

## Summary

### Week 19/2017 (8 – 14 May 2017)

- Influenza activity has returned to out-of-season levels in most countries. All of 35 reporting countries have reported low intensity of influenza.
- The proportion of sentinel specimens testing positive for influenza viruses was 6%, and lower than in the previous week (12%). Influenza viruses were detected in 7 countries only and numbers were low.
- All sentinel detections were type B viruses and their numbers continued to decline since week 15/2017.

## Season overview

- After an earlier start than usual (week 46/2016), influenza activity peaked between weeks 52/2016 and 4/2017. Since week 12/2017, most countries have reported decreased influenza activity with the proportion of sentinel detections returning to the epidemic threshold value (10%) in week 17.
- From week 40/2016 through week 10/2017, influenza A viruses predominated, accounting for 90% of all sentinel detections. Of those subtyped, 99% were A(H3N2). Since week 11/2017, influenza B viruses have predominated, although absolute numbers of type B detections have remained low and been decreasing since week 15/2017.
- Confirmed cases of influenza type A virus infection reported from hospitals have predominantly been in adults aged 65 years or older.
- Significant excess all-cause mortality has been observed in people aged 15–64 years, and markedly so in people aged 65 years or older, in the majority of the 20 reporting countries or regions. This is commonly seen when the predominant viruses circulating are A(H3N2).
- Two-thirds of the A(H3N2) viruses genetically characterized belong to subclade 3C.2a1, but remain antigenically similar to the clade 3C.2a vaccine virus, as described in the [WHO recommendations for vaccine composition for the northern hemisphere 2017–18](#). See also the [WHO CC London February 2017 report](#).
- Vaccine effectiveness estimates for all age groups against A(H3N2) illness suggest moderate effectiveness in [Canada](#) (42%), the [US](#) (43%) and in [Europe](#) (38%).
- Of the viruses tested so far this season, one A(H3N2) virus has shown reduced susceptibility to oseltamivir and another A(H3N2) virus has shown reduced susceptibility to zanamivir.
- The developments during the season have been consistent with the conclusions of the ECDC [risk assessment](#) on seasonal influenza, [updated](#) on 25 January 2017, which suggested increased severe outcomes in the elderly due to the high prevalence of A(H3N2) viruses, resulting in pressure on some health care systems.

## Primary care data

### Influenza activity

All 35 countries reporting on influenza activity for week 19/2017 reported low intensity (Fig. 1). However, of the 36 countries reporting on geographic spread of influenza, 2 reported regional and 15 local or sporadic influenza activity, indicating that influenza viruses are still circulating; 19 countries reported no influenza activity (Fig. 2).

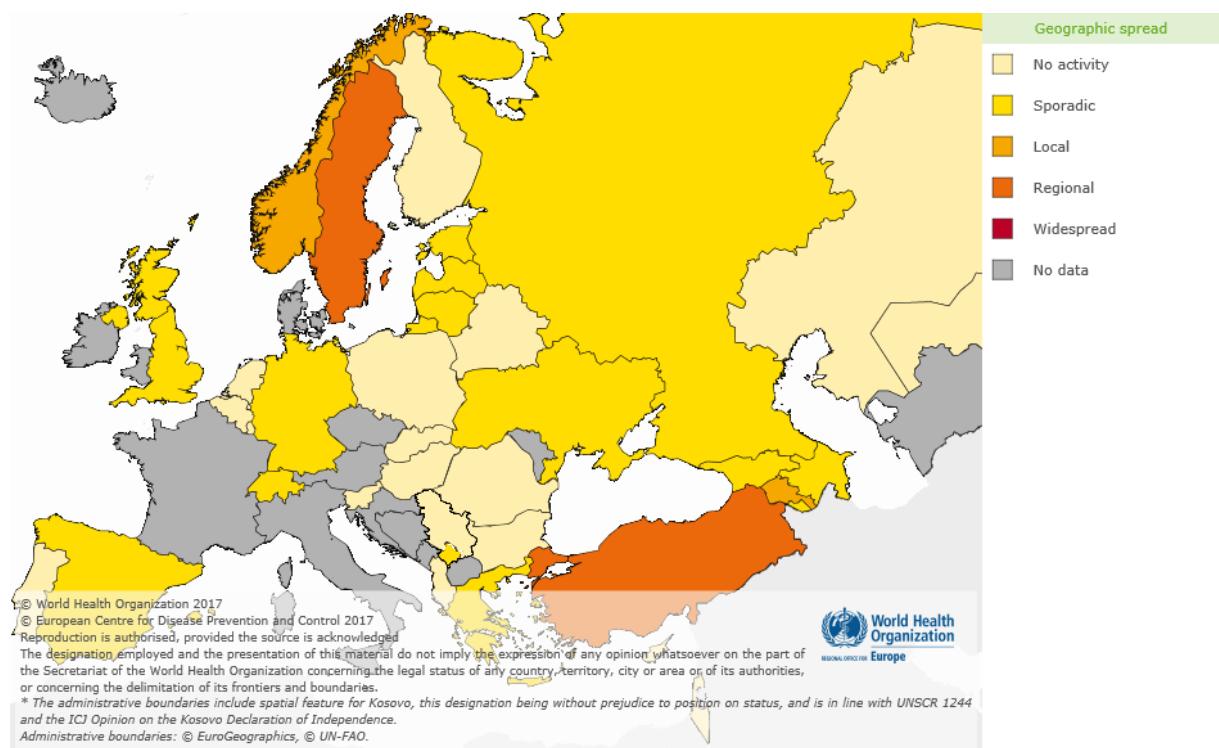
The overall proportion of sentinel influenza virus detections among sentinel specimens was 6% compared to 12% in the previous week. Influenza viruses were detected in only seven countries (Armenia, Germany, Kosovo, Lithuania, the Russian Federation, Turkey and the United Kingdom (Northern Ireland and Scotland)).

