

## Summary

### Week 9/2017 (27 February – 5 March 2017)

- Influenza activity across the region, while decreasing, remained above levels observed during the out of season period.
- The proportion of influenza virus detections among sentinel surveillance specimens decreased to 26% from 33% 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 hospitalized laboratory-confirmed influenza cases reported, primarily in people aged 65 years or older, continued to decrease.

### Season overview

- Influenza activity started early this season in week 46/2016, which is the earliest week that the overall influenza-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) that emerged early in 2016. However, those that have been antigenically characterized are generally similar to the clade 3C.2a vaccine virus.
- 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 infection should be considered for vaccinated and non-vaccinated patients at risk of developing complications.
- No reduced susceptibility to oseltamivir or zanamivir has been observed for any of the viruses tested so far 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.

- The WHO recommendations for the composition of the 2017/2018 northern hemisphere vaccine, [published](#) on 2 March 2017, call for the replacement of the A(H1N1)pdm09 component with an A/Michigan/45/2015 A(H1N1)pdm09-like virus.

## Primary care data

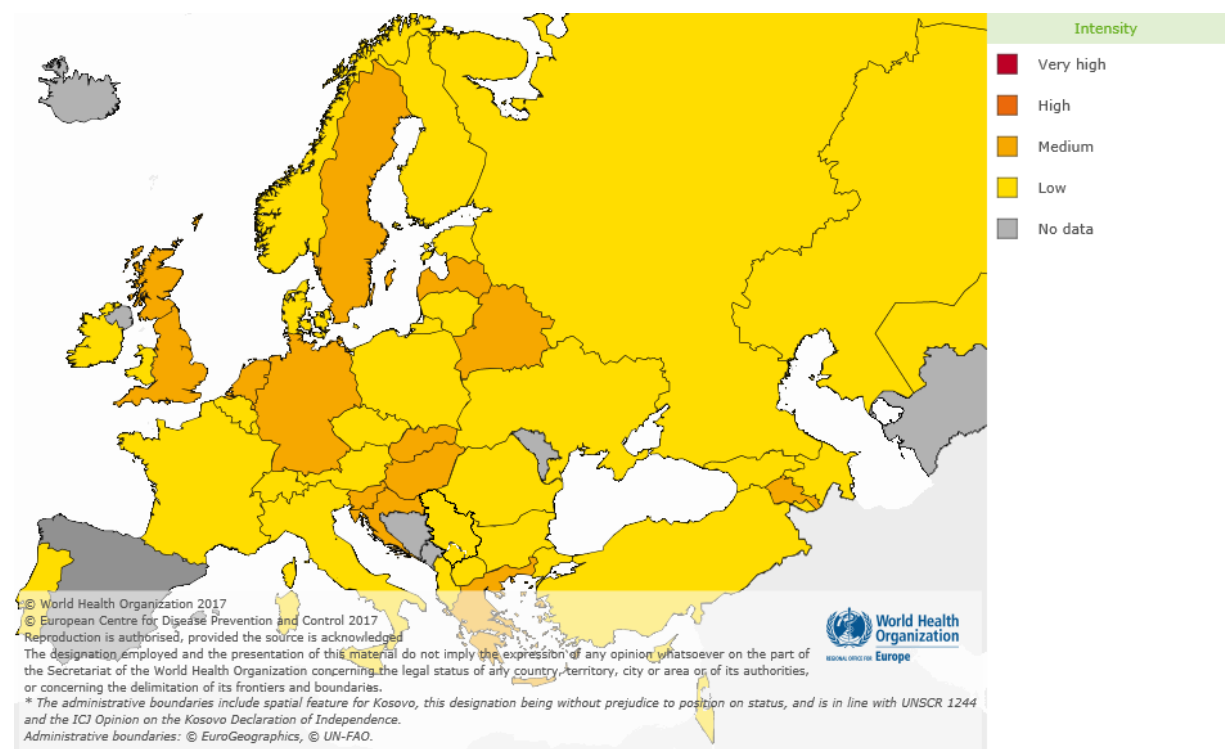
### Influenza activity

Among the 43 countries reporting on influenza activity for week 9/2017, 32 countries reported a return to baseline levels and 13 countries reported medium intensity (Fig. 1). Of the 44 countries reporting on geographic spread, 12 reported widespread influenza activity (Fig. 2).

