Vietnam – impact of GAP I on pandemic preparedness including H5N1

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CONTENT

- Situation of the influenza A(H5N1) and pandemic (H1N1) 2009 in Vietnam
- The influenza surveillance in Vietnam
- National immunization plan for prevention of the influenza A (H1N1)
- Usage of influenza vaccine in Vietnam
- Research and produce influenza vaccine in Vietnam
- Lesson learned from GAP
- Expectations from GAP
Vietnam

- Population: 86.9 m.
- < 1 year old: 1.6 m.
- Regions: 4
- Provinces: 63
- Districts: 695
- Communes: 11,138

- 7 waves of epidemic
- 61/63 provinces reported avian influenza epidemic in poultry.
- Slaughtered more than 45 mil poultries/250 mil poultries
- 119 cases in human, 59 deaths (mortality and mobility rate was 49.6%)
Since 2003, continuously record new case of avian influenza A(H5N1)
Distribution of AI cases by gender and age, 2003 - 2010

by gender

- Male: 49%
- Female: 51%

By age

- 0-4: 5%
- 5-14: 11%
- 15-24: 28%
- 25-64: 19%
- ≥65: 37%
Characteristics of the influenza type A(H5N1) isolated from human in Vietnam, period of 2003-2010

- A virus has high virulence; highly similar to a avian influenza type A(H5N1) that causes diseases in avian at the same time and location.
- Present in two antigenic clades: clade 1 and clade 2.3.4
- Didn’t find any mutation related to its potential to mutate from an avian influenza virus into a human influenza virus
- Have some mutation related to reduction of sensitivity or resistance to Oseltamivir (Tamiflu)
- There is an exchange in term of gene between influenza virus of the same subtype A/H5N1. Not yet detected any exchange to other subtypes or human influenza viruses
Influenza pandemic (H1N1)2009
Number of cases by onset dates and regions

The first case detected: May 31st
The date when H1N1 spreads out to community (HCM city): Jul 16th
The first death: Aug 03rd

From 31/5/2009- 10/3/2011: 11,468 (+) 68 deaths
Characteristic of death caused by H1N1

- By risk groups
  - Pregnant women: 13 (21.3%)
  - Chronic diseases: 34 (55.7%)

- By gender
  - Male: 23 (37.7%)
  - Female: 38 (62.3%)

- By age:
  - Under 10 ages: 11 (18.0%)
  - 10-19 ages: 10 (16.4%)
  - 20-29 ages: 14 (23.0%)
  - 30-39 ages: 9 (14.8%)
  - 40-49 ages: 7 (11.5%)
  - 50-59 ages: 6 (9.8%)
  - Above 59 ages: 4 (6.5%)
Results of national influenza surveillance, 2006-2011
The units in the national influenza surveillance program

MOH/WHO/CDC

NIHE

Hoa Binh district PMC
Thanh Xuan general clinic, HN
Ba Trieu general clinic, HN

Dak Lak general hospital
Highland Institute of Hygiene and Epidemiology

Nhatrang Pasteur Institute

Kien Xuong district PMC
National Pediatric hospital
Tropical diseases institute
Cao Loc PMC, Lang Son

Huong Thuy district PMC
Khanh Hoa general hospital
Thanh Khue PMC, Danang

Tropical diseases, HCM city
No. 1 Pediatric hospital, HCM city
Cai Be district hospital, Tiengiang
Xuan Loc district hospital
HCM city Pasteur Institute

Ba Trieu general clinic, HN

Thanh Xuan general clinic, HN
Hoa Binh district PMC
Map of 15 sentinel surveillance sites
Results of influenza syndrome surveillance
From Jan, 2006 to May, 2011

Positive percentage among influenza syndrome patients who were tested

Source: National influenza surveillance
Due to the frequent changes of the influenza virus with the ability to exchange genetic material between different strains, for example influenza A (H1N1) and (H5N1) that could lead to create new strains of influenza with high virulence and ability to spread out strongly.

