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

Summary

Week 10/2017 (6–12 March 2017)

- Influenza activity across the region continued to decrease with the great majority of countries reporting low intensity.
- The proportion of influenza virus detections among sentinel surveillance specimens decreased to 21% from 27% in the previous week.
- The great majority of detected and subtyped influenza viruses were A(H3N2) and while the proportion of type B viruses increased, as commonly seen in the second half of an influenza season, their numbers remained low.
- The number of reported hospitalized laboratory-confirmed influenza cases from ICU and other wards, primarily in people aged 65 years or older, as well as severe acute respiratory infections continued to decrease.

Season overview

- Influenza activity started early this season, in week 46/2016, which is the earliest week that the overall influenza virus-positivity rate in sentinel specimens reached 10% since the emergence of A(H1N1)pdm09 viruses in 2009/10.
- Since week 40/2016, influenza A viruses have predominated, accounting for 94% of all sentinel detections; the great majority (99%) of subtyped influenza A viruses from sentinel sites being A(H3N2).
- Confirmed cases of influenza virus type A infection reported from hospitals have predominantly been in adults aged 65 years or older. Excess all-cause mortality has been observed substantially in people aged 15–64 years and markedly in people aged 65 years or older in the majority of the 19 reporting countries. This is commonly seen when the predominant viruses circulating are A(H3N2).
- Two-thirds of the A(H3N2) viruses genetically characterized belong to genetic subclade (3C.2a1) which are antigenically in general similar to the clade 3C.2a vaccine virus as mentioned in the WHO recommendations for vaccine composition for the northern hemisphere 2017–18.
- Recent vaccine effectiveness estimates for all age groups against A(H3N2) illness from Canada (42%), the US (43%) and Europe (38%) are consistent with estimates from Stockholm county (28%) and Finland (32%) earlier in the season.
- 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 virus-infection should be considered for vaccinated and non-vaccinated patients at risk of developing complications.
- Of the viruses tested so far, only one A(H3N2) virus (<1%) has shown reduced susceptibility to oseltamivir this season.
- The progression of the season has confirmed the conclusions of the ECDC risk assessment on seasonal influenza updated on 25 January 2017, namely expected severe outcomes in the elderly related to the prevalence of A(H3N2) viruses, putting some health care systems under pressure.

Primary care data

Influenza activity

Among the 41 countries reporting on influenza activity for week 10/2017, 37 countries reported a return to baseline levels and 4 countries reported medium intensity (Fig. 1). Of the 42 countries reporting on geographic spread, 7 reported widespread influenza activity (Fig. 2).

The percentage of influenza virus detections among sentinel specimens was 21%, the lowest since week 49/2016, and decreased from 27% in week 9/2017. In total, for week 10, 45 countries reported on influenza virus dominance: Armenia, Georgia, Latvia, Montenegro, Romania, the Russian Federation, Slovenia, Ukraine and the United Kingdom (Scotland) reported type B virus, 18 either type A or subtype A(H3) dominance, and 18 no dominant type or subtype.

