Asia-Pacific
Economic Cooperation

International Seminar on Food Trade Safety to Prevent Avian Influenza

Guangzhou, P.R. China
November 27-30, 2012

APEC Health Working Group
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APEC Project: S HWG 0911A

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PROJECT LEADER

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Table of Content

1. Summary

(Project No.: S HWG 09 11A)
November 27-30, 2012 in Guangzhou, China

The "APEC Seminar on Food Trade Safety to Prevent Avian Influenza" (Project No. S HWG 09 11A) was successfully held from November 27th to 30th, 2012 in Guangzhou, China. The Seminar was organized by the China Entry-Exit Inspection and Quarantine Association (CIQA). About 60 experts, scholars and government officials from APEC Economies including China, Russia, the United States of America, and Viet Nam participated in the Seminar. Mr. Steve Chen, Program Director of the APEC Secretariat attended the Seminar and offered great help to the event. Dr. Nikolay Kravtsov, the APEC HWG Chair's Special Assistant, attended the Seminar and moderated the closing ceremony. The Seminar emphasized some key points that attracting concerns of the government officials, the industries, the traders and the private sectors particularly in such aspects as the Avian Influenza and its sever impact, the measures taken for prevention and control, the Human Highly Pathogenic Avian Influenza (HPAI) containment, food safety management measures, and combat of illegal trade etc. A Statement was initiated as the output of the event. The Seminar is the first of its kind under the umbrella of the APEC/HWG and has initiated a good start.

The Seminar received great support from the Chinese government. The Ministry of Health (MOH) and the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) offered lots of help in the project application and project monitoring. Mr. Ge Zhirong, Councilor of the State Council of China, Member of the Chinese People's Political Consultative Committee (CPPCC), and President of the China Entry-Exit Inspection and Quarantine Association (CIQA) presented at the opening ceremony and delivered a speech. Mr. Feng Xueping, Deputy Director General of the Department of Supervision on Animal and Plant Quarantine of AQSIQ moderated the opening ceremony. Mr. Li Qingxiang, Director General of the Guangdong Bureau of Entry-Exit Inspection and Quarantine of AQSIQ hosted the evening banquet at the conference centre.

As is known to all, Avian Flu constitutes a severe threat to human security in the world, especially in AF affected region. It also severely affects the food and trade safety. Facing such an issue, this Seminar carried out a series of discussions around four major topics, i.e. Section A, Avian Influenza and its severely negative impacts on human security, food safety, and international trade; Section B, Different measures and methods taken by various APEC Economies to prevent and control Avian Flu; Section C, Misunderstandings on measures leading to mistrust between Economies and barriers to trade of poultry and other related food products and Section D, Recommendations on common actions and methods on prevention and control of Avian Flu for achieving the trust.

Speakers from APEC Economies made presentations at the Seminar. Names and presentation titles of the speakers include Mr. Zhang Yanping, Chinese Center for Disease Control and Prevention (CDC) entitled “Response of Highly Pathogenic Avian Influenza (H5N1) in China”; Prof. Abu Abdullah, Associate Professor of Global Health & Epidemiology, School of Public Health, Florida International University, Miami, USA, entitled “Avian Influenza: Asia's public health problem” and “Public Health Issues and Approaches to Combat Avian Influenza”; Prof. Gao Rongbao, Institute of Virology, National Influenza Centre, entitled “Avian influenza contamination in environmental samples from 4 different type sites associated with poultry in mainland China”; Ms. Trinh Thi Ngoc Linh, International Cooperation Department , Ministry of Helth, Viet Nam, entitled “Avian Influenza (H5N1) Prevention and Control in Viet Nam” and “Avian Influenza and Pandemic: Viet Nam’s Experience & Challenge”; Dr. He Hongxuan, National Research Center for Wildlife Born Disease SFA-CAS Institute of Zoology, Chinese academy of sciences, entitled “ Control of Highly Pathogenic Avian Influenza in Wild Birds of China”; Dr. Rosa Victoria Gutierrez Castilla, Veterinarian - Zoonoses Area, Directorate General of Environmental Health (Digesa) - Ministry of Health (Minsa), entitled “Steps Peru has taken to combat distrust”; Mr. Qin Zhifeng, Shenzhen Entry-Exit Inspection and Quarantine Bureau, entitled “Prevention and control of AF in trade of live-birds among APEC economies”; Dr. Aaisah Binti Senin, Disease Control Division, Ministry of Health, Malaysia, entitled “Outbreaks of Avian Flu in Malaysia and measures taken for prevention and control”; Mr. Lin Zhixiong, Guangdong Entry-Exit Inspection and Quarantine Bureau, entitled “Control of Avian Disease in Poultry Supplied to Hong Kong, China and Macau, China”; Ms. Ivina Natalia, Chief of the Unit of International Cooperation, entitled “Prevention and control measures taken by Russian Federation in response to the outbreak of avian flu”; Dr. Liao Ming, Vice President of Huanan University of Agriculture, entitled “Poultry Avian Flu Prevention and Control in China”; and so on.

Experts discussed situation of Avian Flu in the world and in countries of Asia-Pacific area and the severe impacts to food safety, human security and international trade. From 2003 through 1 October 2012, 608 laboratory-confirmed human cases with avian influenza A (H5N1) virus infection have been officially reported to WHO from 15 countries, of which 359 died. Higher rates of confirmed cases belong to people at the age of under 20 and the lower rates belong to over 60. Avian Influenza spreads easily from person to person through coughing and sneezing, it usually occurs unpredictably not always in winter, it has great variations in mortality, severity of illness, and pattern of illness or age most severely affected. Avian influenza virus is frequently contaminated in environment associated with live poultry, especially in live poultry markets. Multiple subtypes of influenza A were found in those sampling environments. And H5N1 and H9N2 are major virus contamination in live poultry market and poultry farms respectively. Southern China is significantly higher contaminated than the north of China. Silent or subclinical H5N1 infection is rare in poultry worker in China

AF causes intense pressure on healthcare and disruption to many aspects of daily life. It caused direct economic impacts in outbreaks. The 1983 U.S. outbreak (H5N2) caused $65 million losses, destructed 17 million birds and caused 30% increase in egg prices. The 1999-2000 Italy outbreak (H7N1) caused $100 million compensation to farmers, destroyed 18 million birds and caused $500 million indirect losses. The 2001 Hong Kong, China outbreak (H5N1) caused 1.2 million birds destroyed and $3.8 million losses. The 2003 European outbreak (H7N7) caused 30 million birds destroyed and $314 million losses.

Speakers introduced the methods taken by government agencies to prevent and control Avian Influenza. For instance, In China the following methods are taken for the control of H5N1: Notifiable disease, Precautions at the borders, Monitoring, Screening, General surveillance, Targeted surveillance, Movement control inside the economy, Stamping out, Modified stamping out, Zoning, Vaccination prohibited, Routine vaccination, Treatment, Control of wildlife reservoirs, and the Control of arthropods etc. southern China is a key area to prevent and control AIV, there are more than 50% immune density in this area including 5 poultry registration farms. Quantities of live poultries and iced fresh chicken transported to Hong Kong, China is respectively 8000 and 30000 per day. There exists high risk level during all the commodity. In order to prevent and control AF on poultry to Hong Kong, China, eight measures have been taken by the Shenzhen CIQ, i.e. 1) farm registration, 2) complete vaccination, 3) register field inspection, 4) Monitor and surveillance on diseases and drug residuals, 5) quarantine isolation of pre-exit, 6) supervision over loading, 7) departure port check, and 8) vehicles and cage back disinfection etc. Diagnosis of AI in laboratory is also an important part of the prevention and control work. This needs the constant research and study of detecting technology.

In Russia over the last 5 years pollution of food has increased 5 times. At present Russia has not established a single case of transmission of avian influenza virus from person to person. Vaccine is regarded as one of the types of struggle against AF and controls over poultry and the staff is a quite effective method.

Experts stated that surveillance on avian influenza in environmental associated with live poultry would play crucial role to make evidence based management or preparedness, or to gain an understanding of environmental drivers of infection. Some stuffs such as wasted water of washing poultry should be treated properly before discharging. The establishment of monitoring teams and frequent training if such teams is a useful tool for the prevention and control of AF.

Experts put forwarded recommendations on common actions with regards to the prevention and control of avian flu and to achieve the trust. They strongly recommended that it is of vital importance to strengthen the international exchange and cooperation. For instance the Asia-Pacific Collaboration Network on Wildlife Diseases has attracted big number of experts from

Bangladesh, Canada, China, Cambodia, Indonesia, Mongolia, Nepal, Philippines, Russia, Thailand, United States of America, Viet Nam and international organizations etc. Regular Surveillance of HPAI in Wild Birds is also a way that commonly taken by APEC economies. Collaboration can also carried out in such areas as the sampling live wild birds, AF detecting methods, the Surface Plasmon Resonance SPR, the Index System for H5N1 Risk Assessment, the model analysis, and the overall rating methods etc.

Recommendations from the expert of Peru on the establishment of the organization of sectorial and inter-sectoral coordination response against pandemic flu, the implement pharmacologic and non pharmacologic measures, the strengthening of the response capacity of health services for the care of patients with pandemic flu to reduce the fatality rate, the strengthening of public health surveillance flu in the economy, the strengthening of epidemiological surveillance of influenza in domestic and wild birds as well as pigs, the implementation of environmental health response on time, the providing of information to the population about prevention and control measures and properly handle crises communication and the strengthening of mechanisms for organization and society active participation, in governments institutions and civil action for prevention and health promotion to avoid the pandemic flu are very constructive to the future work. The Vietnamese expert suggested that disease control and prevention is a shared responsibility between government and the private sector, and that cross border cooperation aimed at improving regional disease status is important, and biosecurity measures appropriate to each individual enterprise can markedly reduce the risk of introduction of a range of AI viruses, and better vaccines against AI are required, especially for ducks. Expert from Malaysia recommended that animal– human health coordination mechanism is an efficient way from their experience, and that preventive measures should be taken in such aspects as the enforcement of import ban, the reduction of smuggling activities, the mproved border control, the inspection and control at the entry points as well as the movement control i.e. movement with permit, and patrol and roadblock for enforcement.

At the end of the seminar, a Joint Statement of Guangzhou Seminar was discussed aiming at the understanding of different scenarios of AF preparedness and response in the APEC region. The Seminar provided an opportunity for participants to share information and advanced experience in food safety management systems, further pushed forwarded the cooperation between China the APEC economies, and has reached the planned objective. It is the common wish that such kind of dialogue will continue in future.

The four section sessions were moderated respectively by Mr. Feng Xueping of China, Dr. Rosa Victoria Gutierrez Castilla of Peru, Prof. Abu Abdullah of the United States of America and Dr. Aaisah Binti Senin of Malaysia. Prof. Guo Lisheng from CIQA of China convened an invited expert meeting prior of the opening session and made close remarks at the final sitting of the Seminar on behalf of the host organization.

Participants thanked the APEC Secretariat for their efficient help and guidance, thanked the China Entry-Exit Inspection and Quarantine Association (CIQA) for their thoughtful arrangement of the meeting, thanked all the speakers for their excellent presentations and thanked all the participants for their active involvement of the event.

The “APEC Seminar on Food Trade Safety to Prevent Avian Influenza” in Guangzhou closed with great success!

2. Basic data

2.1 Relevance

Avian Flu constitutes a severe threat to human security in the world, especially in AF affected region. It also severely affects the food safety and trade. Different APEC economies adopt different measures to prevent and control Avian Flu. The lack of exchanges and cooperation among these different measures may have caused misunderstanding, and sometimes becomes the barriers to the trade of poultry and related food. There is a need for APEC economies to harmonize their actions in avian food trade to achieve regional coherence. The exchange and dialogue on food safety measures in relation to Avian Influenza could ease the misunderstanding, and contribute to facilitate the avian food trade in AF region while protecting human health. Such dialogue and exchange would promote multi-sides cooperation.

It is helpful for China and other APEC economies to play their full effects on regional Avian Influenza prevention and control, and would also strengthen coordination to the cooperation mechanism developed by the quarantine agencies, health department, Avian Trade companies, science research institutions and other interrelated organizations among APEC economies.

The direction is to allow the whole region to take actions together under a unified deployment and pace as a whole. Meanwhile, play each economies' respective advantages, to master the newest knowledge and practice at the seminar to effectively contain the threat of Avian Influenza (AI), best protect people's health and economic order in Asia Pacific region.

This project is based on the summary of the former experiences and best international practices. All the economies are welcome to attend the seminar. The seminar participants are anticipated to discuss and share their successful experiences. Intensive information exchanged in the seminar would definitely help the participants better understand APEC scenarios on AI preparedness, prevention, control, and response in order to help travel and avian trading industry increase rapidly in the APEC areas.

2.2 Objectives

The project will build a platform of exchange and dialogue on food safety related to Avian Influenza in order to enhance the understanding of different scenarios of AI preparedness and response in the APEC region so as to promote healthy travel and avian trading industry. Delegates from different economies will

share the advanced experience in food safety management system and detection technology on exported & imported avian food for better protecting human health. It will promote exchange and cooperation between China and APEC Economies by Introducing Chinese Food Safety Law and its implementing regulations, Avian Food Safety Management System, the import and export

avian food safety management measures, market access issues on Avian food and so on. And other economies will also do the same thing.

In order to further promote the exchange and cooperation between China and APEC other Economies, we are intend to carry out the activities such as seminars, detection technology on Exported& Imported Food policies and regulations in the purpose to strengthen their dialogue in the field of food safety, especially in Human Highly Pathogenic Avian Influenza (HPAI) Containment, enhance the mutual understanding and the APEC region's food safety management, share the advanced management and testing technology, combat illegal trade and jointly take measures to deal with the emergencies. All those activities will promote the sustainable economic development and ensuring human health in APEC region.

2.3 Activity Locations

2.3.1Venue: **The Pearl River Hotel**

No. 2 building, Siyou 1 road,
Yuexiu District, Guangzhou
Phone Number:
Hotel Fax: 86-20-87371473
Email: zmchinese@yeah.net
http://pearlriver.net.8hy.cn/contactsc.html

2.4 Work plan

Preparation Phase: First-Second quarter 2012
Two working groups will be set up (Science technology and seminar preparation)
Design and disseminate the questionnaire to seek comments on contents/topics of the programs mentioned above.
Identify appropriate trainers/experts/speakers to attend the activities fix the exact date and venue and discuss arrangement details with the hosts
Prepare the program agendas
Send announcement on two events and invite speakers and select the participants

Implementation phase: September 2012
To conduct the seminar (4 days).
Collect the evaluation survey of this event
Post seminar phase:
To document the seminar discussion and output
To disseminate the output of the seminar
Analyze the feedbacks of participants, prepare and complete the completion report of the project
Beneficiaries:

- Directly beneficiaries: avian food industry, quarantine agencies
- Ultimate beneficiaries: All APEC member economies

Stakeholders:

- Health quarantine agencies, health department, CDC
- Avian Trade companies, avian Food Industry
- Science research institutions
- Other interrelated organizations among APEC economies

Engagement-multi-sectoral involvement:

- All the economies invited to the seminar. 6 speakers from China, Chinese Taipei, Thailand, USA and Singapore for 4 day seminar, 1 Researcher from Chinese Hong Kong. Chile, China, Indonesia, Malaysia, Mexico, Papua New Guinea, The Philippines, Peru, Russia, Thailand and Viet Nam, 22 persons-2 person/economies from APEC travel eligible economies.
- The seminar participants anticipated to share their experience. After the seminar, the discussion results will be summarized and published on media, also informed to the related governmental departments in the region.

2.5 Agenda of Key Dates Activities

APEC Seminar on Food Trade Safety to Prevent Avian Influenza (APEC S HWG 09 11A)
November 27-30, 2012 Guangzhou, China

DAY 1, Tuesday, November 27

9:00-20:00 Registration
15:30-17:00 Invited expert meeting (18th floor of the main building)
Convener: Prof. Guo Lisheng, Senior Advisor, China Entry-Exit Inspection and Quarantine Association (CIQA)

DAY 2, Wednesday, November 28

9:00-9:40 Opening Ceremony

- Moderator: Mr. Feng Xueping, Deputy Director General, Department of Animal and Plant Qarantine, AQSIQ
- Mr. Ge Zhirong, State Councilor, Member of CPPCC, President of China Entry-Exit Inspection and Quarantine Association (CIQA)
- Mr. Steve Chen, Program Director, APEC Secretariat
- Dr. Nikolay Kravtsov, Adviser, Ministry of Health of the Russian Federation
- Mr. Chen Xiaofan, Deputy Director Guangdong Entry-Exit Inspection and Quarantine Bureau

Taking a photograph together

9:40 – 10:00 Tea/Coffee Break

Section A 10:00 – 12:00

Avian Influenza and its severely negative impacts on human security, food safety, and international trade

- Moderator: Mr. Feng Xueping, Deputy Director General, Department of Animal and Plant Qarantine, AQSIQ
- Mr. Zhang Yanping, Chinese center for disease control and prevention (CDC): Response of Highly Pathogenic Avian Influenza (H5N1) in China
- Prof. Abu Abdullah, Associate Professor of Global Health & Epidemiology, School of Public Health, Florida International University, Miami, USA: Asia's influenza problems
- Prof. Gao Rongbao, Institute of Virology, National Influenza Centre: Avian influenza contamination in environmental samples from 4 different type sites associated with poultry in mainland China

Q & A

12:00 – 14:00 Lunch

Section B 14:00 – 17:45

Different measures and methods taken by various APEC Economies to prevent and control avian flu

- Moderator: Ms. Rosa Victoria Gutierrez Castilla, Direcorate General of Environmental Health (DIGESA), Peru
- Dr. He Hongxuan, National Research Center for Wildlife Born Disease SFA-CAS Institute of Zoology, Chinese academy of sciences: Control of Highly Pathogenic Avian Influenza in Wild Birds of China
- Ms. Ivina Natalia, The Bureau of Food Safety and Food Quality, Russia: Prevention and control measures taken by Russian Federation in response to the outbreak of avian flu
- Mr. Qin Zhifeng, Shenzhen Entry-Exit Inspection and Quarantine Bureau : Prevention and control of AF in trade of live-birds among APEC economies
- Q & A

18:00-20:00 Evening Banquet

Moderated by Mr. Duan Xiaohong, Deputy Secretary General of CIQA

Li Qingxiang, Deputy Director of Guangdong Entry-Exit Inspection and Quarantine Bureau

DAY 3, Thursday, November 29

Section C 9:00 – 12:00

Misunderstandings on measures leading to mistrust between economies and barriers to trade of poultry and other related food products

