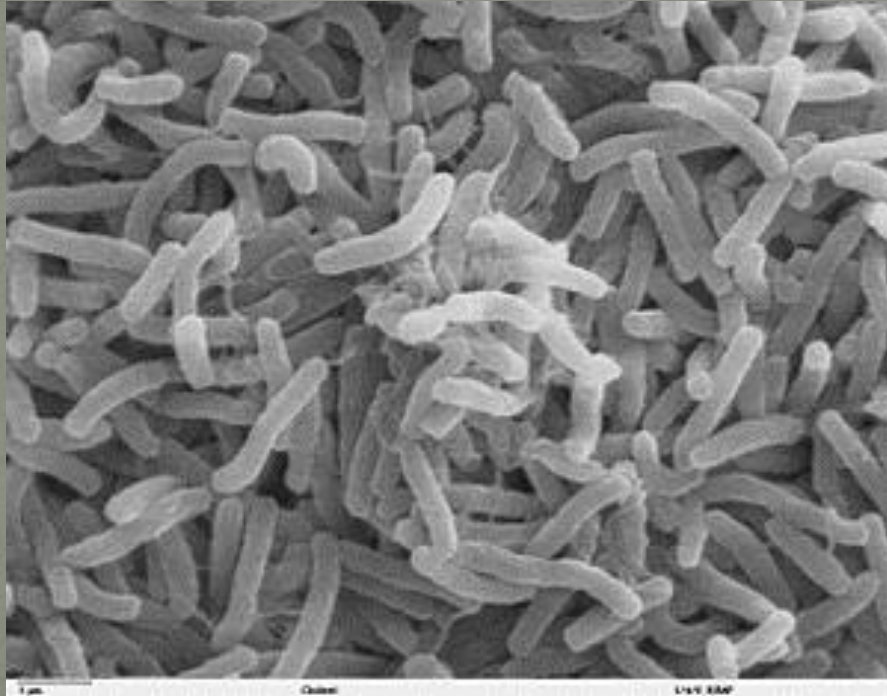


The Endless War Between Human and Cholera

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What is cholera? (1)



- *Vibrio cholerae*

What is cholera? (2)

- It will cause severe dehydration and electrolyte loss.
- When someone is sick, the bacterium will spread to the surrounding environment through the patient's stool.
- The most significant symptoms of cholera are vomiting and diarrhea.

The history of cholera

- There 're many documented pandemics around the world.
- One of the most famous story was how Dr. John Snow found a link between cholera and contaminated water at 1855.
- It was isolated and identified by Robert Koch in 1883.
- Around 1900, a Russian scientist made the first cholera vaccine.

The 2010 epidemic in Haiti

- In early 2010, a 7.0 earthquake struck Haiti, destroying most of the infrastructure such as the sewage and hospital.
- Cholera broke out in October, while many still were homeless and had poor sanitation.
- Until January 2012, it had caused at least 7000 people died.

How people fight cholera (1)

- Since *Vibrio cholerae* would attack the small intestine and cause dehydration and electrolyte imbalance, oral rehydration therapy (ORT) could help people to recover.
- Also, a CDC manual says keeping eating is advised.
- Antibiotic treatments for one to three days shorten the course of the disease and reduce the severity of the symptoms.



How human fight cholera (2)

- After Dr. John Snow discover the way how cholera spreads,scientists and engineers used his model to built greater and safer water supply.
- All water used for drinking, washing, or cooking should be sterilized by either boiling, chlorination, ozone water treatment, ultraviolet light sterilization or antimicrobial filtration in any area where cholera may be present.

New theory to fight disease (1)

- Paul Ewald, an evolutionary biologist, specializing in the evolution of infectious disease.
- “According to Ewald's theory, the virulence of a cholera outbreak in a given population should be directly related to the quality and safety of that population's water supply. If sewage flows easily into rivers that people wash in or drink from, then the cholera strain would evolve toward virulence—it can multiply freely, essentially using up its hosts, relying on its access to the water supply for transmission. But if the water supply is well protected, the organism should evolve away from virulence—the longer it remains in a more mobile host, the better its chance of transmission.”

New theory to fight disease (2)

- “We should be taking control of the evolution of those disease organisms, favoring those mild strains and thereby essentially domesticating those disease organisms, making them into mild versions of what was there before. With a mild version, most people won’t even know they’re infected. It’ll be almost like those people having a free, live vaccine. ”

Reference

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