

# ***FOOD SAFETY FOR ELDERLY PEOPLE***

***3.0 Contact Hours***

***Presented by:***

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# FOOD SAFETY FOR ELDERLY PEOPLE

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## Objectives

Upon completing this course, the learner will be able to:

1. Explain the reasons why elderly people are at increased risk from foodborne illnesses
2. Identify foodborne pathogens that pose a high risk of complications, hospitalization, or death in elderly people
3. Identify foods that elderly people should avoid eating
4. Explain the precautions that elderly people should take with restaurant, takeout, or home-delivered meals and those that friends and relatives should take with food gifts brought to elderly people living in nursing homes or other care facilities

## Background

Elderly people are a high-risk group for foodborne illnesses. Although deaths due to acute foodborne illnesses are rare in the general population (<0.1%), they occur most often in very young people, elderly people, or those with compromised immune systems.<sup>1</sup> Elderly people are also more likely than younger adults to experience complications of foodborne illness.<sup>1</sup>

**Instant feedback:** What three segments of the population are at highest risk of dying of foodborne illnesses?

**Answer:** Very young people, elderly people, and those with compromised immune systems.

Most foodborne illnesses take the form of gastroenteritis, a type of illness that often has more serious consequences among elderly people than in younger adults. Data from the U.S. National Hospital Discharge Survey, 1979–1995, show that hospitalization rates for adults with gastroenteritis were highest among those aged 75 years or older. The mean length of stay and case-fatality rate for adults hospitalized for gastroenteritis increased with age, with the oldest patients (those age 75 or older) being 33 times more likely to die during hospitalization for gastroenteritis than those aged 20–49 years.<sup>1</sup>

### **Why Elderly People Are More Susceptible**

Elderly people are more susceptible to foodborne illness for several reasons:

1. *Changes in the immune system.* As a natural part of aging, both humoral and cellular immunity decline.<sup>1–3</sup> Defective functioning of macrophages and granulocytes and a shift to memory T cells with aging, along with decreased cytokine production and suboptimal function of IL-2 and IL-8, may increase susceptibility to pathogens to which elderly people are exposed for the first time.<sup>1</sup> Thus, elderly people may be particularly at risk from newly emerging or genetically mutated foodborne pathogens.<sup>1</sup>
2. *Changes in the digestive tract.* Both gastric acid production and gastrointestinal motility decrease with age. Decreased production of gastric acid may lead to increased survival of pathogenic microorganisms in the digestive tract, and decreased gastrointestinal motility may prolong exposure to pathogens or their toxins.<sup>1–3</sup> In addition, overuse of over-the-counter antacids or H<sub>2</sub>-receptor

antagonists, which is common among older people, may further decrease acid levels in the stomach, thus increasing susceptibility to infection.<sup>1</sup>

**Instant feedback:** What two age-related changes in the gastrointestinal tract may increase vulnerability to foodborne pathogens?

**Answer:** Decreased production of gastric acid and decreased gastrointestinal motility.

3. *Chronic illnesses.* Elderly people who are ill are at increased risk of infection with foodborne pathogens because of immune suppression associated with both aging and disease. For example, diabetes, which affects about one-fifth of people older than age 65 in the United States, can promote infection through hyperglycemia and impairment of microcirculation.<sup>1</sup>
4. *Malnutrition.* Elderly people are at increased risk of malnutrition because of a variety of factors including dental problems, digestive disorders, alterations in the senses of smell and taste, early satiety, side effects of medications, and social isolation.<sup>3</sup> Malnutrition weakens the immune system, increasing susceptibility to foodborne and other pathogens.
5. *Impairments associated with aging.* A variety of impairments associated with aging may make it more difficult for elderly people to handle and prepare food safely.<sup>4</sup> For example, an individual with impaired vision may not be able to read expiration dates on food packages or determine whether a cooking utensil has been adequately cleaned. Loss of dexterity or difficulty in standing and bending may make it difficult or impossible for an elderly person to clean the kitchen or the refrigerator properly. An impaired sense of smell may prevent an older person from recognizing the characteristic odors that indicate that food is spoiled. Difficulty in shopping or financial constraints may make elderly people reluctant

to discard perishable food that has been kept too long. Any of these problems may contribute to situations in which an elderly person consumes contaminated or incorrectly prepared food.

