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Cholera: Uganda

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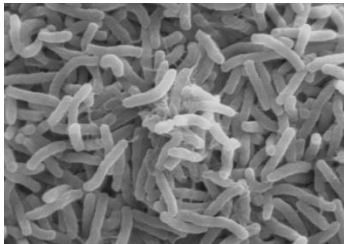
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Cholera

Emilie Verran, Public Health Brief, PUBH-100

Cholera Introduction

Cholera is a communicable diarrheal disease caused by an infection in the intestines by ingestion of the bacterium *Vibrio cholerae* through contaminated water and food. In areas with poor sanitation and sewage treatments, water supplies are often contaminated with fecal material of an infected person, causing an outbreak (CDC, 2016).



Microscopic view (10000 X) of *Vibrio cholerae*
Image: Kirn, Lafferty, Sandoe, & Taylor, 2000

Cholera remains a large health issue in places including sub-Saharan Africa, Southeast Asia, and Haiti because of poor water sanitation and high population densities (CDC, 2016). No evidence can be found to suggest that cholera affects those of certain races/ethnicities more than others, but people who are more likely to have a poor outcome from the illness include those with achlorhydria (without hydrochloric acid in the stomach), blood type O, chronic medical illness, and without access to rehydration therapy (CDC, 2016).

Epidemiology

Most people infected with the *V. cholerae* bacterium do not become ill or show any symptoms; only about 1 out of 10 people who are infected end up developing serious symptoms (Mayo Clinic, 2017). If a person does become ill from cholera, however, the symptoms include diarrhea, nausea, vomiting, and dehydration (Mayo Clinic, 2017). Dehydration due to a cholera infection can

cause irritability, lethargy, thirst, dry and shriveled skin, low blood pressure, and an irregular heartbeat, and it can also lead to an electrolyte imbalance that can cause muscle cramps and shock (Mayo Clinic, 2017). The signs and symptoms are the same for children with an increased risk of low blood sugar, which can cause an altered state of consciousness, seizures, and coma (Mayo Clinic, 2017). The only way to confirm a cholera diagnosis is through analysis of a stool sample (Mayo Clinic, 2017).

During recent years, there have been cholera outbreaks in many fishing communities of the Great Lakes Region of Africa, particularly in Uganda. An analysis of cholera data from 2011-2016 in Uganda showed a mean incidence rate of 28.44 per 100,000 people in the districts of Uganda analyzed (Bwire, Ali et al., 2017). The cholera 'hotspots' identified from this analysis shows incidence rates of 120-998 cases per 100,000 people in the Ugandan districts that contain fishing villages (Bwire, Ali et al., 2017). An older analysis of these districts using data from 2011-2015 show a Case-Fatality Ratio (CFR; deaths per cases reported in percentage) of 2.4 %, with an outbreak from the Kasese District having a CFR as high as 5.8 %, and on average the male population had a higher CFR than the female population (Bwire, Munier et al., 2017). These fishing villages are predisposed to these cholera outbreaks because of the usage of contaminated lake water and poor sanitation and hygiene. Ignorance, illiteracy, and poverty also play a part in the spread of the illness in these districts, as many of these working families do not partake in education and do live in poverty, preventing them from learning safe sanitation and hygiene measures (Bwire, Munier et al., 2017). The most influential social determinants of health that impact cholera in Uganda include food (and water), because often the water

they fish from and use to clean the food is contaminated. This also includes education because many members of the community are not educated on basic sanitation to help stop the contamination; place is also important because the location of these fishing villages places the populations near contaminated water supplies.