Therefore, it is necessary to strengthen routine surveillance system to closely monitor any annual change of the influenza virus; increases the use of vaccines is very important; having timely preventive measures, and support vaccine manufactures develop a plan to produce vaccines.
## The state of influenza syndrome in Vietnam

### Situation over the past five years (2005-2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>Morbidity</th>
<th>Death</th>
<th>Morbidity/100,000 population</th>
<th>Mortality/100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1.634.349</td>
<td>2</td>
<td>2023.21</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>1.635.013</td>
<td>3</td>
<td>1991.74</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>1.782.176</td>
<td>1</td>
<td>2144.01</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>1.795.183</td>
<td>0</td>
<td>2159.66</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>1.662.861</td>
<td>0</td>
<td>1952.75</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>1.923.056</td>
<td>3</td>
<td>1952.59</td>
<td>0</td>
</tr>
</tbody>
</table>
Usage of influenza vaccines in Vietnam

Seasonal flu vaccines had permission to sell in Vietnam
- Vaxigrip: Sanofi Pasteur- produced in France
- Fluarix: GlaxosmithKline- produced in Germany
- Influvac: Solvay- produced in Holland

Types of the vaccine
- Inactivated vaccine, solution, 0.5ml dose, 12 months expiry.

Disease Prevention
- Prevent B, H3N2, H1N1 (2009). This vaccine virus kept changing every year according to WHO’s recommendations
- These vaccines are being used at the request of customers. The seasonal vaccines have to be repeated every year.
National immunization plan for prevention of the influenza A (H1N1)

Objective:
- To reduce prevalence and mortality rates in high risk groups in provinces/cities highly vulnerable to influenza A (H1N1).

Target population:
- Pregnant women
- Patients of chronic diseases (chronic bronchitis, cardiovascular diseases, diabetes, hypertension, cancer, etc.):
- Health workers in direct contact with influenza A (H1N1) patients or specimens from influenza A (H1N1) patients or suspected influenza A (H1N1) patients:
- People not subject to contraindication of influenza A (H1N1) vaccines in accordance with instructions by manufacturers and guidelines by the Ministry of Health
- People at the age of 18 upwards and/or elder family members of people under the age of 18 who agree to receive vaccination against influenza A (H1N1).
## Estimated number of influenza A (H1N1) vaccine recipients

<table>
<thead>
<tr>
<th>No</th>
<th>Provinces /cities</th>
<th>Population (people)</th>
<th>Number of recipients (people)</th>
<th>Influenza A (H1N1) vaccine doses (1 dose vial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><strong>Option 1 (10 provinces/cities):</strong> Hanoi, Ho Chi Minh City, Hai Phong City, Da Nang City, Khang Hoa, Thua Thien Hue, Can Tho City, Lam Dong, Dac Lac, and Nghe An.</td>
<td>24.990.200</td>
<td>909.820</td>
<td>951.482</td>
</tr>
<tr>
<td>II</td>
<td><strong>Option 2 (20 provinces/cities)</strong> including the above 10 provinces/cities and Hai Duong, Ba Ria - Vung Tau, Nam Dinh, Quang Ninh, Tien Giang, An Giang, Binh Dinh, Binh Thuan, Dong Nai, Gia Lai.</td>
<td>41.049.200</td>
<td>1.523.762</td>
<td>1.593.537</td>
</tr>
<tr>
<td>III</td>
<td><strong>Option 3 (all of the 63 provinces/cities nationwide)</strong></td>
<td>86.210.600</td>
<td>3.260.971</td>
<td>3.410.295</td>
</tr>
</tbody>
</table>
# Health education and communication

<table>
<thead>
<tr>
<th>Forms of health education &amp; communication</th>
<th>Contents of health education &amp; communication</th>
</tr>
</thead>
</table>
| – Indirect communication via mass media systems: television, radios at different levels from central to local, the press, loudspeaker systems, posters, billboards, and leaflets.  
– Direct communication at health facilities and in communities. | – Knowledge on the influenza A (H1N1) pandemic.  
– Etiologic agents.  
– Preventive measures for the influenza A (H1N1) pandemic.  
- Influenza A (H1N1) vaccines: benefits, schedules and side effects. |
Vaccination influenza A (H1N1)

- Making plans on influenza A (H1N1) vaccination at provincial, district and commune levels
- Making lists of influenza A (H1N1) vaccination recipients
- Distribution, transport, and storage of vaccines and materials for influenza A (H1N1) vaccination
- Training to health workers on conducting influenza A (H1N1) vaccination
- Conducting influenza A (H1N1) vaccination sessions
- Surveillance and treatment of side effects after influenza A (H1N1) vaccination
- Management of syringes and needles and medical waste after influenza A (H1N1) vaccination sessions.
- Inspection, surveillance and support
- Periodic monitoring and reports on influenza A (H1N1) vaccination
## Research and produce influenza vaccine in Vietnam