Maps of qualitative indicators in the European Region

Fig. 1. Intensity in the European Region, week 10/2017

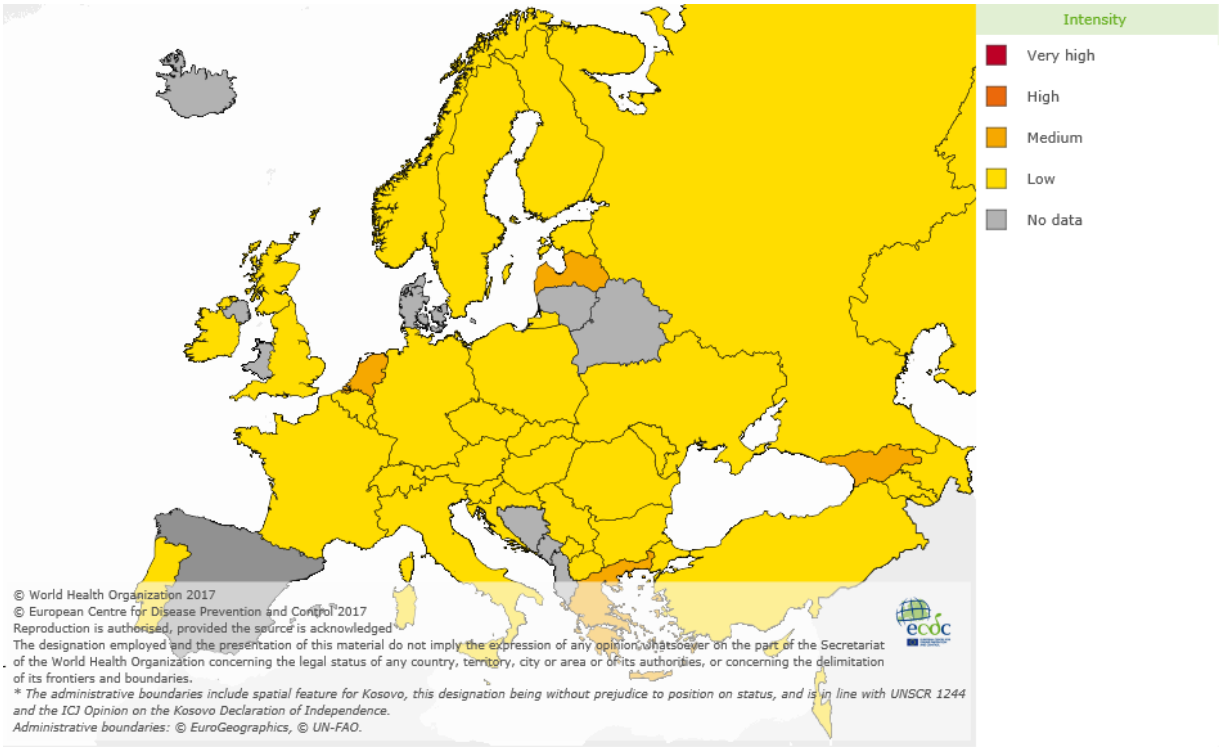
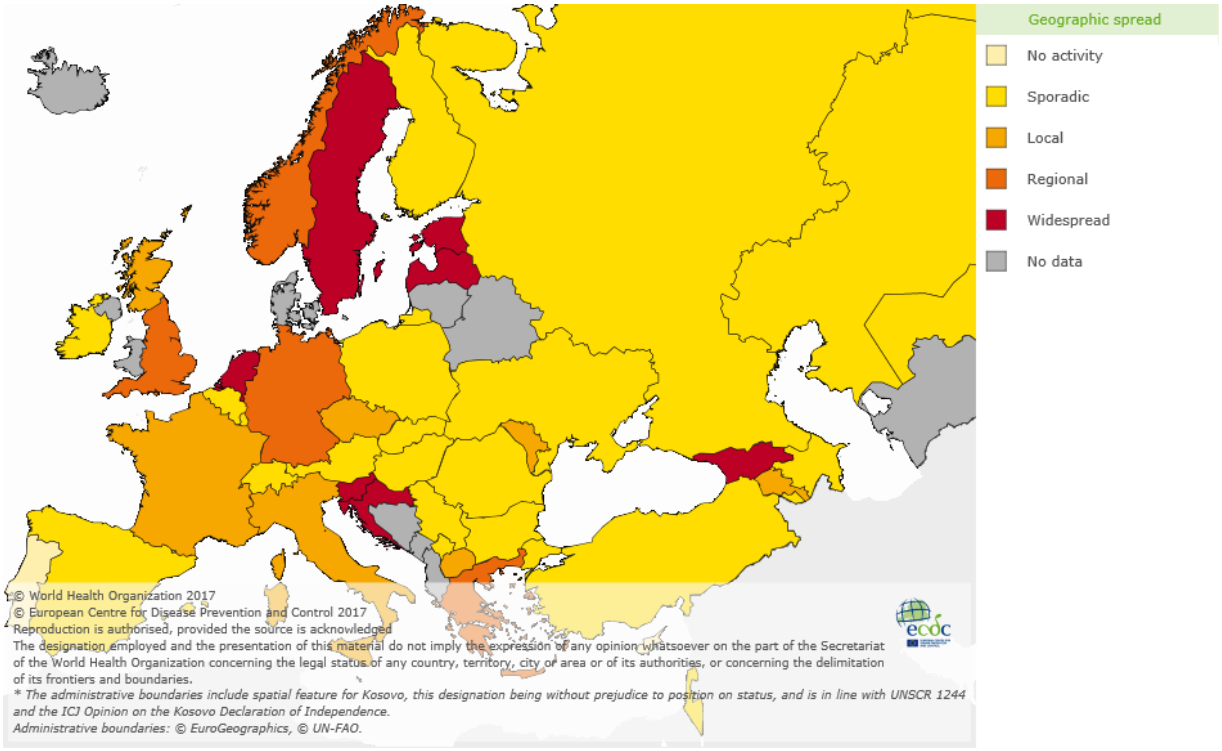


