



RAPID RISK ASSESSMENT

Outbreak of cholera in Cuba, potential risk for European travellers

12 July 2012

Main conclusions and recommendations

As of 12 July 2012, 85 cases of *Vibrio cholerae* were confirmed by the Cuban Ministry of Health. Despite control measures, further cases cannot be excluded at this stage. This is the first time in almost 150 years that Cuba has reported an outbreak of cholera.

Sanitary control measures have been put in place by the Cuban health authorities. Based on the available information at this stage, the outbreak appears to be mainly localised in the Granma province, mostly in Manzanillo City. Should the outbreak not spread beyond this area, the risk of infection for European tourists visiting Cuba is negligible. If the outbreak spreads to other provinces, the risk of infection for European tourists should be reassessed. However, with appropriate precautionary measures, the overall risk of infection remains low, as is the risk for further spread of the infection upon return to Europe. Travellers should seek information on how to prevent cholera contamination prior to visiting affected areas. Clinicians should be made aware to keep the possibility of cholera firmly in mind for travellers returning from Cuba who show clinical signs suggestive of this disease.

Source and date of request

Internal decision during the ECDC daily round table on 5 July 2012

Public health issue

Cases of cholera in Manzanillo, Granma province, Cuba and potential risk for infection of European citizens travelling to Cuba.

Consulted experts

World Health Organization European Region and the Pan American Health Organization

Disease background information

Cholera is an acute diarrhoeal infection caused by the bacterium *Vibrio cholerae* from two toxigenic serogroups, namely O1 and O139 among a total of 200 serogroups. These two serogroups are related to cholera epidemic. The *V. cholerae* O1 serogroup is divided into two biotypes: classical and *El Tor*. Moreover, *V. cholerae* O1 is subdivided into three serotypes: Ogawa and Inaba, which are the most frequent, and Hikojima [1].

Most individuals infected with *V. cholerae* remain asymptomatic or show only mild diarrhoea. Symptomatic cases of human infection are characterised by acute secretory watery diarrhoea (rice water stools), commonly with vomiting, nausea and abdominal discomfort [2]. Fever is uncommon. The incubation period is between a few hours and five days. About 20% of the cases can present a moderate form of the disease, and 2–5% a severe form with massive and acute diarrhoea, severe dehydration and potential hypotensive shock which can lead to death (up to 50%) if left untreated. Among people receiving appropriate treatment based on rehydration, the case fatality rate is below 1%.

Treatment of cholera infection is through rehydration in function of the clinical severity (oral rehydration salt solution for mild cases and intravenous fluids in more severe clinical cases). Using anti-diarrhoeal drugs is not recommended in patients with cholera. It has been suggested that providing a 1–3 day course of antibiotics in severely ill patients can shorten the illness and reduce the frequency of loose stools. There are two oral whole-cell killed cholera vaccines currently available with protection of over 50% lasting for two years in endemic settings [3]. Vaccines are not usually recommended as control measures for outbreaks.

Transmission to humans is usually through the consumption of contaminated water and food items (i.e.: seafood from contaminated water, fruits and vegetables irrigated with contaminated water etc.), but also through direct exposure to faeces/vomit of an infected person. The most common risk factors for cholera outbreaks are water source contamination, poor sanitation and lack of sewage treatment, and to a lesser extent, heavy rainfall, flooding events and population displacement.

V. cholerae is a species of the *Vibrionaceae* family of bacteria found in coastal and estuarine waters of temperate and tropical regions. The serogroup O1 presents a worldwide distribution, and O139 is endemic in Asia. The epidemiology of cholera demonstrates an endemic and epidemic pattern. In endemic area of southern Asia, *V. cholerae* causes periodic, seasonal outbreaks in regions where it is an established member of the indigenous aquatic bacterial flora. Epidemic pattern is usually recorded in regions where the population is immunologically naive, such as recent major outbreaks in the African continent and Haiti.

Globally, approximately 2.8 million cholera cases occur annually in endemic countries (uncertainty range: 1.4–4.3) with nearly 91 000 deaths among 1.4 billion people considered at risk [4]. In non endemic countries, the number of cases is estimated at 87 000 and 2 500 deaths. The major burden of cholera is located in southern Asia and Africa. It is a common diarrheal disease in South East Asia, particularly the Indian sub-continent (e.g. India, Bangladesh), and also in several countries in sub-Saharan Africa. In the past decade, major outbreaks have been notified in West Africa (Guinea, Guinea-Bissau Sierra Leone, Ghana and Nigeria), in Central Africa (Angola, Democratic Republic of Congo, Cameroun and Chad), and Eastern Africa (Somalia, Zimbabwe and Mozambique) [5]. Additionally in the Caribbean region, a major outbreak is ongoing since the end of 2010 on Hispaniola Island with more than 577 500 cases reported in Haiti [6] and 25 330 cases in the Dominican Republic [7].

Event background information

Cuba is a large Caribbean island between the North Atlantic Ocean and the Caribbean Sea, 150 km south of Florida State (USA) and less than 100 km west from Haiti. Cuba is the largest country in the Caribbean with an estimated population of 11 million inhabitants. The country is divided into 15 provinces and one special municipality. The life expectancy at birth is nearly 77 years with an infant mortality rate of 4.83 deaths/1 000 live births. Cuba's climate is tropical with a rainy season (May to October) and dry season (November to April). Hurricanes can occur on the east coast at the end of the rainy season.

