Secure Turkey Supply Plan - Issuing Movement Permits During an Outbreak of HPAI

Outline

- Asian H5N1 HPAI
  - Origin and Spread
- National HPAI Response Plan
- Secure Turkey Supply Plan
Asian H5N1 HPAI

- 1996: China
- 1997: Hong Kong *(6 D)
- December 2003: South Korea
- January 2004: Vietnam, Japan
- April, 2005: Qinghai Lake, China
Asian H5N1 HPAI

- Qinghai Lake
  - Tipping point H5N1 spread
- Bar-headed geese, gulls, and great cormorants
- Migration patterns
Asian H5N1 HPAI

- February 2006
  - Asia, Africa, Europe, Middle East
- 2006 Peak
  - 63 countries; 3 continents
- 2012 Endemic
  - Bangladesh, China, Egypt, India, Indonesia, Vietnam
Influenza A
Asian H5N1 HPAI

- 400 million poultry killed/culled
- $20 Billion
  - Global economic loss
- 359 human deaths
  - 608 infected (59% mortality; 8/10/2012)
National HPAI Response

- Wild migratory bird surveillance
- Importation restrictions
  - H5N1 countries – no live poultry/products
  - Live birds (except Canada)
    - 30 day quarantine at USDA facility
    - AI tested (any subtype)
- Smuggling Intervention & Trade Compliance Unit
National HPAI Response Plan

- April 2006
  - APHIS poultry industry meeting
- August 2006
  - HPAI National Response Plan 1st draft
- October 2007
  - USAHA Resolution 54
  - Incorporate COB by including movement protocols within, out of, and into a CA
Summary of the National Highly Pathogenic Avian Influenza (HPAI) Response Plan

August 2007
(Replaces version of August 2006)
National HPAI Response Plan

• Quarantine
  • State (Intrastate commerce)
  • Federal (Interstate commerce)
• Permit required for movement
  • Prevent further spread
National HPAI Response Plan

- **Control Area**
  - Infected Zone (2.0 mi radius)
  - Buffer Zone (6.2 mi radius)

- **96 hours**
  - Characterize outbreak
  - Risk factors
  - Develop strategies
Zones of an Outbreak Response

- Infected Premises
- Infected Zone
- Buffer Zone
- Free Zones
- Surveillance Zone

Control Area (CA) = Infected Zone + Buffer Zone
Secure Turkey Supply Plan

- Market continuity non-infected flocks
- Ensure HPAI turkeys don’t move
  - Protect other flocks
  - Food safety
- Avoid trade restrictions
  - Interstate, international
Secure Turkey Supply Plan

- Iowa State University
  - Center for Food Security/Public Health
- University of Minnesota
  - Center for Animal Health/Food Safety
- National Turkey Federation
- Association of Veterinarians in Turkey Production
Secure Turkey Supply Plan

- USDA APHIS
  - VS, CEAH, NCAHEMS
  - Eastern, western epidemiologists
- AVICs
- SAHOs
- 69 people
- 20 revisions
Hen Breeder Farm

Hatchery

1 - Day - Old Pouls

Brooder House

6 - Week - Old Turkeys

Finishing House

14 - Week - Old Hens; 18 - Week - Old Toms

Processing Plant
Pre-movement Requirements

- Biosecurity: In-place
- Epidemiology: No contact
- rRT-PCR Surveillance: Negative
- Mortality: Normal
- Clinical signs: Absent
- Pre-loading inspection: Normal
- Farm traffic restriction: 5 days
Premovement Biosecurity

• Incident Command
  • Review written Biosecurity Plan
  • Time period before movement
  • Specific measures required

• Level 1- 26 pre-outbreak measures
• Level 2- 36 post-outbreak measures
Biosecurity Measures

• Policies, Outside, Parking
  • Annual biosecurity training
  • Employees do not own, contact birds

• People, Vehicles
  • No unnecessary visitors
  • Clean clothes, disinfected footwear
  • Mandatory hand hygiene
  • C & D vehicles
Biosecurity Measures

- Turkeys, Turkey Houses
  - Bird-proof
- Loadout, Livehaul, Equipment
  - Equipment C & D
  - Crews keep out of other houses
  - Do not borrow or lend
Biosecurity Measures

- **Birds, Rodents**
  - No other domestic birds on premises
  - Rodent control
- **Feed and water**
  - Secure from free-flying birds, rodents
- **Manure, Dead Bird Disposal**
  - Composted carcasses covered
Biosecurity Effectiveness

