

What is *Campylobacter*?

Campylobacter is a group of spiral-shaped bacteria that can cause disease in humans and animals. *Campylobacter* is one of the most common bacterial causes of diarrheal illness in the United States. Virtually all cases occur as isolated, sporadic events. *Campylobacter jejuni*, one of the most common strains, grows best at the body temperature of a bird, and seems to be well adapted to birds, which are frequently carriers.

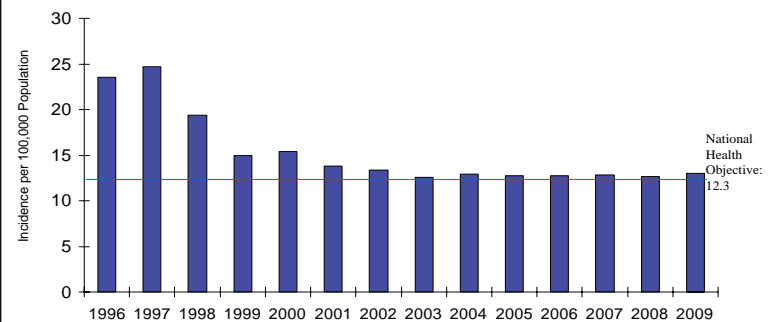
Campylobacter organisms have long been recognized as a cause of diarrhea in cattle and of septic abortion in both cattle and sheep, but they also are recognized as an important cause of human illness. Both *Campylobacter fetus* subspecies *fetus* (referred to then as *Vibrio fetus*) and *Campylobacter jejuni* were isolated from blood cultures of humans in the 1950s and at that time were thought to be rare and perhaps opportunistic pathogens.

What steps are government agencies taking to prevent *Campylobacter*?

The Centers for Disease Control and Prevention (CDC) began a national surveillance program in 1982, to learn more about how *Campylobacter* causes disease and is spread. A more detailed active surveillance system was instituted in 1996, Emerging Infections Program Foodborne Diseases Active Surveillance Network (FoodNet); this provides more reliable estimates of disease occurrence.

Beginning in 1996, the United States Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) implemented a new framework for meat and poultry inspection called HACCP (Hazard Analysis Critical Control Point). HACCP is a regulatory program that focuses attention on controlling food safety hazards at the most appropriate step or steps in the process. HACCP programs are designed to exert control over a variety of microbial pathogens, such as

Incidence of Foodborne Illness 1996-2009: *Campylobacter**



*Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food --- 10 states, 2009

Source: CDC/FoodNet

Campylobacter.

The CDC is also making an effort to inform the public about *Campylobacteriosis* and ways to avoid becoming infected. The U.S. Department of Agriculture conducts research on how to prevent the infection in chickens. The Food and Drug Administration has produced the Model Food Code, which, if followed, could decrease the risk of contaminated poultry being served in food service establishments.

How common is *Campylobacter* in meat and poultry?

Campylobacter live in the intestines of healthy birds, and are associated with raw poultry. Many poultry flocks are infected with *Campylobacter*. It can be easily spread from bird to bird through a common water source or through contact with infected feces. *Campylobacter* is also present in the giblets, especially the liver.

Eating undercooked poultry, or other food that has been contaminated with juices from raw poultry is the most frequent source of this infection. Freezing reduces the number of *Campylobacter* bacteria present on raw meat. The bacterium is fragile. It cannot tolerate drying and can be killed by exposure to oxygen.

Can *Campylobacter* be present in other products?

Campylobacter is found in every part of the United States and throughout the world. Millions of *Campylobacter* cells can be released in a bowel movement from an infected person or animal. *Campylobacter* may be found in water sources such as private wells that have been contaminated with feces from infected people or animals. Human or animal waste can enter the water in many different ways (i.e., sewage overflows, polluted storm water runoff, and agricultural runoff).

Campylobacteriosis occurs much more frequently in the summer months than in the winter. The organism is isolated from infants and young adults more frequently than from other age groups. Active surveillance through FoodNet indicates about 12.7 cases were diagnosed per 100,000 persons, in 2005, a 30 percent decrease since the 1996-1998 time frame.

Most human illness is caused by one species, called *Campylobacter jejuni*, but 1 percent of human *Campylobacter* cases are caused by other species.

Campylobacteriosis is an infectious disease- it can be passed to others. Symptoms can include diarrhea, cramping, abdominal pain, and fever within 2 to 5 days after exposure; some infected persons have no symptoms. Symptoms can also be accompanied by nausea and vomiting. The illness typically lasts 1 week. Although *Campylobacter* doesn't commonly cause death, it has been estimated that approximately 100 persons with *Campylobacter* infections may die each year.

Some people may have arthritis following Campylobacteriosis; others may develop a rare disease that affects the nerves of the body beginning several weeks after the diarrheal illness. This disease, called Guillain-Barré syndrome, occurs when a person's immune system is "triggered" to attack the body's own nerves, and can lead to paralysis that lasts several weeks and usually requires intensive care. It is estimated that approximately one in every 1000 reported *Campylobacteriosis* cases leads to Guillain-Barré syndrome. Campylobacteriosis may trigger as many as 40 percent of Guillain-Barré syndrome cases in this country.

Larger outbreaks due to *Campylobacter* are not usually associated with raw poultry but are usually related to drinking non-pasteurized milk or contaminated water. Animals can also be infected, and

Incidence of Cases of Infection with Five Common Pathogens United States, 2008	
<i>Salmonella</i>	16.2
<i>Campylobacter</i>	12.68
<i>E. coli</i> O157:H7	1.12
<i>Yersinia</i>	0.36
<i>Listeria</i>	0.29
Cases per 100,000 persons	
<i>Source: FoodNet, CDC</i>	

some people have acquired their infection from contact with the infected stool of an ill dog or cat.

Illness Prevention

Most cases of Campylobacteriosis are associated with handling raw poultry or eating raw or undercooked poultry meat. A very small number of *Campylobacter* organisms can cause illness in humans. Even one drop of juice from raw chicken meat can infect a person. One way to become infected is to cut poultry meat on a cutting board, and then use the unwashed cutting board or utensil to prepare vegetables or other raw or lightly cooked foods. *Campylobacter* organisms from the raw meat can then spread to the other foods. The organism is not usually spread from person to person, but this can happen if the infected person is a small child or is producing a large volume of diarrhea.

Advice For Consumers

Cook all poultry products thoroughly. Make sure that the meat is cooked throughout and the inside is cooked to 165°F (74°C). Wash hands with hot, soapy water before and after handling raw foods of animal origin.

Prevent cross-contamination in the kitchen by using separate cutting boards for foods of animal origin and other foods. Carefully clean all cutting boards, countertops and utensils with soap and hot water after preparing raw foods. Avoid consumption of non-pasteurized milk and untreated surface water. Make sure that persons with diarrhea, especially children, wash their hands carefully and frequently with soap to reduce the risk of spreading the infection. Wash hands with soap after having contact with pet feces.

The bacterium can also be present in water, particularly well water. Heating water at a full boil for 1 minute (3 minutes if you live in a high altitude) will kill *Campylobacter*. Boiled water should be stored in a clean container with a lid and refrigerated.

Helpful Links

American Meat Institute

<http://www.meatami.com>

<http://www.meatsafety.org>

Centers for Disease Control and Prevention

<http://www.cdc.gov>

Third-Party Experts

Gary Acuff, Ph.D.

Professor and Head, Department of Animal Science

Texas A & M University

(409) 845-4402

gacuff@tamu.edu