

Research



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Multisectoral approach for the control of cholera outbreak - lessons and challenges from Lusaka district - Zambia, October 2023 - February 2024

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Abstract

Introduction: on October 18, 2023, the Ministry of Health declared an outbreak of cholera in the Lusaka district. Public health interventions were implemented using a multisectoral approach in the Lusaka district and other hotspots in the country. We documented the multisectoral response efforts and their impacts on the cholera epidemic in the Lusaka district of Zambia. We highlighted the major challenges and their associated impacts on the epidemiologic patterns of disease in hotspot areas. **Methods:** we conducted a descriptive observational study of cholera response activities in the Lusaka district. We used quantitative and qualitative non-participant techniques using the Centers for Disease Prevention and Control's direct in-person observation tool in healthcare settings. We reviewed surveillance records to estimate the magnitude of the outbreak, and characterized cases by person, place, and time. We documented the response interventions and challenges using situation reports. **Results:** during the 2023 - 2024 cholera outbreak, Lusaka district was the most affected district with 13,122 cases and 498 deaths as of 12th February 2024. Despite having a well-established system for coordinating technical support and resource mobilization, inadequate sanitation and limited access to clean water remained potential risks for cholera outbreaks in Lusaka district. **Conclusion:** Lusaka district may have experienced one of the most severe cholera epidemics in the nation's history, as indicated by its rapid spread and increased mortality reported from both the community and treatment centers. A multisectoral coordination for improved sanitary systems, access to clean water, health education strategies, and vaccination campaigns contributed to the decline in cholera cases.

Introduction

Globally, researchers have estimated 1.3 to 4.0 million cases of cholera each year and 21,000 to 143,000 deaths worldwide due to cholera [1]. The causative agent, *Vibrio cholerae*, has been

eradicated from cholera transmission in high-income nations through better sanitation facilities and access to clean water [2]. However, cholera epidemics have continued to affect millions of people in several developing countries - Asia, Africa, and Latin America, where access to clean water and improved sanitation facilities are not widely available [3].

In the southern part of Africa, cholera epidemics have continued to occur in Tanzania, Zimbabwe, Ethiopia, Malawi, Mozambique, the Democratic Republic of the Congo, and Malawi. These continued resurges of cholera outbreaks in the region demand heightened surveillance, enhanced preparedness, and sustainable preventive, response, and control measures in communities and border areas, to prevent and mitigate cross-border transmission [4-6]. Zambia, one of the six nations in the World Health Organisation (WHO) African Region, is currently experiencing a cholera outbreak and is classified as being in an acute crisis [5,7]. Controlling cholera and reducing mortality in humanitarian settings require a multisectoral approach that combines treatment, community engagement, enhanced surveillance, oral cholera vaccines (OCV), and water, sanitation, and hygiene interventions (WASH) [3]. Therefore, since October 2023, the Ministry of Health (MOH) has been implementing public health measures in the Lusaka district and other national epicenters with ongoing cholera epidemics to control and prevent the spread of the outbreak. This paper, therefore, aims to document the multisectoral efforts in the fight against cholera and their effect on the cholera epidemic in Lusaka district of Zambia. It also highlights the major challenges encountered during the response and narrates their effects on the epidemiologic patterns of diseases in the affected subdistricts. Thus, providing evidence for effective future planning and sustainable response interventions.

Methods

Study design, site, and time frame: we conducted a descriptive observational study of cholera

response activities in the Lusaka district. We used both quantitative and qualitative non-participant techniques using the Centres for Disease Prevention and Control's (CDC) direct in-person observation tool in healthcare settings [8,9]. This study was conducted during the peak of the cholera outbreak in the six subdistricts of Lusaka district from October 2023 to February 2024. Lusaka is the largest Zambia city, with a population of over 3 million as of 2022 [10]. Lusaka is the main commercial and manufacturing hub of Zambia, and these commercial activities are well-connected to Zambia's other cities through a developing road network.

