Summary

- The seasonal peak for influenza has passed in most countries in the temperate regions of the northern hemisphere.

- Different viruses have predominated in different parts of the world in the northern hemisphere 2011-12 influenza season. In North America, Canada had a slight predominance of influenza B over influenza A(H3N2) (67% vs. 33% respectively) particularly later in the season, while in the United States of America (USA), the proportions were reversed and A(H3N2) was more common. Mexico’s season was almost all related to influenza A(H1N1)pdm09. In Europe, the large majority of influenza viruses have been influenza A(H3N2) with only very small numbers of A(H1N1)pdm09 and B. In Asia, northern China and Mongolia reported mostly influenza B early in the season with influenza A(H3N2) appearing later, though this sequence was reversed in the Republic of Korea and Japan where A(H3N2) was predominant initially and influenza B appeared later.

- At the beginning of the influenza season, most viruses tested were antigenically closely related to those found in the current trivalent seasonal vaccine. However, by mid-season, divergence was noted in both the USA and Europe in the A(H3N2) viruses tested and significant numbers of A(H3N2) viruses tested in recent months have shown reduced cross reactivity with the vaccine viruses. Influenza B virus detections have been both from the Victoria and Yamagata lineages with the former slightly more common in China and parts of Europe.

- Resistance to neuraminidase inhibitors has been low or undetectable throughout most of the season; however, a slight increase in levels of resistance to oseltamivir has been reported in influenza A(H1N1)pdm09 isolates in the USA. Most (11/16) of these oseltamir resistant cases have been from the state of Texas, where influenza A(H1N1)pdm09 has been the most common virus circulating.

Note: Global epidemiology and surveillance updates are periodically collected from data reported by national authorities or organization responsible for these reporting these data. For further information on specific influenza virus activity in the world visit the following pages (links are at the end of the document):

- Virological Update
- Peer-reviewed Literature: Influenza-associated burden of disease in low and middle income countries – Examples from Kenya, Bangladesh and China.
Countries in the temperate zone of the northern hemisphere

Influenza activity is decreasing across the entire northern hemisphere temperate zone. In some countries, notably in the Americas and the United Kingdom of Great Britain and Northern Ireland, the 2011-2012 season was milder when compared to previous influenza seasons. Other countries in Europe and northern Asia have reached influenza activity levels similar to previous years.

North America

This influenza season peaked later than previous seasons and overall influenza activity in North America is continuing to decline. Influenza B was the predominant virus in Canada and influenza A(H3N2) in the USA.

In Canada, during the week of 23-29 April, influenza activity continued to decrease, but several regions still reported elevated activity. Although influenza-like illness (ILI) consultation rates increased slightly nationally since the last report, the numbers of outbreaks reported, the percentage of specimens testing positive for influenza, numbers of hospitalizations and deaths, and the number of regions reporting widespread or localized influenza activity have all decreased. Among the 3,447 samples tested in the week of 23 -29 April, 15% were positive for influenza, which represents a persistent decline since the peak five weeks previously. The highest consultation rates for ILI in the reporting period were for children under 5 years of age (48.2/1,000 visits), followed by those between 5 to 19 years old (29.6/1,000 visits). Sixty-seven new laboratory-confirmed influenza-associated hospitalizations were reported, down from 118 hospitalizations in the last reporting period. Of the hospitalizations in children under the age of 16 years reported by the Immunization Monitoring Program Active (IMPACT) network since the start of the season, 35% were under the age of 2 years. The Aggregated Surveillance System reported that 33% of 1,439 influenza-associated hospitalizations and 78% of 80 laboratory-confirmed deaths were in adults over the age of 65 years since the start of the season. Influenza B detections have increased in proportion, accounted for 67% of all influenza viruses detected by provincial laboratories in the latest report. Of the influenza A viruses detected since the start of the season that have been subtyped, 68% were influenza A(H3N2) and 32% were influenza A(H1N1)pdm09. Since the start of the season, 1,010 influenza viruses were antigenically characterized. Of the 196 A(H3N2) viruses, 177 (90%) were antigenically similar to A/Perth/16/2009, the virus contained in the current trivalent seasonal influenza vaccine, while 19 (10%) viruses showed reduced titers with antiserum produced against the virus. Of the 632 influenza B viruses characterized, 315 (50%) were antigenically similar to the vaccine virus B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 315 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 317 (50%) influenza B viruses were antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage.

