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**Epidemiological and virological situation update of the
2010/2011 influenza season in the
WHO European Region
(Week 40/2010 to Week 03/2011)**

10 February 2011

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CONTENTS

	<i>Page</i>
Authors.....	2
Introduction.....	3
Current epidemiological overview of the 2010/2011 influenza season.....	3
Sentinel ILI/ARI data	3
Sentinel data on hospitalised Severe Acute Respiratory Infections (SARI).....	7
Risk factors for severe disease 2010/2011.....	8
Current virological overview of the 2010/2011 influenza season.....	9
Sentinel ILI/ARI data	9
Non-sentinel virological data	13
Sentinel data on hospitalised SARI	14
Antigenic and genetic characterizations	15
Conclusions.....	17

Authors

WHO Regional Office for Europe

Joshua A. Mott, Dmitriy Pereyaslov, Pernille Jorgensen, Caroline Sarah Brown

Temporary Advisers to WHO

Liana Martiryosan, Tamara Meerhoff

Abstract

This overview of influenza data from the WHO European Region from weeks 40/2010 through week 3/2011 has been submitted for consideration during the WHO Northern Hemisphere Vaccine Strain Selection Meeting, to be held on 14-17 February, 2011, in Geneva. The 2010/2011 influenza season arrived 8-10 weeks later than the 2009/2010 'pandemic' season in the WHO European Region, but still quite early compared to historical trends. As has been observed in several previous years, the 2010/2011 influenza season appears to be progressing in a West to East fashion across much of Europe. Increases in influenza activity have been accompanied by increases in hospitalised Severe Acute Respiratory infections (SARI) and in severe influenza cases admitted to intensive care units. Pandemic influenza A (H1N1) 2009 viruses are the predominant circulating viruses but in contrast to the 2009/2010 season, there is a higher rate of co-circulation with influenza B viruses and a substantial decrease in the proportion of influenza A(H3N2) viruses. Currently, 98% of antigenically characterized viruses from the 2010/2011 influenza season correspond with the viruses recommended by WHO for inclusion in the 2010-2011 northern hemisphere influenza vaccine.

Introduction

The WHO Regional Office for Europe, in coordination with the European Centre for Disease Prevention and Control, works with the 53 countries of the WHO European Region to provide a weekly bulletin describing influenza activity in the Region¹. Influenza surveillance has traditionally centered on epidemiological data collection for outpatient influenza-like illness (ILI) and acute respiratory infections (ARI) from sentinel sites backed up by laboratory-based generation of virological data. More recently, European Member States are establishing sentinel SARI influenza surveillance systems in order to routinely monitor severe influenza. The laboratory network in Europe consists of WHO-recognized national influenza centres (NICs), many of which participate in the Community Network of Reference Laboratories for Human Influenza in Europe², a WHO collaborating centre for reference and research on influenza (WHO CC) and two WHO H5 reference laboratories³. Many of the data included in this report are publicly available at www.euroflu.org, where WHO/Europe publishes a weekly surveillance report in English and Russian that is based on data covering the Region's total population of 883 million.

This overview has been submitted for consideration during the WHO Northern Hemisphere Vaccine Strain Selection Meeting, to be held on 14-17 February, 2011. It complements the data generated by the WHO collaborating centre for reference and research on influenza, NIMR, London, United Kingdom, from analyses performed on influenza viruses provided by European Member States.

Current epidemiological overview of the 2010/2011 influenza season

Sentinel ILI/ARI data

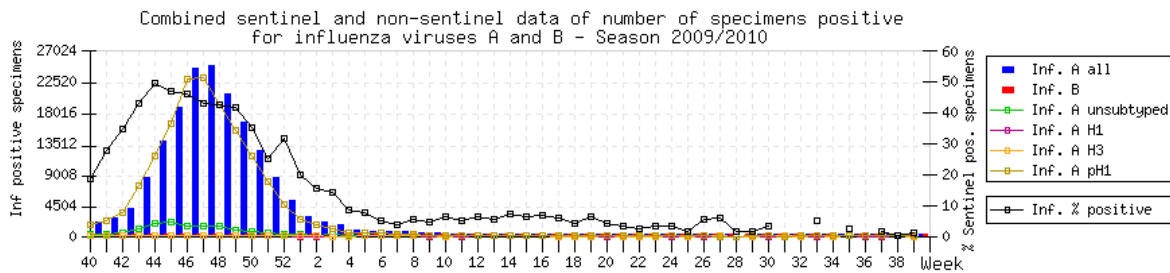
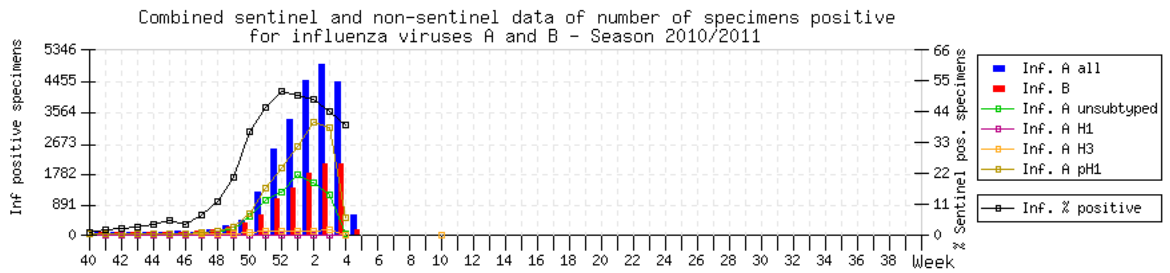
The 2010/2011 influenza season arrived 8-10 weeks later than the 2009/2010 season in the WHO European Region. During 2010/2011, pandemic influenza A (H1N1) 2009 continues to predominate among circulating influenza A viruses in Europe. A noticeable difference from the 2009/2010 season has been the high prevalence Influenza B co-circulation. One measure of the intensity of influenza activity is the percentage of sentinel specimens that test positive for influenza, (represented by the black line on the following graphs, in relation to the right axes).

