World Health Organization
REGIONAL OFFICE FOR Europe

Summary of the first post-pandemic influenza season in the WHO European region: 2010-2011

Key features of the 2010-2011 influenza season

- ILI/ARI consultation rates observed during 2010-2011influenza season were comparable with pre-pandemic influenza seasons in most countries in the region.
- The main viruses circulating were pandemic A (H1N1) 2009 virus and influenza B, with very little co-circulation of seasonal influenza A (H3N2).
- The vast majority of the circulating influenza viruses matched well with viruses recommended by WHO for inclusion in the influenza vaccine for the northern hemisphere 2010-2011 season.
- 97% of screened pandemic A (H1N1) viruses and all screened B influenza viruses were found to be sensitive to the antivirals oseltamivir and zanamavir.
- Severe disease due to influenza was seen more commonly in patients less than 65 years of age, as was seen during the pandemic.
- The underlying conditions associated with severe disease due to influenza were the same as those identified during the 2009-2010 influenza season, including obesity, chronic heart and respiratory diseases, diabetes, immune deficiency and pregnancy.

Topics covered in this summary

1. Influenza surveillance in the WHO European Region

The WHO European Influenza Surveillance Network (EuroFlu[1]) collected data from 49 Member Sates during the 2010-2011 influenza season. EuroFlu presents epidemiological and virological data that are collected by clinician networks and laboratory networks on a weekly basis. EU and EEA Member States report to the European Centre for Disease Prevention and Control (ECDC), with which the WHO Regional Office for Europe coordinates influenza surveillance.

The clinician networks are represented by a group of primary care physicians that cover a representative sample of the general population. In some countries in the central and eastern part of the Region, a nation-wide surveillance system is in place, whereby all cases of ILI/ARI are reported. The

[1] www.euroflu.org

primary care physicians report the weekly number of clinical cases of influenza-like illness (ILI) and/or acute respiratory infection (ARI) to a central registry and take respiratory specimens according to the nationally defined sampling strategy. The specimens are sent to a national reference laboratory for testing to obtain information on types, subtypes and strains of influenza viruses circulating in the Region.

Several Member States also have hospital-based surveillance of severe acute respiratory infections (SARI), using different methodologies, e.g. reporting of all-cause SARI hospitalizations (sentinel SARI[2]) or only the laboratory confirmed hospitalized cases of severe influenza[3]. Despite these differences, the routine surveillance for SARI provides epidemiologic and virologic data on more severe influenza infections in the region, such as the identification of the viruses associated with severe disease and risk factors associated with severe illness.

2. Epidemiological surveillance

The 2010-2011 influenza season started in the western part of the region, with the first increases in ILI/ARI consultation rates reported in December. The ILI/ARI consultation rates reached their highest levels in the majority of the countries in February 2011 (week 5/2011). The highest ILI/ARI consultation rates were generally observed among children aged 0-14. In most countries, the ILI/ARI consultation rates had returned to normal out-of-season/winter levels by mid April 2011 (week 14/2011). Consultation rates during 2010-2011 influenza season were generally lower than during the pandemic 2009-2010 season.

3. Virological surveillance

During the 2010-2011 winter, influenza activity in the WHO European region was associated with both influenza A (60%) and influenza B (40%) viruses, which co-circulated in most countries. Influenza A was dominant in most of the countries in the western part of the region in the beginning of the epidemic, while influenza B became the dominant virus in the region as of late February (week 7/2011). In Norway, influenza B was the dominant virus type through the whole season. In some countries located in the central and eastern parts of the region (Armenia, Kyrgyzstan, Ukraine) influenza B dominated in the beginning of the season, but later influenza A became the dominant virus.

In comparison with the pandemic 2009-2010 influenza season, influenza B contributed to a much higher percentage of ILI/ARI consultations in 2010- 2011 (40% versus 1%). In addition, there was a slightly higher percentage of circulating A (H3N2) influenza viruses in 2010-2011 compared with the 2009-2010 influenza season (Table 1). This could be explained by less susceptibility to A (H1N1) 2009 influenza virus in the general population.

