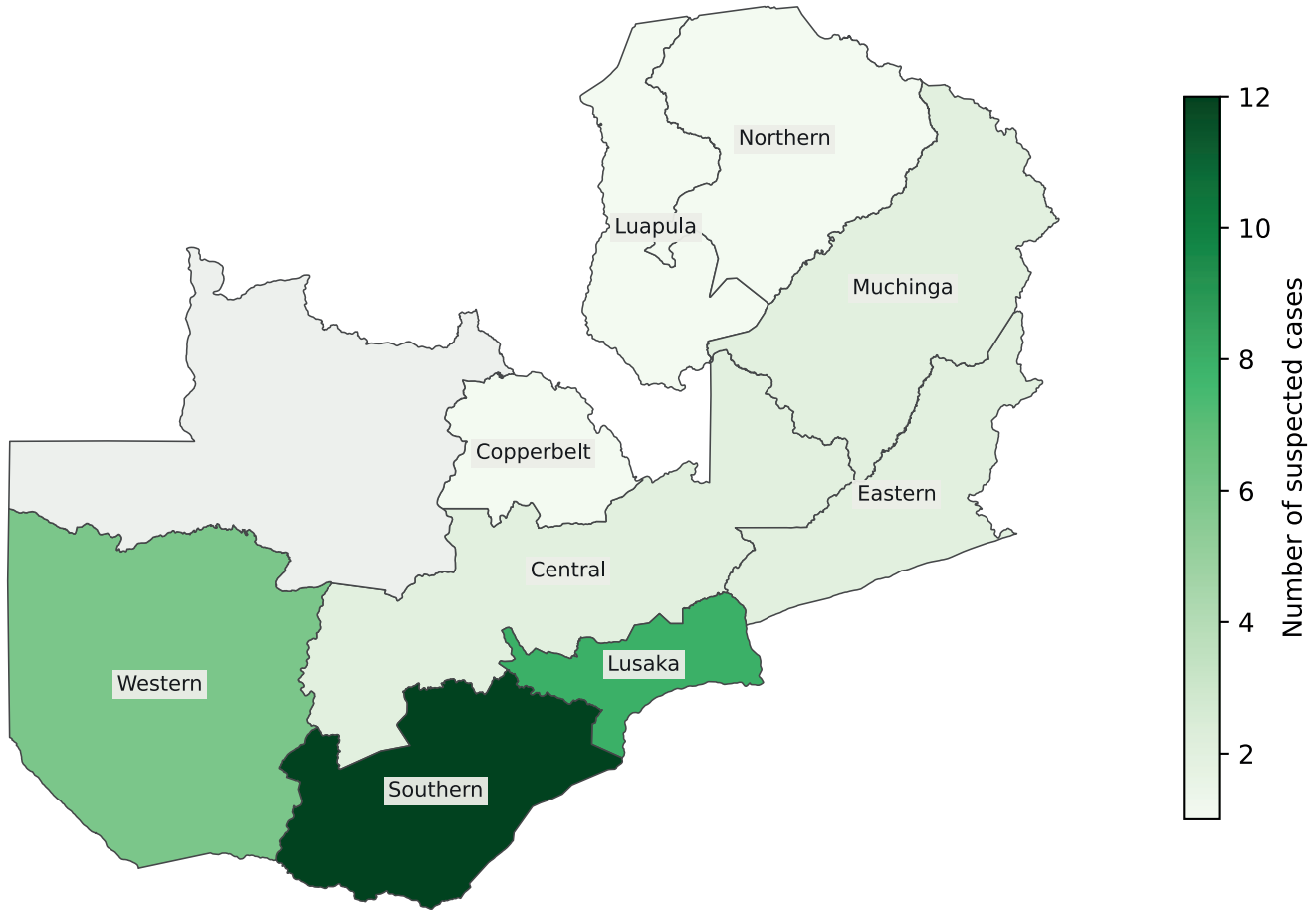

Figure 11: Distribution of suspected mpox cases by province, Q2 2026.

