

# Environmental sanitation: A health approach for cholera control

by José A. Hueb

**In recognition of both the continuing threat of cholera and the wide range of skills needed to combat the disease, WHO has set up a multidisciplinary Global Task Force.**

A GLOBAL TASK FORCE on cholera prevention and control was set up in April 1991 by the World Health Organization (WHO). Its primary aim was to support and interact with national and international efforts to combat this epidemic. The Global Task Force concentrated its action on the following major priorities:

- intensify assistance to national cholera control activities;
- enhance information exchange;
- review and revise policy;
- intensify research efforts;
- mobilize financial resources; and
- activate a global technical resource network.

This Global Task Force was created as a response to the cholera outbreak

in Latin America in January 1991, because it was felt that a multidisciplinary and integrated approach would have a synergetic effect on the prevention and control of cholera. For this reason, the WHO Global Task Force is made up of representatives of the many different units: Diarrhoeal Disease Control Programme, the Division of Environmental Health (Community Water Supply and Sanitation Unit), the Food Safety Programme, the Strengthening of Epidemiological and Statistical Services Unit, the Office of External Co-ordination, the Division of Health Education, the Division of Emergency Relief Operations, and the Action Programme on Essential Drugs. These WHO Units have been working

in co-operation with other international agencies since 1991 to develop guidelines and formulate and implement regional and country-level programmes to prevent and control cholera.

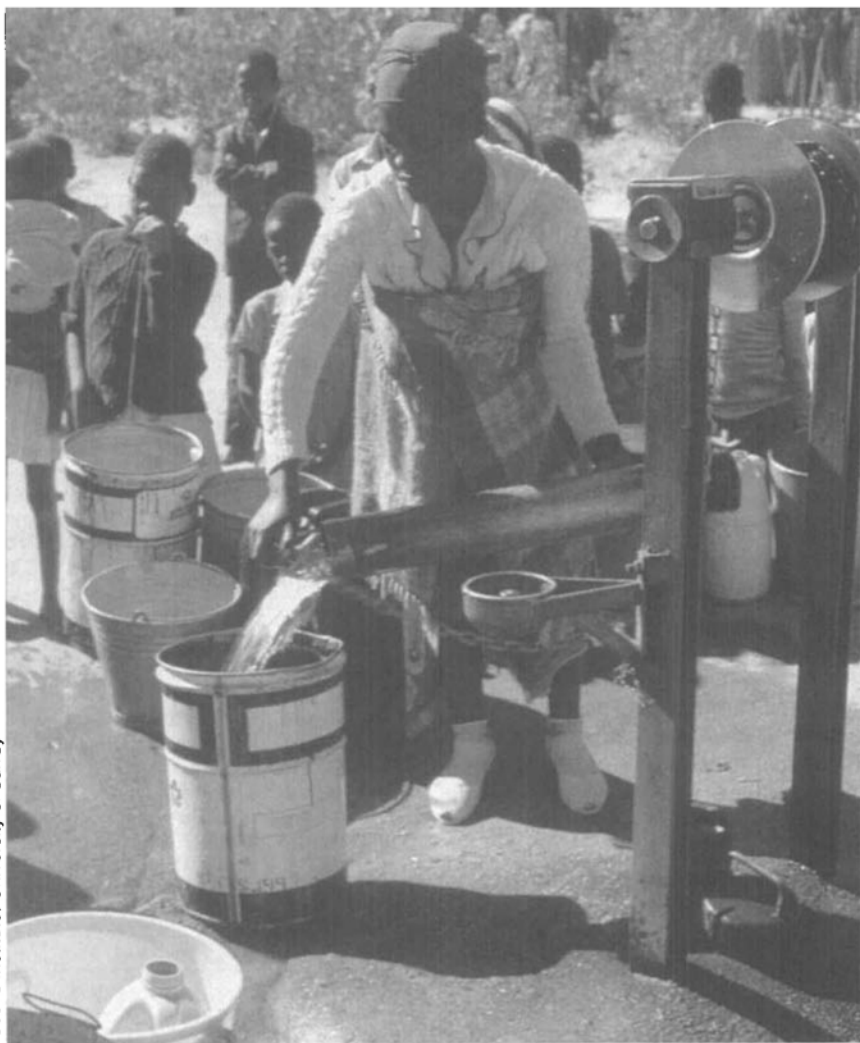
The Division of Environmental Health has been participating actively in this initiative, particularly in aspects of drinking-water supply, sanitation, and solid waste disposal. In addition to the development and promotion of long-term action aimed at extending the coverage and sustainability of water supply and sanitation services, which are intended to improve health in general (including cholera prevention and control), the Division of Environmental Health has greatly emphasized priority measures of more immediate impact.

