

# Update on current winter influenza season

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## Main influenza surveillance systems in HK

- Sentinel surveillance
  - Influenza-like illness (ILI) consultation rate in GOPCs, GPs, Chinese medical practitioners
    - ILI: fever > 38°C AND cough or sore throat
  - Fever surveillance in child care centres/kindergartens, elderly homes
- Laboratory surveillance
- Monitoring of outbreaks in schools/institutions
- Influenza-associated hospitalization and death rates
- Paediatric influenza-associated severe complications (severe pneumonia, sepsis, shock, encephalopathy, myocarditis, death)

## Burden of influenza in HK

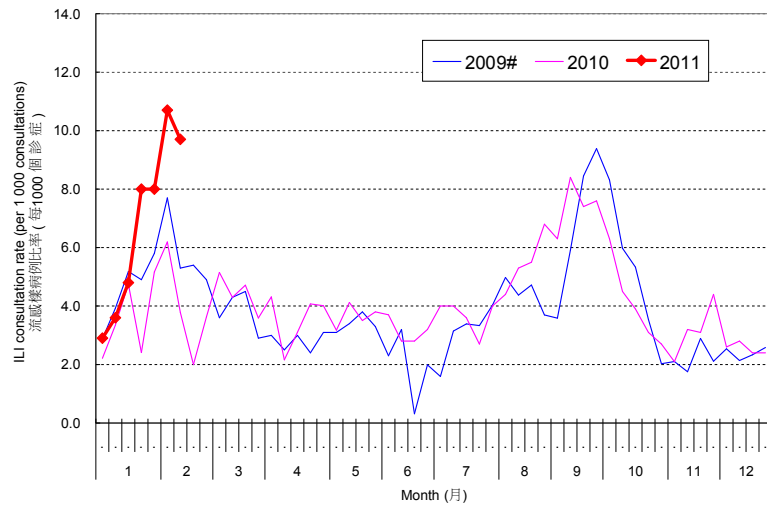
- 2 seasonal peaks
  - Winter peak around January - March
  - Another summer peak around July/August, usually less prominent
- Influenza accounts for:
  - 60.6 hospitalizations per 100,000 population per year for acute respiratory disease for all age groups, ranged from 6.0 (in age 15-39) to 266.0 (in age 75+) [1]
  - Excess deaths (all causes) of 11.8 per 100,000 population per year among individuals aged 40 to 64 years and 136.1 per 100,000 population per year among individuals  $\geq 65$  years [2]

1. Wong CM, Yang L, Chan KP, et al. Influenza-associated hospitalization in a subtropical city. *PLOS Medicine* 2006; 3(4):e121
2. Wong CM, Chan KP, Hedley AJ, et al. Influenza-associated mortality in Hong Kong. *Clin Infect Dis* 2004; 39:1611-17

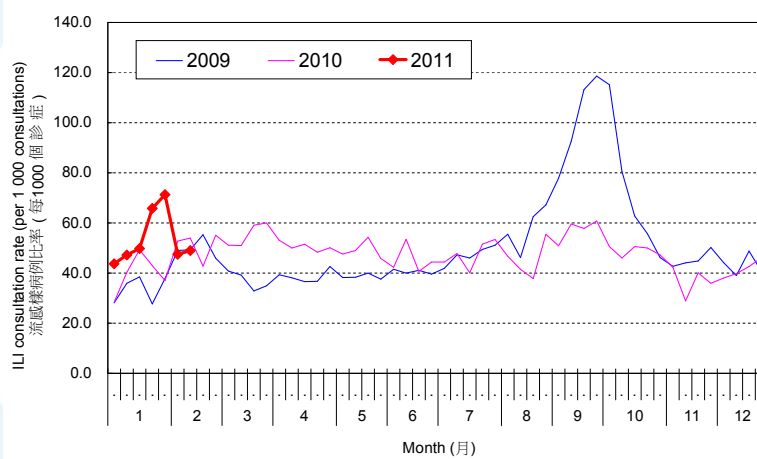
## Situation of current flu season

- Surveillance indicators showed rising trend since early Jan 2011
- HK has entered winter flu season since mid-Jan 2011
- Dominated by Human Swine Influenza (i.e. influenza A (H1N1) 2009)
  - *For 2010: flu B & HSI in winter peak; H3 in summer peak*
- Expected to last about 8 weeks
- Early signs of peaked activity