Data collection, management and analysis: we reviewed surveillance records to estimate the magnitude of the outbreak, and characterised cases by socio-demographics. We reported cholera attack rates (AR) in constituencies or health administrative areas also known as subdistricts. We documented the response interventions using various sources including patients' line list, cholera situation reports, multisectoral emergency response updates, and incident management system (IMS) meetings. We created an epidemic curve and visually presented response strategies in a sequence of implementation. Outbreak response activities included WASH interventions, oral cholera vaccine, and amendments to public health regulations. In addition, we identified and reported challenges faced during the 2023 - 2024 cholera epidemic response.

Ethics approval and consent to participate: this study was conducted as a part of the public health response by the Ministry of Health through the Zambia National Public Health Institute (ZNPHI) which has a waiver for ethical clearance of epidemic investigations by the Zambia National Research Authority. The ZNPHI Act, No. 19 of 2020, establishes the Institute's role in conducting research and generating scientific evidence to facilitate prompt decision-making during public health emergencies. We requested for permission from the Provincial Health Office, District Health Office (DHO), and subdistrict management to

access the patient's medical records. We did not collect any personally identifiable information from the facility reports and the electronic integrated surveillance response (eIDSR) database, and all information was treated with strict confidentiality.

Results

Epidemiology and cholera burden in Zambia: Zambia is one of the middle-income countries in Africa that has experienced several cholera outbreaks since 1978; with the worst epidemics, which included over 12,500 cases in 1991, 1999, and 2023-2024, have been documented (Figure 1). The 2023-2024 Cholera outbreak was declared on 18th October 2023 by the Zambia Ministry of Health; the first two confirmed cases were residents of the Kanyama compound in Lusaka district. As of 12th February 2024, the outbreak had spread to all 10 provinces of Zambia with a total of 18,519 cases, including 625 reported deaths. More than 78 of the 116 districts had been affected by the 2023-2024 cholera epidemic. Of a total of 78 districts that had reported cholera, 64 districts had reported imported cases from Lusaka between January and February 2024. Compared to the 30 previous outbreaks, this may be one of the biggest cholera outbreaks in the country's history as characterised by the swift escalation in cases and the epidemic's potential to spread into other districts (Figure 2).

Description of the 2023 - 2024 cholera outbreak in Lusaka district: there is an ongoing cholera outbreak in Zambia with most of cases (89.3%, N=18,519) occurring in Lusaka province. Lusaka is the most-affected district with 13,122 cases and 498 deaths as of 12th February 2024. The index case was a 21-year-old female patient who presented at the clinic on 14th October 2023, complaining of severe watery diarrhoea, nausea, vomiting, weakness, and leg discomfort. The second case was a community death identified within the same compound as the first case during active case search and contact tracing by the rapid

response team (RRT) on the 15th of October, 2023. Of the 13,122 cases reported, the majority were males (57.2%) and those aged ≥ 15 years were the most affected followed by those aged 1-4 years. More community deaths (60%, N=498) were reported than facility deaths with higher numbers recorded in Matero and Kanyama subdistricts, 28.0% and 27% respectively. Overall, the case fatality rate (CFR) was 3.8%; almost three times higher than the World Health Organization's threshold. Most of the cases (64.5%, N=13,193) were recorded between the 13th and 14th of January 2024, with the largest number (n = 474) being reported on the 18th of January (Figure 2). Cases were mostly clustered in two constituencies (subdistricts) namely Matero (32.8%; n=4,333) and Kanyama (31.6%; n=4,170). Matero subdistrict reported the highest attack rate (AR) of 1,325 cases per 100,000 population (Table 1).

Multisectoral response activities during the 2023 - 2024 cholera outbreak response coordination:

the IMS was activated at the district level on 18th October 2023, subsequent when it was beyond its capacity the provincial and national, levels were also activated. In line with the Zambia Public Health Emergency Operation Center (PHEOC) guidelines, the incident managers were selected based on their expertise in cholera (Table 2). The provincial and district epidemic preparedness prevention control and management committees were activated to improve coordination during preparedness and the outbreak response. Further, the Ministry of Health started working with its partners to enhance the district's response efforts. At the national level, the National Coordinator of the Disaster Management and Mitigation Unit (DMMU) hosted weekly meetings of the National Disaster Management Technical Committee Meeting to coordinate WASH activities and mobilization of resources for the response. Attendees in strategic discussions included a range of stakeholders, such as the line ministries, Lusaka Water and Sewerage Company (LWSC), Lusaka City Council (LCC), Defense forces, WASH, and health promotion teams from ZNPHI and MOH. The Minister of Health hosted daily media briefings to

update the public on the current statistics and status of the cholera response activities.

