

ILLNESSES RELATED TO WATER

Hurricane Forum, Luperon, Dominican Republic

June 15, 2005

By Judy Lamar, MPH

S/V Quest

MALARIA: A parasite transmitted from one person to another in the saliva of the female *Anopheles* mosquito. After an incubation period in the liver of approximately 9 to 30 days where they multiply, the parasites return to the blood invading the blood cells where they multiply again causing the cells to rupture. This causes chills and high fever, can cause anemia, an enlarged spleen and mild jaundice. Fatal complications are cerebral malaria and blackwater fever (uncommon). Note: the *anopheles* mosquito lives in the Everglades and Southern Florida.

Symptoms: Chills with headaches followed by high fever that can exceed 104 degrees F/40 degrees C, which lasts for several hours or days, then the person begins to sweat and feels better but weak; this may repeat every 2 or 3 days, depending on the type of parasite, there are four known parasites which cause malaria.

Diagnosis and Treatment: Anyone suffering from unexplained fever should seek medical treatment from a physician familiar with the area.

Avoiding Malaria: 1) don't get bitten by mosquitoes (these feed between dusk and dawn) 2) put screens or netting on all hatches and ports 3) use citronella candles or oil, and mosquito coils 4) wear protective clothing 5) use repellent 6) take a prophylaxis 7) seek medical help and 8) isolate the patient so mosquitoes can not bite them 9) eliminate breeding areas and kill larvae 10) use insecticide sprays.

DENGUE: An acute viral fever caused by any of four viral varieties transmitted by *Aedes aegypti* mosquitoes; common in the tropics and sub-tropics; two types, simple and hemorrhagic (easy bruising and purplish spots or patches on the skin), no immunity, you can get it more than once Note: some cases have been reported in Southern Texas.

Symptoms: Sudden high fever (104 degrees F/40degrees C) with chills, severe headache, aching behind the eyes and often intense pain in joints and muscles(also known as breakbone fever), sore throat; person feels very ill, weak and miserable; patient feels better for a few hours up to 2 days after 3 or 4 days and then illness returns for 1 to 2 days more; sometimes a rash appears after the 4th or 5th day; those with hemorrhagic dengue may develop circulatory failure, abdominal pain is frequent; in the worst cases a rapid, weak pulse, cold and clammy skin, restlessness and abnormally low blood pressure.

Diagnosis and Treatment: Plenty of fluids and a **NON-ASPRIN** pain reliever; a careful watch for deterioration, such as a change in mental status or evidence of hemorrhagic symptoms (bruising); although there is no specific treatment, a doctor or clinic can treat potentially fatal complications.

Avoiding Dengue: 1) Don't get bitten by day-biting mosquitoes, especially at dusk and dawn 2) put screens or netting on all hatches and ports 3) use insect repellent 4) eliminate breeding areas and kill larvae 5) use insecticides sprays.

TYPHOID FEVER: A fever caused by a bacterium found in contaminated water or food, cases often appear after flood or other disaster, there are carriers who have no symptoms.

Symptoms: Begin gradually after 8-14 days; at first the patient feels tired and listless like they have a cold or the flu, with a persistent headache and poor appetite, sore throat and dry cough; then the temperature rises in steps reaching a height of 102-104 degrees F/ 39to 40 degrees C dropping over the course of night and climbing again during the day, pulse is usually slower as the fever goes up, sometimes there is vomiting, diarrhea or more likely constipation and abdominal pain and tenderness; in the second week, there is a high fever, relatively slow pulse, pink spots may appear on the body, trembling, delirium, weakness, weight loss, dehydration; third week, if no complications fever and other symptoms go away.

Treatment: get medical help immediately, with prompt antibiotic therapy more than 99% are cured, in the interim drink plenty of fluids and control the fever with wet cloths; isolate the person because urine, feces and vomit are all highly contagious.

Avoiding Typhoid Fever: 1) immunization is about 70% effective 2) drink clean water 3) eat only cooked foods or foods you can peel 4) avoid food and water that might be contaminated 5) don't allow flies to rest on your food 6) properly dispose of sewage 7) eating utensils should be sterilized after use (boil for 10 minutes) 8) linens should be carefully disinfected 9) after recovering some patients are still carriers and should be extra careful with personal cleanliness.

CHOLERA: Is caused by a bacteria, *Vibrio cholera*, found in aquatic environments attached to particular types of algae and plankton which produces a toxin causing vomiting and profuse watery (rice water) diarrhea resulting in rapid dehydration and loss of salts and minerals, without treatment it causes cardiovascular collapse and kidney failure; it is acquired by ingesting water, seafood or other foods contaminated with the bacteria.

