

2026: Emerging Foodborne Pathogens for the Food Industry and the Importance of Ongoing HACCP Training

As new threats emerge to the food safety systems human error will remain the biggest threat to food safety and why proper HACCP training is a must.

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EINPresswire.com/ -- It is important to anticipate foodborne pathogen emergence to protect public health, minimize severe illness and death, prevent widespread outbreaks, mitigate significant economic losses,

and inform effective prevention strategies in an evolving global food system. Ironically, no matter the research and technical preventative measures employed to mitigate the risks it usually comes down to the human variable and proper [food safety training](#).



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I was enrolled in a course on HACCP and GMPs for Manufacturers and Producers. It was very well-structured and provided insightful learning on HACCP and its prerequisites.”

Anna Tyler

In the relentless march of our global food system, staying one pre-emptive step ahead of existing and emerging foodborne pathogens has proven essential.

By anticipating the new threats, we can better safeguard public health with determination and spare countless individuals from the unwelcome experience of severe illness and even more significantly will thwart the potential for large scale outbreaks. This will significantly reduce the cost to the economy and instill confidence in the consumer as to their buying choices. Increased such as

training, monitoring, and verification activities at the food preparation level.

- EAEC (Enterotoxigenic Escherichia coli): a type of bacteria that causes watery, often persistent diarrhea in both children and adults, known for its distinct "stacked brick" adherence

pattern on intestinal cells, leading to inflammation and mucosal damage, and is a significant cause of traveler's diarrhea and illness in developing nations. EAEC is an emerging pathogen, increasingly recognized globally, transmitted via contaminated food/water, and identified by its ability to form biofilms and produce toxins, though its exact mechanisms are still being studied.

EAEC is now recognized as an emerging enteric pathogen. EAEC are reported as the second most common cause of traveler's diarrhea, second only to Enterotoxigenic *E. coli*, and a common cause of diarrhea amongst pediatric populations.

September 2023, at a Canadian Daycare in Calgary Alberta a massive outbreak of STEC (Shiga toxin-producing *E. coli*) was reported to the Alberta Health Services (AHS). There were at least 448 infections. Mainly children, parents of the children, and guardians. It was attributed to a meatloaf served on August 29, 2023, from the Fueling Minds central kitchen. There were dozens of hospitalisations, many with Hemolytic Uremic Syndrome (HUS), a severe kidney complication. Alberta Health Services (AHS) found major health violations at the central kitchen after the outbreak, though the specific contaminated ingredient in the meatloaf wasn't identified. The main cause was likely infected kitchen worker not using proper hand hygiene could have contaminated a common food contact surface and/or contaminated the meat.

- Rotavirus: a long-established cause of severe gastroenteritis (the inflammation of the stomach and intestines, causing symptoms like diarrhea, vomiting, cramps, nausea, and fever), primarily in young children, but it is being re-evaluated as an emerging pathogen for foodborne illness in the context of improved surveillance and its inclusion in upcoming global burden estimates for 2026. The "emergence" of rotavirus as a foodborne pathogen is less about a brand-new threat and more about a heightened awareness, improved detection methods, and the recognition of its prevalence in the food chain.

Rotavirus is highly contagious and stable in the environment. Food contamination typically occurs through the fecal-oral route, often via infected food handlers or contaminated water used in food production.

Other better known foodborne pathogens are still at the top of their game of infection including bacteria, viruses, and parasites.

Bacteria

- Enterotoxigenic *Escherichia coli* (ETEC): a specific type of bacteria that causes diarrhea, known for being a major cause of "traveler's diarrhea" and severe diarrhea in infants in developing countries, acquired through contaminated food/water. ETEC works by attaching to the gut lining and producing toxins (heat-labile and/or heat-stable) that cause the intestines to secrete too much water, leading to watery diarrhea, cramps, nausea, and sometimes fever.

- *Salmonella*: a type of bacteria that commonly causes food poisoning (salmonellosis), infecting

the intestinal tract with symptoms like diarrhea, fever, and cramps, usually from contaminated food (like poultry, eggs, produce) or animal contact, and while most healthy people recover in days, it can be serious for the young, elderly, or immunocompromised. Salmonella is often found in poultry, eggs, meat; causes cramps, fever, diarrhea.