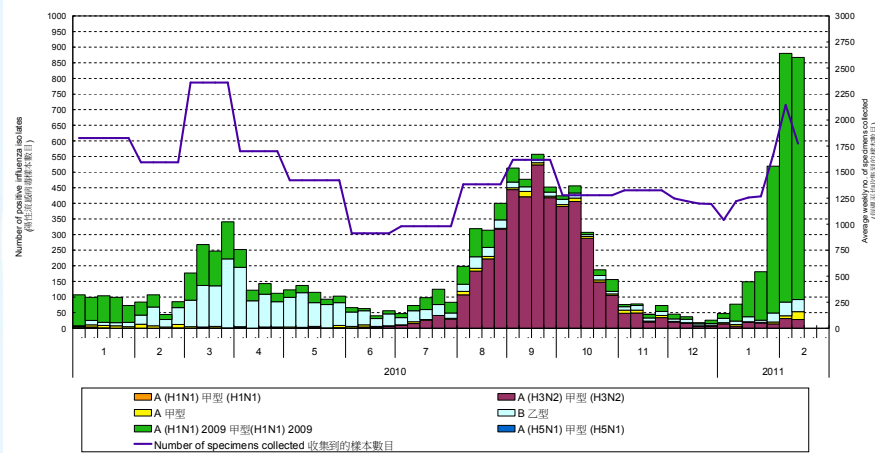
## ILI consultation rate among sentinel GOPCs



## ILI consultation rate among Sentinel Private Doctors



## Influenza virus detections

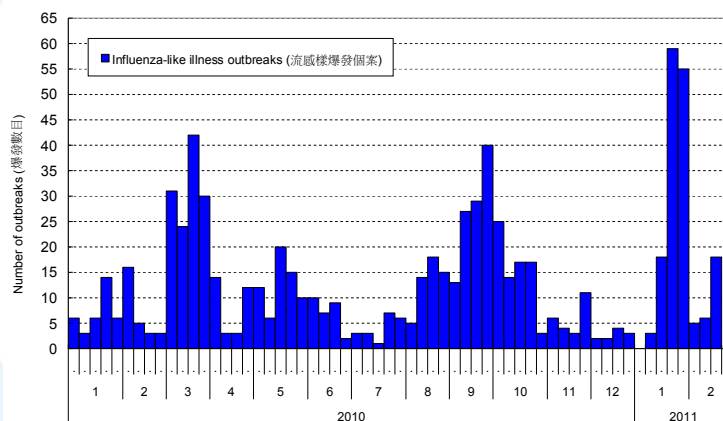


- Among flu viruses detected in recent 2 weeks, most (92%) were HSI virus, followed by flu B (5%) & flu A (H3N2) (3%).
- Flu viruses detected so far were antigenically similar to this year's vaccine viruses



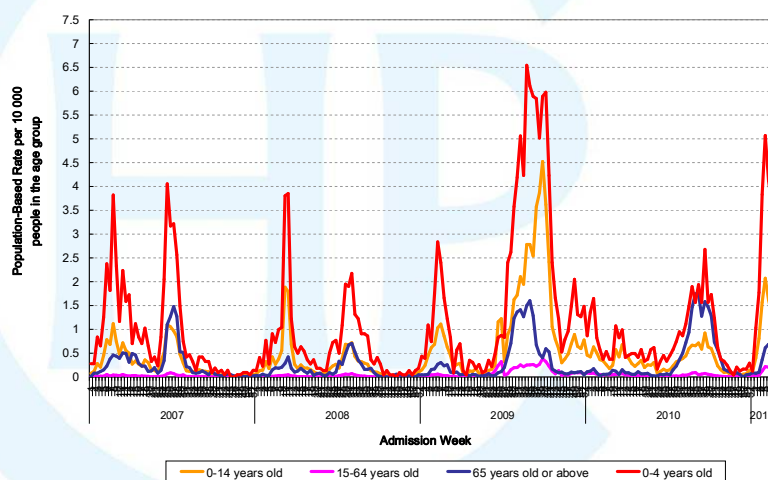
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## ILI outbreak monitoring



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## Hospital admission rates with principal diagnosis of influenza



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## Case-based reporting of ICU or fatal cases due to influenza



- New surveillance mechanism set up since Jan 24, 2011
  - Hospitals to report each case of flu-associated ICU admission or death as they occur
- Between Jan 24 – Feb 18 (26-day period), 90 ICU or death cases (including 17 deaths)
  - Translates approximately to 25 ICU cases and 4-5 deaths per week
- Similar to the level seen during Sep 2009 when the HSI activity peaked

