Response to Human Infection with Avian Influenza A(H7N9) Virus

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1. Overview of the epidemic
2. Response strategy and prevention and control measures
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1 Overview of the epidemic
### Detection, Confirmation and Notification of the Epidemic

<table>
<thead>
<tr>
<th>March</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Shanghai reported 3 cases of pneumonia with unknown cause</td>
</tr>
<tr>
<td>24</td>
<td>Shanghai CDC delivered pharynx-mop sample of 2 cases to China CDC</td>
</tr>
<tr>
<td>25</td>
<td>Anhui CDC delivered pharynx-mop sample of one case to China CDC</td>
</tr>
<tr>
<td>26</td>
<td>China CDC found the RT-PCR test result of the sample positive</td>
</tr>
<tr>
<td>28</td>
<td>China CDC isolated the virus</td>
</tr>
<tr>
<td>29</td>
<td>China CDC confirmed it as the new-type avian influenza A(H7N9) virus.</td>
</tr>
<tr>
<td>30</td>
<td>NHFPC organized experts to confirm the 3 cases of H7N9 human infections</td>
</tr>
<tr>
<td>31</td>
<td>NHFPC notified WHO of the epidemic and released the information to the public</td>
</tr>
</tbody>
</table>
# Number of H7N9 Human Infections

(As of Aug 10)

<table>
<thead>
<tr>
<th>Province</th>
<th>Total</th>
<th>Outcome</th>
<th>Discharged</th>
<th>In Hospital</th>
<th>Dead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>2</td>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hebei</td>
<td>1</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Shanghai</td>
<td>33</td>
<td></td>
<td>15</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>28</td>
<td></td>
<td>17</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>46</td>
<td></td>
<td>35</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Anhui</td>
<td>4</td>
<td></td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Fujian</td>
<td>5</td>
<td></td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>6</td>
<td></td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Shandong</td>
<td>2</td>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Henan</td>
<td>4</td>
<td></td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Guangdong</td>
<td>1</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Hunan</td>
<td>2</td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Taiwan</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>135</td>
<td><strong>87</strong></td>
<td><strong>4</strong></td>
<td><strong>44</strong></td>
<td></td>
</tr>
</tbody>
</table>
Clinical Attributes

• Exhibit such flu symptoms as fever and cough at the outset.

• Lab test found out a normal or decreased level of PBL, deceased level of lymphocyte and platelet.

• A significant proportion of the cases developed into severe pneumonia and worsened in one or two days. Some cases developed into stubborn hyoxemia and multiple organ failure which lead to death.

• Cases of light ailments and pathogen carriers were found, showing possibility of silent affection.
Geographical Distribution (Jun 30)
Most Cases Are Sporadic

- 135 cases, most cases are sporadic.
- Out of the near 3000 close contacts in the 135 cases, except 4 family clusters, others are normal.
- The 3 family clusters can not exclude the possibility of limited human to human, 1 family cluster can not exclude the possibility of co-exposure. They don't change our judge at public health risk
  - Shanghai case: spouse
  - Shanghai cases: father and son
  - Jiangsu cases: father and daughter
  - Shandong cases: father and son
Etiological Attributes

H7N9 virus is a new reassorted bird flu virus. The virus strain from human cases are highly isogenous with that from the birds (pigeon and chicken). According to test by China CDC, there is no generic mutation of the genes of the 39 collected virus strains. As reported by Chinese Ministry of Agriculture, the virus is not pathogenic for birds.
## Exposure to Birds or Live-poultry Markets

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>94</td>
<td>70</td>
</tr>
<tr>
<td>No</td>
<td>41</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>135</td>
<td>100</td>
</tr>
</tbody>
</table>
Response Strategy and Prevention and Control Measures
Goal & Principle

Safeguard Human Health

- Key priorities
- Scientific response
- Differentiated guidance

Containment of epidemic
Enhance ICU care
Early treatment
Legal Basis

- Law on Prevention and Control of Infectious Diseases
- Regulations on the Response to Public Health Emergencies
- State Emergency Preparedness Plan for Pandemic Influenza
- International Health Regulations (2005)

Response to H7N9 human infection
Prevention & Control Measures (1)

- Multi-level joint prevention and control working mechanism
Prevention & Control Measures (2)