¹ <http://www.euroflu.org>;

http://www.ecdc.europa.eu/en/healthtopics/influenza/epidemiological_data/Pages/Weekly_Influenza_Surveillance_Overview.aspx

² http://www.ecdc.europa.eu/en/activities/surveillance/EISN/Pages/AbouttheNetwork_Description.aspx

³ <http://www.who.int/csr/disease/influenza/mission/en/index.html>;

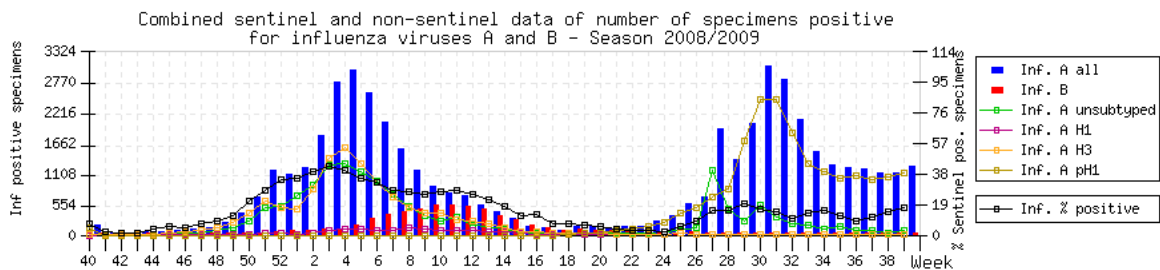


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Source: The WHO European Influenza Network (EuroFlu.org)

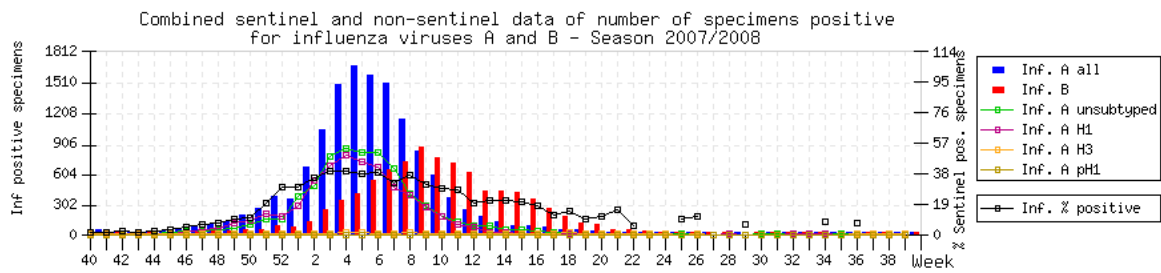
To date, during the 2010/2011 influenza season a peak in influenza activity in the European Region was observed during week 52, when over 50% of sentinel specimens in Europe tested positive for influenza. This intensity of influenza activity is similar to that observed during the peak of the 2009/2010 'pandemic' season in Europe.

As can be seen in the graphs of recent influenza seasons, the percentage of sentinel specimens testing positive for influenza has been somewhat higher during both the 2010/2011 and the 2009/2010 influenza seasons than during prior recent influenza seasons. This may reflect a greater intensity of influenza circulation resulting from the introduction of a novel virus into naïve human populations, and/or improvements in the sensitivity of laboratory diagnostic methods to detect influenza in use in Europe.



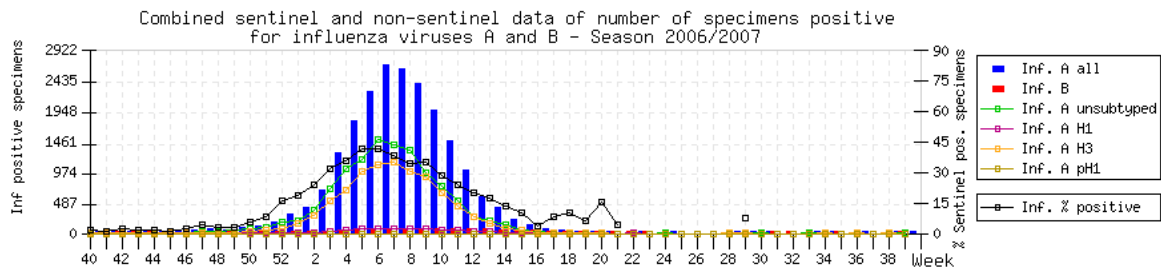
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Source: The WHO European Influenza Network (EuroFlu.org)



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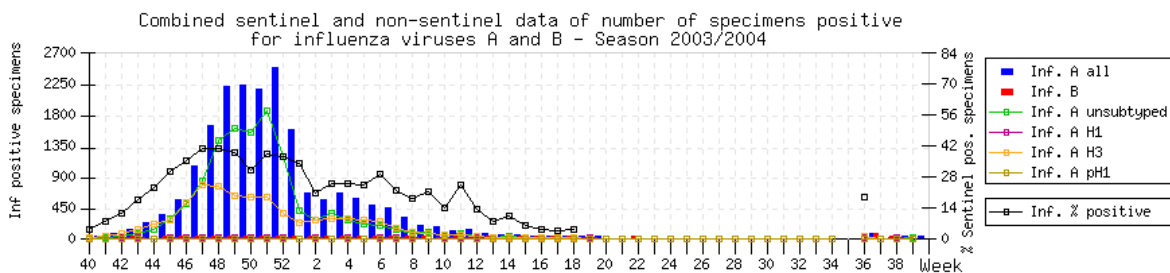
Source: The WHO European Influenza Network (EuroFlu.org)



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Source: The WHO European Influenza Network (EuroFlu.org)

While the currently observed peak intensity of influenza activity during this season did not occur as early as was experienced during the 2009/2010 season, it has occurred relatively early by European standards. During recent prior influenza seasons, peaks in the intensity of influenza activity have typically been observed between weeks 2 and 6. The current peak during week 52/2010, however, bears some similarity to the 2003/2004 influenza season, which was notable for the circulation of the "Fujian" A (H3N2) virus.

