

Cholera

Report by the Secretariat

1. Cholera is an acute enteric infection characterized by profuse vomiting and acute watery diarrhoea caused by ingestion of the bacterium *Vibrio cholerae* serogroup O1 or O139. The infection can lead within hours to rapid dehydration and death. If untreated, the case-fatality rate can reach 50%, but with timely and adequate treatment that rate will remain below 1%. In 80% of cases patients recover when treated only with oral rehydration salts, whereas 10% to 20% of patients need administration of intravenous fluids for rehydration.

2. Because of the short incubation period of cholera and delays in timely control measures due to weaknesses in early warning systems, outbreaks tend to be explosive in nature. In recent years massive outbreaks have occurred in countries that have been free of the disease for decades. The most recent example, in Zimbabwe, accounted for 98 591 cases including 4288 deaths between August 2008 and July 2009, one of the biggest outbreaks recorded in recent history. However, the long-lasting endemic occurrence of cholera in several countries in South-East Asia as well as in Africa should not be underestimated and remains an insidious burden on public health.

3. Analysis of global trends in the incidence of cholera by five-year periods shows a steady increase since the beginning of the millennium. From 2004 to 2008, a cumulative total of 838 315 cases was notified to WHO, compared with 676 651 cases between 2000 and 2004, representing a 24% increase in the number of cases reported for this most recent five-year period. However, the true number of cholera cases is known to be much higher. The reported figures exclude the estimated 500 000–700 000 cases of patients with acute watery diarrhoea that occur every year in vast areas of central and South-East Asia and in some African countries. The discrepancy results from underreporting and other limitations of surveillance systems, including inconsistencies in case definitions and lack of a standard vocabulary.¹

4. Underreporting may also occur because of fear of unjustified sanctions on travel and trade. Sanctions, in any case, have been shown not to contribute to efficient control of cholera. Effective public health interventions such as proper and timely case management, improved environmental management and adequate use of oral cholera vaccines all depend upon a solid surveillance system and a coordinated multisectoral approach including access to appropriate health care, and help to mitigate or avert epidemics. The International Health Regulations (2005), which entered into force in June 2007, encourage adherence to open and transparent sharing of information, with the aim of contributing to efficient prevention and containment of cholera epidemics.

¹ Cholera 2008. *Weekly epidemiological record*, 2009, **84** (31):309–324.

5. As a waterborne disease closely linked to poor environmental conditions and lack of personal hygiene, cholera is associated with the same risk factors as other waterborne diarrhoeal diseases. The absence or shortages of safe water and proper sanitation, as well as poor waste management, contribute to the spread of these diseases. These circumstances exist in many places of the developing world, particularly in overcrowded settlements but also in rural areas, along rivers or near lake shores. The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation 2010 update¹ indicates that 884 million people still lack access to an “improved drinking-water source”, the region of sub-Saharan Africa is home to 40% of all people without access to an improved drinking-water source.²

6. By 1991, the seventh pandemic of cholera had spread to Latin America, and in response to the threat of further spread, the Health Assembly adopted resolution WHA44.6. As a result, the WHO Global Task Force on Cholera Control was launched in 1992 with the aim of supporting Member States in reducing the morbidity and mortality associated with cholera and in diminishing the social and economical consequences of the disease.

7. Many countries are making substantial efforts to contain cholera by focusing on responses to outbreaks, but cholera control depends on far more than prompt medical treatment of cases. The interplay between prevention, preparedness and response, and the existence of an efficient surveillance system are crucial for mitigating outbreaks and lowering case-fatality rates. Cholera prevention and control require access to safe water, adequate sanitation, adequate food safety and personal hygiene and rely on a programmatic coordinated multisectoral approach. Community involvement, open and transparent sharing of information, and policy dialogue are core elements of this approach, which also has the advantage of benefiting the prevention and control of other waterborne diarrhoeal diseases.

8. Although the management of water resources is crucial, access to safe water sources needs to be improved and sustained, along with promotion of household-level water treatment and safe storage in order to prevent occurrence of cholera and to reduce morbidity in case of outbreaks. Even households that have access to improved drinking-water sources may suffer from recontamination within the home, requiring specific action to prevent exposure at that level.

9. Given the continued growth of the world population, increased rural migration, failing infrastructure, climate change, and competing public health priorities, preventive measures at the global level have not controlled the disease. Efforts to control cholera are now entering a new phase with the development of safe and effective oral cholera vaccines, which are complementary to, but not substitutes for, traditional preventive measures.

10. Several oral cholera vaccines have been developed and proven safe, immunogenic and effective.³ So far, the WC-rBS vaccine consisting of killed whole-cell *Vibrio cholerae* O1 with purified recombinant B subunit of cholera toxoid is the only WHO prequalified vaccine. It is given in two doses – each diluted in 1.5 dl of buffered water – one week (but less than six weeks) apart, and elicits protective efficacy about one week after the second dose. A reformulation of this vaccine, developed as a result of North-South and South-South technology transfer, is now manufactured and

¹ World Health Organization and United Nations Children’s Fund Joint Monitoring Programme for Water Supply and Sanitation. Progress on sanitation and drinking water: 2010 update. Geneva, World Health Organization, 2010.