Table 1 Summary of sentinel virological data for WHO European Region: seasons 2009-2010 and 2010-2011*

Season	Influenza virus detections			A-subtyped viruses			
	Total (N)	% total positive		Total (N)	% of total positive for		
		Influenza A	Influenza B		A (H1N1)2009	A (H3N2)	A (H1N1)
2010-2011	16 839	60.2	39.8	9457	93.1	6.9	0
2009-2010	24 438	98.9	1.1	23189	99.5	0.3	0.2

* based on data available on EuroFlu on 12 Sept 2011

[2] WHO Regional Office for Europe guidance for sentinel influenza surveillance in humans
http://www.euro.who.int/__data/assets/pdf_file/0020/90443/E92738.pdf
[3] Weekly Influenza Surveillance Overview (WISO) ECDC
http://ecdc.europa.eu/en/healthtopics/seasonal_influenza/epidemiological_data/pages/weekly_influenza_surveillance_overview.aspx

During the summer period, all countries of the WHO European Region reported low intensity of influenza activity, and no positive influenza specimens were detected from sentinel sources. There were sporadic cases of laboratory confirmed influenza from non-sentinel sources during this period. In general there was a higher proportion of influenza A (H3N2) viruses in the summer period as compared to the winter 2010-2011.

From week 21/2011 to week 39/2011 a total of 123 influenza virus detections were reported from non-sentinel sources: 83 (67%) were influenza A and 40 (33%) were influenza B. Of the influenza A viruses, 47 (57%) were subtyped, with 28 (60%) being pandemic A (H1) and 19 (40%) A (H3).

4. Sentinel SARI surveillance

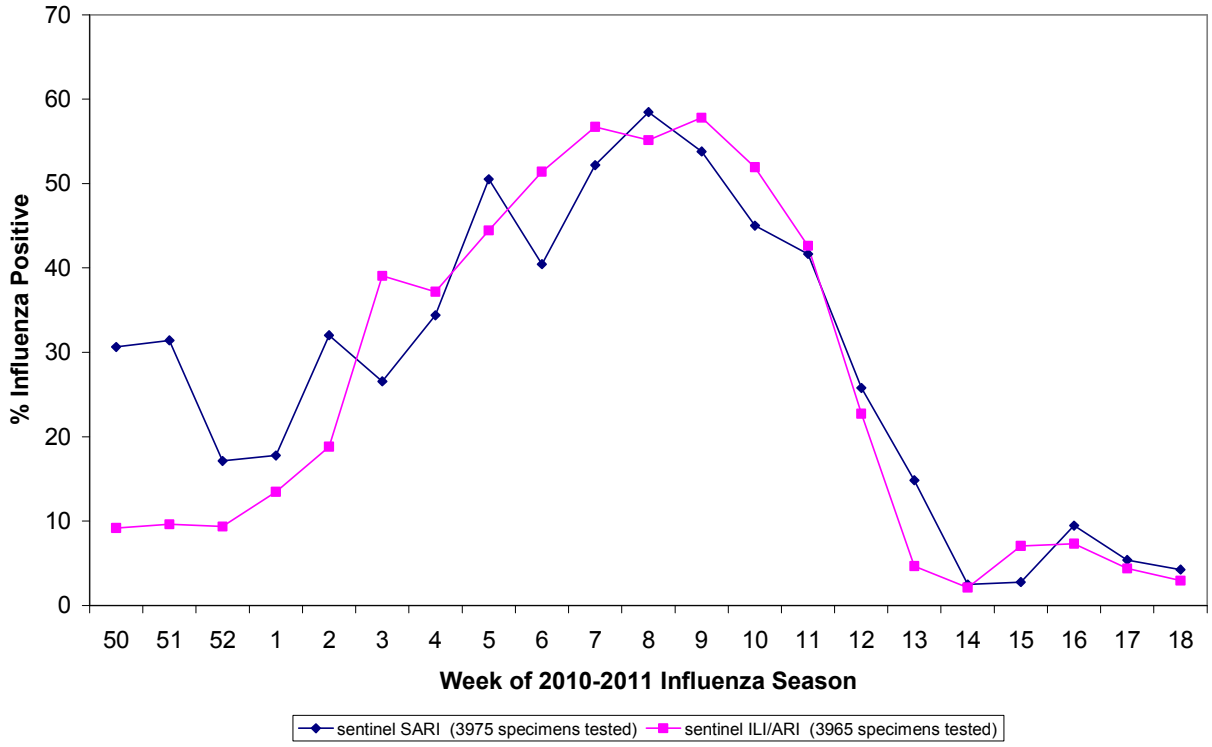
During the past two years, the WHO Regional Office for Europe has been working with Member States to establish sentinel surveillance systems for hospitalized SARI with the goals of comparing the relative severity of different influenza seasons and tracking the viruses which specifically cause severe disease. During the 2010-2011 influenza season, data from 10 Member States located in central and eastern parts of the region were incorporated in the EuroFlu bulletin for the first time. The criteria for inclusion were as follows:

- Hospitalized patients meeting a syndromic SARI case definition are routinely monitored, tested for influenza and reported to the national level on a weekly basis from a standard and generally stable number of sentinel hospitals.
- There has been consistent weekly reporting of epidemiological and virological data from the sentinel SARI system to national platforms or EuroFlu. A detailed overview of the SARI surveillance system, including the SARI case definitions, sampling strategies and the number of SARI sentinel sites in each of the participating countries, can be found at: http://euroflu.org/documents/Overview_of_SARI_Surveillance_Systems_25-03-2011.pdf

In most countries with sentinel SARI surveillance, peaks of sentinel SARI hospitalizations correlated well with the ILI/ARI rates with a lag time of one week. The highest numbers of hospitalizations due to SARI were observed in 0-4 and 15-64 age groups. Within the 15-64 age group, three countries reported highest number of cases in 15-29 and two countries in the 30-64 age group. The age-group 65+ constituted a very small proportion of sentinel SARI hospitalizations.

The proportion of different influenza viruses detected in ILI/ARI sentinel specimens compared with SARI sentinel specimens was very similar during the 2010-2011 influenza season.

Figure 2. Percent of sentinel ILI/ARI and SARI specimens testing positive for influenza, week 50/2010 – week 18/2011[4]



The sentinel SARI surveillance systems are young, and lack of data on SARI hospitalizations in previous years limits the interpretation of hospitalized respiratory disease burden. However, the available data suggest that surveillance using the SARI case definition yields annual influenza positivity rates that are comparable to those from ILI/ARI surveillance. The routine surveillance for SARI provides epidemiologic and virologic data on more severe influenza infections in addition to the traditional virologic objectives of seasonal influenza surveillance.

5. Underlying conditions associated with severe disease due to influenza 2010-2011

In addition to sentinel SARI surveillance, several Member States of the western part of the Region reported laboratory confirmed cases of influenza. While most critical and fatal influenza cases have been associated with influenza A (H1N1) 2009 virus infections, a smaller number of severe influenza B virus infections were also being reported. The age and underlying clinical profile of these severe cases were similar to that observed during the 2009-2010 influenza season, with obesity being the most prevalent underlying condition. The other conditions associated with severe cases of influenza included diabetes, chronic heart disease, immune deficiency and pregnancy. However, more than a third of confirmed influenza cases did not have any underlying medical condition.

6. Vaccine match in 2010-2011 influenza season

Based on antigenic characterization of a large subset of influenza viruses (N=5361) provided by 22 Member States, the vast majority (96%) of characterized strains matched well with the viruses recommended by WHO for inclusion in the seasonal influenza vaccine for the 2010-2011 season in the northern hemisphere. (link to: http://www.euro.who.int/en/what-we-do/health-topics/communicable-diseases/influenza/publications/2010/vaccine-recommendations-for-20102011-winter-influenza-

[4] Data are from Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Romania, Russian Federation, Ukraine

season). Match of the vaccine with circulating virus strains is an important factor contributing to the effectiveness of the vaccine.

7. Antiviral resistance and clinical care of patients

Based on antiviral susceptibility data provided by 23 Member States, there was no indication of widely spreading resistant strains of influenza viruses during the winter of 2010-2011. Of the 3 526 pandemic A (H1N1) 2009 viruses that were tested, 3 417(97%) were sensitive to both neuraminidase inhibitors and 109 viruses (3.1%) carried the NA H275Y mutation. This mutation renders viruses resistant to oseltamivir but they remained sensitive to zanamivir. All of the 90 influenza A (H3N2) viruses tested for susceptibility to oseltamivir and the 88 tested for susceptibility to zanamivir were found to be sensitive. All of the 460 influenza B viruses tested for susceptibility to oseltamivir and the 447 tested for susceptibility to zanamivir were found to be sensitive. These data indicate that clinicians should continue to include the use of neuraminidase inhibitors in their clinical management of all patients with moderate or severe disease suspected, or confirmed, to be due to influenza.

All 261 pandemic influenza A (H1N1) 2009 viruses and 43 A (H3N2) viruses that were screened for susceptibility to adamantanes were found to be resistant. WHO guidance recommends that an antiviral should not be used for treatment where the virus is known or highly likely to be resistant to that antiviral[5].

8. Influenza activity in the temperate regions of the southern hemisphere 2011 influenza season

Most countries in the southern hemisphere had a mild influenza season in comparison to previous years. Virological surveillance showed a mixed picture: some countries had dominant A (H1N1) 2009 virus, some had more A (H3N2), and in general there was little influenza B. More details on influenza activity in the southern hemisphere are available at: http://www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/#summary

[5] WHO Guidelines for Pharmacological Management of Pandemic Influenza A (H1N1) 2009 and other Influenza Viruses http://www.who.int/csr/resources/publications/swineflu/h1n1_guidelines_pharmaceutical_mngt.pdf