### Maps of qualitative indicators in the European Region

**Fig. 1. Intensity in the European Region, week 19/2017**



**Fig. 2. Geographic spread in the European Region, week 19/2017**



For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe [website](#).

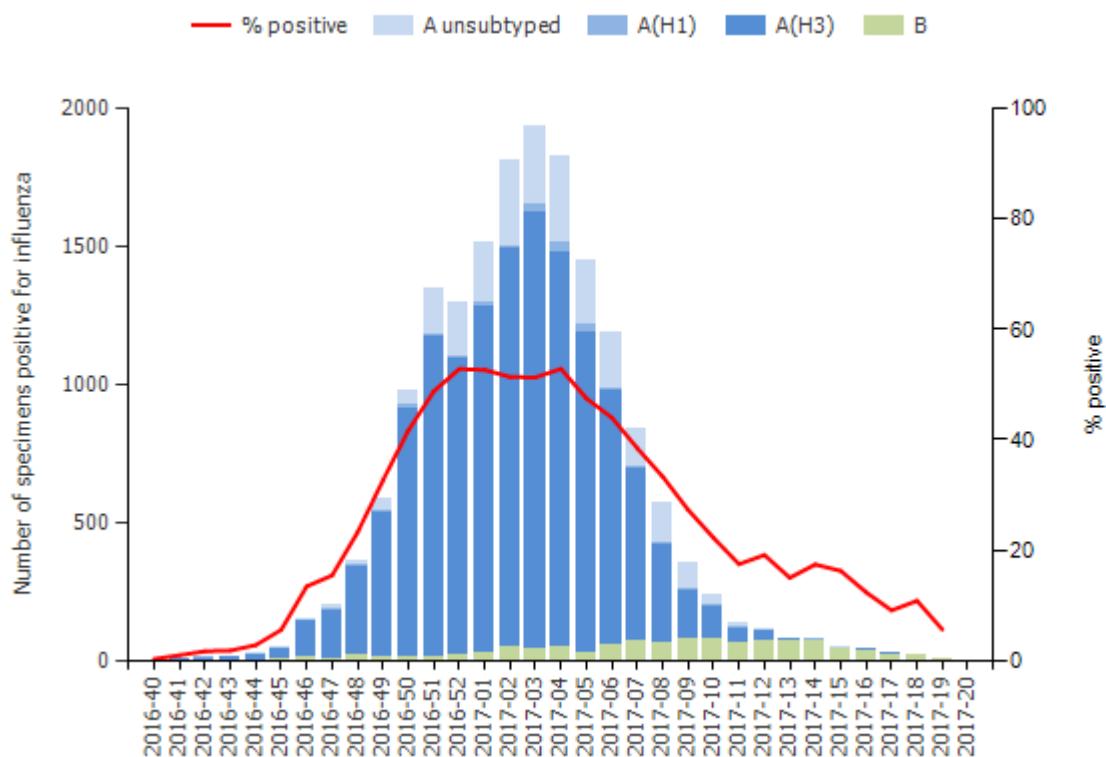
### **Viruses detected in sentinel-source specimens (ILI and ARI)**

For week 19/2017, 15 (6%) of 264 sentinel specimens tested positive for influenza viruses (Table 1). All were type B viruses.

