Salmonella Outbreaks Linked to Poultry – United States

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NPIP Biennial Conference
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CDC Outbreak Response and Prevention Branch

- Rapid response and management of multistate foodborne and animal contact disease outbreaks
- Coordinate investigations with state and federal partners
- Consultations with state partners on single state investigations
- Consultations with other CDC Branches on activities related to animal contact
Research Paper

Utility of Combining Whole Genome Sequencing with Traditional Investigational Methods To Solve Foodborne Outbreaks of Salmonella Infections Associated with Chicken: A New Tool for Tackling This Challenging Food Vehicle

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Using Whole Genome Sequencing (WGS) to Solve Salmonellosis Outbreaks linked to Poultry

- Multistate foodborne outbreaks of *Salmonella* infections associated with chicken challenging to investigate
  - High consumption rates and a multitude of brands
- WGS of pathogens isolated from clinical, environmental, and food
WGS allows isolates with same PFGE pattern to be broken down into smaller groups of isolates.

In clade 7: clinical isolates and those from company C chicken and its subsidiary, company D, suggests their chicken linked to *Salmonella* Heidelberg illness outbreak.
Identifying Source of Outbreaks

- WGS, epidemiologic, traceback, and routine product sampling and testing data
- WGS allows heterogeneous clusters of isolates grouped by PFGE patterns to be broken into smaller groups of illnesses more likely to share common source
- Routine product testing at slaughter and processing facilities provides source of chicken isolates from variety of companies that can be added to the phylogenetic trees
- Can also use to exclude unrelated illnesses
Raw-meat pet food tainted with salmonella sickens 2 Minnesota children

Raws for Paws ground turkey recalled after salmonella was found.

By Jeremy Olson Star Tribune | FEBRUARY 9, 2018 — 9:10PM

Two Minnesota children suffered salmonella infections and illnesses after coming in contact with bacteria from tainted pet food, the state Health Department reported Friday.

Testing found the same salmonella DNA patterns in the siblings, one of whom was hospitalized last month for a painful bone infection known as osteomyelitis.

Subsequent investigation found that the children's home in the Twin Cities area contained ground turkey from the Minneapolis-based company Raws for Paws and that the pet food was contaminated.

Health officials urged pet owners to discard or return pet food with this brand and to thoroughly clean bowls or surface areas that could have come in contact with the food.

"When you’re feeding raw meat to an animal, and putting that food on the floor, any bacteria that is there will spread around," said Carlota Medus, epidemiology supervisor for the Health Department’s food-borne diseases unit.
Salmonella Reading Case Finding

- CDC reviewed clinical *Salmonella* Reading isolates in PulseNet
  - Multidrug resistant strain
    - Streptomycin, tetracycline, sulfisoxazole, ampicillin
  - WGS used to determine relatedness between isolates
    - Additional clinical isolates related to MN illnesses and 20 FSIS isolates and several NVSL isolates
- Ill people report variety of turkey products, no common brand
Salmonella Infantis

- Identified in clinical and poultry isolates
- Isolates are multidrug resistant
  - Tetracycline, chloramphenicol, kanamycin, streptomycin, sulfisoxazole, hygromycin, gentamicin, ampicillin, ceftriaxone, ceftiofur, and fosfomycin.
ALWAYS WASH YOUR HANDS AFTER HANDLING LIVE POULTRY

Outbreaks in 2018
Live-Poultry Linked *Salmonella* Outbreaks

![Diagram showing the number of outbreaks and illnesses over the years.](image-url)
Multistate Outbreaks of Salmonella Infections Linked to Contact with Live Poultry in Backyard Flocks, 2018

