

## Summary

### Week 5/2017 (30 January – 5 February 2017)

- Influenza activity remained elevated across the region with 28 of 43 countries reporting medium to very high intensity.
- Most countries reported stable or decreasing activity compared to the previous week.
- Excess all-cause mortality has been observed in people aged 15–64 year and 65 years or older in many of the 18 countries that provide data on excess all-cause mortality and, most likely, this is mainly due to the circulation of influenza A(H3N2) virus.
- The proportion of influenza virus detections among sentinel surveillance specimens decreased to 45% from 51–52% seen since week 51/2016.
- The great majority of influenza viruses detected were type A (94%) and, of those subtyped, 97% were A(H3N2). However, there was a small increase of the influenza type B detection proportion, as is often seen towards the end of an influenza season.
- Most of the hospitalized laboratory-confirmed influenza cases reported have occurred in people aged 65 years or older.

### Season overview

- Influenza activity started early 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 96% of all sentinel detections; the great majority (99%) of subtyped influenza A viruses from sentinel sites has been A(H3N2).
- As expected during a A(H3N2) dominated season, confirmed cases of influenza virus type A infection reported from hospitals have predominantly been in adults aged over 65 years.
- Two-thirds of the A(H3N2) viruses genetically characterized belong to a new genetic subclade (3C.2a1). However those that have been antigenically characterized are similar to the vaccine virus (clade 3C.2a).
- Early monitoring of vaccine effectiveness in [Finland](#) and [Sweden](#) suggests levels of effectiveness in persons aged 65 years or older similar to the suboptimal estimates from annual multi-country studies covering the 2011–2012 and 2014–2015 seasons.
- 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.
- Reduced susceptibility to oseltamivir or zanamivir has not been observed for any of the tested viruses so far this season.
- The progression of the season thus far has confirmed the conclusions of the ECDC [risk assessment](#) on seasonal influenza [updated](#) on 25 January 2017.

## Primary care data

### Influenza activity

Influenza activity in week 5/2017 was at variable levels across the region and was similar to the previous week: Hungary reported very high intensity, and 6, 21 and 15 countries or regions reported high, medium and low intensity, respectively (Fig. 1). Of the 43 countries reporting any data on geographic spread of influenza, 26 reported widespread influenza activity, similar to the previous week. Other countries reported regional (n=5), sporadic (n=7), local activity (n=4) and no activity (n=1) (Fig. 2). Of the 43 countries reporting any data on the trend of activity, 14 reported increasing activity while 29 reported decreasing (n=15) or stable (n=14) activity. The percentage of influenza virus detections among sentinel specimens was 45%, slightly decreased compared to the weeks since week 52/2016 (51-52%). 26 of 43 countries reporting on a dominant virus subtype reported A(H3) as the dominant subtype, 6 as A and 11 as no dominant type.

