This posting culled from my book “Principles of Infectious Disease Epidemiology”, is an attempt to educate the people about Cholera. This is an Outreach effort by my Non Profit Organization “Minority Health Promotion Initiative Inc.”

Brief Discussion

Definition and diagnosis of the disease

Is an acute gastrointestinal bacterial disease. It is caused by an exotoxin produced by the infectious agent. Fatality rate is as high as 50% in severe untreated cases. Diagnosis is confirmed through culture of vibrio cholerae of the serogroup 01 from feces. Diagnosis can also be made by darkfield procedure.

Clinical Manifestations or Signs and Symptoms: Acute onset characterized by profuse painless watery stools (rice water stools), occasional effortless vomiting, rapid dehydration, muscular cramps, acidosis, and circulatory collapse, shock, and death. Asymptomatic infection is more frequent than clinical illness, especially with eltor biotype. Also, mild cases with only diarrhea are common, especially in children.

Infectious Agent: Vibrio cholerae serogroup 01 including two biotypes; cholerae and eltor. In any single epidemic, only a particular type tends to be dominant.

Occurrence: The disease has occurred in epidemics in Asia, Africa, and parts of Eastern Europe. Is not common in the West, though a few cases have been reported in Texas.

Reservoir of Infection: Humans. Environment is a reservoir as observed in the USA and Australia, especially in relation to association with zooplanktons.

Mode of Transmission: Through ingestion of water contaminated with feces or vomitus of infected persons, carriers; contaminated water supplies; ingestion of unrefrigerated food that has been contaminated by dirty water, feces, soiled bands, or perhaps flies. Eltor organisms can survive in water for long periods. From raw uncooked seafood such as crabs from polluted waters.

Incubation Period: From a few hours to 5 days; Usually 2-3 days.

Period of Communicability: Lasting the stool-positive stage. Carrier state may persist for several months. Antibiotics shorten period of communicability.
**Susceptibility and Resistance:** Varies. Gastric achlorhydria increases risk of disease. Infants who are breastfed are less susceptible. Lower socioeconomic group is more susceptible. Group 0 individual are more susceptible to cholera gravis due to eltor biotype. Infection renders increased resistance to reinfection which lasts longer against the homologous serotype. Most people in endemic areas develop antibodies by early adulthood.

**Methods of Prevention and Control**

1. Educate people about the **WHO Ten Golden Rules** for food preparation:
   
   i. Choose food processed for safety;
   ii. Cook food thoroughly;
   iii. Eat cooked food immediately;
   iv. Store cooked food properly;
   v. Reheat cooked foods thoroughly;
   vi. Avoid contact between raw foods and cooked foods;
   vii. Wash hands repeatedly;
   viii. Keep all kitchen surfaces meticulously clean;
   ix. Protect foods from insects, rodents, and other animals;
   x. Use pure water.

   Source: (Abram. 1995, p. 184)

2. Educate people about mode of spread and the need for proper immunization, especially of people travelling to endemic areas. Recommended vaccine is TAB vaccine. The inactivated vaccines are given in primary series of 2 injections several weeks apart. Periodic single reinforcing injections are desirable at 3-year intervals for persons at continuing risk.

3. Proper disposal of human feces, maintaining fly-proof latrines.

4. Public education about mode of transmission and the need to get appropriate immunization. Active immunization with the current killed whole-cell vaccine given by injection is of no practical value in epidemic control or management of contacts. However, the vaccine does provide partial protection (50%) of short duration (3-6 months) in highly endemic areas. Furthermore, the vaccine does not prevent asymptomatic infections. Oral vaccines are under study.

5. Restriction or inhibition of movement is unjustifiable except in epidemics.

6. Enteric precautions of severely ill and concurrent disinfection of feces and vomitus and of fomites by heat, carbolic acid or other disinfectants.