- Moderator: Prof. Abu Abdullah Associate Professor, Florida International University, Miami, USA
- Ms. Rosa Victoria Gutierrez Castilla, Direcorate General of Environmental Health (DIGESA), Peru：“ Steps Peru has taken to combat distrust”
- Ms. Trinh Thi Ngoc Linh, Official in charge of Trade and Health, International Cooperation Department, Ministry of Health , Vietnam: Avian Influenza and Pandemic: Vietnam's Experience and Challenge
- Dr. Aaisah Binti Senin, Disease Control Division, Ministry of Health Malaysia: Outbreaks of avian flu in Malaysia and measures taken for prevention and control

  Q & A

12:00 – 14:00 Lunch

Section D 14:00 – 17:45
Recommendations on common actions and methods on prevention and control of avian flu for achieving the trust

- Moderator: Dr. Aaisah Binti Senin, Disease Control Division , Ministry of Health, Malaysia
- Dr. Liao Ming, Vice President of Huanan University of Agriculture: Poultry Avian Flu Prevention and Control in China
- Prof. Abu Abdullah, Associate Professor of Global Health & Epidemiology, School of Public Health, Florida International University, Miami, USA：Public health issues and approaches to combat avian influenza
- Mr. Lin Zhixiong, Guangdong Entry-Exit Inspection and Quarantine Bureau : Control of Avian Disease in Poultry Supplied to Hongkong and Macau
- Ms. Trinh Thi Ngoc Linh, International Cooperation Department, Ministry of Health, Vietnam: Avian Influenza (H5N1) Prevention and Control Viet Nam

  Q & A

DAY 4, Friday, November 30

9:00 – 12:00 Technical visit

Guangdong Entry-Exit Inspection and Quarantine Bureau, technology center of Avian Influenza Laboratory
Visit and discuss
12:00 – 14:00 Lunch

Section E 14:00 – 16:00
Output of Seminar

- Moderator: Dr. Nikolay Kravtsov - MD. PhD Adviser, Department for International Cooperation and PR APEC HWG Chair's special assistant | APEC HWG Chair's office, Ministry of Health of the Russian Federation
- Discussion and approval of a "Joint Declaration of Guangzhou Seminar"
- Closing Remarks

2.6 Participant Economies

1	**Peru**	**Ms.**	**ROSA VICTORIA GUTIERREZ CASTILLA**	**VETERINARIAN - ZOONOSES AREA**	**DIRECTORATE GENERAL OF ENVIRONMENTAL HEALTH (DIGESA) – MINISTRY OF HEALTH (MINSA)**
2	**Peru**	**Ms.**	**Susalen Maria Tang Flores**	**Executive Director of Basic Sanitation**	**Environmental Health Directorate- Ministry of Health**
3	**Russia**	**Ms.**	**Ivina Natalia**	**Chief of the Unit of International Cooperation**	**The Bureau of Food Safety and Food Quality**
4	**Russia**	**Mr.**	**Nikolay Kravtsov**	**Adviser**	**Ministry of Health**
5	**Malaysia**	**Ms.**	**Aaisah Binti Senin**	**Senior Principle Assistant Director Public Health Medicine Specialist**	**Ministry of Health Malaysia Federal Government Administrative Centre**
6	**Vietnam**	**Ms.**	**Trinh Thi Ngoc Linh**	**The official in charge of Trade and Health, APEC**	**The International Cooperation Department Ministry of Health of Vietnam**
7	**Vietnam**	**Mr.**	**Dang Tran Kien**	**Official of Division of Certification**	**The National Institute of Food Control, MOH Vietnam**

8	**Indonesia**	**Mrs.**	**Novinar**	**Dra.M.Epid, Directorate of Food Safety Surveillance & Extension**	**National Agency for Drug and Food Control (NADFC)**
9	**Malaysia**	**Mr.**	**Mazlan Bin Isa**		**Food Safety and Qualitidivision, Ministry of Health**
10	**China**	**Mr.**	**Liao Ming**	**The ministry of agriculture bird flu prevention and control group deputy leader**	**South China Agricultural University**
11	**China**	**Mr.**	**Zhang Yanping**	**New disease office director**	**China CDC**
12	**Philippines**	**Ms.**	**REMEDIOS B. VARON**	**Food-Drug Regulation Officer III**	**the Food and Drug Administration**
13	**Philippines**	**Ms.**	**Vikki Carr delos Reyes**	**Medical Specialist III**	**National Epidemiology Center**
14	**USA**	**Mr.**	**Abu Abdullah**	**Associate Professor of Global Health & Epidemiology**	**School of Public Health, Florida International University, Miami, USA**
15	**China**	**Mr.**	**He Hongxuan**	**Animal epidemic group leader**	**The Chinese academy of sciences institute of animal**
16	**China**	**Mr.**	**Gao Rongbao**	**Assistant Research**	**The National Center for influenza virus**
17	**China**	**Mr.**	**Qin Zhifeng**	**Vice Director**	**Shenzhen Entry-Exit Inspection and Quarantine Bureau**
18	**China**	**Mr.**	**Lin Zhixiong**	**Vice Director**	**Guangdong Entry-Exit Inspection and Quarantine Bureau**

Some experts/speakers photo together:

3. Lectures

3.1 Response of Highly Pathogenic Avian Influenza (H5N1) in China, by Zhang Yanping (Chinese center for disease control and prevention)

3.2 Avian Influenza: Asia's public health problem, by Abu Abdullah MD., MPH., PhD. (School of Public Health Florida International University & Department of Medicine Boston Medical Center, Boston)

3.3 The surveillance of HPAIV and the serology of occupation exposure population，by Rongbao Gao (WHO CC. National influenza center, National institute for viral diseases control and prevention China CDC)

3.4 Control of Highly Pathogenic Avian Influenza in Wild Birds of China, by He Hongxuan (National Research Center for Wildlife Born Diseases SFA-CAS Institute of Zoology, Chinese Academy of Scie)

3.5 Russia outbreaks of avian flu, by Ms. Ivina Natalia (The Bureau of Food Safety and Food Quality, Russia)

3.6 Prevent & control of AIV for live poultry between APEC members, by Dr.Qin Z F (Shenzhen entry-exit inspection & quarantine bureau of.R.China)

3.7 Steps Peru has taken to combat distrust, by Ms. Rosa Victoria Gutierrez Castilla (DIGESA, Peru)

3.8 vian Influenza and Pandemic: Vietnam's Experience & Challenge, by MD. Trinh Thi Ngoc Linh, (MOH Viet Nam)

3.9 MALAYSIA - Experience Outbreaks of avian flu in Malaysia and measures taken for prevention and control, by Dr Aaisah Senin (Disease Control Division Ministry of Health Malaysia)

3.10 Public Health Issues and Approaches to Combat Avian Influenza, by Abu Abdullah MD., MPH., PhD. (School of Public Health Florida International University & Department of Medicine Boston Medical Center, Boston)

3.11 Control of Avian Disease in Poultry Supplied to Hong Kong and Macau, by Lin Z X (Guangdong Entry/Exit Inspection and Quarantine Bureau)

3.12 Vietnam Influenza prevention & control, by MD. Trinh Thi Ngoc Linh (The International Cooperation Department Ministry of Health, Viet Nam)

Response of Highly Pathogenic Avian Influenza (H5N1) in China

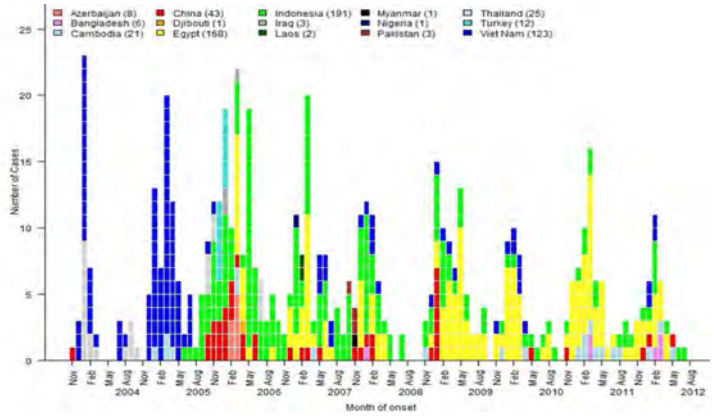
Zhang Yanping

Chinese center for disease control and prevention

December 28,2012，Guangzhou

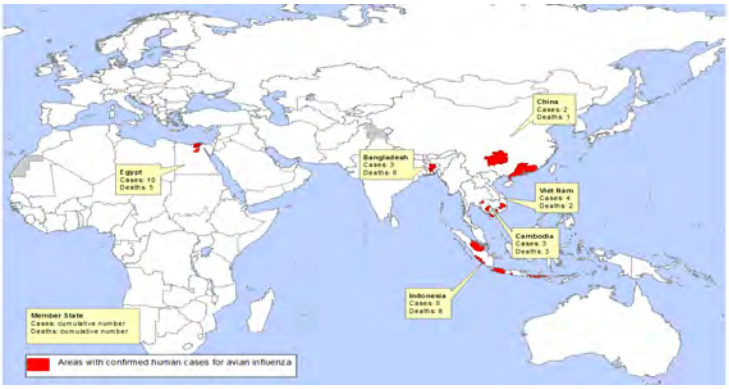
Number of HPAI (H5N1) cases in the whole world

（As of November 13, 2012）



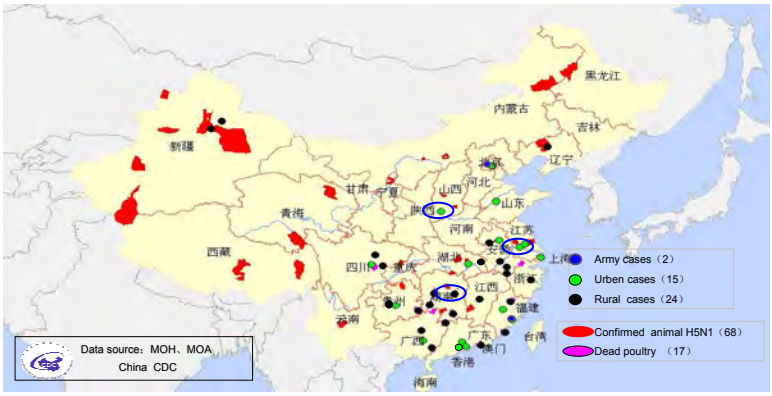
Number of HPAI (H5N1) cases in the whole world in 2012

（As of November 13, 2012）



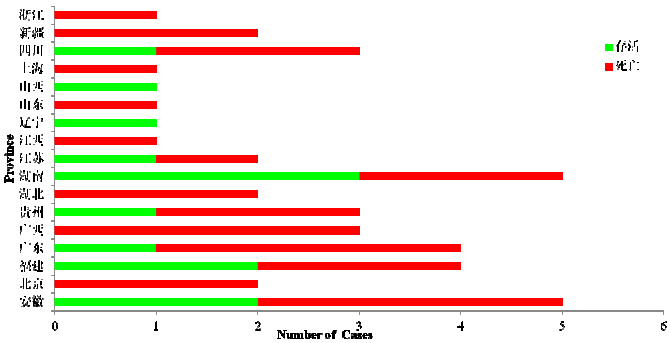
Geography distribution of HPAI(H5N1) cases in mainland of China

（ As of November 26, 2012, N=41 ）



Distribution of HPAI(H5N1) cases in mainland of China

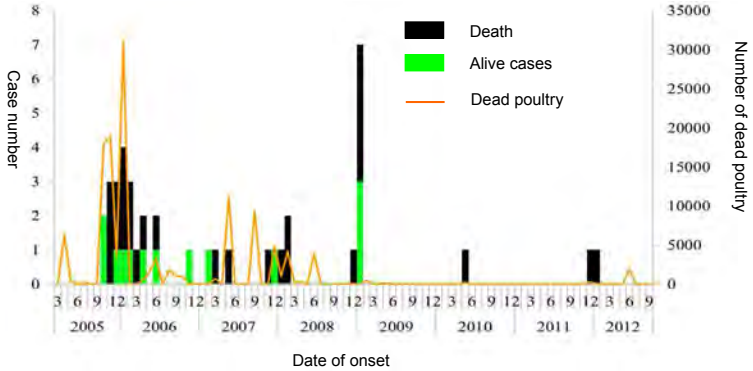
（As of November 26, 2012, N=41）



17 provinces, 41 cases, 28 dead

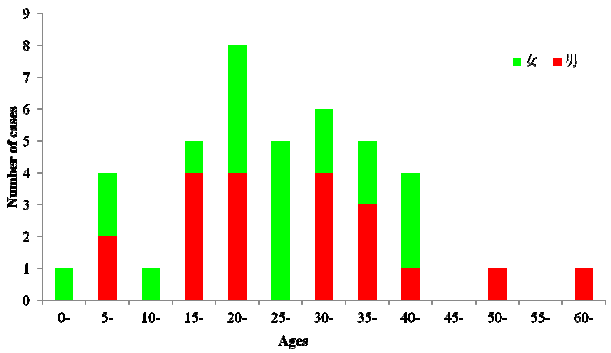
Epidemic curve of HPAI(H5N1) in mainland of China

（As of November 26, 2012, N=41）



Age distribution of HPAI(H5N1) in China mainland

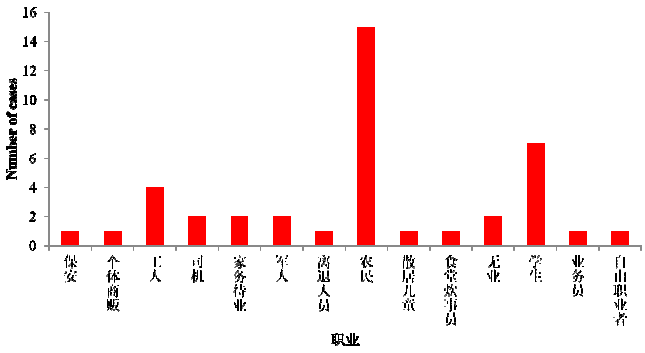
(As of November 26, 2012, N=41)



Among 41 cases, female 21, male 20

Occupation distribution of HPAI (H5N1) in China mainland

(As of November 26, 2012, N=41)



Epidemiological characteristics of HPAI (H51N1) in mainland of China

- Residence: 23 cases (58%) of rural cases; 17 cases (42%) of urban cases
- Exposure: 20 patients (50%) of contact with sick or dead poultry; 11 cases (28%)
- went to live poultry market; 3 patients (7%) contact with live birds; 4 cases (10%)
- without a clear history of exposure to poultry
- Each age group people could be infected
- Most of cases occur in south province of China
- Mortality up to 68.30%

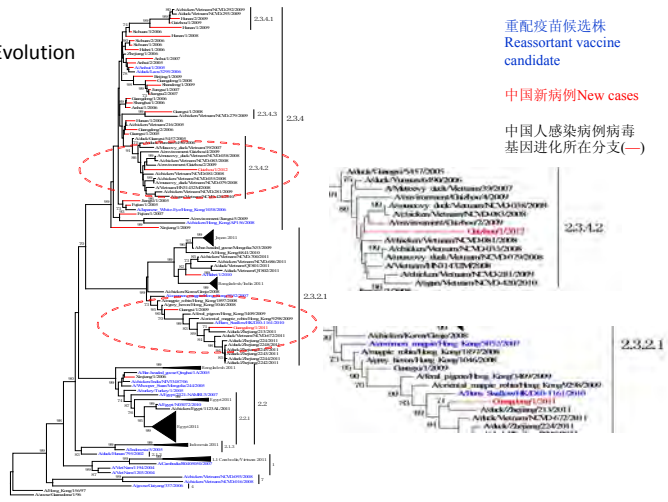
Characteristics of HPAI (H51N1) virus

- More than 29 viruses isolated from 37 human cases in mainland China since 2005 ;7 viruses isolated from 8 human cases in mainland China in 2009
- 29 viruses formed in 3 distinct sublineages, Xinjiang/1/2006 belonged to clade 2.2; Guangxi/1/2009 belonged to clade 2.3.2; the rest belonged to clade 2.3.4.
- All Viruses contained the motif of multiple basic amino acids at the HA cleavage site characteristic of HPAI HA
- All viruses had H274 at NA protein, which predicted to be sensitive to oseltamivir
- Majority of viruses have residues indicating sensitivity to amantadine
- Reassortment with prevailing human influenza A virus was not found
- Virus isolated from environmental samples was highly homologous with virus isolated from human cases

Character of HPAI H5N1 cases in 2011-2012

- 2 HPAI H5N1 confirmed cases were reported in China mainland since January ,2011
  - Among these, Guizhou case occurred in 2012 is Male，39，live in Guiyang city.
    - January 6 got ill and died in January 22.
    - Before onset ,the case have been to live-avian market
    - The virus is similar to A/Zhejiang/1/2006 and A/Sichuan/2/2006
- Both virus were sensitive to oseltamivir and amantadine;
- Two virus belonged to clade 2.3.2.1 and clade 2.3.4.2,separately

Gene Evolution



Response strategy of HPAI H5N1

- To formulate and issue the "highly pathogenic avian influenza response plan"
- To revise the unexplained pneumonia monitoring system
- To train the staffs of CDCs
- To strengthen laboratory capacity
- To establish the inter-departmental communication and liaison mechanism with the agricultural sector, etc
- To produce and store HPAI H5N1 vaccine
  - An Inactivated adjuvant whole-virion influenza A(H5N1) vaccine
  - A split influenza A(H5N1) vaccine
- International cooperation and communication

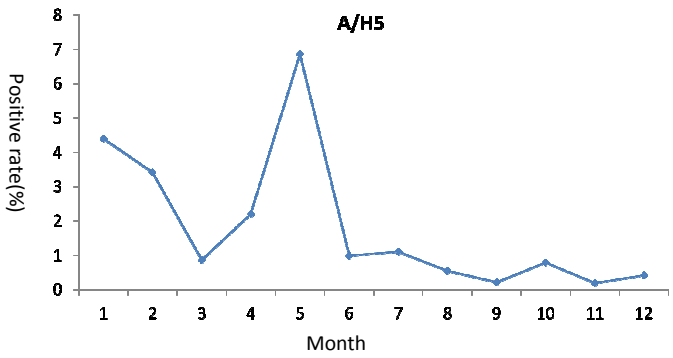
Surveillance system of HPAI H5N1 in China

- Internet-based notifiable infectious diseases reporting system
- Influenza laboratory surveillance net
- Pneumonia with unknown cause reporting system
  - Implementation Plan for National Surveillance on Pneumonia with Unknown Cause (2004)
  - Implementation Plan for National Surveillance, Diagnosis and Treatment Guidance for Pneumonia with unknown cause (2007)
  - Case report、laboratory diagnosis
- Emergency Surveillance
  - After animal or human AI epidemic situations, the corresponding regions should carry out surveillance ILI cases and close contacts
  - (Emergency Surveillance Plan for Human Avian Influenza Infection)
- Environment sample surveillance
- Serological surveillance

Isolation result of HPAI(H5N1) virus in environment sample relate to poultry

- NIC make investigation of influenza antigen and antibody in the whole China Support by MOH
- The sample were collected from live poultry market, poultry slaughterhouse , wild migratory birds habitat and so on
- Some HPAI H5N1 virus were isolated from 13 provinces

Test result of H5N1 antigen of environment sample



Serum antibody surveillance of occupational groups

- The National Influenza Center of China CDC provide detection reagents to the local CDC including provincial CDC and so on
- Local CDC report the test results to NIC
- So far, the National Influenza Center received a total of over 40,000 of serum samples
- H5N1 antibody were found in several serum sample of occupational groups collected by the National Influenza Center before March 2012

Suggestions

- To reduce the opportunities of people exposed to the avian influenza virus
- To improve Pneumonia with unknown cause reporting system
- In addition to the avian flu, other animal influenza surveillance should be strengthen
  - To carry out drug resistance monitoring of the new swine flu virus
  - The swine flu virus serological cross-protection test with current Vaccination should be carry out
  - To carry out the detection of swine virus in Human Influenza Surveillance Network
- To strengthen cooperation with the agricultural department , special in animal influenza surveillance and sharing strains
- Strengthen capacity establishment of laboratory and training of staffs

Thank you for your attention

Avian Influenza: Asia's public health problem

Abu Abdullah MD., MPH., PhD.
School of Public Health
Florida International University
&
Department of Medicine
Boston Medical Center, Boston

APEC Summit on Food Trade Safety to Prevent Avian Influenza
November 27-30, 2012 Guangzhou, China

Overview

- Organism
- History
- Economic impact
- Asia's problem – a situation analyses

What is influenza?