Of 7 countries across the region that each tested at least 10 sentinel specimens, 2 reported proportions of influenza virus detections of 10% or above (Armenia and United Kingdom (Scotland)).

Since week 40/2016, of all typed viruses, 89% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 817 influenza B viruses that have been ascribed a lineage since week 40/2016, 455 (56%) were of the B/Yamagata lineage and 362 (44%) were of the B/Victoria lineage.

**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 19/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>0</b>	<b>0</b>	<b>16 235</b>	<b>89</b>
A(H1N1)pdm09	0	0	186	1
A(H3N2)	0	0	13 569	99
A not subtyped	0	-	2 480	-
<b>Influenza B</b>	<b>15</b>	<b>100</b>	<b>1 911</b>	<b>11</b>
B/Victoria lineage	2	40	362	44
B/Yamagata lineage	3	60	455	56
Unknown lineage	10	-	1 094	-
<b>Total detections / Total tested</b>	<b>15 / 264</b>	<b>6</b>	<b>18 146 / 50 653</b>	<b>36</b>

<sup>a</sup>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

The 11 countries that reported data on sentinel surveillance of severe acute respiratory infections (SARI) reported a total of 423 SARI cases for week 19/2017. Among these cases 88 respiratory specimens were collected, 6 (7%) of which, from Armenia (n=2), Kosovo (n=1) and the Russian Federation (n=3), tested positive for influenza viruses.

Since week 40/2016, 16 countries have reported 39 272 SARI cases. Of these 10 700 were tested for influenza viruses, 3 566 (33%) of which were positive: 2 706 (76%) were type A and 860 (24%) type B viruses. Of the influenza A viruses, 2 493 (92%) were A(H3N2), 7 (<1%) were A(H1N1)pdm09 and 206 (8%) were not subtyped.

For week 19/2017, of 9 countries that conduct surveillance of hospitalized laboratory-confirmed influenza cases, 2 countries each reported one ICU case.

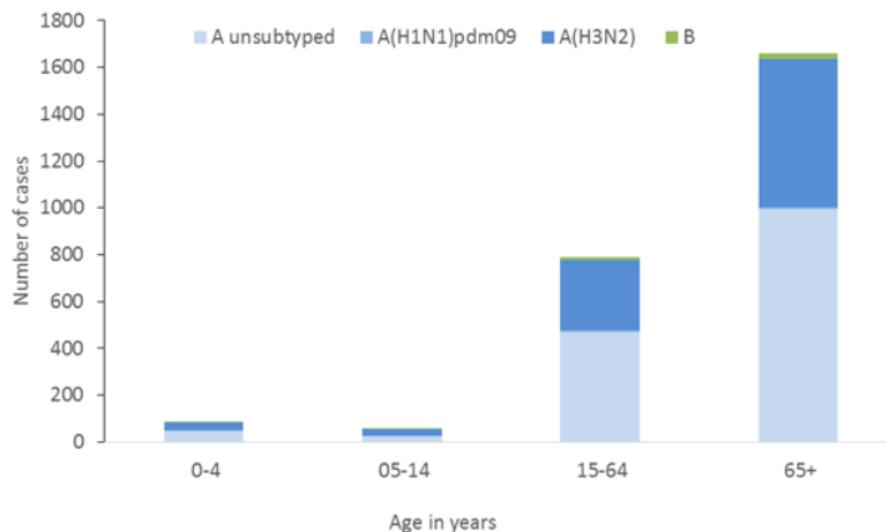
Since week 40/2016, the 9 countries reported 3 708 cases that have been admitted to ICU; 3 585 (97%) were infected with influenza type A viruses (2 136 unsubtypeable, 1 320 A(H3N2) and 129 A(H1N1)pdm09) and 123 with type B viruses.

Since week 40/2016, 5 countries have reported 3 776 laboratory-confirmed influenza cases admitted to non-ICU wards; 3 703 (98%) were infected with influenza type A viruses (2 059 unsubtypeable, 1 636 A(H3N2), 8 A(H1N1)pdm09), and 73 were infected with type B influenza viruses.