Case management: due to an alarming spike in cases, on 4th January 2024, the MOH designated Lusaka's National Heroes Stadium (NHS) as a Cholera treatment center to support the district's response capability and improve the quality of care. The Heroes Stadium had an estimated bed capacity of over 1000 patients. In addition, hundreds of health workers including infectious disease specialists, public health specialists, public health nurses, and a mixed skill set of volunteers, were deployed to support the thorough functionality of NHS-CTC. Onsite technical support and capacity building on cholera case management continued at NHS and Levy Mwanawasa University Teaching Hospital (LMUTH) Cholera Treatment Centers (CTCs). The LMUTH functioned as the main center for the specialized management of cholera cases with comorbidities. Emergence medical supplies (including important for appropriate antibiotics) from the central level, the Zambia Medicines and Medical Supplies Agency (ZAMMSA) were made available in all CTCs including subdistricts to ensure timely treatment of patients. The WHO collaborated with the International Emergency Medical Teams (EMTs) to assist with the response from many agencies, including the Africa CDC, US CDC, Médecins Sans Frontières (MSF), United Kingdom Health Security Agency (UKHSA) and Japan International Cooperation Agency (JICA).

At the community level, the district set up more than 250 Oral Rehydration Salts Corners (ORCs) and upgraded some ORCs to Oral Rehydration Points (ORPs) in Lusaka with assistance from partners. A total of 214,611 residents visited the ORCs as of 6th February 2024, of whom 184,407 received ORS and 1,638 were referred to CTCs for further management. In the worst-affected subdistricts, 300 additional community health workers were trained and assigned to oversee the ORCs in specific locations identified as having a high number of cases. A total of 177 vehicles - eight trucks transported medical and non-medical

supplies, nine buses for staff mobility to/from CTCs, and the rest were reserved for frontline health workers to ease active search and contact tracing.

Laboratory: the samples were examined by the Zambia Nation Public Health Reference Laboratory (ZNPRL) for confirmation by PCR or culture. Of the 2,091 samples examined at ZNPRL, 253 were positive for *Vibrio Cholerae* with the majority (98%) being *ibrio cholerae*O1 Ogawa. Rapid response teams identified patients using epidemiologic links to clinically compatible or confirmed cases as the outbreak spread to all subdistricts. Referral systems were established, and genotyping was carried out at ZNPRL in Lusaka for prompt detection and confirmation.

Water, sanitation, and hygiene interventions: the district with support from partners, enhanced water, sanitation, and hygiene interventions in all subdistricts. Thousands of domestic chlorine shippers were provided to residents in affected neighborhoods. As of January 24, 2024, 235 emergency water tanks were installed and supplied with safe/clean drinking water in Lusaka's hotspot areas: Matero, Kanyama, George, and Chipata. The district health office, with support from the United Nations International Children's Emergency Fund (UNICEF), intensified water quality monitoring (WQM) on emergency water tanks, pipe water (both public and privately owned), kiosks, and communal taps. To monitor the quality of the water delivered in the hotspot areas, the US CDC, UNICEF, and MOH provided support for the training of an additional thirty community-based volunteers (CBVs) in the use of digital colorimeters to test for free chlorine residual (FCR) in drinking water. At the household level, stored water from various sources was sampled and analyzed. In addition, 34,837 pit latrines were disinfected; while over 2,000 pit latrines were emptied across the city. By 25th January 2024, over 1,520 tons of historical solid waste were removed (from trading places and residences) and 350 shallow wells were super-chlorinated.

Amendment of public health regulations: on 12th January 2024, government invoked the statutory instrument No. 5 of 2024 - the public health act (laws, volume 17, cap. 295) that introduced key provisions to enhance cholera prevention and control measures. Inspections of public spaces such as markets, restaurants, bars, and households, were heightened in the community. As of 24th January 2024, over 2,560 food premises were inspected, of which 1889 were complying (overall: 74.0%), while 5,682 trading premises were inspected and 73.0% were compliant.

