

# Preparing for the next flu pandemic



为下一轮大流感作好准备

# Scope

- **Avian Influenza**  
禽流感
- **Influenza Pandemics**  
大流感
- **Singapore's Pandemic Plan**  
新加坡的大流感应变计划

# Avian Influenza

禽流感



# Human Infections caused by Avian Influenza

## 禽流感引起的人类流感

- **Avian flu – disease affecting birds.**  
禽流感 – 感染禽鸟的疾病。
- **Avian flu viruses rarely infect humans**  
禽流感病毒极少感染人类

| Year | Place    | Subtype | No of Cases | No of Deaths |
|------|----------|---------|-------------|--------------|
| 1997 | HK       | H5N1    | 18          | 6            |
| 1999 | HK       | H9N2    | 2           | 0            |
| 2003 | HK       | H5N1    | 2           | 1            |
| 2003 | Ne'lands | H7N7    | 83          | 1            |
| 2003 | HK       | H9N2    | 1           | 0            |

# Update of H5N1 Avian Influenza In Humans

(4 Jul 2006) (Source:WHO)

## 人类感染禽流感的最新情况

(2006年7月4日) (来源: 世界卫生组织)

| Country      | Cases      | Deaths     |
|--------------|------------|------------|
| Azerbaijan   | 8          | 5          |
| Cambodia     | 6          | 6          |
| China        | 18         | 12         |
| Djibuti      | 1          | 0          |
| Egypt        | 14         | 6          |
| Indonesia    | 52         | 40         |
| Iraq         | 2          | 2          |
| Thailand     | 22         | 14         |
| Turkey       | 12         | 4          |
| Vietnam      | 93         | 42         |
| <b>Total</b> | <b>229</b> | <b>131</b> |

# H5N1 Transmission

## H5N1的传播

### ➤ Animal to human –

preparing diseased birds, handling fighting cocks, playing with poultry, consumption of duck's blood, eating undercooked poultry.

### 由动物传给人类 –

处理生病鸟类、同斗鸡有接触、同家禽嬉戏、食用鸭血、食用未煮熟透的家禽。

### ➤ Environment to human –

contamination of hands & self-inoculation

### 人类从环境感染病毒 –

双手因接触到受感染的非生物性媒介物或自我注射预防针而受到污染

# H5N1 Transmission

## H5N1的传播

### ➤ Human to Human 人传人

- Oct 2004 - probable case of child-to-mother transmission in Thailand in Oct 2004.

2004年10月，泰国曾发生母亲从孩子身上感染到病毒的确诊病例。

- May 2006 – Medan probable cluster

2006年5月 - 在棉兰发生确诊群体发病病例。

- Very close and prolonged contact

非常紧密和长时间的接触。

- Mainly by large droplet spread e.g. sneeze (1 meter)

主要由大颗的飞沫传播(1米)

# Infectious Period of Influenza

## 流感的传染期

- **Generally, 1 day before onset of symptoms up to 5 days in adults and 3 weeks in young children.**  
一般来说，出现症状的前一天成人的传染期最长达5天，年幼儿童的传染期最长达三个星期
- **Infectiousness related to severity of illness.**  
病毒散发量同病情的严重度有关联。
- **Minimal symptoms, asymptomatic can still be infectious (30-50% of influenza infections are asymptomatic).**  
轻微症状，无症状患者也有传染性（30-50%的流感传染是无症状的）。



# Influenza Pandemics

大流感



# Influenza Pandemics 大流感

- Pandemic – world-wide epidemic affecting large numbers of people.

大流感 – 感染世界各地很多人。

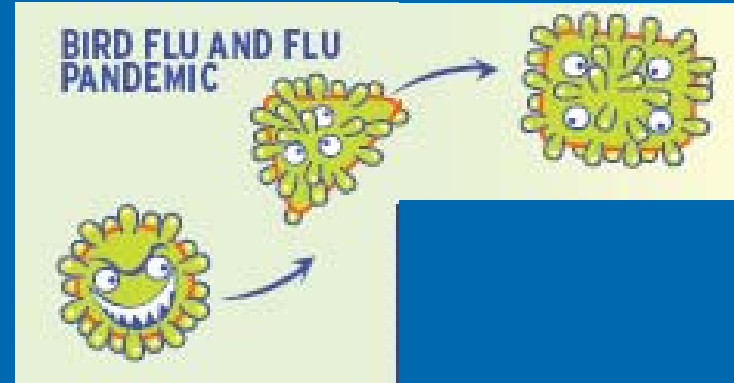
- 3 subtypes have caused human epidemics in the 20<sup>th</sup> century : H1N1 (1918 Spanish flu), H2N2 (1957 Asian flu), H3N2 (1968 Hong Kong flu).

