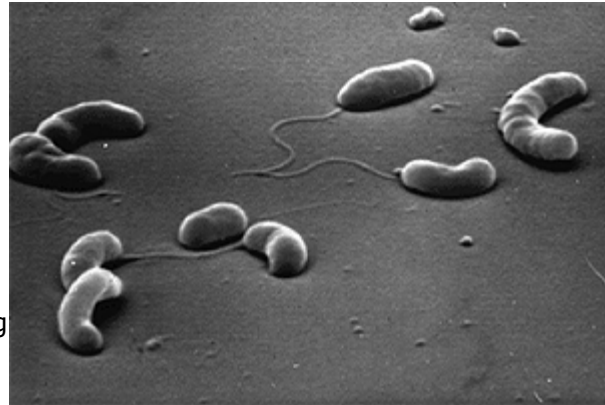


## VIBRIO CHOLERAE

### What is *Vibrio cholerae*?

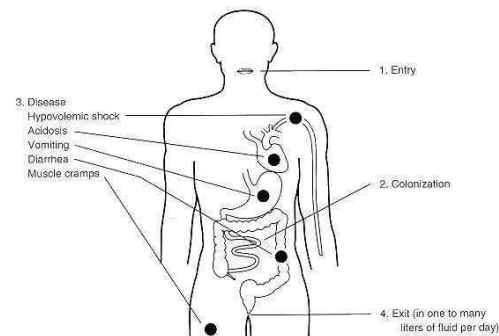
Cholera is an acute diarrheal illness caused by infection of the intestine with the bacteria *Vibrio cholerae*. Cholera was prevalent in the 1800s, but due to proper treatment of sewage and drinking water, has become rare in developed countries. *V. cholerae* can be found in contaminated food or water, especially in areas of poor sanitation and water treatment. It can also be found in brackish rivers and coastal water. The *V. cholerae* bacterium accumulates in a person's stomach and produces toxins, which affect the cells of the gastrointestinal tract, causing the person to lose large quantities of fluid (up to one litre per hour). Cholera is a fecal disease, meaning that it spreads when the feces of an infected person come into contact with food or water.



***Vibrio cholerae***

### What are the symptoms and the incubation time?

Most people who are infected with *V. cholerae* will remain asymptomatic, meaning that they will not experience any symptoms. The symptoms of cholera include profuse, watery diarrhea, often accompanied by stomach pains, leg cramps, mild fever and vomiting. In extreme cases, where treatment is not given, this can lead to severe dehydration and shock. Because the loss of fluids occurs so rapidly, death can occur within several hours. The incubation time ranges from less than several hours up to five days.



**Lifespan of *Vibrio cholerae* Within the Human Body**

### How long do the symptoms last?

Cholera is a disease that progresses rapidly. The symptoms generally appear quite quickly after infection. The bacterium is generally present in the feces of an infected person for 7 to 14 days, though with treatment, the symptoms do not last long.

### How is it diagnosed?

Cholera is difficult to diagnose for several reasons. First, most people who are infected do not become ill, though they still carry and transfer the bacteria. Of those who do become ill, 80 to 90 percent experience only mild to moderate cholera. Mild to moderate cholera is difficult to

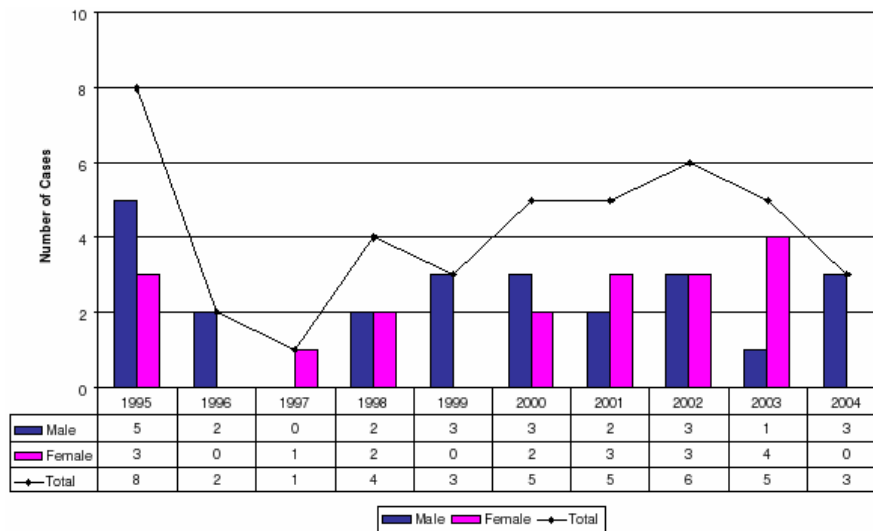
diagnose because diarrhea is a common symptom of many diseases. Less than 20 percent of people who become ill develop typical cholera with moderate to severe dehydration.

### Cholera Outbreaks

Cholera outbreaks are common in developing countries, where the sewage disposal and water treatment facilities are often inadequate. An epidemic in Africa has lasted over 30 years, and shows no signs of ending in the near future. Until improvements are made in the sewage and drinking water treatments in developing countries, cholera epidemics are expected to continue.