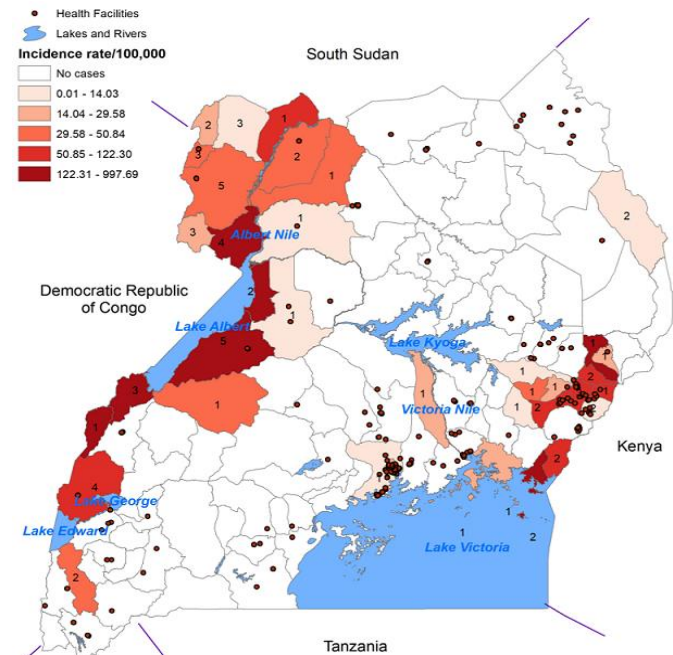
Interventions

Interventions including vaccination, improvements on sewage treatments and drinking water sanitation, and education are used worldwide for the prevention and eradication of cholera (WHO, 2018). In the Kasese District of Uganda, interventions involving rigorous disposal of feces, chlorination of pipe water, and treatment of drinking water were recommended for the cholera outbreak that spanned three months in 2015. After these ideas were implemented into the district, the outbreak stopped in six weeks (Kwesiga et al., 2018). These proved to be effective interventions, as long as they are continued. Vaccination might also be beneficial to prevent future outbreaks. Because most cholera outbreaks occur due to poor water conditions, a novel intervention to help provide clean drinking water would be to fund the mass production and distribution of water bottles with nanotech membranes. These membranes remove odors, metals, and bacteria from water (Peters, 2015). This would prevent people from ingesting the *V. cholerae* bacteria while drinking contaminated water.

References

Bwire, G., Ali, M., Sack, D. A., Debes, A. K., Ngwa, M. C., Brooks, W. A., . . . Garimoi Orach, C. (2017). Identifying cholera "hotspots" in Uganda: An analysis of cholera surveillance data from 2011 to 2016. *PLoS Neglected Tropical Diseases*, 11(12), 1-17.

Bwire, G., Munier, A., Ouedraogo, I., Heyerdahl, L., Komakech, H., Kagirita, A., . . . Mengel, M. A. (2017). Epidemiology of cholera outbreaks and socio-economic characteristics of the communities in the



Incidence rates of cholera in districts of Uganda /100,000 people

Image: Bwire et al, Ali., 2017

fishing villages of Uganda: 2011-2015. *PLoS Neglected Tropical Diseases*, 11(3), 1-19.

Centers for Disease Control and Prevention [CDC]. (2016). Cholera - *Vibrio cholerae* infection. Retrieved from

<https://www.cdc.gov/cholera/general/index.html>

Kwesiga, B., Pande, G., Ario, A. R., Tumwesigye, N. M., Matovu, J. K. B., Bao-Ping Zhu, & Zhu, B. (2017). A prolonged, community-wide cholera outbreak associated with drinking water contaminated by sewage in Kasese district, Western Uganda. *BMC Public Health*, 17, 1-8.

Mayo Clinic. (2017). Cholera. Retrieved from <https://www.mayoclinic.org/diseases-conditions/cholera/diagnosis-treatment/drc-20355293>

Peters, A. (2015, March). This nanotech bottle instantly purifies dirty water. *Fast Company*. Retrieved from

<https://www.fastcompany.com/3043640/this-nanotech-bottle-instantly-purifies-dirty-water>

World Health Organization [WHO]. (2018). Cholera. Retrieved from <http://www.who.int/news-room/factsheets/detail/cholera>