

# Public health implications of animal influenza surveillance in animals



**World Health  
Organization**

**Last updated: 26 February 2009**

# Learning Objectives

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- Describe the goals of surveillance
- Describe the different elements and standards of national animal surveillance systems
- Discuss the different populations (both animal and human) targeted

# AI surveillance in animals: Overview

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- **Human and animal health goals for surveillance**
- **Players**
- **Attributes of surveillance systems**
- **International standards for surveillance**
- **Types of surveillance**
- **Potential animal populations for targeting**
- **Human risk populations and surveillance targeting**
- **Public and animal health sectors: Communication & integration**

# AI surveillance in animals: Goals

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- Improve early warning and detection of AI outbreaks
  - Optimize response and containment
  - Identify new virus strains
- Decrease public health risks
  - Implement measures to decrease exposure of human populations in areas of risk
  - Identify new human cases early by targeting surveillance to risk areas and populations
  - Poultry outbreaks can act as an early warning, as they are often seen before human cases in an area
- Establish a baseline for evaluation of control measures

# AI surveillance in animals: Players

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- Surveillance in animals is the responsibility of the National Governmental Animal Health Authority, and is generally conducted by staff from the:
  - Central Veterinary Office
  - Field Veterinary Offices (district, provincial, local)
  - Special units
- In some countries, assistance (e.g. training, field support, financing) is provided by international organisations, NGOs, regional entities, and individual countries

# National animal surveillance systems...

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- Should be:

- Based on international standards
- Incorporated into national preparedness plans and contingency plans for animals
- Incorporated into national preparedness plans and contingency plans for humans
- Reviewed and updated regularly, especially when there is a change in the disease situation

# National animal surveillance systems...(2)

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- Must take into account:
  - Risk populations in the country
  - Epidemiological situation in the country
  - Vaccination policy of the country
  - Specific questions to be answered
  - Many other factors

# AI surveillance in animals: Standards

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- International guidelines for AI surveillance are given by the International Organisation for Animal Health (OIE)
  - Appendix 3.8.9. of the Terrestrial Animal Health Code
  - Emphasizes that national systems must be based on the **specific situation** in individual countries
- National systems must include formalised protocols for
  - Detecting/investigating outbreaks
  - Collecting/shipping/testing of samples
  - Recording and analysing data

# AI surveillance in animals: Types

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- **Passive surveillance**

- Relies on identification and reporting of clinical cases

Example: The farmer identifies a sick chicken, and calls the veterinarian or paravet

- Is affected by many national factors (e.g. disease awareness, willingness to report, veterinary and laboratory infrastructure)

# AI surveillance in animals: Types (2)

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- Active surveillance

- Searching for cases systematically (clinical or subclinical)

Example: Samples are collected every month from ducks in a live animal market

Example: Samples are collected daily from a fixed number of chickens at slaughter

- If appropriately implemented, is less susceptible to national factors
- Targeting active surveillance to potential risk populations increases efficiency
  - Must be based on an assessment of the specific risk

# AI surveillance in animals: Types (3)

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- OIE guidelines state that countries should implement
  - Both passive and targeted active surveillance in poultry
    - Wild birds are not included in international (OIE) guidelines
  - Clinical, virological, and/or serological surveillance are each used under specific circumstances
    - e.g. to monitor risk populations, to confirm suspects, to monitor vaccination programs, etc

# Potential animal populations for targeting

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## Poultry production sectors

Sector 1: Industrial integrated system

Sector 2: Commercial poultry production,  
moderate-high biosecurity

Sector 3: Commercial poultry production,  
low-minimal security

Sector 4: Village or backyard production,  
with minimal biosecurity

These 4 sectors  
are differentially  
targeted  
depending on the  
country, current  
AI situation,  
season, flock  
vaccination  
status, and many  
other factors

# Potential animal populations for targeting (2)

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- Other at-risk animal populations
  - Wild waterfowl
  - Fighting cocks
  - Shipments of imported birds
  - Non-avian species (e.g. pigs, cats, dogs, monkeys)
    - at live animal markets
    - in areas experiencing outbreaks
  - Other susceptible species (e.g. suspicious deaths in wild feline species in zoos)

# Human risk populations

- Remember that humans at risk for AI are **not limited** to health care workers, teams culling infected flocks, and family members and contacts of cases
- AI is currently primarily a disease of animals. Humans are primarily being exposed through close contact with infected animals and contaminated environments
- Therefore, identifying at-risk **animal** populations in a country allows targeting of active surveillance of **people** to risk populations and areas, thus potentially improving the prompt and effective identification of infected people

# Potential human - animal interface populations for surveillance targeting

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- Poultry-owning families living in outbreak or at-risk areas
  - Living in close contact with animals (e.g. children playing with poultry)
  - Collecting eggs
  - Slaughtering/preparing poultry for consumption

# Potential human - animal interface populations for surveillance targeting (2)

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- Animal interface occupations
  - Live animal market workers
  - Poultry farm workers
  - Poultry slaughterhouse/transport/processing workers (including feather workers)
  - Veterinarians
  - Bird cullers
  - Fertiliser handlers

# Potential human - animal interface populations for surveillance targeting (3)

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- Many of these human populations will vary among countries & situations

e.g. Butchers

- Are at risk in live animal markets
- Are at negligible risk in commercial poultry processing (e.g. deboning) plants

e.g. Poultry-owning families

- Are at risk in outbreak or at-risk locations
- Are at negligible risk in other locations

# Integration of human and animal AI surveillance: Communication

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- Targeting surveillance (as well as control and prevention) requires communication and interaction between public health and animal health sectors
  - Political level (e.g. ministries)
  - Technical level (laboratories, hospitals)
  - Field level (field response teams, veterinarians)
- For countries where no outbreaks have occurred yet, it is important to set up these relationships beforehand

# Challenges

- Challenges exist to collaboration in:
  - National human and animal data collection system implementation
  - Analysis of data collected within the human surveillance system, within the animal surveillance system
  - Implementation of data and collection systems within countries, within regions, and worldwide
- Better standardization is required in systems used, data collected, tests used, etc.
- Is an overall lack of surveillance data from most countries (affected, at risk, and 'free' countries)

# Take-home messages

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- Data collected through animal surveillance can be used to target human surveillance to at-risk human-animal interface groups
- Communication is required to improve collaboration between human and animal systems

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**Developed by:**

**The Global Influenza Programme of the World Health Organization with the assistance of:**

**the Department of Epidemic and Pandemic Alert and Response**

**the Department of Food Safety**