Postponement of the start of the school year: on 3rd January 2024, the minister of education announced the postponement of the opening of schools, from 8th to 29th January to prevent and mitigate the spread of cholera. The National Disaster Management and Mitigation Council of Ministers advised the Ministry of Education to further delay the opening date to February 12th as the outbreak continued to spread to other regions of the country. Given the above, the ministries of health, education local government, and housing embarked on the inspection of schools and colleges to ensure quality provision of WASH services in learning institutions. As of 24th January, a total of 819 schools were inspected in the Lusaka district, of these 614 were complying (overall: 75.0%).

Heightened disease surveillance: the district enhanced its event-based surveillance, alert management, and response efforts. All suspected cholera cases were reported to the health authorities and then a variety of data sources were systematically verified and further investigated to determine the authenticity of the reports. As of 24th January 2024, the district enlisted a total of 17,616 alerts during an active search of which 4,289 met the cholera case definition i.e. suspected cholera case. A cumulative total of 10,720 new suspected cases met the cholera case definition, of which 5,511 new cases were followed with their contacts traced (24,113 contacts traced and screened). The district authorities analyzed and provided

feedback on the data from the reporting sites through IMS update meetings and reports in the form of outbreak situation reports among appropriate authorities and partners, which were shared for informed decision-making. Technical support to the districts and subdistricts was ongoing on contact tracing, active case finding, and risk mapping. Lusaka provincial health office provided mentorships and supportive supervision on data capturing using eIDRS in all the CTCs/CTUs. Eighty-seven percent of the total reported cases had been entered into the e-IDSR platform; daily data entry and verification were conducted to enhance real-time data capturing.

Risk communication and community engagement: the DHO heightened health education, stakeholder, and community engagement was provided in form meetings, using public address systems, door-to-door sensitization, radio shows, TV updates, and focal point person interviews. The subdistricts implemented sensitization and distribution of information education communication (IEC) materials in congregate settings such as prisons, markets, and bus stations. The DHO in collaboration with partners, managed to sensitize 1,079,677 in congregate settings and reached 5,282,049 individuals in communities. Overall, over 103,542 pupils and teachers were sensitized while 4,235 churches visited. Over 2,259 communities and compounds were reached with the PA system; 1,563 markets were sensitized and 26,599 IEC materials were distributed including those printed in local languages - as of January 23rd. The government and health officials forbade people from attending funerals because of the elevated danger of contracting cholera, especially if the corpse was thought to have passed away from the disease. Environmental health units at the local government and officials from the Ministry of Health handled the gathering, and disposal of bodies and provided oversight of funerals. The health minister persisted in her appeal to the people to abstain from funerals held in private homes and private burials.

Oral cholera vaccination: the WHO International Coordinating Group on Vaccine Provision approved over 1.7 million doses of Oral Cholera vaccines for use in Zambia. Of these doses, 1.4 million doses were delivered in the country in four separate shipments between the 11th and the 14th of January, 2024. The other consignment of over 200,000 was made available on 19th January 2024 with support from the WHO, UNICEF, and Gavi - The Vaccine Alliance. The MOH trained front-line healthcare professionals in the administration of OCV, with technical assistance from WHO and Africa CDC. On 16th January 2024, MOH commenced the administration of the oral Cholera vaccine, starting with Matero township, one of the affected shanty compounds of Lusaka, and most affected by the outbreak. A total of 1,553,995 (97.8%) of the target population has been vaccinated as of 24th January 2024 including 3,546 inmates from correction facilities and 3,356 health workers. Daily review sessions on the OCV operations in identified hotspot areas were conducted.

Challenges

Erratic supply of water: the LWSC commenced water rationing in mid-September of 2023. Following the concerns on the water quality supplied by LWCS, the Ministry of Local Government (MoLG), LWSC, and DMMU held an epidemic preparedness management meeting. The inconsistent water supply in certain communities may have forced residents to use untreated shallow wells and boreholes, leading to continued exposure to contaminated water sources. Since September 2023, there has been an increase in diarrheal cases in the Lusaka district and on October 18th, 2023 cholera outbreak was confirmed.

