Unit 4 Foodborne Illness and Disease
Lesson 3: Prevention Practices

Prevention is better than cure.
Proverbs. 

Prevention practices related to food handling and preparation involve food manufacturers, food preparers and the consumer. Each must be educated as to the risks of introducing foodborne illness and diseases to the end user – humans. While all food consumers are at risk for contracting foodborne illnesses and diseases there are certain groups at higher risk for contracting bacteria and toxins from contaminated foodstuffs.

High Risk Groups for Food-borne Illness
Gail Frank identifies several groups that are considered at high risk if ingesting contaminated seafood. Individuals with

- Liver disease
- Diabetes Mellitus
- Immune Disorders
- Gastrointestinal disorders
- Children
- Pregnant women
- Older adults
- Individuals receiving chemotherapy or radiation
- Individuals suffering from a debilitating disease or who have a human immunodeficiency virus infection

(2008, page 270-271)

In order “To make the US food supply safe for all consumers, the United States Department of Agriculture (USDA), the Food and Drug Administration (FDA) and food-processing industries have developed and implemented programs to control food-borne illness” (Whitney & Rolfes, 2002, page 648, ¶1).

Industry Controls
According to Whitney and Rolfes, 2002, one of the Healthy People 2010 initiatives relates to “improving food employee behaviors and food preparation practices that directly relate to foodborne illnesses in retail food establishments” (2002, page 648, ¶1).

The Hazard Analysis Critical Control Points (HACCP) system was implemented as a way for food manufactures to identify “...points of contamination and implement controls to prevent foodborne disease” (Whitney & Rolfes, 2002, page 648, ¶1).

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For example, after tracing two large outbreaks of salmonellosis to imported cantaloupe, producers began using chlorinated water to wash the melons and to make ice for packing and shipping a requirement. Safety procedures such as this are expected to prevent hundreds of thousands of food-borne illnesses each year. (Whitney & Rolfes, 2002, page 648, ¶1).  

However, with the latest salmonellosis outbreak (certain types of tomatoes) in June and July of 2008 (causing more than 943 deaths in the U.S. as of July, 2008), the prevention controls by the food manufacturers seemed to have experienced a breakdown.

According to the FDA, 

FDA has issued a warning to consumers nationwide that an outbreak of *Salmonella* serotype Saintpaul, an uncommon type of *Salmonella*, has been linked to consumption of some raw red plum, red Roma, round red tomatoes, and products containing these raw tomatoes. Since mid April, there have been 943 reported cases of salmonellosis nationwide caused by *Salmonella Saintpaul*, an uncommon form of *Salmonella*. At least 130 hospitalizations have been reported (2008).  

![Red Plum/Red Roma tomatoes implicated in outbreak](image1)

![Round red tomato implicated in outbreak](image2)

Source: US Food and Drug Administration  

**Food Safety in the Marketplace**

According to the Centers for Disease Control and Prevention (CDC) health risks have been associated with drinking unpasteurized or untreated fruit juices  

Orange, apple, grape or cranberry- juice comes in many different flavors. Juice provides essential nutrients that help keep people healthy. Consumers today have numerous choices when it comes to drinking juice. One of the decisions they must make is whether to buy pasteurized or unpasteurized juice. Though illness due to juice is rare, several outbreaks of diarrheal illness due to juice have been reported in the United States in the last decade. Most outbreaks of illness due to juice have been linked to untreated or inadequately treated

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juice products. Most juice sold in the United States is treated. One of the most common treatments used is pasteurization.

**Some outbreaks of foodborne illness linked to juice:**

1996: Outbreak of *E. coli* O157:H7 infections linked to untreated apple juice sold in multiple states

2003: Outbreak of *Cryptosporidium* infections linked to apple cider inadequately treated with ozone

2005: Outbreak of *Salmonella* infections linked to inadequately treated orange juice marketed as ‘fresh squeezed’ and sold in multiple states

(2008)\(^8\)

**Food Service Practices**

Frank discusses how "Certain procedures are recommended for maintaining sanitary food service conditions to eliminate acute and avoid hyperendemic food-borne illnesses" (2008, pages 266-267)\(^9\)

Food must be protected from potential contamination when stored, prepared, displayed, served, or transported. Dust, insects, rodents, unclean equipment and utensils, unnecessary handling, coughs, sneezes, flooding, drainage, and overhead leakage or overhead drainage from condensation are all potential sources of contamination and increased food risk.

