

Environmental sanitation for the control of cholera in Lisungwi Refugee Camp, Malawi

by Francis Mulemba and Pierre Nabeth

By thinking ahead and planning for the inevitable cholera cases, the spread of the disease in this refugee camp has been limited, and victims have received the treatment they need.

PEOPLE ALL OVER the world live in fear of epidemics that will result in the loss of thousands of lives. The seventh cholera pandemic was first recorded in Africa in 1970. It reached Malawi in 1973, involving the *Vibrio cholerae* 'El Tor' serotype Inaba.¹

Despite improved knowledge about cholera transmission, major epidemics continue to occur in the developing world, especially among displaced populations in overcrowded areas. This very situation exists now in Malawi: between 1986 and 1992 1.1 million Mozambican refugees fleeing the war in their country found asylum in Malawi. They settled in villages and in camps along the borders. In 1992, because of both the intensification of the fighting preceding the signing of the peace accord in October and the drought that affected all of Southern Africa, there was a major influx of new refugees. Most of these people were sent to a new camp, Lisungwi, in Mwanza District. This camp, which is composed of two parts, Luwani and Ndelema, welcomed 61 000

refugees between October 1991 and October 1992, all of them arriving straight from Mozambique.

On 25 May 1992, the first six cases of cholera were declared at Luwani.

Between 25 May 1992 and 1 March 1993, 3730 Mozambicans living in the camp (2656 in Luwani, 1074 in Ndelema) were treated for cholera.

The average population of the camp during that period was 50 930; of these 35 790 people were in Luwani, and 14 140 in Ndelema. The Total Attack Rate (the proportion of people living in the camps affected by the disease, according to the case definition) was 7.34 per cent (7.22 in Luwani, 7.59 in Ndelema). The Case Fatality Rate (the proportion of deaths among the cases) was 2.39 (3.2 in Luwani and 0.37 in Ndelema).

A special facility was built in Lisungwi when the first refugees arrived: a 'Cholera Camp'. As cholera is endemic in Malawi and as refugees are a particularly vulnerable population, there is now a Cholera Camp in every refugee

camp. It is made up of four parts: an Observation Ward, where all suspected cases are admitted; an Isolation Ward, where cases are sent from the Observation Ward and receive intravenous rehydration; an Oral Rehydration Therapeutic Ward, where people are orally rehydrated before being discharged; and a Neutral Zone, where the kitchen, store, and staff dressing rooms are located and where no patient is admitted.

The Cholera Camp's admission criteria were acute and profuse watery stools and dehydration needing an intravenous rehydration. This case definition is much more specific than the one WHO uses;² it excludes all the moderate cases which, with the asymptomatic cases, represent 90 per cent of all the cholera cases according to the literature.

Control measures

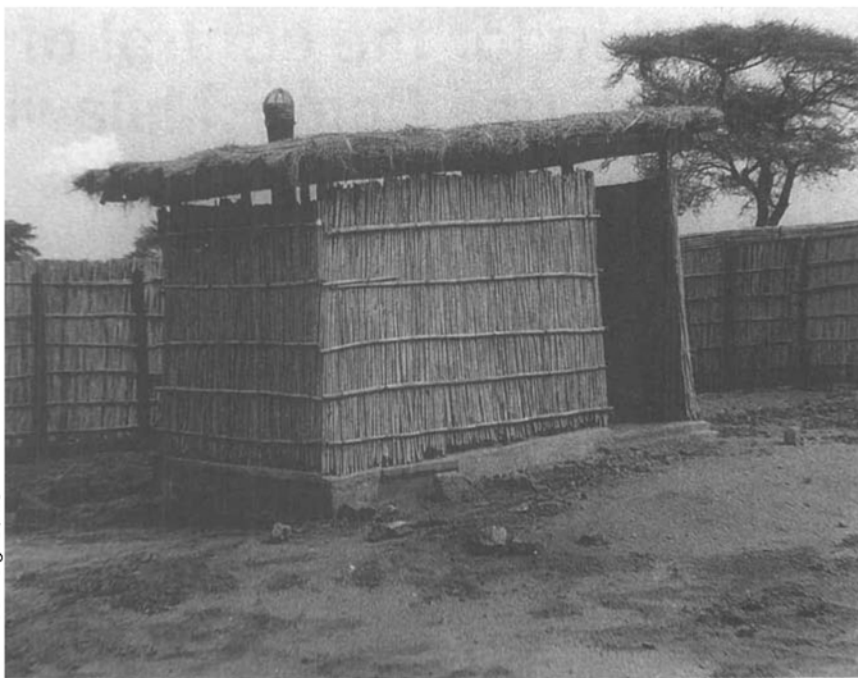
World-wide, two modes of transmission of the *Vibrio* organism are common: from person to person, and through a common source, such as water or food contaminated by the faeces of a sick person.²

