WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTÉ

EXPERT COMMITTEE ON CHOLERA

Chol/WP/66.10

Manila, 13-19 September 1966

ENGLISH ONLY

PROBLEMS OF CHOLERA CONTROL

by

A. H. Abou-Gareeb
WHO Cholera Team

The control of cholera is a difficult problem, more difficult in fact than the control of many other communicable diseases. In the case of smallpox, for example, two measures (namely, mass vaccination and the early detection and proper isolation of cases) can be depended upon for control and even ultimate eradication. The situation is much more complicated in regard to cholera where no single measure can ensure immediate control.

To intercept transmission, we have to minimize the quantum of infection in man when he disseminates the causative agent around him. We must prevent the agent from being seeded in an environment where new susceptibles can make contact with the organism and become infected. Then we must attempt to increase mass immunity by mass vaccination. Cholera prevention and control can be well established where there are facilities for environmental sanitation and a high level of personal hygiene.

Apart from the epidemiological picture of the disease in classical endemic areas, the following situations have occurred in cholera-free areas:

(1) A situation of potential danger from a neighbouring country with epidemic or endemic cholera.

(2) Potential epidemic cholera when one or more cases are introduced into a cholera-free area without knowledge of the focus of local transmission.

(3) Establishment of a primary focus transmitted locally.

(4) Establishment of primary focus and local secondary foci of infection around the primary focus.

(5) Spread of cholera along travel routes with scattered foci and distant seeding of infection.

(6) Post-invasion or post-epidemic periods:

(i) Spontaneous disappearance of infection or the success of control measures with or without the assistance of environmental self-limiting influences.

(ii) Entrenchment of infection during an unfavourable season for transmission (if any) with or without the appearance of sporadic cases or minor infections. This may be followed by a recrudescent wave during the following season favourable for transmission without the introduction of fresh infection.

(iii) Establishment of a condition of endemic cholera of long or short duration with, or less commonly without, regular seasonal exacerbations during the favourable season.

The sequences of events will depend upon:

(a) How early the situation is recognized and a diagnosis is made with bacteriological evidence.

(b) How early effective measures, proportional to the situation, are implemented. Drastic measures have been used in certain cases in order to abort an epidemic.

(c) How easily transmission and spread can take place, depending on environmental and host factors.

Prevention of Invasion

When a country is exposed to invasion by cholera from a neighbouring country, the following may be included in a comprehensive programme for cholera prevention:

(1) A national programme should include active measures for improving sanitation with special attention to border areas from which invasion may be expected, and with emphasis on safe water supplies and disposal of excreta. (Such a programme would also be applicable to other diarrhoeal diseases.) It is difficult to predict the first appearance of cholera in a cholera-free country. Experience from the 1965 invasion of Afghanistan and the 1961 invasion of the Philippines shows that cholera may appear in the least expected places.

(2) An intelligence network should be established even in small villages to be sensitive to all possibilities of invasion. Health personnel will need to utilize other available resources, for example, the capabilities of malaria staff, and the co-operation of village and community leaders. Special attention should be given to diarrhoea among adults and older children.

(3) Epidemiological information on cholera among diarrhoaeic patients should be gathered. Laboratory facilities should be available to receive samples for rapid diagnosis of cholera. Additional units with portable laboratories for sample collection may be needed.

(4) Every possible effort should be made to stop illegal population movements at the frontiers. This is not always an easy task. Travellers arriving from infected areas should be observed for the length of the incubation period.

(5) Arrangements should be made for strict isolation and management of patients suspected of having cholera.

(6) The indispensability of adequate medical supplies is obvious.

(7) Arrangements should be made for vaccine production. Mass vaccination campaigns may begin with certain priority groups such as those on low socio-economic levels, travellers, nomads, people having poor sanitation, or communities bordering infected regions.

(8) Arrangements should be made for concurrent and terminal disinfection.

(9) Training should be given to personnel engaged in the programme at various levels.

(10) Special arrangements must be made to check pilgrims carefully.

Problems of Controlling Outbreaks

(1) Detection of patients

Various methods should be used to detect cholera patients since their early detection is of such fundamental importance. Prompt notification and rapid isolation of cases will reduce the spread of the infection and save lives. Persons who have contracted minor infections and who remain in the field, continue infecting others and contaminating their surroundings. In carrier studies in Calcutta (1966), although only three confirmed cases were admitted to a hospital there were 40 cases with minor infections who acted as carriers during April, May and June. In addition, a large number of service latrines were found positive, indicating that there were a large number of Vibrio cholerae excretors in the field. This is a constant problem for authorities. A new method has been devised to trace mild cases and carriers through pooled stool samples collected from service latrines.

(2) Daily house-to-house visits are helpful for finding early foci of infection and disinfecting contaminated objects and suspected vehicles. Elimination of suspected or confirmed sources of infection is useful in prevention of further spread. These visits also provide an opportunity for family health education, which has proved most effective in many areas.

