

Council of State and Territorial Epidemiologists Position Statement

04-ID-06

Committee: Infectious Disease

Title: Improved Inter-Agency Coordination for Multi-State Outbreaks Associated with *Salmonella* species

Statement of the Problem:

Foodborne illness is an important public health problem in the United States accounting for up to 76 million cases of illness, 325,000 hospitalizations and 5,000 deaths annually.¹ According to the United States Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS), the contamination of meat and poultry products results in 4 thousand deaths and 5 million illnesses each year.² The organisms most responsible for these illnesses include *Campylobacter*, *E.coli* O157:H7, *Listeria monocytogenes* and *Salmonella* species.

As a part of its pathogen reduction/Hazard Analysis Critical Control Points (HACCP) program, FSIS set *Salmonella* performance standards for slaughterhouses and processing plants producing raw ground products. *Salmonella* was selected as the target organism because it is a pathogen commonly associated with meat and poultry products and is present in all major species. It is believed that interventions targeting *Salmonella* lead to concurrent reduction of other enteric pathogens in raw meat and poultry.³ Additionally, *Salmonella* infection is a nationally reportable condition and clinical isolates are submitted for further serotype and genetic identification.

The HACCP performance standard sets the maximum *Salmonella*-positive samples that the product must meet from FSIS-conducted batch testing. The frequency of this testing varies, but is approximately 1 time per year for major slaughterhouses and processors. Samples are obtained from each lot for ~100 lots over all shifts and consequently take over 1 month to obtain. For ground beef this testing is performed on sample portions of the product, not surface swabs or other material. Positive samples are submitted to the National Veterinary Services Laboratory for serotyping and phage typing and Agricultural Research Service laboratories for further molecular characterization and antimicrobial susceptibility testing. Results of antimicrobial susceptibility testing are submitted in a blinded manner to the National Antimicrobial Resistance Monitoring System (NARMS). Along with FSIS conducted testing, many processors and slaughterhouses conduct year-long microbial testing for *Salmonella* and other clinical pathogens.

Beginning in 1996, CDC's Emerging Infections Program Foodborne Diseases Active Surveillance Network (Foodnet) has collected data on non-typhoidal *Salmonella* species. For the first time, 2003 FoodNet data show a 17% decrease in *Salmonella* incidence among the 10 states participating⁴. While some clinically significant *Salmonella* serotypes (i.e. *S. Enteritidis*) have not shown significant reductions since reporting began in 1996, when paired with reductions in *Salmonella* in USDA HACCP environmental testing, these preliminary trends are encouraging. Additionally, multi-drug resistant (MDR) *Salmonella enterica* species, such as definitive phage type 104 (DT 104), and resistant *Salmonella* associated with transmissible plasmids, such as *S. MDR Newport*, have become an emerging problem in association with animal and human

¹ <http://www.cdc.gov/foodnet/default.htm>

² http://www.fsis.usda.gov/OA/fr/haccp_rule.htm

³ <http://www.fsis.usda.gov/OA/haccp/imphaccp.htm>

⁴ CDC. Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – Selected Sites, United States, 2003. MMWR 53(16); 338-343, Apr 30, 2004

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disease. Illness with MDR resistant pathogens has higher case-fatality and hospitalization rates compared to other non-typhoidal *Salmonella* infections.^{5,6}

In 1990, CSTE passed a position statement entitled “Coordination Between Federal and State Health Agencies of Outbreak Investigations involving Products in Interstate Commerce” in an effort to promote further coordination in multi-state foodborne outbreak investigation. However, despite a number of prominent national outbreaks and resultant MOU’s and national conferences, federal-state-local protocols and coordination remain problematic, particularly when outbreaks require epidemiology and regulatory coordination. As an example, in late 2003-2004, a multi-state outbreak of *Salmonella enterica* Typhimurium DT104 associated with ground beef occurred in the northeast United States. This investigation traced the product to a single meat packer. Further, USDA on-site investigation hypothesized a farm source for the potentially contaminated meat. However, information to characterize implicated lots, and hence further trace back activities and institution of prevention efforts, was inhibited by the lack of availability of HACCP or industry specimens and lack of code dating on consumer packages.

Statement of the desired action(s) to be taken:

USDA FSIS should adopt further practices to assist federal, state and local public health agencies with epidemiologic investigation of *Salmonella enterica* species associated with ground meat and ground poultry by:

1. Assuring that all USDA collected HACCP-based *Salmonella* isolates are:
 - a. Submitted to federal or state-based public health laboratories to assure speciation, serotyping, DNA fingerprinting and, when possible, antimicrobial susceptibility testing,
 - b. Submitted with information that characterizes the affected manufacturer, lots, product type and name, and
2. Requiring slaughterhouses and processors to:
 - a. Retain their *Salmonella* isolates associated with testing in ground beef and ground poultry for a period of at least 12 months,
 - b. Maintain records associated with these retained isolates that characterize the affected manufacturer, lots, product type and name, and
 - c. When needed for outbreak investigation, submit retained isolates to appropriate federal and state public health laboratories for speciation, subtyping, DNA fingerprinting and antimicrobial resistance testing.
3. Working with CDC and CSTE to identify rapid and expanded plant site-inspections protocols upon recognition of *Salmonella* outbreaks.

Additionally, the Centers for Disease Control and Prevention should:

1. In cooperation with USDA and FDA, convene a second nationwide conference on interventions to reduce *Salmonella* DT104 in the food supply, and

⁵ Ribot EM et al. *Salmonella enterica* serotype Typhimurium DT104 Isolated from Humans, United States, 1985, 1990 and 1995. EID, 8(4), April 2002

⁶ CDC. Outbreak of Multidrug-Resistant Salmonella Newport – United States, January – April 2002. MMWR, 51(25) : 545-548. June 28, 2002

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2. Set standards for *Salmonella* antimicrobial susceptibility testing among PulseNet and Foodnet associated laboratories.

Public Health Impact:

The adoption of the action items would increase the ability of federal, state and local public health epidemiologists and regulators to provide improved trace back information and resultant identification of specific manufacturers/packers, lots and farm sources. Surveillance for non-typhoidal *Salmonella* species and rigorous epidemiologic, laboratory and regulatory trace back can improve multi-state epidemiologic investigations and improve the quality of science-based data available for industry interventions.

Coordination:

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