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

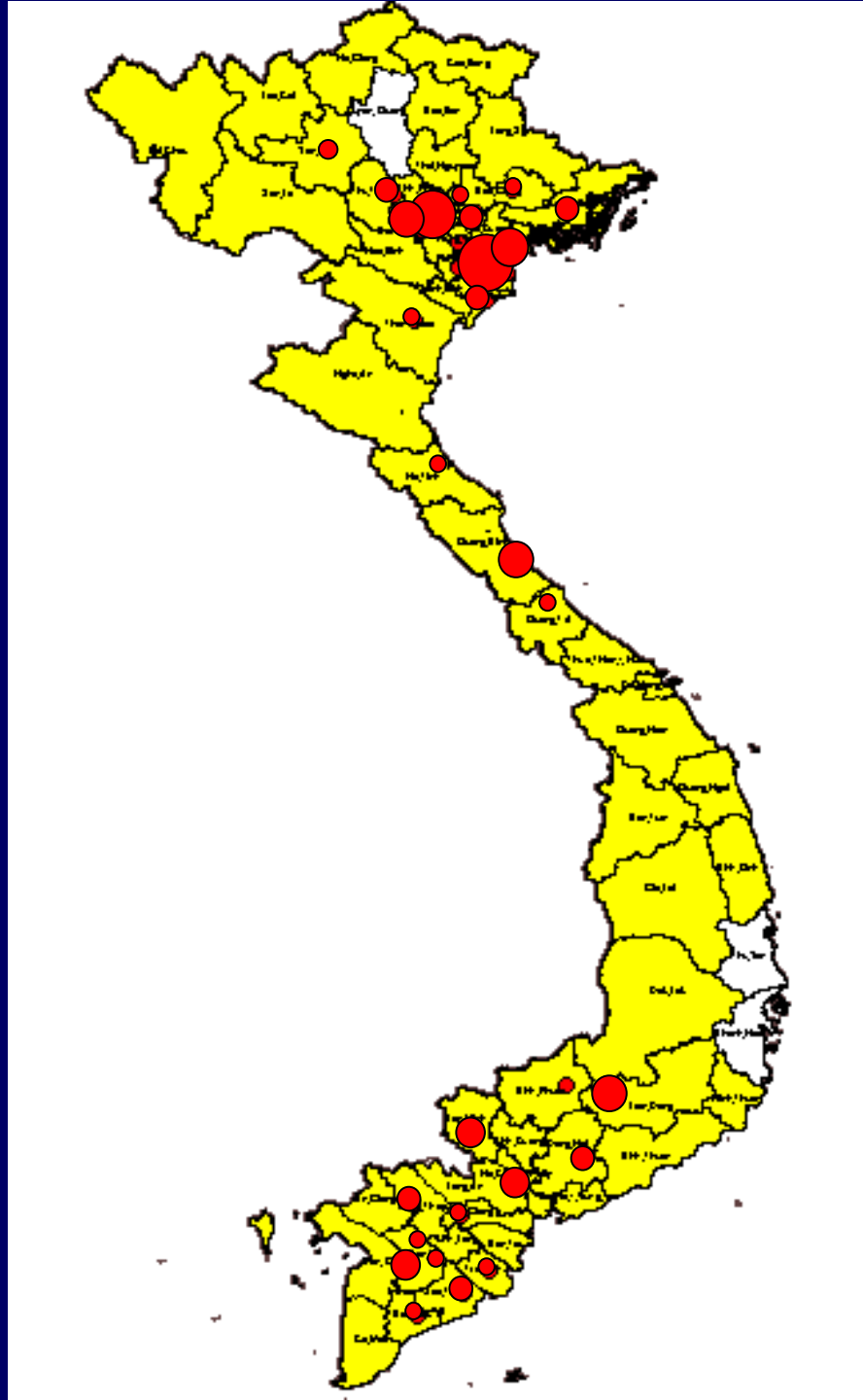
National Institute
of Hygiene and Epidemiology

General Information

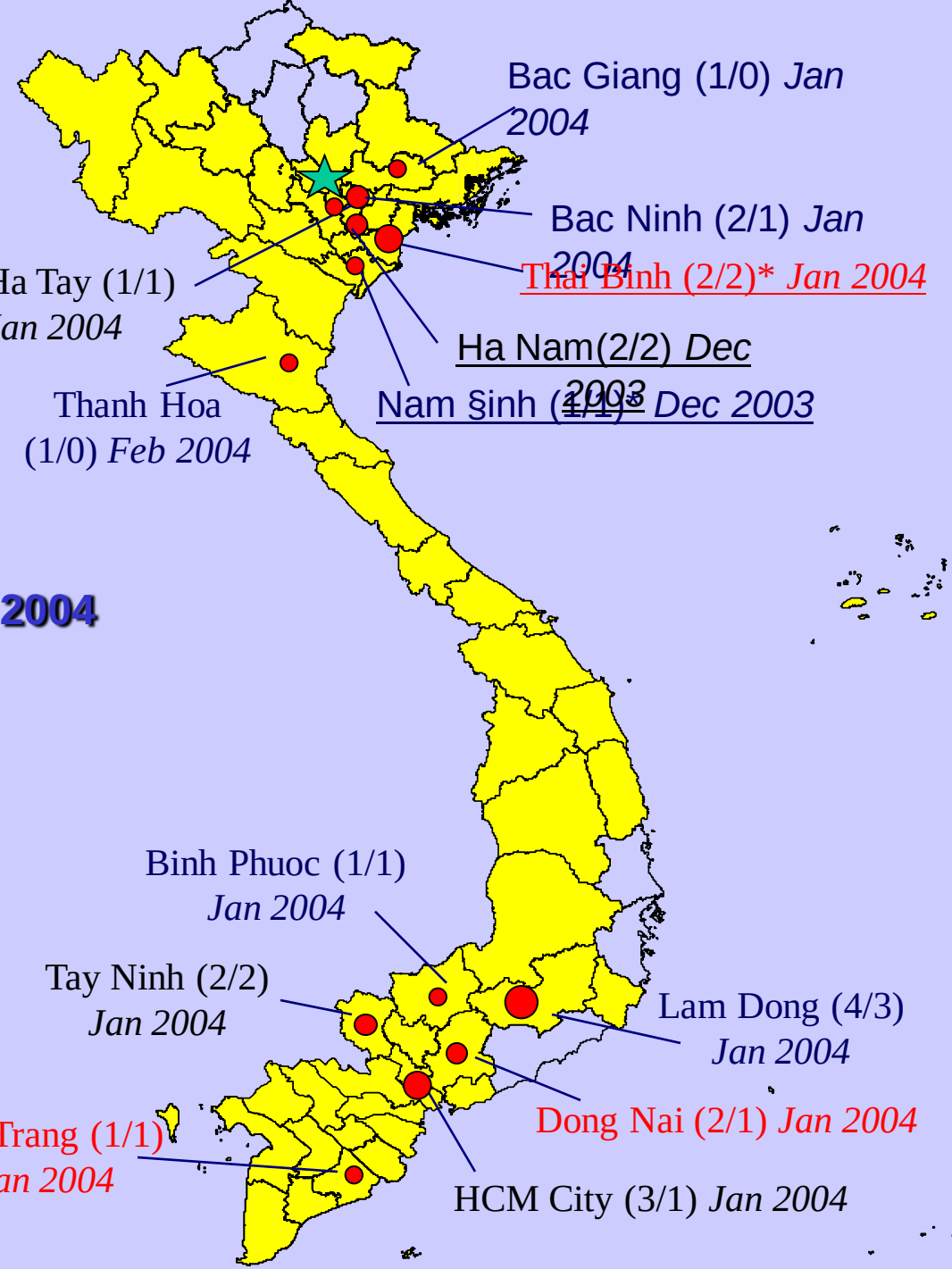
- Area:
  332,600 km2
- Provinces: *64*
- Districts: *668*
- Communes/wards: *10,732*
- Population: *82 millions*
- Climate
  - North: 4 distinct seasons
  - South: 2 seasons (wet and dry)