In the United States of America (USA), influenza activity declined nationally and available data suggests that the 2011-2012 season has been milder compared to previous seasons. The ILI consultation rate continued to decline after peaking in the second week of March just above the national baseline of 2.4%. The number of respiratory specimens testing positive for influenza viruses has also been declining since mid-March to 15% during week 23-29 April. The number of states reporting widespread activity has decreased from 6 to 2 since the last report. The mortality from pneumonia and influenza reported in the 122 cities surveillance system decreased 7% and continued to be below the epidemic threshold of 7.6%. Since the start of the season, 20 influenza-associated pediatric deaths have been reported, which is markedly less than the 2010-2011 season, when 122 pediatric deaths were reported. Among adults hospitalized with laboratory-confirmed influenza, the most commonly reported underlying medical conditions were chronic lung diseases, obesity, and metabolic disorders. In hospitalized children, the most commonly reported underlying medical conditions were chronic lung diseases, asthma, and neurologic disorders. However, nearly half of hospitalized children did not have any identified underlying medical conditions. In contrast to Canada,
of 2,886 specimens tested in mid-April, 32% were influenza type B and 68% type A; influenza B has increased proportionately, however, accounting for only 13% of viruses overall since the beginning of the season. Among influenza A viruses with subtype information, A(H3N2) accounted for 84% (177) and A(H1N1)pdm09 16% (34). There have been 1,316 influenza viruses antigenically characterized since October 1, 2011; 98% of the influenza A(H1N1)pdm09 viruses, and 81% of the influenza A(H3N2) viruses, and 42% of the influenza B viruses are antigenically related to viruses contained in the current seasonal trivalent influenza vaccine. Oseltamivir resistance was reported in 1.5% (16) of the 1,067 influenza A(H1N1)pdm09 viruses tested but in none of 200 influenza A(H3N2) or influenza B viruses tested. Information related to oseltamivir exposure among the 16 cases is available for 14. Among those 14, 3 were using oseltamivir for 1 day or more at the time of specimen collection, 2 had family members using oseltamivir, and 9 had no exposure to oseltamivir. Eleven of the 16 oseltamivir-resistant A(H1N1)pdm09 viruses detected during the 2011-12 season are from the state of Texas. Of 371 influenza A(H1N1)pdm09 specimens tested from Texas, 11 (3.0%) collected from January to April 2012 were resistant to oseltamivir.

Similarly to Canada and the USA, influenza activity in Mexico is decreasing, with detection of few samples of influenza A(H1N1)pdm09 and influenza B.

**Influenza transmission zone: North America**

*Number of specimens positive for influenza by subtype*

![Graph showing number of specimens positive for influenza by subtype](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAgAAAAMCAYAAACexpected.png) Data source: FluNet (www.who.int/flunet), Global Influenza Surveillance and Response System (GISRS)

**Europe**

During the week of 23-29 April, consultation rates for ILI and acute respiratory infection (ARI) are low-intensity, and decreasing trends on influenza activity have continued across Europe. In the most recent report, activity was highest in eastern Europe, notably the Russian Federation. The number of specimen testing positive for influenza has continued to decrease over the last weeks, with 18% of 308 specimens from sentinel outpatient clinics testing positive for influenza viruses in late April. Hospitalizations due to severe acute respiratory infection (SARI) have also decreased; during week 23-29 April, no influenza-associated SARI cases were reported from western Europe. The European Mortality Monitoring Project reported that excess mortality in people ≥ 65 years increased significantly during this 2011-2012 season, particularly between weeks 5 to 11, and this intensification coincided
with influenza activity; however, rates have now returned to baseline levels. Since the beginning of
the season, 41,844 influenza viruses from sentinel and non-sentinel sources across Europe and
Central Asia have been typed; 91% were influenza A and 9% were influenza B. Of the influenza A
viruses, 96% were influenza A(H3N2) and 4% A(H1N1)pdm09. Of the 1,175 genetic characterizations
conducted during this season, 1,020 (87%) were influenza A(H3N2) viruses, and 658 (65%) fell within
the A/Victoria/208/2009 clade. Viruses falling within this genetic group are antigenically diverse,
indicating that there is an imperfect match with the current vaccine A/Perth/16/2009. No resistance to
oseltamivir has been reported from Europe during the 2011-2012 season.

**Influenza transmission zone: European Region of WHO**

**Number of specimens positive for influenza by subtype**

*Data source: FluNet (www.who.int/fluNET), Global Influenza Surveillance and Response System (GISRS)*

*Data generated on 9/05/2012 14:44:58 UTC*
**Northern Africa and eastern Mediterranean**

In the eastern Mediterranean and northern African region influenza activity has continued to decrease since a peak in the activity at the end of 2011. Influenza B viruses are currently predominant in this region, although the numbers are very small. Oman reported influenza A(H1N1)pdm09 activity.

