This month, we will be talking about Cholera, which is a virus that causes severe dehydration and diarrhea. While not currently a threat in the United States, Cholera continues to be a problem in low-income countries without clean drinking water.

***What is it?***

Cholera is a virus caused by the bacterium *Vibrio cholerae*. This bacterium is typically found in water and can spread through drinking water or eating food contaminated with the bacteria, such as undercooked shellfish. Once ingested, the bacteria spreads to the small intestines and causes mild symptoms including diarrhea, severe fatigue, and dehydration – which can lead to the trademark blue, sallow skin associated with Cholera. However, left untreated, Cholera can produce more severe symptoms including kidney failure, low blood pressure, and rapid heart rate which can lead to shock that will cause death within a few hours. According to the CDC, about 1 in 10 people can develop life-threating symptoms.

***History***

It is believed that the Cholera bacteria was first identified in 5th Century India and 1st Century Greece, respectfully. However, the first “pandemic” level Cholera outbreak occurred in 1543 in the Ganges Delta in India and Bangladesh. At the time, most people died within 8 hours of symptom onset and the communities struggled to bury their dead. Cholera outbreaks continued across this region throughout the next few centuries.

However, the first recorded pandemic outbreak occurred in 1817, also in India, from contaminated rice, infecting the majority of India and modern-day Sri Lanka through travel routes and trade. A few years later, it spread to other parts of Asia and Europe, including Britain, Russia, and Turkey. The pandemic continued for 6 years, and ultimately “ended” after a long winter, which killed most of the bacteria, in 1824. From there, Cholera continued to spread, and by 1829, it continued, moving even further into Europe, and landing in North America by 1832. After this pandemic, the world continued to see Cholera outbreaks, continuing to get smaller, and by the 1990s, most of the Cholera outbreaks were contained to the African continent.

 ***Containment and Vaccine Development***

Because of the rapid spread of the virus, scientists began studying the epidemiology of the bacteria, and determined that many outbreaks occurred because of contaminated water and food. In 1854, British physician Dr. John Snow determined that the current outbreak of Cholera was caused by a contaminated water pump. Because of this discovery, Dr. John Snow is considered the father of modern epidemiology.

By 1883, German microbiologist Robert Koch determined that Cholera was caused by a specific bacterium and isolated it for the first time. However, many credit Italian microbiologist Filippo Pacini with the original discovery. A few years later, Spanish physician Jaime Ferran isolated the virus even further, creating a vaccine and beginning mass-vaccination clinics. Ferran is also credited for creating a vaccine for plaque, tetanus, typus, and TB.

***Cholera Today***

In 2022, the active Cholera vaccine, Vaxchora, is much more effective than the vaccine created in 1885 and only requires one vaccine about 10 days before exposure – and remains 90% effective at preventing the disease. In the United States, a Cholera vaccine is recommended for travel.

However, despite this vaccine being widely available, outbreaks of Cholera do still occur in small pockets, including in areas with high water contamination including poorer countries in Africa, Asia, and South America. Thankfully, the individuals in these outbreaks have little to mild symptoms and usually recover. But around 21,000 to 143,000 deaths have occurred because of these outbreaks. In 2017, the World Health Organization (WHO) developed a global strategy to reduce Cholera deaths by 90% by 2030 which includes vaccination and reduction strategies such as clean drinking water.

***Impact of Cholera on Society and Culture***

Because of the work of Dr. John Snow and his identification of Cholera in England, modern epidemiology was able to thrive and grow, leading to significant successes in modern public health, including clean drinking water – which all but eliminated diseases like Cholera from wealthier countries. However, Cholera had an impact outside of public health and within popular culture as well. While not as “romanticized” as TB, Cholera has been mentioned in various books including *Death in Venice* by Thomas Mann (later developed into an opera), and *Love in the Time of Cholera* by Gabriel Garcia Marquez of *One Hundred Years of Solitude* fame.