- An acute respiratory illness resulting from infection with an influenza virus
- Highly infectious and can spread rapidly from person to person
- Some strains cause more severe illness than others

Types of influenza viruses

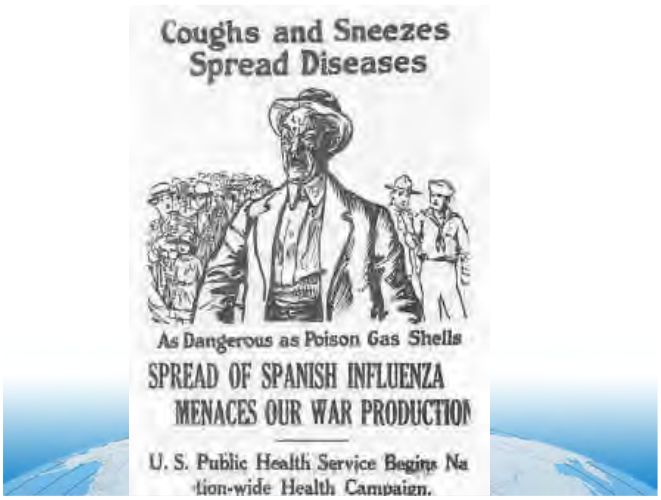
- Influenza viruses are divided into three main types: influenza A, B, and C
- **A** viruses – infect birds and other animals, as well as humans
- **A** viruses – source of seasonal influenza epidemics and all pandemics
- **B** and **C** viruses – infect humans only and do not cause pandemics

Influenza symptoms

- Sudden onset
- Fever, headache, muscle aches, severe weakness
- Respiratory symptoms, e.g., cough, sore throat, difficulty breathing

How influenza spreads

- Spreads easily from person to person through coughing and sneezing
- Transmitted by:
  - inhaling respiratory aerosols containing the virus, produced when infected person talks, coughs, or sneezes
  - touching an infected person or an item contaminated with the virus and then touching your eyes, nose, or mouth



History of influenza

- 412 BC - first mentioned by Hippocrates
- 1580 - first pandemic described
- 1580-1900 - 28 pandemics

Influenza Pandemics 20th Century



Credit: US National Museum of Health and Medicine

1918: "Spanish Flu" A(H1N1)
20-40 million deaths

1957: "Asian Flu" A(H2N2)
1-4 million deaths

1968: "Hong Kong Flu" A(H3N2)
1-4 million deaths

10 CDC

Pandemics & Pandemic Alerts 19th, 20th & 21st Centuries

- Historical accounts
- 1891-92 H3
- **1918-19 "Spanish flu" H1N1**
- **1957 "Asian flu" H2N2**
- **1968 "Hong Kong flu" H3N2**
- 1976 Fort Dix "Swine flu" episode
- 1977 "Russian Flu" H1N1
- 1997 Avian influenza A (H5N1)
- 2004-05 Avian influenza A (H5N1)

11 CDC

Mortality Comparisons

	# DEATHS
World War II	50 million
1918 Flu Epidemic	20-40 million
World War I	15 million
Ebola	1000- 2000
SARS	774

12 CDC

1918 Influenza Pandemic

- Outbreaks reported worldwide within 6 months
- Over 20% of the world's population infected
- 20-40 million deaths worldwide
- Most deaths occurred among 25-40 year olds

13

Lessons from past pandemics

- Occur unpredictably, not always in winter
- Great variations in mortality, severity of illness, and pattern of illness or age most severely affected
- Rapid surge in number of cases over brief period of time, often measured in weeks
- Tend to occur in waves of 6 - 8 weeks, subsequent waves may be more or less severe

Key lesson – unpredictability

What could happen during an influenza pandemic?

- In the United States, up to 1.9 million people could die, up to 9.9 million could be hospitalized, and up to 90 million could become ill
- Intense pressure on healthcare
- Disruption to many aspects of daily life

Emergency hospital, Camp Funston, Kansas 1918
Courtesy of National Museum of Health and Medicine

Economic Impact

- Direct losses:
  - Depopulation and disposal
  - High morbidity and mortality
  - Quarantine and surveillance
  - Indemnities
- 1978-1996: Seasonal outbreaks in Minnesota cost taxpayers $22 million

Center for Food Security and Public Health, Iowa State University, 2008

Economic Impact

- 1983: U.S. outbreak (H5N2)
  - $65 million in losses
  - Destruction of 17 million birds
  - 30% increase in egg prices
- 1999-2000: Italy outbreak (H7N1)
  - $100 million in compensation to farmers
  - 18 million birds destroyed
  - Indirect losses of $500 million

Center for Food Security and Public Health, Iowa State University, 2008

Economic Impact

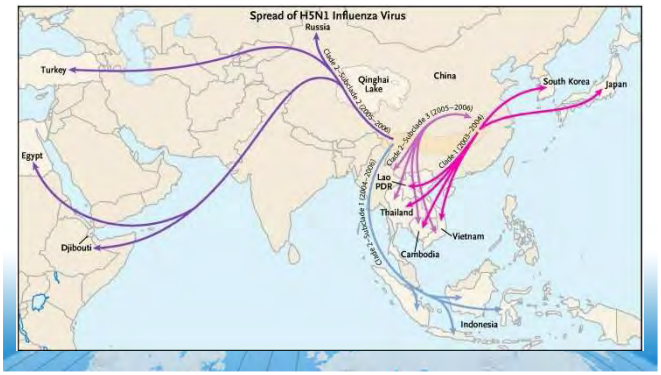
- 1997: Hong Kong outbreak (H5N1)
  - $13 million for depopulation and indemnities
  - 1.4 million birds
- 2001: Hong Kong outbreak (H5N1)
  - 1.2 million birds
  - $3.8 million
- 2003: European outbreak (H7N7)
  - 30 million birds destroyed
  - $314 million

Center for Food Security and Public Health, Iowa State University, 2008

Is avian influenza a public health threat in Asia?

21

Global Spread of Influenza A H5N1 since 2005



An ecosystem favouring the interaction of viruses

- Dense population
  (China: 70% of world's land supports 23% of world's population)
- Ducks in rice paddy
- Chickens, geese and pigs farmed together
- *Rate of isolation* of viruses *same* in *urban* and *rural* ducks

23

South China: The epicentre for influenza pandemics (Gene swapping South China style)

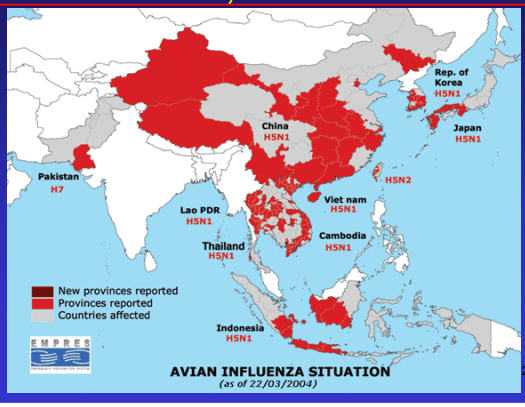
December 26, 1997

The new epidemics of avian diseases

- 1996 H7 "Avian conjunctivitis"
  1997 H5N1 "Avian flu", 18 cases; 6 deaths slaughter of chickens
  1999 H9N2 2 cases age 13y, 4m both recovered H5N1 in chickens slaughter of poultry
  2003 H5N1 "Bird flu" 2 cases/deaths
  2004 H5N1 "Avian flu"ASEAN pandemic
  ~ todate More cases …….

25

Avian Influenza Poultry Outbreaks, Asia, 2003-04



26

Priority: Human Health


Virus kills Vietnamese girl

Eight-year-old is fifth victim as fears rise over epidemic

27

H5N1-infected duckling
Ha Nam Province, Vietnam

T. Tumpey, CDC

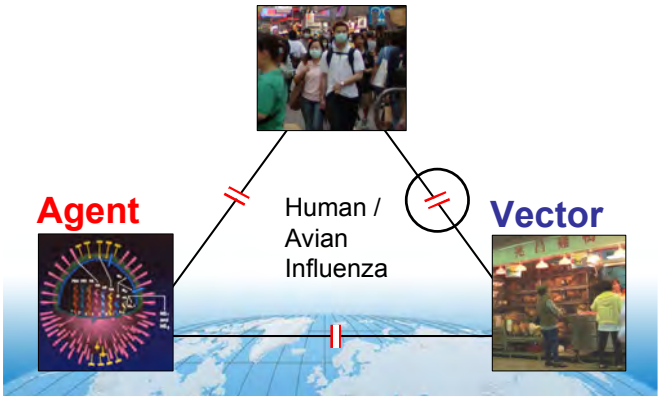
28

Unprotected disposal of chickens potentially infected with H5N1, Thailand, February 2004

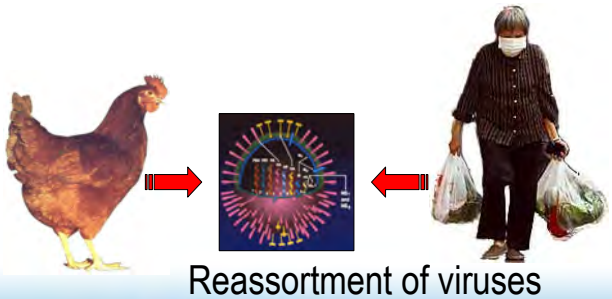
29

The Public Health Approach

Host



Avian and human influenza: What is the hazard to the community?



Reassortment of viruses

Mixing of avian and human influenza viruses with exchange of genetic material carries the risk of evolution of a highly pathogenic influenza virus

What is the *risk* of an epidemic with a new highly pathogenic influenza virus?

How many contacts with live chickens per year?

18.12 Average no. of live chickens purchased per household

×

2.05M No. of households in Hong Kong

×

9.36% Proportion who touch chickens before buying

= **3.48M person-chicken contacts per year**

THE NEWSPAPER YOU CAN TRUST

Bangkok Post

TUESDAY, JANUARY 27, 2004 • 20 BAHT

AMBULANCE CBU (Imported) Based on Mercedes Benz. Highest standards of hygiene. From 2.2 m to 27 Mil. Baht

BIRD FLU CRISIS

Boy, 6, first confirmed death

5 more likely victims; flu in 8 new provinces

Farm pigs can also pass on flu virus

The politics of infectious disease

What they said:

January 14

Agriculture Minister Somsak Thepsuthin: "There has never been an outbreak of bird flu in Thailand. We have a programme that calls for regular checks of poultry farms to control diseases."

Somsak

Deputy Agriculture Minister Newin Chidchob: "Not a single case of bird flu was found." Newin added that "certain trade competitors" had been spreading rumours about the bird flu in order to undermine Thailand's status as a major poultry exporter.

January 16

Newin: "Legal action is inevitable to prevent people with incorrect information [about the bird-flu outbreak] from causing further damage to the country." He added that those "spreading the rumour" were "irresponsible to their motherland".

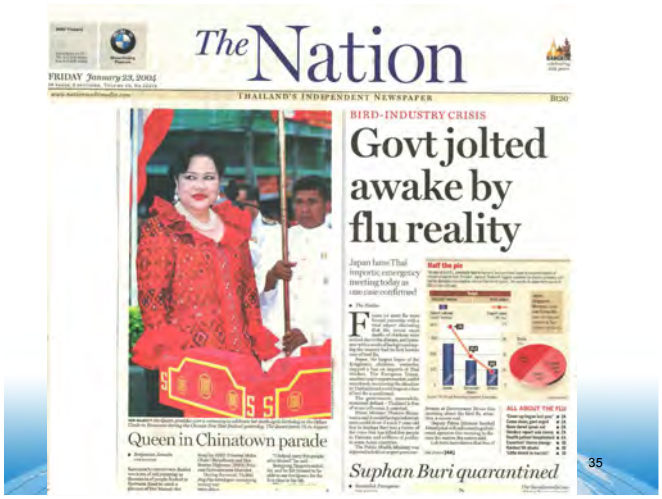
Newin

Livestock Department director-general Yukol Limlamthong: "Because the weather changed quickly this year, the chickens became weaker . . . Rather than just fowl cholera alone, the addition of infectious bronchitis puts two forces in the picture. So there may be an abnormally high number of deaths."

January 17

Prime Minister Thaksin Shinawatra: "Exaggeration will damage the country's poultry exports and leave chicken farmers and workers in the field to suffer." Thaksin made the comment after declaring in a radio address that the World Health Organisation had determined there was no bird flu in Thailand. He went on to say, "We have taken very strict measures to control the outbreak. We can control the situation. Please do not worry!"

Thaksin



The Nation

FRIDAY January 23, 2004

THAILAND'S INDEPENDENT NEWSPAPER

BIRD-INDUSTRY CRISIS

Govt jolted awake by flu reality

Queen in Chinatown parade

Suphan Buri quarantined

35

The Nation Tuesday, January 27, 2004

Business

INSIDE

Street WISE

GE promotes Thai executive

BIRD-FLU OUTBREAK

Threat of mass layoffs

Big exporters need epidemic contained within 3 months

Crisis will hurt many sectors, analysts say

Sitting on a time-bomb

South China farms ever ripe for pandemic

JONATHAN ANSFIELD
Nanzhencun, China, Reuters

??

How should we tackle all the relevant issues to combat Avian influenza?

Thank you!

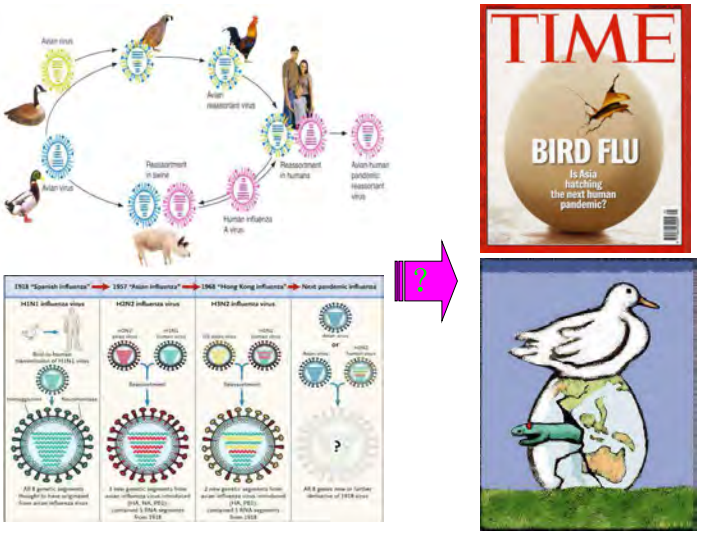
The surveillance of HPAIV and the serology of occupation exposure population
环境高致病性禽流感监测和职业暴露人群血清学

Rongbao Gao

WHO CC. National influenza center,
National institute for viral diseases
control and prevention China CDC

2012-11-27

Email: gaorongbao@cnic.org.cn



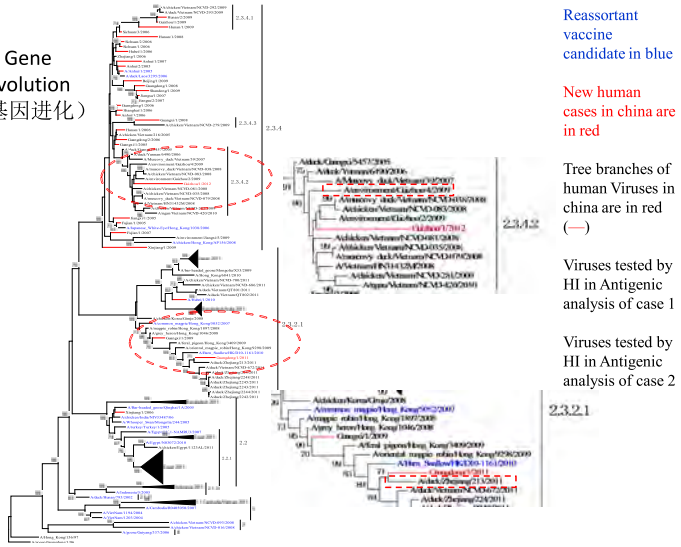
HPAIV H5N1 epidemic
（高致病性禽流感病毒H5N1区域流行）

- Human infections with highly pathogenic avian influenza (HPAI) strains of subtype H5N1 since the first outbreak in 1997 have also been reported in several countries. During the passed decades, the virus has presented epidemic in birds in countries of east-south Asia, Europe and Africa. (1997年HPAIV H5N1被发现感染人类以来，过去的10多年内HPAIV H5N1已经证实在东南亚、欧洲和非洲等多个地域的禽类中出现连续流行并造成多次禽类疫情的爆发和多国家人群的散发感染)
- At present, 608 H5N1 human cases with 359 deaths have been reported in the world. And 30 cases with 19 deaths were confirmed in 2012. (目前为止，全球共报道H5N1感染病例608例，其中359例死亡，2012年全球报道病例30例，29例死亡）

Etiology of the confirmed case in mainland China during 2011-2012
(2011-2012中国大陆确诊病例的病原学特征）