### Map of qualitative indicators in the European Region

Fig. 1. Intensity in the European Region, week 5/2017

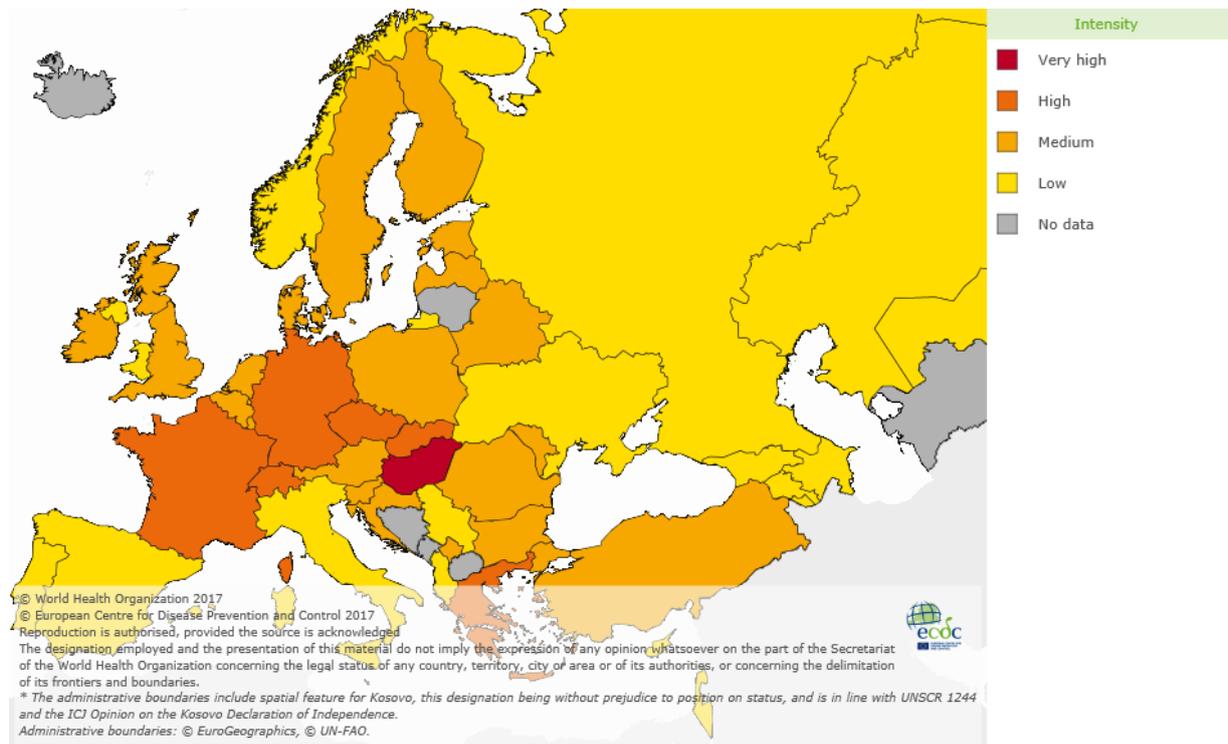
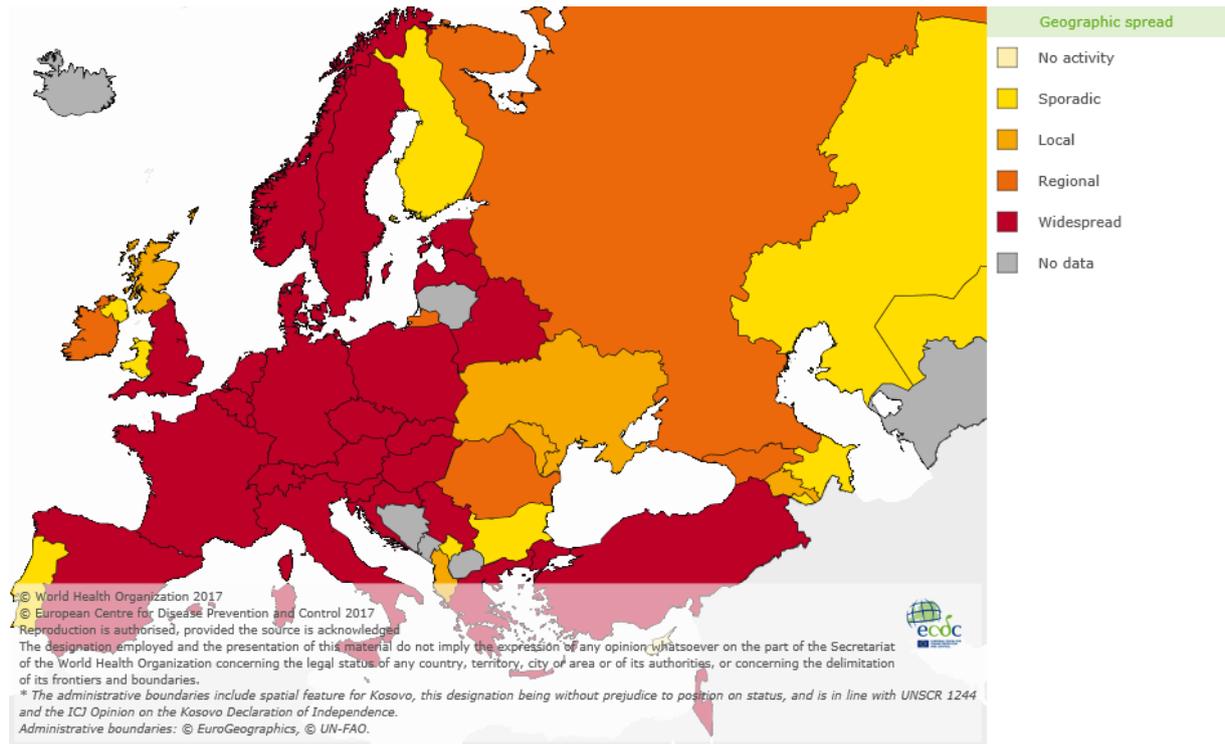


