Policy brief
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Cholera outbreak in Zambia

An institutional perspective

In brief

- Since October 2017, Zambia has been battling a severe cholera epidemic that has resulted in more than 81 deaths nationwide. The government's immediate response was swift, and although the crisis is now seemingly under control, it is currently important that policymakers prioritise water and sanitation provision to prevent future outbreaks.
- In addition to the very high human toll of the outbreak, the impact of cholera can also be measured in direct and indirect economic costs – for example, studies suggest that outbreaks can cost countries up to 2% of GDP.
- This brief looks at the recent history of cholera outbreaks in Zambia and how policymakers can develop policies and attract investment aimed at improving the infrastructure needed to reduce cases of this disease.
- The author suggests that the most recent crisis opens a policy window for making fundamental reforms in the water and sanitation sector to tackle the institutional problems that are the root cause of the persistent cholera outbreaks in Zambia.

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Introduction

Since October last year, Zambia has been battling a severe cholera epidemic that has resulted in more than 81 deaths countrywide. The epidemic has, at times, put parts of the capital city Lusaka on lock down. The military was deployed to enforce measures aimed at curbing cholera transmission which included bans on street vending and public gatherings; closure of marketplaces, schools, universities, and colleges; and enforced curfews in the worst affected parts of the city. These actions put severe restrictions on the economic and social lives of the city's residents, breeding discontent and culminating in riots and clashes between riot police and citizens.

The government's immediate response to the epidemic was swift and effective judging from the reported decline in cholera transmission numbers in the past few weeks. Some of the restrictions have been relaxed. With the crisis seemingly under control, the question that remains is whether this outbreak and the costs of battling the epidemic will prompt policymakers to reconsider and prioritise water and sanitation provision to prevent future outbreaks.

Facts on Cholera

- Cholera is an acute intestinal diarrheal disease that can lead to death if left untreated. Most of those infected will have mild or no symptoms, and can be successfully treated with oral rehydration solution. Severe cases will need rapid treatment with intravenous fluids and antibiotics.
- It has been estimated that each year, there are 1.3-4.0 million cases of cholera, and 21,000-143,000 deaths worldwide due to cholera. Yet, most of these go unreported due to poor monitoring and fear of impact on trade and tourism. The number of cholera cases reported to the World Health Organisation (WHO) during 2016 was 132,121 cases and 2,420 deaths from 38 countries. African countries accounted for 54% of cholera cases reported worldwide in 2016.
- Cholera remains a global threat to public health and an indicator of inequality and lack of social development.
- Cholera is transmitted through the faecal-oral route, usually through consumption of contaminated water or food.
- The disease is closely linked to inadequate access to clean water and sanitation facilities. Risk factors are also considered to be high population density and crowding, all of which are common in urban slum areas.
- Provision of safe water and sanitation is critical to control the transmission of cholera and other waterborne diseases, as well as promotion of good personal hygiene practices. Oral cholera vaccines are also used to control outbreaks.

Source: WHO

High human toll of the cholera outbreak

According to the most recent numbers, 3,916 cholera cases and 81 deaths have been reported countrywide in Zambia since 4 October 2017, when the outbreak was declared. The frequency of transmission peaked from mid-December to early January and has been declining in the last few weeks.

The outbreak has been concentrated in the capital city Lusaka in the high density informal settlements of the city. The epidemic initially started in the Chipata sub-district in the northern part of Lusaka and spread to the Kanyama sub-district in the western part of the city.

Local and central governments have been collaborating with the WHO and other partners to control the outbreak. The authorities have been implementing emergency water, sanitation, and health measures which include:

- Establishing cholera treatment centres
- Closing contaminated water points
- Improving water supplies
- Disinfection
- Increasing collection of garbage and emptying of septic tanks
- A cholera vaccination campaign
- Inspection and testing of food outlets and sanitation standards more generally. Several food outlets and supermarkets that have tested positive have been closed.