Heavy rains: between the 3rd and 8th of January 2024, the Lusaka district experienced heavy rains causing the compounds to flood, and some roads were not passable, making it almost impossible to carry out preventive measures like Risk Communication and Community Engagement

(RCCE), contact tracing, and the delivery of WASH interventions like filling water tanks and emptying pit latrines. Most of Lusaka's slums have poor infrastructure (roads, underserviced drainages), and these potentially caused delays and supply chain disruptions beyond the control of the response intervention teams. Urban populations with inadequate sanitation systems and floods contribute to the spread of cholera by contaminating nearby drinking water sources from overflowing toilets.

Reported increase in community deaths: our study found that more deaths occurred in the communities than those reported from the facilities. Perhaps this could be attributed to gaps in the knowledge, attitudes, and practices about cholera prevention among the affected communities. The observed accumulation and inappropriate disposal of waste at business premises, such as restaurants and bars operating in unsanitary conditions, could have been because of inadequate knowledge and poor hygiene practices related to cholera. Another documented conduit for the spread of cholera in the community is a delay in seeking medical attention, attributable to low-risk perception and stigma among some community members.

Inadequate number of surge staff including community-based volunteers: there were around 500 cholera cases recorded per day in the second week of January; this was an increase from 200 cases on average per day in the previous week. As a result of this increase, staff responsible for contact monitoring, risk communication community engagement and other supervisory duties were inadequate and overstretched. Having acknowledged that the required human resources were inadequate, over 300 CBVs were trained and deployed to hotspot areas; who offered water quality monitoring and oversaw the ORC's operation in designated points. Furthermore, to strengthen the existing structures and capacities at the subdistrict level and provide the surge technical, operational, and logistical support; the Ministry of Health and the WHO country office

trained health workers in case management, emergency preparedness, and response, infection prevention and control, data collection, management, and analysis between January 13th and January 31st, 2024.

Discussion

Lessons and implications on control of the cholera outbreak for future considerations: we observed a steady decline in the number of cases during the epidemic, particularly after January 23, 2024. The multisectoral actions implemented by the DHO with support from the MOH, ZNPHI, governmental and non-governmental organizations including international agencies such as the WHO, UNICEF, Red Cross Society, Catholic Relief Services, US CDC, and Africa CDC, contributed to the decline in the number of cases reported [11-13]. Implementation of the WASH interventions such as the distribution of chlorine for at-home water treatment and hand-washing soap, provision of safe drinking, monitoring of water quality, OCV, and emptying and disinfection of latrines have been documented as high-impact emergency response measures to interrupt the spread of cholera outbreaks [1-4].

The documented core measures of controlling outbreaks such as cholera are; proactive finding and managing cases, tracing contacts, and strict movement of susceptible populations when feasible and appropriate [14,15]. A multi-sectoral approach was to implement these strategies. Transport was provided to the rapid response teams' activities such as active case search and contact tracing. Heightened surveillance and active case finding are key to identifying additional cases and determining who is at risk because initial cases often represent a small fraction of the total number of people affected. The decision by the Ministry of Education to delay the opening of schools was another important strategic decision that feasibly interrupted the transmission of cholera. Learning institutions are usually crowded

and may exacerbate the spread of infection among learners due to obvious personal interactions [16]. The epidemic could have been more severe if the schools had opened due to poor compliance with minimally acceptable public health regulations.

One notable overwhelming support that the Zambia government experienced, was high-level engagements by the Minister of Health, with a delegation from the Africa CDC, to assess the cholera situation and identify critical gaps for continuous support. The delegation led by the Africa CDC and the deputy director, conducted field visits to the CTCs and affected communities, including engaging partners such as the WHO, UNICEF, JICA, US-CDC, International Federation of Red Cross and Red Crescent Societies, World Bank, and UKHSA, among others, to ensure better coordination and alignment of the required response support. This outbreak was graded at level 3, the highest activation level which deals with the emergency of the greatest magnitude, complexity, scope, and impact [11]. This level requires the greatest resources and multisectoral response and coordination where national resources and capacities are exceeded and overwhelmed, and substantial international support is required [11,12]. These International and national high-level engagements have increased public acceptance and willingness as well as government determination and capacity in the fight against cholera in Zambia [17]. It is perhaps for these reasons that government invoked the Statutory Instrument No. 5 of 2024 of The Public Health Act to enhance cholera prevention and control measures. Many public spaces, including marketplaces, restaurants, bars, and schools, were inspected. Premises that did not comply with public health regulations were either closed down or given warnings to reduce the spread of cholera in the city [18,19].