Since the start of the season, information on patient age and influenza virus (sub)types was available for 2 604 cases admitted to ICU; the majority of cases (64%; n=1 667) were aged ≥65 years, 795 (31%) were aged 15–64 years and 142 (5%) were aged under 15 years (Fig. 4).

In total, 939 deaths among hospitalized laboratory-confirmed influenza cases have been reported, 536 from ICUs and 403 from non-ICU wards, with 765 (81%) of all deaths occurring in patients aged 65 years or older. Of all fatal cases, 930 (99%) were due to influenza A with 457 (99%) of those subtyped being A(H3N2) viruses.

**Fig. 4. Distribution of virus (sub)types in influenza-confirmed cases admitted to ICU by age-group, cumulatively, during weeks 40/2016-19/2017**



## Mortality monitoring

Data from 20 countries or regions reporting to the [Euromomo](#) project were received for week 19/2017 and included in the pooled analyses of excess all-cause mortality.

The majority of participating European countries experienced a [marked excess](#) in all-cause mortality between the beginning of January 2017 and the end of February 2017, in particular among the elderly (those aged 65 years and above). Mortality levels have since decreased to expected levels. This season's excess mortality coincided with circulation of influenza A(H3N2) viruses, which usually leads to increased mortality among the elderly.

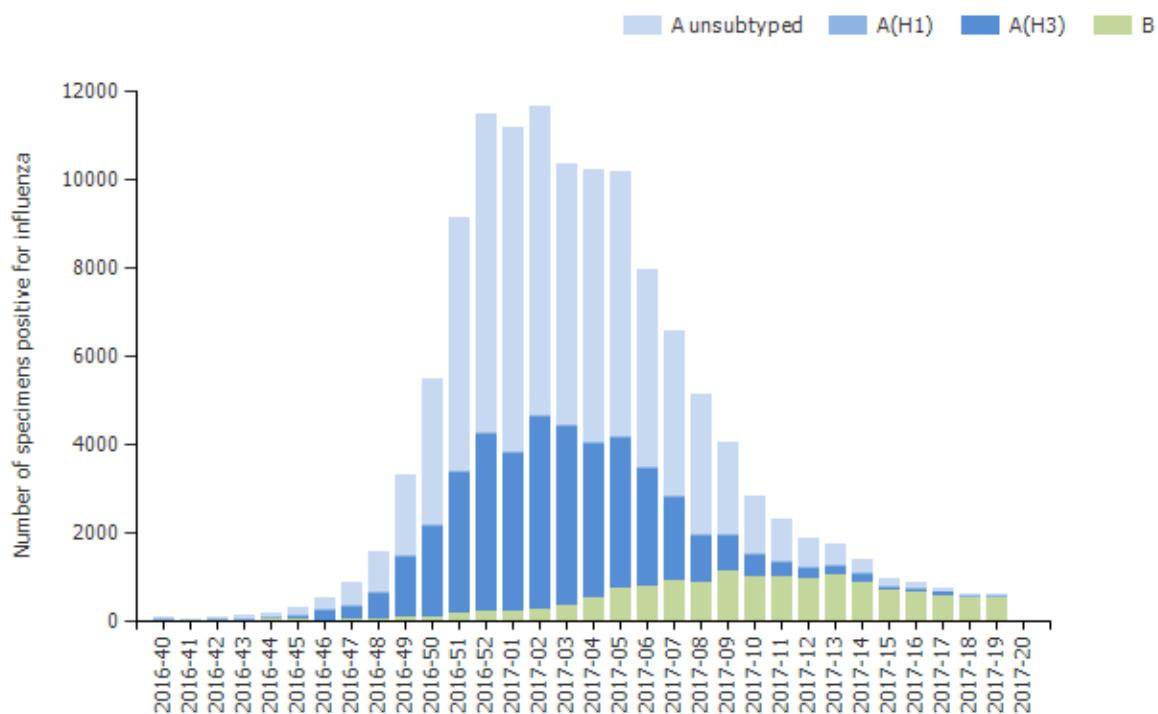
## Virus characteristics

### Viruses detected in non-sentinel-source specimens

For week 19/2017, 619 specimens from non-sentinel sources (such as hospitals, schools, non-sentinel primary care facilities, nursing homes and other institutions) tested positive for influenza viruses (Fig. 5, Table 2).

Of these, 12% were type A (with all subtyped viruses being A(H3N2)), and 88% type B. The increase in proportion of type B viruses corresponds to the sentinel detection data, but the number of influenza B viruses detected remained relatively low and similar to that seen in recent weeks.

