Flu News Europe
Joint ECDC–WHO/Europe weekly influenza update

Summary

Week 4/2017 (23–29 January 2017)

- Influenza activity remained elevated across the region with 28 of 43 countries reporting increased activity.
- Most countries reported stable or decreasing activity compared to the previous week.
- Excess all-cause mortality has been observed among the 15-64 years and 65 years and over age groups in many of the 18 countries that provide data on excess all-cause mortality and, most likely, this is mainly due to the circulation of influenza A(H3N2) virus.
- The proportion of influenza virus detections among sentinel surveillance specimens was 51%, similar to that seen since week 51/2016.
- The great majority of influenza viruses detected were type A (95%) and, of those subtyped, 97% were A(H3N2).
- Most of the hospitalized laboratory-confirmed influenza cases reported have occurred in people aged 65 years or older.

Season overview

- Influenza activity started early this season compared to previous seasons.
- Week 46/2016 is the earliest week that the overall influenza-positivity rate in sentinel specimens reached 10% since the emergence of A(H1N1)pdm09 viruses in the 2009 season; during the last 6 seasons this occurred between weeks 48 and 51.
- Since week 40/2016, influenza A viruses have predominated, accounting for 96% of all sentinel detections; the great majority (99%) of subtyped influenza A viruses from sentinel sites has been A(H3N2).
- In an influenza season in which A(H3N2) viruses predominate, elderly populations might be expected to be the most severely affected. Indeed, confirmed cases of influenza virus type A infection reported from hospitals have predominantly been in adults aged over 65 years.
- So far, circulating A(H3N2) viruses are antigenically similar to the vaccine virus. While about two-thirds of the A(H3N2) viruses genetically characterized belong to a new genetic subclade (3C.2a1), those that have been antigenically characterized are similar to the vaccine virus (clade 3C.2a).
- Early monitoring of vaccine effectiveness in Finland and Sweden suggests levels of effectiveness in persons aged 65 years and older similar to estimates from annual multi-country studies between the 2011–2012 and 2014–2015 seasons. Given typically suboptimal vaccination coverage and the partial effectiveness of influenza vaccines, rapid use of neuraminidase inhibitors (NAIs) for laboratory-confirmed or probable cases of influenza infection should be considered for vaccinated and non-vaccinated patients at risk of developing complications.
- Reduced susceptibility to Zanamivir has been observed for only one of the tested viruses so far this season.

- A risk assessment on seasonal influenza in EU/EEA countries was published by ECDC on 24 December 2016 and was updated on 25 January 2017. The above description is in line with the findings of these assessments.

Primary care data

Influenza activity

Influenza activity in week 4/2017 was at variable levels across the region and was similar to the previous week: Hungary reported very high intensity, and 4, 23 and 15 countries or regions reported high, medium and low intensity, respectively (Fig. 1). Of the 43 countries or regions reporting any data on geographic spread of influenza, 27 reported widespread influenza activity, similar to the previous week. Other countries reported regional (n=8), sporadic (n=4) or local activity (n=1) (Fig. 2). Of the 43 countries or regions reporting any data on the trend of activity, 10 reported increasing activity while 33 reported decreasing (n=23) or stable (n=10) activity. The percentage of influenza virus detections among sentinel specimens was 51%, similar to that in the previous week (49%).