The setting of Oral Rehydration Points (ORPs) served as the primary point of care for Cholera in communities identified as infection hotspots [5,8,9]. In addition, the ORPs assist in the screening, stabilization, and timely referral of

patients to CTCs, thereby preventing community deaths. Analysis conducted in Malawi indicates that setting up of ORPs had increased chances of quick recovery and reduced Cholera deaths, by 15.7% and 36.4% respectively. It also recommended that health education and the distribution of chlorine are done at the same point for people to have safe water and prevent disease [8,9]. In this study, we anticipated the short-term effect of single-dose OCV administered during the ongoing cholera outbreak. The Zambian government implemented similar interventions previously during the 2018 cholera outbreak in the high-risk subdistricts of Lusaka and other hotspot districts, including fishing camps [1-3]. Studies have documented 80-90% effectiveness of one dose OVC administration in cholera epidemic and outbreak settings [10-12]. Cholera has been a historic disease in Zambia because of a lack of access to basic water supply, sanitation, hygiene, and sustainable waste management services in towns and unplanned settlement areas. To prevent future cholera outbreaks in most affected areas of Lusaka, it is important to implement medium to long-term WASH strategies, otherwise, early detection and rapid response to alerts are essential for containing and stopping the spread of cholera.

Conclusion

Lack of access to clean drinking water, especially in the heavily populated slums around the city, makes Lusaka an ongoing potential hotspot for cholera outbreaks. Prompt confirmation by local health authorities, and robust multisectoral response interventions from the government, Non-governmental organizations (NGOs), and United Nations (UN) agencies could have contributed to the decline in the number of cases in hotspot subdistricts. Continued implementation of health education on cholera particularly on water treatment, use of toilets, and good handwashing practices is highly recommended. Providing capacity building to health personnel in case management, setting up more oral

rehydration corners, targeted vaccination, and community engagement should be strengthened to curb community deaths. It is recommended that sanitary facilities at learning institutions where cholera transmission is likely to occur should undergo routine inspections to ensure appropriate compliance with hygiene standards. The Ministry of Local Government and Rural Development should launch long-term WASH initiatives, such as rehabilitating household latrines and piped water supplies in Lusaka's unplanned settlements.

What is known about this topic

- *Cholera has been a historic disease in Zambia because of the lack of access to basic water supply, sanitation, hygiene, and sustainable waste management services in towns and unplanned settlement areas.*

What this study adds

- *During the 2023 - 2024 Cholera outbreak, Lusaka district was the most-affected district with 13,122 cases and 498 deaths as of 12th February 2024;*
- *A sound and consistent coordination mechanism for technical assistance, resource mobilization, and partnership among the health officials, line ministries, and partners played a critical in the control of the outbreak.*

Competing interests

The authors declare no competing interests.

Authors' contributions

Ernest Kateule, William Ngosa and Oscar Nzila conceived the investigation, participated in its design and coordination, drafted the manuscript, initiated the investigation, interpreted the results and drafted the final manuscript. Fred Mfume and Chola Shimangwala, Sophia Msiska conducted data quality checks, interpreted the data and

analysed the findings. Angela Gama revised the manuscript and guided the discussion and overall write-up. All authors read and approved the final article.

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Tables and figures

Table 1: distribution of cholera cases by the subdistrict, Lusaka district - October 2023 - February 2024

Table 2: guidelines for grading and activation levels of public health emergence operation center

Figure 1: trends in cholera outbreaks - Zambia, 1978 - 2024 (source: WHO: 2023; ZNPHI: 2024)

Figure 2: cholera cases by date of reporting and response activities in Lusaka district - October 2023 - January 2024

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Table 1: distribution of cholera cases by the subdistrict, Lusaka district - October 2023 - February 2024

Subdistrict	Population	Cholera cases	Deaths	CFR (%)	AR per 100,000
Kabwata	232,584	1,012	6	0.6	435
Kanyama	540,875	4,170	135	3.2	771
Chawama	212,586	644	28	4.4	303
Matero	326,990	4,333	130	3.0	1,325
Munali	321,595	1,698	24	1.4	528
Mandevu	472,646	935	40	4.3	198
Lusaka Central	140,865	330	5	1.5	234
Total	2,248,140	13,122	368	2.8	587

