AVIAN INFLUENZA (A/H5N1) SITUATION IN VIETNAM, 2003-2005

National Institute of Hygiene and Epidemiology
General Information

- Area: 332,600 km²
- Provinces: 64
- Districts: 668
- Communes/wards: 10,732
- Population: 82 millions
- Climate
  - North: 4 distinct seasons
  - South: 2 seasons (wet and dry)
Avian Influenza situation in Vietnam, Dec 2003 – until now

- 4 epidemic waves of avian influenza A/H5N1
- Almost all provinces have reported outbreaks in poultry; 50 million poultry killed
- 32 provinces have human cases; Total 93 cases, 42 deaths (CFR: 32.8%)
Timeline and Geographic distribution of H5N1 cases in Vietnam

wave 1: from Dec 2003 to Mar 2004

- 57 provinces had poultry outbreaks; 43.9 million poultry killed.
- 13 provinces had human outbreaks; 23 cases, 16 deaths; CFR: 69.6%.
17 provinces reported poultry outbreaks; 84,000 poultry killed.

3 provinces had human outbreaks; 4 cases, 4 deaths; CFR: 100%.
Timeline and geographic distribution of H5N1 cases in Vietnam

wave 3: from Dec 2004 to Nov 2005

- 36 provinces have poultry outbreaks; 470,000 poultry killed
- 25 provinces had human outbreaks; 64 cases, 21 deaths; CFR: 32.8%

36 provinces have poultry outbreaks; 470,000 poultry killed
25 provinces had human outbreaks; 64 cases, 21 deaths; CFR: 32.8%
Wave 4:
From Nov.2005 until now

- 25 provinces have reported outbreaks in poultry;
- 2 provinces have human AI (2 cases, 1 death)
number of avian influenza cases and deaths by month
number of avian influenza cases and deaths by gender
Distribution of cases and deaths by age group

Số ca

<table>
<thead>
<tr>
<th>Tuổi</th>
<th>Mổ c</th>
<th>Tổ vong</th>
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<tbody>
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<td>0-9</td>
<td>18</td>
<td>15</td>
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<td>10-19</td>
<td>22</td>
<td>6</td>
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<td>20-29</td>
<td>18</td>
<td>9</td>
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<tr>
<td>30-39</td>
<td>17</td>
<td>7</td>
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<tr>
<td>40-49</td>
<td>5</td>
<td>2</td>
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<tr>
<td>50-59</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>60-69</td>
<td>3</td>
<td>1</td>
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<tr>
<td>&gt;70</td>
<td>3</td>
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Mean age of cases and deaths by epidemic waves

<table>
<thead>
<tr>
<th>Year</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Total</th>
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<tbody>
<tr>
<td>Mean age of cases</td>
<td>15.8</td>
<td>5.5</td>
<td>30.8</td>
<td>26.0</td>
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<tr>
<td>Mean age of deaths</td>
<td>16.0</td>
<td>5.5</td>
<td>26.6</td>
<td>20.7</td>
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</tbody>
</table>

Graph showing the mean age of cases and deaths across different waves.
mean age of cases and deaths by year

Mean age of cases
Mean age of deaths

Year

2004
15.8
2005
30.8
2005
26.6
Total
26.0
Total
20.7

NIHE
family-clusters of h5n1 cases in some nothern provinces, Wave 1 (2003-2004)

26 Dec 2003
Thanh Ha, Thanh Liem
1. P.T.Van (patient)
2. P. T. Bay (mother)

6 Jan 2004,
De Tham, Thai Binh city
1. N.L. Hung (patient-unconfirmed)
2. N.L. Hong (sister)
3. N.L Hanh (sister)

20 Dec 2003
Nghia Loi, Nghia Hung
1. D. T. Hoa (patient-unconfirmed)
2. D.V. Thang (brother)
Family-clusters of H5N1 cases in Thai Binh province, Wave 3 (2004-2005)

PREVIOUS CLUSTER
De Tham, Thai Binh city
1. N.L. Hung (patient-unconfirmed)
2. N.L. Hong (sister)
3. N.L Hanh (sister)

14 Feb 2005
Thuy Luong, Thai Thuy
1. N. S. Tuan (patient)
2. N. T. Ngoan (sister)
3. N. H. Kim (grandfather-carrier)
4. N. D. Tinh (HCW)

26 Dec 2004
Nam Cao, Kien Xuong
1. N. H. Viet (patient)
2. N.H. Hung (brother)
3. N. H. Hung (brother-carrier)

19 Feb 2005
Quyet Tien, Kien Xuong
1. Pham Khac Teo (patient)
2. L.T. Them (wife-carrier)
Family-cluster of H5N1 cases in hai phong city, Wave 3 (2004-2005)

* Human to human transmission?
* Family/genetic factor?

