

***Escherichia coli*: the diseases that the bug can cause**

Escherichia coli is a Gram-negative, rod-shaped bacterium that is commonly found in the lower intestine of humans and animals as part of the commensal flora. *E. coli* typically colonizes the gastrointestinal tract of infants within a few hours after birth and often persists for life. However, pathogenic *E. coli* strains also exist and these isolates are typically categorized based on their mechanisms of disease and clinical outcomes. These four to six groups together are also termed EEC (Enterovirulent *E. coli*) and can cause disease by invading tissues, by producing various toxins, by adhering to tissues and by forming aggregates or clumps of bacteria.

The bacteria can be transmitted by person-to-person contact and/or by contaminated food (especially raw vegetables and undercooked ground beef) and water ingestion. Common initial symptoms are nausea, vomiting, stomach cramps, and diarrhea.

E. coli 0157:H7 strain is of specific interest to the Centers for Disease Control and Prevention (CDC) and physicians around the world because strains of this bacterium can be particularly virulent (deadly), even in relatively healthy individuals. Unlike many other disease-causing bacteria, *E. coli* 0157:H7 can cause an infection even through the ingestion of very small amounts: in other words, people can be sickened by *E. coli* by eating a slightly undercooked hamburger or from swallowing a mouthful of contaminated pool water. Fortunately, the majority of affected individuals (usually children under 5 years of age and the elderly) only develop mild symptoms between 3-10 days after ingestion of the contaminated source, and infections auto-resolve without antibiotics in about 5 to 7 days after the onset of symptoms. Even so, around 10% of cases can fall into more severe disease and patients can require hospitalization. Complications, especially with *E. coli* 0157:H7 and a few other strains, can result in hemorrhagic (very bloody) diarrhea, kidney failure (termed hemolytic-uremic syndrome), thrombotic thrombocytopenic purpura (loss of blood platelets and kidney failure) and occasionally, death.

People with weakened immune systems, such as pregnant women, young children, and older adults are at increased risk for developing these complications. Proper food preparation and good hygienic practices can definitely decrease chances of unlucky endings.