

Antiviral Drug resistance of

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H1N1 are predominant in epidemics worldwide and the discovery of antiviral drug resistance was a new phenomenon this winter.

Compared to the previous last 3 winter seasons, this year the presence of oseltamivir (Tamiflu®) resistance viruses circulating in the community was detected in a number of European Countries (Norway, Denmark, UK, France, Finland, Netherlands, Portugal, Sweden and Germany). It has also been detected in USA, Canada and now China. However Japan who widely prescribes oseltamivir,

have not seen an increase in resistance.

Preliminary results of the surveillance of antiviral drug susceptibility of seasonal influenza viruses circulating in Europe have shown a significant proportion (13%) of the Type A (H1N1) viruses - which are the predominant virus this season - to be resistant to oseltamivir but retain sensitivity to zanamivir (Relenza®) and amantadine/rimantadine. In North America the frequency of isolation so far has been 6% in Canada and 8% in USA and Hong Kong.

The resistant viruses carry the same mutation, the substitution of histidine by tyrosine at residue 274 (H274Y) of the neuraminidase protein, which confers high level resistance to oseltamivir.

The resistant viruses have been isolated from both adults and children, ranging from 1 month to 53 years in age, with the majority of viruses being isolated from adults within European countries. So far, there is no information that any of these viruses, in any country, has been obtained from a person who has either been previously treated with oseltamivir, or been in close contact with another individual who has been treated with oseltamivir.

Influenza Viruses in Europe

The frequency of oseltamivir resistance in H1N1 viruses in the current influenza season has been unexpected, and the reason why a higher percentage of these viruses are resistant is currently unknown.

This development has caused experts to do a risk assessment of the situation and the important conclusion made recently by WHO and European Centre for Disease Control and Prevention was that:

- The new H1N1-H274Y viruses have limited pandemic potential as they are a variant of a widely circulating strain. This differs from a pandemic scenario, which is likely to be caused by a completely novel strain of influenza virus.
- Though guarantees of effectiveness

against an unknown virus cannot be made there is no reason to believe that oseltamivir will be ineffective against novel strains.

- Equally it is important to appreciate that H1N1-H274Y is a human seasonal virus and must not be confused with avian influenza viruses notably the similarly named A/H5N1 which causes avian influenza in poultry.

Seasonal Influenza

There is currently medium influenza activity in 18 countries in Europe. In most countries influenza activity is unchanging or declining. Compared to influenza A, the proportion of influenza B has increased

from 14% in the beginning of this year to 37% by the last week in February. The large majority of the total virus detections since last September were influenza A (87%) of which about 99% were of the H1 subtype.

America has noticed a mismatch between the components in this season's vaccine and the circulating influenza B and A (H3N2) subtype.

WHO has just issued the new composition for the upcoming vaccine for 2008/2009 and it will be made up of 3 new strains:

- **H1N1:** A/Brisbane/59/2007
- **H3N2:** A/Brisbane/10/2007
- **B:** B/Florida/4/2006 