Flu News Europe

Joint ECDC–WHO/Europe weekly influenza update

Summary

Week 10/2018 (5–11 March 2018)

- Influenza viruses continue to circulate widely in the Region, apart from some eastern European countries that have only recently reported increased activity.
- Similar to the previous week, 50% of the individuals sampled from primary healthcare settings tested positive for influenza virus, despite the peak rate for the Region occurring in week 05/2018.
- Both influenza virus types A and B were co-circulating with a higher proportion of type B viruses and with B/Yamagata continuing to be the dominant lineage.
- Similar proportions of influenza type A and B viruses were reported in patients admitted to ICU, while the majority of severe cases reported this season have been due to influenza type B and occur in persons above the age of 15 years.

2017–2018 season overview

- For the region overall, the majority of influenza viruses detected were type B, representing a high level of circulation of influenza B viruses compared to recent seasons. B/Yamagata lineage viruses have greatly outnumbered those of the B/Victoria lineage. Click here for more information
- Different patterns of dominant type and A subtypes were observed between the countries of the Region, which may be due to differences in relative weights of information being derived from sentinel, non-sentinel and severe influenza case sources of information.
- Of the type A virus detections from sentinel sources, the majority of which were subtyped, A(H1N1)pdm09 viruses have outnumbered A(H3N2) viruses. In non-sentinel sources, more A(H3N2) viruses were reported than A(H1N1)pdm09 viruses. Click here for more information
- While low in number, 57% of A(H3N2) viruses belong to clade 3C.2a and 48% of B/Victoria viruses belong to a subclade of clade 1A viruses that are antigenically distinct from the current trivalent vaccine component. Click here for more information
- The majority of severe cases reported this season are due to influenza type B and occur in persons above the age of 15 years. Click here for more information
- Mortality from all causes from data pooled across 17 EU countries and regions that reported to euroMOMO (http://www.euromomo.eu/) remains elevated in some countries, while it is declining in others. Click here for more information
- Interim results from 5 European studies indicate that influenza vaccine effectiveness was estimated to be similar to that in recent years. Click here for more information

Primary care data

Overall, the majority of countries reported low or medium intensity of activity of respiratory infections, based on sentinel surveillance data for influenza-like illness (ILI) and/or acute respiratory infection (ARI). The majority of countries reported widespread detections of laboratory-confirmed influenza cases.

Influenza activity

Influenza activity was at variable levels across the region in week 10/2018.

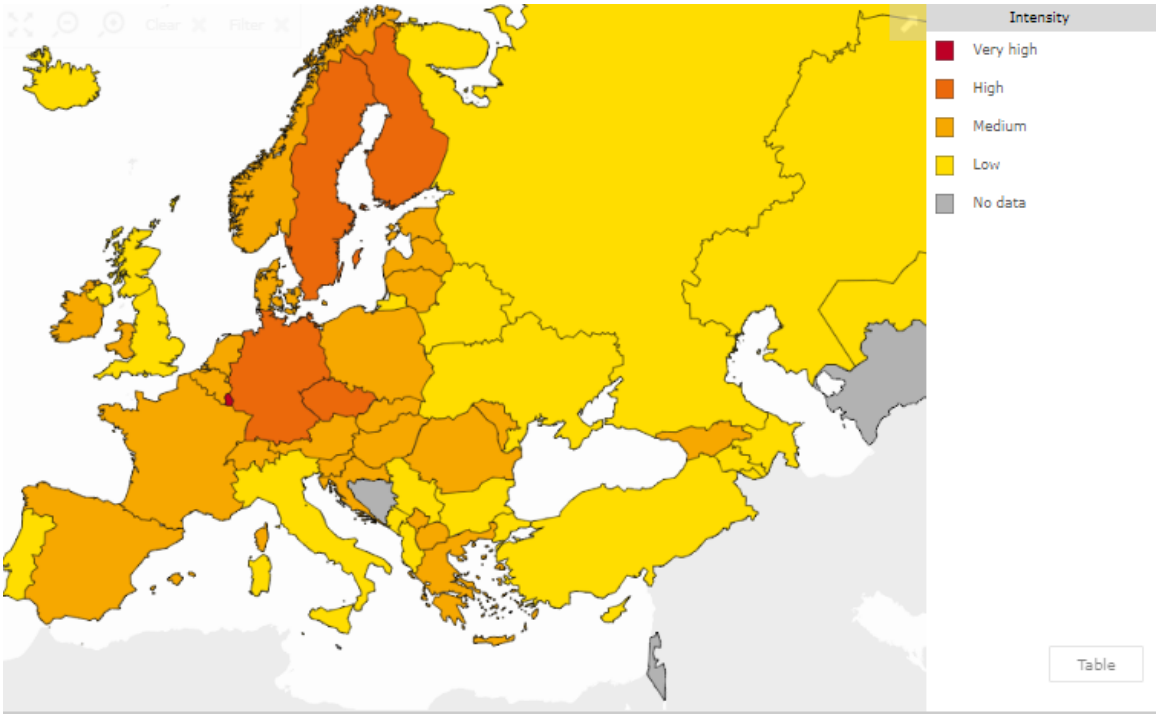
Of 46 Member States and areas reporting on intensity, Luxembourg reported very high intensity, while the Czech Republic, Finland, Germany and Sweden reported high intensity; 24 Member States including the United Kingdom (Wales) reported medium intensity and 18 Member States including the United Kingdom (England, Northern Ireland and Scotland) low intensity (Fig. 1).