- Two cases have been confirmed in mainland china since 2011 (2011年至今大陆共确诊病例2例）；
- Genomic sequence show the H5N1 viruses is highly pathogenic， avian origin , sensitive on neuraminidase inhibitor (Tamiflu) or Adamantane. (基因组序列显示两株病毒均为高致病性禽源流感病毒病毒，病毒对神经氨酸酶抑制剂（达菲）和烷胺类药物敏感)；
- Gene evolution locates at Clade 2.3.2.1 and clade 2.3.4.2, respectively. (基因进化显示两株病毒分别位于 Clade 2.3.2.1和 clade 2.3.4.2)；
- Antigen analysis (抗原分析）

Gene evolution
（基因进化）



Reassortant vaccine candidate in blue

New human cases in china are in red

Tree branches of human Viruses in china are in red (—)

Viruses tested by HI in Antigenic analysis of case 1

Viruses tested by HI in Antigenic analysis of case 2

Antigen analysis（1%HRBC HI）

Reference antigen	Clade	Reference Ferret Antisera	
		A/Anhui/1/2005	A/Hubei/1/2010
A/Indonesia/05/05 (CDC-RG2)	2.1	640	320
A/Xinjiang/1/2006	2.2	640	320
A/Anhui/1/2005	2.3.4	640	80
A/Guangxi/1/2009	2.3.2.1	160	1280
A/Hubei/1/2010	2.3.2.1	640	640
A/Guangdong/1/2011	2.3.2.1	**80**	**80**

Antigen analysis （1%HRBC HI）

Reference Antigen	Clade	Reference Ferret Antisera			
		A/AH/1/2005 NIC	A/AH/1/2005 USCDC	A/JX/1/2005 USCDC	A/En/JX/5/2009 NIC
A/Anhui/1/2005	2.3.4	**640**	2560	2560	160
A/Jiangxi/1/2005	2.3.4	640	2560	2560	320
A/Enviroment/Jiangxi/5/2009	2.3.4	80	640	640	2560
A/Guizhou/1/2009	2.3.4.1	320	2560	2560	320
A/Enviroment/Guizhou/2/2009	2.3.4.2	640	2560	2560	320
A/Guizhou/1/2012	2.3.4.2	**320**	**1280**	**1280**	**320**

Transmission of avian influenza virus to hunman

近年来人感染禽流感病毒病例

病毒亚型	病禽来源	时间/国家	病例数/临床表现
A/H7N7	鹅	1980/英国	3/结膜炎
A/H7N7	鸭	1996/英国	1/结膜炎
A/H5N1	禽	1997/香港	18/ILI，肺炎
A/H9N2	鸡	1998/中国广东	5/ ILI，肺炎
A/H9N2	禽	1999/香港	2/ILI
A/H7N2	禽	2002/北美（Virginia）	1/ILI，血清学诊断
A/H9N2	禽	2003/香港	1/ILI
A/H5N1	禽	2003/香港	2/ ILI，肺炎
A/H7N7 (NL/219, NL/230)	禽	2003/荷兰	89/结膜炎、ILI、肺炎; 1名死亡病例
A/H5N1	禽	2003至今, 15个国家	602/ ILI, 肺炎
A/H7N2(NY/107)	来源不清	2003/北美(New York)，	1/肺炎
A/H7N3 (Can/504,Can/444)	禽	2004/加拿大	2/结膜炎、ILI; 1名感染LPAI; 1名感染HPAI
A/H5N2	禽	2005/日本(Ibaraki)	13/无临床症状，血清学诊断
A/H7N2	禽	2007/英国(Wales)	1/结膜炎、ILI
A/H9N2	来源不清	2007/香港	1/ ILI
A/H10N7	鸭	2004/埃及(Ismaillia)	2/ ILI
A/H10N7	来源于疫区的鸟	2010/澳大利亚	7/上呼吸道感染症状，结膜炎

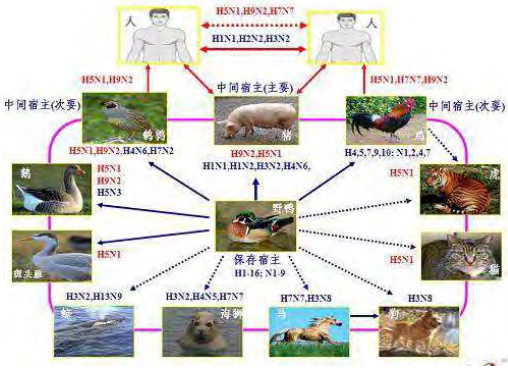
Table 2 Demographic characteristics and exposures of 20 urban and rural patients with human influenza A (H5N1) in China.

Characteristic	Urban patients (n = 10)	Rural patients (n = 10)	p=
Age, years			
Median (range)	39 (10–52)	25 (6–62)	443
5–14	0 (0)	5 (50)	132
15–59	10 (100)	12 (67)	
≥60	0 (0)	1 (5)	
Female sex	3 (30)	12 (67)	114
Highest level of education			
Illiterate	0 (0)	3 (17)	.008
Primary school	0 (0)	8 (44)	
Junior high school	5 (50)	4 (22)	
High school	2 (20)	3 (17)	
College or higher	3 (30)	0 (0)	
Annual household income, RMB*			
<2000	0 (0)	9 (53)	<.001
2000–4999	1 (10)	7 (41)	
5000–10,000	3 (30)	1 (6)	
>10,000	6 (60)	0 (0)	
Travel history*	3 (30)	1 (6)	116
Occupational poultry exposure*	1 (10)	3 (17)	> .99
Household with backyard poultry	0 (0)	15 (83)	<.001
Exposure to healthy-appearing poultry*	16 (100)	17 (94)	> .99
Exposure to sick and/or dead poultry*	1 (10)	14 (78)	.001
Visited a wet poultry market	10 (100)	7 (39)	.002
Raised animals in home*	1 (10)	14 (78)	.001
Lack of indoor water source*	0 (0)	14 (78)	<.001
Exposed to persons with fever and respiratory symptoms	0 (0)	1 (6)*	> .99
Exposed to a person with confirmed influenza H5N1	1 (10)	0 (0)	.357

Indications that Live Poultry Markets Are a Major Source of Human H5N1 Influenza Virus Infection in China†

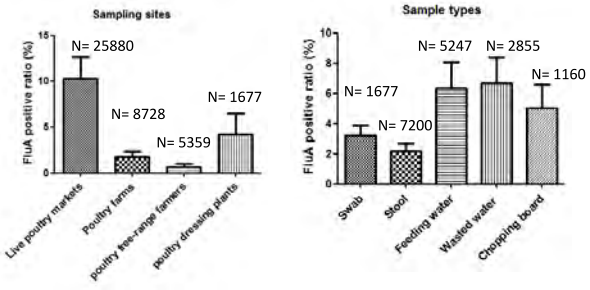
Zhou et al.Risk Factors for Human Illness with Avian Influenza A (H5N1) Virus Infection in China. JID 2009:199 (15 June)

Surveillance on environment associated with live poultry
(活禽相关环境的监测）

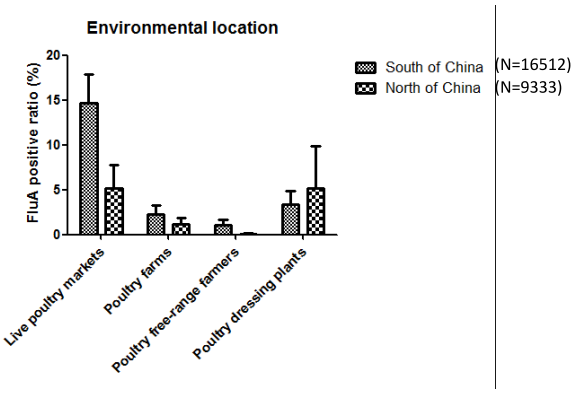


- Previous influenza pandemics originated from influenza viruses of birds. Avian influenza virus (AIV) in domestic poultry constitutes an important reservoir and source of infection for human infection.（已发生的流感大流行都是源自禽的流感病毒，而家禽是禽流感病毒的一个重要储存宿主和人类感染源。）
- The environment associated with live poultry provides an optimal opportunity for human's contacting with live animals and the zoonotic tranfer.（活禽相关的环境为人与动物以及人兽共患病的转播提供了接触机会）
- Surveillance on avian influenza in environmental associated with live poultry would play crucial role to make evidence based management or preparedness, or to gain an understanding of environmental drivers of infection.（对于活禽相关环境中禽流感的监测将为管理及应对策略的制定、理解环境在病毒传播中的驱动作用等发挥重要作用）

Avian influenza positive rate in different sampling sites or sample types
（不同采样点或样本中禽流感检测阳性率）



The comparison of FluA positive rate between south of China and north of China
（中国南北方甲型流感阳性率比较）



H5N1

Clade 2.3.4

2009~2010

2011~2012

— 中国大陆人感染分离株

▲ 烷胺类药物耐药株

H5N1

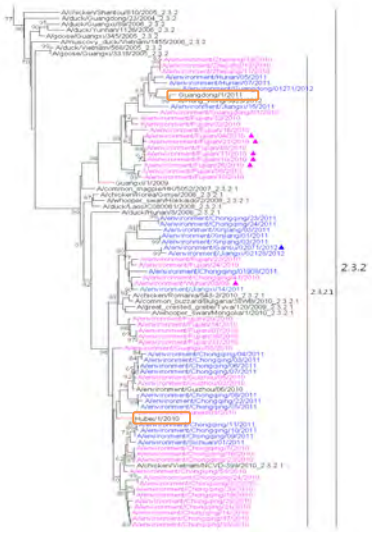
Clade 2.3.2

2009~2010

2011~2012

— 中国大陆人感染分离株

▲ 烷胺类药物耐药株



H5N1

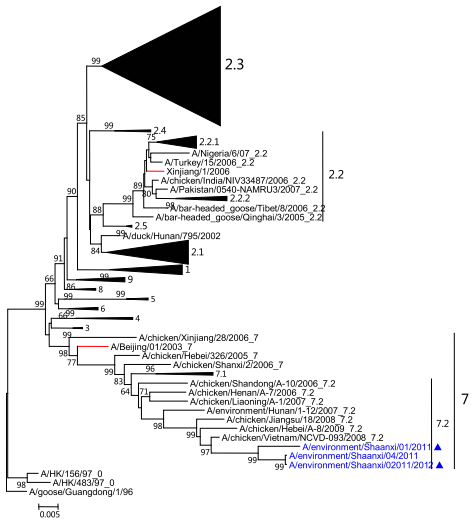
Clade 7

2009~2010

2011~2012

— 中国大陆人感染分离株

▲ 烷胺类药物耐药株



H5N1 Serology surveillance on population of poultry workers

Antigen	Clade	Sample No.	Positive No.(‰)
AH05	2.3.4	29020	5(0. 17)
XJ06	2.2	26355	4(0.15)
HB10	2.3.2.1	23049	1(0.04)

Summary

- Avian influenza virus is frequently contaminated in environment associated with live poultry, especially in live poultry markets. (活禽相关特别是活禽市场的环境存在被禽流感病毒频繁污染）；
- Some stuffs such as wasted water of washing poultry should be treated properly before discharging (环境物如洗禽污水在丢弃前应该做适当的处理）
- Silent or subclinical H5N1 infection is rare in poultry worker in China (职业人群中隐形或亚临床H5N1感染是稀少的）

Thank you for
Your attention !

APEC Seminar on "Food Trade Safety to Prevent Avian Influenza"

Control of Highly Pathogenic Avian Influenza in Wild Birds of China
中国野生鸟类高致病性禽流感防控

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National Research Center for Wildlife Born Diseases SFA-CAS Institute of Zoology, Chinese Academy of Sciences
国家野生动物疫病中心 中国科学院动物研究所

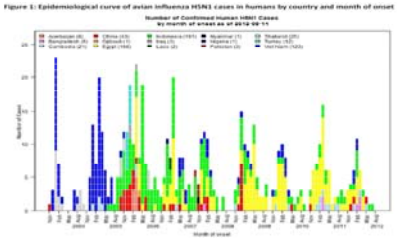
Outline

- Epidemic Status
  疫情形势
- Wild Birds and HPAI
  野鸟和高致病性禽流感
- Control Strategies
  防控策略

一、疫情形势

Epidemic Status

Human Infection with H5N1
人感染高致病性禽流感疫情统计



From 2003 through 1 October 2012, 608 laboratory-confirmed human cases with avian influenza A(H5N1) virus infection have been officially reported to WHO from 15 countries, of which 359 died.

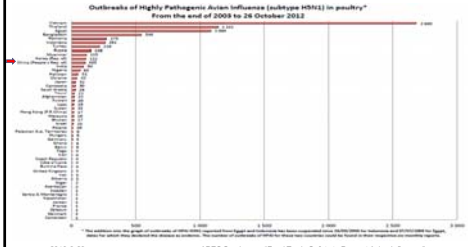
从2003年到2012年10月1日，来自15个国家共计608例实验室确诊人感染禽流感病例被官方报告给WHO，其中359例死亡。

Human Infection with H5N1
人感染高致病性禽流感疫情统计

自2012年1月，共发生30例人感染甲型H5N1疫情。其中中国为三例：

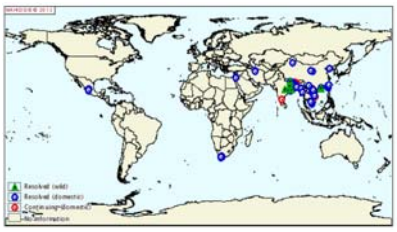
41st	5 January 2012	a 39-year-old man	Guangdong
42nd	24 January 2012	a 39 year-old man	Guizhou
43rd	5 June 2012	a 2-year-old boy	Guangdong

Poultry Infection with H5N1
家禽感染高致病性禽流感疫情统计



从2003年末到2012年10月26日，全球家禽高致病性禽流感案例汇总

Map of H5N1 Cases in Animals for 2012
2012年动物H5N1疫情分布



2012年全球家禽/野生鸟类高致病性禽流感分布情况

H5N1 Risk Level in Animals in China
中国动物H5N1疫情风险等级

中国2005年至2012年关于动物感染高致病禽流感的信息统计。当家禽和野生鸟类情况有差别时，单元格被一分为二，上半部分显示的是家禽信息，下半部分显示的是野鸟信息。

H5N1 Cases in Animals in China for 2012
2012年中国动物H5N1疫情

2012年中国共向OIE上报34例动物感染高致病性禽流感疫情（截至2012.10）

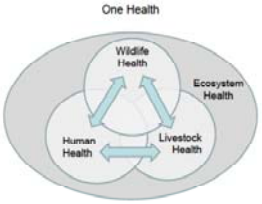
2012年中国大陆地区共向OIE上报7例动物感染高致病性禽流感疫情（截至2012.10）

Province	City	County	Type	Location	Latitude	Longitude	Start Date	End Date	Susceptible	Cases	Deaths	Destroyed
TIBET	Lhasa	Duilongdeqing	Village	Sangda	29.57	91.03	02/12/2011	12/12/2011	1865	290	290	1575
YUNNAN	YuXi		Farm	HongTa	24.35	102.54	27/03/2012	27/03/2012	35018	2	0	35018
NINGXIA	Guyuan	Yuanzhou	Farm	Yangjiang	36.23	106.18	13/04/2012	30/05/2012	377168	23880	10468	366700
LIAONING	Dalian		Village	Zhongshan	38.92	121.64	18/04/2012	14/05/2012	282	5	5	277
GANSU	Baiyin	Jingtai	Farm	Dongguan	37.04	104.16	01/06/2012	01/08/2012	797146	6200	260	796886
XINJIANG			Farm	Xinjiang	43.79	87.62	02/07/2012	22/07/2012	158039	5500	1600	156439
GUANGDONG	Zhanjiang		Farm	Dongjian	21.04	110.49	11/09/2012	-	73800	14050	6300	67500

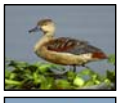
二、野鸟和高致病性禽流感

Wild Birds and HPAI

Why Should We Worry about AI in Wild Birds?
我们为什么要担心野鸟流感？



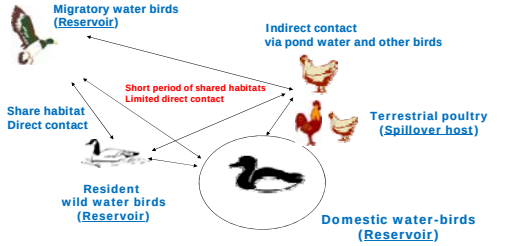
- Wildlife as Reservoir
- Wildlife as Vectors
- Wildlife as Spill-over hosts



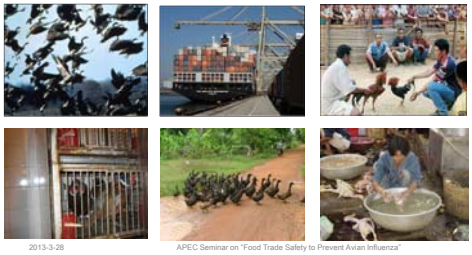
LPAI to HPAI
从低致病性禽流感到高致病性禽流感

- ✓Wild birds are the natural hosts of LPAI
  野生鸟类是低致病性禽流感病毒的天然宿主
- ✓ Circulation of LPAI in domestic poultry can lead to mutations that cause poultry death
  低致病性禽流感在家禽的流通会产生变异，从而引起家禽死亡
- ✓ LPAI Mutation in wild birds? – not well understood
  低致病性禽流感在野鸟的变异情况？- 还不完全清楚

HPAI Epidemiological Process Involving Wild Birds
野鸟高致病性禽流感流行过程

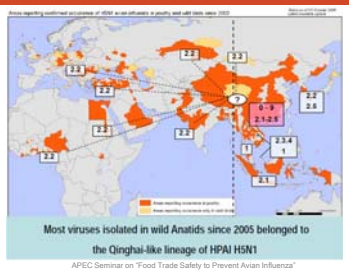


Potential Movement or Spread of H5N1
高致病性禽流感潜在传播途径



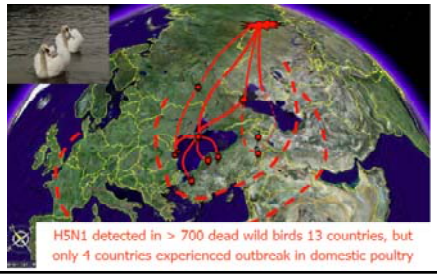
- Migratory birds
- International Commerce
- Wild Bird Illegal Trade
- Free ranging duck flocks
- Poultry Movement
- Fighting Cocks
- Food safety