Avian Influenza situtation in Vietnam, Dec 2003 – until now

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



Timeline and Geographic distribution of h5n1 cases in Vietnam



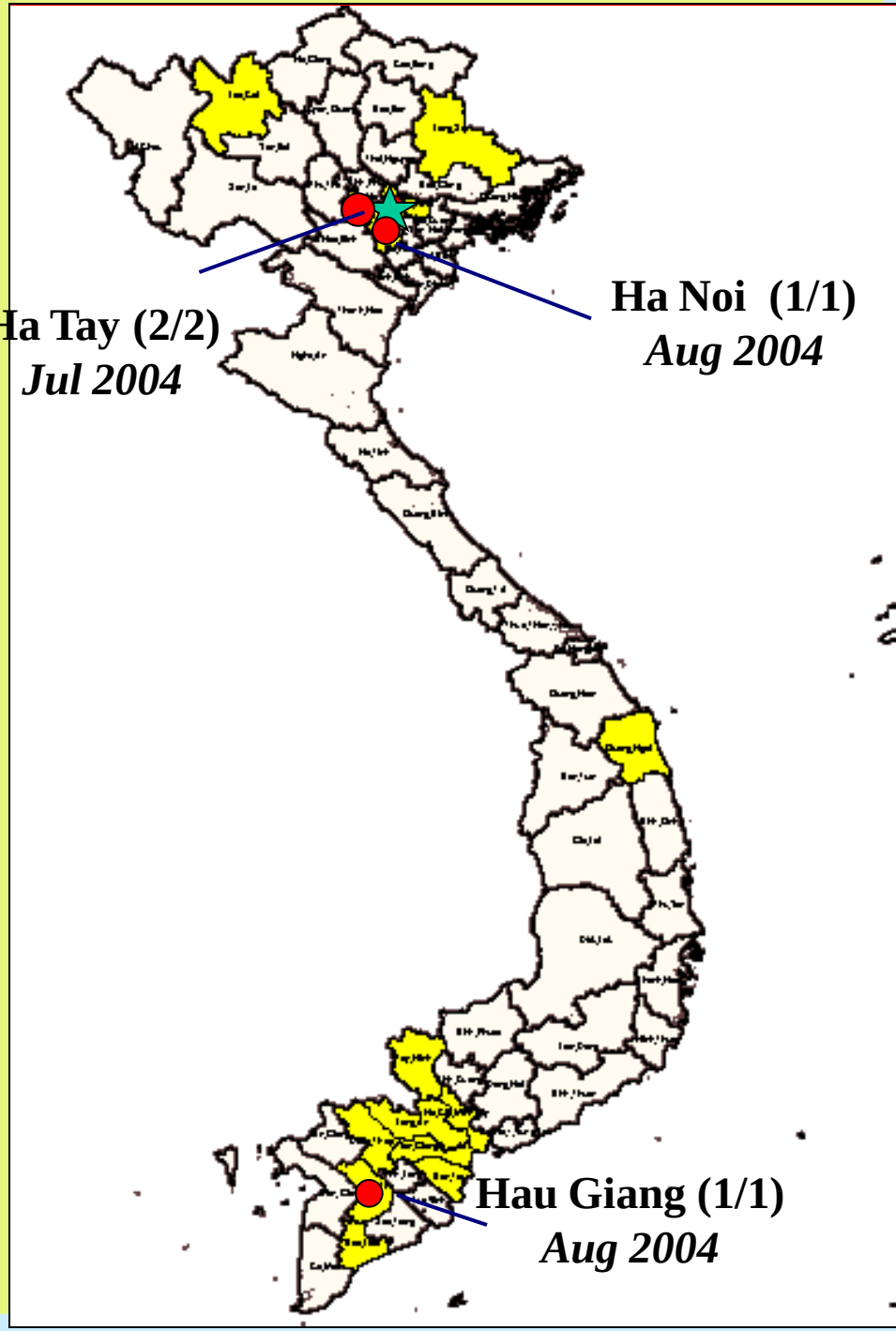
wave 1: from dec 2003 to mar 2004

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

Timeline and Geographic distribution of h5n1 cases in Vietnam

wave 2: from jul 2004 to aug 2004

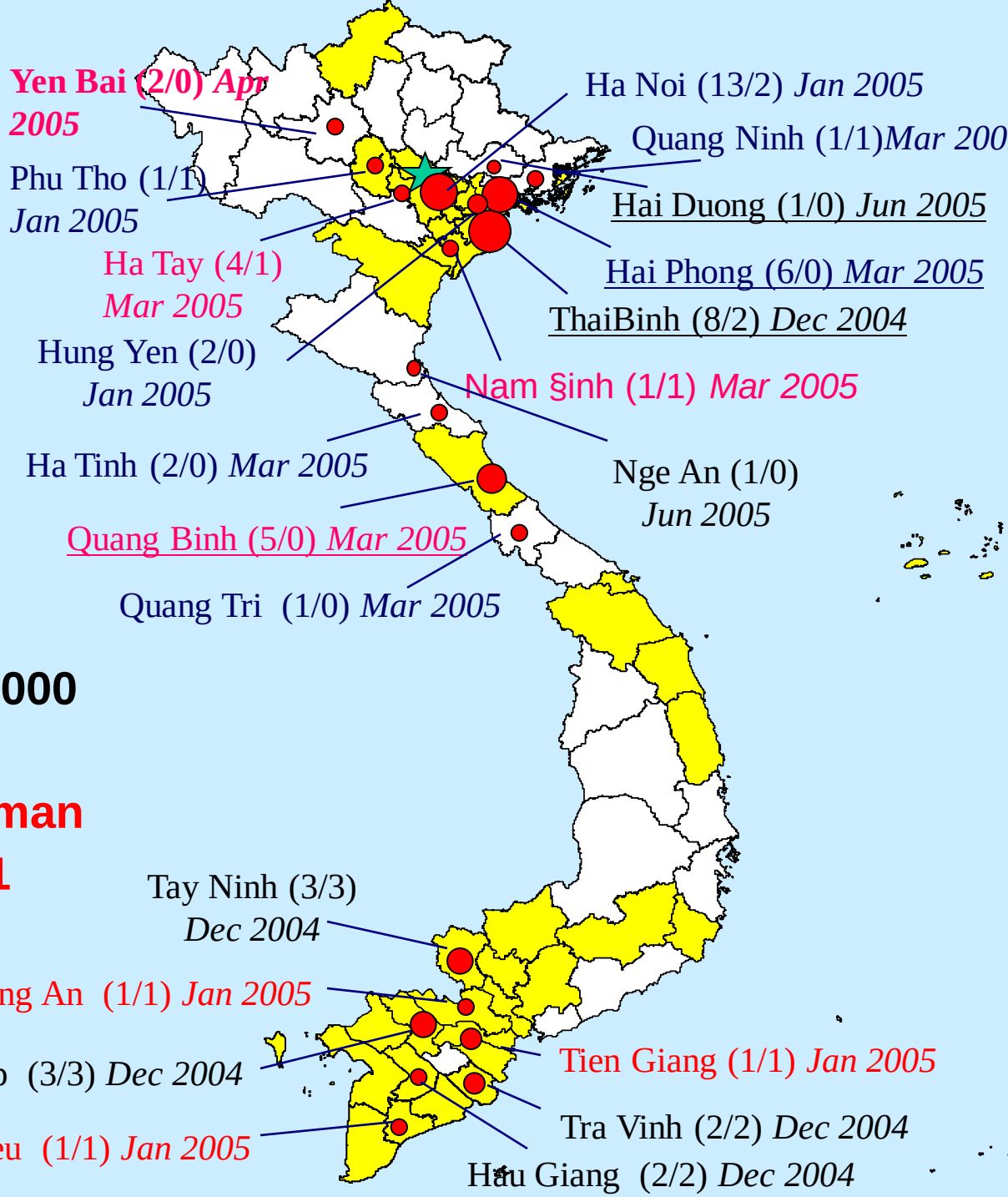