Of the 46 Member States and areas reporting on geographic spread, 27 Member States reported widespread activity, while others reported regional (n=6 including the United Kingdom (Scotland)), local (n=6 including the United Kingdom (Wales)) or sporadic spread (n=6 including the United Kingdom (England and Northern Ireland)) and 3 reported no activity (

Fig. 2).

Maps of qualitative indicators in the European Region

Fig. 1. Intensity in the European Region, week 10/2018



Map disclaimer

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** The administrative boundaries include spatial feature for Kosovo, this designation being without prejudice to position on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.*
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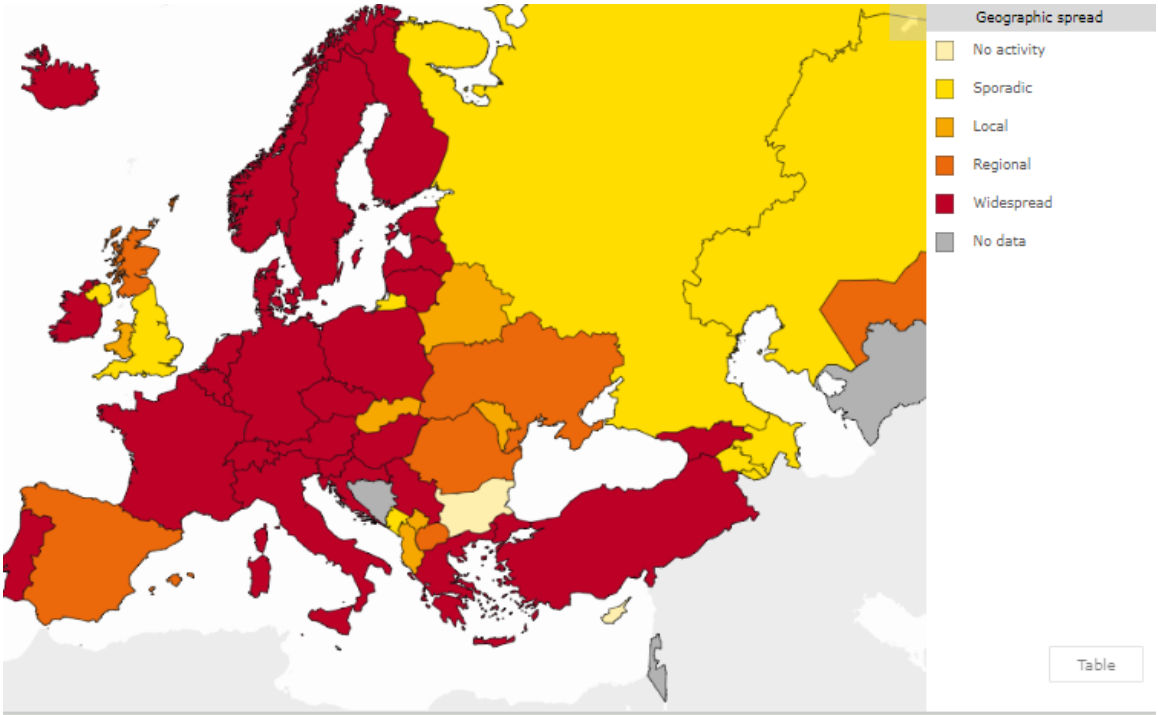
Fig. 2. Geographic spread in the European Region, week 10/2018



