Introduction to Avian Influenza

I. Avian Influenza: What is it?

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Introduction to Avian Influenza

What is Avian Influenza (AI)?

- AI is a virus that mainly affects domestic & wild birds

- It is related to influenza viruses that affect humans and other mammals

- AI viruses can mutate rapidly and exchange genetic material with other flu viruses (human & pig)
  - Continual evolution and development of new types
  - Allows virus to evade animal & human immune systems

- H5N1 AI virus is lethal to animals and to humans
  - Total of 53 countries with OIE-confirmed animal outbreaks since December 2003
    - 40 of these confirmed since February 2006
    - 4 countries with H5 (subtype unconfirmed)
    - Asia and the Near East, Europe & Eurasia, and Africa now affected
  - Over 200 million birds killed by disease or containment measures
  - 241 WHO-confirmed human cases with 141 deaths as of August 23
How is AI spread?

• Animal & human populations in close proximity
  - farm animals and pets in/under/next to houses
  - live animal markets (many species from many countries)

• Poor agricultural practices
  - inadequate infection control on farms
  - poultry excrement used in agriculture (e.g., fed to pigs)

• Poor food hygiene
  - food preparation practices
  - consumption of raw/undercooked meat

• Frequent travel/trade involving humans and birds
  - movement of people/animals among farms
  - legal and illegal animal trade
  - wild bird migration
Global risk of avian influenza outbreaks

As of May 15, 2006

Note: USAID will only support AI programs in less-developed countries

- **Endemic**: Widespread and recurring H5N1 infections in animals since Dec. 2003
- **Epidemic**: Isolated H5N1 outbreaks in animals since July 2005
- **High Risk**: Proximal to endemic or epidemic countries, or at risk of animal outbreaks due to bird migration and/or transport
- **At-Risk**: At risk of animal outbreaks due to bird migration and/or transport
- **Pandemic risk**: At lower risk of animal outbreaks, but would be affected by a human influenza pandemic

Djibouti is highlighted as a country at risk of animal outbreaks due to bird migration and/or transport.
H5N1 in humans since 2003

Affected areas with confirmed human cases of H5N1 avian influenza since 2003

- Turkey: Cases: 12, Deaths: 4
- Azerbaijan: Cases: 3, Deaths: 5
- China: Cases: 21, Deaths: 14
- Egypt: Cases: 14, Deaths: 6
- Iraq: Cases: 2, Deaths: 2
- Djibouti: Case: 1, Death: 0
- Thailand: Cases: 24, Deaths: 16
- Viet Nam: Cases: 93, Deaths: 42
- Cambodia: Cases: 6, Deaths: 6
- Indonesia: Cases: 60, Deaths: 46

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: WHO / Map Production: Public Health Mapping and GIS
Communicable Diseases (CDS) World Health Organization

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How could AI cause a pandemic?

Requirements for pandemic flu:

1. Novel virus  
   - H5N1: Yes

2. Ability to replicate in humans and cause serious damage  
   - H5N1: Yes

3. Ability to pass efficiently from person to person  
   - H5N1: Not yet
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1850 1847 42 yrs
1900 1889 29 yrs
1891 1918 39 yrs
1950 1957 11 yrs
2000

No Pandemic for > 35 years

30 — 40 years cycle
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- Three epidemic waves in close succession
  - March 1918, September 1918, February 1919
- Estimated 50 - 100 million deaths world-wide
- In the U.S.:
  - 10 million hospitalizations
  - 2 million deaths
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Is this a development issue?

• Current H5N1 impact in SE Asia, Europe, Eurasia, Africa
  - affects rural development, agriculture, wildlife
  - decreases GDP by affecting trade, tourism, etc.
  - diverts staff and finances away from other priorities
  - creates stress within and among national governments
  - estimated $10 billion lost so far because of H5N1

• Possible pandemic impact (~25% of population ill)
  - health care system overwhelmed
  - basic services interrupted
  - production, transportation, consumption severely affected
  - decreased capacity for governance and law enforcement
  - forecast of about 10-180 million deaths worldwide
Avian Influenza Response:
What is the U.S. Government doing?
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A coordinated USG approach

- **DoD**
  - Lab capacity strengthening; commodities and training for U.S. military
- **HHS, CDC**
  - Surveillance and diagnostics, pandemic planning, research, communications
- **USDA**
  - Technical assistance for animal surveillance and diagnostics, containment & prevention measures, planning
- **State Department**
  - Public diplomacy, diplomatic engagement, delivery of donated supplies, overall coordination
- **USAID**
  - Pandemic preparedness and planning, animal and human surveillance, behavior change communications, stockpiling protective commodities and decontamination kits, outbreak response support, private sector involvement, coordinating between human and animal health sectors
Avian Influenza: USG funds

- At an international conference in Beijing in January 2006, the U.S. government pledged $334 million to support AI-related activities

- USAID has allocated a total of $159 million for AI-related activities
  - $131.5 million of this is from the Beijing pledge
    - $56 million of this is for stockpile commodities for emergency outbreak response.
  - $26.9 million of this is from prior-year funds, including FY05 tsunami reprogrammed and other reprogrammed funds.
Key Activities

Preparedness
• Support pandemic planning

Surveillance and Diagnosis
• Strengthen surveillance and laboratory diagnostic capacity
• Increasing transparency of surveillance data (www.gains.org)
• “Early-warning” networks

Communications
• Targeting high risk populations, general public, to promote low-risk behavior through mass media and community outreach (for more: www.aed.org/avianflu)
• Public diplomacy, outreach to policymakers
• Press/media training and media management to minimize inaccuracies

Stockpiling
• Establish international stockpiles of personal protective equipment and decontamination kits for first responders

Response
• Rapid response teams for animal and human outbreaks
• Containment measures including culling & disposal, animal vaccination

Research
• Human vaccines, clinical interventions and diagnostics
• Disease transmission routes
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Resources

For more information and regular updates on USAID’s response to this threat,
visit www.usaid.gov and click on “Avian Influenza Response”

For more information and resources related to pandemic flu,
visit www.pandemicflu.gov