(3) Isolation and Management of Cases

Strict isolation of cholera patients who are severely ill constitutes no problem when hospital facilities are available. By the time a case appears, family members and other intimate contacts may already have been infected, and unless such contacts are dealt with, infection can continue.

It is not recommended to confine patients at home. However, hospitalization would be objected to if it involved the transfer of a patient over a long distance for this enhances the risk of spreading infection and reduces the patient's chances of recovery, particularly if patients and their relatives use public transportation.

In rural areas there is sometimes a need for setting up temporary hospitals, whose facilities should include safe water sources, and adequate disinfection of faecel matter and contaminated objects. Nursing should not be left to patients' relatives. The use of mobile hospital units with proper equipment and trained staff is recommended by some, but their use is subject to the availability of suitable roads.

Premature discharge of patients under pressure of new admissions may cancel the benefit of previous isolation and treatment. Discharge should be based on bacteriological rather than clinical grounds. However, in convalescent and post-convalescent periods, shedding of Vibrio cholerae may be resumed for varying durations.

(4) Management of Contacts and Carriers

The segregation of contacts and carriers is frequently a problem. Although segregation and treatment of contacts is highly desirable, in certain cases, the enforcement of quarantine measures has caused further cases to be hidden.

Contacts should be examined bacteriologically for the carrier state, which should be treated if it exists.

(5) Problems of Disinfection

It is now felt that disinfecting the site of infection can be more effective than was previously expected. The ultimate aim is to provide a safe environment free from gross contamination and sanitary defects. It is frequently difficult to disinfect water obtained from large water tanks and small rivers, and the problem is even more serious when people cannot or will not boil water for drinking or washing utensils. In certain cases safe water and food has become contaminated during short storage before consumption. In chlorinating small water bodies such as open wells, there is a great need to maintain the effect of the disinfectant. For this purpose various devices have been developed that maintain their effect through slow diffusion.

(6) Food Control

Health education about food is of utmost importance. During cholera outbreaks, the sale of dangerous articles, such as raw sea-foods, should be prohibited. Food markets and communal eating places have to be supervised for safe food handling and sanitary condition. Water sources have to be protected from contamination.

Foodstuffs and eating and drinking utensils have to be protected from flies and cockroaches. Foodstuffs suspected as vehicles of infection may be dealt with as soon as epidemiological suspicion is established. This might be endorsed by bacteriological examination.

(7) Fly Control

Flies have been incriminated in cholera transmission, particularly when flies have access to both foodstuffs and excreta in infected homes. Safe disposal of human faeces, adequate garbage collection, and protection of foodstuffs would contribute to the elimination of fly breeding places.

(8) Mass Vaccination

Mass vaccination should seek to achieve at least 80 per cent. coverage according to census figures. This should be regarded neither as the most important single measure, nor as an alternative to improving environmental sanitation. In the controlled field trial of the effectiveness of cholera vaccine in Calcutta, 1965, it was possible to vaccinate only 39 per cent. of census population of the study area in two rounds.

Keeping reliable records of vaccinated persons at the place and time of vaccination is essential. Booster doses are recommended to lower socio-economic groups and other sections at high exposure risk. Mass vaccination campaigns should be undertaken before an expected epidemic or before the season of increased prevalence in endemic areas. This will enable the population to build up a certain level of immunity.

(9) Disposal of Cholera Victims

Handling and disposal of dead bodies of cholera victims is dangerous unless it is done carefully. Relatives, staff and undertakers should be guided on preventive measures. For washing dead bodies, a disinfectant (such as carbolic acid or cresol compounds) should be used. Clothes of cholera victims can spread infection even at a distance if they are sent to relatives. The assembly of many people at funeral ceremonies has been responsible for spreading infection in several instances.

(10) Health Education

(i) Immediate report of cases suggestive of cholera.

(ii) Education of the public on modes of transmission and methods of prevention of cholera.

(iii) Use of safe water sources or boiling of suspected sources before drinking and domestic use. Prevention of contaminating water sources and immediate environment.

(iv) Promotion of personal hygiene practices.

(v) Mass vaccination.

(vi) Keeping houses in a sanitary condition.

Among the various methods used, talks and discussions given to individual families or other small groups during house visits were found quite effective.

(11) Organization of Field Teams

(i) In many instances the control effort needed during outbreaks requires recruitment of health staff in addition to regional personnel. Mobile units are also needed to carry out control measures.

(ii) Field teams' duties include: detection of cases and suspects, management of contacts, collection of samples, correction of sanitary defects, and vaccination and health education.

(12) Establishment of Internal Quarantine Barriers

In some countries check posts have been established along travel routes to prevent the spread of infection. Valid vaccination certificates are checked and booster doses are given. Since cholera vaccine gives partial protection and fails to protect persons already infected, this measure, particularly over a long front, has not always been effective. However, it may have retarded the progress of the outbreak to some extent in certain places.