

## Summary

### Week 14/2017 (3–9 April 2017)

- Influenza activity across the region continued to be at a low level with 39 countries of 41 reporting low intensity. However, only 10 of 42 countries reported no geographic spread indicating that influenza viruses are still circulating.
- The proportion of influenza virus sentinel detections was 17%, similar to that of the previous week (16%).
- This was the fourth week during the season that the proportion of type B viruses exceeded the proportion of type A viruses in sentinel detections. However, the overall number of type B virus detections remained low.

### Season overview

- Influenza activity started early this season, in week 46/2016, which is the earliest week of the overall influenza virus-positivity rate in sentinel specimens reaching 10% since the emergence of A(H1N1)pdm09 viruses in 2009/10.
- From week 40/2016 through week 10/2017, influenza A viruses have predominated, accounting for 90% of all sentinel detections; the great majority (99%) of subtyped influenza A viruses from sentinel sites was A(H3N2).
- Since week 11/2017 influenza B viruses predominate, although absolute numbers of detected viruses are low.
- Confirmed cases of influenza virus type A infection reported from hospitals have predominantly been in adults aged 65 years or older. Significant excess mortality from all causes has been observed in people aged 15–64 years and markedly so in people aged 65 years or older in the majority of the 19 reporting countries or regions. This is commonly seen when the predominant viruses circulating are A(H3N2).
- Significant excess mortality from all causes has been observed in people aged 15–64 years and markedly so in people aged 65 years or older in the majority of the 19 reporting countries or regions
- Two-thirds of the A(H3N2) viruses genetically characterized belong to subclade (3C.2a1), which is 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%).
- Given the suboptimal vaccination coverage and the moderate 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, especially if they are 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 developments during the season have followed the conclusions of the ECDC [risk assessment](#) on seasonal influenza, [updated](#) on 25 January 2017, suggesting increased severe outcomes in the elderly due to the prevalence of A(H3N2) viruses, which has put health care systems under pressure.

## Primary care data

### Influenza activity

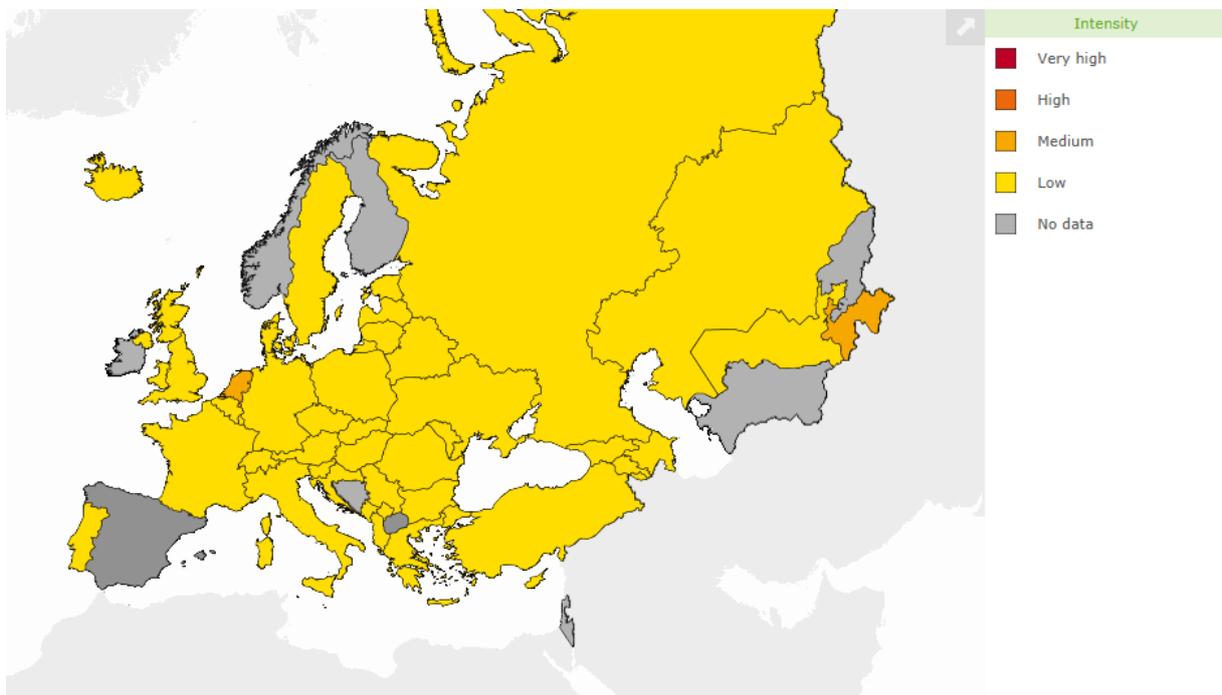
Of 41 countries reporting on influenza activity for week 14/2017, 2 reported medium intensity and 39 reported a return to baseline levels with low intensity (Fig. 1).