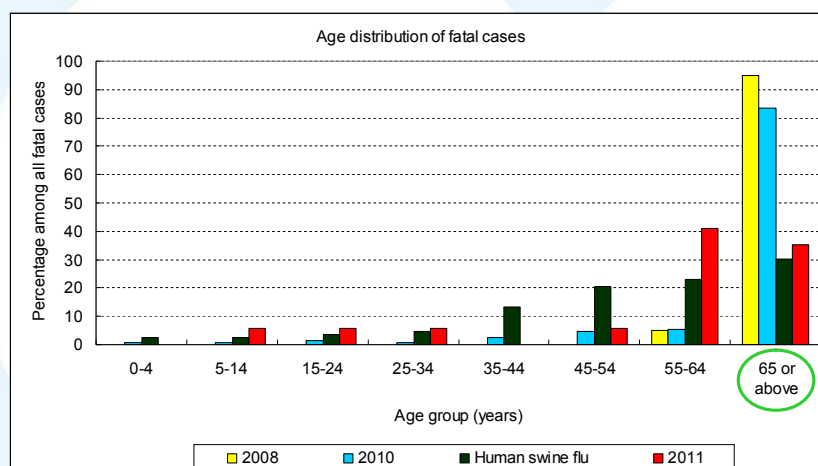


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## Characteristics of ICU or death cases

- 90 ICU/fatal cases (24 Jan – 18 Feb 2011)
  - 50 males, 40 females
  - Age range: 5 months - 84 yrs (median: 53 yrs)
    - 0-14: 13%
    - 15-44: 27%
    - 45-64: 43%
    - $\geq 65$ : 17%
  - 62 (69%) were known to have chronic diseases  
(66% during 2009-2010 HSI pandemic)
  - Only about 5% were known to have received flu vaccination.

## Age distribution of ICU or fatal cases



## Characteristics of death cases

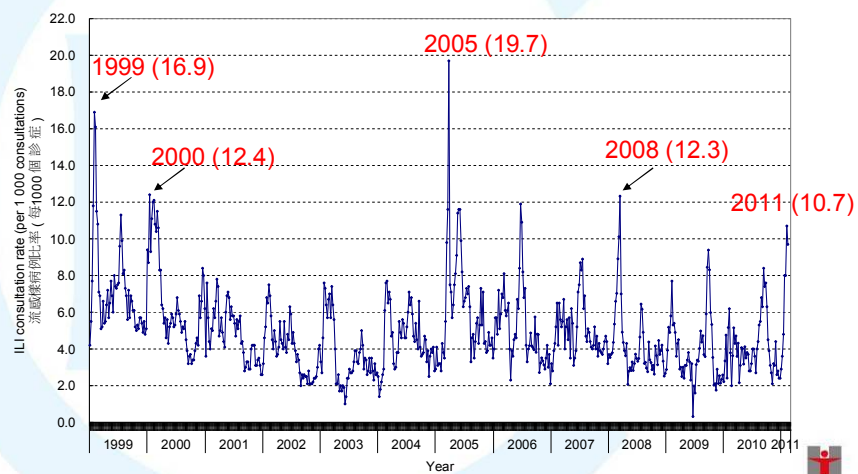
- 17 fatal cases (24 Jan – 18 Feb 2011)
  - 10 males, 7 females
  - Age range: 7 - 84 yrs (median: 62 yrs)
    - 0-14: 6%
    - 15-44: 12%
    - 45-64: 47%
    - $\geq 65$ : 35%
  - 14 (82%) were known to have chronic diseases (72% during 2009-2010 HSI pandemic)
  - None was known to have received flu vaccination.