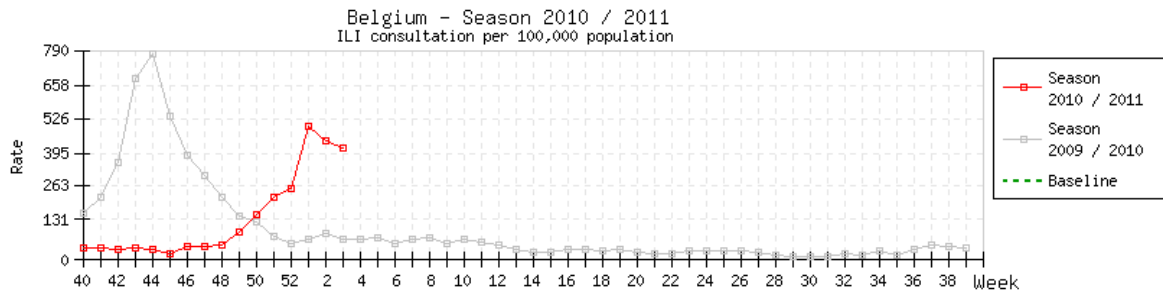


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Source: The WHO European Influenza Network (EuroFlu.org)

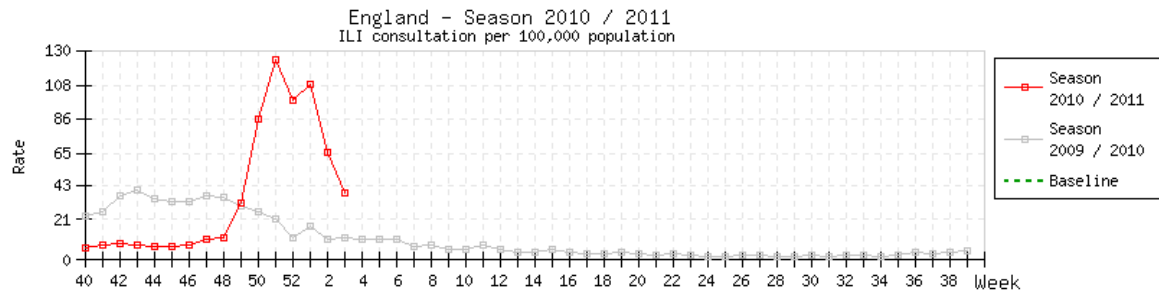
It must be noted that the presentation of data for the combined 53 countries of the WHO European Region masks considerable variability in the progression of the influenza season across the Region. As observed in 2008/2009, 2009/2010, and several prior years, the 2010/2011 influenza season appears to be generally progressing in a West to East fashion across much of Europe. This can be seen below in the pattern of observed ILI and ARI consultation rates by country.

Currently clinical consultation rates for ILI or ARI vary considerably between countries, and are related to the prevalence of influenza in the population, the prevalence of other respiratory pathogens in the population, and public anxiety regarding influenza.



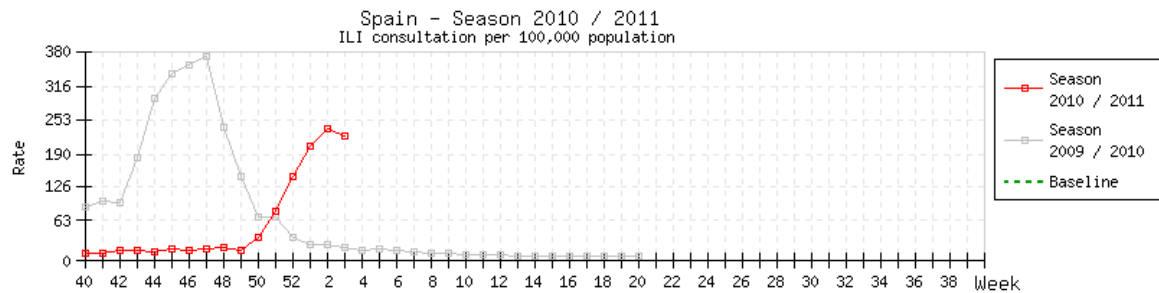
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Source: The WHO European Influenza Network (EuroFlu.org)



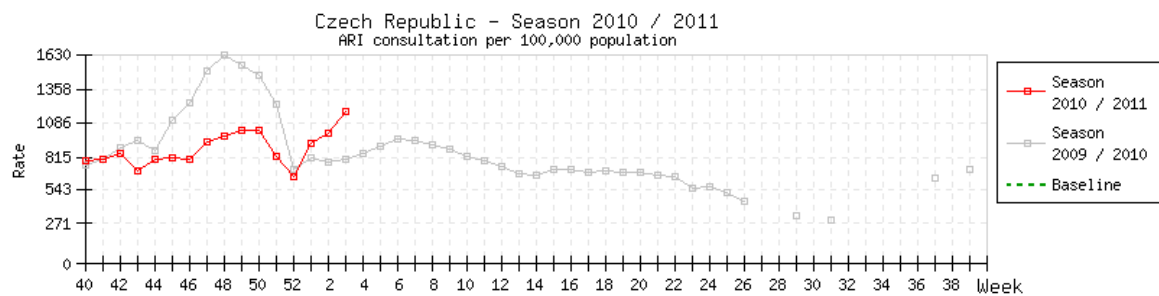
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Source: The WHO European Influenza Network (EuroFlu.org)