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 10/2018, 1 240 (50.6%) of 2 449 sentinel specimens tested positive for influenza viruses; 41% were type A and 59% were type B (Table 1).

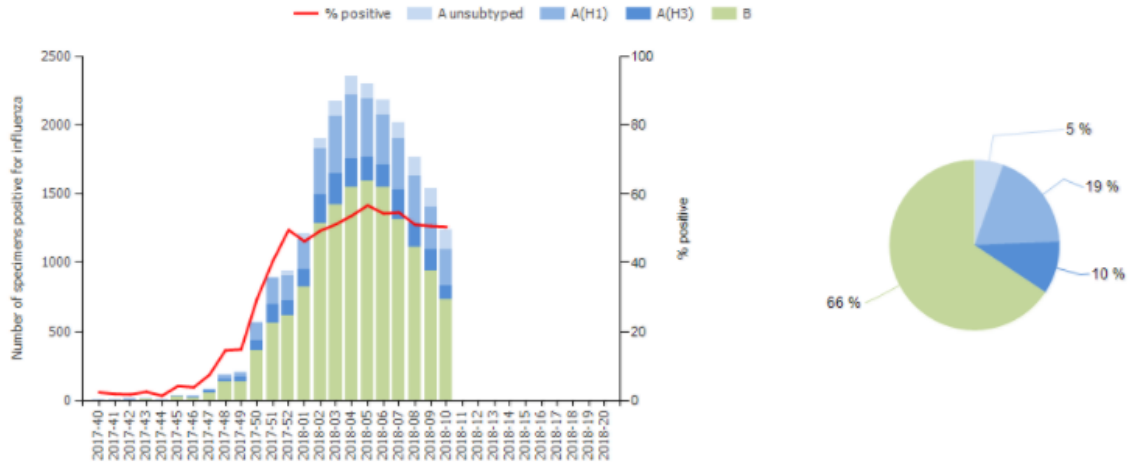
Of 362 subtyped A viruses, 73% were influenza A(H1N1)pdm09 and 27% A(H3N2). Of 406 type B viruses ascribed to a lineage, 97.5% were B/Yamagata and 2.5% B/Victoria (Fig. 3 and Table 1).

Of 36 Member States across the region including the United Kingdom (England and Northern Ireland) that each tested at least 10 sentinel specimens in week 10/2018, 27 reported proportions of influenza virus detections above 30% (range of 31% to 70%).

Overall, since week 40/2017, more influenza type B (66%) than type A (34%) viruses have been detected. Of 6 265 subtyped A viruses, 65% were A(H1N1)pdm09. The majority of type B viruses were reported without lineage, but of the 6 579 ascribed to a lineage, 97% were B/Yamagata (Table 1).

Details of the distribution of viruses detected in non-sentinel-source specimens can be found in the virus characteristics section.

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



[a]Pie chart shows cumulative data.

Table 1. Influenza virus detections in sentinel-source specimens by type and subtype, week 10/2018 and cumulatively

	Current Week		Season 2017-2018	
Virus type and subtype	**Number**	**%[a]**	**Number**	**%[a]**
Influenza A	**505**	**40.7**	**7 449**	**34.3**
A(H1N1)pdm09	263	72.7	4 099	65.4
A(H3N2)	99	27.3	2 166	34.6
A not subtyped	143	-	1 184	-
Influenza B	**735**	**59.3**	**14 260**	**65.7**
B/Victoria lineage	10	2.5	190	2.9
B/Yamagata lineage	396	97.5	6 389	97.1
Unknown lineage	329	-	7 681	-
Total detections (total tested)	**1 240 (2 449)**	**50.6**	**21 709 (51 256)**	**42.4**

[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

A subset of Member States monitor severe disease related to influenza virus infection by surveillance of 1) hospitalized laboratory-confirmed influenza cases in ICUs (n=12) or other wards (n=8), or 2) severe acute respiratory infections (SARI; n=16).