(Frank, 2008, pp. 266-277)\(^10\)

In addition, foods stored in food service establishments need to adhere to specific “Refrigerator Storage Practices” including the following:

- Visible internal thermometers to monitor temperature regularly
- Maintain temperatures of 40°F or less
- Food containers covered to protect food from contamination
- Food containers arranged for ease of cleaning and air circulation
- Food containers stored 6 [sic] inches or more above the floor in walk in refrigerators
- Monitoring food expiration dates, particularly for table eggs
- Keeping frozen foods at 0°F or below

(Frank, 2008, pp. 268-269)\(^11\)

**Food Transportation**

The transportation of food products is another potential mode of transmission of which foodborne illness and disease. Therefore, as Frank points out,

To prevent contamination during transportation... food and food utensils must be covered, completely wrapped, or packaged. Hot foods must be 165°F or higher before they are placed in transport carts or containers, and cold foods must be at a temperature of 35°F. Written records of

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\(^10\) Ibid.

\(^11\) Ibid.
food temperatures before transport, upon arrival, and prior to service should be kept for a year (Frank, 2008, page 269, ¶1).  

**Food Safety at Home**
Consumers can practice food safety in the kitchen by following four simple practices recommended to prevent food-borne illness:

1. Keeping a clean safe kitchen 
2. Avoiding cross contamination 
3. Keeping hot foods hot (140°F or hotter) 
4. Keeping cold foods cold 

In addition, following safe handling instructions for meat and poultry as directed by the food manufacturers label can help consumers with reducing (but not totally eliminating) the risk of foodborne illness and disease.

Frank points out that “Hazardous foods must be rapidly cooled to an internal temperature of 40°F or below and checked with a food thermometer to ensure the recommended internal temperature of the food is met and maintained (2008, page 266).”

One of the arguments advanced by the food industry, including the meatpacking companies is that the responsibility of ensuring proper food handling and preparation rests on the consumer. While all meat products have the potential of containing bacteria and other organisms that can cause foodborne illness and disease, the industry has been steadfast in maintaining that if consumers follow effective practices for food handling and preparation, the risk of contracting foodborne illness is significantly reduced.

On the other hand, Eric Schlosser argues that the meatpacking industry should be both responsive and responsible for assuring all consumers that the meat products produced, transported and served by restaurants or sold by grocers should be contamination free. Because of the spread of E. coli 0157:H7 caused by the “...huge admixture of animals in more American ground beef plants, a single fast food hamburger now contains meat from dozens or even hundreds of different cattle” (2007, page 204, ¶2) placing responsibility for avoiding contaminated meat on the consumer with a directive for ‘properly cooking’ is not a realistic option.

**Additional Prevention Practices**
The Centers for Disease Control and Prevention (CDC) provides information on food safety for health care provides as part of the education process and practice of food safety. Their *Diagnosis and Management of Foodborne Illness: A Primer for Health Care Professionals* is available to health care professionals as an educational tool.

Recognizing a need to update health care providers on the critical role they play in food safety, CDC collaborated with the American Medical Association (AMA), the American Nurses Association, the Food and Drug Administration (FDA), and USDA's Food Safety and Inspection Service (FSIS) to create "*Diagnosis and Management of Foodborne Illnesses: A Primer for Health Care Professionals*.

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12 Ibid.  
Primer for Physicians and other Health Care Professionals". The Primer offers continuing education for nurses, physicians, and health educators and also provides practical and concise information on the diagnosis, treatment and reporting of foodborne illnesses. Providers can obtain continuing education through CDC reports or through the CDC website.¹⁷

Summary
In order to enforce and support prevention practices designed to thwart the risk and transmission of foodborne illness and disease, Schlosser recommends that the fast food industry, meatpacking plants and other food producers be required by the US Congress to implement safe food production practices immediately.

In light of “…the slaughter of hundreds of thousands of cattle potentially infected with mad cow disease (BSE), and an outbreak of foot-and-mouth disease in Great Britain in 2001…” (2007)¹⁸ Schlosser maintains the prevention practices must start at the initial source of contamination – with the animal or food product itself and not wait until the foodstuff comes in contact with humans (hands or mouths). To leave the responsibility totally to the consumer who may practice effective food handling and preparation still is too great a risk for American consumers to absorb.