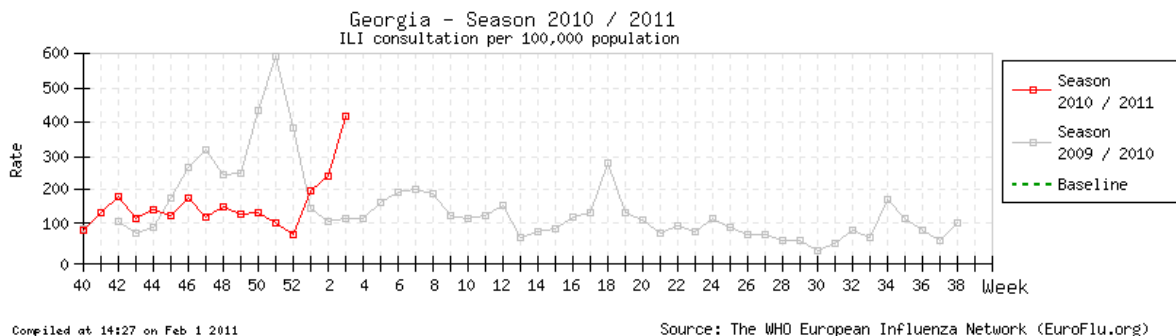
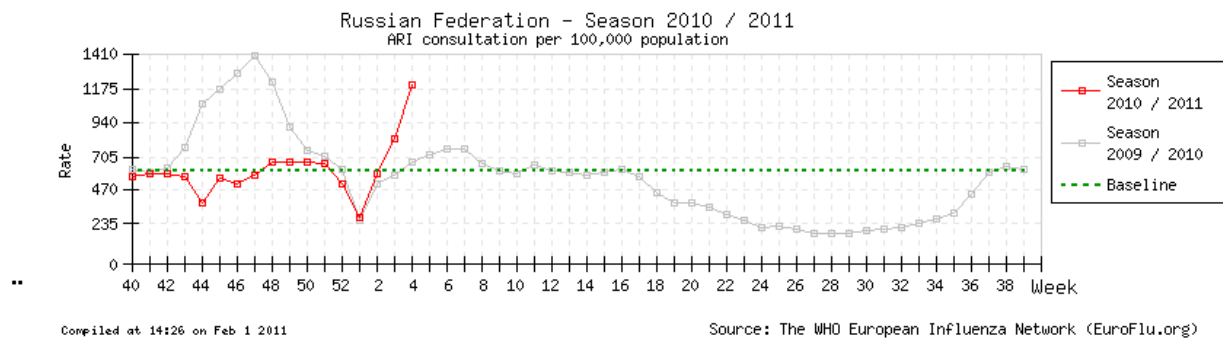
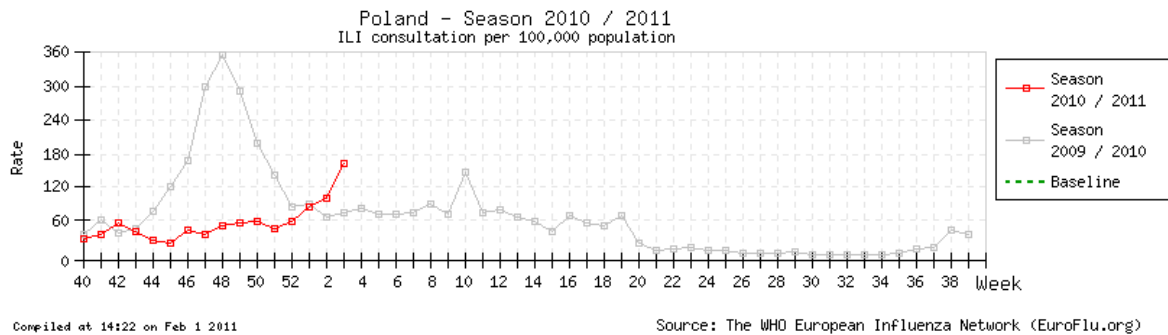
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Source: The WHO European Influenza Network (EuroFlu.org)



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Source: The WHO European Influenza Network (EuroFlu.org)



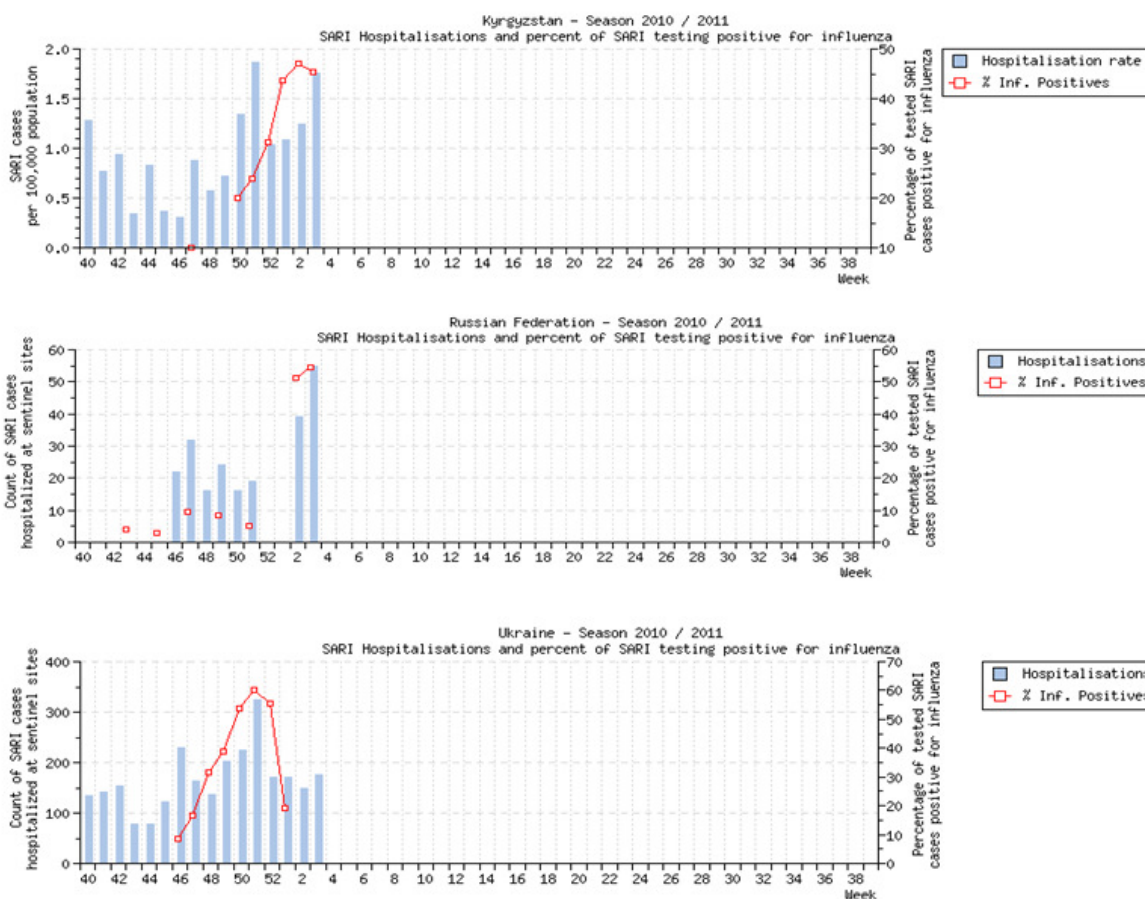
While there are some exceptions, several Western European countries have already reached apparent peaks in ILI and/or ARI activity while other countries farther East are still approaching peaks in clinical consultation rates.

