Wild birds and the risk of a pandemic

FAO/OIE International Scientific Conference on Avian Influenza and Wild Birds
Rome, 31 May, 2006

Acknowledgements

Ministries of Health of Turkey, Iraq and Azerbaijan

WHO Country Offices
WHO teams (GOARN): EC, ECDC, ECDC/EPIET, FAO, INVS, Swedish CFG, Rabin MC Tel Aviv, CDC, Robert Koch Institute Berlin, SZU Prague, NAMRU-3 Cairo, WHO (Euro, Emro, Geneva, Rome), WHO CC Mill Hill.

Overview of the presentation

• Current situation regarding avian influenza in the European region
• Outcome of the Turkey, Iraq and Azerbaijan outbreaks
  • epidemiological findings
  • virological findings
• Risk to humans: wild birds vs poultry

Current situation regarding avian influenza in the European region
WHO/Europe - Avian Influenza Infections A/H5N1

Human Case of H5N1 Avian Influenza
- since 2003 and as of 11 May 2006 -

Outcome of the Turkey, Iraq and Azerbaijan outbreaks

142 / 208 (68.3%) cases occurred in the December – March period

Legend:
- H5N1 Outbreaks
- Area with poultry case confirmed
- Area with wild bird case confirmed
- Number of WHO confirmed human cases

4 out 52 countries affected

Surveillance in wild birds?

Die-off at Qinghai lake

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Epidemiological findings

- Age groups, number of cases and case fatality rates
- Asymptomatic infection (AZ)
- Nature of exposure
- Family clustering

### Age groups, number of cases and case fatality rates

<table>
<thead>
<tr>
<th></th>
<th>Turkey</th>
<th>Iraq</th>
<th>Azerbaijan</th>
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<tbody>
<tr>
<td>No. cases</td>
<td>12</td>
<td>2</td>
<td>8</td>
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<td>No. Deaths</td>
<td>4</td>
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<td>Case fatality rates</td>
<td>33%</td>
<td>100%</td>
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<td>Average age</td>
<td>9.5#</td>
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<td>Median age</td>
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<td>Male:female</td>
<td>4:5#</td>
<td>1:1</td>
<td>2:6</td>
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# data from nine cases

As of 23 May 2006: 218 human cases including 124 deaths (CFR 57%)

Asymptomatic Infection (AZ)

- Clinical specimens were taken from 18 household contacts on 21 March
- No detection of H5N1 virus in throat swabs nor antibodies in serum
- Specimen from mother in close contact with two patients also negative for virus
- Three asymptomatic cases picked up by active surveillance

Nature of exposure: poultry

Turkey and Iraq

Clear contact with sick backyard poultry
- Slaughtering, preparation for consumption
- Poultry had been brought indoors due to cold weather (Turkey)
- Caring for sick chickens (Turkey)
- Playing with parts of dead chickens (Turkey)
**Nature of exposure: wild birds**

Azerbaijan

Exposure to dead wild swans
- Feathers were plucked for sale
- Indoors or outdoors??
- Exposure to carcasses before/after de-feathering?
- Consumption of carcasses?

**Risk to humans: wild birds**

Involvement of wild birds in AZ complicated and delayed the investigation:
- the situation in poultry in AZ was unclear
- affected families had healthy poultry
- affected families did not believe their children had avian ‘flu
- affected families denied wild bird contact for fear of punishment

**AZ - Number of Dead Wild Animals**

Mostly Wild Birds (animal/day)

*Courtesy of Ministry of Ecology*

![Graph showing number of dead wild swans](chart.png)

Total dead swans counted 17.01.06 - 12.03.06: **1952**

**Age groups: behaviour related?**

Mainly children treated chickens as pets.
Mainly teenagers responsible for slaughtering sick poultry.

Mainly teenagers involved in plucking swans.
*Azerbaijan Male:female was 2:6*

*Or possibly higher susceptibility of this group??*
Family clustering

Family clusters were seen in all 3 countries
- In Turkey, 2 families had 2 and 3 cases respectively
- In Iraq, one family had 2 cases
- In Azerbaijan, there were:
  - 2 cases in one family
  - 6 cases from 5 families were cousins

Family clustering in Azerbaijan

Family clustering: significance?

Most likely due to sharing of a common exposure.

*Human to human transmission cannot be excluded.*

Implications for prophylaxis:

household members of cases should receive antiviral prophylaxis quickly upon identification of a case due to same (high) risk of common exposure

Virological findings: phylogenetic comparison
Many H5N1 viruses

**Human viruses 100% avian**

European and Middle Eastern H5N1 isolates from human and animals show phylogenetic relationship.

These isolates segregate from the earlier Asian isolates (Clade 1) and exhibit antigenic differences (Clade 2)

**IMPLICATIONS FOR VACCINE DEVELOPMENT**

Courtesy of Alan Hay (WHO Collaborating Centre, London), YiPu Lin and associates, and VLA, Weybridge.

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**Antigenic analyses of avian and human influenza A H5N1 viruses (HI test)**

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<thead>
<tr>
<th>Antigen</th>
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<th>A/ty/Turkey/I/05</th>
<th>A/Azerbaijan/115TS/06</th>
<th>A/Azerbaijan/161ser/06</th>
<th>A/Azerbaijan/162ser/06</th>
<th>A/ck/Scotland/59</th>
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**Risk to humans: wild birds vs poultry**

**Current assessments**

**WHO**

All evidence to date indicates that close contact with dead or sick birds is the principal source of human infection with the H5N1 virus. Especially risky behaviours identified include the slaughtering, defeathering, butchering and preparation for consumption of infected birds.

**ECDC**

Group 1 – Low but Real Risk

The risk of infection is confined to those who have close and intense contact with sick poultry.

Group 2 – Theoretical Risk – Precautions required

Includes where H5N1 may be present: HCW, cullers, farm workers and people who may have close contact with infected wild birds eg. some ornithologists and hunters.

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**Conclusions**

- Virus acquired by exposure to wild birds is not different to virus acquired from poultry
- Close human contacts with infected wild birds far less numerous than with infected poultry
- Therefore virus from wild birds will have less opportunity to adapt/reassort in humans
- Therefore wild birds constitute a lower pandemic risk

**Prevention**

Emphasis should be on the education of the population and identification of vulnerable populations, including hunting communities.

**Thank You**

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www.euro.who.int/flu/