Avian Influenza Surveillance in Thailand

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Outline

• AI case definition
• Overview of AI control measures
• Status of HPAI in Thailand
• Current surveillance protocols in different poultry management systems
• Conclusions
AI Case Definition & Revisions

1. Broad signs to cover all AI potential cases
2. AI Case Definition (since January 2004) and further Revisions :-
   a) Almost 100% mortality
   - Poultry death ≥10% within a day (July 2004 Revision)
   - Poultry death ≥5% within 2 days (Revised since July 2005)
   - Farmed poultry death ≥1% within 2 days OR 20% reduction in feed & water intake during a day
   b) Severe respiratory signs with excessively watery eyes & sinusitis, cyanosis of the combs, wattle and shanks, edema of the head, ruffled feathers (Eye opacity in some ducks)
   c) Diarrhoea and nervous signs (torticollis, seizure)
   d) Sudden death OR cumulative death up to 40% in 3 days, depress, off feeding, egg drop, abnormal eggs OR no clinicals
3. Should any one criterion be observed, disease control measures are executed immediately.

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HPAI Disease Control Measures

- **Depopulation** the affected premises,
- **Compensation** 75% of the local market price
- **Disinfection** of premises & infected materials
- **Disposal** of carcasses, products & infected materials
- **Quarantine** the suspected premises & surroundings
- **Movement control** in the radius of 10 km, 30 days
- **Active surveillance** in all poultry groups in risk area(s)
- **Coordination/Cooperation** with authorities concerned – MOPH, MENR, Prov. Governor, Police/Military etc.
- **Prohibition of AI vaccination in poultry**
- **Public Awareness & special Campaigns**

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Situation of AI in Thailand during 2004-2008

<table>
<thead>
<tr>
<th>Outbreaks and affected Areas</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers of Outbreak</td>
<td>1740</td>
<td>194</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sub-district</td>
<td>797</td>
<td>110</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>District</td>
<td>298</td>
<td>58</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Province</td>
<td>60</td>
<td>21</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
## Types of Poultry Affected with H5N1

<table>
<thead>
<tr>
<th>Type of Poultry</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backyard Chicken</td>
<td>1000</td>
<td>153</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1159</td>
<td>59.61</td>
</tr>
<tr>
<td>Duck</td>
<td>477</td>
<td>20</td>
<td>1</td>
<td></td>
<td></td>
<td>498</td>
<td>25.61</td>
</tr>
<tr>
<td>Broiler</td>
<td>109</td>
<td>5</td>
<td></td>
<td>1</td>
<td></td>
<td>115</td>
<td>5.91</td>
</tr>
<tr>
<td>Layer</td>
<td>90</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td></td>
<td>100</td>
<td>5.14</td>
</tr>
<tr>
<td>Quail</td>
<td>40</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>47</td>
<td>2.41</td>
</tr>
<tr>
<td>Geese</td>
<td>15</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>16</td>
<td>0.82</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td>0.46</td>
</tr>
<tr>
<td>Total outbreaks</td>
<td>1740</td>
<td>194</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1944</td>
<td>100</td>
</tr>
<tr>
<td>Year</td>
<td>Numbers of outbreak</td>
<td>Poultry Destruction</td>
<td>Compensation Baht (US $)</td>
<td>Numbers of Collected &amp; tested samples*</td>
<td>Budget allocated for AI control Baht (US $)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
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<td>---------------------</td>
<td>--------------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>1740</td>
<td>60,811.081</td>
<td>5,196,231,843 ($ 148,463,767)</td>
<td>150,648</td>
<td>3,559,040,000 ($ 101,686,857)</td>
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<tr>
<td>2005</td>
<td>194</td>
<td>3,694,423</td>
<td>195,129,620 ($ 5,575,132)</td>
<td>253,960</td>
<td>333,209,100 ($ 9,520,260)</td>
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<td></td>
</tr>
<tr>
<td>2006</td>
<td>2</td>
<td>393,430</td>
<td>51,681,810 ($ 1,476,623)</td>
<td>900,334</td>
<td>555,949,700 ($ 15,884,277)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>110,022</td>
<td>6,011,258 ($ 171,750)</td>
<td>788,611</td>
<td>3,031,139,500 ($ 85,603,986)</td>
<td></td>
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</tr>
<tr>
<td>2008</td>
<td>4</td>
<td>63,081</td>
<td>3,233,400 ($ 92,383)</td>
<td>778,382</td>
<td>506,954,200 ($ 14,484,406)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>20,728</td>
<td>1,189,200 ($ 36,036)</td>
<td>728,101</td>
<td>333,590,500 ($ 10,108,803)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>23,349</td>
<td>1,173,803 ($ 36,117)</td>
<td>484,863</td>
<td>323,818,600 ($ 9,963,649)</td>
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<td></td>
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</tbody>
</table>