The Role of wild birds in the spread of H5N1
野鸟在H5N1传播中的角色



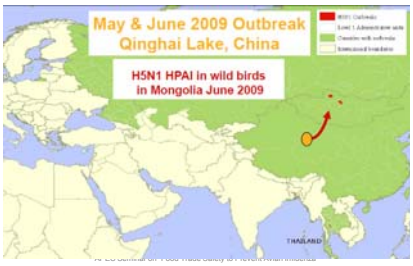
Evolution of HA genes of H5N1 HPAI viruses

The Role of wild birds in the spread of H5N1
野鸟在H5N1传播中的角色



Spreading of H5N1 autumn and winter 2005-06 into Europe

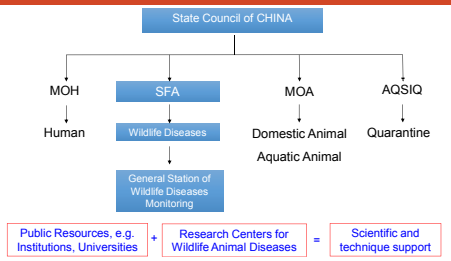
The Role of wild birds in the spread of H5N1
野鸟在H5N1传播中的角色



三、防控策略

Control Strategies

Clear Division of Wildlife-borne Infectious Diseases Management
针对野生动物疫病管理明确分工



Clear Division of Wildlife-borne Infectious Diseases Management
针对野生动物疫病管理明确分工

Laws, Regulations and Policies
法律、法规、政策

- Promulgated *Regulation on Handling Major Animal Epidemic Emergencies* in 2005
- Issued *Criterion for Terrestrial Wildlife-borne Infectious Disease Monitoring (Pilot)*, in 2006
- Drafting *Measures for Terrestrial Wildlife-borne Infectious Diseases Monitoring and Control*
- Implemented *Zero Report Policy*

Team & training
队伍建设

- A monitoring team over **10000** persons was established and trained frequently

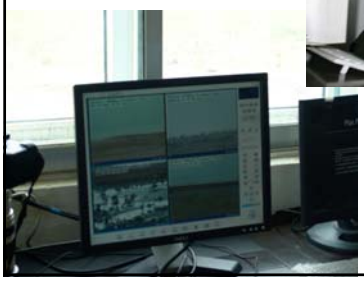
Control Methods for H5N1 in China
中国针对高致病性禽流感采取的防控措施

Code	Meaning		Domestic species	Wild species
*	Notifiable disease	法定传染病	✓	✓
Qf	Precautions at the borders	边界预防	✓	✓
M	Monitoring	监测	✓	✓
Te	Screening	筛查		
GSu	General surveillance	常规监测	✓	✓
TSu	Targeted surveillance	目标监测	✓	✓
Qi	Movement control inside the country	国内活动控制	✓	✓
S	Stamping out	扑杀	✓	
Sp	Modified stamping out	改良的扑杀		
Z	Zoning	分区	✓	✓
Vp	Vaccination prohibited	禁止疫苗接种		
V	Routine vaccination	例行疫苗接种	✓	
T	Treatment	治疗		
Cr	Control of wildlife reservoirs	野生动物资源控制	✓	✓
Cn	Control of arthropods	节肢动物控制		

Establishing Monitoring Station Network
建立监测站点网络

NMS 350
PMS 768
CMS over 2000

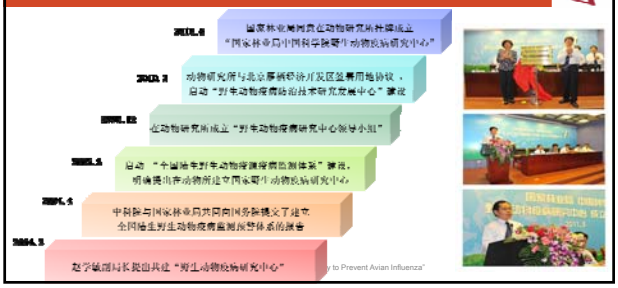
Remote Conduct and Monitoring System
远程监测系统



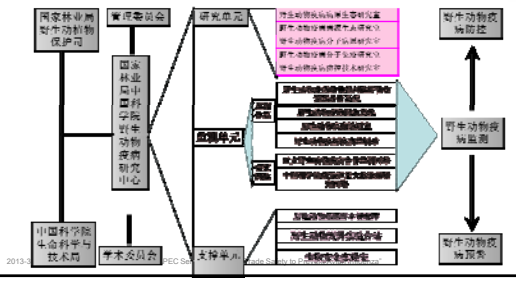
Zero Report System
零报告系统

Direct report system
直报系统

NRCWBD，SFA-CAS
国家野生动物疫病中心



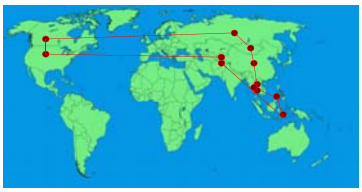
Organization Structure for NRCWBD，SFA-CAS
中心组织框架



Strengthen International Exchange and Cooperation
加强国际交流合作

- 基地共建
- 科研合作
- 承办会议
- 技术培训
- 人员互访
- 技术引进

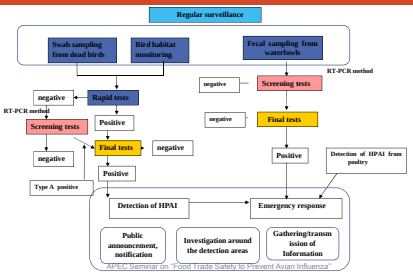
Asia-Pacific Collaboration Network on Wildlife Diseases
亚太野生动物疫病合作网络



Asia-Pacific Conference on wildlife Diseases and in July, 2010

More than 100 scientists attending diseases network were from Bangladesh, Canada, China, Cambodia, Indonesia, Mongolia, Nepal, Philippines, Russia, Thailand, United States of America, Vietnam and international organizations.

Regular Surveillance of HPAI in Wild Birds
野鸟高致病性禽流感的定期监测



Sampling Live Wild Birds
样品采集和捕捉方法





- Fecal samples
- Cloacal swabs
- Throat swabs
- Using Sentinel Animals

Other detected Methods
不同检测方法

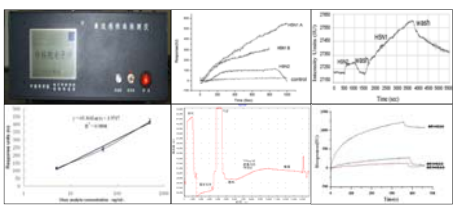

禽流感现场快速检测技术

Environmental Sampling

纳米免疫磁珠检测水中禽流感病毒

吸附洗脱法检测土壤中禽流感病毒

Surface Plasmon Resonance SPR
表面等离子共振禽流感快速检测仪



Index System for H5N1 Risk Assessment
风险评估指标体系

全面合理的评估指标体系是保证评估结果科学准确的前提。通过搜集、整理相关的流行病学资料， 结合我国实际情况以及现有对高致病性禽流感发生风险指标的研究，建立了由目标层A、准则层B和指标层C组成的高致病性禽流感发生风险评估指标体系。

Weight for Each Index
指标权重确定

由于我国不同地区在地理环境、饲养模式、经济条件等因素上存在着差异， 因此风险评估指标在不同地区的相对重要性也是有差异的。根据这些差异将我国省份分成三个区域，分别对这三个区域建立高致病性禽流感发生风险评估模型：

- 南方，包括上海、江苏、安徽、广东、广西、福建、湖北、湖南、浙江、江西、海南、香港、澳门、台湾；
- 北方，包括北京、天津、山西、辽宁、河北、河南、山东、吉林、黑龙江、内蒙古；
- 西部，包括重庆、贵州、陕西、四川、云南、甘肃、青海、宁夏、西藏、新疆。

Weights	C_{11}	C_{12}	C_{21}	C_{22}	C_{23}	C_{24}	C_{31}	C_{32}	C_{33}	C_{41}
South	0.1	0.187	0.048	0.018	0.072	0.018	0.059	0.039	0.025	0.006
North	0.153	0.082	0.047	0.006	0.071	0.031	0.029	0.029	0.014	0.01
West	0.054	0.101	0.019	0.004	0.044	0.029	0.091	0.137	0.059	0.038
Weights	C_{42}	C_{43}	C_{51}	C_{52}	C_{53}	C_{61}	C_{62}	C_{71}	C_{72}	C_{73}
South	0.001	0.025	0.033	0.019	0.044	0.047	0.025	0.075	0.048	0.112
North	0.015	0.007	0.043	0.024	0.056	0.062	0.034	0.091	0.059	0.137
West	0.056	0.029	0.017	0.033	0.022	0.016	0.016	0.075	0.048	0.112

Model Analysis
重力模型分析

$$Risk_i = \frac{GDP_i^{w_1} Population_i^{w_2}}{d_i^{w_3}}$$

GDP_i: **GDP of country *i***

$Population_i$: **population of country *i***

d: **distance from country *i***

w_x: **weight coefficients**

Gravity Model被专门用来计算一个地方受到疫源地传播来疫病的风险大小。

以前的观点总认为病毒流行地点所紧邻的城镇将是下一个疾病大流行的地点。而美国宾州立大学(Penn State University) Dr. Bjornstad等人套用物理重力模型来预测麻疹(measles)等病毒性疾病的传播。发现病毒就好比人一样，不一定向往邻近的城市，反而会到具有吸引力的大城市发展。城市就好比行星一样，越大就越有吸引力，但是吸引力的大小也因距离的增加而减少。

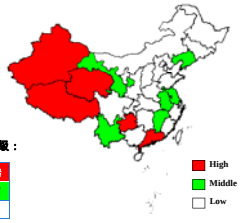
根据2011年全年以及2012年上半年禽流感疫情发生情况，我们可以计算出从已发生疫情的地区向外传播的风险大小，作为综合评分的依据之一。

Viboud, C., O. N. Bjornstad, D. L. Smith, L. Simonsen, M. A. Miller, and B. T. Grenfell. 2006. Synchrony, waves, and spatial hierarchies in the spread of influenza. **Science** 312:447-451.

Overall Rating
综合评分

[illegible]

中国各省份2013年春季禽流感疫情发生的风险概率图



按照多指标综合评分方法计算出风险概率Y，按概率划分出风险等级：

0.60≤Y＜1.00	高度风险	西藏 新疆 青海 贵州 广东 香港
0.30≤Y＜0.60	中度风险	甘肃 辽宁 江苏 安徽 江西 云南
0.00≤Y＜0.30	低度风险	其他二十二个省

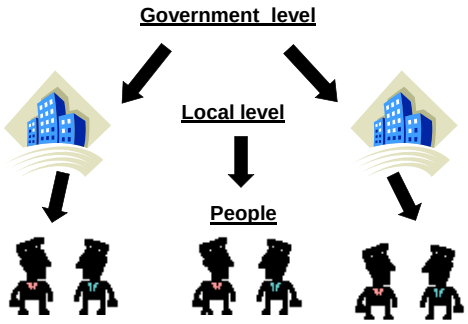
Thank You!

- Nutrition is one of the most important factors of man's connection with the external environment. Ensuring the safety of food commodities and food products is one of the main determinants of health of the population and preserve of the gene pool.
The human body receives 40 to 50% of harmful substances, and water 20 to 40%.

20 – 40 % of harmful substances

- Foods have the ability to take a whole of the environment, particularly the harmful substances which concentrate in large quantities.
From the environment 70% of poison ingested with food of plant and animal origin. In Russia over the last 5 years pollution of food has increased 5 times.

This issue should be addressed at the state level and in the regions.

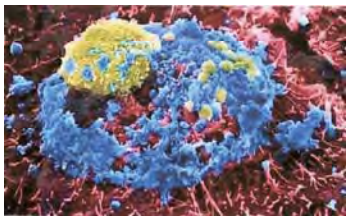


- It is impossible not to mention one more problem - is the growing use of GMO products in the food industry. The question arises as a threat to humanity, the threat to genetic diversity, basic stability of biological diversity posed by the introduction of GMOs into the cultivated varieties of plants and breeds of animals and wildlife, as well as the environmental threat posed by GMOs.

- More recently, the world did not know about this threat to humanity, such as avian flu.

- Today, there are several ways to officially confirmed bird flu:
  • by contact with infected and dead poultry and wild birds;
  • by eating raw or poorly roasted meat and eggs infected birds;
  • by eating meat and eggs infected birds without adequate heat treatment.

At present, Russia has not established a single case of transmission of avian influenza virus from person to person.



- In Russia we provide food safety monitoring and controlling every day.

- Vaccine is just one of the types of struggle. Also a quite an effective method is the introduction of controls over poultry and the staff.

Prevent and control of AIV for live poultries trade between APEC economies

(China and Hong Kong, China)

Dr. Qin zhifeng
Shenzhen entry-exit inspection and quarantine bureau of P.R.China
November 29,2012
qzflhl@hotmail.com

Prevent and control of AIV for live poultries trade

1、The brief introduction of AIV
2、SouthChina plays a important role on AIV prevent and control
3、The control measures on live birds to Hongkong applied by Shenzhen CIQ
4、Diagnosis of AI in lab

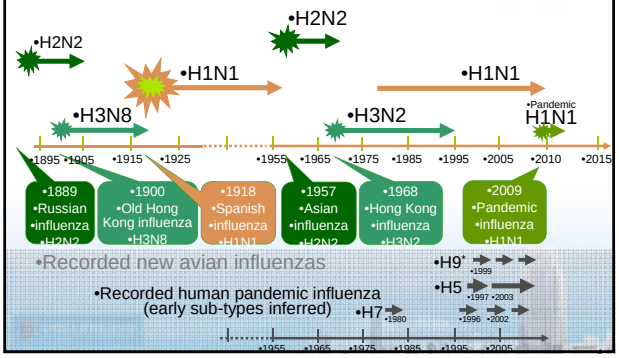
1. The brief introduction of AIV

(1) Etiology

- Caused by the genus influenza virus A (other genera- B, C, D) of the family orthomyxoviridae.
- Genome negative sense, linear, ss RNA, segmented.
- Two types of peplomers:
  HA - H (16 variants)
  NA - N (9 variants)
- Influenza A viruses are categorized into 16 H and 9 N types.
- Emergence of new variants due to
  Genetic drift (point mutations)
  Genetic shift (segment reassortment)

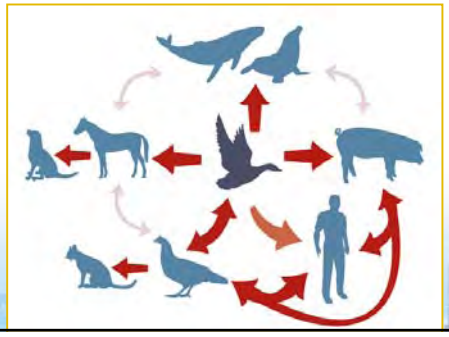
1. The brief introduction of AIV

(2) Evolution and mutation



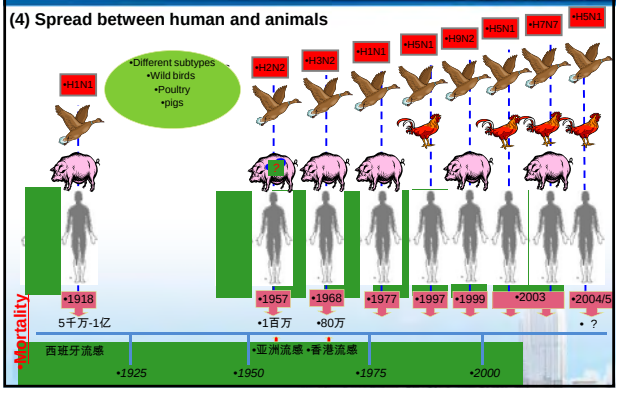
1. The brief introduction of AIV

(3) Spread among different species



1. The brief introduction of AIV

(4) Spread between human and animals



1. The brief introduction of AIV

(5) Great impact on the society

- Geographic Source: Asia
- Animal Carrier: Avian : "Bird Flu" H5N1.
- Mode of Transmission: Not transmitted easily
- Severity of Pandemic/Global Impact: Severe

- Mexico
- "Swine Flu" H1N1.
- Transmitted very easily.
- Pandemic.
- Causes mild "flu-like symptoms". Unique, unexpected,
- age groups affected more than others.

2. SouthChina, A key areas to prevent and control AIV

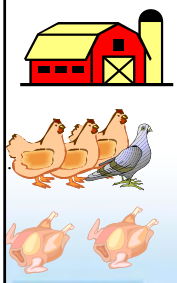
(1) There are more than 330,000,000 quantities of live poultries in South China

2. SouthChina, A key areas to prevent and control AIV

(2) There are more than 50% immune density in South China

2. SouthChina, A key areas to prevent and control AIV

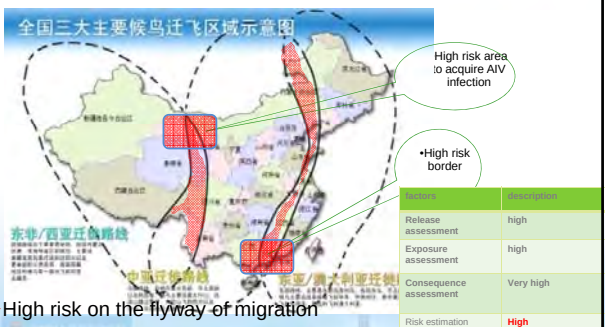
(3) There are more than 50% immune density in South China



- **Poultry registration farm:**
  - **5**
- **Quantities of live poultries to Hongkong per day**
  - **8，000**
  - **High risk level during all the commodity**
- **Quantities iced fresh chicken to Hongkong per day**
  - **30，000**

2. SouthChina, A key areas to prevent and control AIV

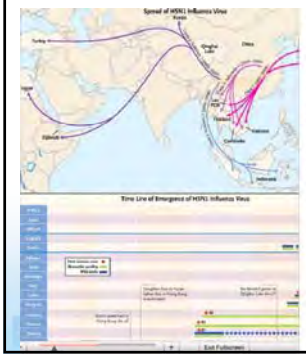
(4) South China, a potential regions for AIV to outbreak



- High risk on the flyway of migration
  - ➢Be unable to control and prevent

2. SouthChina, A key areas to prevent and control AIV

(5) A hypothesis: SouthChina is the origin place for AIV



How Did H5N1 Move So Rapidly Across Asia, Europe, & Africa?

