H5N2 LPAI Overview

• Influenza in Minnesota Poultry

• Kandiyohi, Stearns and Chippewa Counties – Nine (9) Commercial Turkey Premises

• H5N2 LPAI detection
  • North American wild bird lineage H5N2 LPAI based upon partial HA/NA sequencing

• H5/H7 LPAI Response
  • USDA-APHIS-VS Guidance Documents, Minnesota Plan (ISRCP 2012 version)

• Premises Depopulation – ~400,000 turkeys -> Controlled Marketing Movement
Why Minnesota?

– Susceptible domestic poultry population
– Native and migratory waterfowl populations
– Waterfowl brood, migratory routes & habitat
– Turkey production areas = waterfowl areas
– Influenza introductions in MN poultry flocks happen
– Breeder and Commercial flock health
– “Bird Flu” will not, does not go away
– Potential mixing with swine influenza viruses
“Heightened Risk Periods”
Influenza in Poultry

• **Low Pathogenic Avian Influenza (LPAI)**
  • Depressed, ruffled feathers
  • Respiratory signs (air sac issues)
  • A drop in egg production
  • Sometime no signs at all!

• **Highly Pathogenic Avian Influenza (HPAI)**
  • Quiet flock, extreme depression
  • Systemic infection, multiple organs involved
  • Few dead birds followed by high mortality/rapid spread
**HPAI (Highly Pathogenic Avian Influenza)**

- Foreign Animal Disease (FAD)
- Combined Federal, State response
- Rare event (2014-15)
- Severe Mortality
- Immediate Depopulation
- Requires Depopulation Equipment, Resources, People, etc. immediately

**LPAI (Low Pathogenic Avian Influenza)**

- State Response -> Initial State Response and Containment Plan (ISRCP)
- Annual event during fall & spring migration
- Clinical disease may, may not be present
- Controlled Marketing or Immediate Depopulation is dependent upon ISRCP
- Quarantine, Monitor flock, Test
Minnesota AI History

- 1978 – 141 flks H1N1, H4N8, H6N1 (1 layer flock), H9N2
- 1988 – 258 flks H2N2, H4N6, H5N6, H7N9, H8N4, H9N2 (1 Broiler Breeder)
- 1991 – H5N2, H5N3, H7N3 LPAI
- 1992 – H7N3 LPAI
- 1993 – H5N9 LPAI
- 1994 – H7N1 LPAI
- 1995 – 178 flks H1N1, H6N8, N9N2, H10N7
- 1997 – H7N9 LPAI
- 2007 – H7N9 LPAI
- 2009 – 89 flks H7N9 LPAI
- 2011 – H7N9 LPAI
- 2015 – 110 flks H5N2 HPAI
- 2018 – H5N2 LPAI
Components of an Avian Influenza Cooperative Control Program

(Drs. Peter Poss, Dave Halvorson)

• Education (Communication)

• Industry Reporting (Surveillance)

• Exposure Prevention (Biosecurity)

• Reaction (Responsible Response)
NPIP LPAI Programs

• Breeder flocks and hatcheries (9 CFR 145):
  • U.S. Avian Influenza Clean
  • U.S. H5/H7 Avian Influenza Clean

• Commercial meat-type birds (slaughter plants) and table-egg flocks (9 CFR 146):
  • U.S. H5/H7 Monitored

• Surveillance Methods (NPIP, NAHLN, NVSL)
  • Antibody detection (AGID, ELISA)
  • Antigen/Virus detection (PCR, ACIA)

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NPIP Avian Influenza Surveillance Schedule

• Active Surveillance
  • Meat-type turkeys and chickens:
    • Tested for AI within 21 days of slaughter
  • Breeder turkeys and chickens:
    • Monitored monthly for AI
  • Layer chickens:
    • Tested for AI within 21 days of move and at least yearly
  • Upland Gamebird (UGB) & backyard birds:
    • Voluntary participation (quarterly testing)

• Passive Surveillance
  • Diagnostics / Sick Bird Calls
Industry Initiative Enhanced Surveillance