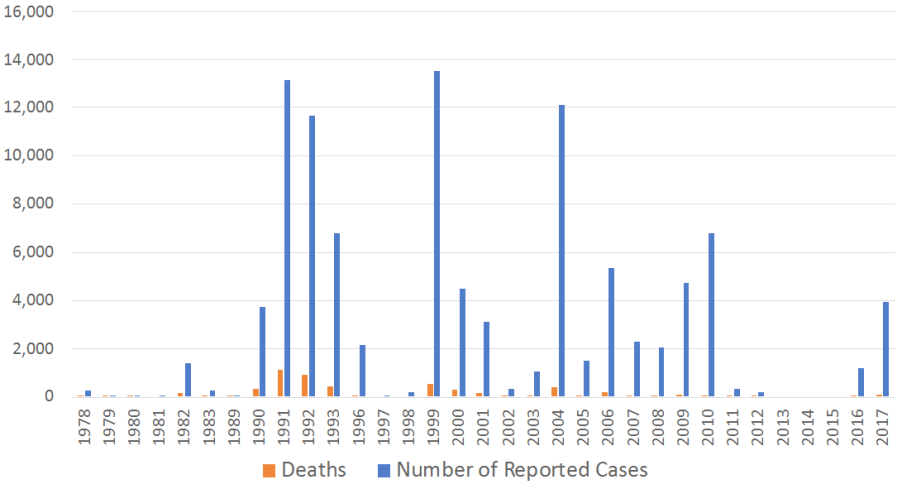
These interventions have been coupled with more drastic measures in the form of bans on street vending and public gatherings, closure of market places, postponement of the new school semester, and a seven-day curfew between 18:00-6:00 in Kanyama. The military was been deployed in parts of the city to enforce these measures.

The heavy-handed approach has bred discontent amongst Lusaka residents who have complained that the restrictions have jeopardised their livelihoods. As a result, several incidents of rioting, looting, and clashes between police and citizens have been reported.

Chronic cholera outbreaks in Zambia

Cholera epidemics are not new to Zambia, outbreaks have been frequent since 1990, with a cumulative number of 4,731 reported deaths. Prior to the current epidemic, major outbreaks occurred in 1991, 1993, 1999, 2004, 2009, 2010, and more recently in 2016.

Figure 1: Reported Cholera Incidence and Death, 1978-2017 (WHO)



Cholera epidemics typically occur during the rainy season in Zambia, starting in October and ending in May/June the following year, with the peak being reached between January and March (WHO 2011).

Most cholera cases are recorded in the peri-urban areas of Lusaka and Copperbelt provinces with poor access to clean water and sanitation and in the fishing camps of the rural areas. Seventy-three percent of cholera cases between 2001 and 2010 were reported in Lusaka with outbreaks mostly appearing in the western suburbs of the city where water, sanitation, and drainage infrastructure are poor (Sasaki et al., 2008).

While the current outbreak is comparable to previous epidemics in terms of incidence and deaths, what sets it apart is the forceful response by government. With such a persistent record of cholera outbreaks, one would expect Zambia to have preventative measures in place that would inhibit the outbreak from developing into a national crisis in the first place. That not being the case indicates there is a more deep-rooted problem than the symptoms would otherwise indicate.

Negative impact on the economy

In addition to the very high human toll of the outbreak, the impact of cholera can also be measured in direct and indirect economic costs and its contribution to the already strained government finances (Moono, 2018). Studies of cholera epidemics in Zambia and elsewhere suggest that such costs can be significant – up to 2% of GDP (Water and Sanitation Programme, 2012).

Looking to the future

However, even without a detailed account of the economics of the outbreak, it is evident that cholera is a serious public health threat in

Zambia causing considerable socioeconomic disruption and loss of life. This is especially agonising since cholera is entirely preventable and treatable – at least to the extent of avoiding an epidemic of the current scale. Beyond the immediate efforts to curb the epidemic crisis, there will be a need post-epidemic for policymakers to evaluate the response to the outbreak and devise appropriate preventative policies for the future.

