Building Evidence and Influencing Policy

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Workshop on Health and Economic Impact of Influenza
5th - 7th June 2, Indonesia
Distribution of Avian Influenza in Poultry and Human, 2004 - 2007

National Strategic Plan on Avian Influenza and Pandemic Influenza

The Government

National Committee on Avian & Pandemic Influenza

Strategies

- Safe animal husbandry
- Surveillance and control in animals & humans
- Pandemic influenza preparedness
- Multi-sector & international cooperation
Pandemic Preparedness Strategies

Medical/Pharmaceutical

Non-medical/non-pharmaceutical

Socio-economic security and governance (to keep society running)

- Antiviral drug, PPE, medical care facilities, Vaccine
- Risk communication
- Personal hygiene
- Travel restriction
- Social distancing
- Quarantine
- Security and rule of law
- Food and water supply
- Power supply
- Transportation
- Telecommunication
- Financial and banking

Modified from: David Nabarro at APEC-HMM, Sydney 8 June 2007
Justification for Seasonal Influenza Vaccination

- Reducing burden of season influenza
  - Reduce morbidity and mortality from influenza, pneumonia and other complications
  - Reduce economic and social impacts from influenza

- Pandemic influenza preparedness
  - Create market force for vaccine production
  - Improve infrastructure for vaccine delivery
  - Familiarize people and health providers with influenza vaccine
Evidence for Policy on Influenza Vaccination

- **Disease burden/epidemiology**
  - Season influenza
  - Pandemic influenza

- **Vaccine quality**
  - Safety
  - Efficacy

- **Health economics**
  - Cost-effectiveness
  - Cost-benefit
  - Cost saving
## Evidence for Policy on Burden of Seasonal Influenza

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<tr>
<th>Parameter or issue</th>
<th>Methodology</th>
<th>Key findings</th>
<th>Investigator / Reference</th>
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</table>
| Influenza & pneumonia burden | Routine surveillance | **Reported**  
• Influenza cases: 17,424 / yr  
• Pneumonia case: 145,290 / yr  
• Pneumonia deaths: 874 / yr | Bureau of Epidemiology, 2006 |
| Influenza & pneumonia burden | Prospective pop.-based surveillance |  
• 23% of ILI at OPD is flu positive  
• 10% of hospitalized pneumonia is caused by influenza  
• OPD visits from flu: 924,478 / yr  
• Loss of work days: 3.1 mill. / yr  
• Loss of school days: 1.7 mill. / yr | Simmerman M, et al, 2006 |
| Influenza & pneumonia burden | Extrapolation from study of Simmerman, on reported data | **Estimated (min)**  
• Flu cases: 749,189 cases / yr  
• Pneumonia cases: 242,150 / yr  
• Flu pneumonia cases 26,637 / yr  
• Flu pneumonia deaths 161/ yr | Charung M, In flu vaccination project proposal to NHSO Board, 2007 |
### Evidence for Policy on Seasonal Influenza Epidemiology

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| Risk group               | Prospective pop.-based surveillance | Groups at risk of serious complications  
- Elderly and young children  
- Persons with chronic cardiac and respiratory diseases  
- Persons hospitalized in previous year                                                                  | Simmerman M, et al, 2006                           |
| Influenza seasonality    | Prospective surveillance            | Influenza cases peak during June-October                                                                                                                                  | Simmerman M, et al, 2006                           |
| Influenza seasonality    | Routine surveillance                | Influenza cases are reported all year round, more cases during May-October, peaks usually in July                                                                 | Bureau of Epidemiology                            |
| Match of circulating & vaccine virus | Laboratory surveillance, over the past decade | Characters of circulating flu viruses in Thailand each year are close to those of recommended vaccine strains for both northern and southern hemispheres | NIH/ Dep.of Med. Sci./ MOPH                       |
### Evidence for Policy on Influenza Vaccine Cost & Effectiveness

<table>
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<tr>
<td>Vaccine effectiveness</td>
<td>Epidemiologic Survey</td>
<td>Flu vaccination to the elderly will reduce pneumonia incidence by one half (AR 4.83% in vaccinated group compared with 10.88 in unvaccinated)</td>
<td>1. Rungnirand P. et al. In J Med Assoc Thai Vol.88 No.2 2005</td>
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<td>Benefit of flu vaccination</td>
<td>Simple estimation</td>
<td>Flu cases prevented: 400,000 / yr Pneumo. deaths prevented: 25,000/ yr Medical cost saved: 736 M baht Indirect cost saved: 800 M baht</td>
<td>Charung M, In flu vaccination project proposal to NHSO Board, 2007</td>
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<td>Low estimates:</td>
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<td>• 6.5 million cases</td>
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<td>• 6,500 – 35,000 deaths</td>
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<td>High estimates:</td>
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<td>• 26 million cases</td>
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<td>• 26,000 – 143,000 deaths</td>
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<td>Economic impact of pandemic</td>
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<td>0.39% GDP loss from avian influenza outbreaks in 2004</td>
<td>NESDB 2005</td>
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<td>(as benchmark for estimation of human influenza pandemic)</td>
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Projection on the Use of Seasonal Influenza Vaccine in Thailand

High-risk groups
- Started 2008
- Target groups:
  - People with health conditions (COPD, asthma, heart disease, cerebro-vascular dis., renal failure, chemotherapy, DM)
  - Elderly, over 65 years
  - Add: Pregnant & obesity in 2009
  - Add: children 6-23 months in 2010
- Vaccine supply: 2.4 M doses in 2011

Health care personnel
- Started 2004
- HCW & poultry cullers
- Public sector, countrywide
- Target: 400,000 / yr

Note: 2000-2003 figures -- from Simmerman et al.
2004 -2005 figures – initial projection
Influenza Vaccine Project in Thailand

- May 2007: Government approved influenza vaccine production Project / package

- Pilot Plant: BSL-3 with WHO-GMP

- Target: 2-10 million doses of Trivalent IIV annually using Egg-based technology

- Investment: supported from Thai Government $42 million or 1,411.70 million baht for Industrial Plant
## Evidence for Policy Assessment: Vaccine Efficacy/Effectiveness

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<tr>
<td>Seasonal flu vaccine efficacy</td>
<td>Epidemiologic Survey</td>
<td>Seasonal flu vaccination had 42% efficacy against ILI in hospital staff in Buriram province (N:57). Hand washing was protective.</td>
<td>Yodkalw E, et al. (FETP) 2010</td>
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<td>Pandemic H1N1 vac efficacy</td>
<td>Epidemiologic Survey</td>
<td>50 % efficacy against ILI, 80% efficacy against H1N1 infections in prisoners (N:100). 50% coverage needed for herd effect.</td>
<td>Praekunatham H, et al. (FETP) 2010</td>
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<td>Pandemic H1N1 immunogenicity</td>
<td>Prospective cohort, serologic study</td>
<td>62% immunogenicity after single injection in medical staff (N: 252) at Barasnaradura Hospital.</td>
<td>Kankawinpong O, et al. 2010</td>
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Influenza vaccination is a high impact and high investment tool for influenza prevention, especially for developing countries. Strong evidence is essential to support policy decisions for such costly investments. A variety of fundamental capacities are needed for the development of high quality evidence in supporting policy decisions, e.g., surveillance, epidemiology, health economics, modeling, research, etc.
Acknowledgement

- Dr. Supamit Chunsuttiwat
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