

Cholera in Yemen – How did the humanitarian sector tackle this ‘preventable’ disease during the conflict?ⁱ

Cholera is a preventable diarrheal infection of the intestine. The disease occurs twelve hours to five days after the intake of contaminated food or water and is characterized by a profuse watery diarrhea followed by severe dehydration. Ultimately, the disease can lead to death in 50% of the cases if not treated. If the patient is treated, through oral rehydration and intravenous fluid, the death rate quickly falls to less than 1%.¹ Countries with proper healthcare and sanitation systems have already eradicated this disease. However, cholera remains a daily reality in many low-income countries coping with complex crisis situations, where a multitude of issues weaken the local infrastructure. Yemen, for example, has suffered from an unprecedented cholera outbreak since 2016, the worst ever recorded in history.² This outbreak has proven to be a major challenge for humanitarian organizations.

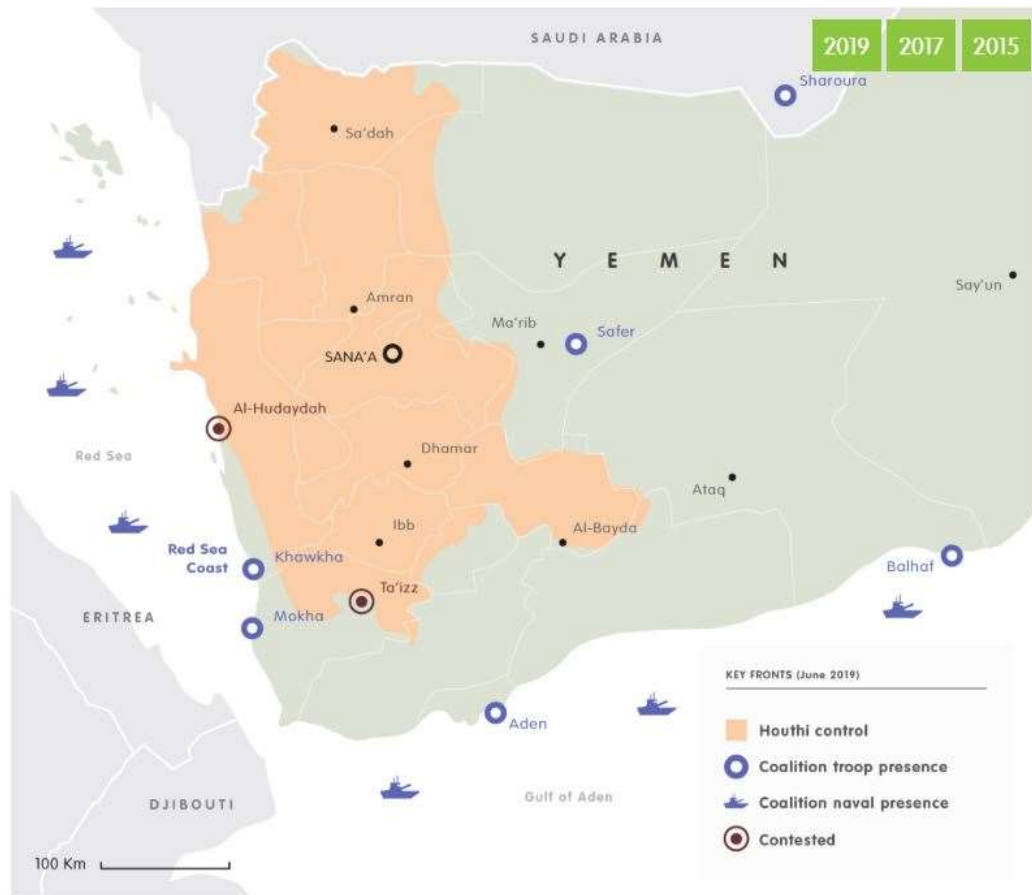


FIGURE 1. AREAS OF CONTROL IN YEMEN, JUNE 2019.³

ⁱ This case is part of a series of humanitarian operations vignettes by the INSEAD Humanitarian Research Group called *Behind the Scenes of Humanitarian Operations*. It was written in December 2019 by Thomas Breugem, Thomas De Munck and Sushil Reddy and Luk Van Wassenhove. For more information go to <https://www.insead.edu/centres/humanitarian-research-group>.