## Age distribution of influenza-associated deaths



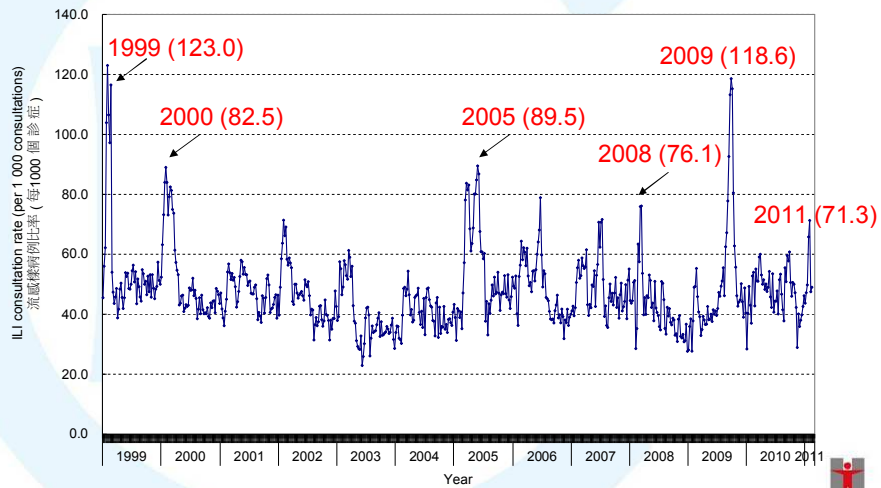
## Comparison with previous flu seasons

## ILI consultation rate among GOPCs

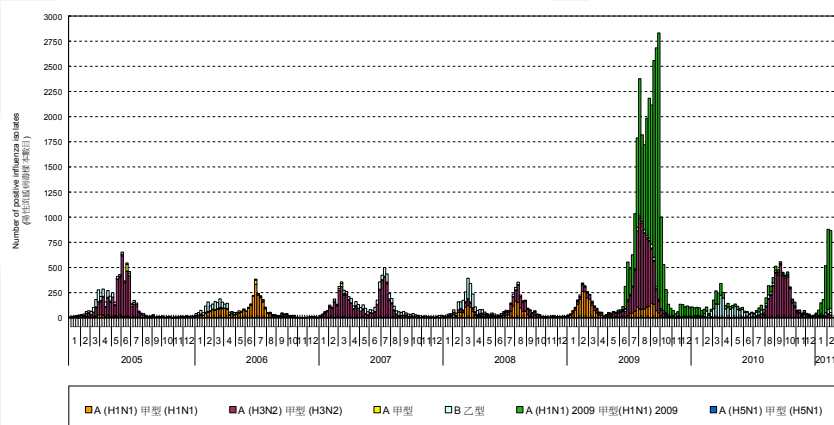




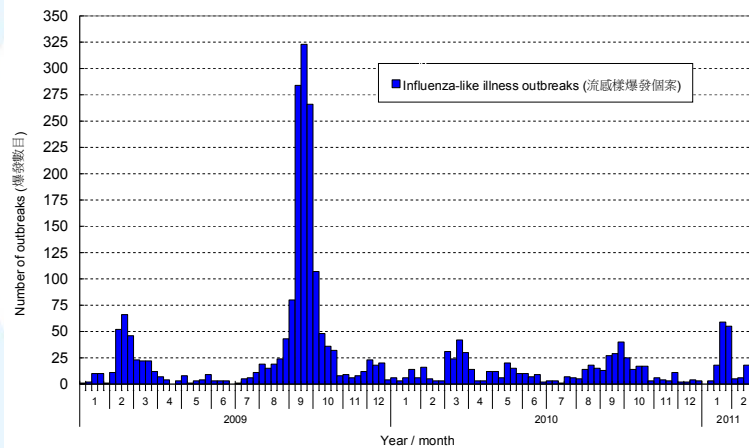
## ILI consultation rate among Sentinel Private Doctors