Source: Lusaka Provincial Health Office - Cholera Outbreak Situation Report 13 February 2024 CFR: case fatality rate, AR: attack rates

Table 2: guidelines for grading and activation levels of public health emergency operation center

Grade	Event/situation activation considerations	Incident management arrangements	National PHEOC Activity
One	An event affecting or having the potential to affect a small number of the population and confined to a small area or site within the district; within the capacity of the district to cope; little or no added complexities.	District or provincial Level PHEOC	Maintain situational awareness through regular contact with the community field staff or district PHEOC; continue dynamic risk assessment and re-grade/escalate as required; keep ministry and senior level briefed on the situation.
Two	Requires coordination outside of the capabilities/jurisdiction of the district or province; an event affecting or has the potential to impact the health of the population within more than one area or site within a district; several agencies involved; major scheduled event (e.g., conference or sporting event).	Provincial or national level PHEOC	Maintain situational awareness through regular contact with the district/provincial PHEOC; continue dynamic risk assessment and re-grade/escalate as required; keep ministry and senior level briefed on the situation; activate the PHEOC if required.
Three	Requires coordination outside of the capabilities/jurisdiction of the district or province; an event affecting or has the potential to affect the health of the population within multiple sites, districts, or provinces; multiple agencies involved; extensive evacuations; resources/support required from national/cross-government level	National level PHEOC and/or office of the vice president	Maintain situational awareness through regular contact with the district/provincial PHEOC; continue dynamic risk assessment and re-grade/escalate as required; keep ministry and senior level briefed on the situation; activate the PHEOC as appropriate (partial or full).

Source: Zambia National Public Health Institute, 2019, PHEOC: public health emergency operation center

