Multistate Psittacosis Outbreak among Poultry Plant Workers, 2018: Animal Health Perspectives

Tracey Dutcher, DVM, MS, DACVPM
USAHA 2019: Poultry and Other Avian Species
Veterinary Services, USDA, APHIS
Field Epidemiology Investigation Services

Sherry Shaw, DVM, MPH, DACVPM
Director, Applied Epidemiology Staff, USDA, FSIS

Michael Martin, DVM, MPVM, ACPV
Director, Poultry Programs
NC Dept. of Ag and Consumer Services, Veterinary Division
This was the first U.S. psittacosis outbreak among poultry slaughter plant workers reported in 30 years.
Case definitions:
Person working at either VA or GA plant with:

**Confirmed**: PCR detection in a clinical sample

**Probable**: Physician diagnosed pneumonia

**Suspect**: Fever or chills, plus ≥ 2 of the following: Cough, headache or muscle aches

*Slide courtesy of CDC-Respiratory Diseases Branch*
Multi-sectoral Investigation

State Health Departments, CDC, NIOSH
- Case finding and risk assessment, lab testing, communication

FSIS, Plant Management
- Evaluate potential food safety hazards
- Health Hazard evaluation (request to NIOSH)
- Ante / post mortem inspections, flock health screening questionnaire
- Data analysis / investigation in partnership with APHIS and SAHOs
- Town halls for case finding and prevention

APHIS, State Animal Health Officials (SAHOs)
- Options and criteria for poultry flock trace back
- Questionnaire for potential risk factors
- Recommendations for surveillance and prevention
Methods – Plant investigation

• USDA Health Hazard Evaluation Board

• Environmental testing
  • Live bird areas
  • Organic matter reservoirs
  • Ventilation sites
  • Drain sites

• Cleaning and Disinfection:
  • Routine plant cleaning protocols followed
  • Disinfection pH<3 on surfaces

• NIOSH Health Hazard Evaluation requested
Results

USDA Health Hazard Evaluation Board findings and recommendation:
• No significant food safety risk due to minimal likelihood of exposure through food
• Cleaning and Disinfection (C&D) with quaternary ammonium or bleach followed by environmental testing
• FSIS partner with APHIS to evaluate preharvest mitigations to eliminate exposure
  • Preharvest questionnaire created and provided to plant management

Health Hazard Evaluation (NIOSH):
Adjust cooling fans
Recommendations to reduce bacterial contamination and aerosalization

No *Chlamydia psittaci* detected
23 companies, wide geographic area east of Mississippi River

12 flocks = ‘farms of interest’
Further analysis for these factors:
• Flocks processed at both plants
• Dates of processing within known human incubation periods
• Increased levels of deads on arrival (DOA) and condemnations at one or both plants
• Reasons of condemnation consistent

7 flocks of interest: TN and NC

NC investigation:
- Review public health syndromic surveillance
- Conduct Farm surveys (n=6)
  • Human health
  • Animal health
  • Biosecurity

Dates of illness onset
+ timing of shipments
Results

Seven farms completed surveys. Results shown for 6 farms from NC

Biosecurity and animal health:

<table>
<thead>
<tr>
<th>Wild Birds seen?</th>
<th>Wild bird entry points evaluated?</th>
<th>Spilled Feed clean up:</th>
<th>Written biosecurity plan and employee training</th>
<th>Increased mortality within 4 weeks processing?</th>
</tr>
</thead>
</table>
| 4 farms routinely outside houses | 2 farms: daily  
3 farms: weekly  
1 farm: twice per year | 4 farms: same day  
1 farm: weekly  
1 farm: once per year | 6 farms: have plan  
5 farms: train employees | 3 farms: increased mortality  
None reported increased respiratory disease |
| 1 farm inside houses during life of flock | | | | |

3 flocks spiked with male birds within 12 weeks of processing

Human Health: No respiratory illness patterns detected from syndromic surveillance. No symptoms or illnesses reported among
- 21 full-time, 17 part-time and 17 contract workers between July 1 and Sept 1, 2018
Summary and Recommendations

Rare but significant human health risk in processing plant workers

Biosecurity principles to prevent exposure. [Defend the Flock Resources Center](#)

Targeted Surveillance: maximize value, minimize false positives

- during last 4 weeks before processing, if mortality >1.75x expected >> necropsy
- if signs of bacterial septicemia or respiratory disease >> test for common bacterial pathogens
  - if negative, inconclusive, or necropsy supports >> test for *C. psittaci*
The Noun Project:

*Illness* by ester barbato

*Chicken coop* by Achmmad Fauzi, ID

*Semi truck* by Blaise Sewell, US

*Semi-trailer truck* by Nico Strobl, AT

*Diagnosis* by Nithinan Tatah, TH

*Analysis graph* by ibrandify, PK

*Factory building* by iconsphere

*Chicken* by David, US