

Final Summary of the Foodborne Outbreak Linked to Beef Brisket

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The Gallatin City-County Health Department (GCCHD) investigated a foodborne illness outbreak with reports of gastrointestinal (GI) illness following the Belgrade Fall Festival that was held on Saturday, September 16, 2023. A team from GCCHD, including the epidemiologist, communicable disease specialists, and an environmental health specialist, launched an outbreak investigation in which the team conducted an environmental inspection and began to interview both festival staff and attendees on Monday, September 18, 2023.

During the initial investigation, individuals who became ill all reported they had consumed beef brisket barbeque prepared by the Belgrade Chamber of Commerce and served by the Belgrade Senior Center on September 16, making it a primary food item of concern. Additionally, it was reported to GCCHD staff that bags of beef brisket had been sold to the public following the event. To mitigate public risk, GCCHD posted information on social media identifying beef brisket as a food item of concern and urged the public to discard leftover meat from the festival as the outbreak investigation continued. The Belgrade Chamber of Commerce volunteers prepared, stored, and transported beef brisket starting on September 15, 2023. The beef brisket was roasted overnight to be served at the Belgrade Fall Festival on September 16, 2023, with the use of a Temporary Event Application. Once chamber volunteers completed the cooking processes, the beef brisket was transported to the Belgrade Senior Center to slice, hot hold, and serve to the public. In response to this outbreak, Environmental Health Services (EHS) staff conducted a routine inspection on September 18, 2023, at the Belgrade Senior Center, a licensed establishment. After the inspection, EHS staff followed up with the Belgrade Chamber of Commerce to discuss the preparation of the beef brisket. Multiple temperature control, handwashing, environmental exposure, and other risk factors were identified for both the licensed facility and the temporary event. EHS staff collected samples of left over bagged, prepared beef brisket from the Belgrade Senior Center. Additional frozen beef brisket samples were collected on September 20, 2023, for testing.

As part of the investigation, two online surveys were created by GCCHD due to the large number of individuals reporting illness. The surveys were created to establish which food item most likely caused illness. One survey was for individuals who developed illness, and the other was for individuals who did not develop illness after consuming food at the Belgrade Fall Festival. Surveys and information were posted on GCCHD social media accounts and website, urging both those who developed illness and those who did not develop illness to fill out an online survey in order to gather information in a timely manner.

The surveys had 395 respondents, including 243 responses from individuals who developed GI illness and 152 responses for individuals who did not develop illness following the event. In total, 29 food items were reported and analyzed for association with GI illness symptoms. Analysis results suggested that consuming beef brisket at the Belgrade Fall Festival was strongly associated with developing GI illness, and those who consumed the beef brisket were more likely to develop illness compared to those who did not.

The epidemiological findings from this investigation also suggest that beef brisket was likely the source of the outbreak. The case-control study displays a strong association between consumption of beef and gastrointestinal illness. The rapid onset of symptoms among cases are consistent with GI illness caused by consumption of improperly handled, prepared, or cooked beef. The findings from the environmental health inspection support the epidemiological evidence, suggesting beef as the causative agent of the outbreak.

The findings of this investigation are subject to limitations. GCCHD was notified approximately 43 hours after the initial case, making it difficult to test for enteric pathogens given the rapid symptom onset and recovery experienced by cases. Both clinical specimens (stool samples from symptomatic individuals), and food specimens (prepared beef brisket) were tested for various GI pathogens and toxins. All test results were negative. Without confirmation via laboratory testing, it is unfortunately not possible for investigators to conclude which pathogen caused the GI outbreak at the Belgrade Fall Festival.

One of the most common causes of foodborne illness is improper temperature control (undercooked or not cooled/reheated properly). The FDA Food Code states the internal temperature of a roast should meet at least 145°F for 3 minutes, 150°F for 1 minute, or 158°F instantaneously. Hot foods should be kept at an internal temperature of 140°F or warmer. To keep yourself and others safe from foodborne illnesses, it is recommended to follow these steps:

- **Clean** – wash hands and surfaces often.
- **Separate** – separate raw meats from other foods.
- **Cook** – cook all foods to the proper temperature.
- **Chill** – refrigerate foods promptly.

For information on all safe food handling and guidelines, visit the [FDA's website](#).

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