Fig. 2. Geographic spread in the European Region, week 5/2017



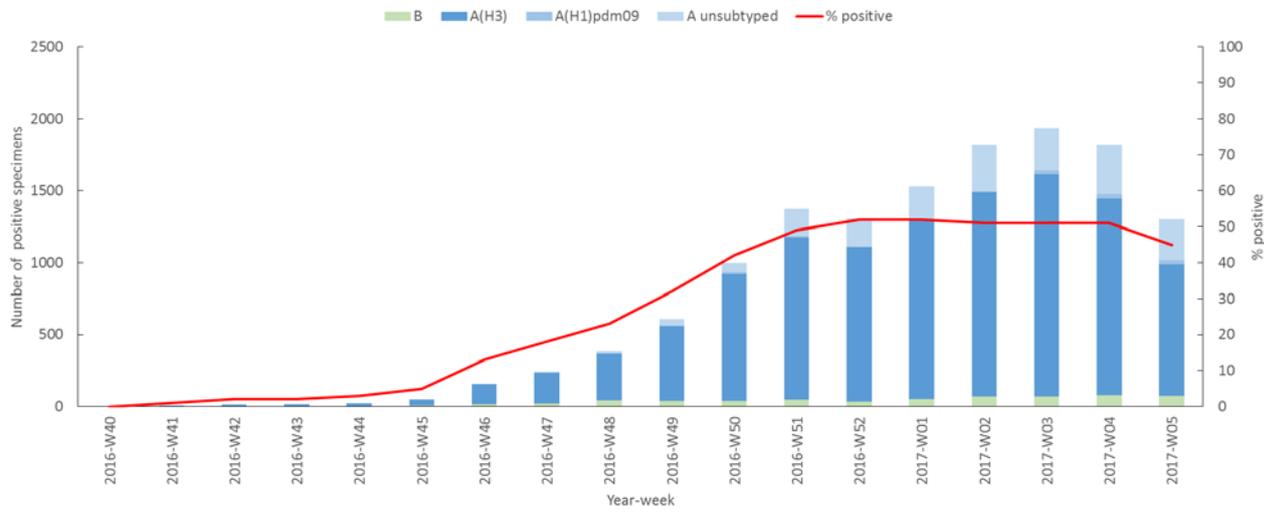
For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe [website](#).

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

For week 5/2017, 1 303 of 2 912 (45%) sentinel specimens tested positive for influenza viruses (Table 1). Of these, 94% were type A and 6% were type B. The great majority (97%) of subtyped influenza A viruses were A(H3N2). The lineage of 54 influenza B viruses was determined of which 43 (80%) fell in B/Yamagata and 11 (20%) in B/Victoria lineages. Of 33 countries across the region that each tested at least 10 sentinel specimens, 22 reported proportions of influenza virus detections above 30% (median 37%, range 31% to 84%).

Similar cumulative distributions of types and influenza A virus subtypes have been observed since week 40/2016: of all typed viruses, 96% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 306 influenza B viruses which have been ascribed a lineage since week 40/2017, 173 (57%) were of the B/Victoria lineage and 133 (43%) were of the B/Yamagata lineage, at odds with the higher proportion of B/Yamagata lineage in week 5/2017.

**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 5/2017 and cumulatively**

Virus type and subtype	Number of detections	
	Current Week	Season 2016-2017
<b>Influenza A</b>	<b>1 228</b>	<b>12 997</b>
A(H1N1)pdm09	26	131
A(H3N2)	914	10 870
A not subtyped	288	1 996
<b>Influenza B</b>	<b>75</b>	<b>598</b>
B/Victoria lineage	11	173
B/Yamagata lineage	43	133
Unknown lineage	21	292
<b>Total detections (Total tested)</b>	<b>1 303 (2 912)</b>	<b>13 595 (35 200)</b>

**Severity**

For week 5/2017, of the 15 countries that conduct sentinel surveillance on severe acute respiratory infection (SARI), 12 reported data and 8 of the 9 countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases reported data.