## Case histories

Approximately 71 000 cases of cholera were reported to WHO in 1990. Ninety-nine per cent of the cases occurred in eleven countries in Africa and twelve countries in Asia. As reported worldwide, a cholera epidemic broke out on the coast of Peru in the beginning of 1991, and spread to most countries of the American Region (including North, Central, and South America).

It was reported that there were 387 488 cases and 3963 deaths in the American Region in 1991, accounting for 67.8 per cent of the total number of cases reported to WHO at the global level. Peru, Ecuador, and Colombia were alone responsible for 97.4 per cent of the cases reported in the Americas. Although most countries in the region reported a substantial increase in the number of cholera cases in 1993, the total number of cases for the American region was reduced to about a half of the cases in 1991.<sup>1</sup> This reduction reflected a substantial decrease in the number of cases in the countries which were most severely affected by the epidemic in 1991. The number of cases reported by Peru dropped dramatically in 1993, but it is still reporting the most cholera cases in the American Region (70 671 cases in 1993 compared with 321 334 in 1991), followed by Brazil and Guatemala (42 961 cases and 25 531 cases in 1993, respectively). Nearly all countries in Latin America reported cases in 1993.

In Africa, 139 970 cases and 13 018 deaths were reported in 1991. Al-



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*Extending coverage with safe continuous water supplies should be a priority.*



WHO photo

Safe excreta disposal is a key measure for cholera prevention and control — where latrines contaminate drinking-water cholera will continue to persist.

though there was a reduction of 57 per cent in the number of cases reported in 1992, no substantial further reduction occurred in 1993. A significant change occurred in the reported death-to-case ratio though, which dropped from 9.3 per cent in 1991 to 3.1 per cent in 1993. Most countries in the African Region reported fewer cases in 1993 than in 1991.

In Asia, there was a significant reduction in the number of cases reported in 1992 (14 421 cases and 255 deaths) compared to 1991 (43 696 cases and 1137 deaths). The number of cases in 1993, however, increased again to 63 364 cases and 1222 deaths. Afghanistan, India, and Nepal accounted for 86.1 per cent of all cases in 1993. Aggravating this situation, a new strain of *V. cholerae* with epidemic potential, a non-O1 *V. cholerae* called 0139, emerged in Bangladesh and India at the end of 1992. Until then, only serotype 01 strains were

known to cause epidemic cholera. It must be remembered when analysing these figures that the completeness of reporting varies greatly from country to country. Some countries known to have endemic and/or epidemic cholera have not officially reported it to WHO.

Table 1 summarizes the situation of the areas of the world most affected by cholera from 1991 to 1993, based on information reported to WHO.

Although cholera appears to be under control in a few countries, it continues to affect new areas and it is likely to spread to other areas with dense populations affected by poverty, lack of an adequate water supply, and deficient sanitary and environmental conditions.

### Water and sanitation

Lack of safe water and inadequate sanitation are the main causes of cholera epidemics. Greater emphasis

must therefore be put on these issues if a sustainable solution is to be found. The only reliable way of preventing cholera is to ensure that everyone has access to safe drinking-water and adequate excreta disposal systems.

The construction of new facilities to improve this situation may require large investments and some years to achieve. In many cases, national development policies do not give priority to these areas and, therefore, the financial resources required for long-term action are not available. A political decision must therefore be taken to support long-term national programmes aimed at providing adequate sanitation and a safe water supply to everyone. These programmes should have the following major aims:

- achieve optimal use of existing facilities through institutional development programmes focused on efficient management, development of human resources, sound financial practices, and effective operation and maintenance;
- extend coverage through the construction of new installations; and
- improve installations, equipment, and operations related to water quality control.

The revision of national plans dealing with water supply and sanitation (including wastewater treatment plants, where justified) is required to ensure that co-ordinated national efforts are working towards improved coverage with these services.

