Escherichia Coli

E. coli, short for Escherichia Coli, is one of the major causes of GI tract and urinary tract infection, pneumonia, and food-borne disease or what would otherwise known as the traveler's diarrhea and dysentery (Mueller & Tainter, 2021). E. coli-caused illnesses are estimated to be at least 2.8 million cases annually around the globe (Ameer et al., 2023). Though its specific cost on the healthcare system remains under-documented, food-borne illnesses costs Australian government $2.5 billion annually; a substantial amount is from E. coli illnesses (Glass et al., 2023).

What is E. coli?

In layman's term, E. coli is a food-borne pathogen. While it is essentially a type of bacteria normally found in intestines of humans and animals, most of the strains of which are essential for digestion, some of its strains/sub-types are hazardous for health when orally ingested, causing infections and diarrheagenic illnesses or discomforts which are known as food poisoning. Currently, there are more than 700 types of E. coli identified. Among them exists more than 10 pathotypes (Geurtsen et al., 2022). Below is table detailing the most common pathotypes of E. coli.

Table 1 (sub-types of disease-causing E. coli)

Pathotype name	**Typical symptoms**
Enterotoxigenic E. coli (ETEC)	Stomach cramps, traveler's diarrhea, watery diarrhea
Enteropathogenic E. coli (EPEC)	Watery diarrhea
Enterohemorrhagic E. coli (EHEC)	Hemorrhagic colitis, bloody diarrhea, etc.
Enteroinvasive E. coli (EIEC)	Dysentery, vomiting, fever
Uropathogenic E. coli (UPEC)	Urinary tract infection
Enteroaggregative E. COLI (EAEC)	Persistent diarrhea, diarrhea in children

The epidemiology of E. coli: How is it spread and contracted?

Basically, the spread of E. coli lies in the gut bacteria being transported into other parts of the body, such as mouths primarily. This can manifest as E. coli being placed in food, water, and other agents entering the mouth and then travel through the GI

tract, causing varying symptoms depending upon the specific pathogen sub-type.

Oftentimes, it is the case where people do not wash their hands thoroughly after defecating that causes related symptoms after the E. coli is orally ingested and goes through the GI tract (Bonten et al., 2020).

However, it could also be scenarios in which other agents, such as a person handling your food or even an animal you came into contact with, carrying E. coli that transmits the bacteria to your system. This kind of passive reception of E. coli also accounts for a major form of transmission. Besides, E. coli may already be in the food before it was processed and purchased, as evidenced by freshly slaughtered cow having feces in their intestines, which are transported into the ground beef we purchase.

So, nine of out ten time, food contamination is the culprit!

The ways to detect E. coli

Unfortunately, the ways that can easily used by laymen to detect E. coli without the aid of equipment remain virtually non-existent. The detection and identification of E. coli are only done in clinical and laboratory settings, wherein doctors and technicians use specific techniques and equipment, such as examining the stool sample acquired from the client utilising biochemical means (Feng, 2020).

Treatment methods

The good news is: most of us recover from E. coli infections without the aid of medication, and no medications are absolute cures for the infection, as you might be surprised (Mayo Clinic, 2024). However, when necessary, antibiotics can be used for fever and other symptoms such as urinary tract infection. Though counterintuitive, anti-diarrhea medications can actually prevent the toxins from being released, so that may be a no-no. Plenty of fluids and rest are the keys here; thorough sanitation of hands before touching food are essential as well (CDC, 2024).

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