Map of qualitative indicators in the European Region

Fig. 1. Intensity in the European Region, week 4/2017

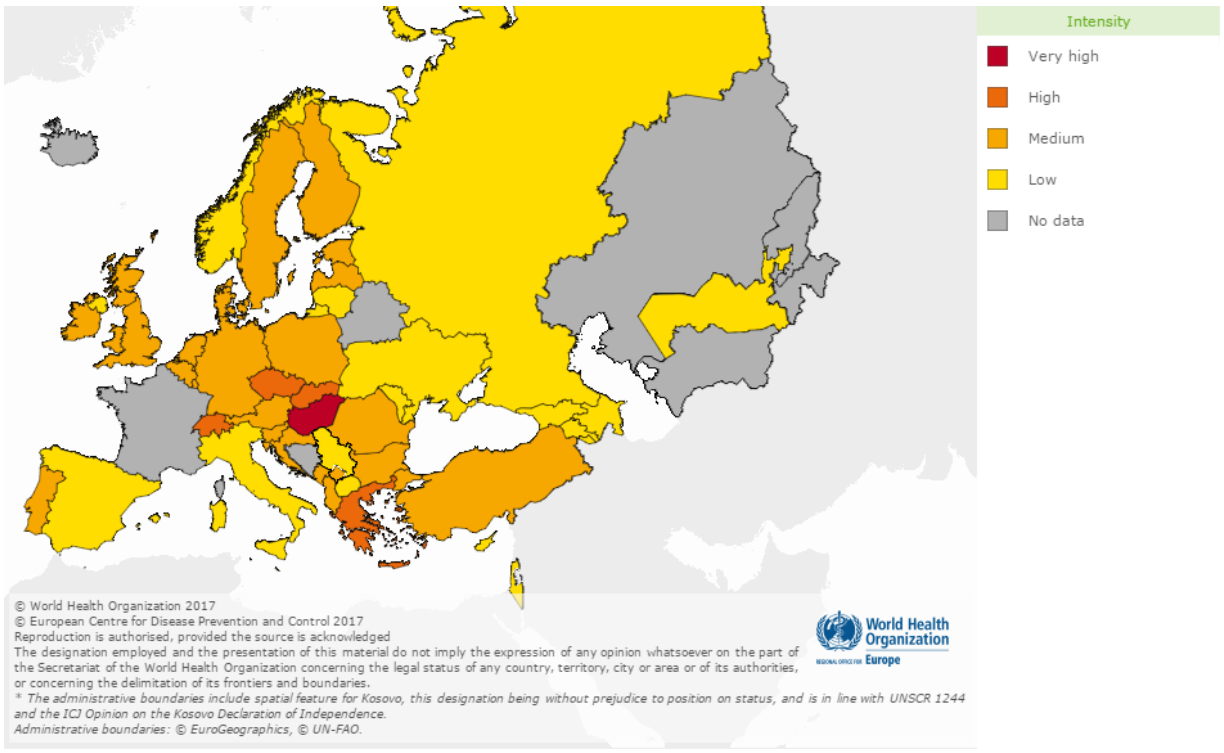
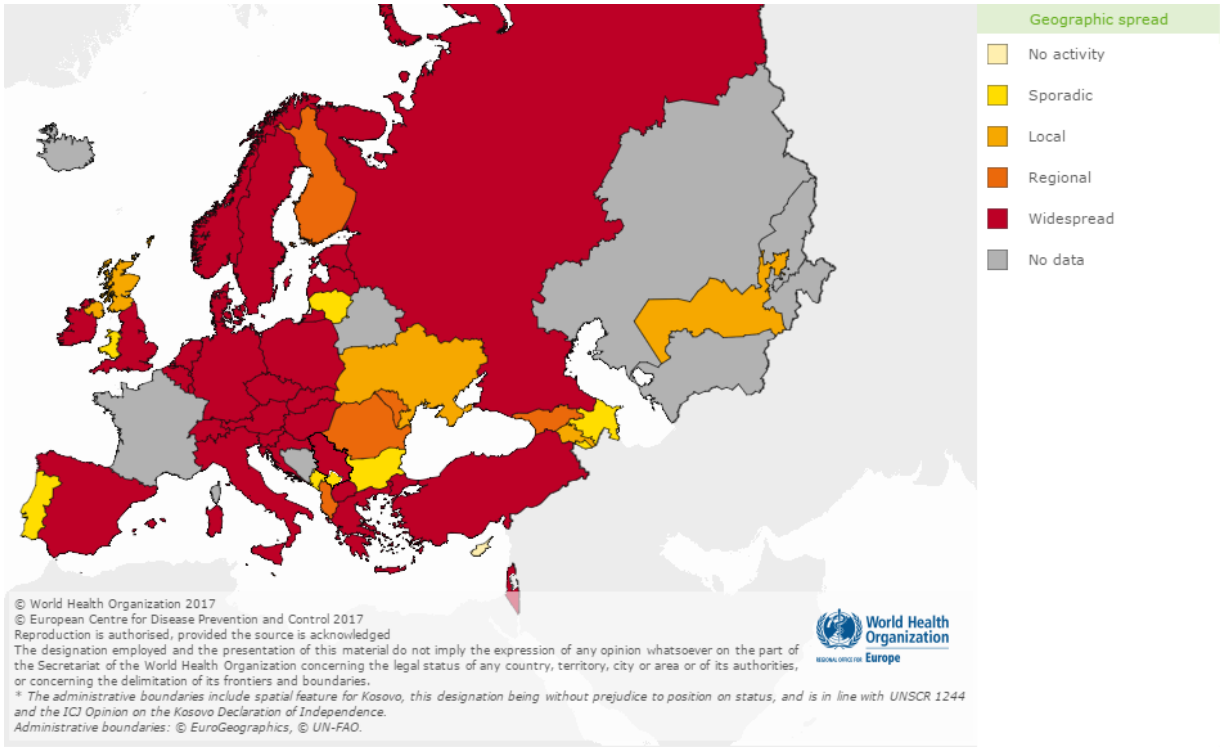