Table 1. Cholera cases in Africa, America, and Asia.<sup>2</sup>

Region	Indicator	Year		
		1991	1992	1993 <sup>3</sup>
Africa	Cases	139 970	60 291	58 750
	Deaths	13 018	2 942	1 843
	Death-to-case ratio (%)	9.3	4.9	3.1
America	Cases	387 488	351 835	175 291
	Deaths	3 963	2 249	1 905
	Death-to-case ratio (%)	1.0	0.6	1.1
Asia	Cases	43 696	12 421	63 364
	Deaths	1 137	255	1 222
	Death-to-case ratio (%)	2.6	2.1	1.9



Some foodstuffs may become contaminated during preparation and handling.

Before new water supply and sanitation facilities are built, programmes should aim to make the best possible use of the existing ones.

In the short term, interventions should be prioritized according to both a realistic assessment of the financial and technical resources available, and the expected impact of each action on cholera prevention and control.

With regard to water supply, WHO recommends that the following emergency interventions be carried out in cholera-affected areas:

- Drinking-water should be adequately disinfected, and procedures for disinfection in distribution systems and rural water systems should be improved.
- Tablets releasing chlorine or any other suitable product for water disinfection should be distributed to the population with instructions on their use, especially where the water distributed or used by the population is not safe.
- Where the chemical treatment of water is not possible, health education should stress that drinking-water should be boiled before use.
- Water quality control should be strengthened by intensifying the surveillance and control of residual chlorine, and conducting and analysing bacteriological tests in different points of the production and

distribution systems.

With regard to sanitation, WHO recommends that:

- Quality control in sewage treatment plants should be strengthened.
- The use of treated wastewater for irrigation should be carefully controlled, following national or international guidelines.
- The large-scale chemical treatment of wastewater is rarely justified, even in emergencies, because of the high cost, uncertain effect, and possible adverse impact on the environment and health.
- Health education should emphasize the safe disposal of human faeces:
  - All family members should use a latrine or toilet that is regularly cleaned and disinfected.
  - The faeces of infants and children should be disposed of immediately in a latrine or toilet, or by burying them.

Three years after the introduction of *V. cholerae* El Tor into Peru and its spread thereafter to practically all countries of the American Region, some countries in that region have managed to control the epidemic. But despite the fact that the countries most affected by the epidemic in 1991 (Peru, Ecuador, and Colombia) have succeeded in reducing dramatically the number of cases in 1993, several other countries have reported more cases in 1993 than in 1991.

In other regions the situation is similar and it is likely that cholera will persist for several years in the endemic state, with recurrent epidemic outbursts throughout the South.

The reduction of the number of cases in several countries of the American Region, especially Peru, Ecuador, and Colombia, is a result of the important efforts made by these countries, particularly in aspects of prevention: safe water, appropriate sanitation, food safety, and health education. The overall reduction of the death-to-case ratio, especially in Africa and Asia, is a consequence not only of the lower virulence of El Tor compared with the Classical *vibrio*, but also of the remarkable efforts made by the international and country agencies to disseminate the standard treatment procedures to ensure the prompt use of rehydration in case management.<sup>4</sup>

These considerations reiterate the well-known principle that 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 a cholera epidemic in the South is to be achieved. It is also well-known that the construction of new facilities to improve levels of coverage of water supply and sanitation in countries affected or at risk of cholera epidemics will require enormous financial resources. Despite the costs involved, decision-makers at the highest level should realize that this is the only sustainable solution for the problem.

Unfortunately, in most cases such resources are not affordable in the short term, and even if the financial constraints are overcome the results will not be achievable for some time. Several measures of more immediate impact should therefore be implemented, such as improving the existing facilities and emphasizing better water quality control, adequately maintaining water supply and sanitation systems, and improving hygiene practices, particularly in primary schools. ●

## References

1. All figures concerning 1993 referred to in this article have been reported to WHO as at 23 December 1993.
2. *Strengthening of Epidemiological and Statistical Services*. WHO, Geneva, 1993.
3. As at 23 December 1993.
4. 'WHO Guidance on formulation of national policy on the control of cholera'. WHO, Geneva, 1992.
5. *Weekly epidemiological record*, 67th year, No.6. WHO, Geneva, February 1992.

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