

Food-borne Illnesses

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Ask Your Patients...

"Do you practice food safety at home?"

If Your Patient Asks...

"Is the food I eat safe?"

UNDERSTAND the problem

A variety of infectious and noninfectious foodborne illnesses cause substantial morbidity and mortality in the United States each year. In addition to the high number of sporadic cases and outbreaks, researchers estimate that thousands of cases are unreported or undiagnosed annually. Despite advances in technology and food safety, foodborne illness clearly remains a public health threat.

Physicians and other healthcare practitioners should be familiar with the mechanisms of contamination and transmission of foodborne pathogens and toxins, the characteristic symptoms of foodborne illnesses, and the appropriate reporting procedures. Healthcare professionals play a key role in preventing foodborne illness by providing education and resources on food safety and secondary transmission.

WHAT foods may be contaminated

Food can become contaminated with pathogens in a variety of ways. Raw foods and beverages pose the greatest risk because they have not been processed, cooked, or refrigerated/frozen, which can reduce or destroy most pathogens. Produce (fruits and vegetables) can become contaminated in the field if soil or water is contaminated, leading to the growth of a variety of pathogens, such as *Salmonella*, Shiga toxin-producing *E. coli* O157 (STEC O157), *Cyclospora*, and hepatitis A.⁵ If not pasteurized, milk or fruit juices may become contaminated with a variety of bacteria, most notably *Listeria* and *Salmonella*. Some pathogens, such as *Campylobacter*, *E. coli*, *Toxoplasma gondii*, and *Yersinia*, live in the intestinal tracts of animals, contaminating raw meat and poultry; this contamination can spread to other animals during slaughter. Eggs may become contaminated with *Salmonella* through infection of hens' ovaries.

WHO is at risk

Because crowding and poor hygiene are risk factors, rates of infectious foodborne illnesses are high in childcare centers and healthcare facilities. A review of 75 enteric outbreaks in long-term care facilities found that 52% of bacterial infections were transmitted through food.¹ Other common risk factors for exposure to foodborne illnesses include:^{2,3}

- Eating raw/undercooked meats or fish
- Ingesting raw/unpasteurized milk or dairy products
- Working with animals or animal products
- Traveling to developing countries
- Abusing drugs
- Having children in daycare or school

The complexity of the host-pathogen relationship creates a spectrum of individual responses to foodborne agents; some people remain asymptomatic whereas severe disease develops in others. Determinants of individual susceptibility to a foodborne illness include:^{3,4}

- Extremes of age (especially children younger than 4 years of age)
- Status of immune system at the time of exposure
- Underlying medical conditions
- Medications that alter normal flora
- Pregnancy
- Surgical procedures and radiation therapy
- Low gastric acidity

Contamination may also occur during food preparation in a restaurant or a home kitchen through handling by an infected person or through exposure to contaminated surfaces or equipment. The most common form of contamination from handled foods is norovirus; *Staphylococcus aureus* and *Cryptosporidium* are also more commonly transmitted through an infected food handler than through direct contamination of a food product.^{5,6}

HOW to report foodborne illnesses

Healthcare professionals are the frontline protection for the public against many infectious disease outbreaks, and reporting of these diseases should not be left to the clinical laboratory.^{7, 8} Prompt and accurate disease reporting to the local or state health department is necessary for the prevention and control of outbreaks as well as for accurate surveillance.^{2, 7} Healthcare practitioners should be familiar with the nationally notifiable diseases and check with the CDC for the most recent list, as it is updated annually.

The CDC recommends that suspected foodborne-illness outbreaks or sporadic illnesses that may be caused by a nationally notifiable disease should be reported as soon as possible.⁷ Because early intervention is critical, definitive diagnoses are unnecessary.^{2, 7} When reporting, the practitioner should provide the following information to the local or state health department:^{8, 9}

- Date of illness(es)
- Age, sex, and full residence address and phone number of patient(s)
- Symptom complexes (especially unusual symptoms)
- Disease patterns

Other requirements or requests will be provided by the involved local or state health department.

WHERE to find resources

Centers for Disease Control and Prevention

<http://www.cdc.gov>

USDA Food Safety and Inspection Service

<http://www.fsis.usda.gov>

BAC Down!

<http://www.fightbac.org>

Ounce of Prevention Campaign

<http://www.cdc.gov/ounceofprevention>

FDA's Bad Bug Book

<http://www.cfsan.fda.gov>

Virginia Bioinformatics Institute PathPort Pathogen Portal Project

<http://pathport.vbi.vt.edu/pathinfo>

- 1 Greig JD, Lee MB. Enteric outbreaks in long-term care facilities and recommendations for prevention: a review. *Epidemiol Infect.* 2009;137(2):145-155.
- 2 Guerrant RL, Van Gilder T, Steiner TS, et al. Practice guidelines for the management of infectious diarrhea. *Clin Infect Dis.* 2001;32:331-350.
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- 4 Siegel JD, Rhinehart E, Jackson M, Chiarello L, Healthcare Infection Control Practices Advisory Committee. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. Available at <http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf>. Last accessed October 21, 2009.
- 5 U.S. Food and Drug Administration. *The Bad Bug Book.* Available at <http://vm.cfsan.fda.gov/~mow/intro.html>. Last accessed July 2, 2008.
- 6 National Digestive Diseases Information Clearinghouse. Bacteria and Foodborne Illness. 2007. Available at <http://digestive.niddk.nih.gov/ddiseases/pubs/bacteria>. Last accessed July 2, 2009.
- 7 American Medical Association, American Nurses Association—American Nurses Foundation, Centers for Disease Control and Prevention, Center for Food Safety and Applied Nutrition Food and Drug Administration, Food Safety and Inspection Service U.S. Department of Agriculture. Diagnosis and management of foodborne illnesses: a primer for physicians and other health care professionals. *Morbidity Mortality Weekly Rep.* 2004;53(RR4):1-33.
- 8 Esler D, Just E. Notification—what's it all about? *Aust Fam Physician.* 2007;36(5):337-339.
- 9 M'ikanatha NM, Southwell B, Lautenbach E. Automated laboratory reporting of infectious diseases in a climate of bioterrorism. *Emerg Infect Dis.* 2003;9(9):1053-1057.

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