Sentinel data on hospitalised Severe Acute Respiratory Infections (SARI)

The WHO Regional Office for Europe has been working with European Member States to establish sentinel surveillance systems for hospitalised SARI with the goals of comparing the relative severity of different influenza seasons, and tracking the viruses which specifically cause severe disease. Currently there are 9 countries (Armenia, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, Romania, the Russian Federation, Serbia, and Ukraine) reporting weekly hospitalised SARI cases, using a standard case definition, to the EuroFlu surveillance platform. The SARI sentinel surveillance systems in these countries generally meet the following two criteria:

- SARI is reported from a known, standard, and generally stable number of hospitals on a weekly basis
- There is consistent weekly reporting of SARI epidemiological and virological data to the EuroFlu surveillance platform during the 2010/2011 influenza season

During week 3/2011 data from sentinel systems indicate that SARI hospitalisations have reached the highest reported levels of the 2010/2011 season so far in Georgia, Romania, the Russian Federation and Serbia. In each of these countries, the increase in reported SARI hospitalisations has accompanied concurrent rises in outpatient consultation rates for ILI and/or ARI. Hospitalisations for SARI previously peaked during week 51/2010 in Ukraine and Kyrgyzstan, although reported SARI hospitalisations are again rising in Kyrgyzstan.



More detail about the viruses detected from sentinel SARI patients is described in Section 2 below.

Risk factors for severe disease 2010/2011

Several countries have reported severe and fatal cases of influenza, and the burden of severe influenza has been sufficient to place considerable strain on critical care services in several locations. This has been notable in the United Kingdom and Ireland but reported in other countries as well. 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 are also being reported. The age and underlying risk profile of these severe cases appears similar to that observed during the 2009/2010 'pandemic' influenza season⁴.

As of week 03/2011, the United Kingdom reported that 320 (92%) of 347 fatal influenza cases were associated with H1N1 (2009) infection, seven with un-subtyped influenza A and 20 (6%) with influenza B infection. Reported deaths have been mainly in younger adults and children. Among the 306 cases with information on age: ten (3%) have been less than 5 years; 14 (5%) from 5 to 14 years; 217 (71%) from

⁴ See <http://www.euro.who.int/en/what-we-do/health-topics/diseases-and-conditions/influenza/publications/2012/influenza-h1n1-2009-key-issues-for-case-management>

15 to 64 years and 65 (21%) older than 64 years of age. One hundred and eighty-four of 252 fatal cases with available information (73%) were in defined clinical risk groups for vaccination. The leading reported clinical risk factors for those with information were underlying respiratory disease including asthma (n=49) and immunosuppression (n=43). Of cases with available information on immunisation history, 82 of 108 (76%) cases had not received the 2010/11 trivalent influenza vaccine this season. Thirty-nine of 41 (95%) of cases with available information had not received the monovalent pandemic influenza vaccine last season.ⁱ

In Ireland sixty-nine of 98 (70.4%) hospitalised influenza cases in critical care have underlying medical conditions, 62 adults and seven paediatric cases. The underlying medical conditions include: chronic respiratory disease, chronic heart disease, immunosuppression, pregnancy, metabolic disorders and morbid obesity. Age-specific rates of ICU admissions in Ireland appear highest in the youngest ages, and then increase again in adulthood with a peak in the 55-64 year age group.ⁱⁱ

Current virological overview of the 2010/2011 influenza season

The tables that follow describe the influenza viruses that have been circulating in the WHO European Region during the 2010/2011 influenza season. Virological data from sentinel ILI/ARI surveillance systems, non-sentinel virological surveillance systems, and sentinel surveillance systems for hospitalised SARI are presented in turn.

Sentinel ILI/ARI data

Tables 1-3 present the number and percentage of sentinel ILI/ARI specimens testing positive for influenza, by type of influenza, and month of the current influenza season. Table 1 presents the data for the entire WHO European Region and Tables 2 and 3 present stratified data for **i)** countries of Eastern Europe, namely the Caucasus, Central Asia and the Russian Federation, and **ii)** countries of Western, Central, and South Eastern Europe, respectively. The specific countries included in each of these groupings may be found in the endnote to this document.

Table 1: Number and percentage of sentinel ILI/ARI specimens testing positive for influenza, by type of influenza, and month, WHO European Region

Month	Number of sentinel specimens tested	Number (%) of sentinel specimens positive for influenza	Number (%) of sentinel specimens positive for influenza A	Number (%) of sentinel specimens positive for influenza B
October, 2010	2605	51 (2.0%)	22 (0.8%)	29 (1.1%)
November, 2010	2912	146 (5.0%)	76 (2.6%)	70 (2.4%)
December, 2010	7562	2778 (36.7%)	1959 (25.9%)	819 (10.8%)
January, 2011	9759	4562 (46.7%)	3183 (32.6%)	1379 (14.1%)
Total	22838	7537 (33.0%)	5240 (22.9%)	2297 (10.1%)

Table 2: Number and percentage of sentinel ILI/ARI specimens testing positive for influenza, by type of influenza, and month, Caucasus, Central Asia and Russian Federationⁱⁱⁱ

Month	Number of sentinel specimens tested	Number (%) of sentinel specimens positive for influenza	Number (%) of sentinel specimens positive for influenza A	Number (%) of sentinel specimens positive for influenza B
October, 2010	346	0 (0.0%)	0 (0.0%)	0 (0.0%)
November, 2010	409	6 (1.5%)	4 (1.0%)	2 (0.5%)
December, 2010	430	25 (5.8%)	7 (1.6%)	18 (4.2%)
January, 2011	304	84 (27.6%)	55 (18.1%)	29 (9.5%)
Total	1489	115 (7.7%)	66 (4.4%)	49 (3.3%)

Table 3: Number and percentage of sentinel ILI/ARI specimens testing positive for influenza, by type of influenza, and month, Western, Central, and South Eastern Europe^{iv}