Fig. 2. Geographic spread in the European Region, week 4/2017



For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe website.

Viruses detected in sentinel-source specimens (ILI and ARI)

For week 4/2017, 1 612 of 3 176 (51%) sentinel specimens tested positive for influenza viruses (Table 1). Of these, 95% were type A and 5% were type B. The great majority (97%) of subtyped influenza A viruses were A(H3N2). The lineage of 36 influenza B viruses was determined of which 18 fell in B/Yamagata and 18 in B/Victoria lineages. Of 34 countries across the region that each tested at least 10 sentinel specimens, 26 reported proportions of influenza virus detections above 30% (median 54%, range 33% to 77%).

Similar cumulative distributions of types and influenza A virus subtypes have been observed since week 40/2016: of all typed viruses, 96% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 252 influenza B viruses which have been ascribed a lineage since week 40/2017, 162 (64%) were of the B/Victoria lineage and 90 (36%) were of the B/Yamagata lineage, somewhat different to the even lineage distribution of influenza B viruses in week 4/2017.

Fig. 3. Influenza virus detections in sentinel-source specimens by type and subtype, by week

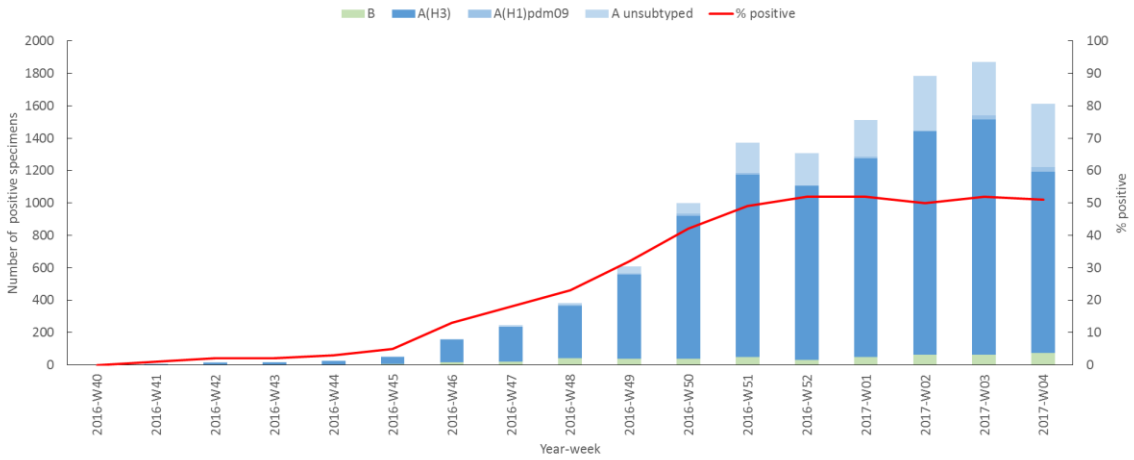


Table 1. Influenza virus detections in sentinel-source specimens by type and subtype, week 4/2017 and cumulatively