三种亚型曾引起人类流感：H1N1（1918年西班牙大流感）、H2N2（1957年亚洲大流感）、H3N2（1968年香港大流感）

- Impact on Singapore 对新加坡的影响：

- 1918 : est 2400 excess deaths 约超过2400人死亡
- 1957 : est 500 excess deaths 约超过500人死亡
- 1968 : est 300 – 400 excess deaths 约超过300-400人死亡

# Influenza Pandemic – Risk Assessment 大流感-风险评估



- H5N1 is a new sub-type of the influenza A virus, humans have no immunity.
- Human cases experienced severe illness with a very high mortality rate.
- Avian flu outbreaks continue to spread in region. Likelihood of eradicating avian flu in this region is bleak. Backyard farms. High risk practices. Poverty. Lack of compensation.
- Avian Flu has spread to Turkey, Romania and westwards
- H5 N1 virus can mutate
- When and how severe cannot be predicted.
- A型流感病毒的新亚型，A/H5N1病毒，人类无抗体。
- 人类受感染后会病重，死亡率极高。
- 禽流感疫情继续在区域蔓延。在本区域根除禽流感的希望渺茫。后院养殖场。高风险行为。贫困。缺乏赔偿。
- 受影响地区向西方扩大到土耳其和罗马尼亚。
- 重组，适应性突变。
- 何时会受影响和严重性无法预料。

# Singapore's Flu Pandemic Plan

新加坡的大流感应变计划

# Singapore's Pandemic Planning Assumptions

## 新加坡的大流感应变计划的假定

- **Two or more waves in same year or in successive flu seasons**

在同一年或连续几个流感季节发生两波或更多波的疫情。

- **Second wave may occur 3-9 mths later; may be more serious than first (seen in 1918)**

第二波疫情可能在三至九个月后发生；可能比第一波疫情更严重（如1918年的情况）

# Singapore's Pandemic Planning Assumptions

## 新加坡的大流感应变计划的假定

- **Each wave lasts about 6 weeks**  
每一波疫情持续约六周。
- **About 1 million infections in 1<sup>st</sup> Wave**  
第一波约有一百万人受到感染。

# Components of Plan

## 计划的内容

- **Surveillance.**

监管

- **Response & Impact Mitigation.**

应对之策，缓解冲击

- **Vaccinate population.**

为全民注射流感疫苗

# Surveillance 监管

- Detect importation, occurrence as early as possible.  
尽早测出病毒的入侵或发生。
- External surveillance 对外监管
  - International Health Orgns 国际卫生组织 (WHO, CDC, FAO etc)
  - Country Health Authorities 国家卫生部门
- Internal surveillance 内部监管
  - Focus on hospitals 集中在医院
    - Atypical pneumonias 非典型肺炎
    - Unexplained deaths + respiratory illness 死因不明 + 呼吸道疾病



# Response & Impact Mitigation

## 应对之策与缓解冲击

### ➤ Desired Outcomes 理想的结果

- Minimise disruption to economy and society

减轻对经济和社会的破坏

- Maintain essential services

维持基本的服务

- Reduce morbidity and mortality

减少发病率和死亡率

# Vaccinate Population

## 全民注射流感疫苗

- Obtain vaccines as soon as possible.  
尽早取得流感疫苗。
- Vaccinate entire population.  
为全民注射流感疫苗。
- Designated vaccination centres.  
注射流感疫苗的指定地点。

# Pandemic Response Plan

## 大流感的应对之策

- **Colour-coded Risk Management approach**  
以颜色为信号的危机管理方法
  - **Green** – animal disease [WHO 1,2,3]  
绿色 – 动物疾病 [世卫 1,2,3]
  - **Yellow** - inefficient human-to-human transmission, small cluster [WHO 4]  
黄色 – 人传人尚不普遍, 一小撮病例 [世卫4]
  - **Orange** – larger cluster, more efficient H to H transmission, but still limited [WHO 5]  
橙色 – 更多集体病例: 普遍出现人传人, 但传播范围有限 [世卫5]