² See also document EB127/6.

³ Cholera vaccines: WHO position paper. *Weekly epidemiological record*, 2010, **85**(13):117–128.

licensed in India. This vaccine does not require any buffer and is in the pipeline for WHO prequalification.

11. Following several mass vaccination campaigns using the original two-dose vaccine, WHO issued recommendations in 2005 for the use of oral cholera vaccines in complex emergencies, stressing a multidisciplinary approach and the need to consider cholera prevention and control within the larger context of public health priorities in times of crisis.¹ A three-step decision-making tool was developed for use by countries in assessing (i) the risk of an outbreak, (ii) the capacity to contain a potential outbreak, and (iii) the feasibility of a mass immunization campaign using oral cholera vaccines in a given context.

12. Recommendations for oral cholera vaccine use were discussed in October 2009 by the Strategic Advisory Group of Experts on immunization, providing the background information for the recently issued WHO position paper on cholera vaccines. The recommendations are as follows:² (i) cholera control should be a priority in areas where the disease is endemic; and (ii) given the availability of two oral cholera vaccines – one prequalified and the other pending prequalification – immunization with these vaccines should be used in conjunction with other prevention and control strategies in areas where the disease is endemic and should be considered for use in areas at risk for outbreaks. Vaccination should not disrupt the provision of other high-priority health interventions to prevent or control cholera outbreaks.³ Administration of vaccines, which produces a benefit in the short term, can bring about an immediate response while the longer-term interventions of improving water and sanitation, which involve large investments, are put into place.

13. Although considerable efforts have been made in controlling cholera, global trends in its occurrence have been steadily increasing and countries have become discouraged in view of the numerous challenges faced in trying to control epidemics. Some of the challenges and the recommended responses are as follows:

- Current responses to cholera outbreaks tend to be reactive, taking the form of an ad hoc emergency response. This approach may prevent deaths, but fails to prevent occurrence of cases. A programmatic, concerted and coordinated approach is called for that fully covers prevention, preparedness and response by considering strategies to reduce the risk of cholera.
- Coordination across sectors has been poor, making improvement of the links between the health and the water sectors paramount for sustained activities to control cholera.
- National action plans, when they exist, are often not adapted to the local context, which is a necessary step in order to enhance multidisciplinary prevention and control activities.

¹ Document WHO/CDS/NTD/IDM/2006.2.

² Meeting of the Strategic Advisory Group of Experts on immunization, October 2009 – conclusions and recommendations. *Weekly epidemiological record*, 2009, **84**(50):526–528.

³ Cholera vaccines: WHO position paper. *Weekly epidemiological record*, 2010, **85**(13):117–128.

- In line with the recently launched UNICEF/WHO seven-point action plan,¹ household water treatment and safe storage need to be promoted, scaled up and supported by effective policy frameworks.
- Surveillance of cholera is not efficiently integrated into overall surveillance systems. Local capacities for data collection and analysis should be strengthened and be part of such integrated systems, thereby facilitating identification of high-risk areas and trends over time and guiding control activities.
- Assessing or forecasting the risk of occurrence of epidemics is difficult. Collecting data on cholera cases alone is not sufficient to conduct risk assessment or to identify the trigger responsible for outbreaks. Surveillance should encompass information on crucial determinants such as existence of water sources, environmental conditions, means of communication and cultural beliefs and practices.
- Experience gained from mass vaccination campaigns with oral cholera vaccines highlights the difficulty in performing both vaccination and other preventive measures in parallel. The vaccines should be administered in conjunction with other recommended prevention and control methods and should not be a substitute for the usual, recommended preventive measures. Further, mass vaccination campaigns have to be well planned and prepared.
- The availability of rapid diagnostic tests for early warning and triggering intervention is inadequate and needs to be further enhanced through research.

14. The WHO Global Task Force on Cholera Control continues to provide support for comprehensive and coordinated cholera-control activities and technical guidance to Member States. Its members also contribute to operational research with the aim of obtaining evidence on best practices.

15. Know-how and tools for efficient prevention and control are available and can make a difference, provided that they are put in place in a timely manner, a concerted and coordinated approach is adopted, and funds are made available.

16. The inclusion of a strong programmatic and multidisciplinary approach specifically for cholera as part of prevention and control activities for diarrhoeal diseases generally has proven effective in both diminishing the occurrence of epidemics and decreasing the case-fatality rate during outbreaks.² Such an approach to prevention and control requires strong leadership, political commitment and involvement of all concerned. Further efforts need to be undertaken and means made available for WHO to play its role in supporting efficient programmes for control of both cholera and diarrhoeal diseases in countries.

ACTION BY THE EXECUTIVE BOARD

17. The Executive Board is invited to note the report.

¹ UNICEF, WHO. *Diarrhoea: why children are still dying and what can be done*. New York, UNICEF, 2009.

² Document WHO/EMC/DIS/97.5.