- 17 provinces reported poultry outbreaks; 84,000 poultry killed)
- 3 provinces had human outbreaks; 4 cases, 4 deaths; CFR: 100%.



Timeline and geographic distribution of h5n1 cases, in Vietnam

wave 3: from dec 2004 to Nov.2005

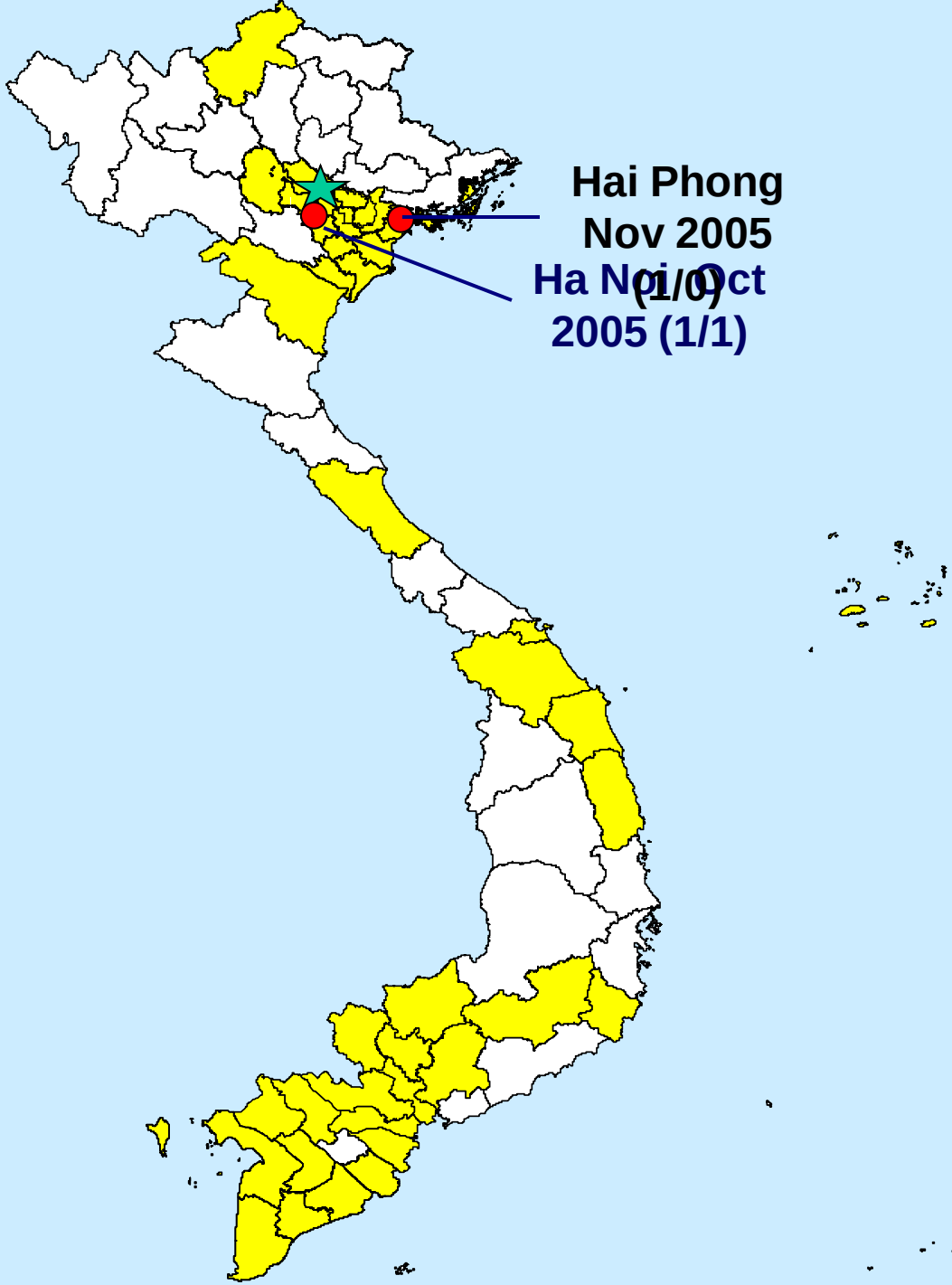
- **36 provinces have poultry outbreaks; 470,000 poultry killed**
- **25 provinces had human outbreaks; 64 cases, 21 deaths; CFR:32.8%)**



