

**Traveler's diarrhea** is acquired through ingestion of food and water contaminated with feces. Today, 50% of our fresh fruits and vegetables are imported, so use caution. The most practical way to avoid diarrhea is to pay meticulous attention to what you eat and drink. Evaluate each food in terms of its ability to contain toxic organisms, which may be harmful. Always **wash your hands** before you eat. Food contamination can result from the **source, handling, bacterial growth,** and **parasitic larvae.**

**Source:** Shellfish could be harvested from polluted waters containing Hepatitis A virus, aeromonas, salmonella, or cholera; chicken and beef can be fecally contaminated when slaughtered, picking up salmonella or E coli; uncooked vegetables could be contaminated in the field from contaminated soil and transmit bacteria and parasites; unpasteurized dairy products made with milk from sick cattle can cause brucellosis, listeriosis, and tuberculosis.

**Handling:** Foods that require a lot of handling during preparation and are not cooked—especially vegetables—increase the risk of contamination. Salads are often washed with contaminated water.

**Bacterial Growth:** Foods that are processed, moist, warm, and have inadequate refrigeration available are at increased risk. These conditions promote bacteria that can produce toxins, which can cause sudden vomiting and diarrhea. Reheated foods are also regarded as dangerous.

**Parasitic Larvae:** Beef, pork, fish, and shellfish can contain parasitic larvae. Aquatic plants (watercress, water chestnuts) could have parasitic cysts attached to their roots.

## **WASH YOUR HANDS.**

The following are some helpful tips:

1. Select fruits and vegetables that are thoroughly cooked and/or washed and peeled by you with bottled water.
2. Eat only meat and fish that are thoroughly and recently cooked - not warmed. Beef and pork should be well done, with no pink areas. Microwaving may not completely destroy surface bacteria.
3. Choose foods that require little handling during preparation.
4. Select canned or frozen food.
5. Order hard-boiled eggs served in the shells.
6. Choose dairy products from large commercial dairies. Canned and boiled milk is also considered safe. Unpasteurized milk and dairy products should be avoided. Milk and dairy products in Canada, Western Europe, Australia, and Japan are considered safe.
7. Don't use ice in drinks, drink uncapped bottled water, or eat food served in contact with ice. Wipe off bottles and cans, as they may be contaminated.

### **Foods to Avoid:**

Raw vegetables - especially leafy salads served in restaurants.

Unpasteurized apple juice.

Fruits not peeled by you or fruits with punctured skins. (Watermelons are often injected with water to increase weight).

Raw or uncooked eggs. (Preparing eggs sunny-side up and scrambled will not kill salmonella bacteria).

Rare or raw meat. Avoid raw fish and sushi.

Street vendor foods unless hot and well cooked. (Use caution with food from private homes and restaurants.)

All foods that have not had proper refrigeration.

Buffet foods, except in first class resorts and on cruises.

**(over)**

Airline and restaurant foods in less-developed countries.

### **Water and Beverage Advice:**

Do not brush your teeth, rinse food in, or drink tap water--even in a 5-star hotel--unless you are sure the water is safe. If in doubt, drink or use only:

- Boiled water (boiling is the most reliable method to make water safe for drinking).
- Boil water for 1-3 minutes, depending on altitude, and cool to room temperature.
- Chemically treated water.
- Hot beverages (coffee or tea). Be sure cup is clean.
- Commercially bottled or canned beverages: carbonated water, soft drinks, fruit juices, beer and wine.

### **Water treatment methods:**

1. Iodine tablets – Limit if pregnant because of adverse effects on fetal growth of thyroid gland development.
2. Chlorine 4-6% bleach - add 2 drops to 1 liter of water if clear and from the tap. Add 4 drops if water is cold and cloudy and not from the tap.

**Note: CDC makes no recommendation as to the use of any of the portable water filters on the market due to lack of verified results of their efficacy.**

### **Prevention**

1. Limit potential exposure to contaminated food and water
2. Drink only boiled or commercially bottled water.

### **Treatment of Mild Diarrhea:**

*Adequate replacement of fluids is the first step in the treatment of traveler's diarrhea, and is often all that is necessary for treatment.*

### **Over-the-Counter Preparations:**

Examples: Imodium or Pepto Bismol should be used only if absolutely necessary, due to their ability to slow the digestive system.

#### **Imodium**

##### *Dose*

Adults, take 2 caplets after first loose bowel movement and one caplet after each subsequent loose bowel movement.

Do not exceed four caplets in a 24-hour period.

Or

4tsp after first loose bowel movement and 2 tsp after each subsequent loose bowel movement. Not to exceed 8 teaspoonfuls in a 24-hour period.

##### *Warning*

Do not use if diarrhea is accompanied by high fever (> then 101° F) or if blood or mucus is present in the stool or if you have had a rash or other allergic reaction to Loperamide HCL. Do not use if you have a history of liver disease. Do not use if you are pregnant or nursing.