The roots of the conflict in Yemen

In 2011, following the Arab Spring's movement, various groups began to protest against President Ali Abdullah Saleh. The quick escalation of the clashes provoked his resignation. Former vice president, Abdrabbuh Mansour Hadi, took power in February 2012 and opened negotiations with various groups including Houthis, an armed movement representing the interests of the Shia (45% of the population). After unfruitful discussions, Houthis took over the capital, Sana'a in September 2014. To date, they still hold a significant share of the territory (see Figure 1) presumably with the support of Iran. As a response, a coalition led by Hadi and Saudi Arabia undertook systematic bombing and naval and air blockade from February 2015 onwards. In addition, other groups like Al-Qaeda contributed to deteriorate an already chaotic situation. By June 2019, this conflict had caused more than 90,000 fatalities.⁴ Yet the most pressing issue is not the war itself but its repercussions, one of them being the cholera outbreak.

Magnitude of the cholera outbreak and its primary reasons

Since 2016, cholera has struck Yemen, mainly in areas under Houthi control. The first wave hit the country from September 2016 to April 2017. At that time, almost 26 thousand cases and 129 associated deaths had been reported (0.4% death rate).⁵ The situation was already described as critical. However, the outbreak bounced back to a higher level in May 2017. This second wave resulted in 1,391,329 additional cases and 2,741 deaths within one year (0.2% death rate).⁶

Various factors made Yemen a fertile ground for cholera. Prior to the war, 50% of Yemenis had no access to sanitation and healthcare systems and malnutrition was already prevalent.⁷ The conflict exacerbated these deep-rooted problems. Fights led 3 million Yemenis to flee, mainly inside the country.⁸ Most of those internally displaced people live in precarious conditions with no access to sanitation or healthcare. Furthermore, airstrikes led by the Saudi coalition damaged the medical facilities and water infrastructures. Less than 50% of the hospitals were still in operation by September 2016.⁹ The naval blockade also threatened to trigger a generalized famine for 14 million Yemenis. In this context of food shortage, Yemenis had a weaker immune system and were more likely to suffer from diseases. While the urgency was increasing, both Hadi's and Houthi's governments cut most of the public expenses to fund the war, resulting in the collapse of the waste collection system. The accumulation of garbage contaminated the water system. Moreover, after heavy rainfalls, many Yemenis started using contaminated surface water instead of water drawn from wells, which triggered the disease outbreak.

The challenging response to the cholera outbreak

Humanitarian organizations were aware of the risk of cholera outbreak in Yemen. However, they could hardly undertake any action due to their limited resources and other priorities. Humanitarian organizations had no plan and almost no materials to prevent and cure

cholera. Under these conditions, the UN health cluster (HC) and WASH (water, sanitation and hygiene) cluster (WC) respectively led by the WHO and UNICEF improvised a response plan about one week after the onset of the outbreak.

Due to lack of preparedness, priority was given to the procurement of treatment rather than prevention materials. Unfortunately, the naval and air blockade hampered access of supplies to Yemen. The HC had to go through a time-consuming verification process of the aid shipments to reach Yemen. Once inside the country, the situation was even worse. The number of cases overwhelmed the weak surveillance system, what led to poor tracking and detection of the cases. Consequently, humanitarian organizations had little idea about where to allocate the treatments due to the lack of data. In addition, the HC had to distribute the treatments through diarrhea centers, since hospitals were overcrowded. Access to remote areas, especially ruled by Houthis, remained limited due to security concerns and bombing by the coalition.¹⁰ Houthi authorities were often suspicious to accept humanitarian aid, mainly financed by Saudi Arabia. Humanitarian organizations had to negotiate long hours with the Houthis and other local powers (tribes, militia, etc.) if they wanted to access remote areas, which further delayed the stumbling response.

When the second wave erupted, it became clear that the response would need to be agile. Major donors, like the World Bank,¹¹ largely contributed to fund the response. After a long elaboration, the revised response plan was successfully launched in July 2017, amidst the second wave. The WC managed to reduce the number of new cases (see Figure 2) and the HC demonstrated that the cases were correctly treated since the death rate halved between the two waves.