The majority of severe cases reported this season have been due to influenza type B and occur in persons above the age of 15 years. In laboratory-confirmed influenza cases in ICU, more cases were infected with influenza type A compared to type B viruses (n=3 685 and 3 337 respectively).

In laboratory-confirmed influenza cases reported in wards other than ICU, influenza type B was detected approximately twice as frequently as influenza type A, and twice as many cases occurred among those older than 64 years compared with patients in the 15–64 years age group.

1.1) Hospitalized laboratory-confirmed influenza cases – Intensive care units (ICU)

Since week 40/2017, 12 countries have reported laboratory-confirmed influenza cases admitted to either all ICUs in the country or a set of sentinel ICUs (Table 2).

Overall, numbers of reported hospitalized laboratory-confirmed influenza cases in ICUs continued to decrease in week 10/2018, reflecting mainly the situation in countries of the western part of the Region. During week 10/2018, there were 203 laboratory-confirmed influenza cases from ICUs, with the majority being in the United Kingdom (n=114, 56%). For weeks 8/2018 and 9/2018 the same countries reported 516 and 388 cases, respectively.

Since week 40/2017, type A influenza viruses have been detected in 52.5% and type B in 47.5% of cases in ICUs. Of 1 357 subtyped influenza A viruses, 58% were A(H1N1)pdm09 and 42% A(H3N2). Of 4 165 cases with known age, 46% were 15–64 years old and 47% 65 years and older.

Table 2. Laboratory-confirmed ICU admitted cases* by country, cumulatively weeks 40/2017–10/2018

Country	Total Cases	A unsub.	A(H1N1) pdm09	A(H3N2)	B all	0-4 yrs	5-14 yrs	15-64 yrs	>64 yrs	UNK
Czech Republic	179	25	32	4	118	10	5	73	91	0
Denmark	177	23	10	15	129	2	2	68	105	0
Finland	36	0	3	10	23	0	1	12	23	0
France	2 235	1 080	413	34	708	63	37	1 081	1 005	49
Ireland	141	38	10	23	70	15	9	59	58	0
Netherlands	14	4	0	0	10	0	0	8	6	0
Romania	43	2	18	1	22	3	1	18	21	0
Russian Federation	6	0	1	5	0	0	0	3	3	0
Spain	1 045	238	114	115	578	85	28	460	472	0
Sweden	309	69	4	9	227	8	17	124	160	0
Ukraine	29	1	0	1	27	9	10	10	0	0
United Kingdom	2 808	848	187	348	1 425	0	0	0	0	2 808
TOTAL	**7 022**	**2 328**	**792**	**565**	**3 337**	**195**	**110**	**1 916**	**1 944**	**2 857**

UNK = age unknown, *from either sentinel hospitals or all hospitals per country

1.2) Hospitalized laboratory-confirmed influenza cases – other wards

For week 10/2018, a total of 186 cases were reported from other wards, with the majority reported from Ireland (44%). Numbers of cases in other wards decreased in week 10/2018 compared to week 9/2018 (n = 657).

Since week 40/2017, 8 countries have reported laboratory-confirmed hospitalized influenza cases in other wards (Table 3). The majority (66%) of these cases were infected by influenza type B viruses and 57% of all cases were in patients aged 65 years and older.

Table 3. Laboratory-confirmed hospitalised cases in other wards* by country, cumulatively weeks 40/2017–10/2018

Country	Total Cases	A unsub.	A(H1N1) pdm09	A(H3N2)	B total	0-4 yrs	5-14 yrs	15-64 yrs	>64 yrs	UNK
Czech Republic	184	35	43	3	103	4	1	80	99	0
Denmark	4 083	483	194	250	3 156	209	162	1 454	2 258	0
Ireland	3 602	986	151	376	2 089	452	350	1 026	1 772	2
Romania	72	4	28	3	37	15	8	37	12	0
Russian Federation	161	0	17	92	52	29	11	108	13	0
Slovakia	4	2	1	0	1	0	0	4	0	0
Spain	3 810	932	202	339	2 337	194	40	845	2 731	0
Ukraine	130	6	2	3	119	18	26	85	1	0
TOTAL	**12 046**	**2 448**	**638**	**1 066**	**7 894**	**921**	**598**	**3 639**	**6 886**	**2**

UNK = age unknown, *from either sentinel hospitals or all hospitals per country

2. SARI surveillance

Since week 40/2017, SARI cases have been reported by 16 countries, the majority being located in the eastern part of the Region.

