CHOLERA FACTSHEET **ZAMBIA**

CHOLERA OVERVIEW

Seventh pandemic cholera was first reported in Zambia in 1977. Since 1990, large-scale outbreaks have occurred in 1990-93, 1999-2001, 2004, 2006, 2009, 2010 and 2018. The overall yearly trend shows a decrease in case numbers over time *(Fig. 1)*.

Between 1999 and 2017, epidemiological surveillance reported 61,157 cases with 1,832 fatalities (case fatality rate (CFR) ≈ 3%)[1]. The majority of outbreaks were reported in the provinces of **Lusaka**, **Luapula**, **Copperbelt, Northern, Central** and **Southern**[2].

The country has been affected by cross-border outbreaks primarily along the borders with the Democratic Republic of the Congo (DRC), the United Republic of Tanzania and Zimbabwe *(Fig. 2)*.

CHOLERA DISTRIBUTION

From 1999 to 2018 (up to week 22 of 2018), most cholera cases (74%) were reported by **Lusaka** Province, which includes the capital Lusaka. On average, outbreaks lasted for four months.[2]

Luapula, **Copperbelt** and **Northern** Provinces, located at the border with DRC and around Lakes Mweru and Tanganyika, reported 18% of all cholera cases. On average, outbreaks lasted approximately two months in **Copperbelt** Province and up to four months in **Luapula** Province. Additionally, **Northern** Province was the most regularly affected, with ten outbreaks over the near 20-year period *(Fig. 2 and Table I)*[2].

In the middle part of the country, Central Province accounted for 3% of the total cases and was affected seven times, mainly in the Lukanga swamp (*Kapiri Moshi*) and the neighboring city of Kabwe *(Fig. 3 and Table I)*[2].

In the southern part of the country, Southern Province notified 2.5% of all cases and was affected five times. Heavily affected areas were located at the border with Zimbabwe and around the Kafue Flat swamp and Kariba Lake *(Fig. 3 and Table I)*[2].

A marked seasonality was observed with outbreak onset at the end of the dry season (from September to October) and outbreak termination at the end of the rainy season (May). A greater number of cases was reported during the rainy season, especially in Lusaka[2,4,5] *(Fig. 3 and Table I)*.

Table I. Epidemiological parameters of cholera outbreaks in primarily affected provinces in Zambia, 1999-2018[2]

PROVINCE	Cases[1], [2]	% of total cases	Recurrence (No. of outbreaks)	Outbreak duration (average in weeks)[4]
Lusaka	35,851	74.2	7	19.29
Luapula	3,286	6,8	4	17.5
Copperbelt	2,958	6.1	5	8.8
Northern	2,515	5.2	10	10.9
Central	1,490	3.1	7	11.71
Southern	1,259	2.6	5	8.6
Eastern	482	1	3	4.33
Muchinga	403	0.8	1	-

Note: [1] Total cases = 48,302 between 1999-2018 (week 22); [2] Number of cholera cases not available for years 2000, 2001 and 2004; [3] Cholera deaths not available; [4] Average in weeks between 2008 and 2018 (week 22).

Figure 1. Annual number of cases and case fatality rate in Zambia, 1990 – 2017[1]

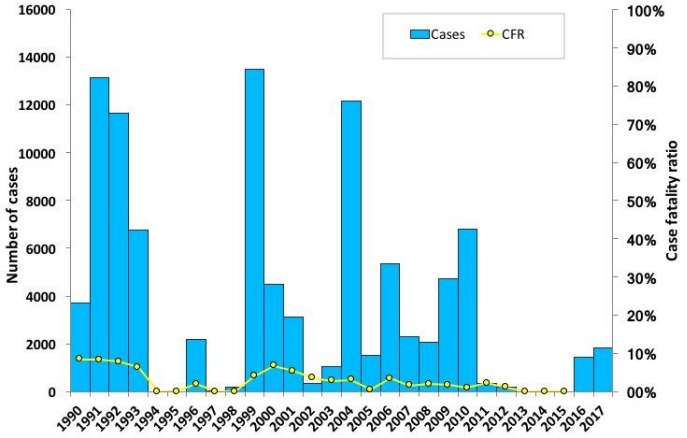


Figure 2. Cumulative cholera incidence by district in Zambia, 1999-2018[2]