Cholera incidence linked to poor water and sanitation infrastructure

Cholera epidemics are associated with poor water and sanitation infrastructure that helps spread the bacterium, vibrio cholerae. Previous studies of cholera outbreaks in Zambia have confirmed that incidents of cholera in peri-urban areas of Lusaka are associated with lower coverage of latrines, safe water sources, drainage systems, and a lack of personal hygiene practices (Sasaki et al., 2009). Poor water and sanitation is of course also associated with a variety of other illnesses.

In Lusaka, the provision of water and sanitation has been complicated by the way the city was urbanised in the colonial period, where the African neighbourhoods were constructed without water and sanitation infrastructure. Following independence, there was a major government-led effort to upgrade the housing, water, and sanitation infrastructure in the city. However, as government funding dried up following the economic crisis of the 1970s, so did investment in water and sanitation (Ashraf et al., 2016). Since the 1970s, major water and sanitation interventions have often been led by international partners and focused on rehabilitating the physical infrastructure and accompanying institutional reform.

The current cholera outbreak points to a general failure of city-level water and sanitation provision, particularly in peri-urban areas. According to the 2015 Living Conditions Monitoring Survey, approximately 68% of households in Zambia have access to improved water supply, but only 40% have access to improved sanitation. Access in urban areas across the country is generally better, with 89% (96% in Lusaka) of households accessing improved water supply and 73% accessing improved sanitation (78% in Lusaka).

Although Lusaka performs relatively well compared to other African cities in terms of both access and reliability of safe water provision, the numbers also indicate that progress on provision of improved sanitation has been limited as compared to provision of water. This is partly because improved sanitation infrastructure, especially centralised systems, is generally more expensive to construct and operate.

Today, a 500km central sewer network covers 30% of the Lusaka city area but only 17% of the population is connected through approximately 32,000 connections. The remainder of Lusaka's residents rely on various types of on-site systems which are not effectively regulated. This creates a serious risk of contamination of groundwater which provides a large share of the municipal and non-municipal water supply in Lusaka.

Moreover, improved water and sanitation as defined in the official statistics may not suffice to stop the spread of disease. The reasons for this are four-fold:

1. First, improved water does not necessarily mean safe water. For instance, water from boreholes typically considered safe has tested positive for cholera during the current outbreak in Lusaka.
2. Second, the definition does not consider adequacy, convenience, or affordability. In particular, many households are dependent on unreliable municipal water supply or public taps and may at times rely on less safe alternatives (Riley et al., 2016).
3. Third, the definition of improved sanitation includes several categories of latrines which may not be as effective as a central sewerage system in separating excreta from human contact. Indeed, in Lusaka, on-site sanitation systems are compromised by the lack of drainage networks leading to flooding and an ineffective faecal sludge management system.
4. Finally, the average numbers mask the fact that access is generally worse in the peri-urban areas where water-spread disease outbreaks tend to be most prevalent.

A lack of investment in water and sanitation

While government spending on water and sanitation has declined in recent years, from $147 million in 2013 to just $27 million in 2016 (NWASCO, 2016), the sector has become a priority for international partners. Since 2013, Zambia has received $80-85 million annually in official development assistance towards the sector.

"A World Bank analysis from 2016 estimates that Zambia would need to invest $385 million per year in order to meet the 2030 sustainable development goals in terms of universal access to water, sanitation, and hygiene"

However, there is still a significant funding gap. A World Bank analysis from 2016 estimates that Zambia would need to invest $385 million per year in order to meet the 2030 sustainable development goals in terms of universal access to water, sanitation, and hygiene.

Weak policy and legal framework for provision of sanitation services

While the lack of investment is an important factor in the persistent cholera outbreaks in Zambia, closing the funding gap alone will not address the problem fully. The persistence of cholera epidemics, lack of preventative measures, and failure to tackle the investment deficits points to multiple dimensions of ineffective government policies and suggests that there are deeper underlying problems. While these issues can be traced to a variety of interconnected factors as discussed above, a common thread seems to be the problem of weak institutions.

