

Cholera and other Epidemic
Diarrhoeal Diseases Control

**Fact Sheets on
Environmental
Sanitation**

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Introduction

Cholera is one of the most widely known and feared of all diseases. It is transmitted by ingestion of the bacteria *Vibrio cholerae* from the excreta of an infected person. Preventing transmission of cholera depends on interrupting the routes by which *V. cholerae* bacteria spread. These bacteria are spread from the excreta of an infected person in many ways, including: inadequate excreta disposal and sewage treatment; contamination of water sources; poor personal hygiene and the contamination of foodstuffs; and flies.

Experience has shown that the most important actions for the control of the spread of cholera involve improving environmental sanitation, providing safe excreta disposal facilities, providing adequate supplies of water for hygiene purposes, and improving personal and food hygiene.

Vibrio cholerae can survive for relatively long periods in the environment and can be especially long lived in water. This has a significant effect on the persistence and spread of cholera.

It has been shown by three decades of inter-site research that vaccination, mass chemoprophylaxis and *cordon sanitaire* are not effective ways of controlling or preventing outbreaks of cholera. Asymptomatic carriers are common and this is one of the reasons for the ineffectiveness of travel restrictions in preventing the spread of cholera.

In 90 per cent of cases, cholera is mild and indistinguishable from other types of acute diarrhoea. Where cholera is present but not epidemic, less than five per cent of all cases of acute diarrhoea are cholera.

Improved treatment (in most cases oral rehydration therapy) reduces fatality rates to less than one per cent.

Thus, lack of safe water, inadequate sanitation and contaminated food are areas to which great emphasis must be given if a sustainable solution to the threat of cholera epidemics is to be achieved. It is well known however, that the construction of new facilities to improve the levels of coverage of water supply and sanitation often requires enormous financial resources. Despite the costs involved, policy-makers at the highest level must realize that ensuring access to safe water supply and appropriate means of excreta disposal represent the only sustainable solution ways of preventing and controlling cholera and other epidemic diarrhoeal diseases.

Unfortunately, in most cases the necessary resources are not available in the short term. Even if the financial constraints are eventually overcome, considerable time will elapse before results are achieved. Hence, it is worthwhile trying to identify measures with more immediate impact in terms of improvement of the use of existing facilities, with particular emphasis on better water quality control, adequate maintenance of water supply and sanitation systems, and improved hygiene practices. These environmental sanitation interventions should be prioritized according to a realistic assessment of the financial and technical resources available and in the light of the expected impact of each priority action on cholera prevention and control.

The following Fact Sheets have been produced by the Robens Institute of the University of Surrey for the World Health Organization in an attempt to consolidate concepts, procedures and techniques developed by different authors for the prevention and control of cholera and other epidemic diarrhoeal diseases through improved environmental sanitation practices. Issues of relevance to the prevention and control of cholera and other epidemic diarrhoeal diseases, identified in many different publications, have been presented as far as possible in a comprehensive and practical way.

The document covers four major areas: planning; water supply; sanitation; and hygiene education.

Planning deals with basic organizational structures at the national and local levels, including arrangements for and definition of roles of national coordinating committees, action committees and local task-forces. It also describes the personnel, materials and equipment needed, together with the sequence of operations to be carried out, to control an outbreak of epidemic diarrhoeal disease.

Water supply focuses on the methodologies for conducting sanitary inspections and upgrading different parts of the water supply system, as well as on measures to reduce the risk of contamination of the water produced and distributed. A major emphasis is placed on drinking water quality. Fact Sheets describe the main methods of disinfecting water and outline the properties, advantages and disadvantages of chemicals available on the market and the equipment used in drinking water disinfection. Methods for cleaning and disinfecting different facilities, such as wells, storage tanks and pipelines, are also described.

Sanitation covers excreta disposal options for both urban and rural areas. Along with description of several types of latrines for different applications, are analyses of the advantages and inconveniences of each. One of the conclusions is that some low-cost excreta disposal methods, although often referred to in the specialized literature, are not effective or safe. Emergency latrines, or trench latrines, for instance, should only be used as a short term alternative, to meet emergency requirements, while a more definitive solution is under implementation. Latrines in which excreta are kept in the home, using a bucket that can then be emptied (cartage), represent a major health risk especially during a cholera or other diarrhoeal disease epidemic. On the other hand, Ventilated Improved Pit latrines (VIP) might be an excellent alternative for rural areas, especially when water is scarce and the population is not densely grouped. The Blair latrine, for instance, developed and largely used in Zimba-

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