Precautionary Measures in Areas of Scientific Uncertainty: Pandemic Influenza

• **Context**
  – Influenza pandemics have occurred without warning
  – International surveillance of infectious diseases has improved, especially since SARS (NB new International Health Regulations)
  – Pandemics lead to social and economic disruption, illness and as loss of life
  – Knowledge & public expectations are greater than at the time of the last pandemic
  – Vaccines are the most important intervention for reducing morbidity and mortality and were available for the 1957 and 1968 pandemics, but too late to have an impact
  – Previously, anti-virals were not an option
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- Risk Assessment
  - Possible warning signs
    - H5N1 now endemic in bird populations in Asia
    - Avian outbreaks continue to occur despite aggressive control measures, including the culling of more than 140 million poultry
    - Migratory birds dying with highly pathogenic H5N1 (but domestic excrete large quantities of highly pathogenic virus without showing signs of illness)
    - Unprecedented level of transmission to humans
    - Changes in the epidemiology of human and animal disease
    - Alterations in the genetic composition of H5N1 viruses
  - Increased risk of a pandemic
  - The risk will continue
  - The evolution of the risk is unpredictable
  - The early warning system is weak
  - Interventions to reduce risk to humans and associated mortality and morbidity are possible but untested

? STRENGTH OF EVIDENCE
How do Flu Pandemics Occur?

Migratory water birds

Domestic birds

Pigs can be infected by human AND avian viruses
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• Options
  – Reduce Opportunities for Human Infection
    • Collaboration between animal and human health sectors
    • Risk communication
    • Modelling of Virus Emergence
  – Strengthen the early warning system
    • Improve detection of cases
    • Investigate human cases related to animal outbreaks
    • Epidemiologic investigation
    • Strengthen risk assessment
  – Contain or Delay Spread At Source
    • International anti-viral stockpile and delivery mechanisms
  – Reduce Morbidity, Mortality & Social Disruption
    • Monitor evolution of pandemic
    • Non-pharmaceutical interventions
    • Use anti-virals for priority groups
    • Augment vaccine supplies and delivery
    • Risk communication
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• Option choice takes into account:
  – Social factors, ethical values, experience, observation and modelling
  – Stakeholders
  – Inequitable distribution of risks, capacity to respond, inequality of access
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- **Option choice now:**
  - No action
  - Research
  - Monitoring
  - Consultation, communication and engagement
  - Behavioural change

- **Option choice at time of a possible pandemic:**
  - Pandemic alert level
  - Behaviour change
  - Reduction in exposure
  - Technical mitigation
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- **Action Now:**
  - Research  - YES
  - Monitoring  - YES
  - Consultation, communication and engagement  - YES
  - Behaviour change  - YES

*Action at time of a possible Pandemic*
- Pandemic alert level declaration  - YES (Fundamental decision point)
- Promotion of behavioural change  - YES
- Reduction in exposure  - Possibly
- Technical mitigation  - YES
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- Evaluation
  - Dependent on surveillance, investigative and risk assessment infrastructure
  - Necessary for changes to utilization of antivirals (NB resistance), vaccines and other measures