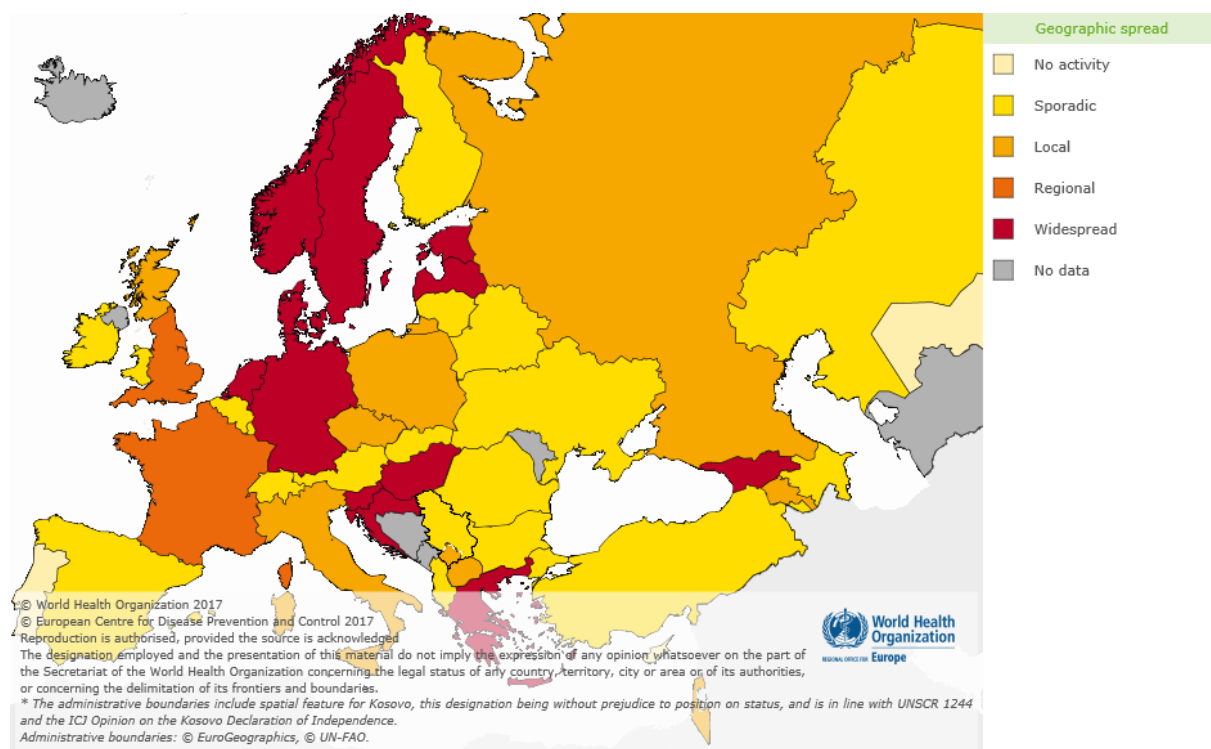
The percentage of influenza virus detections among sentinel specimens was 26%, the lowest since week 49/2016, and decreased from 33% in week 8/2017. In total, 45 countries reported on influenza virus dominance: Armenia, Georgia, Romania, Slovenia, Ukraine and the Russian Federation reported type B virus, 22 either type A or subtype A(H3) dominance, and 17 no dominant type or subtype.

## Maps of qualitative indicators in the European Region

**Fig. 1. Intensity in the European Region, week 9/2017**



**Fig. 2. Geographic spread in the European Region, week 9/2017**



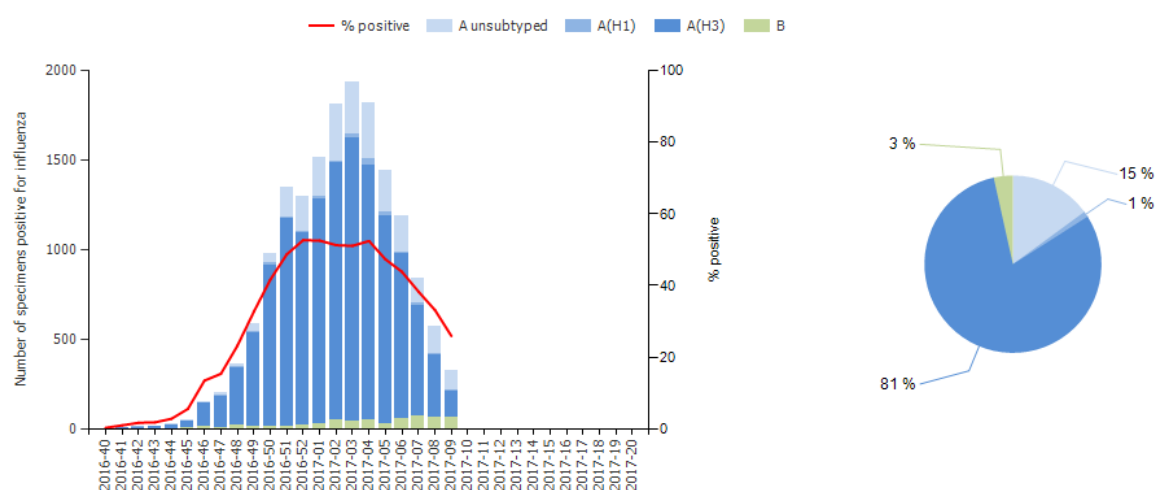
For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe [website](#).

