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Management of the patient with cholera

World Health Organization
Emerging and other Communicable Diseases,
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Cholera should be suspected when:

- a patient older than 5 years develops severe dehydration from acute watery diarrhoea (usually with vomiting); or
- *any* patient above the age of 2 years has acute watery diarrhoea *in an area where there is an outbreak of cholera.*

Steps in the management of suspected cholera:

Step 1. Assess for dehydration.

Step 2. Rehydrate the patient, and monitor frequently. Then reassess hydration status.

Step 3. Maintain hydration: replace ongoing fluid losses until diarrhoea stops.

Step 4. Give an oral antibiotic to the patient with severe dehydration.

Step 5. Feed the patient.

STEP 1. Assess for dehydration

Use Table 1 to determine whether the patient has:

- Severe dehydration
- Some dehydration
- No signs of dehydration

Table 1. Assessment of the diarrhoea patient for dehydration[1]

1. LOOK AT:			
CONDITION	Well, alert	***Restless, irritable***	***Lethargic or unconscious; floppy***
EYES	Normal	Sunken	Very sunken and dry
TEARS	Present	Absent	Absent
MOUTH and TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	***Thirsty, drinks eagerly***	***Drinks poorly or not able to drink***
2. FEEL:			
SKIN PINCH	Goes back quickly	***Goes back slowly***	***Goes back very slowly***
3. DECIDE:	The patient has NO SIGNS OF DEHYDRATION	If the patient has two or more signs, including at least one ***sign***, there is SOME DEHYDRATION	If the patient has two or more signs, including at least one ***sign***, there is SEVERE DEHYDRATION

[1] In adults and children older than 5 years, other ***signs*** for severe dehydration are ***absent radial pulse*** and ***low blood pressure***. The skin pinch may be less useful in patients with marasmus (severe wasting) or kwashiorkor (severe malnutrition with oedema), or obese patients. Tears are a relevant sign only for infants and young children.

STEP 2. Rehydrate the patient, and monitor frequently. Then reassess hydration status

FOR SEVERE DEHYDRATION:

! ***Give IV fluid*** immediately to replace fluid deficit. Use Ringer's lactate solution or, if not available, normal saline.

Start IV fluid immediately. If the patient can drink, begin giving oral rehydration salts (ORS) solution by mouth while the drip is being set up.

For patients aged 1 year and older, give 100 ml/kg IV in 3 hours, as follows:

- 30 ml/kg as rapidly as possible (within 30 minutes); then
- 70 ml/kg in the next 2 **2** hours.

For patients less than 1 year, give 100 ml/kg IV in 6 hours, as follows:

- 30 ml/kg in the first hour; then
- 70 ml/kg in the next 5 hours.

! ***Monitor the patient*** very frequently. After the initial 30 ml/kg have been given, the radial pulse should be strong (and blood pressure should be normal). If the pulse is not yet strong, continue to give IV fluid rapidly.

! ***Give ORS solution*** (about 5 ml/kg/h) as soon as the patient can drink, in addition to IV fluid.

! ***Reassess the patient*** after 3 hours (infants after 6 hours), using Table 1:

- If there are still signs of *severe dehydration* (this is rare), repeat the IV therapy already given.

- If there are signs of *some dehydration*, continue as indicated below for some dehydration.

- If there are *no signs of dehydration*, go on to Step 3 to maintain hydration by replacing ongoing fluid losses.

FOR SOME DEHYDRATION:

! ***Give ORS solution:***

- Administer ORS solution in the amount recommended on Table 2 on the next page.

- If the patient passes watery stools or wants more ORS solution than shown, give more.

Table 2. Approximate amount of ORS solution to give in the first 4 hours						
Age[1]	Less than 4 months	4-11 months	12-23 months	2-4 years	5-14 years	15 years or older
Weight	Less than 5 kg	5-7.9 kg	8-10.9 kg	11-15.9 kg	16-29.9 kg	30 kg or more
ORS solution in ml	200-400	400-600	600-800	800-1200	1200-2200	2200-4000

[1] Use the patient's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the patient's weight (in kg) times 75.

- ***Monitor the patient*** frequently to ensure that ORS solution is taken satisfactorily and to detect patients with profuse ongoing diarrhoea who will require closer monitoring.

- ***Reassess the patient*** after 4 hours, using Table 1:

  - If signs of *severe dehydration* have appeared (this is rare), rehydrate for severe dehydration, as above.

  - If there is still *some dehydration*, repeat the procedures for some dehydration, and start to offer food and other fluids.

  - If there are *no signs of dehydration*, go on to Step 3 to maintain hydration by replacing ongoing fluid losses.

Notes on Rehydration

Most patients absorb enough ORS solution to achieve rehydration even when they are vomiting. Vomiting usually subsides within 2-3 hours, as rehydration is achieved.

Use a nasogastric tube for ORS solution if the patient has signs of some dehydration and cannot drink, or for severe dehydration *only* if IV therapy is not possible at the treatment facility.

Urine output decreases as dehydration develops, and may cease. It usually resumes within 6-8 hours after starting rehydration. Regular urinary output (every 3-4 hours) is a good sign that enough fluid is being given.

