

CHOLERA

GENERAL INFORMATION

Introduction

Cholera is an acute diarrheal disease that can lead rapidly to severe dehydration and death. It is caused by *Vibrio cholerae* serotype O1. Periodically, pandemics of cholera have swept from its endemic homeland in the Ganges-Brahmaputra Delta across Asia into Europe and Africa, occasionally reaching the Americas and Australia.

Transmission

Transmission is fecal-oral. In endemic countries and during epidemics, contaminated water supplies and street food are the most common sources of infection; in developed countries, transmission is commonly through food contaminated by handlers or flies. *V. cholerae* can attach to the carapace of crustaceans such as shrimps, crabs, and lobsters, and to the skin of fish, which are a potent source of infection if inadequately cooked.

Epidemiology

Cholera occurs mainly in developing countries with inadequate sanitation and lack of clean drinking water and in areas where infrastructure may have broken down due to war or natural disasters. Currently the disease is endemic or causing outbreaks throughout the Indian subcontinent and Afghanistan, parts of southeastern Asia and southern China, Papua New Guinea, most of sub-Saharan Africa (warfare and population displacement), Haiti (introduced after the earthquake in 2010), Dominican Republic, and Cuba.

Pandemic spread of cholera out of India has classically occurred along trade and pilgrimage routes, including the Hajj. Air traffic has accelerated the spread of cholera.

The precise distribution, however, may change rapidly. Annually, ~500,000 cases of cholera are reported to WHO, but this figure excludes cases from many countries in southeastern and central Asia that report only watery diarrhea. Case fatality is generally ~1% (5-10% in African countries).

Risk

- Eating or drinking fecally contaminated food or water in a country or place where cholera is present is the main risk factor. Unsterilized water, food from street vendors, raw fish dishes (e.g., ceviche), and inadequately cooked (e.g., steamed) shellfish are common sources of infection.
- Travelers who follow typical tourist itineraries with standard accommodations and take the usual food and drink precautions are at virtually no risk of infection, even in highly endemic countries.
- Aid workers in crisis situations are at high risk.
- In endemic areas of India and Bangladesh, cholera is more common during the hot season before the rains begin.
- In places where cholera has been recently introduced, it is more common at the start and end of the rainy season.

Symptoms

- Ingestion of *V. cholerae* can cause asymptomatic infections, mild cases, or severe, highly symptomatic cases of cholera with significant loss of electrolytes. In most cases, disease lasts from 1 to several days and presents as acute, profuse, watery diarrhea without blood or mucus; vomiting occurs less commonly. Cholera does not usually present with abdominal cramping, pain, or fever. In its most extreme form, a previously healthy person may become severely dehydrated within 3-4 hours and may die if not treated promptly.

Need for Medical Assistance

- In the event of diarrhea that is epidemiologically and clinically suggestive of cholera, the most important measure is to maintain hydration by drinking fluids. Rehydration salts are indicated for dehydrating diarrhea. Hospitalization for administration of intravenous fluids is needed only in fulminant cases or if vomiting prevents drinking. An antibiotic may reduce the duration of diarrhea.

PREVENTION

Non-Vaccine: Standard food and beverage precautions should be observed regardless of vaccination status; see *Food and Beverage Precautions*.

Rehydration salts and antibiotics to be taken in the event of diarrhea may be carried by aid workers and travelers at particular risk, to be taken in the event of diarrhea.

- Rehydration salts should be marketed for fluid and electrolyte replacement and contain glucose, sodium chloride, potassium chloride, and sodium bicarbonate to be dissolved in drinking water.
- A 3-day course of an antibiotic (usually either ciprofloxacin or azithromycin) may be carried.

Vaccine: Cholera vaccine is not routinely recommended and is of questionable benefit to general tourists, for whom the risk is very low, unless there is an immediate risk of epidemic cholera. Cholera vaccines are not available in the U.S. but may be obtained in some countries outside the U.S.

Cholera vaccine is not 100% protective. A large inoculum of bacteria can overwhelm even an optimal response to the vaccine (hence the need for food and beverage precautions regardless of vaccination status).

The primary series provides short-term protection (6 months-2 years) against cholera, with a protective efficacy of 80-90% in all age categories.

Who Should Receive the Vaccine

Cholera vaccine is recommended for persons at immediate risk of epidemic cholera, including travelers into the affected area, such as:

- Long-stay, high-risk travelers or expatriates (e.g., children, pregnant women, and HIV-infected persons) in high-risk areas
- Emergency relief workers and health care workers in endemic and epidemic areas in proximity to displaced populations, especially in crowded camps and urban slums
- Travelers with decreased stomach acidity (e.g., taking certain heartburn medicines) or with blood group O

Who Should Not Receive the Vaccine

Persons who have had a severe allergic reaction to a previous dose should not receive this vaccine.

Persons who are moderately or severely ill, have a fever, or have an acute GI illness (persistent diarrhea or vomiting) should wait until recovery before receiving cholera vaccine.

Risks and Side Effects

Side effects reported include mild gastrointestinal symptoms. Rarely, some individuals have reported diarrhea, abdominal cramps, nausea, or fever.

There is a rare chance that serious problems or even death could occur after receiving any medicine or vaccine. If a significant or unusual problem occurs after receiving the vaccine, the patient should call or visit the health care provider.

Timing

Note: Avoid all food and drink from 1 hour before until 1 hour after receiving a dose of the vaccine.

Persons aged 2-5 years: A primary series of 3 oral doses is given, with doses given at least 1 week apart.

- All doses should be completed at least 1 week before possible exposure.
- A booster dose is given 6 months later for continued cholera protection.
- If more than 5 years have elapsed since the last primary dose, a complete 3-dose series is needed.

Persons aged 6 years and older: A primary series of 2 oral doses is given, with doses given at least 1 week apart.

- All doses should be completed at least 1 week before possible exposure.
- A booster doses is given 2 years later for continued cholera protection.
- If more than 5 years have elapsed since the last primary dose, a complete 2-dose series is needed.

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