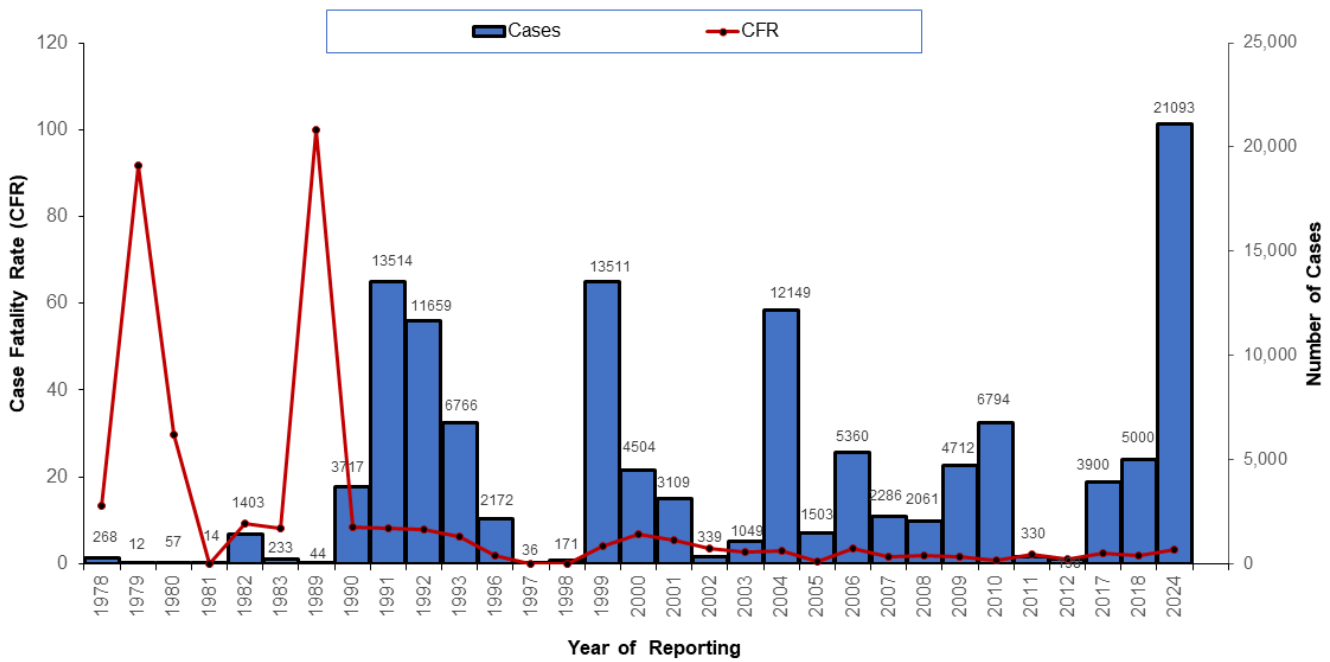


Figure 1: trends in cholera outbreaks - Zambia, 1978 - 2024 (source: WHO: 2023; ZNPHI: 2024)

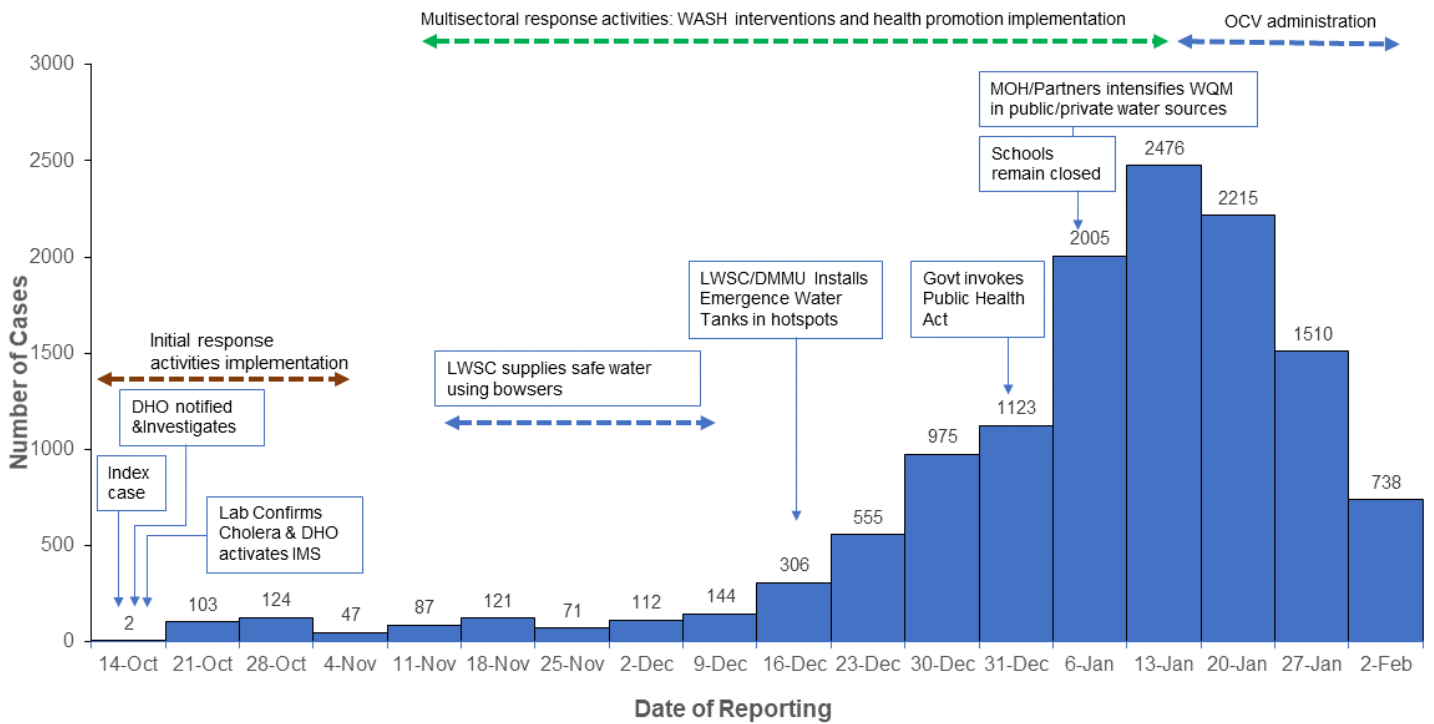


Figure 2: cholera cases by date of reporting and response activities in Lusaka district - October 2023 - January 2024