- Asia – H5N1 spread via the poultry trade
- Europe – H5N1 brought in by migratory birds
- Africa – H5N1 brought in by migratory birds and the poultry trade

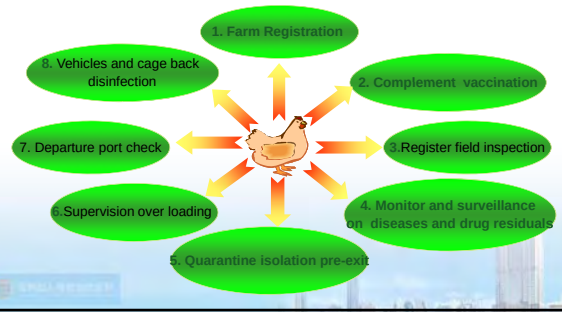
3. measures on live birds trade applied by SZCIQ

(1) Establish a complete legal system—national level

- National Laws
  - LAW OF THE PEOPLES REPUBLIC OF CHINA ON THE ENTRY AND EXIT ANIMAL AND PLANT
- Administrative Regulations
  - REGULATIONS FOR THE IMPLEMENTATION OF THE LAW OF THE PEOPLE'S REPUBLIC OF CHINA ON THE ENTRY AND EXIT ANIMAL AND PLANT
  - Administrative Measures on Inspection and quarantine of live poultry for Hong Kong and Macao
- Technical Regulation
  - protocols

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level



3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

① Farm Registration

- Authorized Farm
  - Based on the requirements of "Administrative Measures on Inspection and quarantine of live poultry for Hong Kong and Macao", all the farms which pretended to supply live poultries to Hongkong must be checked and registered
- Purpose
  - the farm would be good biosecurity and a GAP farm

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

②Complement vaccination with H5N1 inactive vaccine

- 100% vaccination
  - All the poultries must be vaccinated with novel inactive
- Evaluation novel vaccine of field immunity for chicken to honkong
  - Inactive H5N2 vaccine
  - Inactive re-1 vaccine
  - Inactive re-4 vaccine
  - Inactive re-5 vaccine
  - Inactive re-5 vaccine

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

③ Register field inspection

- Farm check
  - Routine check
  - spot check
- Inspection daily for:
  - Sanitary condition
  - raising and management
  - Immune status
  - Treatment with drug
  - Preventive disinfection

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

④ Monitor and surveillance on diseases and drug residuals

- Laboratory test for AIV
  - AIV
  - H5N1
  - Virulent NDV
- Laboratory test for drug residuals
  - Chloramphenicol

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

⑥ Quarantine isolation for five days before supplying to Hongkong

- Isolation period:
  - 5 days
- Laboratory test during isolation
  - 1/3 flock HI titer above 2^4
    - HK: 18- 13
    - SZ: 28 --20
  - Real time RT-PCR for AIV and H5N1
    - Negative-pass
    - positive-notify

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

⑥ Supervision over loading

- confirm:
  - Live poultries derived from register farms
  - Vehicles and cages were disinfected
- Check:
  - Clinical signs
- Seals
  - Vehicles with quarantine mark

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

⑦ Examination and check on Departure port

- Check and inspect:
  - Clinical signs
  - Quantities of Live poultries
  - Inspection certificate comply with the goods shipped
  - Seals is intact or not

3. measures on live birds trade applied by SZCIQ

(2) Eight prevent and control measures implemented in SZCIQ—port level

⑧ disinfect Vehicles and cage back

- Wash, clean and disinfect:
  - Cages back
  - Vehicles back

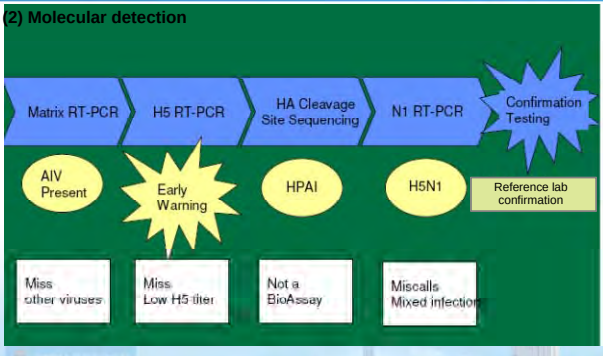
4. Diagnosis of AI in Lab

(1) Diagnostic technical methods

- **Antibody detection**
  - **AGID**
  - **HI**
  - **Indirect ELISA**
- **Virus detection**
  - **Virus isolation**
    - **Embryo inoculation**
    - **Cell culture**
  - **Immunoassay**
    - **HA & HI**
    - **Antigen Capture ELISA**
    - **Lateral flow strip**
    - **biosensor**
  - **Molecular biotechnology**
    - **Real-time RT-PCR (RRT-PCR)**
    - **Traditional RT-PCR**
    - **NASBA**
    - **LAMP**

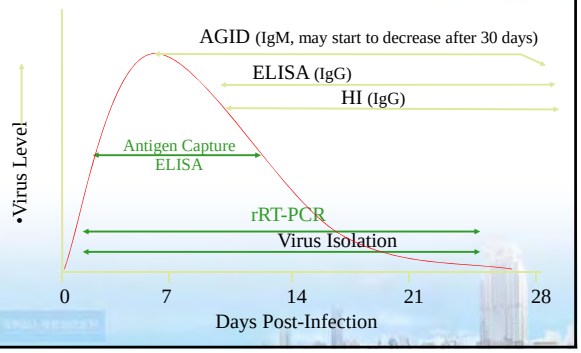
4. Diagnosis of AI in Lab

(2) Molecular detection



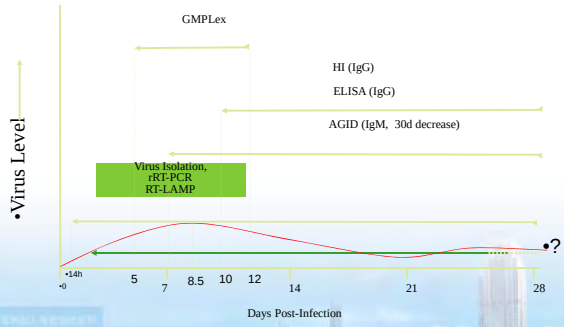
4. Diagnosis of AI in Lab

(3) Methods used for non-vaccination flocks



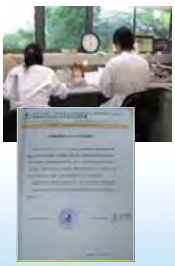
4. Diagnosis of AI in Lab

(3) Methods used for vaccinated flocks



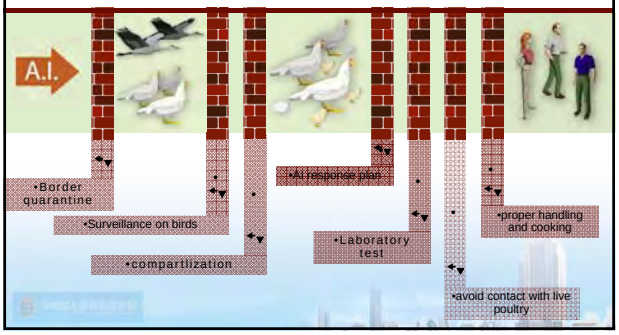
4. Diagnosis of AI in Lab

(4) Ring test of AIV with Hongkong Lab



Purpose: Harmonization of lab protocols

Summary



Thank you for your attention

APEC Seminar on
FOOD TRADE SAFETY TO PREVENT AVIAN INFLUENZA
November 27-30, 2012, Guangzhou, P.R. China

Steps Peru has taken to combat distrust

Lic. Susalen Tang Flores
Executive Director Basic Sanitation
DIGESA - MINSA

BACKGROUND

Knowledge of the existence of the virus A (H1N1) accelerated the process for countries to develop preparedness plans and response to pandemic flu under the guidance of the World Health Organization (WHO) .

In 2005, Peru prepared and published the "National Plan for preparedness and response to a potential flu pandemic," which aims to: provide an effective and coordinated national response to a potential flu pandemic.

BACKGROUND

The WHO reported 04/24/09 from April 18 there were 47 cases of severe pneumonia with 12 deaths in Mexico and USA all mild cases caused by nfluenza virus subtype H1N1

New strain of influenza in humans, there is no evidence that pigs, meat and by-products are involved in transmission.

In response to the international alert, MINSA convenes the Emergency Committee.

	Confirmed	Deads
En America		8536
En el Perú	10041	248

Fuente : 1.WHO untill 06 de agosto
2. Casos al 30 de Agosto a las 8.00 horas En las Americas 8535 defunciones (06/08/2012) en 28 de los 35 paises

Perú situation on flu pandemic A(H1N1) 2009 -2010

DEPARTAMENTO	Casos	%	% Acumulado
Lima	3503	34.89	34.89
Arequipa	1295	12.90	47.78
La Libertad	597	5.95	53.73
Lambayeque	576	5.74	59.47
Junín	530	5.26	64.74
Cusco	498	4.96	69.70
Piura	474	4.72	74.42
Ancash	440	4.38	78.81
Callao	264	2.63	81.44
Apurímac	262	2.61	84.05
Ayacucho	220	2.19	86.24
Puno	235	2.34	88.58
Cajamarca	190	1.89	90.47
San Martín	142	1.41	91.88
Tacna	150	1.49	93.38
Loreto	117	1.17	94.54
Huancavelica	109	1.09	95.63
Tumbes	83	0.83	96.45
Huánuco	77	0.77	97.22
Madre de Dios	58	0.58	97.80
Moquegua	59	0.59	98.39
Amazonas	45	0.45	98.83
Ica	54	0.54	99.37
Ucayali	37	0.37	99.74
Pasco	26	0.26	100
Perú	1041	100	

- Lima and Callao reported 37% confirmed cases.
- 08 departments have more than 80%.
- After Lima department, Arequipa, La Libertad and Lambayeque reported most of the cases.

Flu Confirmed Cases A(H1N1) each 10000 persons (ages groups) 2009 -2010

Ages	Rates
0 - 9	5.38
10 – 19	4.62
20 – 29	3.54
30 – 39	2.67
40 – 49	2.25
50 – 59	2.43
60 – over 60	1.41

- Higher rates of confirmed cases belong to under 20 years old and the lower rates belong to over 60.

INITIAL ACTIONS

- Activates Emergency Committee (April 24).
- Information to the media and the public on the international situation.
- Warning Statement to strengthen surveillance activities.
- Coordination with ESSALUD and Private Sector.
- Regular communication to the population of Peru situation and preventive measures.
- Surveillance aircraft from Mexico and USA. (Intervention of 242 ships with 34 801 passengers who arrived in Lima)

TECHNICAL PAPER NATIONAL RESPONSE PLAN AGAINST FLU PANDEMIC

- **Target**
  To mitigate the impact of pandemic Flu on the health of the Peruvian population as a multisectoral response

GOALS

The objectives of this Plan are based on international recommendations :

1. Establish the organization of sectoral and cross-sectoral coordination response against pandemic flu.
2. Implement pharmacologic and non pharmacologic measures.
3. Strengthen the response capacity of health services for the care of patients with pandemic flu to reduce the fatality rate.

GOALS

4. Strengthening public health surveillance flu in Peru.
5. Strengthen epidemiological surveillance of influenza in domestic and wild birds as well as pigs.
6. Implement environmental health response on time.
7. Provide information to the population about prevention and control measures and properly handle crises communication.
8. Strengthen mechanisms for organization and society active participation, in governments institutions and civil action for prevention and health promotion to avoid the pandemic flu.

ACTIONS TAKEN

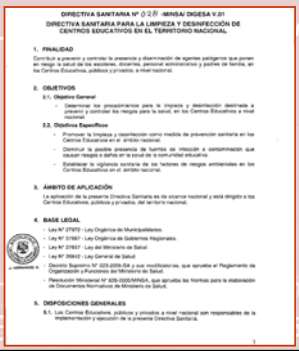
Regulation:

Determination of preventive actions (disinfection with quaternary ammonium concentration greater than 33% of aircraft from Mexico, U.S. Regional pursuant to Decree No. 008 of the Regional Government of Callao "down rules for the prevention and control of Avian Influenza, Swine and other respiratory viruses Callao Region "

Ministerial Resolution No. 525-2009/MINSA "Health Directive for cleaning and disinfecting Educational Center"

Ministerial Resolution No. 768-2010/MINSA "National Plan for Prevention of HBV, HIV and TB by Risk Occupational health workers 2010-2015" instrument that will serve as a baseline to develop aspects related to the control of risks those exposed health workers.

Ministerial Resolution No. 525-2009/MINSA


DIRECTIVA SANITARIA Nº 028 -MINSA/ DIGESA V.01

DIRECTIVA SANITARIA PARA LA LIMPIEZA Y DESINFECCIÓN DE CENTROS EDUCATIVOS EN EL TERRITORIO NACIONAL

1. FINALIDAD

2. OBJETIVOS

3. ÁMBITO DE APLICACIÓN

4. BASE LEGAL

5. DISPOSICIONES GENERALES

DESAS (not all) are doing periodic supervision.

The public and private Educational Centers are responsible for the implementation and enforcement of the Directive.

- Monitor the Implementation of Technical Standard No. 008-MINSA/DGSP-V.01: "hospital solid waste management" approved by Resolution N 217-2004/MINSA * The waste generated in patient care or Influenza suspected cases are handled as waste biocontaminated being followed the provisions of the current legal framework.
- Health Interventions management and thermal treatment of solid waste (aircraft and service stations)
- Monitoring, supervision and evaluation of activities implemented by all regions.
- Permanent coordination between Health and Agriculture sector.

Training Workshop Committees Hospital Solid Waste Management
14, 20,22 and 23 October

- **Capacity Building**
- Participation in teleconferences, technical assistance to Regions
- Support health personnel, health brigades: Workshops, conferences, courses.
- Draft Integrated Solid Waste Management Hospital in Southern Peru
- Design and diffusion of educational tools:
-Guideline for prevention and control of Influenza A H1N1 in the place of work.
-Solid waste management in health in cases of flu
-Not technical breeding.

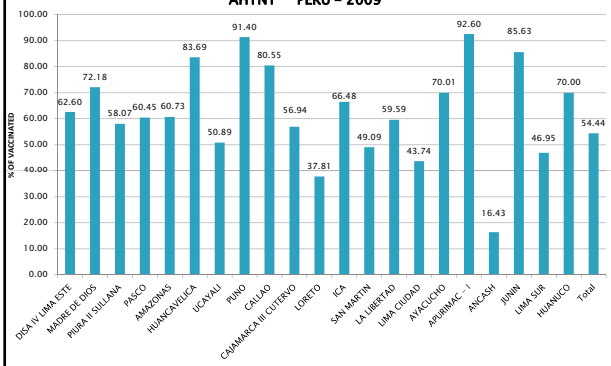
It has developed the Immunization Action Plan for Health Worker against Influenza AH1N1 as an Environmental and Occupational Health Component in the National Immunization Strategy MINSA, with the following components:

1. - Awareness Training (workshops, audiovisual material)

2. – Monitoring the health workers. vaccination

3. – Surveillance sharps waste (syringes) management.

PERCENTAGE OF HEALTH WORKERS VACCINATION AGAINST INFLUENZA AH1N1 PERÚ – 2009



CONCLUSIONS

- Continue to monitor the pandemic to identify changes in their behavior in different scenarios and to guide responses.
- The October 10/2010, the WHO declared the post pandemic phase.
- It is necessary for Peru to maintain the response capacity of health services.

MUCHAS GRACIAS

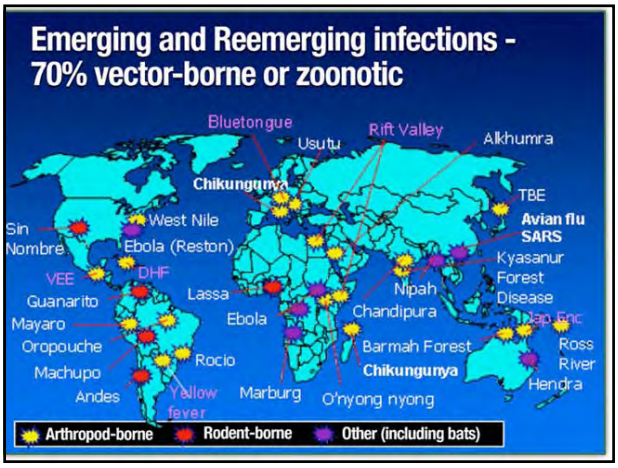
Viet Nam

Section: **Avian Influenza and Pandemic: Viet Nam's Experience & Challenge**

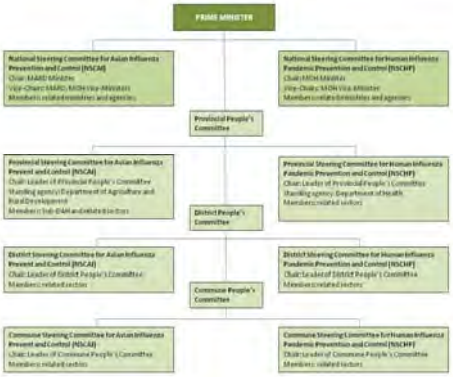
Presenter: MD. Trinh Thi Ngoc Linh, MOH Viet Nam

POTENTIAL DRIVERS OF ZOONOTIC DISEASES

Source: USAID EPI PREDICT

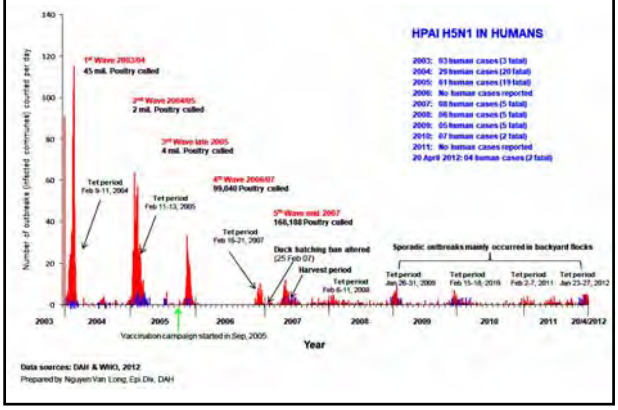


NATIONAL COORDINATION STRUCTURE FOR HPAI AND PANDEMIC INFLUENZA



A TIMELINE OF HPAI H5N1 IN VIETNAM

(December 2003 – April 2012)



The structure of the poultry sector for the future control and prevention of avian influenza

- Significant numbers of poultry reared in small flocks household & village flocks
- Farm workers can act as a bridge for transmission of pathogens such as influenza viruses from/to large farms to the community
- Disease control & prevention is a shared responsibility between government and the private sector

Poultry product consumption patterns

- Demand for freshly killed live poultry has fallen over time reducing the size and relevance of live poultry markets
- Illegal trade in live poultry has occur in urban centres. Consideration could be given to introduction of strictly controlled live poultry sales (as conducted in Hong Kong)

→ Public Health messages related to dressing and consuming sick or dead poultry

Passive surveillance versus active surveillance

- Passive surveillance alone does not result in detection of all cases of infection with H5N1 viruses or other infectious agents
- Active surveillance is required as part of eradication programs for H5N1 influenza viruses in zones but it can very costly to achieve the coverage needed to detect all cases of infection

Capacity building – Veterinary & Livestock Production Services

- Greater investment in undergraduate training of veterinarians in public health & epidemicology
- Passage of any new or amended legislation must be backed by enforcement
- Government animal production and extension services also require long term support to build capacity & to improve link with animal health services

Experiences on border controls for the future control and prevention of avian influenza

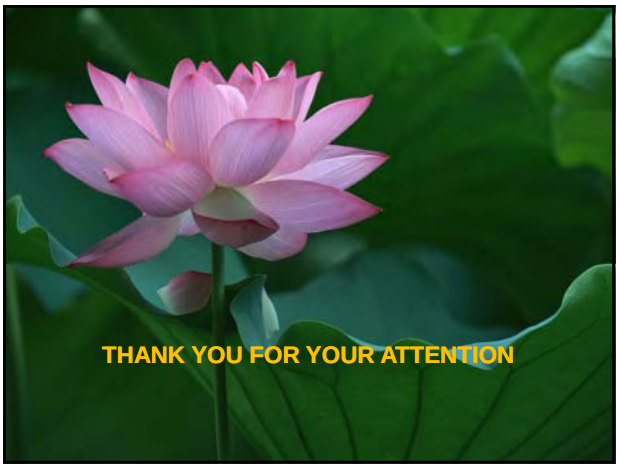
- Improperly controlled movement of livestock across borders represents the greatest threat for introduction of trans-boundary animal diseases to Vietnam & other countries in the region.
- To reduce the likelihood that animals moved illegally pose a threat, better cross border co-operation aimed at improving regional disease status.

