

# Transcript

## Defeating Cholera: Part One

In January 1991 epidemic cholera appeared in Peru and quickly spread to other Latin American countries. Cholera has been an important problem for centuries in other parts of the world. In recent years, cholera epidemics have occurred in parts of Asia and in many African countries. Now it is a problem in this hemisphere.

Here in Guayaquil, Ecuador, patients with cholera are brought by automobile or ambulance for treatment. By the time this patient reaches the hospital, she had lost 10% of her body weight as diarrhea and vomitous. In this 50 kilogram woman, this amounts to 5 liters. She is in shock and cannot stand or even sit up. Her skin has lost its normal turgor. Her eyes are sunken. Her mouth and tongue are dry unless she has just vomited. This patient is conscious and oriented, but her thinking is dull. Her radial pulse is absent, her brachial pulse is weak. It is possible in cholera to be reduced to such a state in a few hours, but it usually takes at least 12 to 18 hours. In extreme cases, patients may be unconscious and close to death. If the water and salts lost through diarrhea are replaced swiftly, survival is assured. This same young woman is now well. With proper treatment, cholera patients recover quickly.

When cholera strikes in areas where practitioners are not acquainted with modern treatment methods, many people die. Death rates were over 30% in some populations. This unnecessary loss of life creates panic, seriously interfering with effective control measures. With proper treatment, even severely ill patients can be saved and panic is prevented.

Most persons infected with the cholera bacterium have mild diarrhea or no symptoms at all. Only about 7% of persons infected with the El Tor biotype of the cholera bacterium have illness requiring treatment at a health center, but these cases are the greatest challenge to the practitioner.

Patients with cholera arrive at the health center complaining of diarrhea that is watery and profuse, vomiting, and often severe leg cramps resulting from electrolyte disturbances. Patients have signs of dehydration, the skin goes back slowly when pinched, the eyes are deeply sunken, the mouth and tongue are dry unless the patient has recently vomited or drunk. The fingers and toes are shriveled and cold. Usually patients are very thirsty and drink eagerly. But severely dehydrated patients may be unable to drink. Usually patients are restless and irritable, but severely dehydrated patients may be lethargic or even unconscious. The pulse and blood pressure should be measured. The pulse is rapid and feeble or not detectable in severe dehydration. The blood pressure is very low, or not measurable. Prompt restoration of lost fluids or salts will prevent death and is the primary goal of treatment. Dehydrated patients who can sit up and drink should be given oral rehydration fluid immediately and encouraged to drink. If a patient has been vomiting, oral rehydration solution is still usually effective. Even if the patient vomits during treatment, usually more solution is absorbed than is vomited.

Oral rehydration solution is made by mixing water with a special combination of salts and sugar. The salts replace the sodium, potassium, and bicarbonate lost from diarrhea. The sugar helps the sodium

and water to be absorbed rapidly. If possible, the solution should be prepared with water that has been chlorinated or boiled. But lack of clean water should not prevent a health worker from administering this life saving fluid. It is important to offer the patient oral rehydration solution frequently, to measure the amount drunk, and to measure the fluid lost as diarrhea and vomitus.

The cholera cot, which has a hole in the middle, offers a convenient method of collecting liquid stool by channeling it to a receptacle under the cot.

In those patients with moderate dehydration, hydration should be reassessed after 1 hour of therapy and then every 1-2 hours until rehydration is complete. The patient is adequately rehydrated when the skin turgor is normal, thirst has subsided, urine has been passed, and the pulse is strong.

The patient should be allowed to drink plain water in addition to oral rehydration solution. If kept in the health facility for longer than six hours, the patient should be offered food once vomiting has stopped.

Patients with severe dehydration, stupor, coma, uncontrollable vomiting, or extreme fatigue that prevents drinking, should be rehydrated intravenously. For those patients who can drink a little, give oral rehydration solution while the drip is being set up.

Placement of a large, 18 gauge needle is necessary to achieve adequate flow. In rare cases, infusion into two veins is needed. Ringer's Lactate Solution is the best choice for severe dehydration. If it is not available, normal saline, or half-normal Saline with 5% glucose are acceptable.