Timeline and geographic distribution of h5n1 cases, in Vietnam

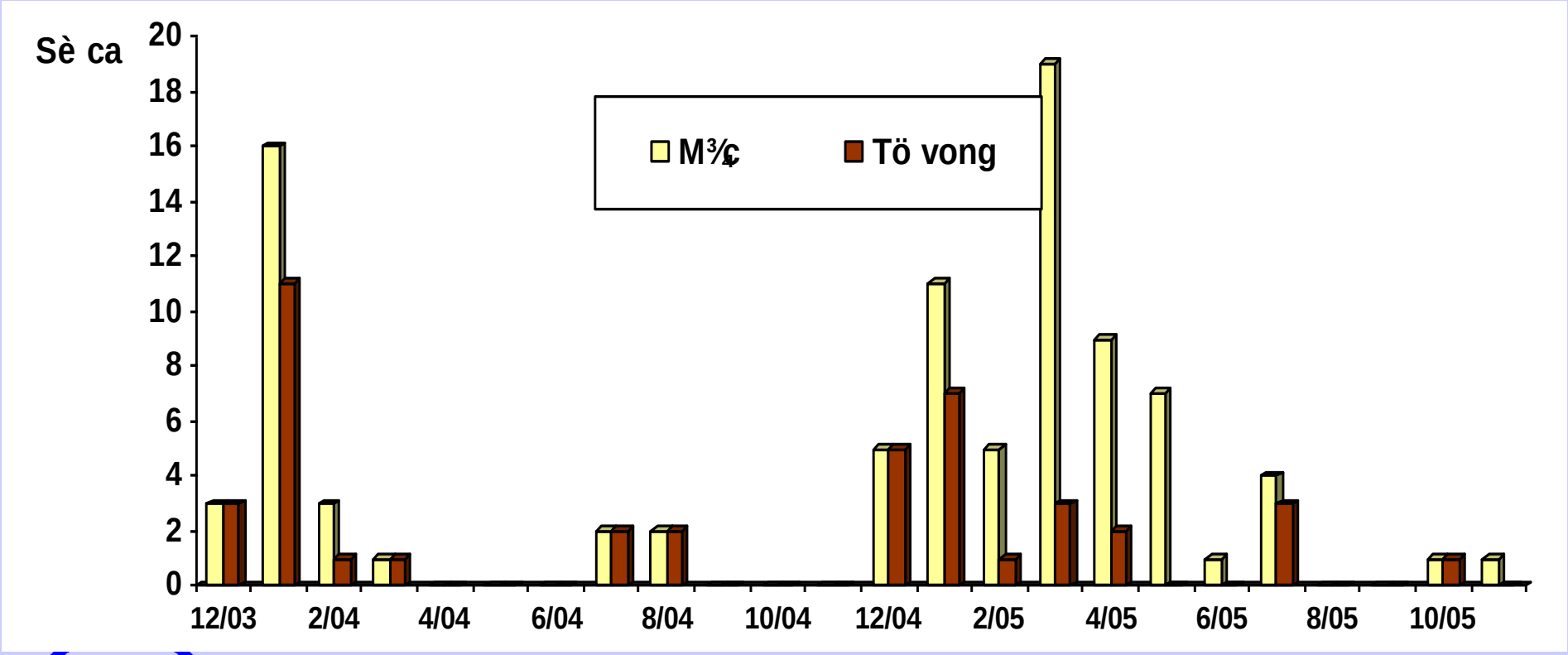
Wave 4:

From Nov.2005 until now



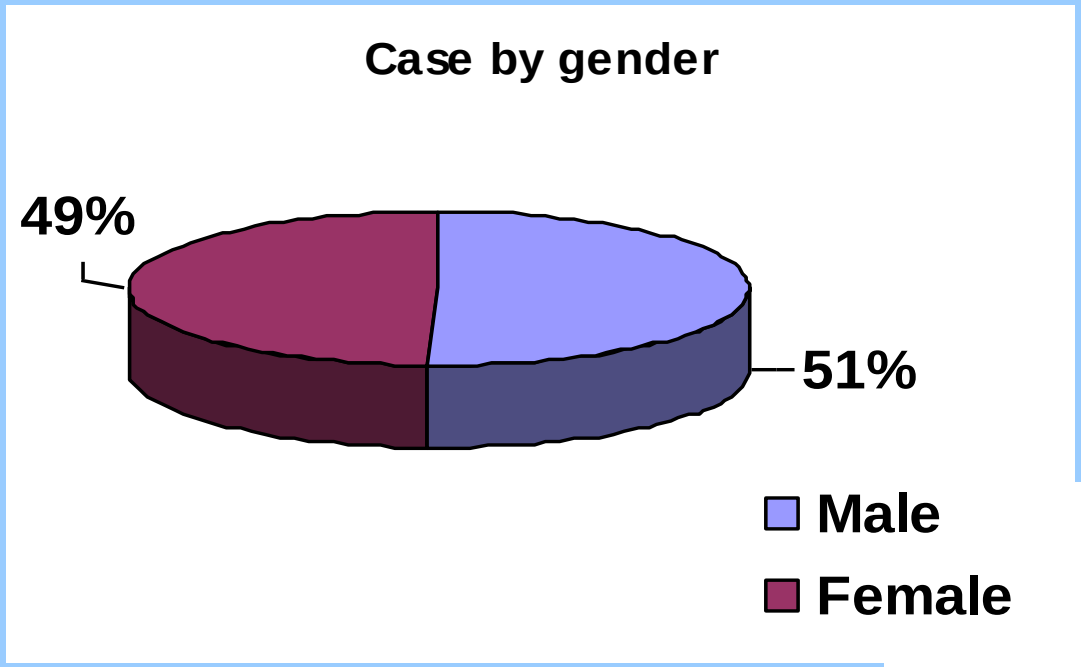
- 25 provinces have reported outbreaks in poultry;
- 2 provinces have human AI (2 cases, 1 death)

