

Foodborne Illness: Especially Dangerous for the Vulnerable

If you've ever become sick after eating a food contaminated with disease-causing bacteria, it's not an experience you want to repeat.

But if you're part of what is called an "at-risk" or "vulnerable" population, a foodborne illness can be extremely dangerous. Symptoms—such as vomiting, diarrhea and fever—can intensify and the illness can become life-threatening.

Which populations are most at risk? According to Food and Drug Administration (FDA) epidemiologist Karl Klontz, M.D., M.P.H., they are the very young (under 1 year); older adults; the immune-compromised (those whose immune systems are less able to fight off harmful bacteria); and women who are pregnant.

For a particular type of bacteria known as *Listeria monocytogenes*—which causes a serious illness called listeriosis—the list is much the same, according to Vital Signs (<http://www.cdc.gov/vitalsigns/listeria/index.html>), a new report from the Centers for Disease Control and Prevention (CDC). The report, which summarizes data on the 1,651 listeriosis cases reported from 2009-2011, shows that older adults, pregnant women, newborns



Older adults, pregnant woman and young children are among the most vulnerable to foodborne illnesses. People with compromised immune systems are also at risk.

and persons with conditions that hinder the immune system are at a higher risk than others for listeriosis.

Combined, these vulnerable groups accounted for at least 90 percent of the listeriosis cases. CDC reported that 21 percent of the people with listeriosis died.

Immune System Plays a Role

What makes these populations more at risk? In many cases, the problem

lies with the immune system, says Klontz. The immune system is the body's natural defense system against "foreign invasion" by pathogens (bacteria or viruses that can cause disease). In healthy people, a properly functioning immune system usually fights off harmful pathogens readily.

As we age, our immune functions and other barriers to infection start to wane, says Klontz. Our bodies less effectively fight off harmful bacteria.

By establishing safety and cleanliness requirements for farmers, food companies, and importers, FDA expects that implementation of FSMA will reduce the chances that pathogens such as Listeria, Salmonella, and E.coli will reach those most at risk.

For example, the amount of acid in our stomachs, once a powerful barrier to pathogens, decreases. In addition, older people tend to take more medications for problems like heartburn or acid reflux, many of which further reduce the amount of stomach acid, further reducing this barrier against pathogens.

The same goes for people with compromised immune systems, such as those with HIV/AIDS, cancer, liver disease and diabetes. “Not only are their immune systems weakened by the disease,” Klontz says, “but the side effects from certain treatments such as chemotherapy may make them weaker still.”

On the opposite side of the age spectrum are children. Young children, in particular, are more at risk for foodborne illness because their immune systems are still developing.

As for pregnant women, “I wouldn’t say that their immune systems are compromised so much as altered, serving a specific purpose—to enable the mother to co-exist with the fetus throughout the nine months of pregnancy. “Remember that half of the fetus’ genes are not the mother’s,” Klontz says. The body has to work extra hard to avoid rejecting it. But that same alteration makes the body more susceptible to infection, he notes.

In addition, listeriosis in pregnant women can cause miscarriage, still birth, premature labor, and serious

illness or death in newborns. *Listeria monocytogenes*, in particular, can cross the placenta (an organ which links the blood supply of mother to child) and infect the unborn baby.

Prevention is Key

Key to reducing the risk faced by these vulnerable populations is to prevent foodborne illnesses from occurring in the first place, says FDA microbiologist Mickey Parish, Ph.D. Prevention is at the heart of the FDA Food Safety Modernization Act (FSMA) signed into law in 2011.

FDA is working toward putting new measures in place to help keep contaminants out of the harvesting, processing and manufacturing of foods, Parish notes. By establishing safety and cleanliness requirements for farmers, food companies, and importers, FDA expects that implementation of FSMA will reduce the chances that pathogens such as *Listeria*, *Salmonella*, and *E.coli* will reach those most at risk.

There are steps that the people particularly vulnerable to the dangers of foodborne illnesses can take to reduce that risk, says Klontz. These include:

- Avoid eating raw animal products, which include unpasteurized milk (and cheeses made from unpasteurized milk), uncooked or lightly cooked eggs, and raw fish and meat dishes such as sushi or steak tartare.

- Wash fruits and vegetables before eating, especially foods with rinds, such as cantaloupes and other melons. Avoid eating raw sprouts.
- Make sure counters and other food preparation surfaces are adequately cleaned.
- Avoid hot dogs and other deli-style meats unless they are reheated to steaming temperatures. Also avoid deli-prepared salads, such as chicken or seafood salad.
- Keep your refrigerator at 40 degrees F or lower, and your freezer at 0 degrees F or lower.

If you’re eating out, notes Klontz, especially if you’re in an at-risk group, it’s helpful to ask what ingredients are in a prepared dish. Are any raw or uncooked? Is the salad dressing or sauce made with unpasteurized milk or eggs? Does it include any raw animal products? [FDA](#)

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