Contamination inside a health facility can also happen when hygiene rules are not correctly followed.



Jean-Luc Pleigne/MSF

Hygiene and sanitation is very important in the Cholera Camp. There are VIP latrines, showers, and a chlorine footbath, and the fence at the back separates the different wards.



Larger than usual VIP latrines are built to serve all the patients in the Camp safely.

In a refugee camp both modes of transmission are common,³ and there are therefore control measures adapted to this situation.

As soon as the outbreak had been declared in the camp, general and specific measures were taken:

Water

During any cholera outbreak water quality and quantity is extremely important. The supply must be adequate: every person must receive at least the standard ration which is, according to UNHCR standards for refugee camps, at least 20 litres/person/day. In Lisungwi there were 19 boreholes (12 in Luwani, 7 in Ndelema), but they were not providing enough water: between 6 and 14 litres/person/day in Luwani and between 4 and 12 litres/person/day in Ndelema during most of the outbreak. To make up the quantities, water

had to be transported by truck to the sections where it was needed.

The water from the boreholes is generally of good quality (and is tested regularly), but the buckets used by the refugees can be contaminated, notably by dirty hands. In order to solve that problem, the water was chlorinated at the water points but directly in the water containers. This pot-to-pot chlorination, done by a health committee member from the section where the borehole was located, prevented contamination by either hands or dirty containers during both transportation and storage. (The quantity used was one teaspoon of one per cent chlorine solution per 20-litre bucket.)

Building latrines

The need for all refugees to have access to latrines is obvious. We therefore intensified our latrine construction pro-

gramme in order to reach a quota of at least one latrine for every ten people. We also built communal latrines in places where people gathered and where the risk of transmission of cholera was greater, such as the market, the food distribution centres, and the churches.

Communal latrines were also built at the beginning, when the first refugees arrived: they had no time and very often no materials to build their own family latrines, so these community latrines were a necessity.

The problem with these kinds of latrines was that they belonged to the community, so in fact to nobody in particular, and none of the community members were cleaning or spraying them. In the end we employed a number of people to clean the inside and outside of the latrines during the outbreak; all the faeces and vomit were sprayed, and any faeces on the ground were put into the pit latrine.

More refuse pits were dug and fitted with covers in order to avoid the spreading of potentially contaminated rubbish by animals.

The market

Places where people gather and where exchanges are made become high-risk areas for spreading cholera. In a refugee camp, market places bring these conditions together. The Camp Administrator agreed to our request that the sale of some food items, especially those which were sold cooked, be banned. This food was prepared in households in unknown hygiene conditions, and were a major source of dissemination of the disease. As the food could not be disinfected, the only appropriate action was to ban its sale. The preventive health personnel were in charge of inspection and control, and the decision was respected by the market vendors.