Month	Number of sentinel specimens tested	Number (%) of sentinel specimens positive for influenza	Number (%) of sentinel specimens positive for influenza A	Number (%) of sentinel specimens positive for influenza B
October, 2010	2259	51 (2.3%)	22 (10%)	29 (1.3%)
November, 2010	2503	140 (5.6%)	72 (2.9%)	68 (2.7%)
December, 2010	7132	2753 (38.6%)	1952 (27.4%)	801 (11.2%)
January, 2011	9455	4478 (47.4%)	3128 (33.1%)	1350 (14.3%)
Total	21349	7422 (34.8%)	5174 (24.2%)	2248 (10.5%)

Notable increases in the intensity of both influenza A and B circulation occurred during December 2010, and then further increased in January 2011. Consistent with the epidemiological data on ILI/ARI consultation rates, a pronounced start of the influenza season was observed in December 2010 in the countries of Western, Central, and South Eastern Europe and in January 2011 in the Caucasus, Central Asia, and the Russian Federation. Although more sentinel specimens have been collected and tested in the countries of Western, Central, and South Eastern Europe, a relative predominance of influenza A over influenza B is being observed across the WHO European Region.

Tables 4-6 further describe the subtypes of influenza viruses collected from sentinel ILI/ARI patients. It can be seen that there is a growing predominance of pandemic influenza A (H1N1) 2009 viruses, accompanied by a notable decrease in the relative proportion of influenza A (H3N2) viruses among circulating influenza A viruses. A particular increase in the relative circulation of influenza A (H1N1) 2009 viruses can be seen in the month of January 2011 in the Caucasus, Central Asia, and the Russian Federation.

Influenza B viruses continue to co-circulate with influenza A viruses in the Region. Across the Region, 94% of influenza B viruses, for which lineage is known, belong to the B-Victoria lineage. No seasonal influenza A (H1N1) viruses have been detected in sentinel specimens.

Table 4: Type and sub-type of influenza viruses collected from sentinel ILI/ARI patients, by month, WHO European Region

	October	November	December	January	TOTAL
Number of sentinel specimens tested for influenza	2605	2912	7562	9759	22838
Number and percentage of tested specimens positive for influenza	51 (2.0%)	146 (5.0%)	2778 (36.7%)	4562 (46.7%)	7537 (33.0%)
Number (% of all influenza) positive for influenza A	22 (43.1%)	76 (52.1%)	1959 (70.5%)	3183 (69.8%)	5240 (69.5%)
Number of influenza A viruses sub-typed	20	73	1803	2921	4817
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	11 (55.0%)	56 (76.7%)	1660 (92.1%)	2714 (92.9%)	4441 (92.2%)
Number (%) of subtyped A positive for influenza A (H3)	9 (45.0%)	17 (23.3%)	143 (7.9%)	207 (7.1%)	376 (7.8%)
Number (%) of subtyped A positive for influenza A (H1)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Number (%) of all influenza positive for influenza B *	29 (56.9)	70 (47.9)	819 (29.5)	1379 (30.2)	2297 (30.5)

* There were 299 influenza B viruses for which the influenza lineage was known. Of these influenza B viruses, 282 (94%) were B-Victoria lineage and 17 (6%) were B-Yamagata lineage.

Table 5: Type and sub-type of influenza viruses collected from sentinel ILI/ARI patients, by month, Caucasus, Central Asia and the Russian Federation

	October	November	December	January	TOTAL
Number of sentinel specimens tested for influenza	346	409	430	304	1489
Number and percentage of tested specimens positive for influenza	0 (0.0%)	6 (1.5%)	25 (5.8%)	84 (27.6%)	115 (7.7%)
Number (%) of all influenza positive for influenza A	0 (0.0%)	4 (66.7%)	7(28.0%)	55 (65.5%)	66 (57.4%)
Number of influenza A viruses sub-typed	0	3	6	44	53
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	0 (0.0%)	1 (33.3%)	2 (33.3%)	42 (95.5%)	45 (84.9%)
Number (%) of subtyped A positive for influenza A (H3)	0 (0.0%)	2 (66.7%)	4 (66.7%)	2 (4.5%)	8 (15.1%)
Number (%) of subtyped A positive for influenza A (H1)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Number (%) of all influenza positive for influenza B *	0 (0.0%)	2 (33.3%)	18 (72.0%)	29 (34.5%)	49 (42.6%)

* There were 18 influenza B viruses for which the influenza lineage was known. Of these influenza B viruses, 17 (94%) were B-Victoria lineage and 1 (6%) were B-Yamagata lineage.

Table 6: Type and sub-type of influenza viruses collected from sentinel ILI/ARI patients, by month, Western, Central, and South Eastern Europe

	October	November	December	January	TOTAL
Number of sentinel specimens tested for influenza	2259	2503	7132	9455	21349
Number and percentage of tested specimens positive for influenza	51 (2.3%)	140 (5.6%)	2753 (38.6%)	4478 (47.4%)	7422 (34.8%)
Number (%) of all influenza positive for influenza A	22 (43.1%)	72 (51.4%)	1952 (70.9%)	3128 (69.9%)	5174 (69.7%)
Number of influenza A viruses sub-typed	20	70	1797	2877	4764
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	11 (55.0%)	55 (78.6%)	1658 (92.3%)	2672 (92.9%)	4396 (92.3%)
Number (%) of subtyped A positive for influenza A (H3)	9 (45.0%)	15 (21.4%)	139 (7.7%)	205 (7.1%)	368 (7.7%)
Number (%) of subtyped A positive for influenza A (H1)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Number (%) of all influenza positive for influenza B *	29 (56.9%)	68 (48.6%)	801 (29.1%)	1350 (30.1%)	2248 (30.3%)

* There were 281 influenza B viruses for which the influenza lineage was known. Of these influenza B viruses, 265 (94%) were B-Victoria lineage and 16 (6%) were B-Yamagata lineage.

Non-sentinel virological data

In order to more fully describe the influenza viruses detected during 2010/2011 across the WHO European Region, Tables 7-9 present the type and sub-type of influenza viruses collected from non-sentinel sources (laboratory tests resulting from routine diagnostic requests from clinicians, etc.).