## Influenza Virus Detections (Laboratory Surveillance)

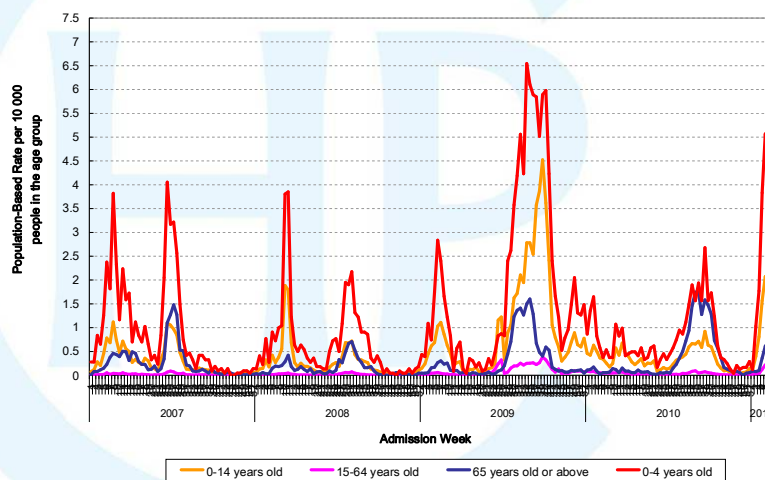


## Influenza-like Illness Outbreak Monitoring



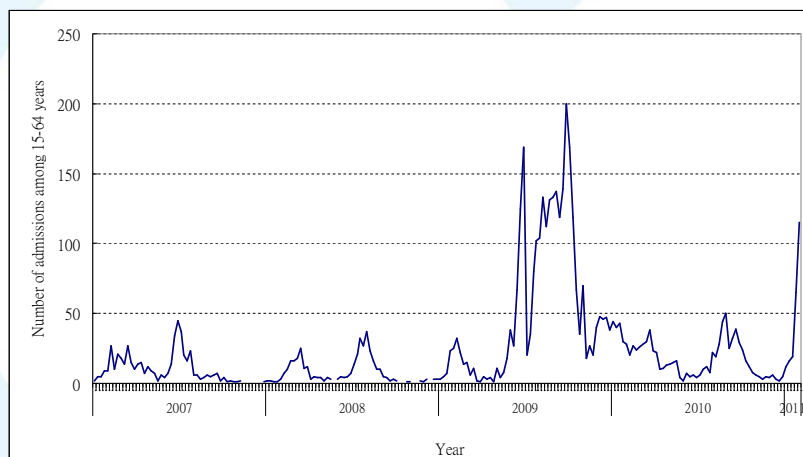
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## Hospital admission rates with principal diagnosis of influenza in HA

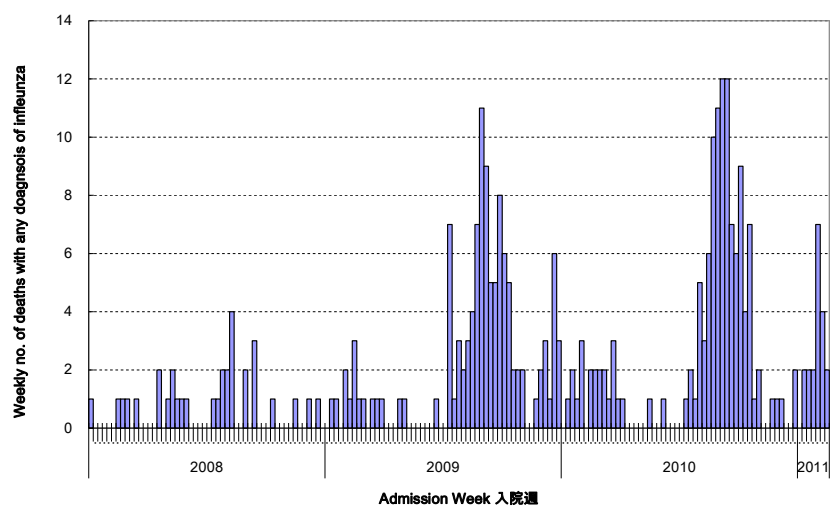


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No. of admissions with principal diagnosis of influenza in HA hospitals (age 15-64 years)



No. of flu-related deaths in HA hospitals according to discharge diagnosis



## Tamiflu resistance

- 12 cases of Tamiflu-resistant HSI so far
- 6 in 2009-2010; 6 in 2011
- 6 (50%) exposed to Tamiflu
- All remained sensitive to Relenza
- No onward transmission
- All recovered.
- So far, >6,900 HSI viruses were tested and all others were sensitive to Tamiflu

## D222G mutation

- Aspartic acid to glycine substitution in position 222 in haemagglutinin HA1 subunit
- Total 13 cases
- All occurred in 2009-2010
- 4 males & 9 females
- 22 yrs – 59 yrs (median: 37 yrs)
- All were severe infections
- 5 cases died
- No detection of D222G in recent death cases.
- HSI viruses in this season genetically very similar to those circulating in Western countries

## Summary



- HK is in winter flu season now
- Expected to last a few more weeks
- Flu activity in current winter season is broadly comparable with some years during which winter flu seasons recorded high activity (e.g., 1999, 2000, 2005, 2008)
- But has not reached the level in Sep 2009 when HSI activity was at its peak
- Comparative more younger individuals requiring hospital admissions as this season is dominated by HSI.
- Epidemiological picture compatible with overseas experience and with local situation in 2009 when HSI first affected HK



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