

Cholera

Key facts

- Cholera is an acute diarrhoeal disease that can kill within hours if left untreated.
 - There are an estimated 3–5 million cholera cases and 100 000–120 000 deaths due to cholera every year.
 - Up to 80% of cases can be successfully treated with oral rehydration salts.
 - Effective control measures rely on prevention, preparedness and response.
 - Provision of safe water and sanitation is critical in reducing the impact of cholera and other waterborne diseases.
 - Oral cholera vaccines are considered an additional means to control cholera, but should not replace conventional control measures.
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Cholera is an acute diarrhoeal infection caused by ingestion of food or water contaminated with the bacterium *Vibrio cholerae*. Every year, there are an estimated 3–5 million cholera cases and 100 000–120 000 deaths due to cholera. The short incubation period of two hours to five days, enhances the potentially explosive pattern of outbreaks.

Symptoms

Cholera is an extremely virulent disease. It affects both children and adults and can kill within hours.

About 75% of people infected with *V. cholerae* do not develop any symptoms, although the bacteria are present in their faeces for 7–14 days after infection and are shed back into the environment, potentially infecting other people.

Among people who develop symptoms, 80% have mild or moderate symptoms, while around 20% develop acute watery diarrhoea with severe dehydration. This can lead to death if untreated.

People with low immunity – such as malnourished children or people living with HIV – are at a greater risk of death if infected.

History

During the 19th century, cholera spread across the world from its original reservoir in the Ganges delta in India. Six subsequent pandemics killed millions of people across all continents. The current (seventh) pandemic started in South Asia in 1961, and reached Africa in 1971 and the Americas in 1991. Cholera is now endemic in many countries.

***Vibrio cholerae* strains**

Two serogroups of *V. cholerae* – O1 and O139 – cause outbreaks. *V. cholerae* O1 causes the majority of outbreaks, while O139 – first identified in Bangladesh in 1992 – is confined to South-East Asia.

Non-O1 and non-O139 *V. cholerae* can cause mild diarrhoea but do not generate epidemics.

Recently, new variant strains have been detected in several parts of Asia and Africa. Observations suggest that these strains cause more severe cholera with higher case fatality rates. Careful epidemiological monitoring of circulating strains is recommended.

The main reservoirs of *V. cholerae* are people and aquatic sources such as brackish water and estuaries, often associated with algal blooms. Recent studies indicate that global warming creates a favourable environment for the bacteria.

Risk factors and disease burden

Cholera transmission is closely linked to inadequate environmental management. Typical at-risk areas include peri-urban slums, where basic infrastructure is not available, as well as camps for internally displaced people or refugees, where minimum requirements of clean water and sanitation are not met.

The consequences of a disaster – such as disruption of water and sanitation systems, or the displacement of populations to inadequate and overcrowded camps – can increase the risk of cholera transmission should the bacteria be present or introduced. Epidemics have never arisen from dead bodies.

Cholera remains a global threat to public health and a key indicator of lack of social development. Recently, the re-emergence of cholera has been noted in parallel with the ever-increasing size of vulnerable populations living in unsanitary conditions.

The number of cholera cases reported to WHO continues to rise. For 2011 alone, a total of 589 854 cases were notified from 58 countries, including 7816 deaths. Many more cases were unaccounted for due to limitations in surveillance systems and fear of trade and travel sanctions. The true burden of the disease is estimated to be 3–5 million cases and 100 000–120 000 deaths annually.

Prevention and control

A multidisciplinary approach based on prevention, preparedness and response, along with an efficient surveillance system, is key for mitigating cholera outbreaks, controlling cholera in endemic areas and reducing deaths.

Treatment

Cholera is an easily treatable disease. Up to 80% of people can be treated successfully through prompt administration of oral rehydration salts (WHO/UNICEF ORS standard sachet). Very severely dehydrated patients require administration of intravenous fluids. Such patients also require appropriate antibiotics to diminish the duration of diarrhoea, reduce the volume of rehydration

fluids needed, and shorten the duration of *V. cholerae* excretion. Mass administration of antibiotics is not recommended, as it has no effect on the spread of cholera and contributes to increasing antimicrobial resistance.

In order to ensure timely access to treatment, cholera treatment centres (CTCs) should be set up among the affected populations. With proper treatment, the case fatality rate should remain below 1%.

Outbreak response

Once an outbreak is detected, the usual intervention strategy is to reduce deaths by ensuring prompt access to treatment, and to control the spread of the disease by providing safe water, proper sanitation and health education for improved hygiene and safe food handling practices by the community. The provision of safe water and sanitation is a formidable challenge but remains the critical factor in reducing the impact of cholera.

Oral cholera vaccines

There are two types of safe and effective oral cholera vaccines currently available on the market. Both are whole-cell killed vaccines, one with a recombinant B-sub unit, the other without. Both have sustained protection of over 50% lasting for two years in endemic settings.

Both vaccines are WHO-prequalified and licensed in over 60 countries. Dukoral has been shown to provide short-term protection of 85–90% against *V. cholerae* O1 among all age groups at 4–6 months following immunization.

The other vaccine (Shanchol) provides longer-term protection against *V. cholerae* O1 and O139 in children under five years of age.

Both vaccines are administered in two doses given between seven days and six weeks apart. The vaccine with the B-subunit (Dukoral) is given in 150 ml of safe water.

WHO recommends that immunization with currently available cholera vaccines be used in conjunction with the usually recommended control measures in areas where cholera is endemic as well as in areas at risk of outbreaks. Vaccines provide a short term effect while longer term activities like improving water and sanitation are put in place.

When used, vaccination should target vulnerable populations living in high risk areas and should not disrupt the provision of other interventions to control or prevent cholera epidemics. The WHO 3-step decision making tool aims at guiding health authorities in deciding whether to use cholera vaccines in complex emergency settings.

The use of the parenteral cholera vaccine has never been recommended by WHO due to its low protective efficacy and the high occurrence of severe adverse reactions.

Travel and trade

Today, no country requires proof of cholera vaccination as a condition for entry. Past experience shows that quarantine measures and embargoes on the movement of people and goods are unnecessary. Isolated cases of cholera related to imported food have been associated with food

in the possession of individual travellers. Consequently, import restrictions on food produced under good manufacturing practices, based on the sole fact that cholera is epidemic or endemic in a country, are not justified.

Countries neighbouring cholera-affected areas are encouraged to strengthen disease surveillance and national preparedness to rapidly detect and respond to outbreaks should cholera spread across borders. Further, information should be provided to travellers and the community on the potential risks and symptoms of cholera, together with precautions to avoid cholera, and when and where to report cases.

WHO response

Through the WHO Global Task Force on Cholera Control, WHO works to:

- provide technical advice and support for cholera control and prevention at country level
- train health professionals at national, regional and international levels in prevention, preparedness and response of diarrhoeal disease outbreaks
- disseminate information and guidelines on cholera and other epidemic-prone enteric diseases to health professionals and the general public.

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