For week 10/2018, 1 550 SARI cases, compared to 670 during week 9/2018, were reported by 13 countries from which 350 specimens were tested for influenza viruses with 26% being positive. The positivity rate had been gradually increasing up until week 8/2018.

For SARI cases testing positive for influenza virus, type B viruses have been most common; 63% overall for weeks 40/2017–10/2018, but 46% in week 10/2018. In week 10/2018, A(H1N1)pdm09 viruses were detected in 37% of influenza virus-positive SARI cases, a higher proportion compared to week 9/2018 (23%).

Mortality monitoring

Data from 17 EU/EEA Member States or regions reporting to the EuroMOMO project were received for week 10/2018 and included in pooled analyses. Excess mortality from all causes has been significantly elevated over recent months in the south-western part of the European region. However, mortality seems to be declining in some countries.

Virus characteristics

Most influenza viruses detected in sentinel surveillance systems this season were type B with those assigned to a lineage being mainly B/Yamagata viruses, while most of the type A viruses subtyped were influenza A(H1N1)pdm09 viruses. Details of the distribution of viruses detected in sentinel-source specimens can be found in the Primary care data section.

Since week 1/2018, the majority of influenza virus detections in non-sentinel systems have been type B with B/Yamagata lineage viruses predominating, as seen in sentinel systems.

However, in contrast to sentinel systems, the majority of non-sentinel influenza A viruses subtyped were A(H3N2). This may be related to the higher proportion of non-sentinel specimens being derived from hospital-based settings or outbreaks in long-term care facilities for the elderly, with A(H3N2) viruses often causing more severe disease in the elderly, while A(H1N1)pdm09 viruses do so in middle-aged patients. Further details are given in the section below.

Differences in the relative contributions of sentinel and non-sentinel specimen sources to influenza surveillance between countries may lead to variation in (sub)type proportions between countries within the Region.

Viruses detected in non-sentinel-source specimens

For week 10/2018, 12 564 specimens from non-sentinel sources (such as hospitals, schools, primary care facilities not involved in sentinel surveillance, nursing homes and other institutions) tested positive for influenza viruses. Of these, 44% were type A and 56% type B viruses (Table 4). The majority of viruses from non-sentinel specimens were not subtyped or assigned to a lineage.

While relatively few of the viruses detected in non-sentinel specimens since week 40/2017 have been ascribed to a subtype or lineage, 55% of all subtyped A viruses were A(H3N2) and 99% of influenza type B viruses ascribed to a lineage were B/Yamagata lineage (Table 4).

Table 4. Influenza virus detections in non-sentinel-source specimens by type and subtype, week 10/2018 and cumulatively

	Current Week		Season 2017–2018	
Virus type and subtype	**Number**	**%[a]**	**Number**	**%[a]**
Influenza A	**5 565**	**44.3**	**67 364**	**40.8**
A(H1N1)pdm09	997	57.3	11 375	45.4
A(H3N2)	743	42.7	13 679	54.6
A not subtyped	3 825	-	42 310	-
Influenza B	**6 999**	**55.7**	**97 791**	**59.2**
B/Victoria lineage	1	0.5	75	1.1
B/Yamagata lineage	195	99.5	6 492	98.9
Unknown lineage	6803	-	91 224	-
Total detections (total tested)	**12 564 (33 744)**	**-**	**165 155 (569 435)**	**-**

[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 40/2017, genetic characterization of 2 120 viruses has been reported (Table 5).

Among 707 influenza A(H3N2) viruses attributed to a clade, 400 (57%) fell in the vaccine virus component clade (3C.2a), 288 (41%) in subclade 3C.2a1 with viruses defined by N171K, often with N121K, amino acid substitutions in the haemagglutinin, and 19 (3%) in clade 3C.3a. Viruses in the first 2 groups are antigenically similar, but both clade and subclade 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.