FOR NO SIGNS OF DEHYDRATION:

Patients *first seen* with *no signs of dehydration* can be treated at home.

! ***Give ORS packets*** to take home. Give enough packets for 2 days. Demonstrate how to prepare and give the solution. The caretaker should give the patient this amount of ORS solution:

Age	Amount of solution after each loose stool	ORS packets needed
Less than 24 months	50 - 100 ml	Enough for 500 ml/day
2 - 9 years	100 - 200 ml	Enough for 1000 ml/day
10 years or more	as much as wanted	Enough for 2000 ml/day

! ***Instruct the patient or the caretaker to return*** if any of the following signs develop:

- Increased number of watery stools
- Eating or drinking poorly
- Marked thirst
- Repeated vomiting

Or if any signs indicating other problems develop:

- Fever
- Blood in stool

STEP 3. Maintain hydration (of the patient who presented with severe or some dehydration): replace ongoing fluid losses until diarrhoea stops

When a patient *who has been rehydrated with IV fluid or ORS solution* is reassessed, and has *no signs of dehydration*, continue to give ORS solution to maintain normal hydration. The aim is to replace stool losses as they occur with an equivalent amount of ORS solution.

! ***As a guide, give the patient:***

Age	Amount of solution after each loose stool
Less than 24 months	100 ml
2 - 9 years	200 ml
10 years or more	as much as wanted

The amount of ORS solution actually required to maintain hydration varies greatly from patient to patient, depending on the volume of stool passed. The amount required is greatest in the first 24 hours of treatment, and is especially large in patients who present with *severe* dehydration. In the first 24 hours, the *average* requirement in such patients is 200 ml of ORS solution per kg of body weight, but some may need as much as 350 ml/kg.

! ***Continue to reassess the patient*** for signs of dehydration at least every 4 hours to ensure that enough ORS solution is being taken. Patients with profuse ongoing diarrhoea require more frequent monitoring. If signs of *some dehydration* are detected the patient should be rehydrated as described on pages 3 and 4, before continuing with treatment to maintain hydration.

A few patients, whose ongoing stool output is very large, may have difficulty in drinking the volume of ORS needed to maintain hydration. If such patients become tired, vomit frequently or develop abdominal distension, ORS solution should be stopped and hydration should be maintained intravenously with Ringer's lactate solution or normal saline, giving 50 ml/kg in 3 hours. After this is done, it is usually possible to resume treatment with ORS solution.

! ***Keep the patient under observation,*** if possible, until diarrhoea stops, or is infrequent and of small volume. This is especially important for any patient who presented with severe dehydration.

If a patient must be discharged before diarrhoea has stopped, show the caretaker how to prepare and give ORS solution, and instruct the caretaker to continue to give ORS solution, as above. Also instruct the caretaker to bring the patient back if any of the signs listed on page 5 should develop.

STEP 4. Give an oral antibiotic to the patient with severe dehydration

An effective antibiotic can reduce the volume of diarrhoea in patients with severe cholera and shorten the period during which *Vibrio cholerae* O1 is excreted. In addition, it will usually stop the diarrhoea within 48 hours, thus shortening the period of hospitalization.

! ***Start antibiotics.*** If the patient is severely dehydrated and older than 2 years, give an antibiotic. Start the antibiotic after the patient has been rehydrated (usually in 4-6 hours), and vomiting has stopped.

There is no advantage in using injectable antibiotics, which are expensive. No other drugs should be used in the treatment of cholera.

Use Table 3 to select the antibiotic and dose:

Table 3. Antibiotics used to treat cholera

Antibiotic[a]	Children	Adults
Doxycycline *a single dose*	----------	300 mg[b]
Tetracycline *4 times a day* *for 3 days*	12.5 mg/kg	500 mg
Trimethoprim (TMP) - sulfamethoxazole (SMX) *twice a day for 3 days*	TMP 5 mg/kg and SMX 25 mg/kg[c]	TMP 160 mg and SMX 800 mg
Furazolidone *4 times a day* *for 3 days*	1.25 mg/kg	100 mg[d]

[a]Erythromycin or chloramphenicol may be used when the antibiotics recommended above are not available, or where *Vibrio cholerae* O1 is resistant to them.
[b]Doxycycline is the antibiotic of choice for adults (except pregnant women) because only one dose is required.
[c]TMP-SMX is the antibiotic of choice for children. Tetracycline is equally effective; however, in some countries it is not available for paediatric use.
[d]Furazolidone is the antibiotic of choice for pregnant women.

STEP 5. Feed the patient

- ***Resume feeding*** with a normal diet when vomiting has stopped.
- ***Continue breast-feeding*** infants and young children.

Complications

Pulmonary oedema is caused when *too much IV fluid* is given, and especially when metabolic acidosis has not been corrected. The latter is most likely to occur when normal saline is used for IV rehydration and ORS solution is not given at the same time. When the guidelines for IV rehydration are followed, pulmonary oedema should not occur. ORS solution never causes pulmonary oedema.

Renal failure may occur when *too little IV fluid* is given, when shock is not rapidly corrected, or when shock is allowed to recur, especially in persons above the age of 60. Renal failure is rare when severe dehydration is rapidly corrected and normal hydration is maintained according to the guidelines.