Fig. 2. Geographic spread in the European Region, week 10/2017



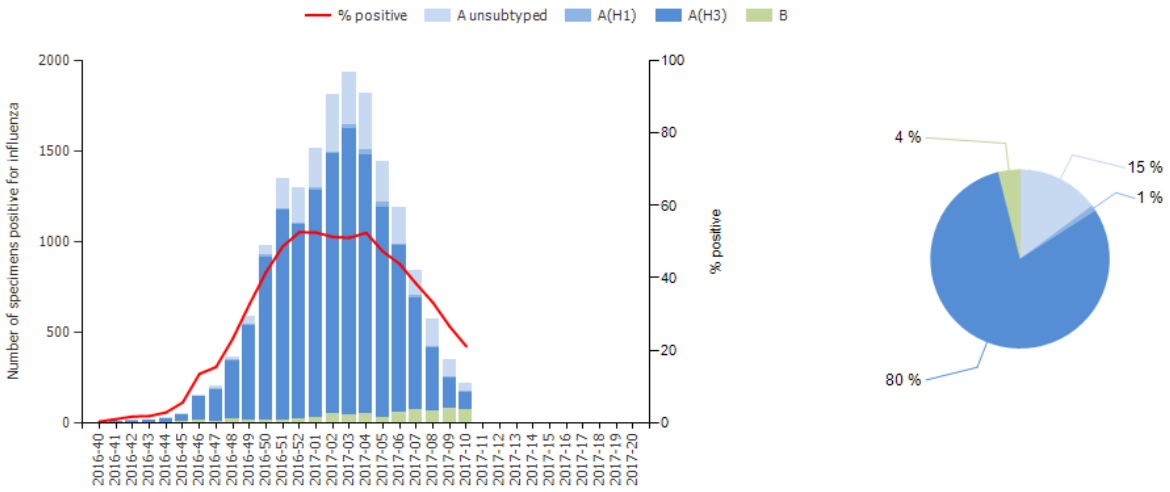
For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe website.

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

For week 10/2017, 243 of 1 162 (21%) sentinel specimens tested positive for influenza viruses (Table 1). Of these, 59% were type A and 41%, an increase from 31% in week 9/2017, were type B. The proportion of type B viruses commonly increases in the second half of an influenza season, however absolute numbers of detections have remained low with the number in week 10/2017 being lower than week 9/2017. The great majority (94%) of subtyped influenza A viruses was A(H3N2). The lineage of 27 influenza B viruses was determined, of which 16 (59%) fell in B/Yamagata and 11 (41%) in B/Victoria lineages. Of 23 countries across the region that each tested at least 10 sentinel specimens, 7 reported proportions of influenza virus detections of 30% or above (median 39%, range 32% to 47%).

Since week 40/2016, similar cumulative distributions of influenza types and type A subtypes have been observed: of all typed viruses, 93% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 542 influenza B viruses that have been ascribed a lineage since week 40/2016, 262 (48%) were of the B/Victoria lineage and 280 (52%) were of the B/Yamagata lineage.

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



Cumulative percentages are shown in the pie chart

Table 1. Influenza virus detections in sentinel-source specimens by type and subtype, week 10/2017 and cumulatively

	Current Week		Season 2016-2017	
Virus type and subtype	**Number**	**%[a]**	**Number**	**%[a]**
Influenza A	**144**	**59**	**16 045**	**93**
A(H1N1)pdm09	6	6	177	1
A(H3N2)	99	94	13 386	99
A not subtyped	39	-	2 482	-
Influenza B	**99**	**41**	**1202**	**7**
B/Victoria lineage	11	41	262	48
B/Yamagata lineage	16	59	280	52
Unknown lineage	72	-	660	-
Total detections / Total tested	**243 / 1 162**	**21**	**17 247 / 45 308**	**38**

[a]For influenza type percentage calculations, the denominator is total detections; for subtype and lineage, it is total influenza A subtyped and total influenza B lineage determined, respectively; for total detections, it is total tested.

Severity

For week 10/2017, of the 15 countries that conduct sentinel surveillance on severe acute respiratory infection (SARI), 10 reported data. 6 of 9 countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases reported data.

Of 1 130 SARI cases reported, 260 were tested for influenza viruses, with 44 (17%) testing positive: 7 A(H3N2) and 37 type B viruses. Since week 40/2016, 29 401 SARI cases have been reported from 15 countries with 7 720 being tested for influenza viruses, of which 2 680 (35%) were positive: 2 118 (79%) were type A and 562 (21%) type B viruses. Of the influenza A viruses, 1 996 (94%) were A(H3N2), 5 (<1%) were A(H1N1)pdm09 and 117 (6%) were not subtyped.

