

E. Coli (*Escherichia Coli*)

Background:

- ❖ *E. Coli* is a common kind of bacteria that lives in the intestines of animals and humans and most are harmless. (Mayo Clinic, 2008)
- ❖ The most dangerous strain of *E. Coli* is called O157:H7 because it produces a very powerful poison and can make you very sick if it is in your food or drink. (CDC, 2008)
- ❖ Eating unwashed greens such as spinach, lettuce or green onions or undercooked beef can cause the infection. (Mayo Clinic, 2008)
- ❖ People can spread the disease through contact with one another if they do not wash their hands after using the bathroom. (Mayo Clinic, 2008)
- ❖ The drinking of unpasteurized milk can be spread the disease because the *E. Coli* can be on the cows utters. (CDC, 2008)
- ❖ Bloody diarrhea and stomach pains are the most common symptoms for people infected with *E. Coli*. (CDC, 2008)
- ❖ A person would usually start to feel the symptoms after about 3-4 days, but some people can feel them the day after they were infected. (CDC, 2008)
- ❖ Children under five years of age and the elderly are more vulnerable to the *E. Coli* infection. The infection can spread to their red blood cells and their kidneys. (CDC, 2008)
- ❖ Long-term effects are kidney damage, which can lead to deaths. (Mayo Clinic, 2008)

Prevention:

- ❖ According to the Mayo Clinic, “Cook all ground beef and roast beef thoroughly, and use a meat thermometer to make sure it reads 160 degrees.” (Mayo Clinic, 2008)
- ❖ Keep raw meat away from other foods within your kitchen. (CDC, 2008)

- ❖ Drink pasteurized milk, juice, and cider. (Mayo Clinic, 2008)
- ❖ Never put cooked meat it was on before the cooking. (CDC, 2008)
- ❖ Never drink from lakes, streams or even pool water because these water sources can contain fecal matter. (Mayo Clinic, 2008)
- ❖ Make sure family members clean their hands after using the bathroom or changing diapers. (Mayo Clinic, 2008)

Statement of the Problem:

- ❖ More than 30 million people in the United States are vulnerable to be infected by a foodborne disease.
- ❖ One goal of Healthy People 2010 is to “reduce the amount of foodborne illnesses.” (Healthy People, 2008)
- ❖ Healthy People has set a target of “1.0 illnesses per 100,000,” compared to the “2.1 illnesses per 100,000 in 1997 for their baseline of findings.” (Healthy People 2010)
- ❖ Another goal of Healthy People is to reduce the number of outbreaks of infections by bacteria like *E. Coli*. The target is to go from 22 outbreaks a year, to 11. (Healthy People 2010)
- ❖ According to Healthy People, “A report from the United Kingdom indicates a relationship between socioeconomic status and foodborne illnesses that may apply to the United States.” (Healthy People 2010)

Epidemiological Picture:

- ❖ According to Healthy People 2010, *E. Coli* showed progress toward its target of 50 percent reduction from baseline issues. (Healthy People 2010)
- ❖ The number of outbreaks from food infections caused by *E. Coli* has actually increased. (Healthy People 2010)
- ❖ The increase in outbreaks and decrease in the number of *E. Coli* infections may be caused by the increase distribution of meats and produce or because of grouping cases into outbreaks. (Healthy People 2010)
- ❖ Americans are eating fresh produce from around the world more and more. Prevention of foodborne illnesses has improved but cost-effective measures have to be improved, as well as detection. (Healthy People 2010)
- ❖ Between 1998-2005 there have been 187 outbreaks of foodborne infections caused by *E. Coli*. (CDC, 2008)
- ❖ Race or ethnicity does not effect whether or not you can become infected with *E. Coli*. (CDC, 2008)
- ❖ Females tend to have a higher infection rate of *E. Coli* but it is a very small difference.
- ❖ Travelers to foreign countries are usually more capable of becoming sick from *E. Coli*.

Solutions:

Food Safety and Inspection Service (<http://www.fsis.usda.gov/OA/background/ec0902.htm>)

In October 1995, the Food Safety and Inspection Service (FSIS) declared raw ground beef can contain traces of *E. Coli* and they began a sampling program to test for the *E. Coli* in retail stores. Raw ground beef is a concern because most people do not cook the meat fully. This can cause *E. Coli* to still live in the meat. All meat facilities are required to make sure that the

areas that handle the meat are sufficiently inspecting their meats. All ground beef plants will be randomly inspected by the FSIS.

National Public Radio (<http://www.npr.org/templates/story/story.php?storyId=6138682>)

At the University of Nebraska, researchers are looking at ways to vaccinate cows instead of humans against the *E. Coli* disease. Since trials began in 2002, about 25,000 cattle have been tested. Epidemiologist David Smith says “The vaccine reduces the number of animals with *E. Coli* in their manure 60-70%.” This is good because that is less of a risk of the other cattle eating the manure and transferring the disease to their own body.

United States Department of Agriculture

(<http://www.ars.usda.gov/is/AR/archive/aug04/ecoli0804.htm>)

Microbiologist Evelyn Dean-Nystrom and veterinary medical officer William Stoffregen of the Agricultural Research Service (ARS) have worked together to find out where *E. Coli* bacteria lives in calves. These scientists already knew that the bacteria lives in the intestines of the calves, but they found out it also lives within the gall bladder of 12 out of 13 calves. “Including gall bladders in samples cultured for *E. coli* O157:H7 may help identify infected cattle at slaughter,” says Evelyn Dean-Nystrom. Knowing the other places where the bacteria lives can be beneficial if one day a vaccine is created to kill the *E. Coli* in the cattle.

Additional Internet Sources:

Food Safety and Inspection Service (<http://www.fsis.usda.gov/OA/background/ec0902.htm>)

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United States Department of Agriculture

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Centers for Disease Control and Prevention. Retrieved March 27, 2008 from http://www.cdc.gov/ecoli/qa_ecoli_sickness.htm

Mayo Clinic. Retrieved March 27, 2008 from <http://www.mayoclinic.com/health/ecoli/DG00005>

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E. Coli Fact Sheet (Class Handout) ***(Escherichia Coli)***

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