



# Listeria monocytogenes Outbreak Linked to Pork Patty Products

Outbreak Investigation After-Action Review, Report 2019-02

## Highlights

- This outbreak was linked to pork patty products and was only the second reported multistate outbreak of listeriosis linked to a Food Safety and Inspection Service (FSIS) regulated product since 2005 (see [FSIS After-Action Report 2018-16](#)).
- Whole genome sequencing (WGS) analysis of routine and investigative FSIS isolates, and isolates from ill people, evaluated in conjunction with epidemiologic and traceback evidence, was instrumental in detecting and solving this outbreak.
- Investigation revealed that the pork patty products were cooked using a process that was not validated to ensure all pieces were thoroughly cooked. Investigation also revealed a history of *Lm* harborage and opportunities for contamination after cooking that were not considered by the establishment.

People infected with *Listeria monocytogenes* by state of residence



## Outbreak at a Glance

Illnesses	4
States included	4
Hospitalizations	4
Deaths	0

## Response at a Glance

Investigative samples tested	49
Recall or Public Health Alert	<a href="#">Yes</a>

## Process improvements

- FSIS may update [Directive 10,240.4, Verification Activities for the Lm Regulation and the RTE Sampling Program](#) to include additional instructions for inspection personnel when verifying if a product is exposed to the environment after undergoing a cooking step.
- FSIS translated the recall release into Vietnamese and Cambodian. FSIS routinely posts recall releases in English and Spanish and will continue to consider the languages spoken by ill people and consumers when posting recall releases.



## What happened?

From October through December 2018, public health officials in Louisiana, Michigan, Tennessee, Texas, the Centers for Disease Control and Prevention (CDC) and FSIS investigated an outbreak of four *Listeria monocytogenes* (*Lm*) illnesses linked to ready-to-eat (RTE), Asian-style pork patty products manufactured in an FSIS-regulated establishment. The four ill people reported being of Asian ethnicity and eating Asian-style foods. Purchase information was not available; however, investigators determined that the pork patty products were distributed from one FSIS establishment to three retail locations where three of the four ill people reported shopping. WGS analysis of routine FSIS product and environmental isolates indicated the historical presence of the outbreak strain at the establishment. In response to these positive samples, FSIS performed follow-up activities, including sampling, to verify that the establishment's corrective actions were effective. Investigation at the establishment revealed that after an initial cooking step, the pork rolls were handled, and during this time they may have been cross-contaminated from the processing environment. After handling, the pork rolls were placed in a bag and re-cooked. The cook-in-bag process was not validated to ensure all pieces were thoroughly cooked so that bacteria that can make people sick (e.g., *Salmonella* and *Lm*) would not survive. The investigation also revealed that there was the potential for contamination after both cooking steps, even though the establishment did not consider the product exposed to the environment after the cooking step. An environmental sample collected at the establishment during the investigation was positive for the outbreak strain, which helped confirm the source establishment. On November 20, 2018, the establishment voluntarily recalled the affected pork patty products.

## What we learned from this outbreak



### Sampling

Product and environmental samples collected before the outbreak and environmental samples collected during the outbreak investigation yielded the outbreak strain. This helped identify the source of the outbreak and indicated *Lm* harborage at the regulated establishment, highlighting the value of both routine and investigative sampling.



### Whole Genome Sequencing

This outbreak likely would not have been detected, nor the cause determined, without WGS. WGS is a powerful tool for determining relatedness between bacterial isolates and is helping public health partners to detect and solve outbreaks with a small number of cases.



## What can you do to prevent or solve the next outbreak?

Industry	Public Health Partners	Consumers
<p>Establishments that produce cook-in-bag RTE products should ensure that they have sufficient scientific support that the chosen endpoint temperature results in a safe product and have gathered in-plant validation data that demonstrates the desired endpoint temperature can be met throughout the product. The data should also support that the monitoring procedures are sufficient to identify a process deviation.</p>	<p>Continue to work closely with local, state, and federal partners to detect and investigate outbreaks. Public health partners should email <a href="mailto:FoodborneDiseaseReports@usda.gov">FoodborneDiseaseReports@usda.gov</a> to notify FSIS if FSIS-regulated products may be involved in an outbreak.</p>	<p>If you think you have a foodborne illness, see a health care provider for treatment. Your health care provider can test you and if the tests show you have a reportable foodborne illness, your state or local public health officials should be notified. If you suspect an FSIS-regulated meat, poultry, or egg product made you sick, see the <a href="#">Report a Problem with Food page</a> for information on how to notify FSIS.</p>

## Helpful Links

- [FSIS Recall 116-2018](#), November 20, 2018
- [CDC Food Safety Alert](#), November 21, 2018, updated January 29, 2019
- [FSIS Directive 10,240.4, Verification Activities for the \*Listeria monocytogenes\* Regulation and the Ready-to-Eat \(RTE\) Sampling Program](#)
- FSIS After-Action Review Report 2018-16: [Listeria monocytogenes Illness Outbreak Associated with Ready-to-Eat, Country-Cured Ham, 2017–2018](#)
- [FSIS Salmonella Compliance Guidelines for Small and Very Small Meat and Poultry Establishments that Produce Ready-to-Eat \(RTE\) Products and Revised Appendix A](#) (June 2017)
- [Report a Problem with Food | Food Safety and Inspection Service \(usda.gov\)](#)
- Find more information about FSIS' response to foodborne outbreaks on the [FSIS Outbreak Page](#)