Experiences with implementation of changes to poultry production and marketing, including biosecurity enhancements

- Any site where poultry from different sources are kept, such as markets and traders' yards, are potential sites for transmission, emergence and persistence of AI if poorly managed.
- Biosecurity measures appropriate to each individual enterprise can markedly reduce the risk of introduction of a range of AI viruses.

Experiences with vaccination for the future control & prevention of AI

- Vaccination is required as one of the measures to control & prevent AI
- Mass vaccination campaigns are difficult to implement and sustain. (ensure support from all levels of government and the community)
- Better vaccines against AI are required, especially for ducks.


THANK YOU FOR YOUR ATTENTION

MALAYSIA - Experience
Outbreaks of avian flu in Malaysia and measures taken for prevention and control

Dr Aaisah Senin
Disease Control Division
Ministry of Health Malaysia

Background – Malaysia Health Facts

- Total population 2011: 29 million(M 14.9m, F14.1m)
- Land area: 329, 959 sq. Km; Population density: 86 per sq. Km
- Population by age group: < 15 y (31.9%), 15-64 y (63.6%), >65 (4.5%)
- Life expectancy at birth (2011): M 72.1 y, F 77.1 y
- Crude birth rate (2010): 17.5 per 1000 pop
- Crude death rate (2010): 4.8 per 1000 pop
- Incidence rate of communicable diseases per 100,000 pop (2011):
  - Top 3 : TB (72.4), Dengue (67), HFMD (60.6)
- Avian Influenza : sentinel notification

A real scenario during Asian AI outbreak in 2006...

9/3/06	**5 environmental bird stool samples from Ecopark, Bukit Merah Laketown Resort (BMLR), Perak sent to Veterinary Research Institute (VRI) , Perak**
14/3	Testing done in VRI – 1 of 3 inoculated chicken eggs died in <24hrs
15/3	HA Serology & RT-PCR: **Positive** for H5N1
16/3	9.00 am Confirmation by VRI & DVS Immediate actions: Activate DVS HPAI Outbreak Committee **Inform MOH (Perak State Health Department)** Meeting with BMLR Management Culling zone 1 km from centre of event Surveillance and sampling radius 2-10 km
16/3 – 19/3	Culling started at 7 pm 16/3/06 at Ecopark BMLR and villages within 1 km radius Total birds culled = 1,934; total eggs destroyed: 502

Scenario continued....

16/3 – 30/3	MOH - Immediately activation of Crisis Preparedness Response Centre (CPRC) Ops Rooms – at all levels **Formation of health teams & Preparation of control measures (incl PPEs)** Active Case Detection (ACD) of staff of BMLR within 300m radius (until 24/3) Increase Iifluenza Like Illness (ILI) Surveillance in area & Passive Case Detection (PCD) at 4 nearby health clinics (cont. 7 days after ACD until 30/3) Health Education (HE) at BMLR & 3 nearby villages within 1 km radius. Monitoring of bird culling activities by DVS (inc use of proper PPEs) Active daily house surveillance for 7 days, incl. Temperature screening of at risk workers (MOH Staff, DVS Staff, BMLR Staff) Total at risk workers screened = 717 (103 MOH , 81 DVS, 533 BMLR); →One symptomatic (BMLR Staff) & referred to hospital as suspected case; 21y/M onset symptoms 22/3; Lab Ix (Blood Culture & PCR at IMR) **Negative for H5N1**; Discharged 24/3 final diagnosis = **URTI** Total HE pamphlets distributed = 744 Total health alert cards distributed = 692
30/3	DVS Ops room closed
31/3	MOH (State & District) Ops rooms closed

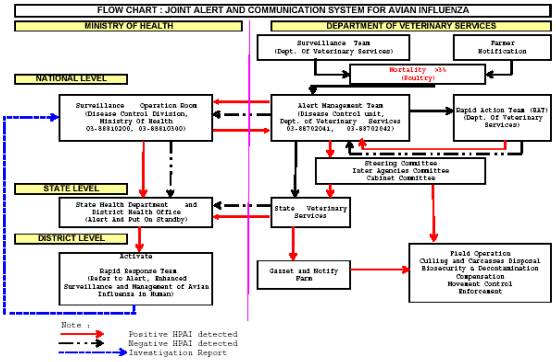
Current situation

End dec 2011	HP AI reported in Hong Kong, H5N1 death in Shenzhen, Guangdong, PR China Public were assured of safety of import not from affected areas or risk areas. Nationwide HPAI alert and preparedness instituted especially entry points. Simulation exercises conducted. Impose ban on imports of chicken from affected areas and high risk areas . Strengthen monitoring ,inspection and surveillance. 15,401 samples taken and all were negative for H5N1
5 Jan 2012	Malaysia declared *Highly Pathogenic Avian Influenza (HPAI) free status since 2* September 2007- Press Release from Minister of Agriculture.

Animal – Human Health Coordination Mechanism

- Animal-Human Health committees established and functioning since 1999 (following Nipah encephalitis outbreak 1998/99)
  - **Inter-Ministerial Committee on the Control of Zoonotic Diseases**
  - **Technical Committee on the Control of Zoonotic Diseases**
- All relevant stakeholders involved:
  - MOH, MOA (DVS), MONRE (DOE), Min. Of Housing and Local Government, MOHE (universities), Min. of Home Affairs, etc
- Terms Of Reference:
  - Formulate policy, implement all decisions and related actions in the prevention and control of zoonoses;
  - Formulate all forms of action required to ensure surveillance activities, detection and surveys/studies, prevention and control, and research related to zoonoses

Animal – Human Health Coordination Mechanism



Prevention & Control – Strategies & Activities (MOH)

- Reference : MOH publication 2004: ALERT, ENHANCED SURVEILANCE AND MANAGEMENT OF AVIAN INFLUENZA IN HUMAN
- Public Health Response :-
  - surveillance, active case detection, home surveillance, health education, health monitoring
- Laboratory Response :-
  - surveillance, diagnostic
- Medical Response :-
  - management of cases, triaging, infection control, anti-viral treatment

Prevention & Control - MOH

Response according to alert level

LOCAL ALERT LEVEL	PUBLIC HEALTH RESPONSE	CLINICAL RESPONSE	LABORATORY RESPONSE
LEVEL 0 No human and poultry case	• Continue influenza-like illness (ILI) surveillance • Rumour surveillance • Public health education • Collaboration with DVS • Continue influenza virus surveillance		

Prevention & Control - MOH

Response according to alert level

LOCAL ALERT LEVEL	PUBLIC HEALTH RESPONSE	CLINICAL RESPONSE	LABORATORY RESPONSE
LEVEL 1 Has case in poultry but not in human	• Enhanced ILI surveillance • Activate operation room • Active case detection • Home surveillance • Refer case to hospital • Restrict movement into affected areas	• Activate triaging system & isolation ward	• Enhanced influenza surveillance

Prevention & Control - MOH

Response according to alert level

LOCAL ALERT LEVEL	PUBLIC HEALTH RESPONSE	CLINICAL RESPONSE	LABORATORY RESPONSE
LEVEL 2 Has case in man but not in poultry (imported)	• Case must be isolated in designated hospital • Epidemiology investigation • Refer DVS to determine presence of AI in poultry • Activate op-room • Active case finding • Home surveillance of close contact • Passive case finding	• Case admission for isolation & Mx • Practice barrier nursing	• Diagnostic workout • Enhanced surveillance

Prevention & Control - MOH

Response according to alert level

LOCAL ALERT LEVEL	PUBLIC HEALTH RESPONSE	CLINICAL RESPONSE	LABORATORY RESPONSE
LEVEL 3 Has case in poultry & human (local transmission)	• All of actions in Level 1 & 2.	• Case admission for isolation & Mx • Practice barrier nursing	• Diagnostic workout • Enhanced surveillance

Prevention & Control – Strategies & Activities (DVS- Animal Health)

- Surveillance : clinical & laboratory
- Culling activities
- Compensation
- Enforcement

Prevention & Control – (DVS- Animal Health)

Disease Response Mechanism

Phase	Disease Status	Action
Alert (I)	L1 : Outbreaks in neighboring countries or trading partners	Ban importation, entry points control, early detection
	L2: Outbreaks in quarantine station	Ban importation, back tracing, destruction of consignment
	L3: Outbreaks in Malaysia	Activation of Phase II
Activation & Mobilization (II)	Single or multiple outbreaks foci	Teams activation & mobilization, culling operation, decontamination
Eradication & Surveillance (III)	Residual infection may present	Surveillance & stamping-out
Recovery (IV)	No outbreaks & evidence of infection	Plan for restocking
Declaration of freedom (V)	Free of any evidence of infection	Free status application & declaration of freedom

Preventive measures

- Enforcement of import ban
- Reduction of smuggling activities
- Improve border control
- Inspection and control at the entry points
- Movement control
  - Movement with permit
  - Patrol and roadblock for enforcement

Preventive Measures at farms level

Improved Biosecurity

Implementation of farm Good practice scheme

Closed house system

Clinical and virological surveillance Or early detection

Coverage: all commercial and backyard chicken farms,duck ,quail, Wet market, pet shop, aviaries, slaughter houses

Conclusion

- Functional coordination mechanism between human and animal health sectors during the avian influenza outbreak among birds through
  - Preparedness
  - information sharing and
  - a coordinated response
  - Training and Simulation exercises

  → able to **prevent** human avian influenza infection in Malaysia.
- Strengthening the established Inter-Ministerial and Technical Committees on the Control of Zoonotic Diseases - reinforce the functional collaboration between the Human and Animal Health Sectors on Zoonoses Prevention and Control in Malaysia

THANK YOU

Public Health Issues and Approaches to Combat Avian Influenza

Abu Abdullah MD., MPH., PhD.

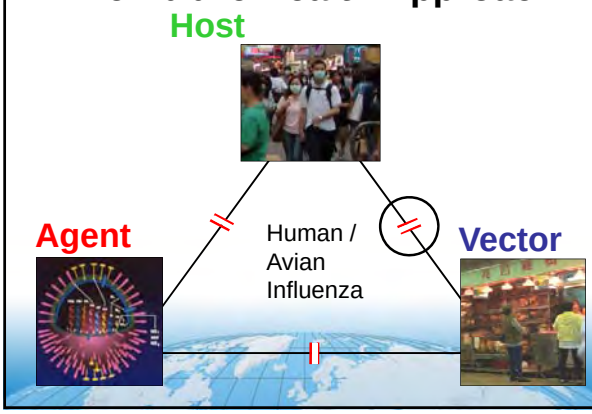
School of Public Health
Florida International University
&
Department of Medicine
Boston Medical Center, Boston

APEC Summit on Food Trade Safety to Prevent Avian Influenza
November 27-30, 2012 Guangzhou, China

Overview

- Public health measures for prevention and control
- Recommended actions
- Issues and challenges

The Public Health Approach



Prevention and Control

Recommended Actions

- Notification of Authorities
  - Federal:
    Area Veterinarian in Charge (AVIC)
    - www.aphis.usda.gov/vs/area_offices.htm
  - State veterinarian
    - www.aphis.usda.gov/vs/sregs/official.htm
- Quarantine

Recommended Actions

- Confirmatory diagnosis
- Depopulation may occur
  - Infected premises
  - Contact-exposed premises
  - Contiguous premises

Control and Eradication

- Eliminate insects and mice
- Depopulate flock and destroy carcasses
- Remove manure down to bare concrete
- High pressure spray to clean equipment and surfaces
- Spray with residual disinfectant

Prevention

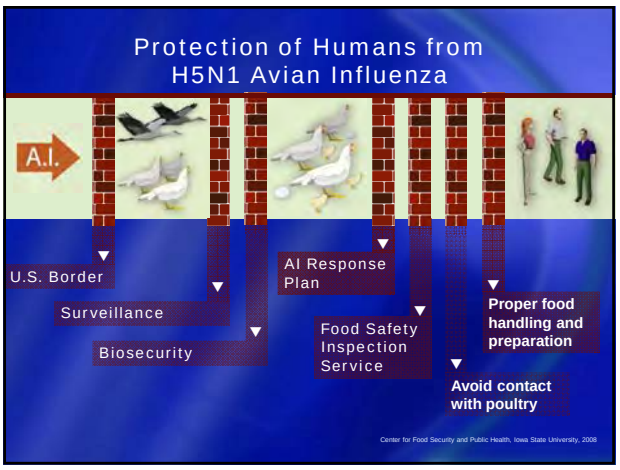
- Appropriate biosecurity
  - Control human traffic
  - Introduction of new birds into flock
  - Avoid open range rearing in waterfowl prevalent areas
- Education of the poultry industry

Vaccination of Poultry

- Emergency situations
  - Preserve breeding stock
- Vaccines
  - Killed and fowl-pox vectored
  - DIVA – Differentiating Infected from Vaccinated Animals
- US Vaccine bank with 40 mil doses
  - 20 million for H5
  - 20 million for H7

USDA Prevention Activities

- Import restrictions
  - No live birds or bird products from infected countries
- Increasing surveillance of wild birds
- National H5 and H7 control program
- Training for disease recognition
- Improving diagnostics for rapid detection



Prevention: Humans

What can be done to slow the spread of a pandemic?

- Vaccine:
  - not expected to be available until later in a pandemic
- Antivirals:
  - likely to be insufficient quantities, effectiveness unclear
- Disease containment measures:
  - may be the only measures available in the early stages of a pandemic
  - may be helpful in slowing the spread of a pandemic, allowing more time for vaccine production

Disease containment measures

- **Isolation:** restriction of movement/separation of ill infected persons with a contagious disease
- **Quarantine:** restriction of movement/separation of well persons presumed exposed to a contagious disease
- **Self-shielding:** self-imposed exclusion from infected persons or those who may be infected
- **Social distancing:** reducing interactions between people to reduce the risk of disease transmission
- **Snow days:** days on which offices, schools, transportation systems are closed or cancelled, as if there were a major snowstorm

Other methods to reduce transmission

- Hand hygiene (cleaning hands with soap and water or an alcohol-based hand rub)
- Respiratory hygiene, e.g., “Cover your cough”
- Cleaning and disinfection of contaminated objects, surfaces
- Physical barriers (e.g., glass or plastic “windows” to protect front desk workers)
- Use of personal protective equipment (PPE) in some settings (e.g., healthcare) such as gowns, gloves, eye, and respiratory protection

Airborne Precautions and Isolation

Avian influenza isolation unit, Tropical Diseases Hospital, Ho Chi MInh City, Vietnam, February 2004

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Issues and challenges

Is culling a solution?

- Backyard flocks versus large commercial farms
- Compensation?
- When to stop?
- When to repopulate?
- Disposal of dead birds?
- Protection of workers?

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Is poultry vaccination a solution?

- Regulated to much lower extent than human vaccine
- Which virus strain?
- Potency?
- Inactivation?
- Quality control?
- Reduction in disease versus continued infection?