However, of the 42 countries reporting on geographic spread, 3 reported widespread, 2 regional, 27 local or sporadic, and 10 no influenza geographic spread activity, indicating that influenza viruses are still circulating (Fig. 2).

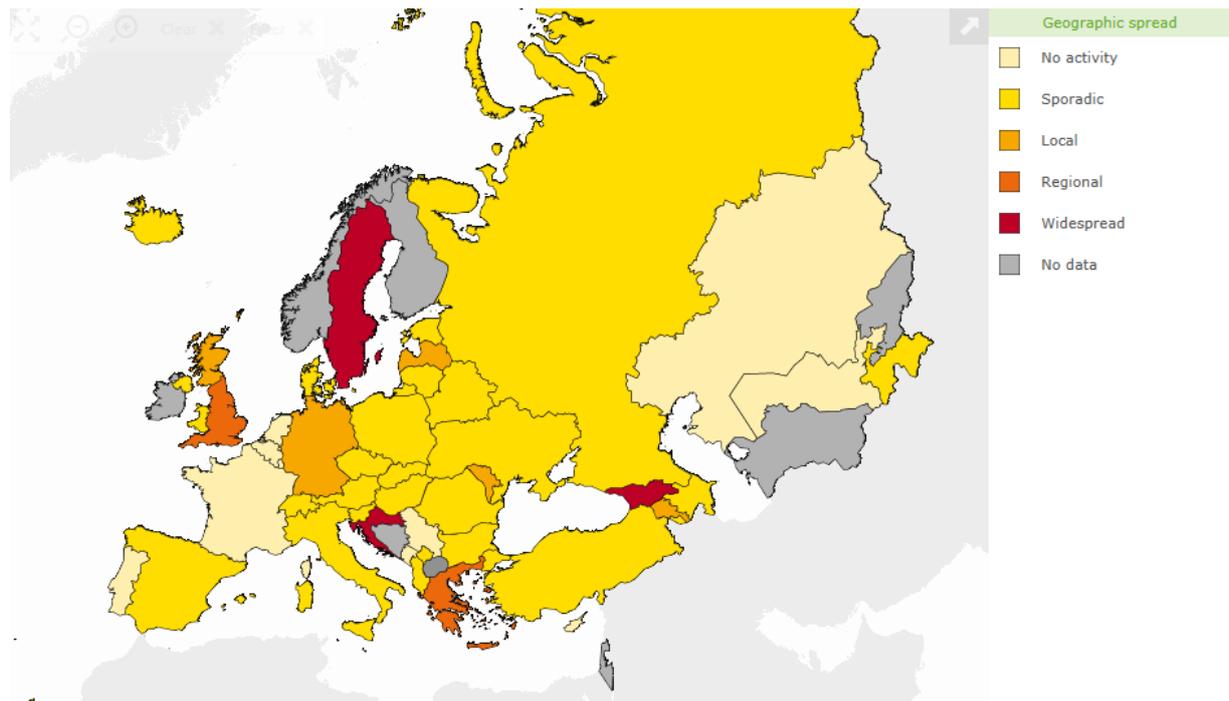
The proportion of influenza virus detections among sentinel specimens was 17%, which is similar to week 13/2017 (16%), with 10 of 35 countries reporting dominance of influenza B viruses.