- Turkeys outdoors – AI outbreaks
  - 1988: 258 flocks
  - 1991: 110 flocks

- Turkeys indoors – AI outbreaks
  - 2000: 3 flocks
  - 2001: 2 flocks
  - 2002: 4 flocks
Epidemiology Questionnaire

- Infected premises
  - Confirmed or presumptive positive
  - Lab results or clinical signs
- Assess risk factors
  - Employees, wild birds, carcass disposal
- Trace-back info
- Trace-forward info
Epidemiology Questionnaire

- Classify premises in HPAI Control Area
- Contact Premises
  - Direct or indirect exposure
  - Poultry, poultry products, fomites, people
- Suspect Premises
  - HPAI-compatible clinical signs
Epidemiology Questionnaire

- **At-Risk premises**
  - Susceptible poultry present
  - Not IP, CP, or SP
  - Seek permit to move poultry/products

- **Monitored premises**
  - At-risk premises
  - Meet pre-movement criteria
Daily rRT-PCR Surveillance

- **Real Time Reverse Transcriptase Polymerase Chain Reaction Test**
  - Sensitivity = Virus Isolation
  - Viral RNA detected (AI matrix gene)
  - 3 hours to complete
  - Sample collection & results to Incident Commander on same day
Daily rRT-PCR Surveillance

- **No. turkeys sampled**
  - 1 5-bird pool/50 dead/sick turkeys/house/day
  - 95% confidence, 40% shedding
- **5-bird pool**
  - Oropharyngeal swabs 5 turkeys/1 BHI tube
- **Sampling time**
  - Within 24 hrs prior to movement
Oropharyngeal Swabs
Daily rRT-PCR Surveillance

- Turkeys selected for sampling
  - Dead of natural causes
  - Sick and euthanized
- Sample collection site
  - Leak-proof container ("barrel surveillance")
  - Designated location
Daily rRT-PCR Surveillance

- Sampling by IC-approved individuals
- Testing by authorized state VDL
  - Results to IC each day
- All houses negative prior to movement
  - Initial - 2 consecutive preceding days
  - Daily – 1 preceding day
Clinical Signs - Mortality

- Unexplained changes reported to IC
  - Reduced feed, water consumption; behavior
  - Company veterinarian, producer
- Mortality >2/1,000
  - No movement
  - Diagnosis required
- Pre-loading inspection
Farm Traffic Restrictions

- No dangerous traffic onto farm
  - Manure
  - Live or dead birds
  - Crews, equipment
- 5 days prior to movement
Diagnostic Lab

Samples

Biosecurity Status
Epi Questionnaire

Permits

Biosecurity
Epidemiology
rRT-PCR
Mortality
Clinical Signs

Mortality
Clinical Signs

Permits

rRT-PCR Results

Samples

Turkey Farm

Diagnostic Lab
Texas A & M Dashboard

- Emergency Response Support System
  - Web-based platform for incident mgmt
- Simultaneous map display of data
  - Control zone(s), premises, status, transportation routes, processors, producers, lab results, weather, geography
  - Data shown in charts, lists
Egg Movement Decision Report: Summary

Premises Name: Cyclone Eggs
Premises ID: ISU23456
Address: 2170 Vet Med., Ames, IA 50011

Epidemiology Questionnaire Complete:
Epidemiology Questionnaire Approved:
Audit Tt: 754 days old
Date of Last Audit: 7/1/2010
Risk Reduction Measures

• All-In, All-Out management
• Supplemental Dx tests reported to IC
  • Rapid antigen capture immunoassay
• Monitoring turkeys not marketed
  • Hatchery → brooder house
  • Brooder → finishing house
  • Replacement breeders → farm
Public Health Risk

- Interagency RA for the Public Health Impact of HPAI
  - FSIS, APHIS, FDA
  - May 2010
- 98% flocks identified pre-slaughter
  - Mortality, clinical signs
  - 2% escape detection (3.5 day window)
Public Health Risk

- Pre-slaughter testing
  - 95% human illnesses mitigated
- Cooking
  - 165 F inactivates HPAIV
- Negligible risk (if properly cooked)
STSP Draft

• Poultry health risk assessments
  • Center Epidemiology Animal Health
  • Center for Animal Health/Food Safety

• Modified as needed
  • New technology
  • Risk assessment results