Comparison of influenza virus strains circulating in Malaysia with the vaccine formulation strains

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Introduction

- Virology Unit – designated as NIC since 1968

- Carrying out influenza surveillance activities for MOH

- ILI data are collected from >26 sentinel sites, which consist of outpatient departments of the government health clinics.

- Selections of the sentinel sites are based on the following criteria:
  - good coverage of the population eg Socio-demographically
  - have at least 200 clinic attendances per day.
• In districts with less than 200, a clinic with the highest attendance will be selected

• sites preferably with history of influenza outbreak

• have Medical and Health Officer (MNHO) posted to the clinic

• The National Influenza surveillance plays an important role in preparing for, and responding to epidemics and pandemics

Based on the surveillance data, vaccine recommended for the Southern Hemisphere is being used in Malaysia
Surveillance Results

• From 2004 to 2011 - received a total of 11,875 ILI and sARI clinical specimens

• There were 10.8% (1279/11,875) positive for influenza virus

• Of the 1279 positive cases
  – 66.5% (850/1279) were influenza A
  – 33.5% (429/1279) were influenza B.
• Influenza A isolated more often than influenza B except in 2005 and 2010

• ILI peak normally between May to August every year

• Highest influenza virus isolation rate
  • July in 2005
  • Sep 7 Mar in 2006
  • July in 2007
  • Jun in 2008
  • May and Jun in 2009
  • Sep in 2010
  • Very low in 2011
• Vaccine - Southern Hemisphere vaccine formulation being used in M’sia

• Noted - except for the previous two year (2005&2006), vaccine formulation strains used did not match the predominant circulating strains
Circulating strains

**Influenza type A**
- A/Fujian/411/2002-like (H3N2) 35%
- A/New Caledonia/20/99-like (H1N1) 12%
- A/Wellington/1/2004-like (H3N2) 48%

**Influenza type B**
- B/Hong Kong/330/2001-like 18%
- B/Shanghai/361/2002-like 82%

**Vaccine formulation**
- A/Fujian/411/2002-like (H3N2) 50%
- A/New Caledonia/20/99-like (H1N1) 50%
- B/Hong Kong/330/2001-like 100%
Circulating strains

Influenza type A

- A/Wellington/1/2004-like (H3N2) 13%
- A/New Caledonia/20/99-like (H1N1) 25%

Influenza type B

- B/Malaysia/250/2004 4-like 20%
- B/Shanghai/1/2002 2-like 1%
- B/Hong Kong/330/2001-like 79%

Vaccine formulation

Influenza type A

- A/Wellington/1/2004-like (H3N2) 50%
- A/New Caledonia/20/99-like (H1N1) 50%

Influenza type B

- B/Shanghai/1/2002 2-like 100%
Circulating strains

Influenza type A:
- A/New Caledonia/20/99-like (H1N1) 48%
- A/Wisconsin/67/2005-like (H3N2) 52%

Influenza type B:
- B/Shanghai/1/2002 2-like 6%
- B/Malaysia/2506/2004 4-like 94%

Vaccine formulation

2006:
- A/Wollongong/1/2004-like (H3N2) 50%
- A/New Caledonia/20/99-like (H1N1) 50%
Circulating strains 2008

Vaccine formulation

Influenza type A

A/Brisbane/10/2007-like (H3N2) 50%
A/Wellington/1/2004-like (H3N2) 50%

Influenza type B

B/Florida/4/2006-like 100%
B/Florida/4/2006-like 100%
Circulating strains 2009 Vaccine formulation

Influenza type A

- A/Brisbane/10/2007-like (H3N2) 28%
- A/Parth/16/2009-like (H3N2) 74%

Influenza type B

- B/Malaysia/2506/2004-like 3%
- B/Florida/4/2006-like 67%

A/Brisbane/59/2007-like (H1N1) 50%

B/Florida/4/2006-like 100%
Circulating strains

Influenza type A
- A/Brisbane/58/2007-like (H1N1) 7%
- A/Perth/16/2009-like (H3N2) 6%

Influenza type B
- B/Florida/4/2006-like 2%
- B/Brisbane/60/2008-like 98%

Vaccine formulation

Influenza type A
- A/Perth/16/2009-like (H3N2) 50%
- A/California/7/2009-like (H1N1) 50%

Influenza type B
- B/Brisbane/60/2008-like 100%
Discussion

- In Malaysia – influenza virus circulate through the year
- Higher occurrence in the middle part of the year
- Usually there will be three to six influenza virus strains co-circulating simultaneously each year
- The pattern were generally similar to countries in the southern hemisphere.
• For influenza A(H1N1)

• For influenza A (H3N2)

• For influenza B

• Surveillance activities are important to ensure a good match between vaccine strains and actual circulating strains
Conclusion

- Surveillance activities are important to ensure a good match between the vaccine strains and actual circulating strains.

- This study emphasizes the importance of a local influenza surveillance program not only as an early warning of upcoming epidemics but to develop appropriate annual influenza vaccines.
Thank You