• Drinker biofilm sampling: Research – NOT OFFICIAL!
  • Viral RNA concentrates in drinker biofilm and sediment
  • Detectable with RTPCR
  • Effective for finding subclinical infectious birds in a population by sampling a large number of individuals
  • Positive signal persists for several days to weeks – reliable active and passive surveillance

• Implemented during “High Risk” periods – spring and fall migration
  • All flocks at least 12-14 weeks old tested weekly in poultry dense counties
  • All flocks tested within 36-48 hours of move to slaughter

• 12:30 pm: Call from company veterinarian – non-negative drinker samples at commercial turkey farm (14 week toms); no clinical signs or mortality in flock.
  • Requested official tracheal swab testing.

• 6:00 pm: Lab manager calls to report barn 2 positive by IAV matrix PCR (Ct 19.25) and H5 (Ct 19.07)
The first reaction……so typical……Friday afternoon……
Let’s do this!

• Get samples to NVSL
  • Someone, please answer your phone!
• Disease Alert
• Establish Incident Command
• Schedule call with EDMC
• October 20, 2018
  
  • Kandiyohi 01 - H5 detection confirmed by NVSL
    
    • North American wild bird lineage H5N2 LPAI based upon partial HA/NA sequence
  
  • Initial State Containment and Response Plan initiated
Plan

• Quarantine flock

• Plan to control market birds once all birds on premises virus negative

• Determine routine mortality disposal
  • Compost
  • Incinerator

• “Control Area” surveillance
  • Surveillance testing on all flocks within the 10 km zone were negative on PCR

• Establish lab drop-off and testing hours
• **October 30, 2018 (Stearns 01)**
  
  • Pre-market blood samples – 4/20 AGID & ELISA positive in 13 week commercial turkey hens
  
  • Tracheal swab samples collected the same afternoon – Matrix positive (Ct 16.48-37.46); H5 positive (Ct 16.31-34.75)

• **November 1, 2018 (Stearns 02)**
  
  • Diagnosed during surveillance zone testing (PCR and serology positive)
  
  • 13 week turkey hens
  
  • Multi-age premises
November 2, 2018 (Stearns 03 and Stearns 04)

- Diagnosed as presumptive positive during surveillance zone testing
- Stearns 03 – 17 week hens, no clinical signs
- Stearns 04 – 14 week toms, birds coughing
- Both multi-age premises
Kandiyohi continues...

- November 3, 2018 (Kandiyohi 02)
  - Diagnosed during surveillance zone testing (0-3 km zone)
  - 16 week turkey toms

- November 12, 2018 (Kandiyohi 03)
  - Diagnosed during surveillance zone testing (0-3 km zone)
  - 14 week turkey toms

- November 14, 2018 (Kandiyohi 04)
  - Diagnosed during surveillance zone testing (3-10 km zone)
  - 10 week turkey toms
Surveillance

• All commercial premises with susceptible species within the 0-10 km zone and epidemiologically linked premises were swabbed within 72 hours of detection of a NVSL confirmed LPAI premises. Serologic testing also conducted to determine past exposure.

• Commercial:
  • 1 km zone: Tested weekly by PCR
  • 10 km zone: Tested 14-21 days after initial test and within 36 hours of any move

• Backyard/Non-Commercial:
  • 1 km zone: PCR tested
  • 10 km zone: Contacted and tested only if sick or dead poultry
Depopulation -> Controlled Marketing Movement (CM)

- Severe clinical signs absent, additional laboratory results (not HPAI)
- Agreement between VS and the Cooperating State Agency to pursue controlled marketing
- CM according to and included in Minnesota’s Initial State Response and Containment Plan (ISRCP)

**Criteria for Controlled Marketing Movement**

- Within 7 days prior to slaughter, each flock must be tested for H5/H7 LPAI using a test approved by the Cooperating State Agency and found to be free of the virus
- Routes to slaughter must avoid other commercial poultry operations whenever possible
- All load-out equipment, trailers, and trucks used on the premises must be cleaned and disinfected and not enter other poultry premises or facilities for 48 hours
- Flocks moved for CM must be the last poultry slaughtered the week they are marketed
- Poultry moved for CM will not be eligible for indemnity, however, any costs related to cleaning and disinfection of premises, conveyances, and materials that came into contact with poultry moved for CM will be eligible
Virus Elimination