	Number of detections	
Virus type and subtype	**Current Week**	**Season 2016-2017**
Influenza A	**1 538**	**11 472**
A(H1N1)pdm09	30	105
A(H3N2)	1 118	9 551
A not subtyped	390	1 816
Influenza B	**74**	**496**
B/Victoria lineage	18	162
B/Yamagata lineage	18	90
Unknown lineage	38	244
Total detections (total tested)	**1 612 (3 176)**	**11 968 (31 641)**

Severity

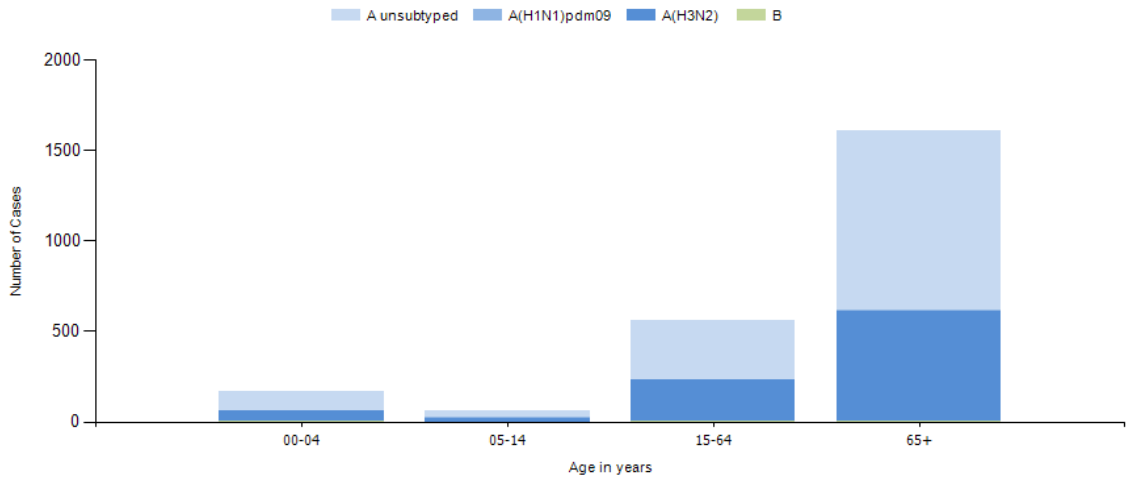
For week 4/2017, of the 15 countries that conduct sentinel surveillance on severe acute respiratory infection (SARI), 10 reported data and 7 of the 9 countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases reported data.

Of 1 107 SARI cases reported, 179 were tested for influenza virus and 54 (30%) were positive: 46 A(H3N2), 1 type A not subtyped and 7 type B viruses. Since week 40/2016, 20 766 SARI cases have been reported from 15 countries with 5 256 tested for influenza virus, of which 1 973 (38%) were positive: 1 707 (87%) were type A and 266 (13%) type B viruses. Of the influenza A viruses, 1 614 (94.5%) were A(H3N2), 1 (0.1%) was A(H1N1)pdm09 and 92 (5.4%) were not subtyped.

Of countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases in intensive care units (ICU) or other wards, the Czech Republic, Finland, Spain, Sweden and the United Kingdom reported a total of 108 cases (59 were type A not subtyped, 43 were A(H3N2), 5 were A(H1N1)pdm09 and 1 was type B) admitted to ICU in week 4/2017, a decrease from 167 cases in the previous week. From other wards, 126 cases were reported in week 4/2017 (a decrease from 147 cases in the previous week) by the Czech Republic, Ireland, Romania and Spain of which 89 were type A not subtyped and 37 A(H3N2).