Of the 291 A(H1N1)pdm09 viruses attributed to a clade, all fell in the A/Michigan/45/2015 vaccine component clade (6B.1).

48 (48%) of the 99 B/Victoria-lineage clade 1A viruses belonged to a subgroup represented by B/Norway/2409/2017, which carries the HA1 double amino acid deletion, Δ162-163, characteristic of a new antigenically distinct subgroup of viruses that has been detected in several countries. All of the 1023 B/Yamagata lineage viruses belonged to clade 3 represented by B/Phuket/3073/2013. For more information on virus characterizations for EU/EEA countries, see the WHO CC London December 2017 report.

Table 5. Viruses attributed to genetic groups, cumulative for weeks 40/2017–10/2018

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (clade 6B.1)[a]	291
A(H1N1)pdm09 not attributable to any clade	0
A(H3N2) A/Hong Kong/4801/2014 (clade 3C.2a)[b]	400
A(H3N2) A/Singapore/INFIMH-16-0019/2016 (clade 3C.2a1)[c]	288
A(H3) representative A/Switzerland/9715293/2013 subgroup (clade 3C.3a)	19
A(H3N2) not attributable to any clade	0
B/Brisbane/60/2008 (Victoria lineage clade 1A)[b, d]	51
B/Norway/2409/2017 (Victoria lineage clade 1A Δ162-163)[e]	48
B(Victoria) lineage not attributed to clade	0
B/Phuket/3073/2013 (Yamagata lineage clade 3)[c, f]	1023
B/Yamagata lineage not attributed to any clade	0

[a] Vaccine component of vaccines for both northern (2017–2018 season) and southern (2018 season) hemispheres
[b] Vaccine component for northern hemisphere 2017–2018 season
[c] Vaccine component for southern hemisphere 2018 season
[d] Vaccine component of quadrivalent vaccines for use in southern hemisphere 2018 season
[e] Deletion of K162 and N163 in the HA1 subunit of the hemagglutinin and antigenically different from the vaccine component.
[f] Vaccine component of quadrivalent vaccines for use in northern hemisphere 2017–2018 season

The recommended composition of trivalent influenza vaccines for the 2017–2018 season in the northern hemisphere includes an A/Michigan/45/2015 (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 21 February 2018 WHO published influenza vaccine recommendations for the 2018-2019 season in the northern hemisphere. Two changes were recommended compared to the current trivalent and quadrivalent vaccines recommended for the 2017–2018 season in the northern hemisphere. Similar to the recommended composition for the 2018 southern hemisphere vaccine, the A(H3N2) component was changed to an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus. In trivalent vaccines the B component was switched to a B/Colorado/06/2017-like virus, representing the emergent strain of B/Victoria-lineage viruses with deletion of K162 and N163 in the HA1 subunit. The A(H1N1)pdm09 component in trivalent and quadrivalent vaccines and the B/Yamagata component in quadrivalent vaccines remained the same.

Vaccine effectiveness

Interim results from 5 European studies indicate that, in all age groups, influenza vaccine effectiveness was 25 to 52% against any influenza, 55 to 68% against influenza A(H1N1)pdm09, 7 to 42% against influenza A(H3N2) and 36 to 54% against influenza B, which is consistent with previous estimates from Canada, Finland, Germany, Spain, Stockholm County and the United States of America. It is encouraging that trivalent vaccine with lineage mismatched influenza B virus has an estimated 36 to 54% effectiveness against the dominant B/Yamagata influenza virus circulating.

Antiviral susceptibility testing

Neuraminidase inhibitor susceptibility has been assessed for 1 436 viruses; 667 type B, 449 A(H3N2), and 320 A(H1N1)pdm09) with collection dates since week 40/2017. 1 A(H3N2) virus carried amino acid substitution R292K in neuraminidase and showed evidence of reduced inhibition by both oseltamivir and zanamivir. 1 A(H1N1)pdm09 showed evidence of reduced inhibition by oseltamivir. 3 type B viruses showed evidence of reduced inhibition by zanamivir and 1, carrying amino acid substitution D198N in neuraminidase, to both oseltamivir and zanamivir.

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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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