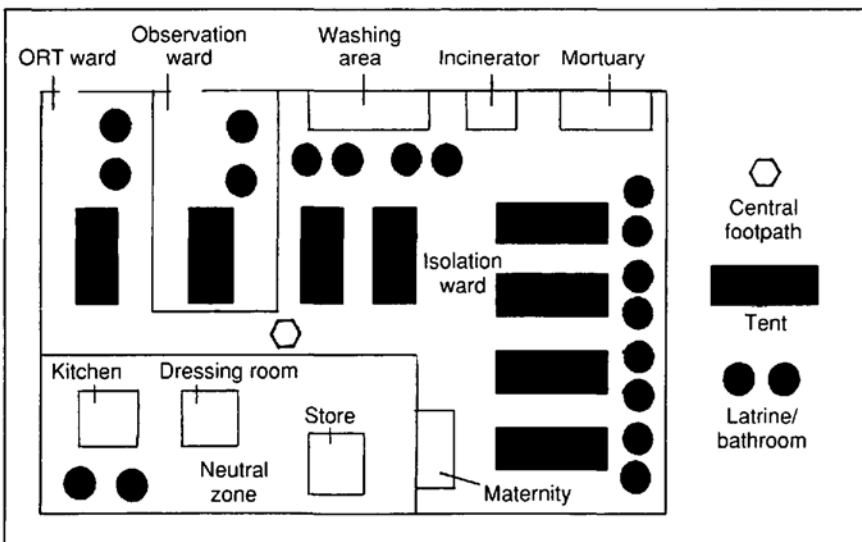
A refuse pit was dug near the market, and rubbish bins were put in place.

When it became clear that there were not enough latrines for the number of people coming to the market, more VIP latrines were built all around the market. A team of cleaners with disinfectants was employed full-time to clean these latrines.

Health education

A big part of the cholera control programme is providing information about cholera to the refugees, in the hope that people will participate in the control of the disease.

The information is about what causes



Schematic diagram of Cholera Camp.

the disease, how people contract it, and how it spreads. There is education material about how to avoid getting cholera, and what to do and where to go in case of sickness. This health education programme was carried out by the preventive health staff, who were Malawian Health Surveillance Assistants helped by Mozambican health staff.

