

E. coli Infection

What is *E. coli* infection?

E. coli infection is a type of diarrheal illness caused by bacteria called *Escherichia coli*. It affects the digestive tract and, in serious cases, the kidneys. There are many strains of *E. coli*, and most are harmless.

E. coli are also used as indicators of water and food quality, and the bacteria can tell us if there is fecal contamination in the water or food.

The strain of *E. coli* that most often makes people sick is *E. coli* O157:H7. For ease, we will refer to *E. coli* O157:H7 as *E. coli*.

What are the symptoms?

Symptoms of *E. coli* infection include:

- watery diarrhea, which in serious cases may become bloody;
- vomiting;
- stomach cramps; and,
- mild fever.

The symptoms can start 2 to 10 days after contact with or consuming something contaminated with *E. coli*, but usually start within 3 to 4 days. Symptoms can last for 5 to 10 days.

In a few cases, *E. coli* can cause a serious and sometimes fatal illness called hemolytic uremic syndrome (HUS) which can result in kidney failure, anemia and internal bleeding. HUS can be especially harmful for young children, the elderly, people with weakened immune systems, and pregnant women.

Where does the disease come from?

E. coli can be found in the stomachs and feces of many healthy animals including cattle, goats, sheep, deer, and elk.

During the butchering process, *E. coli* sometimes gets onto the surface of the meat. Whole cuts of meat such as steaks or roasts usually only have *E.*

coli on the surface, which makes the *E. coli* easier to kill by cooking.

When the meat is ground or mechanically tenderized, *E. coli* on the surface can be transferred to the inside of the meat. This is why ground meat and mechanically tenderized meat are more likely to cause illness than whole cuts of meat. *E. coli* can be killed if the meat is cooked thoroughly. Infection can happen when people eat undercooked hamburgers or ground meat.

E. coli are also sometimes found in other foods including fruits and vegetables, as well as in unpasteurized milk, juice, cider, and untreated water.

Contaminated drinking water and swimming in recreational water that has been contaminated with water that has drained from areas with considerable animal activity, (e.g. pastures), can also cause infections.

How do I avoid getting sick?

To reduce the risk of *E. coli* infection:

- Refrigerate or freeze meat as soon as possible after buying it.
- Always thaw meat thoroughly in the refrigerator before you start to cook it. Ensure it is wrapped well and kept away from other foods. Do not try cooking frozen or partially frozen meat.
- Wash your hands thoroughly before preparing food, after handling raw meat, and after using the toilet as *E. coli* can be spread to others through infected feces.
- Always wash and then sanitize all utensils, cutting boards and counters that have touched raw meat to prevent *E. coli* from contaminating other foods. You can use a 200 ppm no rinse sanitizing solution.

How to make a 200 ppm no rinse sanitizing solution:

- Mix 15 mL (1 tablespoon) of household bleach into 4 litres (1 gallon) of water; or mix 5 mL (1 teaspoon) of household bleach into 1 litre (4 cups) of water.
- Allow the sanitizer to contact the surface or utensil for at least 1 minute before wiping off with a clean paper towel or allowing to air dry.

Use Public Health Ontario's chlorine dilution calculator tool to make up the proper sanitizer strength based on the concentration of your bleach product

www.publichealthontario.ca/en/ServicesAndTools/Tools/Pages/Dilution-Calculator.aspx

- Cook whole or mechanically tenderized cuts of beef to a minimum internal temperature of 63°C (145°F). If cooking steaks, turn at least twice during cooking.
- Cook ground meat, such as hamburger patties, meat loaf and rolled roasts (beef roulade) until the middle reaches a temperature of 74°C (164°F) or hotter and remains there for at least 15 seconds. Measure the internal temperature of the meat with a good probe thermometer.
- Never put cooked meat back on the same unwashed surface that held the raw meat. The juices from the raw meat can be contaminated with *E. coli*, which can then contaminate the cooked meat.
- Do not use marinade as a sauce on cooked meat.
- Serve cooked meats right away or keep them hot. They should be at least 60°C (140°F) or hotter, until you are ready to serve them.
- Wash any fruits and vegetables with cold running water before eating them raw, even if they will be peeled or cut. Use a scrub brush on fruits and vegetables with rough skin, such as a cantaloupe.
- Avoid drinking unpasteurized milk, juice and cider.
- Do not drink or use untreated surface water from a spring, stream, river, lake, pond or shallow well. Assume it is contaminated with animal feces.
- Avoid swimming in water that may drain pastureland.

In B.C., water is routinely tested for generic *E. coli* (non-O157:H7) contamination.

Is there a treatment for the disease?

Anyone who has diarrhea for more than a few days and/or bloody diarrhea should see a health care provider.

Drinking lots of fluids is important to replace lost fluids and prevent dehydration. Do not take anti-diarrhea medicine unless recommended by your health care provider.

Serious cases may require hospitalization, blood transfusion, and dialysis.

For More Information

For more information about food safety, see the following HealthLinkBC Files:

- [HealthLinkBC File #03 Pasteurized and Raw Milk](#)
- [HealthLinkBC File #22 Home Canning - How to Avoid Botulism](#)
- [HealthLinkBC File #59a Food Safety: Easy Ways to Make Food Safe](#)
- [HealthLinkBC File #59b Food Safety for Fresh Fruits and Vegetables](#)
- [HealthLinkBC File #59c Food Safety: Instructions on Food Labels](#)
- [HealthLinkBC File #59d Food Safety in Child Care Facilities](#)
- [HealthLinkBC File #72 Unpasteurized Fruit Juices and Ciders: A Potential Health Risk](#)
- [HealthLinkBC File #76 Foods to Avoid for People at Higher Risk of Food-borne Illness](#)

For more HealthLinkBC File topics, visit www.HealthLinkBC.ca/healthfiles or your local public health unit.

Click on www.HealthLinkBC.ca or call **8-1-1** for non-emergency health information and services in B.C.

For deaf and hearing-impaired assistance, call 7-1-1 in B.C.

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