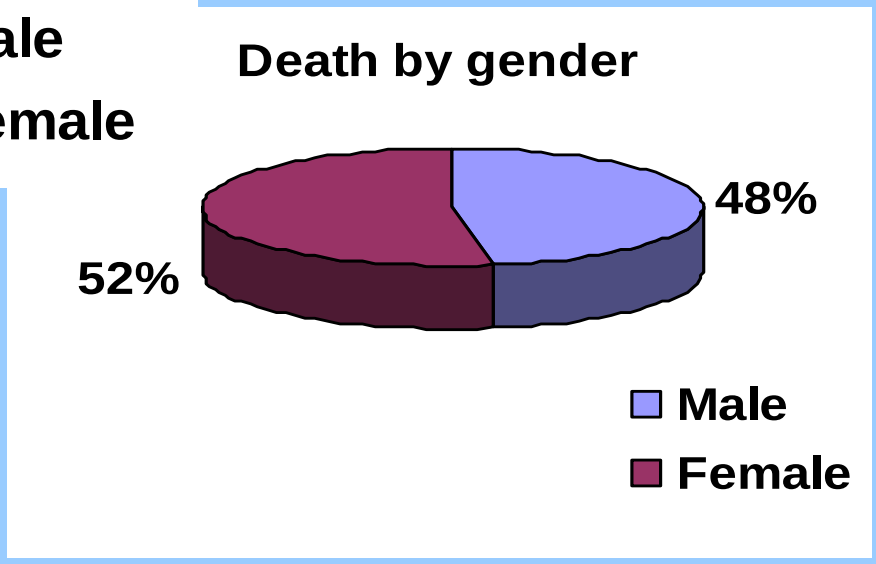
number of avian influenza cases and deaths by month