Since week 40/2016, the Czech Republic, Ireland, Romania and Spain have reported 2 500 laboratory-confirmed influenza cases admitted to non-ICU wards; 1 507 infected with unsubtyped A virus, 976 with A(H3N2), 3 with A(H1N1)pdm09 and 14 with type B influenza viruses. In total, the Czech Republic, Finland, France, Ireland, Romania, Spain, Sweden and the United Kingdom have reported 2 204 cases admitted to ICU; 1 344 infected with unsubtyped influenza A virus, 727 with A(H3N2), 94 with A(H1N1)pdm09 and 39 with type B influenza viruses.

Fig. 4. Distribution of virus (sub)type in influenza-confirmed cases admitted to ICU by age-group, cumulatively



Since the start of the season, most of the hospitalized laboratory-confirmed influenza cases reported have occurred in people aged 65 years or older. Information on patient age and influenza virus (sub)type was available for 1 574 cases admitted to ICU; the majority (65%) of cases (n=1 025) were aged ≥65 years, 472 (30%) were aged 15–64 years and 77 (5%) were aged under 15 years. A(H3N2) viruses predominated and accounted for 533 cases, 97% of the subtyped influenza A viruses in cases admitted to ICUs. 467 fatal cases have been reported, 253 from ICUs and 214 from other wards (212 A(H3N2), 249 type A not subtyped, 1 A(H1N1)pdm09 and 5 type B) with 297 (82%) being in patients aged ≥65 years.

Mortality monitoring

Data from 19 countries or regions reporting to the EuroMOMO project were received this week and included in the pooled analyses of excess all-cause mortality.

Many participating countries across the European region continue to see a marked increase in all-cause excess mortality among the elderly aged 65 years and above. A substantial increase has similarly been observed in the 15-64 years age group. Most likely, this is mainly due to the circulation of influenza A(H3N2) virus.

Virus characteristics

Viruses detected in non-sentinel-source specimens

For week 4/2017, 8 056 specimens from non-sentinel sources (such as hospitals, schools, non-sentinel primary care facilities, nursing homes and other institutions) tested positive for influenza viruses (Table 2). Of these, 95% were type A (with 99% of the subtyped viruses being A(H3N2)), and 5% type B.

Similar cumulative distributions of types and subtypes as seen in sentinel detections have been observed since week 40/2016 with A(H3N2) viruses being dominant throughout Europe (Table 2). For the majority of viruses, no subtype or lineage was determined; however, for those that were, 99% of the subtyped influenza A viruses were A(H3N2), while of 317 type B viruses ascribed to a lineage, 63% were B/Yamagata lineage and 37% were B/Victoria lineage, which differs from sentinel detections where B/Victoria lineage viruses have dominated so far this season. The difference is mainly driven by the proportions of influenza B lineage detections in sentinel specimens in Kyrgyzstan (B/Victoria lineage predominant) and detections among non-sentinel specimens in Estonia and Norway (B/Yamagata lineage predominant).

Table 2. Influenza viruses detected in non-sentinel-source specimens, by virus (sub)type, week 4/2017 and cumulatively

	Number of detections	
Virus type and subtype	**Current Week**	**Season 2016-2017**
Influenza A	**7 664**	**67 237**
A(H1N1)pdm09	28	193
A(H3N2)	2 712	24 445
A not subtyped	4 924	42 599
Influenza B	**392**	**2 095**
B/Victoria lineage	12	119
B/Yamagata lineage	10	198
Unknown lineage	370	1 778
Total detections (total tested)	**8 056 (28 034*)**	**69 332 (323 135*)**

* Not all countries have a true non-sentinel testing denominator and these figures are likely to be an underestimate.

Genetic characterization

For specimens collected since week 40/2016, genetic characterization of 987 viruses has been reported (Table 3). Among A(H3N2) viruses, 281 fall in the vaccine component clade (3C.2a), and 646 in a subclade of clade 3C.2a viruses (3C.2a1) defined by N171K, often with N121K, amino acid substitutions in the haemagglutinin. Viruses in these 2 clades are antigenically similar, though the 3C.2a1 subclade is evolving rapidly with emergence of numerous virus clusters defined by additional amino acid substitutions in haemagglutinin and the impact of which on antigenic characteristics is not yet clear.