Indeed, an analysis of the Lusaka sanitation sector by Kennedy-Walker et al. (2015) suggests that the current state of the water and sanitation sector in Lusaka is also due to deep-rooted institutional problems. These include:

- Weak policy documents (National Urban Water Supply and Sanitation Programme 2011-2030 and Sanitation Master Plan for Lusaka) with little

focus on peri-urban areas where water and sanitation provision poses the greatest challenge.

- Investment and interventions in water and sanitation driven by political pressure. This is especially the case in peri-urban areas where community-level politicians make decisions regarding land-allocation and encroachment.
- Lack of adequate service provision guidelines for peri-urban areas in the legal and regulatory framework for public health and sanitation interventions.
- Unclear responsibilities and lack of capacity among existing institutions that are unable to create regulations where they are needed or to enforce existing regulations. This includes an unclear relationship between community-based organisations charged with water provision in certain peri-urban areas and the utility provider.
- The commercial nature of the utility provider tends to reduce willingness to invest in peri-urban areas due to a low perceived return on investment.
- Perceptions of low capacity in some local government institutions seems to affect the degree of collaboration with central government.

Engineering without incentives and weak institutions

A complementary analysis by Ashraf et al. (2016) focuses on consumers' willingness to pay for water and sanitation infrastructure, and their connection. The paper suggests that even when large-scale infrastructure projects are completed in Lusaka, they have little effect on sanitary conditions partly because poorer Zambians are not willing to pay for a connection to the water and sewerage system. Standard economic reasoning suggests that either regulation or subsidies can induce people to pay for a connection. However, the ability to impose regulations or effectively manage subsidies without massive waste depends crucially on the capability of relevant institutions.

Another aspect of the problem is the lack of formal property rights. Property rights are important not just for empowering owners but also for imposing social obligations, such as sewers, on the land. The willingness to invest in water and sewer connections falls when residents do not actually own the property and will not reap the long-run returns from any investment. The lack of clear property rights is especially prevalent in peri-urban areas where access to water and sanitation is particularly problematic.

Suggested policy direction: Upgrading institutions

Case studies of successful reforms in the water sanitation sector in African countries show that meaningful change was only achieved following catalytic events that shook the political economy and created space for reform (Heymans et al., 2016). The current cholera outbreak in Lusaka potentially constitutes such a policy window. There is now an opportunity

to pursue fundamental reforms in the water and sanitation sector to improve overall access and prevent future disease outbreaks.

This analysis suggests that a revision of the existing policy and legal framework and more general attention to the capability of institutions in conjunction with more investment in infrastructure is required. Specific reform initiatives could include:

- A revision of the legal and regulatory framework of governing planning, service delivery, and public health to address the specific challenges in the peri-urban areas and create well-defined institutional roles and responsibilities (Kennedy-Walker et al., 2015).
- Encouraging politically-driven stakeholders to engage fully in all planning and implementation processes conducted so that they can be convinced of their benefits (Kennedy-Walker et al., 2015).
- Strengthening the institutional capacity of the utility provider by implementing improved management practices (Heymans et al., 2016).
- Strengthening the institutional capacity of the utility provider by ensuring water tariffs become cost-reflective and revenue collection meets the operational costs of the utility, which may make the utility provider more capable of expanding infrastructure to underserviced areas.
- Strengthening the mandate and capacity of the regulatory body, the National Water Supply and Sanitation Council (NWASCO) through a revised mandate focused more on health regulation. The authority could also include more health professionals in its management structure to provide increased focus on improving health in urban areas (Ashraf et al., 2016).
- The regulator could play a larger role in improving health outcomes on a community-level by professionalising the health inspectors and orienting them more towards enforcing health standards in communities as opposed to overseeing the service providers.[18]
- Strengthening regulations regarding sanitation and continuing efforts to issue property titles, which are important for enforcing social obligations related to water and sanitation.[18]

The importance of strong institutions related to the provision of water and sanitation has already been recognised by those working in the sector. Hence, the conclusions in this analysis support the existing policy direction, but also underscore that there needs to be more emphasis on institutional development in conjunction with continued infrastructure investment to improve access to water and sanitation and prevent future disease outbreaks.

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