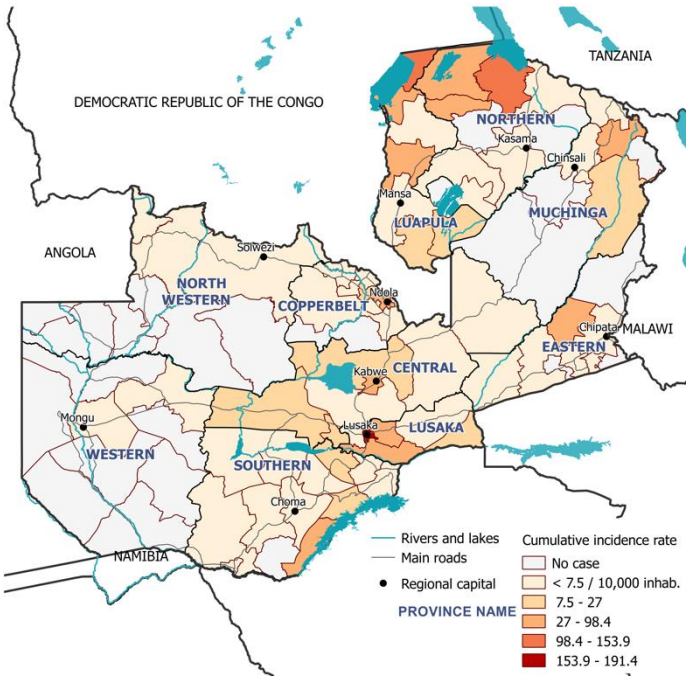
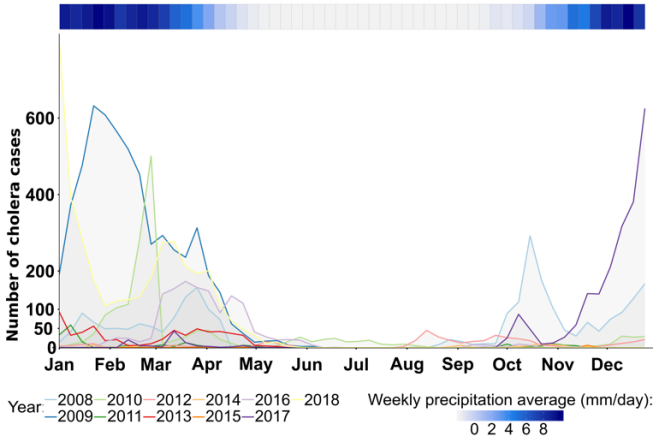


Figure 3. Weekly number of cholera cases and median precipitation in Zambia, 2008 – 2018[2,3]



CHOLERA HOTSPOTS

Location of cholera foci *(Fig. 4 and Table II)*:

- At the periphery of urban areas – *Lusaka, Ndola* and *Kitwe*
- Along the border with the DRC and Tanzania around Mweru and Tanganyika Lakes – *Mpulungu, Chienge, Nchelenge, Mwense, Kaputa* and *Nsama*
- Around the Lukanga swamp area – *Kapiri Moshi*, *Kabwe* and *Chibombo*
- Along the border with Zimbabwe, around the Kafue Flat swamp area and Lake Kariba – *Kafue, Sinazongwe, Mazabuka* and *Luangwa*

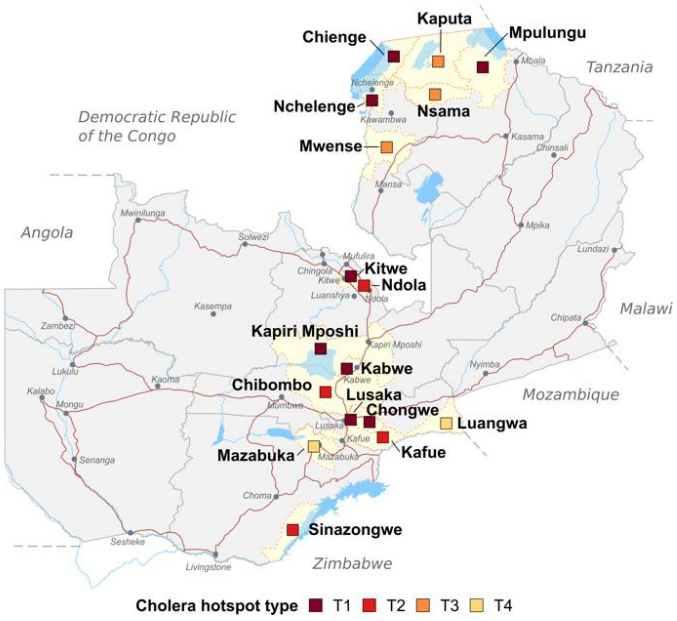
STRATEGIC RECOMMENDATIONS

High-risk areas along the borders were located in zones where cholera outbreaks spread between neighboring countries such as DRC, Tanzania and Zimbabwe *(Table II)*. This highlights the role of the Zambian National Public Health Institute in implementing cross-border surveillance and coordinated response between countries in the sub-region.