#### **Pepto bismol**

##### *Dose*

Adults, 2 tablespoonfuls. Repeat dose every ½ - 1 hour to a maximum of 8 doses in a 24 hour period. Drink plenty of clear fluids to prevent dehydration.

### Warning

Children and teenagers who have or are recovering from chicken pox or flu should not use this medicine to treat nausea and vomiting. If nausea and vomiting is present consult a physician. It could be an early sign of Reye syndrome. (A rare, but serious illness)

If ringing in the ears occurs discontinue use. This product should not be administered to those patients with a known allergy to aspirin. Caution is advised in using this medication if patient is taking medication for anticoagulation, diabetes, or gout. Do not take this medicine if diarrhea is accompanied by a high fever or bloody stools (See a physician). Do not use this drug when pregnant or nursing.

### Note

This medication may cause temporary darkening of the tongue and/or stool.

## **Lomotil**

### Contraindications

- Know sensitivity to diphenoxylate or atropine
- Obstructive jaundice
- Diarrhea associated with pseudomembranous enterocolitis or enterotoxin-producing bacteria

### Dose

Adults, 2 tablets four times daily (20 mg per day)

### Warnings

- Medicine not recommended for children under 2 years of age.
- Overdose may result in severe respiratory depression and coma.
- If severe dehydration or electrolyte imbalance is present this product should be withheld.
- Use with caution in young children because it may cause diphenoxylate toxicity.

This drug may worsen diarrhea associated with organisms that penetrate the intestinal mucosa (E Coli, salmonella, Shigella) and pseudomembranous enterocolitis associated with broad-spectrum antibiotics. This drug should not be used in these conditions. Should not be used with MAO inhibitors because it may cause hypertensive crises. Do not use this drug if you have abnormal liver function. This drug may potentiate the action of barbiturates, tranquilizers and alcohol. Do not use if pregnant or nursing.

### Adverse Reaction

Numbness of extremities, depression, malaise, lethargy, confusion, urticaria (hives), pruritus, toxic megacolon, paralytic ileus, pancreatitis, vomiting, nausea, anorexia, abdominal discomfort.

## **Treatment of Severe Diarrhea:**

*An antibiotic is recommended when there are frequent (3-4 stools in an 8-hour period), watery and/or bloody stools with cramping and/or temperature of over 101°. If not (considerably) improved after 1-2 days, seek medical advice. If diarrhea is accompanied by fever and bloody stools it could signify bacterial invasion. You should seek medical advice and see drug protocol below.*

1. **Cipro:** 500 mg. tablets are the drug of choice for severe diarrhea. Dosage: 500 mg. every 12 hours for 1-3 days or until symptoms are resolved. Maximum of 3 days use per incident, if not better after 5<sup>th</sup> dose, seek medical attention.
2. **Zithromycin:** 500 mg daily for one day. 250 mg daily for 4 days. 5 days total.
3. **Bactrim DS:** Dosage: 1 tablet every 12 hours for 5 days. Discontinue if skin rash occurs.
4. **Doxycycline:** 100 mg. capsule or tablet. Dosage: 100 mg. every 12 hours for 3-5 days. Discontinue if upset stomach occurs. (See handout on Antibiotics for Treatment of Traveler's Diarrhea for more information)

Over the counter medicines can be used with a severe diarrhea, but only when taken in combination with an antibiotic.

**Rehydration Recommendations:**

Rehydration is imperative during and after an episode of severe diarrhea and is best achieved by using the WHO (World Health Organization) oral re-hydration salt solution.

**Oral Rehydration Salts:** The World Health Organization formula - Use 1 packet to 1 liter of clean, boiled, or treated water.

**Homemade:** Prepare 2 separate glasses of the following:

**Glass 1**

Orange, apple or other fruit juice (rich in potassium)	8 oz.
Honey or corn syrup (contains necessary glucose for salt absorption)	½ tsp
Table salt (contains sodium and chloride)	

**Glass 2**

Water (carbonated or boiled)	8 oz.
Baking Soda (contains sodium bicarbonate)	¼ tsp.

Drink alternately from each glass. Supplement with carbonated beverages or water and tea made from boiled or carbonated water as desired.

**Fluids:** bottled or canned  
diluted fruit juices  
non-diet, non-caffeinated soft drinks  
tea sweetened with sugar  
broths or soups - *Alternate soup or broth with a sugared drink.*

<b><u>Foods:</u></b>	saltine crackers	bananas	rice
	applesauce	toast	

For more information contact the Olin Health Center Travel Clinic at 353-3161 or [www.msu.edu/~travel](http://www.msu.edu/~travel). Or you may contact the Centers for Disease Control and Prevention (CDC) website at: [www.cdc.gov/travel](http://www.cdc.gov/travel).

Sources: Center for Disease Control and Prevention Health Information for International Travel, 2001-2002  
Wilderness Medicine by Paul S. Auerbach, 2001  
Travel Health Guide by Stuart R. Rose, MD, 2001  
The Red Book, 2000