Plain Glucose (Dextrose) Solution should NOT be used because it lacks the necessary salts.

Intravenous therapy should only be given by experienced persons using sterile needles, tubing, bottles, and fluid. For a 60 kilogram person, it is often necessary to give 2 liters of fluid in the first 30 minutes of treatment. It is useful to mark the bottle to show the level to which the fluid should have fallen by a specified time. Those patients with life threatening dehydration should be reassessed after the first thirty minutes of treatment. Rapid intravenous therapy should continue until a strong radial pulse is present. Patients should then be assessed every 1 or 2 hours to determine that fluid is being given at the appropriate rate. Do not reuse needles or IV sets for another patient.

All patients should also take oral rehydration solution as soon as they can drink without difficulty. After three hours, most patients are fully rehydrated. They are able to drink, and no longer need intravenous fluid. Their continuing fluid losses can then be treated with oral rehydration solution. Stopping the intravenous infusion when the patient can drink and is no longer severely dehydrated will prevent over-hydration, venous thrombosis, and sepsis. If intravenous equipment is not available, or if practitioners are not skilled in its administration, patients with severe dehydration can receive oral rehydration solution administered by naso-gastric tube by trained workers. The volume of stool and vomitous, and the volume of oral rehydration and intravenous fluid administered should be recorded on a simple chart. Patients with cholera can purge over one liter of fluid each hour. The characteristic rice-water diarrhea of cholera is a straw colored, watery fluid with a slightly fishy smell, not fecal in character. After rehydration has been started, a rectal swab can be taken to make a laboratory diagnosis. The swab is

placed in Cary-Blair medium and transported at room temperature to the laboratory to be cultured on TCBS medium.

Antibiotics given orally will reduce the volume and duration of diarrhea. There is no advantage to using injectable antibiotics which are expensive. Antibiotic therapy can be started after the vomiting has stopped.

Currently recommended antibiotics include Tetracycline, Doxycycline, Azithromycin, Erythromycin, and Ciprofloxacin. No other drugs to treat diarrhea or vomiting should be given.

In some places, cholera bacterium has developed resistance to certain antibiotics, so resistance patterns in every affected area should be monitored.

It is important to remember that cholera can be treated successfully with fluid replacement alone if antibiotics are not available.

Hospital workers who care for patients with cholera, or handle their fluids or bedclothes should not be fearful for their safety. They almost never become ill with cholera. Transmission of the cholera bacterium directly from one person to another is very rare. Hand washing with soap after touching contaminated areas will prevent hands from contaminating food, where the organism could grow. Patient's bedclothes and equipment can be disinfected by routine laundry and cleaning procedures. If the hospital sewage is not treated the feces can be decontaminated by treatment with creosol or Lysol.

When the patient is recovering he and his family can be instructed on ways to prevent transmission of cholera and other diarrheal illnesses. Everyone should wash their hands after defecating and before preparing or eating food. Water can be made safe for drinking by boiling or chlorinating it in the home. Shellfish and other seafood should be cooked well. Any leftover cooked food should be reheated before it is eaten.

In remote areas, field treatment centers can be established. Successful therapy can be given with simple supplies. The only true essentials for cholera treatment are a person skilled in judging and replacing fluid losses, the proper oral and intravenous solutions, and the tubing and needles with which to give intravenous fluids.

To recapitulate the important points of therapy.

The patient is quickly evaluated on entering the treatment center.

Oral rehydration therapy is offered immediately to all patients.

For severely dehydrated patients, intravenous therapy is begun immediately.

Signs of dehydration include loss of skin turgor, sunken eyes, and dry mouth.

Absence of a peripheral pulse and blood pressure indicate shock.

Giving adequate amounts of oral rehydration or intravenous solution is essential.

The degree of dehydration should be re-assessed frequently in the first hours of treatment. Records of fluids lost as diarrhea and vomitous and fluids administered are important in monitoring treatment.

Antibiotics can be used to decrease the amount and duration of diarrhea. With proper therapy, more than 99% of patients recover.

Although cholera can be a severe illness, it is no longer a dread disease. It can often be prevented by simple hygienic measures. When people develop Cholera, proper treatment ensures that almost all will recover.

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