In cholera hotspots, preparedness and response plans should be developed and implemented including: (1) strengthening early detection and rapid response including community-based surveillance and cross-border alerts; (2) establishing multisectoral and cross border coordination mechanisms; (3) building outbreak management capacity; (4) developing risk communication, social mobilization and community engagements plans with harmonized approaches and messaging *(Table II – Type 1 to Type 4)*.

Sustainable water, sanitation, hygiene and social mobilization activities should be implemented in the 12 priority districts regularly affected by outbreaks of extended duration *(Table II – Types 1 and 2)*. While preventive measures are implemented, oral cholera vaccine campaigns conducted in border hotspots may reduce the likelihood of large-scale cholera epidemics in Lusaka. The Type 1 and Type 2 hotspots accounted for 91% of the disease burden[3]. Identification of transmission foci at a finer geographical scale (ward, village) is necessary to best target at-risk populations.

Figure 4. Cholera hotspots by district in Zambia, 1999-2018[2]



Risk factors[5, 6]

- Migration of fishermen and fish traders within fishing camps and across borders mostly with DRC and Zimbabwe
- Use of surface water for drinking and sanitation purposes in fishing camps
- In Lusaka, large-scale contamination of water points in karstic terrain and a shallow water table environment, combined with pit latrines and poor storm water drainage
- Contact with a cholera patient, low cholera immunity and weakened immune system due to HIV and AIDS

Table II. Summary of cholera hotspot classification in Zambia, 1999-2018[2]

HOTSPOT TYPE	PROVINCE	DISTRICT	% of total cases	Recurrence (No. of outbreaks)	Outbreak duration (median, in weeks)	Attack rate (median per 10,000 inhab.)	Cross-border area
TYPE 1	CENTRAL	KABWE	1.2	5	7	1.08	No
		KAPIRI MPOSHI	0.9	6	13	1.54	No
	COPPERBELT	NDOLA	4.7	6	11	1.23	Yes
	LUAPULA	CHIENGE	3.8	8	11	16.44	Yes
		NCHELENGE	1.5	5	10.5	11.53	Yes
	LUSAKA	CHONGWE	0.8	7	15	3.43	No
		LUSAKA	72.3	10	19	13.31	No
	NOTHERN	MPULUNGU	3.1	9	12	16.98	Yes
TYPE 2	CENTRAL	CHIBOMBO	0.3	3	10.5	0.72	No
	COPPERBELT	KITWE	1	4	8	1.87	No
	LUSAKA	KAFUE	0.9	4	14	7.41	Yes
	SOUTHERN	SINAZONGWE	0.8	3	7.5	13.8	Yes
TYPE 3	LUAPULA	MWENSE	0.9	6	6.5	4.38	Yes
	NORTHERN	KAPUTA	1.3	5	5.5	7.31	Yes
		NSAMA	0.5	5	4.5	6.5	No
TYPE 4	LUSAKA	LUANGWA	0.1	3	4	6.56	Yes
	SOUTHERN	MAZABUKA	0.9	4	6	5.8	No

Note: Type 1: Highest-priority area with outbreaks of high frequency (>5 outbreaks) and extended duration (≥7 weeks); Type 2: High-priority area with outbreaks of moderate frequency (3-4 outbreaks) and extended duration; Type 3: Medium-priority area with outbreaks of high frequency and short duration (<7 weeks); Type 4: Low-priority area with outbreaks of moderate frequency and short duration.

References

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4. Luque Fernández, et al. (2009) 'Influence of temperature and rainfall on the evolution of cholera epidemics in Lusaka, Zambia, 2003–2006: analysis of a time series'. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 103(2), pp. 137–143.
5. Sasaki, et al. (2009) 'Impact of drainage networks on cholera outbreaks in Lusaka, Zambia'. *American Journal of Public Health*, 99(11), pp. 1982–1987.
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Authors

Kapina M. MD, Dunoyer J. MSc, Khambira M. MSc., Moore S. PhD, Valingot C. MSc., Piarroux M. MD PhD, Piarroux R. MD PhD, Kapata N. MD, Sudre B. MD PhD, Mukonka V. MD PhD.

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