6. *In some instances, lack of up-to-date knowledge of the principles of safe food handling.* Surveys have shown that older people are actually *less* likely than younger ones to engage in most risky food handling practices.<sup>4</sup> This may reflect older people's greater experience with food preparation, as well as a heightened awareness of the need to be careful with food, dating back to a time when refrigeration was not universally available and processed foods were not as extensively used as they are today.<sup>4</sup> Nevertheless, the food handling practices of older people are not perfect. A survey conducted in eight U.S. states showed that among respondents age 60 or older, 13 percent did not wash their hands with soap after handling raw meat or chicken, 13 percent did not wash cutting surfaces with soap or bleach after using them to cut raw meat or chicken, 13 percent ate pink hamburgers, 49 percent ate undercooked eggs,<sup>\*</sup> 4 percent ate raw oysters, and 1 percent drank unpasteurized milk.<sup>4</sup> Despite these generally reassuring statistics, it is important to recognize that not all elderly people are well informed about food safety. In particular, elderly men whose wives have recently died may find themselves preparing meals for the first time in their lives and may not know even the most basic principles of safe food handling.

**Instant feedback:** What unsafe food handling practice is reported by approximately half of all elderly people?

**Answer:** Eating undercooked eggs.

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<sup>\*</sup> The high frequency of consumption of undercooked eggs by older people may reflect the fact that eating raw or lightly cooked eggs was not regarded as unsafe during much of their lifetimes, as discussed in more detail later in this module.

## **Pathogens Of Greatest Concern**

Foodborne pathogens of greatest concern for elderly people include *Campylobacter*, *E. coli* O157:H7, *Listeria monocytogenes*, noroviruses, *Salmonella*, and *Vibrio*.<sup>1</sup> For some of these pathogens, infection rates are higher among elderly people than among younger adults. The risk of listeriosis is particularly high among older people; an analysis of cases in Minnesota showed that the incidence was 9.5 times greater among those over age 60 than in younger adults.<sup>5</sup> For all of these pathogens, rates of complications, hospitalization, and death are higher in elderly people.<sup>1</sup> For example, data on *Campylobacter* infection show that a serious chronic sequela, Guillain-Barré syndrome, is far more common among elderly patients than younger ones.<sup>3</sup> An analysis of cases of salmonellosis in California over a 10-year period showed that 59 percent of those who died of salmonellosis were elderly, even though this age group represents only 11 percent of the state's population.<sup>6</sup>

**Instant feedback:** Elderly people are at increased risk of developing Guillain-Barré syndrome after contracting an infection with what foodborne bacterium?

**Answer:** *Campylobacter*.

One foodborne pathogen that is not very widely known but is a significant concern for older adults is *Vibrio*. Pathogenic *Vibrio* bacteria, which include *V. parahaemolyticus*<sup>7</sup> and *V. vulnificus*,<sup>8</sup> live in seawater and may contaminate shellfish, particularly oysters, leading to a risk of illness if the shellfish is consumed raw or undercooked. Since the presence of *Vibrio* in seawater is natural and is not a result of fecal contamination, the bacteria may be present even in shellfish legally harvested from areas where the water is considered clean. The incidence of *Vibrio* infection is highest among people age 65 to 74 years.<sup>9</sup> *Vibrio vulnificus* is a particularly dangerous

microorganism with a high case-fatality rate. People with low gastric acidity or impaired immunity, situations common among the elderly, are at increased risk of infection with this bacterium, as are those with liver disease or elevated serum iron levels.<sup>10</sup> Experts discourage the consumption of raw oysters and other raw shellfish, particularly by elderly people and others at high risk, because of the possibility of exposure to *V. vulnificus* or other pathogenic *Vibrio* species.

**Instant feedback:** Oysters, even those harvested from clean waters, should not be eaten raw because of the possibility of contamination with what type of pathogenic bacteria?

**Answer:** *Vibrio*.

### **Principles Of Safe Food Handling For Elderly People**

In general, the basic principles of safe food handling for elderly people are the same as those for other segments of the population. They include the following four concepts that are emphasized in all U.S. government food safety guidance:\*

- CLEAN: Wash hands and surfaces often.
- SEPARATE: Don't cross-contaminate.
- COOK: Cook to proper temperatures.
- CHILL: Refrigerate promptly.

In addition to these four principles, a fifth concept is crucial for elderly people and others at high risk for foodborne illness: careful selection of foods, avoiding those that have the greatest risk of contamination. The U.S. government advises elderly people

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\* A thorough discussion of these four principles and other important considerations in safe food handling for older adults is presented in a 24-page booklet from the U.S. Department of Agriculture, available online at [http://www.fsis.usda.gov/PDF/Food\\_Safety\\_for\\_Older\\_Adults.pdf](http://www.fsis.usda.gov/PDF/Food_Safety_for_Older_Adults.pdf). Since this publication is not copyrighted, you can reproduce as many copies for your patients as you wish.

to *not* eat the following foods because of their high potential for contamination with microorganisms that can cause illness:<sup>11</sup>