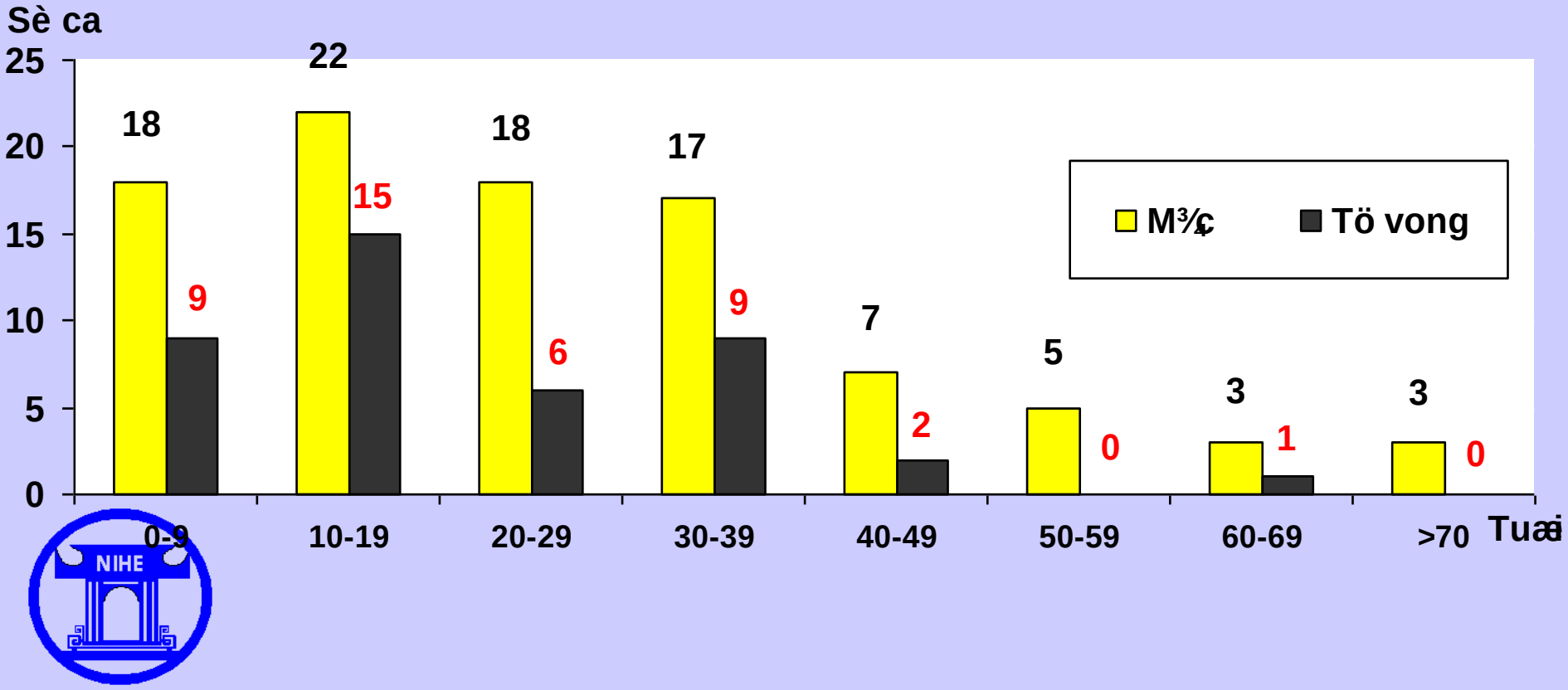
NIHE

number of avian influenza cases and deaths by gender

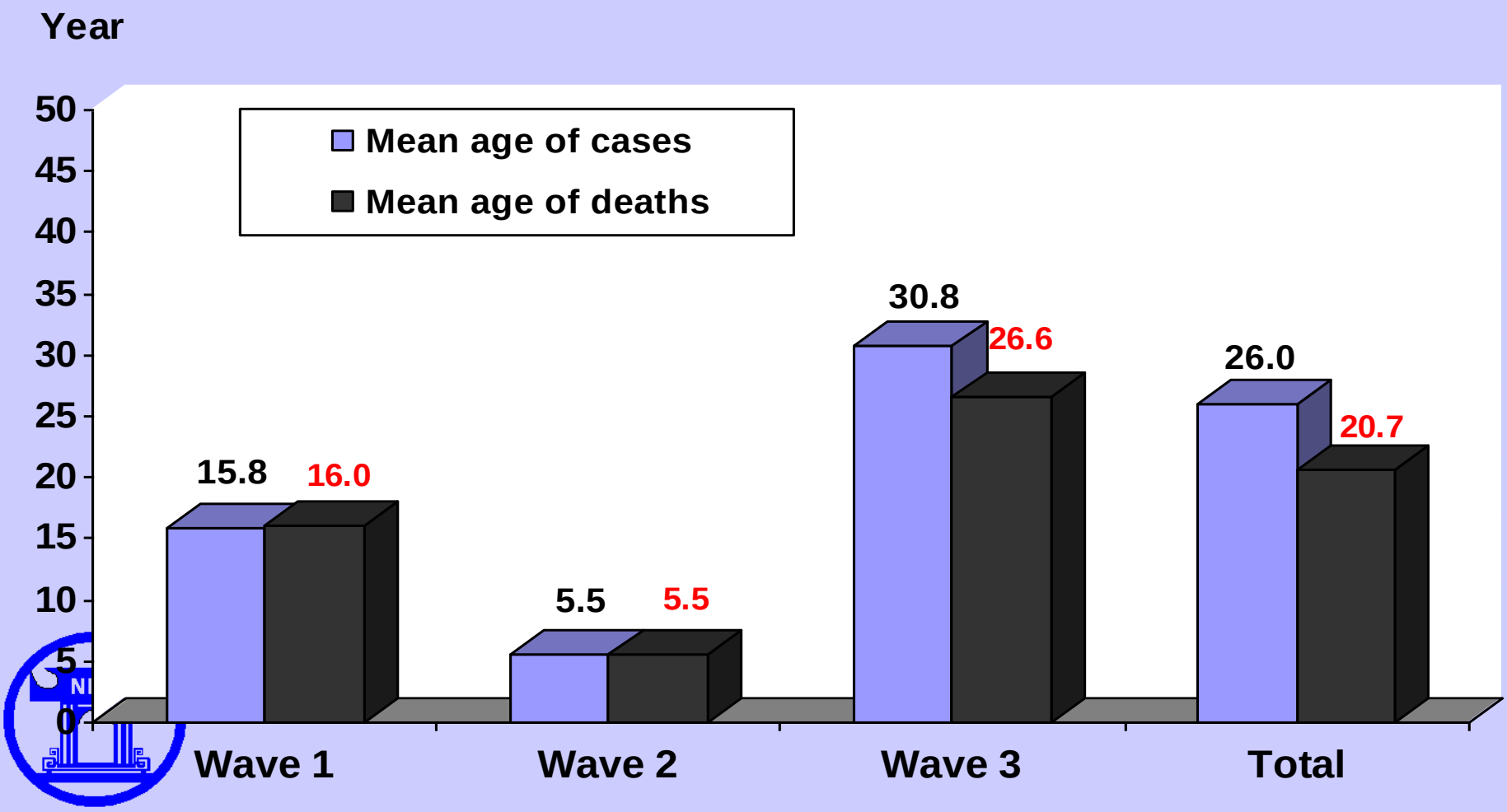




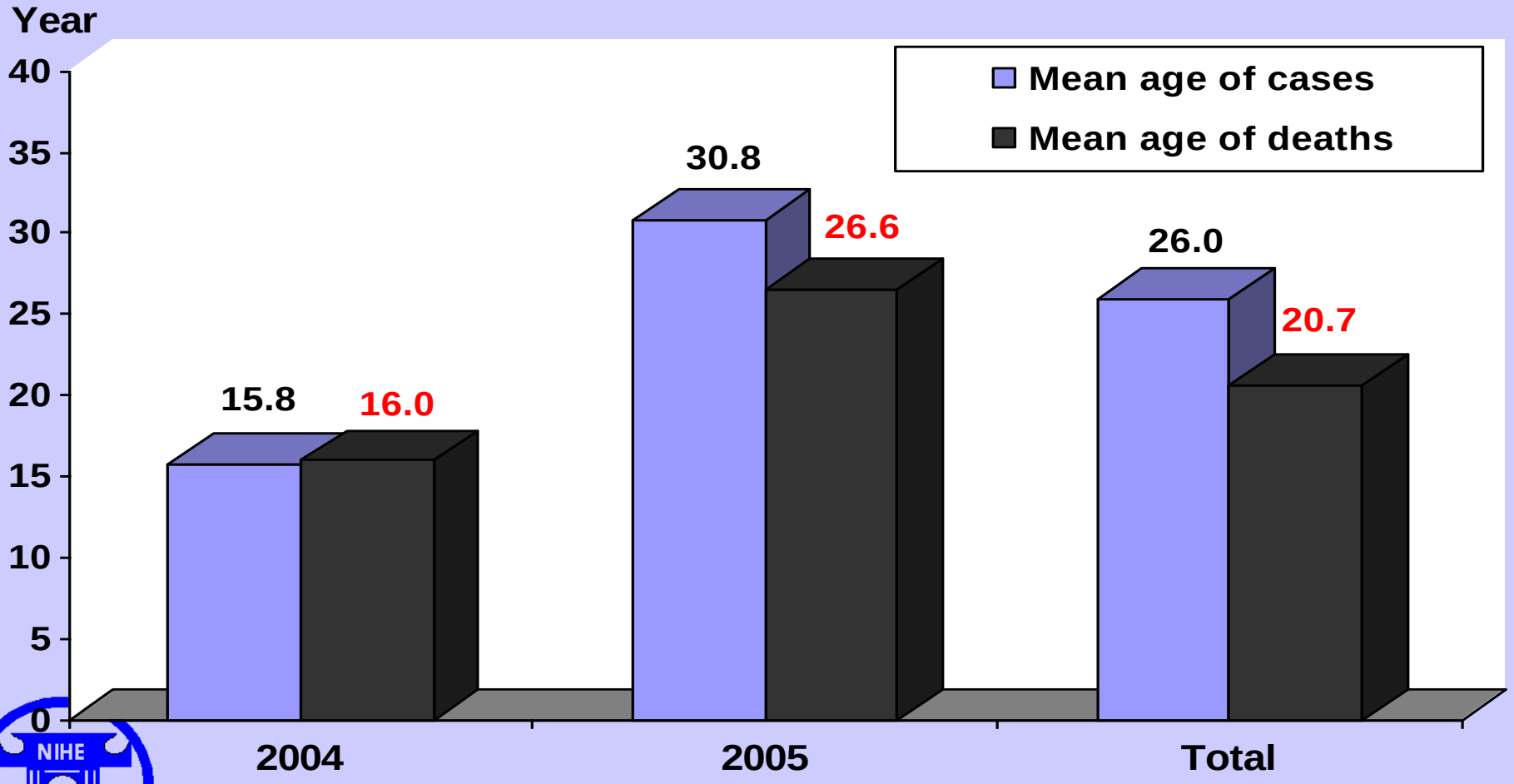
Distribution of cases and deaths by age group