## Maps of qualitative indicators in the European Region

**Fig. 1. Intensity in the European Region, week 14/2017**



**Fig. 2. Geographic spread in the European Region, week 14/2017**



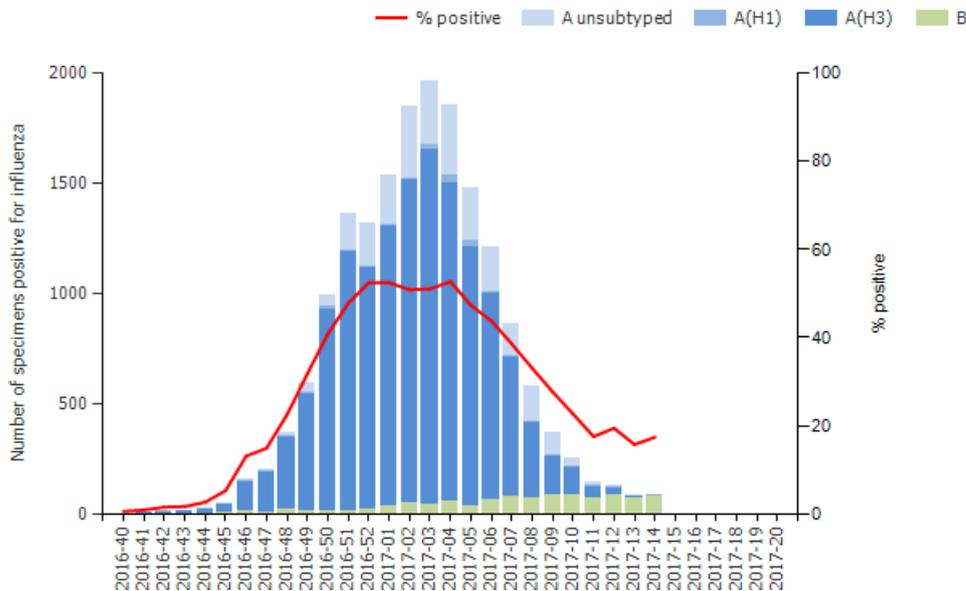
For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe [website](#).

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

For week 14/2017, 116 (17%) of 669 sentinel specimens tested positive for influenza viruses (Table 1). Of these, 94% were type B and 6% type A viruses. The proportion of type B viruses commonly increases in the second half of an influenza season. Of 7 subtyped A viruses, 6 were A(H3N2) and one was A(H1N1)pdm09 virus. The lineage of 30 influenza B viruses was determined, of which 18 were in B/Yamagata and 12 in B/Victoria lineages.

Since week 40/2016, of all typed viruses, 90% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 774 influenza B viruses that have been ascribed a lineage since week 40/2016, 467 (60%) were of the B/Yamagata lineage and 307 (40%) 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 14/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>7</b>	<b>6</b>	<b>16 450</b>	<b>90</b>
A(H1N1)pdm09	1	14	187	1
A(H3N2)	6	86	13 719	99
A not subtyped	0	-	2 544	-
<b>Influenza B</b>	<b>109</b>	<b>94</b>	<b>1 816</b>	<b>10</b>
B/Victoria lineage	12	40	307	40
B/Yamagata lineage	18	60	467	60
Unknown lineage	79	-	1 042	-
<b>Total detections / Total tested</b>	<b>116 / 669</b>	<b>17</b>	<b>18 266 / 50 449</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

For week 14/2017, of the 11 countries that conduct sentinel surveillance of severe acute respiratory infection (SARI), 8 countries reported 886 SARI cases. Among these cases, 200 respiratory specimens were collected, 41 (21%) of which tested positive for influenza viruses in 6 countries (Armenia, Georgia, Kazakhstan, Republic of Moldova, Russian Federation and Ukraine)

Since week 40/2016, 16 countries have reported 35 162 SARI cases. Of these 9 967 were tested for influenza viruses, 3 454 (35%) of which were positive: 2 698 (78%) were type A and 756 (22%) type B viruses. Of the influenza A viruses, 2 484 (92%) were A(H3N2), 6 (<1%) were A(H1N1)pdm09 and 208 (8%) were not subtyped.