**Influenza transmission zone: Eastern Mediterranean**

*Number of specimens positive for influenza by subtype*

Data source: FluNet (www.who.int/flunet). Global Influenza Surveillance and Response System (GISRS)

Data generated on 09/05/2012 13:48:43 UTC

**Temperate countries of Asia**

Overall influenza activity remains at low levels in northern Asia. In northern China, influenza activity continued to decrease. The percentage of ILI-related visits to sentinel hospitals was 2.5%, a decrease from the previous week (2.7%). In the week 16-22 April, 327 specimens were tested and 33 (10.1%) were positive for influenza, which represents a decrease from two weeks ago (18.8%). The proportion of influenza A continues to increase relative to influenza B, which had initially dominated the start of the influenza season, and now represents 78.8% of all positive samples in the week 16-22 April. Of the 26 influenza A viruses identified, 11 (42.3%) were influenza A(H3N2), 10 were influenza A(H1N1)pdm09 (38.5%), and 5 were unsubtyped (19.2%). In Mongolia, ILI activity continued to decrease in the past 2 weeks and remains below the upper national alert threshold after peaking in early March; most of the ILI activity was reported in children 1-4 years of age. The percentage of patients with pneumonia among hospitalised patients declined in week 17 but remains above the national average. The number of influenza positive samples from pneumonia patients also continued to decrease. There has been a transition from influenza B at the beginning of the season to influenza A predominance, with both A(H3N2) and A/H1N1)pdm09 detected in previous weeks. Similar to observations northern China, Mongolia has also experienced a transition from influenza B predominance to influenza A in recent weeks. In the Republic of Korea (ROK), ILI activity continued to decrease but there was a slight increase in pneumonia and influenza-associated mortality. Overall, rates of mortality due to pneumonia and influenza have been similar to those reported in the last 4 years. In contrast to China and Mongolia, following a predominance of influenza A(H3N2) in the beginning of the season, influenza transmission in ROK was predominantly related to influenza A(H3N2) throughout most of the season but has been nearly all influenza B since early March. In Japan, ILI case reporting has decreased to very low levels though still slightly above inter-seasonal baselines. Influenza A(H3N2) was the predominant virus subtype detected this season in the country though small numbers of influenza B were reported in the latter part of the season.
Countries in the tropical zone

Tropical countries of the Americas

In the Caribbean, influenza activity remained low. In week 17 there was an increase in SARI-related hospitalisations to 2.2% from 1.5% in the previous week but no SARI-associated deaths were reported. The highest rate of SARI hospitalisation was observed in children aged 5-14 years of age. The Dominican Republic continued to report a high positivity rate for influenza A(H3N2) detection. In Central and tropical South American, countries have reported low or undetectable levels of influenza transmission as expected for this period of time.

Data source: FluNet (www.who.int/flunet). Global Influenza Surveillance and Response System (GISRS)
Data generated on 09/05/2012 13:53:29 UTC
**Sub-Saharan Africa**

In sub-Saharan Africa, most influenza activity was noted in Kenya and Madagascar. Influenza A(H3N2) was the most commonly detected virus in Kenya and influenza type B in Madagascar, both in relatively small numbers.

**Tropical Asia**

Influenza activity in tropical Asia has decreased or remains at stable levels. In southern China, the percentage of ILI visits in sentinel hospitals was 2.9% in the week 23-29 April, which represents a decrease from the previous week (3.0%) but is higher than the same period last year (2.8%). Of the 1,250 specimens tested, 171 (13.7%) were positive for influenza: 146 (85.4%) were influenza A, of which 115 (67.2%) were A(H3N2) and the remainder were untyped, and 25 (14.6%) were influenza B. The proportion of A(H3N2) to influenza B positive samples has been increasing in the past few weeks. Among the viruses tested for antiviral resistance since October 2011, all influenza A viruses were resistant to adamantane and sensitive to neuraminidase inhibitors; all influenza B viruses were sensitive to neuraminidase inhibitors. In China, special administrative region Hong Kong, influenza activity continued to decrease as compared to the past few weeks. Of the 323 samples that tested positive for influenza, 285 (88.2%) were influenza A(H3N2) and 38 (11.8%) were influenza B. In Singapore, acute respiratory infection (ARI) decreased compared to previous weeks, as did the proportion of ILI cases in polyclinic ARI cases. Of the 152 ILI samples collected in the past 4 weeks, 38% were positive for influenza, of which 63% were influenza B, 28% were influenza A(H3N2), and 8% were influenza A(H1N1)pdm09. In Viet Nam, Cambodia and Lao PDR, influenza activity was low or undetected.

**Countries in the temperate zone of the southern hemisphere**

In the temperate regions of South America and Australia and New Zealand, ILI activity remained low at inter-seasonal levels.
Source of data

The Global Influenza Programme monitors influenza activity worldwide and publishes an update every two weeks.

The updates are based on available epidemiological and virological data sources, including FluNet (reported by the Global Influenza Surveillance and Response System) and influenza reports from WHO Regional Offices and Member States. Completeness can vary among updates due to availability and quality of data available at the time when the update is developed.

Link to web pages

Epidemiological Influenza updates:
http://www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance

Virological surveillance updates:
http://www.who.int/influenza/gisrs_laboratory/updates/summaryreport

Peer-reviewed literature Virological surveillance updates:
http://who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_peer_reviewed

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