



Fact Sheet 7°

FAST FACTS

- Cholera remains a global threat to public health and one of the key indicators of social development.²
- Refrigeration, freezing, alkaline pH, high concentration of carbohydrate, humidity and absence of competing flora enhance the survival of *V. cholerae* in food. Survival of *V. cholerae* is shorter in food with acidic pH.¹
- Most commonly associated with cholera is seafood, both molluscan shellfish and crustaceans. Seafood may be contaminated in its natural environment or during preparation. Other food items associated with outbreaks are fruit and vegetables, meat, cooked grains, etc. Vegetables are usually contaminated by contact with sewage in soil and fruits when injected with contaminated water to increase weight and turgor.¹

Cholera and food safety

Food borne illness is a major, but underestimated public health problem in most countries of the world and the incidence of food contamination and foodborne illnesses are increasingly being reported in the Region. Cholera is endemic within the Region with data showing an upward trend. In addition to water, food is an important vehicle of transmission. Different foods including rice, vegetables, millet gruel and various types of seafood have been implicated in outbreaks of cholera.

Clinical features and epidemiologic history of cholera

Cholera is an acute dehydrating diarrhoeal disease, traditionally caused by *Vibrio cholerae* O1, and also more recently by *V. cholerae* O139 (Bengal).¹ The disease is characterized in its most severe form by a sudden onset of acute watery diarrhoea that can lead to death by severe dehydration and kidney failure.²

During the 19th century, cholera spread repeatedly from its original reservoir or source in the Ganges delta in India to the rest of the world, before receding to South Asia. Six pandemics were recorded that killed millions of people across Europe, Africa and the Americas. The seventh pandemic, which is still ongoing, started in

1961 in South Asia, reached Africa in 1971 and the Americas in 1991. The disease is now considered to be endemic in many countries and the pathogen causing cholera cannot currently be eliminated from the environment.²

Traditionally, water was recognized as the primary vehicle for transmission of cholera, but in the past 30 years, outbreaks of cholera associated with eating contaminated food have demonstrated that food also plays an important role, although in many instances water is the source of contamination of foods.¹

Incidence of cholera outbreaks in the Region

A review of WHO data on cholera cases and deaths reported between 1960 and 2005 show the persistence of cholera in the Region. In 2005, 31 (78%) of the 40 countries that reported

¹ Albert MJ, Neira M and Motarjemi Y. The Role of Food in the Epidemiology of Cholera. World Health Stat Q. 1997; 50(1-2):111-8.

² WHO. Cholera Fact Sheet N°107. September 2007

indigenous cases of cholera to WHO were in sub-Saharan Africa. The reported incidence of indigenous cholera in sub-Saharan Africa in 2005 was 95 times higher than the reported incidence in Asia and 16,600 times higher than the reported incidence in Latin America.³

Foodborne outbreaks of cholera

Seafoods, including fish, shellfish, crabs, oysters and clams, have all been incriminated in cholera outbreaks in many countries, including the United States and Australia. Contaminated rice, millet gruel, and vegetables have also been implicated in several outbreaks. Other foods, including fruits (except sour fruits), poultry, meat, and dairy products, have the potential of transmitting cholera.⁴

Some examples of foodborne cholera outbreaks in the Region include a cholera outbreak in Zambia wherein between 28 November 2003 and 23 February 2004, 4343 cases and 154 deaths were reported. A case-control study showed that consumption of raw vegetables was significantly associated with cholera.⁵ In 1986, in Guinea consumption of left over peanut sauce was incriminated as the vehicle of transmission of cholera. There were also reports of cholera outbreaks due to contamination of rice during preparation of funeral feast.⁶ Between 22 August and December 15, 1990 an epidemic of cholera affected Mozambican refugees in Malawi causing 1931 cases. Eating left over cooked peas was associated with cholera.⁷

Food as a medium of cholera

The physicochemical characteristics of foods that support survival and growth of *V. cholerae* O1 and O139 include high-moisture content, neutral

or an alkaline pH, low temperature, high-organic content, and absence of other competing bacteria.

Prevention and control strategies for foodborne cholera outbreaks

Health education activities and dissemination of key messages on proper food preparation, storage and consumption is critical. The messages should focus particularly on:

- Preparation, serving and eating of food in hygienic environments;
- Use of safe water for food preparation and washing of fruits/vegetables;
- Peeling fresh fruits before eating;
- Proper cooking, storing, heating of food before eating;
- Washing of hands with soap and/or wood ash after toilet visits, before and after handling raw food and before eating.

Assessing and ensuring of proper food handling practices in eating places such as restaurants, street vended foods as well as markets is essential.

WHO technical support in food safety and cholera

In collaboration with the programmes on CSR and EHA, continued efforts are being made to provide technical guidance to countries, dissemination of tools and guidelines in the control of cholera. The WHO five keys to safer food concept and resultant information, education and communication messages developed by WHO continue to provide an innovative approach to communicating food safety to food handlers and consumers. In addition, countries are being assisted in the promotion of the Healthy Food markets approach. The approach aims to ensure the safety of foods in markets through a collaborative effort involving all market stakeholders.

For More Information on Food Safety and Nutrition please contact Division of Prevention and Control of Non-communicable Diseases (DNC). B.P. 6 Congo, Brazzaville.

³ Gaffga NH, Tauxe RV and Mintz ED. Cholera: a new homeland in Africa? *Am J Trop Med Hyg.* 2007 Oct; 77(4):709-713.

⁴ Rabbani GH and Greenough WB 3rd. Food as a vehicle of transmission of cholera. *J Diarrhoeal Dis Res.* 1999 Mar; 17 (1):1-9

⁵ Dubois et al. Epidemiologic cholera in urban Zambia: hand soap and dried fish as protective factors. *Epidemiol Infect.* 2006 Dec; 134 (6): 1226-30.

⁶ St Louis et al. Epidemic cholera in West Africa: the role of food handling and high-risk foods. *Am J Epidemiol.* 1990 Apr; 131 (4): 719-28

⁷ Swerdlow DL et al. Epidemic Cholera among refugees in Malawi, Africa: treatment and transmission. *Epidemiol Infect.* 1997 Jun; 118(3):207-14