- Treat and cure at full power
  - Develop diagnosis and treatment protocols
  - Develop technical plans for hospital infection control
  - Guide localities
    - Early detection, early reporting, early diagnosis and early treatment
- Treat cases at local level, differentiated guidance, pooling experts and resources for concentrated treatment, combination of Chinese and western medicine
- On May 5, new anti-flu medicine Peramivir was allowed to the market.
Prevention & Control Measures (3)

- Close livestock market to reduce human-to-bird contact
- Regulate transportation of live birds to control bird-to-bird infection.
Prevention & Control Measures（4）

- Enhance epidemic surveillance
  - Health departments enhanced surveillance of pneumonia with unknown cause, flu-like cases and etiology
  - Agricultural departments lifted control levels and enhanced surveillance and test on animals
  - Forestry departments enhanced test and surveillance on diseases of wild animals
  - Enhanced test on live birds and bird food supplied to Hong Kong and Macau
Prevention & Control Measures（5）

• **Consolidate findings on epidemic situation**
  
  – Conducted risk assessments
  
  – Experts in China CDC held daily meetings on the epidemic since the first case was reported.
Prevention & Control Measures （6）

• Enforce prevention & control measures:
  – Develop prevention and control plan on H7N9 human infection
  – Guide localities to enhance source tracing, logistics, health procedure, surveillance and inspection
  – Conduct training on health workers at all levels, organize multi-sector joint supervision
Prevention & Control Measures （7）

- **Information release and risk communication**
  - Release latest news on epidemic timely
  - Timely notification of the epidemic to WHO, FAO, OIE, related countries, and Hong Kong, Macau, Taiwan regions
  - Spread prevention and control knowledge
Prevention & Control Measures (8)

- Strengthen R&D
  - Establish H7N9 prevention & control research taskforce
    - Diagnosis technology, vaccine, etiology, epidemiology, clinical treatment, and animal model.
  - Provide virus strain to China’s Hong Kong and Taiwan regions timely.
Prevention & Control Measures （9）

• **Strengthen international cooperation**
  – Closely communicate and cooperate with WHO, FAO, OIE and other international organizations.
    • Hold conferences with foreign experts to discuss the epidemic situation
    • Hold joint press conference with WHO to release information on the epidemic situation and prevention and control measures
    • Invite international experts to investigate the epidemic situation and responses
  – Timely share the data of the virus’s genetic sequence, diagnosis plan and virus strain with the international community
Initial Achievements

• Since May, there have been decreasing new cases.
• Since late Jun, normalization management phase.
• According to WHO’s joint investigation team, the Chinese government’s response to the epidemic is well-prepared, rapid, effective and professional.
Findings from Current Cases

- H7N9 virus is pathogenic to human but not birds.
- Virus infection is mainly caused by infected birds or their environment. Exposure to birds or live-poultry markets is a key risky factor.
- Human infections with H7N9 are still sporadic. There has been no virus mutation. There has been no qualitative change of the epidemic. The avian influenza A (H7N9) is preventable and controllable.
- Until the traditional sources are completely under control, new cases and new locations may still pop out.
- Our knowledge about the virus and the disease is still limited, so we should remain vigilant.
Next Step Priorities
Next Step Priorities

• Continue to play the role of the joint prevention and control mechanism, enhance inter-sector information exchanges and coordinated actions.
• Continue to control the infection sources and contain the spreading of the epidemic.
• Ensure early diagnosis and treatment, consolidate treatment of severe cases and reduce deaths.
• Strengthen surveillance and provide information to the judgment on the epidemic.
• Reinforce source tracing of the epidemic
• Keep information open and transparent and announce the relevant information timely.
• Continue to enhance research on diagnosis technology, vaccine, etiology and source tracing, epidemiology, clinical treatment, and animal model, etc.
• Keep active cooperation and exchange with the international organizations.
• Improve various preplans and get better prepared.
Emerging infectious diseases, such as avian influenza A(H7N9), are common challenges to humanity. The international community needs to work actively to strengthen the institutional capacity building of public health, facilitate epidemic communications, exchange experiences in prevention, control and treatment, share scientific findings, and jointly cope with epidemic threat. We are ready to join hands with all countries to curb any emerging infectious disease and protect life and health.
THANKS!