Posted June 8, 2018 9:30 AM ET

Outbreak Advisory

<table>
<thead>
<tr>
<th>Cases</th>
<th>States</th>
<th>Hospitalizations</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>124</td>
<td>36</td>
<td>21</td>
<td>0</td>
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</tbody>
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- CDC and multiple states are investigating several multistate outbreaks of *Salmonella* infections linked to contact with live poultry in backyard flocks.
- As of June 1, 2018, 124 people infected with the outbreak strains of *Salmonella* have been reported from 36 states.
  - Illnesses started on dates ranging from February 2, 2018 to May 14, 2018.
  - 21 ill people have been hospitalized, and no deaths have been reported.
  - 31% of ill people are children younger than 5 years.
- Epidemiologic, traceback, and laboratory findings link these outbreaks to contact with live poultry, such as chicks and ducklings, which come from multiple hatcheries.
  - In interviews, 55 (74%) of 74 ill people with information available reported contact with chicks or ducklings in the week before their illness started.
  - People reported obtaining chicks and ducklings from several sources, including feed supply stores, websites, hatcheries, and from relatives.
People infected with the outbreak strains of *Salmonella*, by state of residence, as of June 1, 2018 (n=124)
Information collected during 2016 and 2017 illness outbreak investigations indicates that mail-order hatcheries are receiving fertile eggs from commercial broiler egg suppliers; agricultural supply stores subsequently receive the resulting hatchlings for sale to consumers. We believe that the risk of *Salmonella* contamination might be greater for fertile eggs and resultant hatchlings supplied by egg suppliers which are not participants in the voluntary NPIP programs designed to reduce burden of *Salmonella*.

Data from 2016 investigations suggest that a commercial broiler egg supplier provided fertile eggs to mail-order hatcheries, which subsequently sent the hatchlings to agricultural supply stores for sale to consumers. The egg supplier is not a participant in NPIP programs designed to reduce the burden of *Salmonella*, and it is unclear whether the mail-order hatcheries receiving fertile eggs are aware. Thus, agricultural supply stores might not be aware that some chicks they are selling to the public originated at a supplier which does not participate in efforts to control and monitor for *Salmonella*.

Therefore, we recommend that mail-order hatcheries and agricultural supply stores review their practices and understand the potential risks for *Salmonella* transmission to consumers when eggs are originally shipped from commercial egg suppliers that are not participants in the USDA-NPIP programs designed to reduce burden of *Salmonella*. 
Preventing Human *Salmonella* Infections Resulting from Live Poultry Contact through Interventions at Retail Stores

M. Nichols, L. Stevenson, L. Whitlock, K. Pabilonia, M. Robyn, C. Basler, T. Gomez, C. Barton Behravesh
MORE THAN THE EXTRA MILE.

We go the COUNTRY MILE.

TRACTOR SUPPLY CO.
Our Growth & Partnership with the CDC

• Relationship was cultivated in 2011
• Implementation of the flyer to every customer who purchased Chicks/Ducklings
  • Also the prompt on the POS system (in 2015)
• Live poultry is placed in a corral within the store to prevent children and customers from handling live poultry in the store.
• Hand sanitizer and a sign emphasizing safe handling procedures is provided for team members who handle the chicks.
• Posters, including the official CDC salmonella safe handling posters, are prominently displayed around the corralled area. The posters are in English and Spanish.
2015’s Additions

- We require stores to sign-off on the daily care for the birds and cleaning of the tanks
- Salmonella Prevention information printed on the Chick Boxes
- Incremental exposure on Ag-Wrap signs surrounding the Chick Corral
2016’s Additions

• Required that all hatcheries participate in the NPIP program
• Messaging on our Social Media platforms to educate customers on safe handling
• Messaging “I’m NOT an Easter gift”
2017’s Additions

• Buying Team traveled to all hatcheries participating in 2017’s Chick Days

• Increased messaging on Social Media for Salmonella prevention

• Tested 4 bird minimums in select states
Chick & Duckling Sales since 2011

Unit Sales by Year

Partial Year – Sales through April 2018
Programs outside of Chick Days

Pheasant Event – NEW IN 2017
• 62 Stores
• 4/30 Start Date
• 5 Week Event

Fall Chick Days – Tested in 2016
• 1600 Stores
• 7/23 Start Date
• 8 Week Event
Online Sales Launched in 2017

- Launched birds online
  - Chicks, Ducks, Turkeys
  - New in 2018 – Pheasants, Guineas
- Orders are being sourced through Hoover’s Hatchery
NEW in 2018

- Tractor Supply hosted 1\textsuperscript{st} State of the Industry Poultry Meeting
- Included 5 hatcheries, 16 vendor partners, Dr. Nichols and Dr. Dunn
- Provided all attendees with:
  - “Healthy Families and Flock” signage
  - TN Dept of Ag/Health signage
  - Wash your hands after handling chicks and duckling stickers
- Challenged everyone in the Poultry Industry to take ownership of mitigating Salmonella
- Optimistically hoping to make this an annual event
  - Potentially coordinating timing and location around NPIP meeting