Symptoms: Incubation of one to 3 days, during which the person may notice mild diarrhea, depression and lack of energy; followed by explosive voluminous, watery diarrhea; severe dehydration can cause shock in just a few hours; in severe cases the patient loses more than a quart an hour, the resulting depletion causes severe dehydration, intense thirst, muscle cramps, weakness and minimal urine production; loss of fluid causes the eyes to become sunken and the skin on the fingers becomes severely wrinkled; without treatment the loss of fluid and salts can lead to kidney failure, shock, coma and death; symptoms usually subside in 3 to 6 days, most people are free of the bacteria in 2 weeks, but some become long-term carriers.

Treatment: replace water and electrolytes, either by mouth or intravenously, seek medical help immediately; early treatment with antibiotics may contain the diarrhea in 48 hours.

Avoiding Cholera: 1) no reliable vaccine 2) avoid contaminated food and water 3) dispose of human waste properly to avoid further contamination 4) prompt treatment with tetracycline may help prevent the disease in household contacts of a person infected with cholera 5) avoid uncooked vegetables or inadequately cooked fish or shellfish 6) purify drinking water.

GIARDIA: A diarrhea-producing infection of the small intestine caused by a single – celled parasite *Giardia lamblia*, the most common parasitic infection of the intestine in the USA; a common contaminate of fresh water, transmitted through contaminated water and raw sewage.

Symptoms: Cramps, flatulence and foul-smelling, yellow diarrhea full of bubbles (no blood, no mucus) which may persist for weeks if untreated resulting in weight loss.

Treatment: More than one stool analysis may be necessary because the parasites can be excreted at unpredictable intervals; oral medications are effective.

Avoiding Giardia: 1) treat water and sewage properly 2) avoid contaminated water and food.

AMOEBIC DYSENTERY: Diarrhea, sometimes severe, caused by *Entamoeba histolytica*, a parasite found in unsanitary food and water; infection begins when cysts are swallowed, they hatch and continue contaminating the water through raw sewage.

Symptoms: stools have mucus and sometimes blood in them, diarrhea comes and goes, sometimes alternating with constipation; cramps in the belly and a need to have frequent bowel movements, even when little or nothing, or just mucus, comes out; many loose (but usually watery) stools but with lots of mucus, sometimes stained with blood (dysentery), may have a fever; wasting and anemia may occur in people with chronic infection; untreated it can cause more severe health problems

Treatment: seek medical attention and stool analysis; early treatment is important so that amebas do not get into the liver and abscess; oral medications are effective.

Avoiding Amoebic Dysentery: 1) proper disposal of sewage 2) clean drinking water 3) eat nutritious and clean food for health and strength.

TREATING WATER

Boil it for at least 3 minutes,

OR

Add bleach ("cloro" in Spanish) by percentage of available chlorine, but be sure it is pure and has no soaps or other additives. Wait 20 minutes and the water will be drinkable.

1% = 10 drops per quart

4-6% = 2 drops per quart

7-10% = 1 drop per quart

90 drops = 1 Tablespoon

4 quarts = 1 gallon

Double the amount for turbid or colored water.

CLEANING FRUITS AND VEGETABLES

Soak for 20 minutes in a solution of 1 teaspoon of bleach in 1 gallon of water.

WHAT CAN WE DO?

- 1) Treat our water; we don't know if RO will be available.
- 2) Keep the bugs out, mosquitoes and flies.
- 3) Clean our fruits and vegetables.
- 4) Be more careful when we eat in restaurants.
- 5) Cook fish and shellfish well.
- 6) Get typhoid vaccine.
- 7) Wear long sleeves and long pants dawn, dusk and at night.

TREATMENT OF DIARRHEA

- 1) Prevent or control dehydration
- 2) Eat small frequent meals of broth of rice, watery mashed potatoes, chicken or bean broth and when feeling better, very ripe or cooked bananas, crackers, well-cooked grains, potatoes, applesauce, papaya, then boiled or roasted chicken, boiled eggs, beans, lentils or peas well cooked and mashed, well cooked fish (avoid grease, raw fruits except ripe bananas and papayas, highly seasoned food and alcohol).
- 3) For most causes of diarrhea no medicines are needed and can cause harm because they work like a plug keeping in what should be coming out.
- 4) **Re-hydration Drink:** to 1 liter of water add ½ level teaspoon of salt and 8 level teaspoons of sugar (taste the mixture before adding the sugar and be sure it is no more salty than tears), plus ½ cup of fruit juice, coconut water or mashed ripe banana to add potassium.

Resources:

WHERE THERE IS NO DOCTOR, a village health care handbook. The Hesperian Foundation, Palo Alto, CA, May 1992, David Werner

THE MERCK MANUAL OF MEDICAL INFORMATION, Second Home Edition, Merck Research Laboratories, Mark H. Beers, MD, 2003

PRIMARY CHILD CARE, a manual for health workers, Book One, Oxford University Press, Maurice King, Felicity King, BM, MRCP, Soebagyo Martodipoero, MD, 1988

TROPICAL CRUISING HANDBOOK, International Marine/McGraw Hill, Mark Smaalders and Kim des Rochers, 2002