Vibrio cholerae **System:** Freshwater_terrestrial

Kingdom	Phylum	Class	Order	Family
Bacteria	Proteobacteria	Gammaproteobacteria	Vibrionales	Vibrionaceae

Common name Asiatic cholera (English), epidemic cholera (English)

Synonym

Similar species *Vibrio parahaemolyticus*

Summary Vibrio cholerae is the bacteria that causes cholera; a potentially epidemic and life-threatening secretory diarrhea characterised by numerous, voluminous watery stools, often accompanied by vomiting and resulting in hypovolemic shock and acidosis. It can also cause mild or unapparent infections. Vibrio cholerae occurs in both marine and freshwater habitats in mutualistic associations with aquatic animals. Vibrio cholerae is endemic or epidemic in areas with poor sanitation; it occurs sporadically or as limited outbreaks in developed countries. Cholera is transmitted by the fecal-oral route. In coastal regions it may persist in shellfish and plankton. Long-term convalescent carriers are rare.

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Species Description
According to Todar (2002), *Vibrio cholerae* consists of gram-negative, straight- or curved-rod bacteria. The bacteria are bioluminescent and motile by means of a single polar flagellum. *Vibrio* spp. are capable of both respiratory and fermentative metabolism. Oxygen is a universal electron acceptor, and they do not denitrify. Most *Vibrio* spp. are oxidase-positive. There are 3 antigenic types (Inaba, Ogawa, and Hikojima) and the distinct El Tor biotype.

Habitat Description
According to WHO (2000), *V. cholerae* is often found in the aquatic environment and is part of the normal flora of brackish water and estuaries. It is often associated with algal blooms (plankton), which are influenced by the temperature of the water. Todar (2002) notes that *Vibrio* spp. are typically marine organisms, so most species require 2-3% NaCl or a seawater base for optimal growth; however, *V. cholerae* occurs in both marine and freshwater habitats in mutualistic associations with aquatic animals. *V. cholerae* is the most important *Vibrio* sp. to humans, although other species are pathogenic for invertebrates and other vertebrates. Finkelstein (UNDATED) notes that in coastal regions it may persist in shellfish and plankton. *V. cholerae* is endemic or epidemic in areas with poor sanitation, but long-term convalescent carriers are rare.

Reproduction
Cell division is by an asexual process called binary fission, which is the process of the division of a single-celled organism into two daughter cells (Anderson, 1999).

Nutrition
Todar (2002) explains that most *Vibrio* spp. have relatively simple growth factor requirements and will grow in synthetic media with glucose as a sole source of carbon and energy.

General Impacts
Cholera is caused by certain members of the species *Vibrio cholerae*, which can also cause mild or unapparent infections (Finkelstein, UNDATED). According to Todar (2002), *V. cholerae* produces cholera toxin, the model for enterotoxins, whose action on the mucosal epithelium is responsible for the characteristic diarrhea of the disease cholera. In its extreme manifestation, cholera is one of the most rapidly fatal illnesses known. A healthy person may become hypotensive within an hour of the onset of symptoms and may die within 2-3 hours if no treatment is provided. More commonly, the disease progresses from the first liquid stool to shock in 4-12 hours, with death following in 18 hours to several days. The clinical description of cholera begins with sudden onset of massive diarrhea. The patient may lose gallons of protein-free fluid and associated electrolytes, bicarbonates, and ions within a day or two. This loss of fluid leads to dehydration, anuria, acidosis, and shock. The watery diarrhea is speckled with flakes of mucus and epithelial cells (\"rice-water stool\") and contains enormous numbers of bacteria. The loss of potassium ions may result in cardiac complications and circulatory failure. Untreated cholera frequently results in high (50-60%) mortality rates.

Management Info
According to Todar (2002), treatment of cholera involves the rapid intravenous replacement of the lost fluid and ions. Following this replacement, administration of isotonic maintenance solution should continue until the diarrhea ceases. If glucose is added to the maintenance solution it may be administered orally, thereby eliminating the need for sterility and intravenous administration. By this simple treatment regimen, patients on the brink of death seem to be miraculously cured and the mortality rate of cholera can be reduced more than ten-fold. Most antibiotics and chemotherapeutic agents have no value in cholera therapy, although a few (e.g. tetracyclines) may shorten the duration of diarrhea and reduce fluid loss. The CDC (2001) indicates that international public health authorities are working to enhance surveillance for cholera, investigate cholera outbreaks, and design and implement preventive measures.

Pathway
The U.S. Food and Drug Administration is testing imported and domestic shellfish and monitoring the safety of U.S. shellfish beds through the shellfish sanitation program (CDC, 2001). Transmission is through contaminated food or water sources (Todar, 2002). *V. cholerae* is endemic or epidemic in areas with poor sanitation (Finkelstein, UNDATED).

Principal source: *Vibrio cholerae* and Asiatic cholera (Todar, 2002)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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Managment information

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CONABIO. 2008. Sistema de informaci﷿n sobre especies invasoras en M﷿xico. Especies invasoras - Otros invertebrados. Comisi﷿n Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.
Summary: English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - Aquatic invertebrates is available from:
http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Otros_invertebrados [Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci﷿n sobre especies invasoras de m﷿xico cuenta actualmente con informaci﷿n aceca de nombre cient﷿fico, familia, grupo y nombre com﷿n, as﷿ como h﷿bitat, estado de la invasi﷿n en M﷿xico, rutas de introducci﷿n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p﷿gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci﷿n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci﷿n novedades, para conocer los cambios.
Especies invasoras - Otros invertebrados is available from:
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