- Barns heated to 90 F for 3 days
- Litter removed and barns dry cleaned
- Environmental samples collected from each barn and tested by PCR
  - Any non-negative PCR sample submitted to NVSL for virus isolation
  - No virus recovered from any environmental sample

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Response Challenges

- Proximity and size of infected premises
- Time of the Year – Thanksgiving
  - Fresh Pack -> get the right birds to market at the right time
  - Early marketing was initiated by the industry to remove as many susceptible birds from the area. All flocks tested by PCR twice, with one test within 36 hours of movement to processing plant
- Multi-age premises
- Response -> ISRCP, VS Guidance Documents
Response Strategies, Successes

• Engage Industry (EDMC) immediately

• ERC Conference Calls
  • Industry, Processors, MDH, USDA

• USDA Collaboration

• Disease Alerts, Heightened Biosecurity

• MPTL
  • PCR and Serologic Testing
  • Incident Command Post (ICP)
  • Incident Management Team
News Release
For immediate release: October 23, 2018
Contact: Erin Crider

H5N2 low pathogenic avian influenza confirmed in Kandiyohi County commercial turkey flock

Strain is not the same virus that caused 2015 outbreak; does not pose risk to public health or food safety

Saint Paul, Minn - The Minnesota Board of Animal Health has confirmed a case of H5N2 low pathogenic avian influenza (LPAI) in a commercial turkey flock in Kandiyohi County. The disease was detected during routine surveillance testing of the flock of 10,000 13-week-old turkey toms on October 19. This farm includes an additional three barns housing 10,000 birds each, all of which have tested negative. This is not the same virus that was the cause of the highly pathogenic avian influenza (HPAI) outbreak in the Midwest in 2015.

H5N2 LPAI does not pose a risk to the public, and there is no food safety concern for consumers.

The Board of Animal Health is working with all federal, state and industry partners to prevent the spread of the disease. Poultry producers are asked to maintain strong biosecurity practices at their facilities to isolate their flocks from outside sources of infection.

Tracheal swab samples were collected from turkeys and submitted to the Minnesota Poultry Testing Laboratory (MPTL) in Willmar, Minnesota. Tests identified the virus as an H5 influenza strain. The Board of Animal Health quarantined the flock and sent samples to the USDA National Veterinary Services Laboratory (NVSL) in Ames, Iowa. The NVSL confirmed the presence of H5N2 low pathogenic avian influenza (LPAI) virus of North American origin on October 20.

News Release
For immediate release: November 1, 2018
Contact: Michael Cruson

Routine tests identify new case of low pathogenic avian influenza in a Minnesota poultry flock

Strain is not the same virus that caused 2015 outbreak; does not pose a risk to public health or food safety

Saint Paul, Minn - During a routine test, the Minnesota Board of Animal Health identified H5N2 low pathogenic avian influenza in a Stearns County turkey flock. All flocks are tested for influenza before they are moved to market, and this finding was part of the everyday process of ensuring a safe food supply and protecting Minnesota’s poultry industry from the spread of influenza. The flock of 13-week-old hens has been quarantined and will be tested and monitored until the Board determines the flock is virus-negative, and the turkeys can be controlled marketed.

This is not the same strain of virus that impacted Minnesota and other states in 2015, and thus the Board’s response is different. This strain of influenza in poultry does not pose a public health risk or food safety concern.

“The Board conducts routine influenza surveillance of poultry flocks in Minnesota, and this early detection is an example of how our system is designed to monitor for disease and respond quickly,” said Dr. Dale Lauer, Director of the Minnesota Poultry Testing Laboratory and Assistant Director with the Board. “Much like the recent case in Kandiyohi County, the Board, in cooperation with Minnesota’s poultry industry, is going to increase surveillance at poultry farms within 10 km of this site and any other sites linked with common equipment or personnel connections. This is part of the response to look for any additional cases, wherever they may be.”
Disease response updates

Low pathogenic avian influenza

HSN2 LPAI does not pose a risk to public health, there is no food safety concern for consumers.