**Fig. 5. Influenza virus detections in non-sentinel-source specimens by type and subtype, by week**



While subtype and lineage were not determined for the majority of influenza viruses since week 40/2016, cumulative distributions of types and type A subtypes similar to those among sentinel detections have been observed: of all typed viruses, 87% were type A, with 99% of those subtyped being A(H3N2). Of 1 480 influenza type B viruses ascribed to a lineage, 77% were B/Yamagata lineage and 23% were B/Victoria lineage (Table 2), which differs from sentinel detections where B/Victoria lineage and B/Yamagata lineage viruses have been more evenly distributed this season. The difference is mainly driven by the high proportions of influenza B/Yamagata lineage detections in sentinel specimens in Latvia, Norway and Slovenia.

**Table 2. Influenza viruses detected in non-sentinel-source specimens, by virus (sub)type, week 19/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>73</b>	<b>12</b>	<b>109 936</b>	<b>87</b>
A(H1N1)pdm09	1	8	363	1
A(H3N2)	12	92	39 340	99
A not subtyped	60	-	70 233	-
<b>Influenza B</b>	<b>546</b>	<b>88</b>	<b>15 744</b>	<b>13</b>
B/Victoria lineage	0	0	337	23
B/Yamagata lineage	4	100	1 143	77
Unknown lineage	542	-	14 264	-
<b>Total detections / Total tested</b>	<b>619 / 6 219</b>	<b>-</b>	<b>125 680 / 581 171</b>	<b>-</b>

<sup>a</sup>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 characterization of 4 029 viruses has been reported (Table 3). Among 3598 A(H3N2) viruses, 1 069 fell in the vaccine component clade (3C.2a) and 2 486 in the 3C.2a1 subclade defined by N171K amino acid substitution, often with N121K, in the haemagglutinin. Viruses in these two clades have been antigenically similar, but both clades are evolving rapidly with the emergence of several virus clusters defined by additional amino acid substitutions in the haemagglutinin, thereby requiring continued monitoring of antigenic characteristics. 6 A(H3N2), 1 A(H1N1) and 14 B/Yamagata viruses were not listed in the table as they did not fall within the reporting categories. See also the [WHO CC London February 2017 report](#).

**Table 3. Viruses attributed to genetic groups, cumulative for weeks 40/2016–19/2017**

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (subgroup 6B.1) <sup>b, c</sup>	47
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B)	5
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	2 486
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a) <sup>a, b, c</sup>	1 069
A(H3N2) A/Samara/73/2013 (subgroup 3C.3)	1
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a)	41
A(H3N2) A/Stockholm/28/2014 (subgroup 3C.3b)	1
B/Brisbane/60/2008 (Victoria lineage clade 1A) <sup>a, b, c</sup>	101
B/Phuket/3073/2013 (Yamagata lineage clade 3) <sup>d</sup>	278

<sup>a</sup> Vaccine component for Northern Hemisphere 2016–2017 season

<sup>b</sup> Vaccine component for Southern Hemisphere 2017 season

<sup>c</sup> Vaccine component for Northern Hemisphere 2017–2018 season

<sup>d</sup> 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) was 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, but for the A(H1N1)pdm09 component being changed to an A/Michigan/48/2015-like virus (clade 6B.1).

Early monitoring of vaccine effectiveness (VE) in [Finland and Sweden](#) (Stockholm County) suggested levels of effectiveness in persons aged 65 years or older (32% and 28% VE, respectively) similar to estimates from annual multi-country 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%) were consistent with the early estimates from Finland and Sweden.

## Antiviral susceptibility testing

Neuraminidase inhibitor susceptibility has been assessed for 3 056 influenza viruses (2 819 A(H3N2), 41 A(H1N1)pdm09 and 196 type B) with collection dates since week 40/2016. All but four A(H3N2) viruses showed no phenotypic or genotypic signs for reduced inhibition (RI) or highly reduced inhibition (HRI): two of these were reported previously (one from a specimen collected in week 01/2017, showed RI by zanamivir while the other, from a specimen collected in week 04/2017, showed RI by oseltamivir in phenotypic assays). The two newly reported A(H3N2) viruses with HRI for oseltamivir and RI for zanamivir carry the NA R292K substitution after oseltamivir exposure of the patients. These viruses were collected in weeks 48/2016 and 52/ 2016. They were not phenotypically tested.

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Maps and commentary do not represent a statement on the legal or border status of the countries and territories shown.

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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