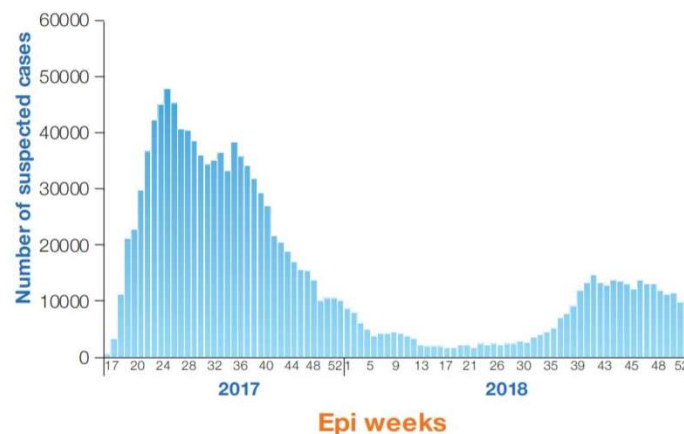


FIGURE 2. YEMEN'S EPIDEMIC CURVE OF CHOLERA CASES DURING THE SECOND WAVE.¹²

The development of an effective surveillance system with reliable geographical data was a major component of the second wave response. After having trained people and obtained additional medicines, the HC and WC finally knew where to allocate them. The HC opened additional treatment centers and rehydration corners to reach remote rural areas. The WC started playing a more strategic role by adopting cholera-specific and community-based



response. They applied water chlorination and promoted vast hygiene awareness campaigns within the communities. By the end of 2018, the response has been leaning towards even more prevention to mitigate relapses, such as the launch of cholera vaccine campaigns. The WC strengthened the surveillance system through the design of a rapid diagnostic test to allow faster intervention in the field.¹³

And now, what's next?

The Yemen cholera outbreak has underlined how data is crucial to tackle a disease. When proper surveillance and tracking systems are implemented, humanitarian organizations can significantly better prevent, prepare and respond to an outbreak. Even if the cholera outbreak has been contained, Yemen keeps facing a significant number of cases.¹⁴ Recently, the bombing of oil production facilities in Saudi Arabia has affected world oil prices. How such events will impact the epidemic situation in Yemen remains an open debate: Are we heading towards a conflict escalation further limiting the access to the country? Or, conversely, will it bring more attention and help from international actors? How will it impact the humanitarian organizations' operations knowing they already struggle to reach remote areas and collect data on the disease?

¹ *Cholera epidemic in Yemen, 2016-2018: an analysis of surveillance data*. Camacho, Anton et al. Lancet Global Health. June 2018.

² *Yemen's cholera outbreak now the worst in history as millionth case looms*. The Guardian. 12 October 2017.

³ *Mapping the Yemen conflict*. European Council on Foreign Relations. July 2019.

⁴ *Yemen snapshots: 2015-2019*. The Armed Conflict Location & Event Data Project (ACLED). 2019.

⁵ *Outbreak update – Cholera in Yemen, February 2019*. WHO Regional Office of the Eastern Mediterranean. February 2019.

http://www.emro.who.int/images/stories/csr/documents/Cholera_situation_update_Yemen_February_2019.pdf?ua=1.

⁶ *Outbreak Update - Cholera in Yemen, 20 December 2018*. WHO Regional Office of the Eastern Mediterranean. 20 December 2018.

⁷ *The Cholera outbreak in Yemen: lessons learned and way forward*. Federspiel, F. and Ali, M. BMC Public Health. 4 December 2018.

⁸ *UNHCR Operational Update – Yemen*. UNHCR. 18 October 2019.

⁹ *Cholera in Yemen: A Case Study of Epidemic Preparedness and Response*. John Hopkins Center for Humanitarian Health. December 2018.

¹⁰ *The Humanitarian Crisis in Yemen: Beyond the Man-Made Disaster*. Giulio Coppi. International Peace Institute. January 2018.

¹¹ *World Bank Mobilizes US\$200 Million to Combat Cholera in Yemen*. The World Bank. 25 August 2017.

¹² *Outbreak update – Cholera in Yemen, February 2019*. WHO Regional Office of the Eastern Mediterranean. February 2019.

http://www.emro.who.int/images/stories/csr/documents/Cholera_situation_update_Yemen_February_2019.pdf?ua=1.

¹³ *Responding to epidemics in large-scale humanitarian crises: a case study of the cholera response in Yemen, 2016–2018*. Spiegel P, Ratnayake R, Hellman N, et al. BMJ Global Health. 15 July 2019.

¹⁴ *Outbreak update – Cholera in Yemen, 10 November 2019*. WHO Regional Office of the Eastern Mediterranean. 10 November 2019.