- Raw fish or shellfish
- Hot dogs and luncheon meats, unless they are reheated until steaming hot.
- Raw or unpasteurized milk
- Soft cheeses (such as feta, Brie, Camembert, blue-veined, and Mexican-style cheeses) unless they are labeled “made with pasteurized milk”
- Refrigerated pâtés or meat spreads
- Refrigerated smoked seafood (such as products labeled “kippered,” “Nova-style,” “lox,” “smoked,” or “jerky”), unless it is contained in a cooked dish, such as a casserole
- Raw or lightly cooked eggs, or dishes that contain them
- Raw or undercooked meat or poultry
- Raw sprouts
- Unpasteurized fruit or vegetable juices

Several of the less familiar prohibitions on this list (regarding unheated hot dogs and luncheon meats, soft cheeses, refrigerated pâtés and meat spreads, and refrigerated smoked seafood) are based on their association with cases of *Listeria monocytogenes* infection. The *Listeria* bacterium, which is commonly found in soil and water, has been found both in raw foods and in cooked foods that have a high potential for contamination after processing, such as delicatessen foods.<sup>12</sup> *Listeria* is more resistant than many other bacteria to heat, salt, acidity, and nitrite (the curing agent used in hot dogs and other cured meats), and unlike most bacteria, it can grow at refrigerator temperatures.<sup>13</sup>



Because refrigeration, one of the main defenses against other foodborne microorganisms, does not adequately protect against *Listeria*, people who need to avoid exposure to this bacterium, such as the elderly, should take special care not to eat foods with the highest risk of *Listeria* contamination.

**Instant feedback:** Why should elderly people avoid eating hot dogs or deli meats that have not been reheated; soft cheeses made from unpasteurized milk; refrigerated pâtés and meat spreads; and refrigerated smoked seafood that has not been cooked?

**Answer:** All of these foods pose a risk of exposure to *Listeria*, which can cause serious or even fatal illness in elderly people.

Some elderly people may find it burdensome to avoid the high-risk foods listed above. They may be interested in learning about better alternatives, such as the following (all suggestions in this table were derived or adapted from the U.S. government booklet cited in the previous footnote):

Poor Choices	Better Choices
Raw seafood, such as sashimi, ceviche, or raw clams or oysters	Fully cooked (firm and flaky) fish or fully cooked shellfish
Sandwiches made with cold deli or luncheon meats	Grilled sandwiches in which the meat or poultry is heated until steaming
Raw sprouts	Cooked sprouts
Cold or lukewarm hot dogs	Hot dogs cooked until steaming hot
Homemade Caesar salad dressing, raw cookie dough, or eggnog made with raw eggs	Commercial versions of these foods made with pasteurized eggs
Refrigerated pâtés or meat spreads	Canned pâtés or meat spreads
Soft cheeses made from unpasteurized milk, such as feta, Brie, Camembert, or queso fresco	Hard cheeses, processed cheeses, cream cheese, mozzarella cheese, or soft cheeses labeled “made from pasteurized milk”
Foods served at restaurant buffets (which may include foods kept too long at room temperature and/or dishes that contain undercooked ingredients or those unsafe for elderly people)	Foods ordered from a menu, after the diner has checked with the server to ensure that safe ingredients were used and that they were cooked adequately

## Special Considerations

In addition to the need to avoid the high-risk foods listed above, several other special considerations apply to food safety for the elderly.

*Changes in the “Rules.”* Several of the principles of safe food handling have changed during the lifetimes of today’s elderly people. Thus, some of the habitual practices and favorite recipes of older cooks may not meet today’s food safety standards.

For example, older cookbooks often include recipes for ground beef dishes, such as meatloaf, that suggest cooking the dish to only the rare or medium-rare degree of doneness. Today, experts advise that ground beef should always be cooked thoroughly. Older recipes may also advise cooks to determine the doneness of meat or poultry by inspecting its color. Scientists now recognize, however, that color is not a reliable indicator that meat has been cooked to a safe degree of doneness,<sup>14</sup> and official food safety advice now calls for the use of a food thermometer to determine whether meat or poultry is adequately cooked.

**Instant feedback:** How should people determine whether meat or poultry has been cooked to a safe degree of doneness?

**Answer:** By testing its temperature with a food thermometer, not by inspecting its color.

Perhaps the most dramatic change in the food safety “rules” in recent decades pertains to eggs. Prior to the 1980s, the interior of an intact shell egg was believed to be sterile. If eggs were properly disinfected and if their shells were not cracked, it was thought to be safe to eat them raw or to cook them only lightly. Many classic ways of preparing eggs — such as poaching, soft-boiling, and frying “sunny-side-up” or “over-easy” — do not heat eggs to a sufficient degree to ensure destruction of bacteria, and many traditional recipes for a variety of dishes, including French toast, soft custards,

Caesar salad, eggnog, and homemade versions of ice cream, mayonnaise, and hollandaise sauce, include eggs that are either raw or only lightly cooked.