According to the World Health Organization, cholera is one of the key indicators of social development, because nearly every country that cannot guarantee access to safe drinking water and adequate sanitation is threatened by cholera epidemics. In 2003, there were 111,575 cases of cholera reported from 45 countries to the World Health Organization.

Cholera is a notifiable disease in Canada, but few cases are reported each year. The Centers for Disease Control and Prevention, in the United States, reports that with modern sewage and water treatment systems, cholera has been virtually eliminated in the United States. They do say, however, that travelers have brought contaminated seafood into the United States, which has caused foodborne outbreaks. The following graph illustrates the number of cases of cholera that have been reported over the last several years in Canada. Since 2001, all of the reported cases of cholera have been from British Columbia, Alberta, or Ontario.



**Cases of Cholera Reported in Canada between 1995 and 2004;**  
[http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/disease2/chol\\_e.html](http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/disease2/chol_e.html)

### Am I at risk for disease?

Cholera is rare in developed countries, due to adequate treatment of sewage and drinking water. However, cholera outbreaks continue to occur in African, Asian and Latin American countries. So, people who travel to areas where cholera is present can become infected and transmit the disease to others. Contaminated seafood is another way in which cholera can be spread to developed countries.

## How is cholera spread?

*V. cholerae* can be found in soil, food or water that has been contaminated with infected human feces. *V. cholerae* is spread by ingesting food or water that has been contaminated. Cholera epidemics develop in areas with unsafe drinking water and inadequate sanitation, because the sewage contaminates the drinking water, which then infects those who drink the water. The *V. cholerae* bacterium has also been found in brackish rivers and coastal waters. Several people in the United States have contracted cholera after eating raw or undercooked shellfish.

## How can I prevent getting cholera?

It is extremely unlikely to contract cholera in developed countries. If you travel to areas where cholera is a concern, simple precautions can minimize your chances of becoming infected:

- Be sure to wash your hands before processing and eating food, and after using the bathroom.
- Drink water that you have boiled or treated with chlorine or iodine.
- Eat foods that are hot and have been cooked thoroughly.
- Eat fruits that you have peeled yourself.
- Avoid raw or undercooked fish and shellfish.
- Avoid salads.
- Avoid foods and drinks from street vendors.
- Do not bring perishable seafood back home with you.

## How do I prevent spreading it to others?

You can prevent spreading cholera to others by following the same guidelines that are given to prevent getting cholera. If you become infected with cholera, be sure to wash your hands after using the bathroom and before eating food. It is advisable to avoid preparing food for others while you are ill, to minimize the risk of spreading the disease to others.

## What is the treatment for cholera?

There are several antibiotics that can shorten the course and diminish the severity of cholera, but it is most important to replace the fluids that have been lost through diarrhea. Oral rehydration solutions, containing a mixture of sugar and salts, are mixed with water and drunk in large amounts. When rehydration is prompt, either through rehydration salts, or intravenous fluids when necessary, fatality rates can be reduced to less than one percent.

## How important is contaminated drinking water in the spread of the illness?

Unsafe drinking water, in combination with inadequate sanitation, is responsible for the majority of cholera epidemics and fatalities. Cholera was common in the United States in the 1800s, but has been nearly eliminated by modern water treatment facilities and sewage treatment systems. That means that contaminated drinking water is the major cause of cholera epidemics and if water treatment systems in developing countries are improved, the disease could be nearly eliminated.

## How can I protect my water supply?

In Canada, it is extremely rare that there would be any *V. cholerae* in your water. However, the following guidelines will reduce the risk of contaminating your water supply with other types of bacteria:

- Make sure fecal contamination of your water is minimized by collecting and storing water appropriately. If possible, store drinking water in an above ground tank. If you store water underground, make sure it is properly sealed.
- Make sure that runoff and sewer pipe leaks cannot enter your water supply.
- Make sure that your drinking water pipes are completely separate from all other plumbing, and that all pipes are properly sealed.
- Regularly cleaning and maintaining your water tank and pipes, and sewage pipes will ensure that bacteria are not able to contaminate your drinking water.
- Ensure that your water supply is safe and properly disinfected. If you use a private water source, this should include regular testing of the water quality.

The Safe Drinking Water Foundation has educational programs that can supplement the information found in this fact sheet. Operation Water Drop looks at the chemical contaminants that are found in water; it is designed for a science class. Operation Water Flow looks at how water is used, where it comes from and how much it costs; it has lessons that are designed for Social Studies, Math, Biology, Chemistry and Science classes. Operation Water Spirit presents a First Nations perspective of water and the surrounding issues; it is designed for Native Studies or Social Studies classes. Operation Water Health looks at common health issues surrounding drinking water in Canada and around the world and is designed for a Health, Science and Social Studies collaboration. Operation Water Pollution focuses on how water pollution occurs and how it is cleaned up and has been designed for a Science and Social Studies collaboration. To access more information on these and other educational activities, as well as additional fact sheets, visit the Safe Drinking Water Foundation website at [www.safewater.org](http://www.safewater.org).

## Resources:

Public Health Agency of Canada. 2006. Notifiable Diseases On-Line: Cholera. <http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/diseases/chol-eng.php>.

World Health Organization. 2007. Cholera. <http://www.who.int/topics/cholera/about/en/index.html>.