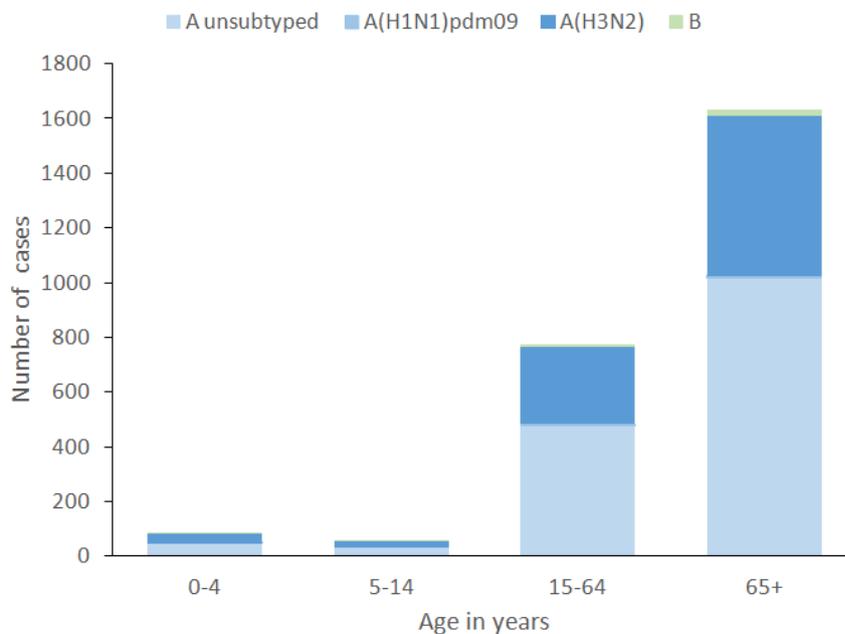
For week 14/2017, of 9 countries that conduct surveillance of hospitalized laboratory-confirmed influenza cases, 4 countries reported 12 cases, 8 in intensive care units (ICU) and 4 in other wards. Of the patients admitted to ICU, 6 were infected with influenza type A viruses (1 - influenza A not subtyped, 5 - A(H3N2)) and 2 with influenza B viruses. In other wards, 3 cases were infected with A(H3N2) and 1 with influenza B virus.

Since week 40/2016, 9 countries reported a total of 3 636 cases that have been admitted to ICU; 3 547 (98%) were infected with influenza type A viruses (2 110 - unsubtyped, 1 310 - A(H3N2) and 127 - A(H1N1)pdm09) and 89 with type B viruses.

Since week 40/2016, 5 countries have reported 3 732 laboratory-confirmed influenza cases admitted to non-ICU wards; 3 684 (99%) were infected with influenza type A viruses (2 058 - unsubtyped, 1 619 - A(H3N2), 7 - A(H1N1)pdm09), and 47 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 2 580 cases admitted to ICU; the majority of cases (64%; n=1 652) were aged ≥65 years, 789 (30%) were aged 15–64 years and 139 (5%) were aged under 15 years (Fig. 4). In total, 917 deaths have been reported, 521 from ICUs and 396 from other wards, with 746 (82%) of the patients 65 years or older. Of all fatal cases, 908 (99%) were due to influenza A with 447 (>99%) of those subtyped being A(H3N2) viruses.

**Fig. 4. Distribution of virus (sub)type in influenza-confirmed cases admitted to ICU by age-group, cumulatively, during weeks 40/2016-14/2017**



## Mortality monitoring

Data from 19 countries or regions reporting to the [Euromomo](#) project were received for week 14/2017 and included in the pooled analyses of excess all-cause mortality.

The majority of participating European countries has had a [marked excess](#) in all-cause mortality since the end of 2016, in particular among the elderly aged 65 years and above. Currently, the mortality level seems to have decreased again. This season's excess mortality coincided with circulation of influenza A(H3N2), which usually leads to increased mortality among the elderly.