This page provides updates on the response to the fall 2018 cases of avian influenza.

When a flock tests positive for LPAI, it is quarantined to prevent the movement of poultry off the infected premises until conditions of a quarantine release are met, which is a virus negative test. The birds are monitored to watch for the development of any clinical signs with additional testing conducted to track their health as they recover from the influenza introduction. Once birds test negative for the influenza virus and have recovered from infection, they can be sent to market through a process called “controlled marketing.”

Controlled marketing is an approved method for recovered (virus negative) birds to continue into the food supply chain. The flock under quarantine is routinely tested as the laboratory and Board tracks their progress and as the flock recovers. When all samples collected from the flock consistently test negative for influenza, the birds are cleared by the Board of Animal Health to be marketed. The virus test must occur within seven (7) days of slaughter. To provide additional assurances that there is no virus spread, designated routes to slaughter are designed and approved, dedicated trucks and loadout equipment are used, and flocks are marketed at the end of the week to provide additional down time for cleaning of processing trucks and equipment. Poultry owners that use “Controlled marketing” to depopulate their poultry farms are not eligible for flock indemnity.

To monitor other flocks in the area, a 10km radius control zone is placed around each infected premises. Flocks within the control zone radius are routinely tested to watch for evidence of infection and for disease spread.

Updates

Site: Kandiyohi County 4 detected on November 14, 2018

Situation: HSN2 low pathogenic avian influenza detected in a commercial turkey flock of 10,000 birds.

Update: November 19, 2018 The flock has been quarantined and is being monitored for signs of infection. Controlled marketing is being planned once the flock tests negative for the influenza virus.
Kandiyohi and Stearns - UPDATES

- Kandiyohi 01 – CM completed 11/30/18
- Kandiyohi 02 – CM completed 12/7/18
- Kandiyohi 03 – CM completed 12/28/18
- Kandiyohi 04 – CM completed 1/11/19
- Stearns 01 – CM completed 11/16/18
- Stearns 02 – CM completed 11/15/18
- Stearns 03 – CM completed 12/7/18
- Stearns 04 – CM completed 1/17/19

- All environmental testing negative!
- All Quarantines released!
- Restock testing complete, all negative
Lessons Learned

• Hotwash session (1/3/19) – Action Items:
  • Update MN LPAI Response Plan
  • Update sample submission forms/instructions for producers
  • Clarify regulatory vs non-regulatory (industry driven) testing
  • Establish a routine communications schedule for responders
  • Create a Case Manager LPAI Toolkit
  • Develop Flock Plans as soon as possible
  • Realistic monitoring of premises workers for LPAI (vs. HPAI)
• January 24, 2019
  • 15/20 AGID positives on pre-market samples – Chippewa Country
    • Samples sent to NVSL, tracheal swab samples requested

• January 25, 2019
  • Samples ran in duplicate – 1 of 3 samples was Matrix suspect (Ct 37.440) on one run, H5 negative
  • NVSL calls – H5 positive on serology
  • Is this Friday afternoon again?

“Whatever just happened, blame it on the pig”
• No virus isolated from this premises

• Flock was Controlled Marketed 2/8/19
  • Blizzard conditions the night of 2/7/19

• Environmental samples collected and negative

Meanwhile, NWS has issued a blizzard warning for counties including Stevens, Lac Qui Parle, Swift, Chippewa, Yellow, Medicine, Renville, and Redwood.
• Drs. Shauna Voss – MBAH

• Dr. Mary Donahue – USDA/APHIS/VS

• Drs. Greg Suskovic, Brad Peterson and the MBAH Incident Management Team

• Minnesota Poultry Testing Laboratory Staff

• Minnesota Poultry Veterinarians and Colleagues
Questions?