# Pandemic Response Plan

## 大流感的应对之策

- **Red** – pandemic; widespread infection  
[WHO 6]  
红色 – 大流感; 大范围的传染 [世卫6]
- **Black** - high mortality, morbidity  
黑色 – 高死亡率、发病率

# Pandemic Response Plan

## 大流感的应对之策

Green/Yellow/Orange

绿色/黄色/橙色

- **Effective surveillance to detect the importation of cases with a novel influenza virus;**  
有效地监控特殊流感病毒的入侵
- **Ring-fence cases through isolation of cases and quarantine of contacts + Tamiflu.**  
通过隔离和检疫，采取滴水不漏的防卫 + 达菲。
- **Prevent spread.**  
预防传播

# Pandemic Response Plan

## 大流感的应对之策

**Pandemic – Red** : Mitigate impact of 1st wave  
**大流感 – 红色** :减轻第一波的冲击

### MOH 卫生部

- **Organize healthcare system to deliver care effectively.**  
组织医疗卫生系统以能有效地提供服务。
- **Treat all flu-like cases. Anti-viral stockpile.**  
于流感诊所治疗流感病案。储备达菲。
- **Polyclinics and primary care clinics – manage all cases. Severe cases referred to hospitals.**  
综合诊所及普通诊所负责处理流感和其他病例。病情严重者将被送往医院。
- **Hospitals handle both flu and non-flu cases.**  
医院处理流感和病其他病例。

# Pandemic Response Plan

## 大流感的应对之策

**Pandemic – Red** : Mitigate impact of 1st wave  
大流感 – 红色 : 减轻第一波的冲击

### Whole of Govt 政府总动员

- **Maintain essential services.**  
维持基本服务。
- **Social distancing may have to be considered depending on severity. e.g. close schools, child care centres, ban public gatherings (e.g. cinemas, concerts)**  
视严重程度，社交方面可能要考虑隔离，例如：关闭学校和托儿所，禁止社交聚会如上电影院和音乐会。
- **Strong public communications.**  
加强与公众的沟通联系。

# Pandemic Response Plan

## 大流感的应对之策

### Pandemic – BLACK

#### 大流感 – 黑色

- **Public health considerations take precedence.**  
优先从公共卫生的角度考虑。
- **Social distancing measures more likely to be imposed.**  
较有机会实施社交隔离措施。
- **Closing of borders may have to be considered initially, at least to affected countries.**  
可能要开始考虑关闭边境，至少不与受影响的国家往来。
- **Additional health care facilities.**  
增加医疗服务设施。



# During Pandemic Individual Action

## 大流感时期每个人要做的事情

- **Maintain hygiene – wash hands regularly.**  
保持卫生，经常洗手。



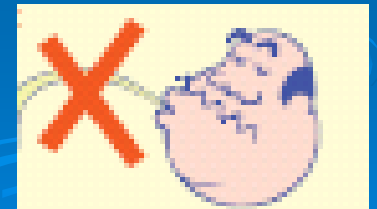
- **Maintain Good Body Resistance**  
保持良好健康免疫力。



- **Avoid crowded places.**  
避免到人群拥挤的地方。

- **See doctor promptly when unwell with flu-like symptoms. Wear mask to protect others.**

出现类似流感病症状时立即求医。请戴口罩，保护他人。



- **MOH will advise on designated flu clinics.**  
卫生部将通告指定的流感诊所。

# Pandemic Plan – Key Points

## 大流感计划 – 重点

- **Enough anti-virals to treat all who have flu.**  
足够的抗病毒药物治疗感染了流感的人。
- **Will get enough vaccine for everyone.**  
将会为全民预备足够的疫苗。
- **Healthcare system will be organised to deliver care effectively.**  
安排卫生医疗制度以能提供有效的服务。
- **Government will ensure things continue to run.**  
政府会确保一切继续运作。
- **Personal hygiene and socially responsible behaviour are crucial to prevent spread.**  
注意个人卫生和采取负责任的社会行为对预防传播非常重要。

# Conclusion 结论

- Maintain close surveillance of avian flu situation

继续密切监管禽流感的最新状况

- Singapore has an operational pandemic plan ready

准备就绪新加坡的大流感应变计划

**Thank You**

**谢谢**

[www.flu.gov.sg](http://www.flu.gov.sg)

[www.moh.gov.sg](http://www.moh.gov.sg)