E. coli O157:H7: a dangerous strain of bacteria, found in animal feces, that causes severe foodborne illness, leading to bloody diarrhea, intense stomach cramps, and vomiting, with high risks of kidney failure (HUS) in young children and the elderly, spread through contaminated undercooked meat, raw milk, or produce.

- Listeria (specifically *Listeria monocytogenes*): a hardy bacterium found in soil, water, and animals that causes a foodborne illness called listeriosis when people eat contaminated food, like deli meats, soft cheeses, or unpasteurized dairy. While usually mild for healthy people, it's very dangerous for pregnant women (threatening the fetus), newborns, seniors, and those with weakened immune systems, potentially causing severe illness, miscarriage, or death. It's unique because it can grow even in refrigerated temperatures, and symptoms, if they appear, can take weeks.
- Campylobacter: a common type of bacteria that causes diarrheal illness (campylobacteriosis) in humans, often from eating undercooked poultry, raw milk, or contaminated water. It's a leading cause of bacterial food poisoning, with symptoms like diarrhea (often bloody), stomach cramps, fever, and vomiting, usually lasting about a week but sometimes leading to serious complications like Guillain-Barré syndrome.
- Clostridium perfringens (*C. perfringens*): is a common, spore-forming bacteria found in soil and animal intestines that causes food poisoning (diarrhea, cramps) from improperly stored cooked foods like meats but can also lead to severe wound infections (gas gangrene). Its spores survive cooking and multiply rapidly in warm, oxygen-free environments, producing toxins in the gut or tissues that cause illness.

Viruses

- Norovirus: a highly contagious virus that causes gastroenteritis, leading to sudden vomiting, diarrhea, stomach pain, nausea, and sometimes fever/headaches, often called the "stomach flu" (though unrelated to influenza). It spreads easily through contaminated food/water, surfaces, or direct contact, and most people recover in 1-3 days, but it's crucial to prevent dehydration by drinking fluids.
- Hepatitis A: a contagious liver infection caused by the Hepatitis A virus (HAV), spread mainly through consuming contaminated food or water, or close contact with an infected person's feces, leading to inflammation and symptoms like fatigue, nausea, jaundice, and fever, though it typically resolves on its own without causing chronic liver disease, and a vaccine offers effective prevention.

Parasites

- *Cyclospora*: a microscopic parasite that causes an intestinal illness called cyclosporiasis, characterized by watery diarrhea, fatigue, and cramps, usually from contaminated food or water, especially imported produce like berries or leafy greens, needing antibiotics for treatment. It's spread via feces, but needs days to weeks to mature, so direct person-to-person spread is rare, with outbreaks linked to contaminated fresh items from tropical areas where the parasite thrives.
- *Toxoplasma gondii*: a common, single-celled parasite that infects most warm-blooded animals, including humans, often without symptoms, but can cause serious illness, particularly in pregnant women and immunocompromised individuals, by forming dormant cysts in tissues, with cats being the only definitive hosts where the parasite sexually reproduces. People get it from undercooked meat, cat feces, or contaminated soil, leading to flu-like signs or, in severe cases, brain, eye, or organ damage, and it can be passed from mother to fetus.

Continuous food safety training (HACCP, hygiene, cross-contamination, personal responsibility) is crucial for keeping food safe by equipping staff with essential knowledge to prevent contamination, reduce foodborne illnesses, and meet regulatory standards, protecting both consumers and the business. This commitment ensures a culture of safety, verifies critical control points (CCPs), and provides a framework for ongoing improvement in food handling practices.

eHACCP.org is an online [HACCP training](#) and [HACCP certification](#) platform for food safety professionals, offering International HACCP Alliance (IHA)-accredited courses in Hazard Analysis and Critical Control Points (HACCP), Good Manufacturing Practices (GMPs), and Prerequisite Programs (PRPs), meeting FDA, USDA, and GFSI requirements for food businesses. It provides self-paced, narrated, and cost-effective training to help individuals develop and manage HACCP plans for various food industries.

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