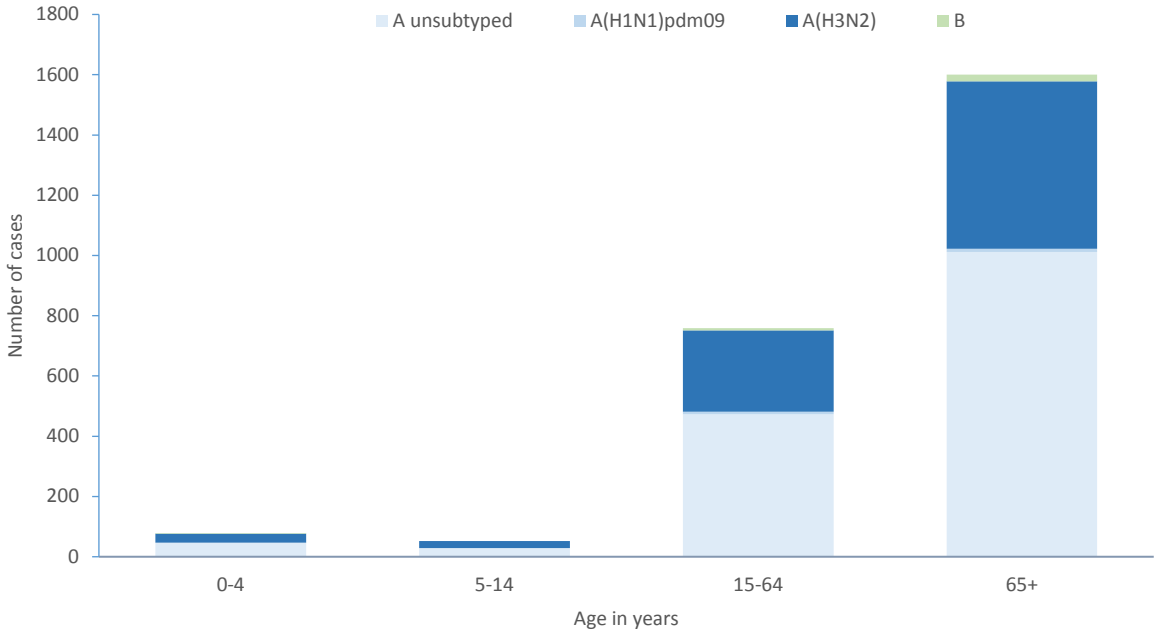
For week 10/2017, of 9 countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases in intensive care units (ICU) or other wards, 6 countries reported a total of 36 cases, 25 in ICU and 11 in other wards. For both ward types, this was a decrease compared to the numbers observed in the previous week. Of the patients admitted to ICU, 23 were infected with influenza type A viruses (17 unsubtyped and 6 A(H3N2)). Of the 11 cases in other wards, 9 were infected with influenza type A viruses (5 unsubtyped, 4 A(H3N2)) and 2 with type B viruses.

Since week 40/2016, 5 countries have reported 3 618 laboratory-confirmed influenza cases admitted to non-ICU wards; 3 586 (99%) were infected with influenza type A viruses (2 041 unsubtyped, 1 539 A(H3N2), 6 A(H1N1)pdm09), and 32 were infected with type B influenza viruses.

In total 3 507 cases have been admitted to ICU, 3 439 (98%) were infected with influenza type A viruses (2 122 unsubtyped, 1 192 A(H3N2) and 125 A(H1N1)pdm09) and 68 with type B viruses. The proportion of cases admitted to ICU due to A(H1N1)pdm09 is higher than observed in other wards and in the outpatient setting among sentinel detections (9%, <1% and 1% of subtyped A viruses, respectively).

Since the start of the season, most of the hospitalized laboratory-confirmed influenza cases reported have occurred in people aged 65 years or older (Fig. 4). Information on patient age and influenza virus (sub)type was available for 2 490 cases admitted to ICU; the majority of cases (64%; n=1 600) were aged ≥65 years, 759 (30%) were aged 15–64 years and 131 (5%) were aged under 15 years. Influenza A(H3N2) viruses predominated and accounted for 879 cases (35%) admitted to ICUs. In total, 841 deaths have been reported, 468 from ICUs and 373 from other wards, with 688 (82%) of the patients being 65 years or older; 835 (99%) of all fatal cases were due to influenza A with 387 (99%) of the subtyped as A(H3N2).

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



Mortality monitoring

Data from 19 countries or regions reporting to the EuroMOMO project were received for week 10/2017 and included in the pooled analyses of excess all-cause mortality.