Currently, 4 institutes are researching to produce influenza vaccine:

<table>
<thead>
<tr>
<th>#</th>
<th>Institutes/companies</th>
<th>Method</th>
<th>Type of vaccine</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ha Noi Vaccines and Biologicals Company No. 1</td>
<td>Primary monkey kidney cells</td>
<td>H5N1</td>
<td>Clinical trial phase III</td>
</tr>
<tr>
<td>2</td>
<td>Nha Trang Institute of Vaccines and Biologicals</td>
<td>embryonated eggs</td>
<td>H5N1</td>
<td>Going to clinical trial</td>
</tr>
<tr>
<td>3</td>
<td>HCM city Pasteur Institute</td>
<td>Vero cell</td>
<td>H5N1</td>
<td>Completed laboratory research</td>
</tr>
<tr>
<td>4</td>
<td>POLYVAC</td>
<td>single-layer embryonated eggs and Vero cells</td>
<td>H1N1</td>
<td>Completed verifying safety, setting doses and schedule</td>
</tr>
</tbody>
</table>
The influenza vaccine production at IVAC

- The Institute of Vaccines and Medical Biologicals (IVAC), a state-owned vaccine manufacturer
- The goal of IVAC is to manufacturer 500,000 doses of monovalent influenza vaccine under appropriate biosafety and current Good Manufacturing Practice (cGMP) conditions,
- The potential for expansion to >1 million doses per year
- IVAC has a history of compliance to GMP and ISO 9001 quality standards for its marketed products
- For the influenza vaccine project, IVAC has benefited from the WHO and PATH–BARDA collaboration to enhance the skills of its production and quality assurance and control staff.
Strengthening supportive procedures for using and producing influenza vaccines

- A long-term plan on the development and use of influenza vaccines is developed.
- Guidelines on registration of influenza vaccines are developed.
- Guidelines on clinical trials of influenza vaccines are developed.
- Guidelines on influenza vaccine use, including AEFI monitoring are developed.
- Capacities of the MOH relevant department in research, production, use monitoring and management of influenza vaccines are strengthened.
Research and training

- Research on the safety and efficacy of influenza A (H1N1) vaccine
- Research, development and production of influenza A (H1N1) vaccine on a domestic basis. Support to technology transfer for vaccine production.
- Enhanced scientific cooperation and experience sharing with international organizations on use, verification, research on the safety and efficacy, and production of influenza A (H1N1) vaccine
Researchs

- Epidemiological characteristics, infectious risk factors, clinical of influenza type A/H5N1, 2003-2010.
- Study on burden of seasonal influenza disease at some district hospital
- Study on the co-evolution of influenza virus type A in human and animal
- Study on the interaction between human and animal virus in Vietnam
- Study on trial of rapid diagnosis test for influenza to apply in the field
Lesson learned from GAP I

1. Create opportunities for countries, especially countries with low and middle income, to increase their preparedness to seasonal influenza and pandemic vaccines to protect the community when a pandemic occurs, including: funding, technical support for vaccine production; strengthen the immunization system.

2. Creating unified framework for all countries in using, producing, researching and developing vaccines.

3. Social mobilization and communication

4. Seek strong political commitment.

5. Vaccine clearance process should be improved; legal and regulatory processes should be developed early.
Expectations from GAP in the coming years

1. Have a plan for technical assistance to enhance research capacity, producing and testing of vaccines in general, influenza vaccines in particular for developing countries, which are middle and low income countries, to be able to produce influenza vaccines.

2. The vaccine manufacture facilities complete their stable production processes to meet the needs of vaccines in the world for both quality and quantity.

3. Establishing a research system, forecasting a pandemic strain of influenza virus, providing timely vaccines virus strains.

4. Cooperation in surveillance and sharing the virus strains; cooperative multi-center clinical trial of influenza vaccine to meet the registration of circulation quickly.

5. Have a reasonable mechanism to support regions and high-risk population in the use of pandemic influenza vaccines.

6. Specifying a preparedness plan, stockpiling influenza vaccine at global, regional and national scale to effectively prevent when a influenza pandemic occur.
Thank you very much for your attention!