On 3 July 2012, the Cuban Ministry of Health confirmed the occurrence of an outbreak of cholera in the city of Manzanillo, in the south west of the country. During the previous weeks, the surveillance system in Cuba recorded an increased trend of diarrheal diseases, which were likely influenced by the high temperatures and heavy rains. The highest incidence of cases was in the Granma province, with the majority of the cases reported from the city of Manzanillo (Figure 1).

Figure 1. Affected areas in Granma Province



Note: in orange, the Province of Granma

In Granma province, approximately 1 000 patients were reported to have been treated for gastrointestinal infections and among them 85 were confirmed to be infected with *V. cholerae*: 63 cases in Manzanillo, 13 cases in Yara, five cases in Niquero, two cases in Bayamo and two cases in Campechuela. Three of the confirmed cholera cases have died: a 66 year old, 70 year old and 95 year old, all with chronic illness [8–11]. No information on the serotype is available yet.

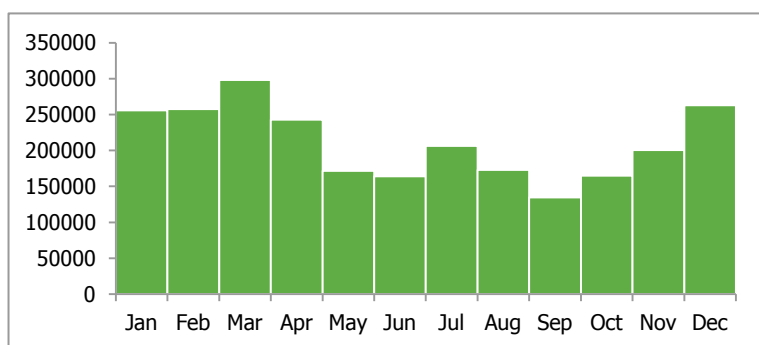
According to the Cuban Ministry of Health, control measures have been implemented, including sampling and closure of contaminated private and public wells, treatment of waste water, removal of water leaks, chlorination of water in the affected areas, cleaning and sanitation of septic tanks, and public awareness campaigns about the importance of good sanitary and hygiene practices [8, 9].

This outbreak is the first confirmed notable outbreak of cholera in Cuba since the 19th century [12].

ECDC threat assessment for the EU

In 2010, there were more than 2.5 million tourists visiting Cuba*. Among these tourists approximately 810 000 (32%) were European residents, mostly from Italy, Spain, and Germany [13]. Around 58% of these tourists were visiting Cuba during the European winter months (Figure 2).

Figure 2. Number of tourists arriving by air per month in 2010 [13]



Manzanillo city, with a population of around 150 000 inhabitants, is located in the south of the island, in the administrative province of Granma. This is a port town in eastern Cuba, on the Gulf of Guanacayabo in the Caribbean Sea. It is a commercial city and exchange point for agricultural merchandise. This area is not one of the major tourist centres in Cuba, which are mainly located in the north of the island (Havana and the beaches along the northern coast). The main tourism area of Granma is the National Park of Sierra Maestra located south of the Province.

The Cuban health authorities have experience in the management of cholera outbreaks through their involvement in the Haitian response [14], yet despite the effort of the Cuban health authorities in controlling this outbreak, the occurrence of further cases in Manzanillo, and spreading to the surrounding areas and other provinces cannot be excluded at this stage.

Travel-associated cholera cases reported in Europe are rare and usually associated with travel to the Indian subcontinent and Africa, where outbreaks frequently affect local populations. In 2011, a few imported cholera cases were reported in European travellers returning from the Dominican Republic.

Globally, the risk of cholera infection in travellers visiting Cuba should be considered low. Applying suitable precautionary sanitary-hygienic measures plays a key role in the prevention of the disease. Visitors of cholera endemic or epidemic countries should only drink bottled water or water treated with chlorine, carefully wash all fruits and vegetables with bottled or chlorinated water before consumption, regularly wash their hands (especially before eating), avoid consuming raw sea-food products and only eat them when thoroughly cooked [15]. Travellers with severe watery diarrhoea should seek immediate medical attention.

Considering the hygiene standards in the European Union, the risk for further transmission of cholera upon return of imported cases, is considered negligible.

In European Union Member States, a cholera vaccine is not routinely recommended for travellers but might be considered for humanitarian health workers and military personnel working in refugee camps, persons travelling to cholera epidemic/endemic countries with limited access to safe drinking water and/or no access to medical care, and immune compromised people. Travellers should seek advice from travel medicine clinics to assess their personal risk.

A close monitoring of the situation in the region is essential to better prevent and control the spread of the disease.

* This includes arrival by air only; additional tourists arrive by sea (on cruise ships and pleasure craft)

Conclusions

As of 12 July 2012, 85 cases of *V. cholerae* were confirmed by the Cuban Ministry of Health however the incidence of infection is likely to be much higher than this. Despite control measures, further cases cannot be excluded at this stage. It is the first time in almost 150 years that Cuba has experienced an outbreak of cholera.

Sanitary control measures have been put in place by the Cuban health authorities. Based on the available information at this stage, the outbreak appears to be mainly localised in the Granma province, mostly in Manzanillo city. Should the outbreak not spread beyond this area, the risk of infection for European tourists visiting Cuba is negligible. If the outbreak spreads to other provinces, the risk of infection for European tourists should be reassessed. However, with appropriate precautionary measures, the overall risk of infection remains low, as is the risk for further spread of the infection upon return to Europe. Travellers should seek information on how to prevent cholera contamination prior to visiting affected areas. Clinicians should be made aware to keep the possibility of cholera firmly in mind for travellers returning from Cuba who show clinical signs suggestive of this disease.

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