Table 7: Type and sub-type of influenza viruses collected from non-sentinel sources, by month, WHO European Region

	October	November	December	January	TOTAL
Number of tested specimens positive for influenza	81	321	7898	14785	23085
Number (%) of all influenza positive for influenza A	54 (66.7%)	165 (51.4%)	5456(69.1%)	10410 (70.6%)	16115 (69.8%)
Number of influenza A viruses sub-typed	36	87	2674	6310	9107
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	17 (47.2%)	53 (60.9%)	2516 (94.1%)	6174 (97.5%)	8760 (96.2%)
Number (%) of subtyped A positive for influenza A (H3)	18 (50.0%)	34 (39.1%)	158 (5.9%)	136 (2.2%)	346 (3.8%)
Number (%) of subtyped A positive for influenza A (H1)	1 (2.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.0%)
Number (%) of all influenza positive for influenza B *	27 (33.3%)	156 (48.6%)	2442 (30.9%)	4345 (29.4%)	6970 (30.2%)

* There were 299 influenza B viruses for which the influenza lineage was known. Of these influenza B viruses, 282 (94%) were B-Victoria lineage and 17 (6%) were B-Yamagata lineage.

Table 8: Type and sub-type of influenza viruses collected from non-sentinel sources, by month, Caucasus, Central Asia and the Russian Federation

	October	November	December	January	TOTAL
Number of tested specimens positive for influenza	26	58	466	1059	1609
Number (%) of all influenza positive for influenza A	14 (53.8%)	24 (41.4%)	155 (33.3%)	673 (63.6%)	866 (53.8%)
Number of influenza A viruses sub-typed	13	21	137	644	815
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	2 (15.4%)	8 (38.1%)	86 (62.8%)	611 (94.9%)	707 (86.7%)
Number (%) of subtyped A positive for influenza A (H3)	10 (76.9%)	13 (61.9%)	51 (37.2%)	33 (5.1%)	107 (13.1%)
Number (%) of subtyped A positive for influenza A (H1)	1 (7.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.1%)
Number (%) of all influenza positive for influenza B *	12 (46.2%)	34 (58.6%)	311 (66.7%)	386 (36.4%)	743 (46.2%)

* There were 18 influenza B viruses for which the influenza lineage was known. Of these influenza B viruses, 17 (94%) were B-Victoria lineage and 1 (6%) were B-Yamagata lineage.

Table 9: Type and sub-type of influenza viruses collected from non-sentinel sources, by month, Western, Central and Eastern Europe

	October	November	December	January	TOTAL
Number of tested specimens positive for influenza	55	263	7432	13726	21476
Number (%) of all influenza positive for influenza A	40 (72.7%)	141 (53.6%)	5301(71.3%)	9767 (71.2%)	15249 (71.0%)
Number of influenza A viruses sub-typed	23	66	2537	5666	8292
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	15 (65.2%)	45 (68.2%)	2430 (95.8%)	5563 (98.2%)	8053 (97.1%)
Number (%) of subtyped A positive for influenza A (H3)	8 (34.8%)	21 (31.8%)	107 (4.2%)	103 (1.8%)	239 (2.9%)
Number (%) of subtyped A positive for influenza A (H1)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Number (%) of all influenza positive for influenza B *	15 (27.3%)	122 (46.4%)	2131 (28.7%)	3959 (28.8%)	6227 (29.0%)

* There were 281 influenza B viruses for which the influenza lineage was known. Of these influenza B viruses, 265 (94%) were B-Victoria lineage and 16 (6%) were B-Yamagata lineage.

The data collected from non-sentinel sources present a pattern similar to that observed in the sentinel ILI/ARI surveillance data. A notable increase in the predominance of influenza A(H1N1) 2009 among influenza A viruses can be observed from October 2010 to January 2011. The non-sentinel surveillance data also highlight the increase in the relative circulation of influenza A viruses compared to influenza B viruses during the month of January 2011 in the Caucasus, Central Asia, and the Russian Federation. A single seasonal influenza A (H1N1) virus was detected in a non-sentinel specimen in October 2010. No seasonal influenza A (H1N1) viruses have been detected in the WHO European Region since that time.

Sentinel data on hospitalised SARI

Currently there are nine countries that provide sentinel virological data from hospital-based SARI surveillance to the EuroFlu platform. Table 10 presents the type and sub-type of influenza viruses collected from SARI patients. During week 3/2011, 20% of hospitalised SARI patients tested positive for influenza. During this week the relative distribution of influenza types (63% influenza A and 37% influenza B), and subtypes (96% influenza A (H1N1) 2009 and 4% influenza A (H3N2)) in SARI patients appeared similar to what was observed from other sentinel and non-sentinel data sources. The striking difference in the proportion of influenza A to influenza B viruses during week 3/2011 when compared to cumulative data from week 40/2010 to week 3/2011 likely reflects the recent shift in the relative circulation of influenza B to influenza A in the Caucasus, Central Asia, and the Russian Federation—as many countries that are implementing SARI surveillance are located in this part of the WHO European Region.

Table 10: Type and sub-type of influenza viruses collected from hospitalised SARI patients, week 40/2010 to week 3/2011, WHO European Region^v

	Week 3/2011	Cumulative, week 40/2010 to week 3/2011
Number of sentinel SARI specimens tested for influenza	233	1766
Number and percentage of tested SARI specimens positive for influenza	46 (19.7%)	272 (15.4%)
Number (%) of all influenza positive for influenza A	29 (63%)	79 (29%)
Number of influenza A viruses sub-typed	24	65
Number (%) of subtyped A positive for pandemic influenza A (H1) 2009	23 (96%)	57 (86%)
Number (%) of subtyped A positive for influenza A (H3)	1 (4%)	8 (14%)
Number (%) of subtyped A positive for influenza A (H1)	0 (0%)	0 (0%)
Number (%) of all influenza positive for influenza B *	17 (37%)	193 (71%)

* There were 19 influenza B viruses for which the influenza lineage was known. All 19 were of the B-Victoria lineage.

