Opportunistic Infections

Bacterial Diarrhea (Salmonellosis, Campylobacteriosis, and Shigellosis)

Three of the most common causes of diarrhea in people living with HIV are bacterial organisms: Salmonella, Campylobacter and Shigella. Maintaining higher CD4 counts above 500 with HIV treatment can help prevent these diseases from occurring.

Infection with Salmonella can cause the disease salmonellosis, and people living with HIV are at a 20–100 times higher risk for it compared to people who are HIV negative. Salmonella can enter the body by eating or drinking contaminated food or water or by contact with infected people or animals. The most common sources include contaminated raw poultry, eggs and unpasteurized milk and cheese products. Other sources include contact with infected animals, especially turtles, iguanas, other reptiles, chickens, cattle and poultry.

Campylobacter bacteria can cause the disease campylobacteriosis and is the leading cause of bacterial diarrhea in the U.S. People living with HIV, particularly men who have sex with men, are 40 times more likely to be infected. The bacteria are found in cattle (beef), chickens, birds and flies. It is sometimes present in non-chlorinated water sources, such as streams and ponds. Oral-anal sex may be another route of transmission.

Infection with Shigella can cause the disease shigellosis. Two groups of the bacteria—groups B and D—account for nearly all shigellosis in the U.S. The bacteria is commonly spread from one person to another, through direct contact with feces. Shigella infection is more common among people living with HIV, and can lead to either mild or severe cases.

In people with HIV who have weakened immune systems, all three diseases can lead to severe diarrhea. They can spread from the intestines to the blood stream and into other body parts. This can cause death unless the person is treated quickly.

What are the symptoms and how is it diagnosed?

Symptoms can include severe diarrhea, bloody diarrhea, fever, chills, weight loss, abdominal pain and occasionally vomiting. The symptoms generally appear one to three days after exposure. They are all diagnosed through samples of stool or blood.

Diarrhea may also be caused by taking HIV (or other) medications. In this case, certain bacterial symptoms would likely not be present. Correctly diagnosing the cause of any diarrhea is important.
to ensure that the proper treatment is used.

How is it treated?

These three bacterial infections are treated with antibiotics, which may also cause diarrhea. People with stronger immune systems (above 500 CD4s) usually recover on their own without medication. However, drinking extra amounts of fluid is often needed to prevent dehydration. If dehydration has occurred, IV saline may be needed.

For people living with HIV who have mildly weakened immune systems (CD4 counts of 200–500), medications are sometimes needed. In most cases, a short course of antibiotics over 7–14 days is all that is necessary. However, for people with CD4 counts below 200, 2–6 weeks of antibiotics might be needed.

- **Salmonellosis**: The most effective antibiotic is ciprofloxacin (Cipro). This tablet is taken twice a day for the first 2–4 weeks. After that, it is sometimes continued once a day for several months, depending on when symptoms disappear. Other antibiotics include levofloxacin (Levaquin), moxifloxacin (Avelox), cefotaxime (Claforan), ceftriaxone (Rocephin) or TMP-SMX (Bactrim; Septra). For severe cases of salmonellosis where infection is in the blood, IV antibiotics may be necessary. Salmonellosis can often recur in people with weaker immune systems, so treatment may be extended. Longer use of antibiotics to prevent recurrence is not recommended.

- **Campylobacteriosis**: Treatment of mild-to-moderate disease usually involves azithromycin (Zithromax) or ciprofloxacin (Cipro) for 7–10 days. For more severe cases, adding a second antibiotic, such as vancomycin (Vancocin), may be needed.

- **Shigellosis**: One of the following antibiotics can be used: ciprofloxacin (Cipro), levofloxacin (Levaquin) or moxifloxacin (Avelox). Other options include azithromycin (Zithromax) or TMP-SMX (Bactrim; Septra). Time on treatment may range from 7–14 days depending on the CD4 count and symptoms.

It might also be useful to consider other medications that can help control diarrhea. [Click here](#) to read about the things you and your doctor can do to help manage your diarrhea.

Can it be prevented?

Yes. Many people with lower CD4 counts already take TMP-SMX (Bactrim, Septra) to prevent *Pneumocystis pneumonia* (PCP). Fortunately, the drug can also help prevent salmonellosis and shigellosis, if people who are already taking this drug are exposed to Salmonella or Shigella.
There are also some simple tips that can help prevent being exposed to these bacteria in the first place. These include:

- Wash your hands with soap and water before and after handling foods, after using the bathroom, changing a baby’s diaper, handling soil, and after contact with animals.
- Make sure children, particularly those who handle pets, wash their hands often and well.
- Purchase only inspected eggs, animal food products and pasteurized milk.
- Wrap meats in plastic bags to prevent blood from dripping onto other foods.
- Refrigerate foods promptly.
- Defrost meats in the refrigerator rather than at room temperature.
- Wash fruit, vegetables and meats well before preparation. Wash cutting boards and counters when preparing food.
- Avoid eating raw or undercooked meats and eggs, particularly when using a microwave oven.
- Never prepare food for other people if you have diarrhea.
- Do not swim in pools or lakes if you have diarrhea.
- Practice safer oral-anal sex. If a dental dam (a piece of plastic or latex) is used properly during oral-anal sex, it lowers the risk for getting these bacteria from someone with these infections. Ordinary plastic wrap can be used, as long as it is not microwavable, which is porous and can allow bacteria through.
- People with HIV who travel to resource-poor countries should be careful with food, beverages and tap water. It is best to avoid raw fruits and vegetables, undercooked meat, unpasteurized dairy products, and foods and beverages from street vendors. Tap water and ice made with tap water may carry these bacteria.
- If you experience diarrhea, ensure you eat well to help correct your body’s loss of nutrients that often occurs with longer bouts of diarrhea.

Are there any experimental treatments?

If you would like to find out if you are eligible for any clinical trials that include new therapies for the treatment or prevention of bacterial diarrhea, visit ClinicalTrials.gov, a site run by the U.S. National Institutes of Health. The site has information about all HIV-related clinical studies in the United States. For more info, you can call their toll-free number at 1-800-HIV-0440