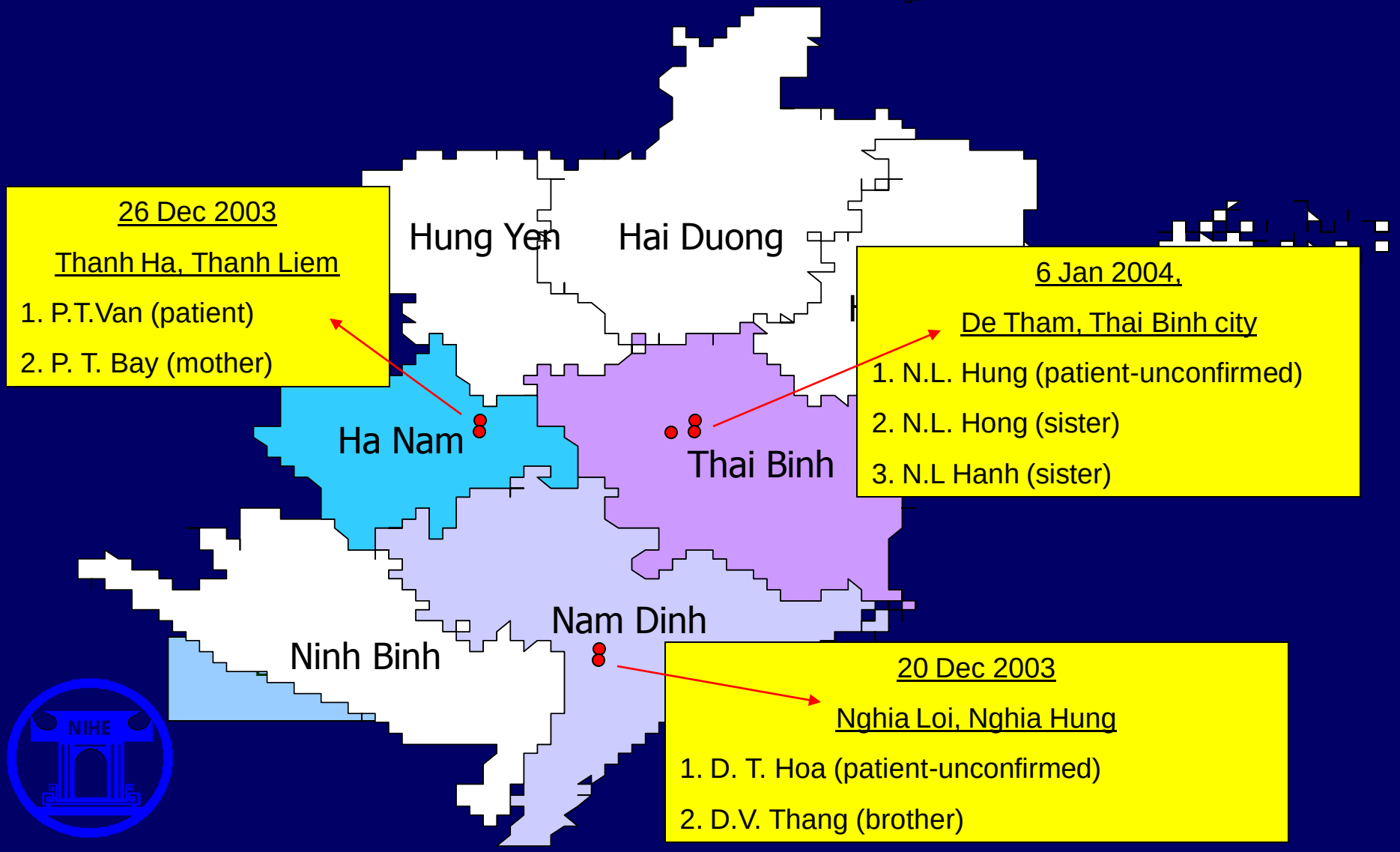
Mean age of cases and deaths by epidemic waves