21 Mar 2005
Hung Dao, Kien Thuy

1. V. V. Son (patient)
2. N. T. Lien (wife)
3. V. T. Ngoc (daughter)
4. V. T. Trang (daughter)
5. V. T. Duong (daughter)
REMARKS ON EPIDEMIC SITUATION

1. H5N1 viruses seem to be more infectious for people:
   - Human cases occurred sporadically in more provinces (35 prv.).
   - Human cases occurred in all age groups, with the increasing mean age (15.8 – 28.8).

2. Majority of human cases have exposed to infected poultry, but several no.

3. Disease patterns are changing: Clinical symptoms become milder, more asymptomatic cases; case-fatality rate is decreased (70%-30%).

4. Genetic / family factors may play a very important role in susceptibility to the virus.
5. No clear evidence of human to human transmission is available, but it’s possibility should be considered:

- Number of human cases increased, including number of healthy carriers
- Number of infected family cluster is increasing
- Number of infected individuals in each family cluster is increasing
- Some cases without clear exposure history to sick poultry
- One health worker is infected
6. Virus (HPAI strain) may have timely and slightly changed its antigenicity and pathogenicity:

- HA gene homogeneity reduced from 99.1% in 2004 to 98.2% in 2005
- One amino acid deletion occurred in the multi-basic amino acid cluster (cleavage site), which may be associated with reduced pathogenicity
RESPONSES nationwide

1. National and Provincial Steering Committee for AI epidemic prevention and control

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2. Set up the system for the identification, investigation, diagnosis and treatment of AI

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RESPONSES

3. Extensive IEC on 4 measures for AI prevention and control:

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RESPONSES: 4 measures for community

• Early detection of poultry epidemic and inform immediately the local authorities
• Do not eat ill/dead poultry

• Inform immediately or go to health care facilities when having fever related to infected poultry
• Disinfect poultry cages by chloramines
RESPONSES

4. Strict poultry quarantine, gathering raise of poultry in farms and cages, gathering slaughter places

5. National campaign on environment and poultry cage cleaning.
6. Close collaboration between human health and animal health sectors in surveillance and early detection of poultry epidemics

7. Close collaboration with WHO and FAO, OIE: technical and financial supports.


9. Conducting exercise for AI epid & pandemic
Some picture from the exercise for AI epid & pandemic

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1. Reservoirs among animals:

- Which animal? Chicken, duck, other animals?
- Asymptomatic carriers? and if, duration?
2. Mechanism for transmission:
   - direct or indirect?
   - human to human transmission?
   - risk factors
3. Susceptibility:
   - Genetic/family factor?
4. Natural history of the disease
5. Molecular epidemiology: genetic and antigenic characterization of the virus

RESEARCH QUESTIONS

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Intervention strategies:

- Vaccination for poultry (H5N1) and human (seasonal Vaccine). Influenza vaccin development for human.
- Producing and stockpiling of tamiflu for treatment and prevention?
- Surveillance of new strains of A(H5N1); resistance to antiviral drugs.
- Research on mechanism of virus transmission.
1. AI should be considered as a combined agricultural, public health, economic and major social threat nation & globalwide.
2. Strengthen epidemiological, virological and clinical surveillance and researches for clearer assessment on AI situation with the close collaboration between animal and human health sectors
3. Complete and finalize the influenza practical, operational pandemic preparedness plan following WHO guidelines
4. Accelerate H5N1-like vaccine (both human & poultry vaccines) development
5. Develop regional and global collaboration (bilateral & multilateral) on surveillance, researches and responses.
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