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**Expanded Discussion**

**Cholera**

*Source: Centers for Disease Control and Prevention (CDC)*

**What is Cholera?**

Cholera is an acute, diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*. The infection is often mild or without symptoms, but sometimes can be severe.
What are cholera symptoms?

Approximately 1 in 20 infected persons has severe disease characterized by:

- profuse watery diarrhea,
- vomiting, and
- leg cramps.

In these persons, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

How does a person get cholera?

A person may get cholera by drinking water or eating food contaminated with the cholera bacterium. In an epidemic, the source of the contamination is usually the feces (stool) of an infected person. The disease can spread rapidly in areas with inadequate treatment of sewage and drinking water.

The cholera bacterium may also live in the environment in brackish rivers and coastal waters. Shellfish eaten raw have been a source of cholera, and a few persons in the United States have contracted cholera after eating raw or undercooked shellfish from the Gulf of Mexico. The disease is not likely to spread directly from one person to another; therefore, casual contact with an infected person is not a risk for becoming ill.

What is the risk for cholera in the United States?

In the United States, cholera was prevalent in the 1800s but has been virtually eliminated by modern sewage and water treatment systems. However, as a result of improved transportation, more persons from the United States travel to parts of Latin America, Africa, or Asia where epidemic cholera is occurring. U.S. travelers to areas with epidemic cholera may be exposed to the cholera bacterium. In addition, travelers may bring contaminated seafood back to the United States; foodborne outbreaks have been caused by contaminated seafood brought into this country by travelers.

What should travelers do to avoid getting cholera?

The risk for cholera is very low for U.S. travelers visiting areas with epidemic cholera. When simple precautions are observed, contracting the disease is unlikely.

All travelers to areas where cholera has occurred should observe the following recommendations:

- Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated, bottled beverages with no ice.
- Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
- Avoid undercooked or raw fish or shellfish, including ceviche.
- Make sure all vegetables are cooked, avoid salads.
- Avoid foods and beverages from street vendors.
- Do not bring perishable seafood back to the United States.
A simple rule of thumb is "Boil it, cook it, peel it, or forget it."

Is a vaccine available to prevent cholera?

At the present time, the manufacture and sale of the only licensed cholera vaccine in the United States (Wyeth-Ayerst) has been discontinued. It has not been recommended for travelers because of the brief and incomplete immunity it offers. No cholera vaccination requirements exist for entry or exit in any country.

Two recently developed vaccines for cholera are licensed and available in other countries (Dukoral®, Biotec AB and Mutacol®, Berna). Both vaccines appear to provide a somewhat better immunity and fewer side-effects than the previously available vaccine. However, neither of these two vaccines is recommended for travelers nor are they available in the United States.

Can cholera be treated?

Cholera can be simply and successfully treated by immediate replacement of the fluid and salts lost through diarrhea. Patients can be treated with oral rehydration solution, a prepackaged mixture of sugar and salts to be mixed with water and drunk in large amounts. This solution is used throughout the world to treat diarrhea. Severe cases also require intravenous fluid replacement. With prompt rehydration, fewer than 1% of cholera patients die.

Antibiotics shorten the course and diminish the severity of the illness, but they are not as important as rehydration. Persons who develop severe diarrhea and vomiting in countries where cholera occurs should seek medical attention promptly.

Where can a traveler get information about cholera?

The global picture of cholera changes periodically, so travelers should seek updated information on countries of interest. The U.S. Centers for Disease Control (CDC) maintains a travelers’ information telephone line on which callers can receive recent information on cholera and other diseases of concern to travelers. Data for this service are obtained from the World Health Organization. The number is 877-FYI-TRIP (394-8747).

Further Reading: [www.cdc.gov/ncidod/dbmd/diseaseinfo/cholera_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/cholera_g.htm)  
[www.who.int/mediacentre/factsheets/fs107/en](http://www.who.int/mediacentre/factsheets/fs107/en)  
[www.medicinenet.com/cholera/article.htm](http://www.medicinenet.com/cholera/article.htm)