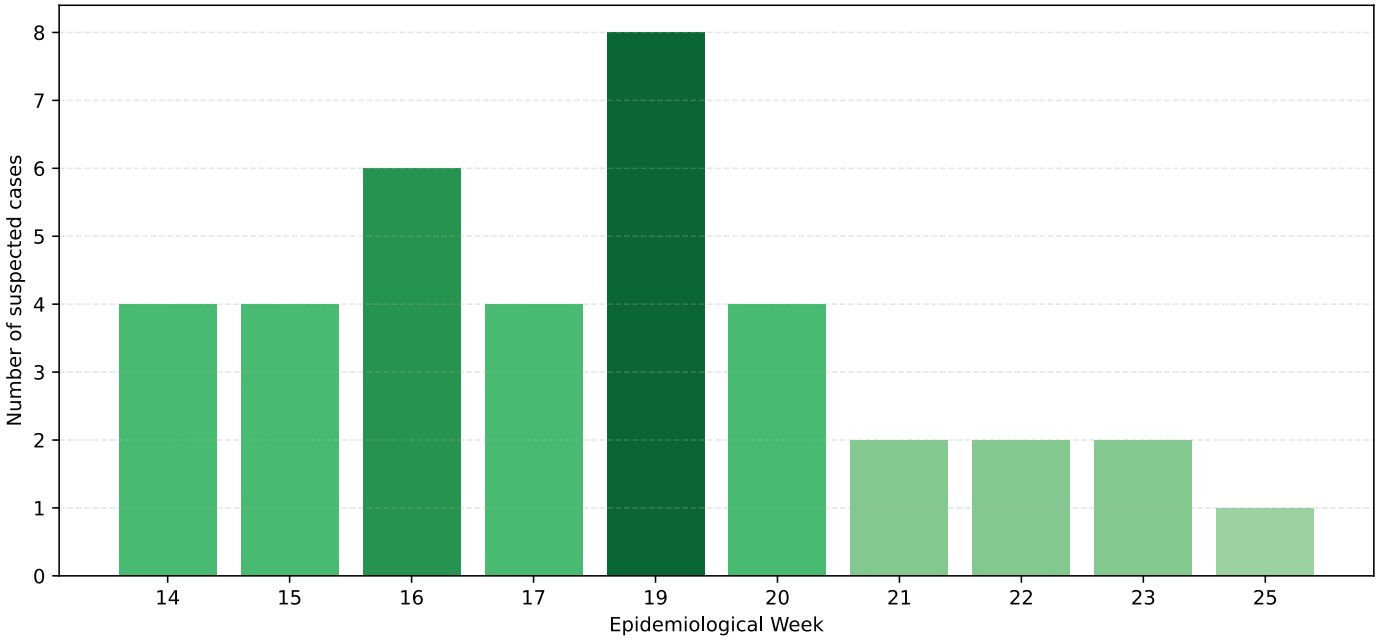

Figure 12: Weekly suspected mpox cases, Zambia, Q2 2026.

Recommendations

- Maintain sensitive Mpox case detection and verification around the hotspot areas.
- Investigate the week 19 surge thoroughly and ensure contact tracing has fully interrupted transmission chains.
- Sustain IPC measures and clinical readiness for Mpox despite declining case numbers.
- Continue targeted risk communication to at risk groups on symptom recognition and care seeking.

Table of Reported Cases and Events

Table 2: Nationally reported suspected and confirmed cases, deaths, and CFRs by disease/event Q1 2026 (January–March 2026)

Disease/ Event	Suspected cases	Confirmed cases	Deaths	CFR*(%)
Acute flaccid paralysis (AFP) (suspected polio)	133	2	9	6.77
Acute viral hepatitis	27045	1651	11	0.04
Adverse event following immunisation (AEFI)	19	8	—	—
Bilharzia (Schistosomiasis)	55	1	—	—
Bloody diarrhoea (dysentery)	6518	802	1	0.06
Cholera	7969	—	—	—
Diarrhoea non-bloody	319	1	—	—
Dog bites	261	93	14	5.36
HIV	45811	1142	8	0.07
Human rabies	24	5	8	133.70
Influenza-like illness (ILI)	920	14	—	—
Malaria	4855459	2741433	962	0.08
Measles	581	61	4	2.76
Meningitis	231	43	22	38.20
Monkeypox (mpox)	37	1	—	—
Mumps	5114	694	8	0.63
Neonatal tetanus	17	2	5	117.97
Plague	6	—	—	—
Scabies	7129	158	1	0.06
Trypanosomiasis	29	5	—	—
Tuberculosis	9350	226	1	0.04
Typhoid fever	1871	52	—	—

** CFR = Case fatality rate: (number of deaths ÷ number of confirmed cases) × 100. '—' indicates insufficient confirmed case data to calculate a meaningful rate.*

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Data used was extracted from eIDSR on 4th July, 2026.
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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