Antigenic and Genetic Characterizations

The antigenic and genetic characterizations performed on influenza isolates by NICs in the WHO European Region are presented in Tables 11 and 12, respectively. Of the 465 pandemic influenza A (H1) viruses that have been antigenically characterized during the 2010/2011 influenza season, 100% are antigenically similar to pandemic A/California/7/2009 (H1N1)-like viruses. Of the 79 influenza A (H3N2) viruses that have been characterized, 100% are antigenically similar to A/Perth/16/2009 (H3N2)-like viruses. Of the 279 influenza B viruses that have been antigenically characterized, 262 (94%) are B/Brisbane/60/2008-like (B/Victoria/2/87 lineage) and 17 (6%) are B/Florida/4/2006-like (B/Yamagata/16/88 lineage). All 17 viruses from the influenza B-Yamagata lineage were reported by Western, Central, and South Eastern European countries. Taken together, 98% of antigenically characterized viruses were similar to 2010-2011 northern hemisphere influenza vaccine strains.

Genetic characterization of 109 circulating influenza viruses suggest that all influenza A (H1) viruses are in the pandemic cluster represented by the current vaccine strain A/California/7/2009 A (H1N1). The influenza A (H3) that have been genetically characterized are in the clades represented by A/Perth/16/2009, A/Victoria/208/2009, and the A/Victoria/208/2009 - A/Hong Kong/2121/2010 subgroup. Influenza B viruses are in the clades represented by B/Bangladesh/3333/2007 and B/Brisbane/60/2008.

Table 11: Antigenic characterization of influenza isolates from the WHO European Region

Viruses	WHO European Region		Caucasus, Central Asia and Russian Federation		Western, Central, and South Eastern, Europe	
	Number	%	Number	%	Number	%
<i>A(H1)pandemic A/California/7/2009 (H1N1)-like*#</i>	465	56.5	14	50.0	451	56.7
<i>A(H1) A/Brisbane/59/2007 (H1N1)-like</i>	0	0	0	0	0	0
<i>A(H3) A/Perth/16/2009 (H3N2)-like*#</i>	79	9.6	9	32.1	70	8.8
<i>B/Florida/4/2006-like (B/Yamagata/16/88 lineage)</i>	17	2.1	0	0	17	2.1
<i>B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage)</i>	0	0	0	0	0	0
<i>B/Brisbane/60/2008-like (B/Victoria/2/87 lineage)*#</i>	262	31.8	5	17.9	257	32.3
Grand Total	823	100.0	28	100.0	795	100.0

* Included in the WHO recommended composition of influenza virus vaccines for use in the 2010-2011 northern hemisphere influenza season
(http://www.who.int/csr/disease/influenza/recommendations2010_11north/en/index.html)

Included in the WHO recommended composition of influenza virus vaccines for use in the 2011 southern hemisphere influenza season
(<http://www.who.int/csr/disease/influenza/recommendations2011south/en/index.html>).

Table 12: Genetic characterization of influenza isolates from the WHO European Region

Virus Characterization	Number
<i>A(H1)pandemic cluster repr. A/California/7/2009 A(H1N1)pandemic</i>	70
<i>A(H1)pandemic cluster repr. A/Christchurch/16/2010</i>	4
<i>A(H1)pandemic cluster repr. A/Hong Kong/2213/2010</i>	8
<i>A(H1) clade 2B - repr. A/Brisbane/59/2007</i>	0
<i>A(H3) clade repr. A/Brisbane/10/2007</i>	0
<i>A(H3) clade repr. A/Perth/16/2009</i>	7
<i>A(H3) clade repr. A/Victoria/208/2009</i>	2
<i>A(H3) clade repr. A/Victoria/208/2009 - A/Hong Kong/2121/2010 subgroup</i>	11
<i>B(Yam) lineage - clade repr. B/Bangladesh/3333/2007</i>	6
<i>B(Yam) lineage - clade repr. B/Brisbane/3/2007</i>	0
<i>B(Yam) lineage - clade repr. B/Florida/4/2006</i>	0
<i>B(Vic) lineage - clade repr. B/Brisbane/60/2008</i>	1
<i>B(Vic) lineage - clade repr. B/Bolivia/104/2010</i>	0
Grand Total	109

Conclusions

The 2010/2011 influenza season arrived 8-10 weeks later than the 2009/2010 'pandemic' season in the WHO European Region, but still quite early compared to historical trends. The percentage of sentinel specimens currently testing positive for influenza in the Region is similar to that observed during the peak of the 2009/2010 season. As has been observed in several previous years, the 2010/2011 influenza season appears to be progressing in a West to East fashion across much of Europe. Several Western European countries have reached peaks in ILI or ARI activity, and in the percentage of sentinel specimens testing positive for influenza. However other countries are still approaching peaks in influenza activity.

Increases in influenza activity have been accompanied by increases in hospitalised SARI and severe influenza cases; particularly those associated with pandemic A (H1N1) 2009 virus infections. While this has placed a strain on critical care resources in several locations, the age and underlying risk profile of the severe cases appears similar to what was observed during the 2009/2010 'pandemic' season. During recent weeks the relative distribution of influenza viruses in SARI cases from sentinel hospitals appears similar to what has been observed in other sentinel and non-sentinel surveillance systems.

Relative to the increased circulation of pandemic influenza A (H1N1) 2009 viruses, the proportion of influenza A(H3N2) viruses has substantially decreased during the course of the 2010/2011 influenza season. While influenza B viruses continue to co-circulate with influenza A viruses, their relative presence has declined somewhat in countries where there are currently increasing numbers of influenza (H1N1) 2009 viruses in circulation. This has been particularly notable during January 2011 in the Caucasus, Central Asia and the Russian Federation. Currently, 98% of antigenically characterized viruses from the 2010/2011 influenza season are similar to the 2010-2011 northern hemisphere influenza vaccine strains.

ⁱ http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1294740643915 (last accessed 1 February, 2011)

ⁱⁱ <http://www.hpsc.ie/hpsc/A-Z/Respiratory/Influenza/SeasonalInfluenza/Surveillance/InfluenzaSurveillanceReports/20102011Season/File.11977.en.pdf> (last accessed 1 February, 2011)

ⁱⁱⁱ Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Uzbekistan, Turkmenistan

^{iv} Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, United Kingdom, Norway, Poland, Portugal, Republic of Moldova, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, Ukraine

^v Countries currently meeting the minimum reporting criteria and who are submitting sentinel SARI virological data to EuroFlu include Armenia, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Romania, Russian Federation, and Ukraine