During the 1980s, public health officials began to see an increasing number of cases of illness caused by *Salmonella* serotype Enteritidis, and epidemiological studies linked the illnesses to consumption of shell eggs that were neither cracked nor dirty but that had been served without thorough cooking.<sup>15,16</sup> Scientists eventually learned that this particular strain of *Salmonella* bacteria had developed the ability to infect hens without causing them to become ill, and that the bacteria could contaminate eggs from the inside before they were laid. Health authorities began to recommend that people, particularly those at high risk of serious complications from *Salmonella* infection, such as the elderly, should always cook eggs thoroughly (until both the yolk and white are firm) and should not eat dishes that include raw or lightly cooked eggs unless pasteurized eggs were used in their preparation. Understandably, some consumers, including older people, resisted this advice because it meant giving up favorite ways of serving eggs. As discussed earlier, eating undercooked eggs is still a common practice among the elderly, despite its risks.

**Instant feedback:** Why should elderly people be discouraged from eating eggs that are poached, soft-boiled, or fried “sunny-side-up” or “over-easy”?

**Answer:** Because eggs cooked in these ways may not be heated sufficiently to ensure destruction of *Salmonella*, which can contaminate intact shell eggs and can cause serious illness in elderly people.

*Takeout Foods, “Doggie Bags,” and Home-Delivered Meals.* Takeout meals have become a prominent feature of modern life, and large restaurant portions have prompted many people — including thrifty seniors — to ask that uneaten food be packaged to take home. Also, some elderly people are eligible for home-delivered meal

programs such as Meals on Wheels. Many foods from all of these sources are perishable and can cause illness if mishandled. It is crucial to ensure that such foods are not kept at room temperature for more than two hours between preparation and serving. Programs that prepare home-delivered meals for seniors need to take special precautions to ensure that foods are delivered within the two-hour window of safety, and recipients of these meals need to be careful to follow instructions about consuming or refrigerating the foods promptly after delivery.<sup>17,18</sup> Elderly people who eat in restaurants need to realize that the two-hour safety clock starts ticking when their food is served, not when they leave the restaurant.<sup>11</sup> If they will not finish their meal and complete their trip home within two hours, it is safer not to ask for a “doggie bag.”<sup>11</sup> Some senior centers that serve meals on site do not permit clients to take leftovers home because they know that bacteria can multiply to dangerous levels if food is left unrefrigerated for too long.<sup>11</sup>

**Instant feedback:** Why may it be risky for elderly people to bring home leftovers from restaurants?

**Answer:** Perishable foods should not be left at room temperature for more than two hours after preparation. Because of the time spent eating the meal in the restaurant, plus the time spent traveling home, it may be difficult to get the contents of the “doggie bag” into the home refrigerator within the two-hour window of safety.

*Food Gifts for Residents of Nursing Homes or Other Care Facilities.* Friends and relatives of elderly people living in nursing homes or other care facilities often like to bring in favorite foods as gifts for the elderly person. Although this is a kind and often welcome gesture, the foods must be selected carefully to conform both to the general restrictions advised for elderly people and to any special dietary requirements of the individual resident.<sup>19</sup> Perishable food must be transported to the facility with great care to ensure that hot food stays hot and cold food stays cold.<sup>19</sup> Before bringing in a food gift, friends and relatives should consult with the staff of the care facility to find out about the

resident's dietary restrictions and about the facility's policy concerning storage and reheating of foods.<sup>19</sup>

## **Summary**

Elderly people are a high-risk group for foodborne illness. Age-related changes in the functioning of the immune system and gastrointestinal tract, as well as possible malnutrition, coexisting illnesses, impairments associated with aging, and, in some instances, lack of up-to-date knowledge of the principles of safe food handling, may place elderly people at risk. The likelihood of complications, hospitalization, or death from foodborne illness in elderly people is higher than that in younger adults. In addition to following the basic principles of safe food handling that are recommended for everyone, elderly people need to avoid eating certain foods that may be contaminated with pathogens that are particularly dangerous for people in their age group, such as *Listeria*, *Salmonella*, and *Vibrio*. Health professionals who work with elderly people may need to teach them about the principles of food safety, particularly those that apply specifically to their age group (such as the need to avoid foods that have been associated with *Listeria* infection) and those that have changed in recent years (such as recommendations pertaining to the cooking of eggs). Takeout foods, restaurant leftovers, home-delivered meals, and food gifts brought by friends and relatives to people residing in nursing homes need to be handled with care to ensure that they are safe for elderly consumers.

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