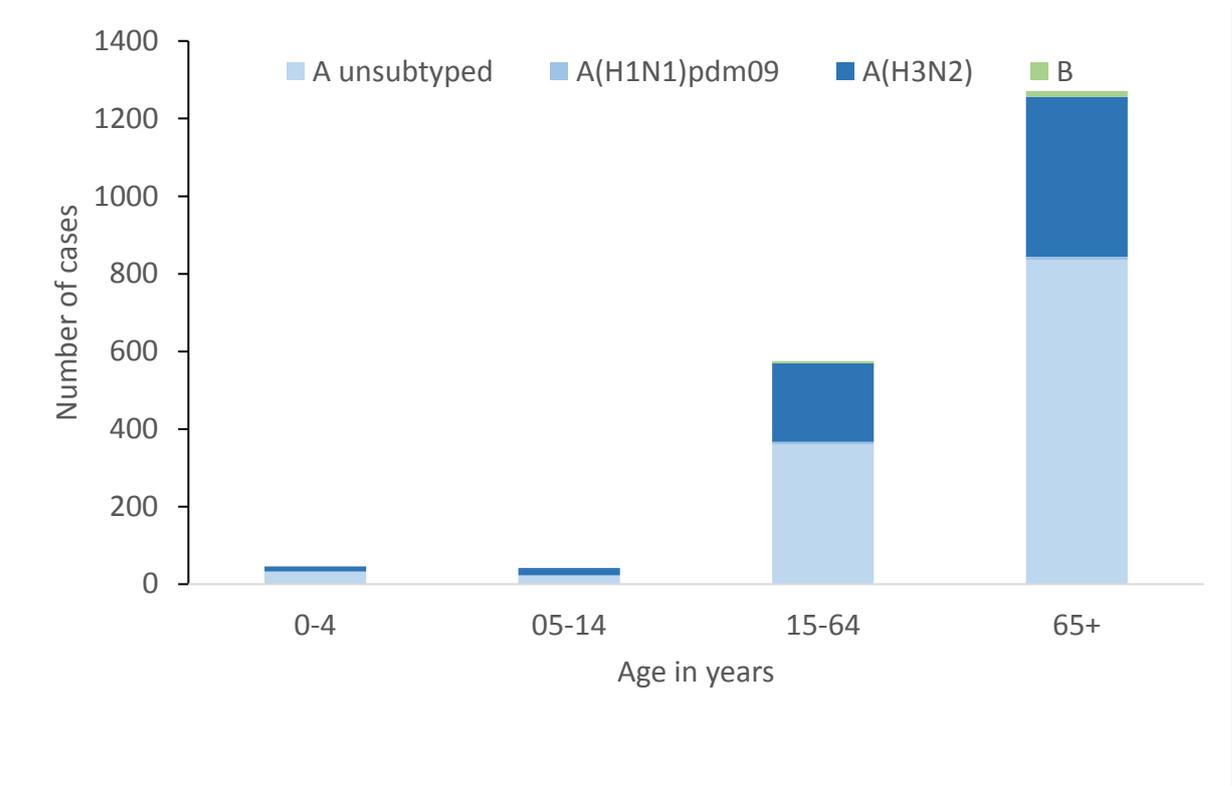
Of 1 171 SARI cases reported, 182 were tested for influenza virus and 53 (29%) were positive: 49 A(H3N2) and 4 type B viruses. Since week 40/2016, 22 251 SARI cases have been reported from 15 countries with 5 939 tested for influenza virus, of which 2 230 (38%) were positive: 1 901 (85%) were type A and 329 (15%) type B viruses. Of the influenza A

viruses, 1 808 (95%) were A(H3N2), 1 (<1%) was A(H1N1)pdm09 and 92 (5%) were not subtyped.

Of countries that conduct surveillance on hospitalized laboratory-confirmed influenza cases in intensive care units (ICU) or other wards, the Czech Republic, France, Romania, Spain, Sweden and the United Kingdom reported a total of 195 cases (135 infected with unsubtyped A virus, 50 with A(H3N2), 6 with A(H1N1)pdm09 and 4 with type B viruses) admitted to ICU in week 5/2017, a decrease from 283 cases in the previous week. From other wards, 117 cases were reported in week 5/2017 (a decrease from 148 cases in the previous week) by the Czech Republic, Ireland, Romania and Spain of which 69 were infected with unsubtyped A virus, 47 with A(H3N2) and 1 with type B virus.

Since week 40/2016, the Czech Republic, Ireland, Romania, Slovakia and Spain have reported 2 813 laboratory-confirmed influenza cases admitted to non-ICU wards; 1 656 infected with unsubtyped A virus, 1 137 with A(H3N2), 4 with A(H1N1)pdm09 and 16 with type B influenza viruses. In total, the Czech Republic, Finland, France, Ireland, Romania, Slovakia, Spain, Sweden and the United Kingdom have reported 2 692 cases admitted to ICU; 1 665 infected with unsubtyped influenza A virus, 875 with A(H3N2), 108 with A(H1N1)pdm09 and 44 with type B influenza viruses.

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



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 1 935 cases admitted to ICU; the majority (65%) of cases (n=1 271) were aged  $\geq 65$  years, 575 (30%) were aged 15–64 years and 89 (5%) were aged under 15 years. A(H3N2) viruses predominated and accounted for 646 cases, 97% of the subtyped influenza A viruses in cases admitted to ICUs. 549 deaths have

been reported, 318 from ICUs and 231 from other wards (300 infected with unsubtype A viruses, 241 with A(H3N2), 3 with A(H1N1)pdm09 and 5 with type B viruses) with 444 (81%) among patients aged  $\geq 65$  years. Out of 549 deaths, vaccination status was known for 402 and 162 (40%) were vaccinated.