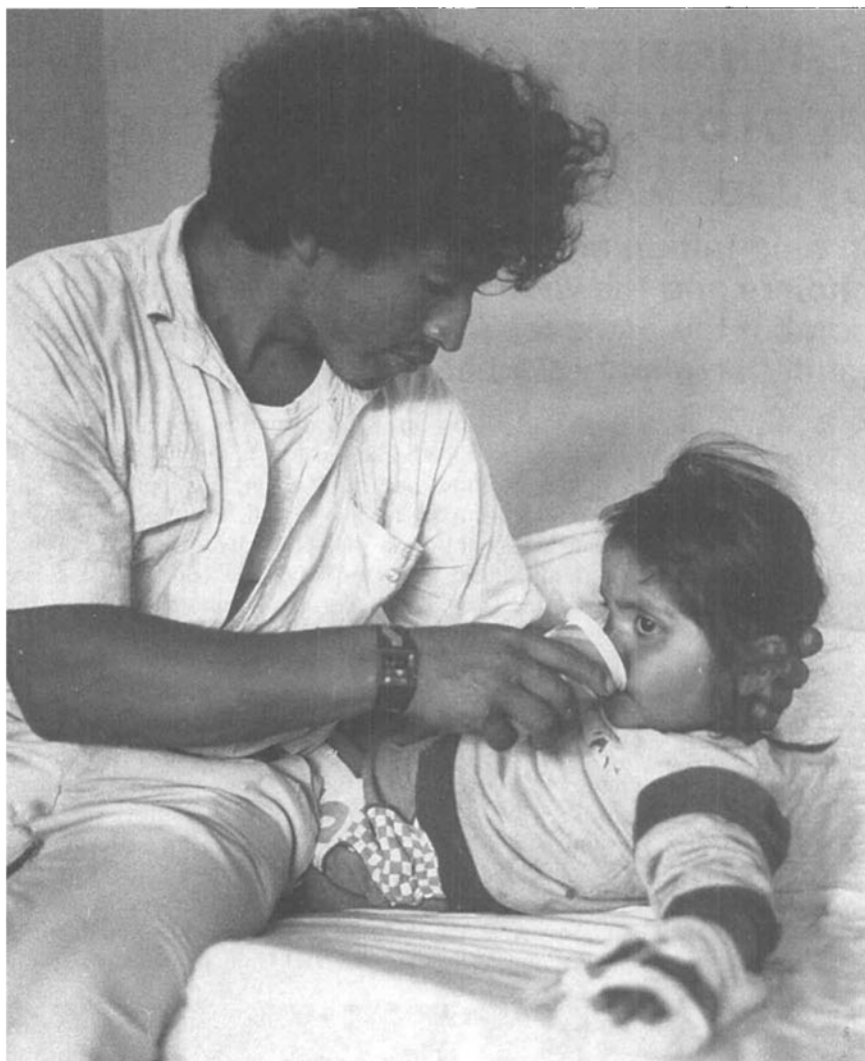
Oral rehydration points

As the health centre and the Cholera Camp were quite far from some areas of the camp, we decided to train community members to take charge of diarrhoea cases during the emergency phase. These people supervised 'ORS Points' and were able to recognize severe diarrhoea cases and to decide to transfer them to the Cholera Camp. People with moderate cases were orally rehydrated with ORS sachets until they were better. Four ORS Points were set up in the camp.

Specific measures

For healthy people, the Cholera Camp itself is a very high-risk place. For that reason it has to be well isolated from the rest of the camp, and very strict hygiene measures have to be respected inside the Camp. The four sections within the camp are completely separated. No traffic was allowed between them, except for patients who were moving from observation to isolation and then to ORS, and for health staff, who were respecting very strict measures. The health staff were supplied with uniforms and gumboots which were washed within the Camp. They took their meals in the neutral part of the Camp, and every time they went from one part of the Camp to another they had to pass through a footbath full of disinfectant and were sprayed with a 0.05 per cent chlorine solution by a watchman whose job it was to restrict circulation. All chlorine solutions were made of chloride of lime. Four dilutions are used: 2 per cent to disinfect vomit and faeces and to wash dead bodies; 1 per cent mother solution for drinking-water, 0.2 per cent for spraying clothes; and 0.05 per cent for washing skin.

The patients were sprayed when they arrived in the Camp. Their clothes were taken and washed (and given back when they were discharged), and they were each supplied with a piece of cloth and a blanket. Each patient was admitted with a relative, who was advised about hygiene measures. According to a study of 672 patient files, the length of stay in the isolation ward ranged from less than 24 hours to 9 days (mean 2.8 days).



PH Merchez/WHO

Cholera patients must be rehydrated, both orally and intravenously.

Nothing used inside the Cholera Camp came out unless it was fully disinfected. When there was a death, the body was disinfected and all its openings closed; it was wrapped in plastic and buried straight away.

In the refugee camp

Whenever a new patient was admitted, an investigation was conducted in the section where that person was from in order to detect new cases and institute preventive measures.

People were traced who had been very close to the cholera patient or who had eaten, slept, or shared the same cutlery or plates, spoons, cooking pots, bedding, or house with them. At the same time, the health personnel filled in surveillance forms noting the source of the food and water and how they were stored, where the people deposited their faeces, if they washed with soap, or any other valuable information.

At the beginning Doxycycline was systematically given to anyone who had been in contact with a sick person. But as the efficiency of this antibiotic on *Vibrio cholerae* has not been proved, this systematic prophylaxy has been abandoned.

As the patient was probably vomiting and passing stools in his house or in his latrine before being admitted to the Cholera Camp, both buildings and their surroundings were disinfected. The solution used was 0.2 per cent.

Ending a cholera outbreak in a refugee camp is more likely to be a result of the actions of sanitarians than of medical people. The necessary measures must take place not only during the outbreak itself, but also before, by improving sanitation conditions and by encouraging people to improve their hygiene. ●

References

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