The majority of participating European countries have had a marked excess in all-cause mortality since the end of 2016; in particular among elderly aged 65 years and older. However, mortality levels seem to have normalised now. The excess mortality coincided with a high level of influenza activity, dominated by circulation of influenza A(H3N2), which usually leads to increased mortality in the elderly. However, some countries experienced extremely cold weather in the beginning of the year, which probably contributed to the excess mortality.

Virus characteristics

Viruses detected in non-sentinel-source specimens

For week 10/2017, 2 516 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, 63% were type A (with 98% of the subtyped viruses being A(H3N2)), and 37% type B.

Whilst for the majority of viruses no subtype or lineage was determined, similar cumulative distributions of types and type A subtypes as seen in sentinel detections have been observed since week 40/2016: of all typed viruses, 92% were type A, with 99% of those subtyped being A(H3N2). Of 846 influenza type B viruses ascribed to a lineage, 71% were B/Yamagata lineage and 29% were B/Victoria lineage (Table 2), which differs from sentinel detections where B/Victoria lineage and B/Yamagata lineage viruses were evenly distributed so far this season. The difference is mainly driven by the proportion of influenza B lineage detections in sentinel specimens in Latvia, Norway and Slovenia (B/Yamagata lineage predominant).

Table 2. Influenza viruses detected in non-sentinel-source specimens, by virus (sub)type, week 10/2017 and cumulatively

	Current Week		Season 2016-2017	
Virus type and subtype	**Number**	**%[a]**	**Number**	**%[a]**
Influenza A	**1 582**	**63**	**97 440**	**92**
A(H1N1)pdm09	6	2	315	1
A(H3N2)	309	98	37 132	99
A not subtyped	1 267	-	59 993	-
Influenza B	**934**	**37**	**8 077**	**8**
B/Victoria lineage	2	11	243	29
B/Yamagata lineage	16	89	603	71
Unknown lineage	916	-	7 231	-
Total detections / Total tested	**2 516 / 16 720**	**-**	**105 517 / 477 651**	**-**

[a]For influenza type percentage calculations, the denominator is total detections; for subtype and lineage, it is total influenza A subtyped and total influenza B lineage determined, respectively; as not all countries have a true non-sentinel testing denominator, no percentage calculations for total tested are shown.

Genetic characterization

For specimens collected since week 40/2016, genetic characterizations of 2 425 viruses have been reported (Table 3). Among 2 207 A(H3N2) viruses, 703 fell in the vaccine component clade (3C.2a), and 1 474 in the 3C.2a1 subclade defined by N171K, often with N121K, amino acid substitutions in the haemagglutinin. Viruses in these two clades are currently antigenically similar, but both clades are evolving rapidly with emergence of several virus clusters defined by additional amino acid substitutions in the haemagglutinin, thereby requiring continued monitoring of antigenic characteristics.

Table 3. Viruses attributed to genetic groups, cumulative for weeks 40/2016–10/2017

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (subgroup 6B.1)[b, c]	23
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B)	5
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	1 474
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a)[a, b, c]	703
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a)	24
A(H3N2), subgroup not listed	6
B/Brisbane/60/2008 (Victoria lineage clade 1A)[a, b, c]	51
B/Phuket/3073/2013 (Yamagata lineage clade 3)[d]	139

[a] Vaccine component for Northern Hemisphere 2016–2017 season
[b] Vaccine component for Southern Hemisphere 2017 season
[c] Vaccine component for Northern Hemisphere 2017-2018 season
[d] Vaccine component of quadrivalent vaccines for use in both Northern and Southern Hemisphere

The recommended composition of trivalent influenza vaccines for the 2016–2017 season in the northern hemisphere was 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. On 2 March 2017 WHO announced the recommended vaccine composition for the 2017–2018 season in the northern hemisphere. The recommendations matched those for the 2016–2017 season, however with the A(H1N1)pdm09 component changed to an A/Michigan/48/2015-like virus (clade 6B.1).

Early monitoring of vaccine effectiveness (VE) in Finland and Stockholm county suggested levels of effectiveness in persons aged 65 years or older (32% and 28% vaccine effectiveness, respectively) similar to estimates from annual multicountry studies covering the 2011–2012 and 2014–2015 seasons. More recent VE estimates, for all age groups against A(H3N2) illness, from Canada (42%), from the US (43%) and from Europe (38%) are consistent with the early estimates from Finland and Stockholm county.

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 1 226 viruses (1 122 A(H3N2), 22 A(H1N1)pdm09 and 82 type B) with collection dates since week 40/2016. One A(H3N2), from week 2/2017, showed reduced inhibition to oseltamivir in phenotypic assay.

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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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