Table 3. Viruses attributed to genetic groups, cumulative for weeks 40/2016–4/2017

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (clade 6B.1)[b]	5
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B)	2
A(H3N2) A/Hong Kong/4801/2014 (clade 3C.2a)[a,b]	281
A(H3N2) A/Bolzano/7/2016 (clade 3C.2a1)	646
A(H3N2) A/Switzerland/9715293/2013 (clade 3C.3a)	4
B/Brisbane/60/2008 (Victoria lineage clade 1A)[a,b]	18
B/Phuket/3073/2013 (Yamagata lineage clade 3)[c]	31

[a] Vaccine component for Northern Hemisphere 2016–2017 season
[b] Vaccine component for Southern Hemisphere 2017 season
[c] Vaccine component of quadrivalent vaccines for both northern and southern hemisphere

The recommended composition of trivalent influenza vaccines for the 2016–2017 season in the northern hemisphere is for inclusion of an A/California/7/2009 (H1N1)pdm09-like virus; an A/Hong Kong/4801/2014 (H3N2)-like virus; and a B/Brisbane/60/2008-like virus (B/Victoria lineage). For quadrivalent vaccines a B/Phuket/3073/2013-like virus (B/Yamagata lineage) virus is recommended. The recommended influenza A(H1N1)pdm09 component of the 2017 southern hemisphere influenza vaccine is an A/Michigan/48/2015 (H1N1)pdm09-like virus, the first update since A(H1N1)pdm09 viruses emerged in 2009.

Early monitoring of vaccine effectiveness in Finland and Sweden suggests levels of effectiveness in persons aged 65 years and older (26% (95% CI 22% to 30%) and 24% (95% CI 11% to 34%) vaccine effectiveness, respectively) similar to estimates from annual multi-country studies between the 2011–2012 and 2014–2015 seasons. Given typically suboptimal vaccination coverage and the partial effectiveness of influenza vaccines, rapid use of neuraminidase inhibitors (NAIs) for laboratory-confirmed or probable cases of influenza infection should be considered for vaccinated and non-vaccinated patients at risk of developing complications.

Antiviral susceptibility testing

Neuraminidase inhibitor susceptibility has been assessed for 574 viruses (540 A(H3N2), 10 A(H1N1)pdm09 and 24 type B) with collection dates since week 40/2016. None showed evidence of reduced inhibition to oseltamivir, but one A(H3N2) virus showed evidence of reduced inhibition to zanamivir (Table 4).

Table 4. Antiviral susceptibility (combined phenotypic and genotypic susceptibility information) by influenza virus type and subtype, cumulative for weeks 40/2016–4/2017

Subtype	Oseltamivir					Zanamivir				
	Viruses tested	RI	HRI	RI+HRI	RI+HRI%	Viruses tested	RI	HRI	RI+HRI	RI+HRI%
A(H1)pdm09	10	0	0	0	0.0%	9	0	0	0	0.0%
A(H3)	540	0	0	0	0.0%	528	1	0	1	0.2%
B	24	0	0	0	0.0%	24	0	0	0	0.0%

For phenotypic analysis, reduced inhibition, RI, was defined as 10 to 100-fold above normal inhibition and highly reduced inhibition, HRI as >100-fold above normal inhibition for influenza A viruses, and 5 to 50-fold and >50-fold for influenza B viruses, respectively. For genotypic analysis, the summary table of neuraminidase amino acid substitutions associated with RI by neuraminidase inhibitors published by WHO was used (http://www.who.int/influenza/gisrs_laboratory/antiviral_susceptibility/nai_overview/en/).

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All data are up to date on the day of publication. Past this date, however, published data should not be used for longitudinal comparisons, as countries retrospectively update their databases.

The WHO Regional Office for Europe is responsible for the accuracy of the Russian translation.

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Tables and figures should be referenced:

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