Barking Up the Right Tree
Using Routine Surveillance to Detect Salmonella in Pet Foods and Link to Human Infections

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Outline

• Michigan’s Rapid Response Team

• 2012 Salmonella Infantis - Pet Food Response

• Lessons Learned
  • Multi-agency and multi-disciplinary responses
Rapid Response Teams (RRTs) Background

- Cooperative agreement program between FDA and state partners
  - funding for improving rapid response to all-hazards food/feed emergencies

- Goals
  - Improve Response Capabilities with all hazards approach to Food and Feed Emergency Responses
  - Improve Food/Feed Protection Infrastructure
  - Strengthen Collaboration
  - Fully integrated and sustained response capabilities
Feed & Food Cross-Training: Preparedness

Preparedness Cycle
- Planning
- Organize/Equip
- Train
- Exercise
- Evaluate/Improve

Cross-Training
- Rapid Response Team Food & Feed Specialist Initiative
- Statewide Sessions
- 31 Inspectors
- Aseptic Sampling
- Joint-Inspections
Feed & Food Cross-Training: Aseptic Feed Sampling
Benefits of the Interdivisional Training

- Overwhelming positive feedback
- Capacity Development
- Increased Consistency
- Better Interdivisional Relationships
- Better regional communication
Pet Ownership and Pet Food

- 56% of U.S. households own one or more pets
  - 43 million (37%) US households include one or more dogs and 36 million (30%) include one or more cats

- FDA & states regulate pet food products

- Pet food products contaminated with *Salmonella* are considered adulterated and subject to product recalls

- *Salmonella* isolated from 6% of pet foods and treats during FDA surveillance sampling

- 2008–2012: 54 recalls of pet food products for *Salmonella* – over 300 products
April 2 – MDARD positive
  - *Salmonella* Infantis

April 10 – linked to human illness cluster

Nationwide recall
  - updated 8 times

Over 30,000 tons of pet food

Linked to:
  - 53 human illnesses
  - 37 animal illnesses
  - hundreds of complaints
Outbreak Detection

- PulseNet: 8 human illnesses with PFGE pattern matching isolate from dry dog food
  - Reported from 6 states between February 1–April 10, 2012
- April 10: Multistate outbreak investigation initiated
  - Coordinated by CDC
Epidemiologic Investigation

- Human case definition
  - Illness in a person with *Salmonella* Infantis infection
  - Isolate with indistinguishable PFGE pattern from outbreak strain
  - Illness onset since January 1, 2012

- Median Age – 28 years (<1 - 87)

- 57% female

- Case interviews
  - 79% (22/28) reported contact with dog in the week before becoming ill
  - 65% (11/17) identified dry dog food that may have been produced at single facility in South Carolina
Epi Curve – human illnesses

Number of persons

Date of Illness Onset

2011

2012

5-Oct 5-Nov 5-Dec 5-Jan 5-Feb 5-Mar 5-Apr 5-May 5-Jun 5-Jul

0 1 2 3 4
*n=51. Additionally, two ill persons were reported from Canada.
Laboratory Assessment

April 20: Ohio Department of Agriculture isolated outbreak strain from
- Opened bag of dry dog food collected from home of case-patient
- Unopened bag of same brand of dry dog food collected from retail
- Stool specimen of dogs

April 30: MDARD & FDA isolated outbreak strain from dog food samples collected from SC facility

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<th>Date of illness Onset</th>
<th>Number of ill persons</th>
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Traceback Investigation

- Led by FDA Coordinated Outbreak and Response Evaluation Network (CORE)

- Production codes obtained from:
  - Open bags of dry dog food from case-patients’ homes
  - Unopened bags of dry dog food that yielded outbreak strain
  - FDA’s consumer complaint system

- Converged on Facility in SC
Voluntary Recall

April 6, 26, 30: Three individual product recalls

May 2:
Expanded recall
- 16 brands (>30,000 tons) of dry dog and cat food produced at facility
- Distributed to 40 states and 26 countries

4/2: Isolate from dog food
4/10: Investigation initiated
4/20–30: Outbreak strain isolated from multiple sources

Number of ill persons

Date of illness Onset
After Recall Expansion

- Continued analysis of consumer complaints and surveillance
- Two human cases reported from Canada
- Second PFGE pattern of *Salmonella* Infantis isolated from inspection and retail samples
  - 18 human cases identified with second pattern
Inspection and Actions

April 9: SCDA inspected the facility

April 11: stopped operation
- Cleaned and disinfected

April 12–20: FDA inspected facility

April 18: resumed operation
- Increased product testing

4/2: Isolate from dog food

4/10: Investigation initiated

5/2–8: Recall expansion

Number of ill persons

Date of illness Onset

Pattern 1
Pattern 2
Investigation Findings at Production Facility

- Environmental and ingredient samples negative for *Salmonella*

- Observations:
  - No microbiological analysis conducted
  - No facility for hand washing and hand sanitizing in production area with exposed finished products
  - Cardboard, duct tape, and other non-cleanable surfaces on plant equipment

- Source of contamination not determined

- FDA 483 online
Conducted September 2012

Violations observed similar to April 2012 inspection

Multiple *Salmonella* strains isolated from environmental samples (not outbreak strain)

Corrective actions ongoing
Significance

• Feed is Food

• Demonstrates animal and human interconnection

• Multi-division and multi-agency partnerships

• MDARD increased its feed pathogen sampling
  • Other states also increasing sampling

• Model & Case Study
  • CDC publications
  • FDA Commissioner’s Citation Award
  • American Journal Veterinary Medicine
  • Pet food educational materials
Collaboration
Multi-disciplinary, Multi-agency

• Laboratory
  - Michigan Department of Community Health - Bureau of Laboratories and PulseNet
  - Michigan Department of Agriculture and Rural Development - Geagley Laboratory

• Regulatory
  - MDARD Food and Feed cross training
  - MDARD and SC and OH state agriculture
  - MDARD, FDA Detroit District, and CORE

• Epidemiology
  - Local health department – MDCH – CDC
  - MDCH – MDARD shared RRT Epidemiologist
Lessons Learned

- Continue to sample – even after the recall
- Conduct recall effectiveness checks immediately
- Establish back-up/partner labs
- Communication
- Press Releases – include agency (if possible)
- Educational Materials
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- FDA
- USDA
- Public Health Agency of Canada (PHAC)
- American Veterinary Medical Association (AVMA)
- American Animal Hospital Association (AAHA)
- American Association of Veterinary Laboratory Diagnosticians (AAVLD)