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

For week 9/2017, 370 of 1 415 (26%) sentinel specimens tested positive for influenza viruses (Table 1). Of these, 69% were type A and 31% were type B. The proportion of type B viruses commonly increases in the second half of an influenza season. The great majority (95%) of subtyped influenza A viruses was A(H3N2). The lineage of 48 influenza B viruses was determined, of which 27 (56%) fell in B/Yamagata and 21 (44%) in B/Victoria lineages. Of 27 countries across the region that each tested at least 10 sentinel specimens, 14 reported proportions of influenza virus detections of 30% or above (median 36%, range 32% to 62%).

Since week 40/2016, similar cumulative distributions of influenza types and type A subtypes have been observed: of all typed viruses, 94% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 514 influenza B viruses that have been ascribed a lineage since week 40/2016, 252 (49%) were of the B/Victoria lineage and 262 (51%) 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 9/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>256</b>	<b>69</b>	<b>15 886</b>	<b>94</b>
A(H1N1)pdm09	8	5	171	1
A(H3N2)	141	95	13 256	99
A not subtyped	107	-	2 459	-
<b>Influenza B</b>	<b>114</b>	<b>31</b>	<b>1090</b>	<b>6</b>
B/Victoria lineage	27	56	252	49
B/Yamagata lineage	21	44	262	51
Unknown lineage	66	-	576	-
<b>Total detections / Total tested</b>	<b>370 / 1 415</b>	<b>26</b>	<b>16 976 / 44 081</b>	<b>39</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

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

Of 972 SARI cases reported, 308 were tested for influenza viruses, with 54 (18%) testing positive: 9 A(H3N2) and 45 type B viruses. Since week 40/2016, 27 677 SARI cases have been reported from 15 countries with 7 442 tested for influenza viruses, of which 2 628 (35%) were positive: 2 110 (80%) were type A and 518 (20%) type B viruses. Of the influenza A viruses, 1 989 (94%) were A(H3N2), 4 (<1%) were A(H1N1)pdm09 and 117 (6%) were not subtyped.

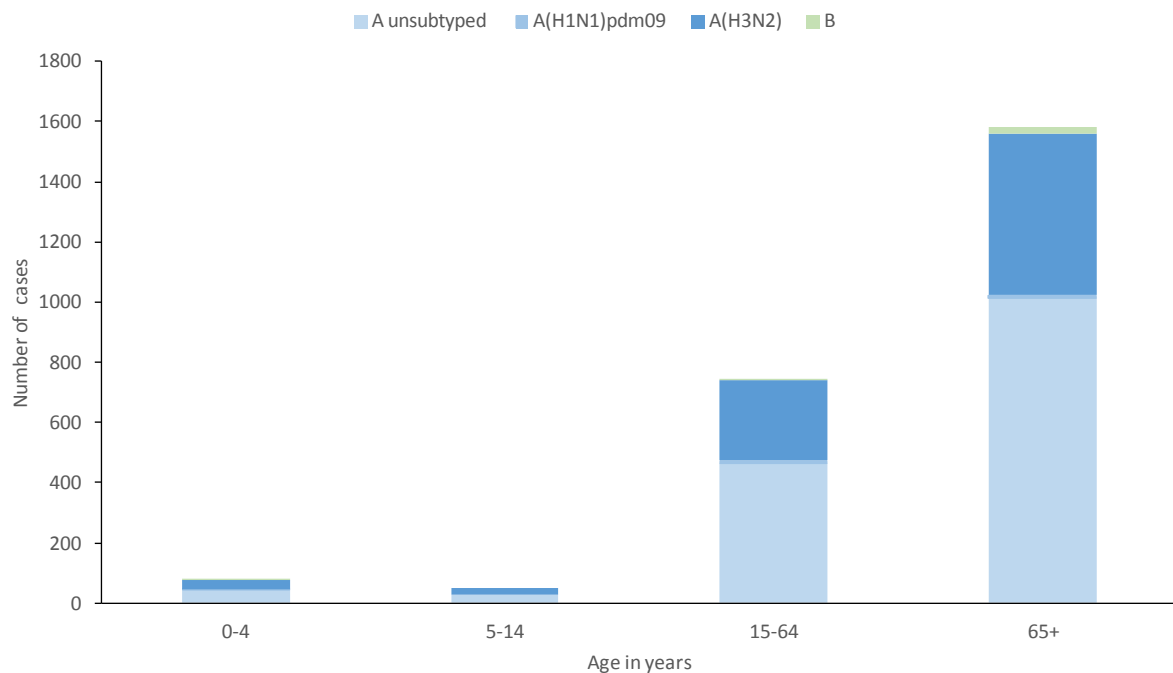
For week 9/2017, of 9 countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases in intensive care units (ICU) or other wards, all countries (with the exception of the United Kingdom where no new cases were reported) reported a total of 55 cases, 21 in ICU and 34 in other wards. For both ward types, this was a decrease compared to the numbers observed in the previous week. Of the patients admitted to ICU, all were infected with influenza type A viruses (17 unsubtyped and 4 A(H3N2)). Of the 34 cases in other wards, 31 were infected with influenza type A viruses (26 unsubtyped, 5 A(H3N2)) and 3 with type B viruses.