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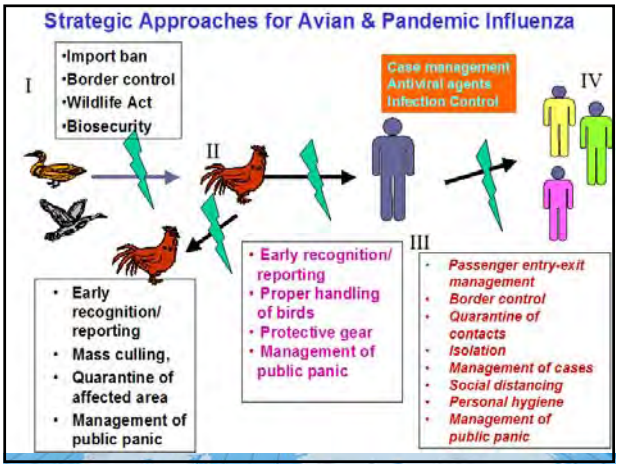
Issues and challenges

1. Massive information demanded by public, local government units, business, academe, civil society, etc.
2. Training for more government personnel to undertake surveillance, laboratory testing, quarantine enforcement and crisis response preparedness (i.e. military, local veterinarians, etc.)
3. Full cooperation on eradication policies
4. Funds to support all aspects of the program

Issues and challenges

5. *Early warning of human-human spread :* need for stronger global coordination
6. *Pandemic preparedness and logistics* overwhelmed health care system, existing manpower and resources could response only to a certain extent
7. *Antiviral agents :* efficacy is uncertain, in short supply, decision on who should be given priority
8. *Pandemic Influenza Vaccine :* equitable distribution and liability, characteristics of the pandemic vaccine, development and production constraints



Conclusions

- H5N1 has proven extremely difficult to control since 1997
- Premature relaxation of control efforts will facilitate persistence of H5N1 epizootic
- Persistence increases risk of H5N1 adaptation to people
- A multi-sectorial effort would be needed to combat the spread

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Additional avian and pandemic influenza information

- CDC
  http://www.cdc.gov/flu/avian/ index.htm
- Health and Human Services (HHS)
  http://www.pandemicflu.gov/
  http://www.hhs.gov/pandemicflu/ plan/
- WHO
  http://www.who.int/csr/disease/ avian_influenza/en/index.html
- World Organization for Animal Health (OIE)
  – www.oie.int

供港澳家禽禽流感的防控
Control of Avian Disease in Poultry Supplied to Hong Kong and Macau

林志雄 Lin Zhi-xiong

广东出入境检验检疫局
Guangdong Entry/Exit Inspection and Quarantine Bureau

法律法规依据：Statutory Basis

- 《中华人民共和国进出境动植物检疫法》
- 《中华人民共和国进出境动植物检疫法实施条例 》
- The Law of The People's Republic of China On The Entry and Exit Animal and Plant Quarantine
- Implementing Regulation for The Law of The People's Republic of China On The Entry and Exit Animal and Plant Quarantine

组织机构：Organizational Structure

- 国家质量监督检验检疫总局统一管理进出境动物检验检疫工作。
- 直属出入境检验检疫机构负责各自辖区内的进出境动物检验检疫工作。
- Overall management of entry/exit animal inspection and quarantine is carried out by the General Administration for Quality Supervision, Inspection and Quarantine of the People's Republic of China
- The Inspection and Quarantine Authorities directly subordinated under the AQSIQ,are responsible for the inspection and quarantine of animals entering and exiting their respective jurisdiction region

供港澳家禽禽流感的控制
Control of avian disease in Poultry Supplied to Hong Kong and Macau

1．供港澳家禽禽流感检测使用的检测方法
Testing methods used for detection of avian disease in Poultry Supplied to Hong Kong and Macau

2．供港澳家禽禽流感检测使用的检测仪器
Testing instrument used for detection of avian disease in Poultry Supplied to Hong Kong and Macau

3、供港澳家禽禽流感的控制管理办法
Control Measures for Inspection and quarantine of live poultry supplied to Hong Kong and Macau

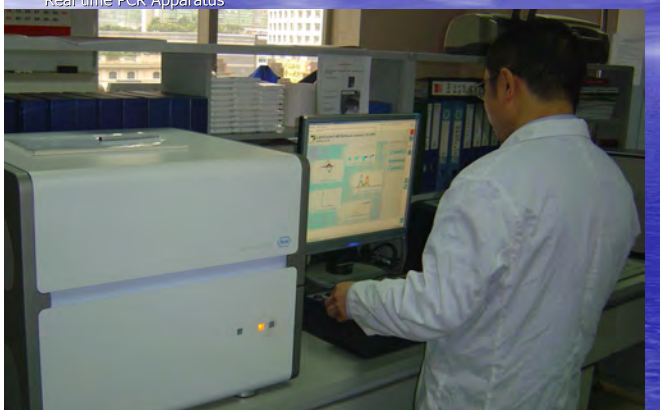
供港澳家禽禽流感检测使用的检测手段
Testing methods used for detection of avian disease in Poultry Supplied to Hong Kong and Macau

- 1．分子生物学检测技术检测禽禽流感病原：
- Molecular biology testing techniques used in detecting avian disease antigen
- RT-PCR, real-time RT-PCR

- 2．检测禽禽流感抗体：
- Testing techniques used in detecting Avian disease antibodies
- Haemagglutination-inhibition (HI),
- Enzyme-linked immuno-sorbent assay (ELISA)

全自动核酸纯化系统
Fully automated Nucleic Acid Purification System

荧光PCR仪
Real time PCR Apparatus



全自动HI工作站
Fully automated HI operation unit

全自动ELISA工作站
Fully automated ELISA unit

通过OIE参考实验室英国AHVLA能力验证
satisfaction for PT from OIE reference lab.

Control Measures for Inspection and quarantine of live poultry supplied to Hong Kong and Macau

- 《供港澳活禽检验检疫管理办法》；
- 《Control Measures for Inspection and quarantine of live poultry supplied to Hong Kong and Macau》
- 1、检验检疫机构对供港澳家禽实行注册登记和监督管理制度
- Inspection and quarantine bureau shall institute registration and management system for poultry supplied to Hong Kong and Macau
- 2、水禽、其他禽类、猪不得在同一注册饲养场内饲养
- Waterfowl, other avian species, and pigs shall not be raised on the same farm
- 3、每批活禽供港澳前须隔离检疫5天
- Each batch of live birds must be subjected to 5 days inspection in isolation before delivery to Hong Kong and Macau
- 4、对供港澳活禽实施临床检查，抽取样品进行禽流感H5抗体检测及抗原检测。
- Live birds supplying Hong Kong and Macau are subjected to clinical examination, and samples taken to detect H5 avian influenza antibodies and antigen

供港澳家禽禽流感的检测
Testing for AI in poultry supplied to Hong Kong and Macau

- 1、禽流感疫苗抗体效价测定：HI方法
- Titration of antibody mounted against avian influenza vaccine – HI
- 2、禽流感抗原检测：荧光RT-PCR
- Detection of avian influenza antigen–Real time reverse transcriptase (RT)-PCR
- 3、全年检测1万多批次，15万多份样品
- Tested over 10 thousand batches, more than 150 thousand samples in one year
- 4、每天出口到香港、澳门家禽18万多只
- Over 180 thousand poultry supplied daily to Hong Kong and Macau

供港澳家禽注册场禽流感免疫
AI Vaccination in registration farm

- 供港澳活禽注册场共有62家，广东辖区有供港澳活禽注册场43家
- 62 registration poultry farms(43 in Guangdong)
- 2007年7月1日起对供港澳活禽改用重组禽流感病毒H5N1灭活疫苗
- Recombination fowlpox virus express HA gene of H5 subtype AIV Vaccinated poultry since 2007.
- 首次免疫，14日龄左右，二次免疫，35日龄左右
- 14 –day-old first vaccinated, 35-day-old second vaccinated.

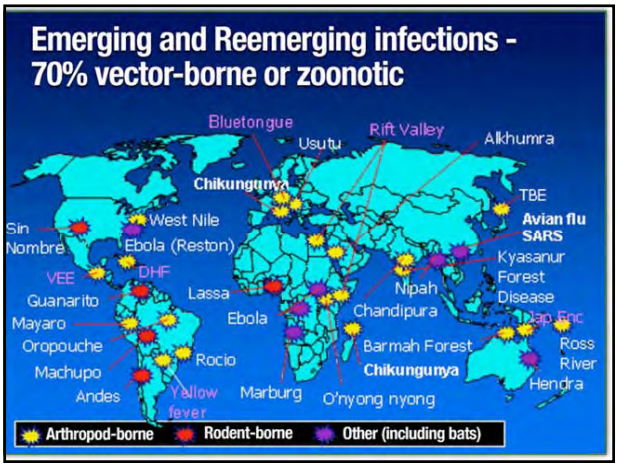
THANK YOU!

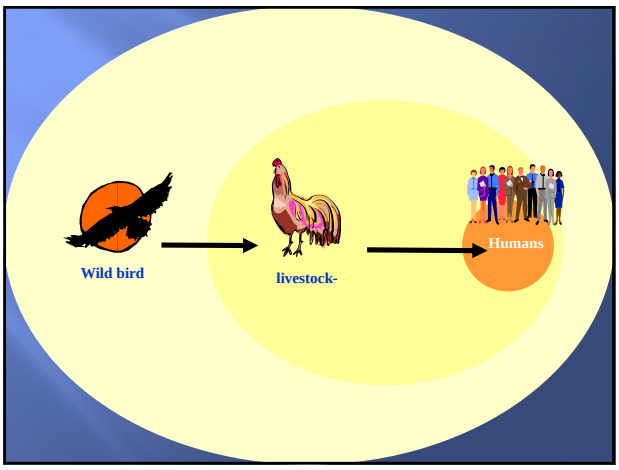
AVIAN INFLUENZA (H5N1) PREVENTION & CONTROL VIET NAM

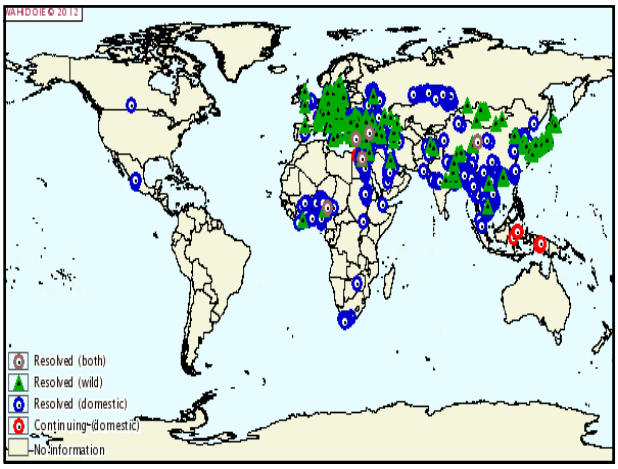
MD. Trinh Thi Ngoc Linh
The International Cooperation Department
Ministry of Health, Viet Nam

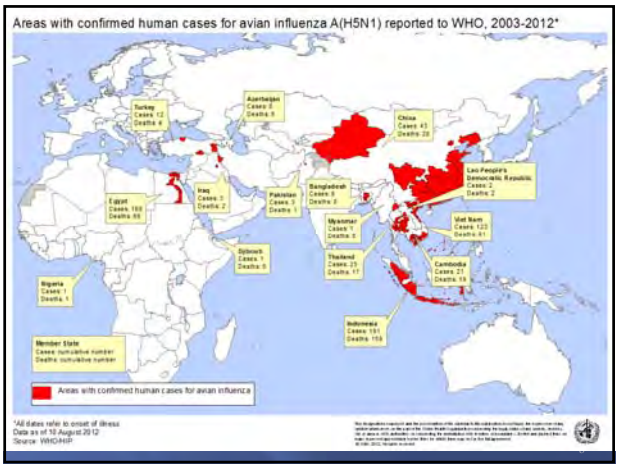
CONTENTS

PART 1
The situation of Avian Influenza (H5N1) in the world







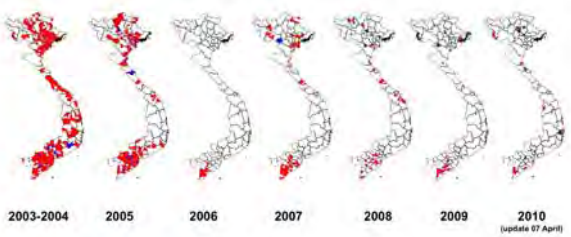


The situation of AI (H5N1) in the world from 2003 2012

No.	Country	Total of Cases	Total of Deaths	CFR%
1	Azerbaijan	8	5	62.5%
2	Bangladesh	6	0	0%
3	Cambodia	21	19	90.5%
4	China	43	28	65.1%
5	Djibouti	1	0	0%
6	Egypt	168	60	35.7%
7	Indonesia	191	159	83.2%
8	Iraq	3	2	66.7%
9	Lao's PDR	2	2	100%
10	Myanmar	1	0	0%
11	Nigeria	1	1	100%
12	Pakistan	3	1	33.3%
13	Thailand	25	17	68%
14	Turkey	12	4	33.3%
15	Viet Nam	123	61	49.6%
	Total	**608**	**359**	**59%**

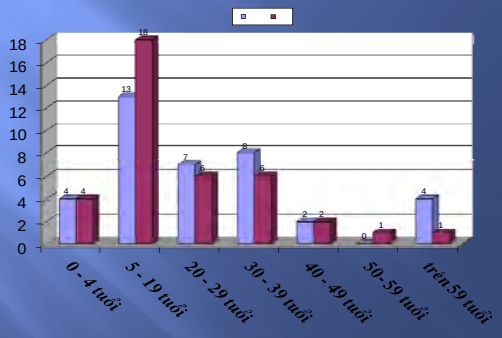
PART 2
The situation of Avian Influenza (H5N1) in Viet Nam

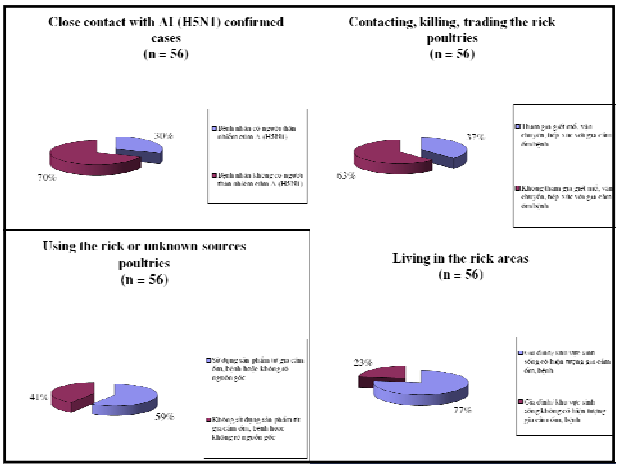
Spatial distribution of Avian Influenza human cases and poultry outbreaks Viet Nam, 2003-2010

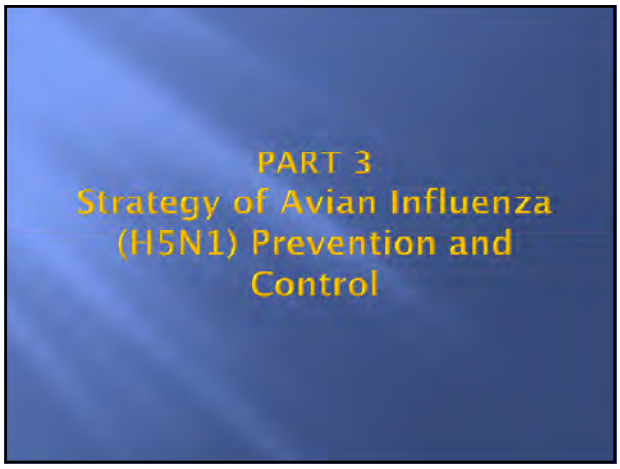


Human Cases (at district level)
Poultry Outbreaks (at district level)

Distribution by Ages and Gender







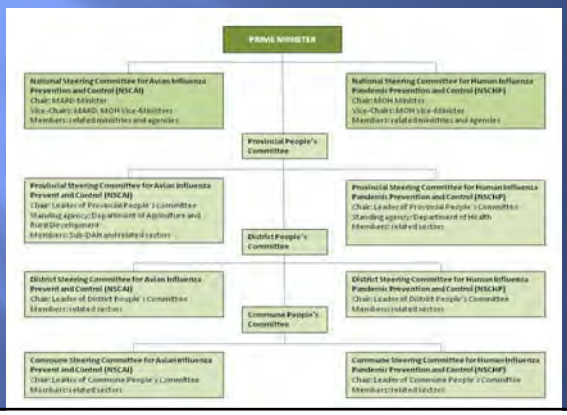
OBJECTIVES

1. Controlling infectious diseases at source and implementing appropriate measures to prevent disease emergence/re-emergence.
2. Detecting and responding rapidly and appropriately to cases of new and emerging high impact diseases in animal and humans.
3. Enhancing preparations for the medical and other consequences of any severe pandemic disease of human.

KEY ACTIONS

1. Enhanced Coordination Activities
   1. National Coordination Mechanisms
   2. Support to Central and Provincial coordination
   3. International Cooperation and Donor Coordination
   4. Strengthening engagement with civil society and the private sector
   5. Communications, public awareness and behavioral change
   6. Program monitoring and evaluation
   7. Support for regional and international activities

NATIONAL COORDINATION MECHANISMS



KEY ACTIONS *(cont.)*

II. Prevention and Control in Agricultural Sector
1. Disease Control and Prevention
2. Surveillance and epidemiological investigation
3. Modification to the livestock sector
4. Communication and extension activities

KEY ACTIONS *(cont.)*

III. Prevention and Control in Health Sector
1. National preparedness
2. Strengthening surveillance and response
3. Strengthening diagnostic capacity
4. Strengthening curative care and preventive health capacity
5. Improving research
6. Public awareness, behavioral change and other communications

SURVEILLANCE SYSTEM OF COMMUNICABLE DISEASE

MINISTRY OF HEALTH
GENERAL DEPARTMENT OF PREVENTIVE MEDICINE

- Polyclinic; Pediatric/Infectious Dept. in National Hospital
- Institutes of Hygiene and Epidemiology/Pasteur
- Pediatric; Infectious Ward In National Hospital
- Polyclinic; Pediatric/Infectious Dept in Provincial Hospital
- Dept of Communicable Disease Control In Provincial Center for Preventive Medicine
- Pediatric, Infectious Ward in Provincial Hospital
- Polyclinic; Pediatric/Infectious Dept in District Hospital
- District Health Center
- Commune Health Station

SENTINEL SITES OF INFLUENZA SURVEILLANCE

MINISTRY OF HEALTH/ WHO/CDC

- Hoa Binh Town Health centrer
- Thanh Xuan Polyclinic – Ha Noi
- Ba Trieu Polyclinic – Ha Noi
- National Institute of Hygiene and Epidemiology
- Cao loc Health Center – Lang Son Province
- National Hosp of Tropical Disease
- National Hosp of Pediatric
- Kien Xuong Health Center – Thai Binh Province
- General Hosp of Dak Lak Province
- Tay nguyen Insitutute of Hygiene and Epidemiology
- Pasteur Institute of Nha Trang
- Huong thuy Health Center - T.T. Hue Province
- General Hosp Of Khanh Hoa
- Hosp of Thanh Khe Distric – Da nang City
- Hosp of Cai Be District – Dong Nai Province
- Hosp of Xuan Loc District – Dong Nai Province
- Pasteur Institute of Ho Chi Minh City
- Hosp of Tropical Disease of HCMC
- Pediatric Hos No 1 - HCMC

Remarks:
- Number of infection, death is high in cold seasons, there are also reported some cases in hot seasons.
- There is no evidence of virus transmission from human to human but there were reportedly clusters of infected cases in some households.
- Most of patients (around 95%) have epidemiological history of exposure with infected poultry.

PART 4
LESSONS LEARNED

LESSONS LEARNED

- Political commiment and leadership have been essential in progressively addressing HPAI and in ralidly preparing Vietnam for a pandemic.
- Avian influenza caused by virus of H5N1 subtype is not expected to be eliminated from Vietnam in the next five years.
- Timeliness of international reporting of notifiable human and animal health events is a key feature of a successful national response.
- The linked system of national steering committees should be reviewed and their scope expanded to address other emerging diseases in humans and animals.

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LESSONS LEARNED *(cont.)*

- Human health is connected to the health of animals and to the health of ecosystems, there is a need to apply a One Health approach(*).
- The animal and human health sector will need to collaborate to address a number of key changes affecting Vietnam in the near future (*).
- Cooperation between human and animal health on response to avian influenza is a good starting point to expand cooperation to other zoonotic diseases.
- Official document from Ministry level guiding cooperation between human and animal health sectors is needed for tightening cooperation in provincial and district levels.

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