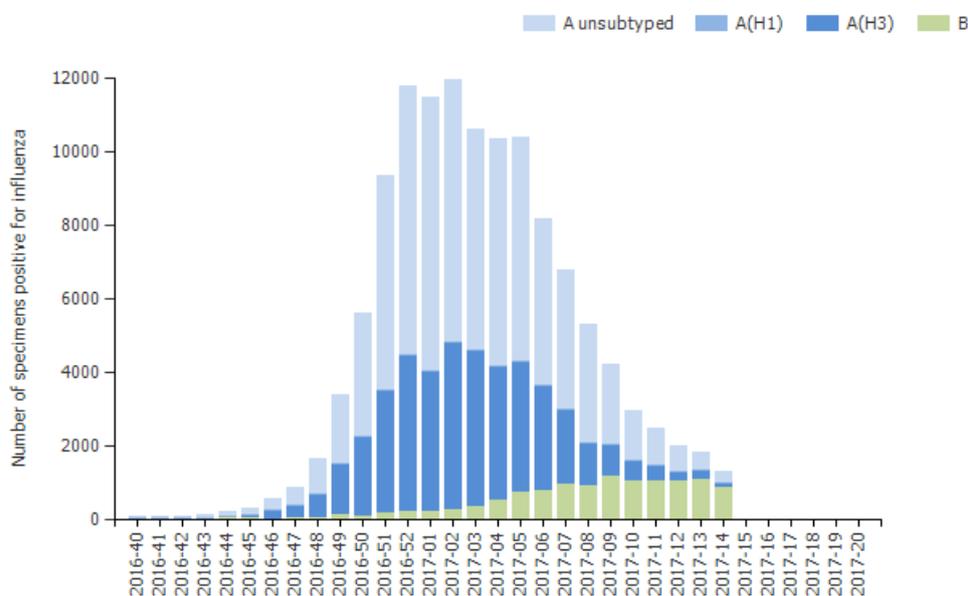
## Virus characteristics

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

For week 14/2017, 1 303 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, 34% were type A (with 99% of the subtyped viruses being A(H3N2)), and 66% type B. The increase in proportion of type B viruses corresponds to the data seen in sentinel detections, however the number of B viruses detected remained low and similar to that seen in the previous 6 weeks.

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



Whilst no subtype or lineage was determined for the majority of influenza viruses, 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, 90% were type A, with 99% of those subtyped being A(H3N2). Of 1 281 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 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 14/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>443</b>	<b>34</b>	<b>111 943</b>	<b>90</b>
A(H1N1)pdm09	2	1	365	1
A(H3N2)	133	99	40 867	99
A not subtyped	308	-	70 771	-
<b>Influenza B</b>	<b>860</b>	<b>66</b>	<b>13 055</b>	<b>10</b>
B/Victoria lineage	3	25	294	23
B/Yamagata lineage	9	75	987	77
Unknown lineage	848	-	11 774	-
<b>Total detections / Total tested</b>	<b>1 303 / 10 873</b>	<b>-</b>	<b>124 998 / 569 947</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 3 470 viruses have been reported (Table 3). Among 3 095 A(H3N2) viruses, 920 fell in the vaccine component clade (3C.2a) and 2 139 in the 3C.2a1 subclade defined by N171K amino acid substitution, and often with N121K, in the haemagglutinin. Viruses in these two clades have been 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. See also the [WHO CC London February 2017 report](#).

**Table 3. Viruses attributed to genetic groups, cumulative for weeks 40/2016–14/2017**

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (subgroup 6B.1) <sup>b, c</sup>	28
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B)	6
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	2 139
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a) <sup>a, b, c</sup>	920
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a)	29
A(H3N2) A/Stockholm/28/2014 (subgroup 3C.3b)	1
A(H3N2), subgroup not listed	6
B/Brisbane/60/2008 (Victoria lineage clade 1A) <sup>a, b, c</sup>	59
B/Phuket/3073/2013 (Yamagata lineage clade 3) <sup>d</sup>	282

<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 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 Stockholm county suggested levels of effectiveness in persons aged 65 years or older (32% and 28% VE, 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%) were consistent with the early estimates from Finland and Sweden.

Given the 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 1 528 influenza viruses (1 383 A(H3N2), 27 A(H1N1)pdm09 and 118 type B) with collection dates since week 40/2016. One A(H3N2) virus, from a specimen collected in week 2/2017, showed reduced inhibition by oseltamivir in phenotypic assay. None have shown reduced inhibition by 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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