**NB:** The collected samples* were carcasses and cloacal swabs.
Current AI
Surveillance Systems

Surveillance protocols:
1) Poultry compartmentalisation
2) Accredited (or DLD standard) poultry farm
3) Non-accredited (or conventional) poultry farm
4) Other types of poultry premises (e.g. fighting cocks, pet birds, native bantams) with some sanitary practice
5) Backyard poultry
6) Thailand traditional duck raising (free ranging flocks)
Surveillance in Poultry
Compartmentalisation: (1)

On Farm & the Buffer area of 1 km radius:- (SOP for alls)

1) Active clinical surveillance (daily basis) & recorded by farmers/workers, if matching to “AI case definition” found, reporting to the local DLD office

2) DLD officials to visit for preliminary investigation, sampling (carcasses/swabs) & submission to a Lab

3) DLD implementing basic disease control measures:-
   3.1) quarantine  
   3.2) disinfection
   OR 3.3) movement control in the village
Surveillance in Poultry Compartmentalisation: (2)

4) Active laboratory surveillance: on FARM

- Every 6 month (CI 95% , est. Prev 20%)
- Sampling 20 birds/house & 5 houses (or all)/farm
- Cloacal swab samplings for BREEDER in June/Dec
  (No cloacal swab for broiler from accredited HPNAI free farms)
- Serum sampling for BREEDER in Feb/Aug, but for BROILER in the next batch of the cloacal swab sampled one
Surveillance in Poultry Compartmentalisation: (3)

5) Active laboratory surveillance:- in the BUFFER area
- Every 6 month (CI 95%, est. Prev 20%)
- Sampling 20 birds from 4 households (@ 5) in the buffer area of that Compartmental farm/hatchery.
- Cloacal swab samplings in June/Dec
- Serum sampling is collected in Feb/Aug,
Surveillance in Accredited Poultry Farm: (2)

4) Active laboratory surveillance:-
   - Every 6 month (CI 95% , est. Prev 20%)
   - Cloacal swab sampling 20 birds /farm (evenly distributed), for **BREEDER** in Jun/Dec, but for broiler in any selected months of a 6-month period
   - Serum sampling is not required

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Surveillance in Non-accredited Poultry Farm: (2)

4) Active laboratory surveillance:

All poultry in non-accredited farm:
- Cloacal swab sampling 20 birds/farm, evenly distributed, 8-10 days before movement permission
- Serum sampling is not required

Long lifespan poultry (i.e. breeder, layer, quail, etc)
- Cloacal swab sampling 20 birds/farm, evenly distributed, every 6 month in Jun/Dec

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Surveillance in other types of Poultry Premises: (2)

4) Active laboratory surveillance:-
   - Every 6 month (CI 95%, est. Prev 20%)
   - Cloacal swab sampling 10 (or all) birds/premises in Jun/Dec
   - Serum sampling 10 (or all) birds/premises in Feb/Aug

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Surveillance in Backyard Poultry: (2)

4) Active laboratory surveillance:-
   - Select 4 households in all villages of the risk Sub-districts (with historical outbreak, wild bird habitats)
   - Every 6 month (CI 95%, est. Prev 20%)
   - Cloacal swab sampling 4 birds/household in June/Dec
   - Serum sampling is not required.
Surveillance in Thailand

Traditional Duck Raising: (2)

4) Active laboratory surveillance:-
   - Every 6 month (CI 95% , est. Prev 20%)
   - Cloacal swab sampling 60 birds/flock in Jan/Jul
   - Cloacal swab sampling 60 birds/flock, at 8-10 days before movement
   - Serum sampling is not required.
Conclusions (1)

Current AI Surveillance Protocols in Thailand

- All management types of poultry
- Active clinical surveillance (daily basis)
- Active laboratory surveillance (every 6 month)
- Passive lab. surveillance in dubious cases submitted
- Sampling protocol for HPAI are usually at 95% Confidence Interval & estimated Prevalence 20 %
- Assuming the poultry population is 10,000 birds/farm and 20 birds/household, on average in calculation

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Conclusions (2)

• Compartmentalisation & Buffer area
  • Active (daily) clinical /(biannually) laboratory surveillance
  • No swab sampling from accredited HPNAI free farms
  • No swab sampling before movement

• Accredited farm
  • Active (daily) clinical /(biannually) laboratory surveillance
  • No swab sampling before movement
  • No serum sampling required

• Non-accredited farm
  • Active (daily) clinical/(biannually) laboratory surveillance
  • Swab sampling before movement 8-10 days
  • No serum sampling required
• **Other types of poultry premises:**
  - Daily active clinical surveillance
  - Biannually laboratory surveillance (serology & virology)
  - No swab sampling before movement

• **Backyard:**
  - Active (daily) clinical/(biannually) laboratory surveillance
  - Swab sampling before movement 8-10 days
  - No serum sampling required

• **Thailand traditional duck raising:**
  - Active (daily) clinical /(biannually) laboratory surveillance
  - Swab sampling before movement 8-10 days
  - No serum sampling required

Conclusions (3)
Thank You for Your Attention