## Mortality monitoring

Data from 19 countries or regions reporting to the [EuroMOMO](#) project were received for week 5/2017 and included in the pooled analyses of excess all-cause mortality.

Many participating countries across the European region continue to see a marked increase in all-cause excess mortality among the elderly aged 65 years and above. A substantial increase has similarly been observed in the 15–64 years age group. Most likely, this is mainly due to the circulation of influenza A(H3N2) virus.

## Virus characteristics

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

For week 5/2017, 7 972 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, 91% were type A (with 98% of the subtyped viruses being A(H3N2)), and 9% type B.

Similar cumulative distributions of types and subtypes as seen in sentinel detections have been observed since week 40/2016 with A(H3N2) viruses being dominant throughout Europe (Table 2). For the majority of viruses, no subtype or lineage was determined; however, for those that were, 99% of the subtyped influenza A viruses were A(H3N2), while of 382 type B viruses ascribed to a lineage, 62% were B/Yamagata lineage and 38% were B/Victoria lineage, which differs from sentinel detections where B/Victoria lineage viruses have dominated so far this season. The difference is mainly driven by the proportions 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 5/2017 and cumulatively**

Virus type and subtype	Number of detections	
	Current Week	Season 2016-2017
<b>Influenza A</b>	<b>7 229</b>	<b>75 665</b>
A(H1N1)pdm09	36	230
A(H3N2)	2 339	27 605
A not subtyped	4 854	47 830
<b>Influenza B</b>	<b>743</b>	<b>3 047</b>
B/Victoria lineage	24	147
B/Yamagata lineage	31	235
Unknown lineage	688	2 665
<b>Total detections (Total tested)</b>	<b>7 972 (28 209)</b>	<b>78 712 (355 622)</b>

## Genetic characterization

For specimens collected since week 40/2016, genetic characterizations of 1 494 viruses have been reported (Table 3). Among 1 348 A(H3N2) viruses, 375 fell in the vaccine component clade (3C.2a), and 933 in a subclade of clade 3C.2a viruses (3C.2a1) defined by N171K, often with N121K, amino acid substitutions in the haemagglutinin. Viruses in these two clades are antigenically similar, though the 3C.2a1 subclade is evolving rapidly with emergence of numerous virus clusters defined by additional amino acid substitutions in haemagglutinin, the impact of which on antigenic characteristics is not yet clear. In addition, 14 viruses fell in clade 3C.3a and 26 viruses could not be ascribed to a listed phylogenetic subgroup.

**Table 3. Viruses attributed to genetic groups, cumulative for weeks 40/2016–5/2017**

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (subgroup 6B.1)	8
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B) <sup>a</sup>	4
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	933
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a) <sup>a</sup>	375
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a) <sup>a</sup>	14
A(H3N2), subgroup not listed	26
B/Brisbane/60/2008 (Victoria lineage clade 1A) <sup>b</sup>	29
B (Victoria lineage), not attributed to clade	11
B/Phuket/3073/2013 (Yamagata lineage clade 3) <sup>a</sup>	38
B (Yamagata lineage), not attributed to clade	56

<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 of quadrivalent vaccines for both northern and southern hemisphere

The recommended composition of trivalent influenza vaccines for the 2016–2017 season in the [northern hemisphere](#) is 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. The recommended influenza A(H1N1)pdm09 component of the 2017 [southern hemisphere](#) influenza vaccine is an A/Michigan/48/2015 (H1N1)pdm09-like virus, the first update since A(H1N1)pdm09 viruses emerged in 2009.

Early monitoring of vaccine effectiveness in [Finland](#) and [Sweden](#) suggests levels of effectiveness in persons aged 65 years or older (26% (95% CI 22% to 30%) and 24% (95% CI 11% to 34%) vaccine effectiveness, respectively) similar to estimates from annual multi-country studies covering the 2011–2012 and 2014–2015 seasons. 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 837 viruses (789 A(H3N2), 11 A(H1N1)pdm09 and 37 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.

Suggested citation:

European Centre for Disease Prevention and Control/WHO Regional Office for Europe. Flu News Europe, Joint ECDC–WHO weekly influenza update, week 5/2017.

Tables and figures should be referenced:

European Centre for Disease Prevention and Control/WHO Regional Office for Europe. Flu News Europe, Joint ECDC–WHO weekly influenza update, week 5/2017.

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