

## Traveler Summary

### Key Points

- Cholera is an acute intestinal bacterial infection acquired through the consumption of fecally contaminated food or water, occurring primarily in Hispaniola, Africa, and Asia.
- Risk is very low in typical travelers, even in countries with cholera. Risk is highest for aid and refugee workers (including health care workers [HCWs]) handling patients with cholera.
- Symptoms are generally mild and include watery diarrhea, nausea, and vomiting.
- Consequences of infection rarely occur in travelers but may include severe dehydration, muscle cramps, and shock.
- Prevention (essentially 100% effective) includes observing strict food and beverage precautions and hand-hygiene (frequent, thorough handwashing) measures.
- Cholera vaccination (only indicated for certain at-risk groups), depending on the brand, is taken orally either as a single dose at least 10 days before possible exposure (U.S. vaccine) or in a multiple-dose series given at intervals of 1 to 6 weeks apart.
- Vaccine side effects are most commonly mild gastrointestinal symptoms (e.g., nausea and vomiting), fatigue, or lack of appetite.
- Duration of vaccine protection is 3 to 6 months for the U.S. vaccine, with a booster recommended every 6 months while at risk.

### Introduction

Cholera is an acute bacterial intestinal infection transmitted mainly through ingestion of contaminated water or food in endemic areas (e.g., Hispaniola, Africa, and Asia). Risk of cholera is very low in travelers and in otherwise healthy travelers. Clinical disease most often mimics other causes of travelers' diarrhea (TD); severe cholera is uncommon. Cholera is especially responsive to proper rehydration with or without a single dose of an appropriate antibiotic.

### Risk Areas

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. Cholera is endemic in Africa and Asia where focal outbreaks often occur. Recent outbreaks have occurred in Cuba, Democratic Republic of the Congo, Dominican Republic, Haiti (introduced after the earthquake in 2010), the Horn of Africa, and Yemen.

Cholera is rarely reported in travelers. In the U.S. (where a cholera vaccine was not available from 1999 through late 2016), 42 cases (mostly imported from Haiti) were reported in 2011, and fewer than 25 cases per year have been reported since 2012.

### Transmission

Cholera is mainly acquired from drinking contaminated water or through the consumption of fecally contaminated food (all types of food can be contaminated by infected food handlers). The bacteria that cause cholera are also found in fresh and brackish waters, where they attach to the shells of crustaceans such as shrimp, crabs, and lobsters and to the skin of fish, which are potent sources of infection if inadequately cooked.

### Risk Factors

Risk is very low for travelers, but the following circumstances increase the likelihood of infection:

- Ingestion: eating or drinking fecally contaminated food or water
- Travel in areas of active transmission with limited access to safe food and water
- Occupation: aid and refugee workers (including HCWs) handling patients with cholera
- Seasonality/intensity: In endemic areas of India and Bangladesh, cholera is more common during the hot season (before the rainy season begins) and at the start and end of the rainy season in areas where cholera has been recently introduced.

Risk of acquiring cholera or having severe disease is increased in persons with blood type O, low gastric acidity (from antacids or partial stomach removal), chronic medical conditions such as heart or kidney disease, or HIV co-infection, and in travelers visiting friends and relatives in the family's country of origin, travelers without access to appropriate medical care or unable to

adhere to food and beverage precautions, nonbreastfed infants and young toddlers, and pregnant women (including increased risk of fetal loss due to severe dehydration).

Travelers on typical tourist itineraries with standard accommodations, who observe appropriate food and beverage precautions and hand-hygiene (frequent, thorough handwashing) measures, are at almost no risk of clinical cholera, even in highly endemic countries.

## Symptoms

In otherwise healthy travelers, infection is usually mild, and symptoms resemble those of TD.

Symptoms most commonly develop within a few hours up to 5 days following exposure and include acute, profuse, watery diarrhea (without fever, blood, or mucus); nausea and vomiting can also occur.

## Consequences of Infection

Serious illness rarely occurs, but complications can include rapid heartbeat, dry skin and mucous membranes, low blood pressure, extreme thirst, and muscle cramps. Rapid loss of bodily fluids leads to severe dehydration, shock, and death within hours, although with proper rehydration, the death rate is less than 1%.

## Need for Medical Assistance

Travelers who develop symptoms of cholera should maintain hydration by drinking fluids and seek urgent medical attention. If the diarrhea causes dehydration, any commercially available oral rehydration solution containing glucose, sodium chloride, potassium chloride, and sodium bicarbonate (to be dissolved in safe drinking water) should be taken. A single dose of an appropriate antibiotic may reduce fluid requirements and the duration and severity of illness. Zinc supplementation (in children aged 6 months through 5 years) reduces the severity and duration of cholera and other diarrheal diseases in children in resource-limited areas.

## Prevention

### Nonvaccine

Observe strict food and beverage precautions and hand-hygiene (frequent, thorough handwashing) measures, regardless of vaccination status. According to all authoritative guidelines, these measures are essentially 100% effective in typical travel situations. See *Food and Beverage Precautions*.

Aid and refugee workers (including HCWs) handling patients with cholera should shower and change clothes at the end of their shifts.

### Vaccine

Vaccination is of questionable benefit to general travelers (for whom risk is very low, even in countries where cholera epidemics occur) and is only recommended for aid and refugee workers (including HCWs) and certain vulnerable populations (see Risk Factors) traveling to areas with very active transmission.

An oral cholera vaccine (which contains live, weakened bacteria) for persons aged 18-64 years is available in the U.S. Several cholera vaccines for persons aged 1 year and older are available outside the U.S.

Vaccination is not 100% effective, hence the need for food and beverage precautions. Duration of vaccine protection against cholera is 3 to 6 months for the U.S. vaccine and 6 months to 2 years for non-U.S. vaccines.

### Side Effects

The most common side effects of cholera vaccine are usually mild and include fatigue, headache, abdominal pain, nausea, vomiting, lack of appetite, and (rarely) diarrhea for the U.S. vaccine, and mild gastrointestinal symptoms and fever for non-U.S. vaccines.

Persons with underlying medical conditions or who have concerns about the vaccine should speak to their health care provider before vaccine administration.

### Timing

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

The U.S. vaccine is given as follows:

- Travelers aged 18-64 years: 1 oral dose at least 10 days prior to possible exposure
- Duration of vaccine protection is 3 to 6 months; a booster dose is given every 6 months if at continued risk.

The non-U.S. vaccine is given as follows:

- Travelers aged 2-5 years: 3 oral doses given at an interval of 1 to 6 weeks between doses and completed at least 3 weeks prior to possible exposure
- Travelers 6 years and older: 2 oral doses given 1 to 6 weeks apart and completed at least 1 week prior to possible exposure
- A booster dose is given every 6 months (for children aged 2-5 years) or every 2 years (for persons 6 years and older) if at continued risk.

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