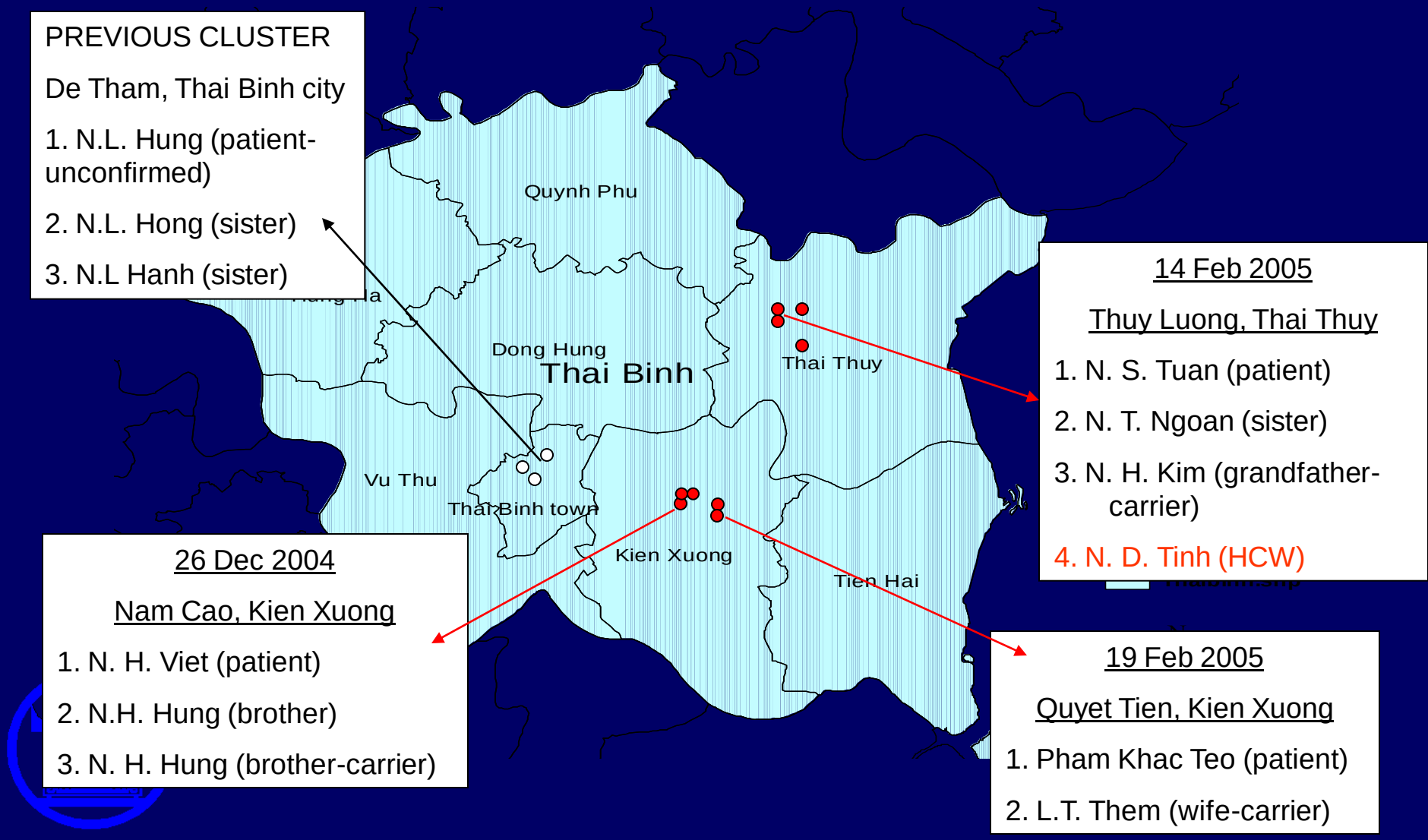
mean age of cases and deaths by year



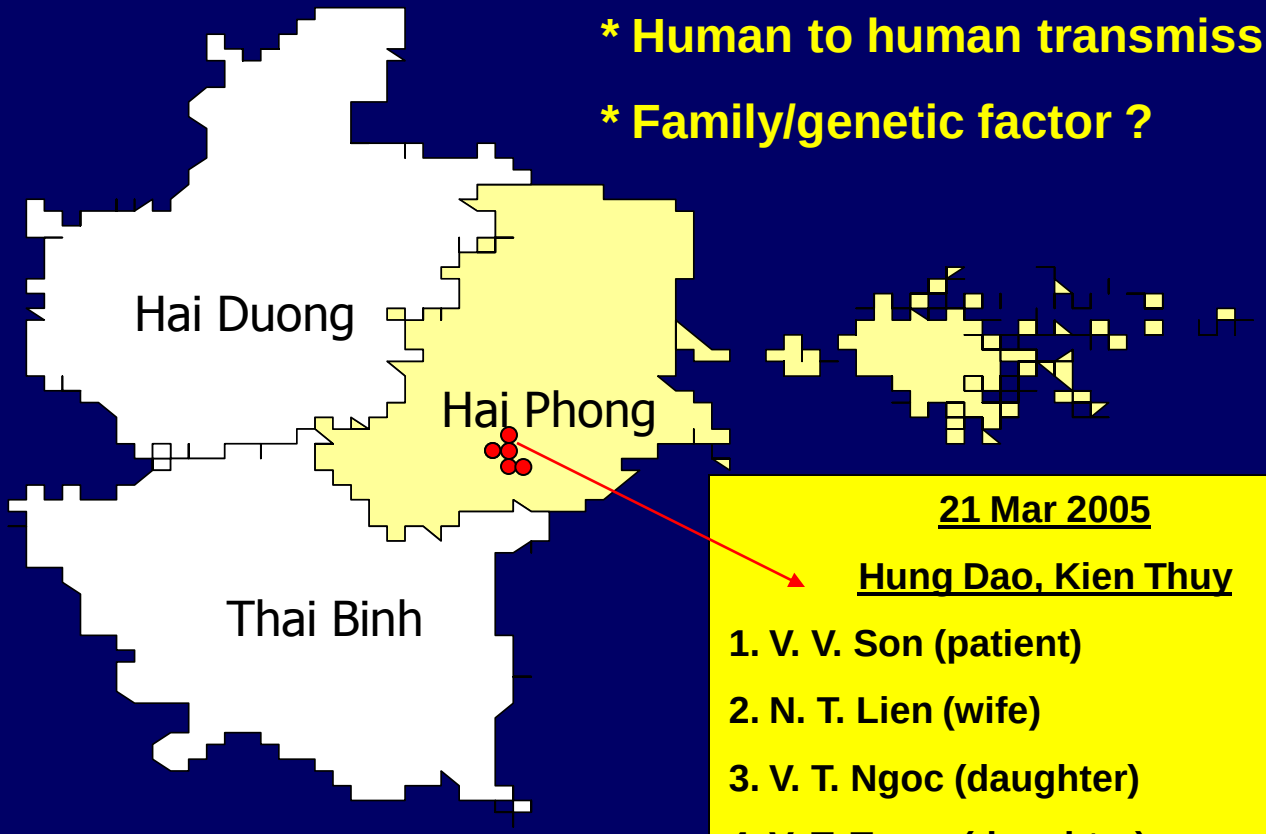
family-clusters of h5n1 cases in some nothern provinces, Wave 1 (2003-2004)



Family-clusters of H5N1 cases in Thai Binh province, Wave 3 (2004-2005)



Family-cluster of H5N1 cases in hai phong city, Wave 3 (2004-2005)



*** Human to human transmission?**

*** Family/genetic factor ?**

21 Mar 2005

Hung Dao, Kien Thuy

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

REMARKS ON EPIDEMIC SITUATION

1. H5N1 viruses seem to be more infectious for people:
   - Human cases occured sporadically in more provinces (35 prv.).
   - Human cases occured in all age groups, with the increasing mean age (15,8 – 28,8)

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

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

4. Genetic / family factors may play very important role in susceptibility to the virus.

REMARKS ON EPIDEMIC SITUATION

5. No clear evidence of human to human transmission is available, but it's possibility should be considered :

- **Number of human cases increased, including number of healthy carriers**
- **Number of infected family cluster is increasing**
- **Number of infected individuals in each family cluster is increasing**
- **Some cases without clear exposure history to sick poultry**
- **One health worker is infected**

REMARKS ON EPIDEMIC SITUATION

6. Virus (HPAI strain) may have timely and slightly changed it‘s antigenicity and pathogenicity:

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

RESPONSES nationwide

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

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RESPONSES natiOnwide

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

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RESPONSES

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

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RESPONSES: 4 measures for community

- Early detection of poultry epidemic and inform immediately the local authorities
- Do not eat ill/dead poultry
- Inform immediately or go to health care facilities when having fever related to infected poultry
- Disinfect poultry cages by chloramines

RESPONSES

4. Strict poultry quarantine, gathering raise of poultry in farms and cages, gathering slaughter places
5. National campaign on environment and poultry cage cleaning.

RESPONSES

6. Close collaboration between human health and animal health sectors in surveillance and early detection of poultry epidemics
7. Close collaboration with WHO and FAO, OIE: technical and financial supports.
8. Development of action plan for AI prevention and control: National, Provincial, District…
9. Conducting exercise for AI epid & pandemic

Some picture from the exercise for AI epid & pandemic

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RESEARCH QUESTIONS

1. **Reservoirs among animals:**

- **Which animal? Chicken, duck, other animals?**
- **Asymptomatic carriers? and if, duration?**

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RESEARCH QUESTIONS

2. Mechanism for transmission:
- direct or indirect?
- human to human transmission?
- risk factors

3. Susceptibility:
- Genetic/family factor?

4. Natural history of the disease

5. Molecular epidemiology: genetic and antigenic characterization of the virus

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Intervention strategies:

- Vaccination for poultry (H5N1) and human (seasonal Vaccine). Influenza vaccin development for human.
- Producing and stockpiling of tamiflu for treatment and prevention?
- Surveillence of new strains of A(H5N1); resistance to antiviral drugs.
- Research on mechanism of virus transmission.

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recommendations

1. AI should be considered as a combined agricultural, public health, economic and major social threat nation & globalwide.
2. Strengthen epidemiological, virological and clinical surveillance and researches for clearer assessment on AI situation with the close collaboration between animal and human health sectors
3. Complete and finalize the influenza practical, operational pandemic preparedness plan following WHO guidelines
4. Accelerate H5N1-like vaccine (both human & poultry vaccines) development
5. Develop regional and global collaboration (bilateral &multilateral) on surveillance, researches and responses.

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THANK YOU FOR YOUR ATTENTION