Since week 40/2016, 5 countries have reported 3 560 laboratory-confirmed influenza cases admitted to non-ICU wards; 3 531 (99%) were infected with influenza type A viruses (2 033 unsubtyped, 1 492 A(H3N2), 6 A(H1N1)pdm09) and 29 were infected with type B influenza viruses.

In total 3 419 cases have been admitted to ICU, 3 358 (98%) were infected with influenza type A viruses (2 082 unsubtyped, 1 156 A(H3N2) and 120 A(H1N1)pdm09) and 61 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 2 456 cases admitted to ICU; the majority of cases (64%; n=1 582) were aged ≥65 years, 747 (30%) were aged 15–64 years and 127 (5%) were aged under 15 years. Influenza A(H3N2) viruses predominated and accounted for 856 cases (35%) admitted to ICUs. In total, 823 deaths have been reported, 459 from ICUs and 364 from other wards, with 675 (82%) of the patients being 65 years or older; 817 (99%) of all fatal cases were due to influenza A with 375 (46%) 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 9/2017 and included in the pooled analyses of excess all-cause mortality.

The majority of participating European countries has seen a marked excess in all-cause mortality, in particular among the elderly aged 65 years or older, and mortality seems to have peaked in most countries. The excess mortality appears to have coincided with a high level of influenza activity, dominated by circulation of influenza A(H3N2), which usually leads to increased mortality in the elderly. It is, however, still premature to make projections of the overall impact of this year's influenza season; some countries have also experienced extremely cold weather in the beginning of the year, which has likely contributed to the excess mortality.

## Virus characteristics

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

For week 9/2017, 3 798 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, 69% were type A (with 99% of the subtyped viruses being A(H3N2)), and 31% 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, 93% were type A, with 99% of those subtyped being A(H3N2). Of 792 influenza type B viruses ascribed to a lineage, 70% were B/Yamagata lineage and 30% 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 Kyrgyzstan (B/Victoria lineage predominant).

**Table 2. Influenza viruses detected in non-sentinel-source specimens, by virus (sub)type, week 9/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>2 631</b>	<b>69</b>	<b>95 726</b>	<b>93</b>
A(H1N1)pdm09	7	1	308	1
A(H3N2)	637	99	36 632	99
A not subtyped	1 987	-	58 786	-
<b>Influenza B</b>	<b>1 167</b>	<b>31</b>	<b>7 112</b>	<b>7</b>
B/Victoria lineage	5	7	236	30
B/Yamagata lineage	64	93	556	70
Unknown lineage	1098	-	6 320	-
<b>Total detections / Total tested</b>	<b>3 798 / 20 192</b>	<b>-</b>	<b>102 838 / 459 632</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 characterizations of 2 285 viruses have been reported (Table 3). Among 2 097 A(H3N2) viruses, 666 fell in the vaccine component clade (3C.2a), and 1 404 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 40/2016–9/2017**

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (subgroup 6B.1) <sup>b, c</sup>	20
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B)	5
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	1 404
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a) <sup>a, b, c</sup>	666
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a)	22
A(H3N2), subgroup not listed	5
B/Brisbane/60/2008 (Victoria lineage clade 1A) <sup>a, b, c</sup>	44
B/Phuket/3073/2013 (Yamagata lineage clade 3) <sup>d</sup>	119

<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) 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 1 094 viruses (1 018 A(H3N2), 17 A(H1N1)pdm09 and 59 type B) with collection dates since week 40/2016. None showed evidence of reduced inhibition to oseltamivir or zanamivir.



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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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