

## Summary

### Week 15/2017 (10–16 April 2017)

- Influenza activity across the region decreased further with 41 of 43 countries reporting low influenza activity.
- The proportion of sentinel specimens testing positive for influenza virus was 14%, lower compared to the previous week (17%).
- The proportion of type B viruses exceeded the proportion of type A viruses in sentinel detections, similar to recent previous weeks. However, the overall number of type B virus detections remained low.

### Season overview

- After an earlier than usual start to the influenza season (week 46/2016), the influenza season is considered to be over in the majority of countries in the Region, with influenza activity at inter-seasonal levels in 41 countries.
- 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 have predominated, although absolute numbers of type B detections have remained low.
- Confirmed cases of influenza virus type A 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 19 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, 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 some health care systems under pressure.

## Primary care data

### Influenza activity

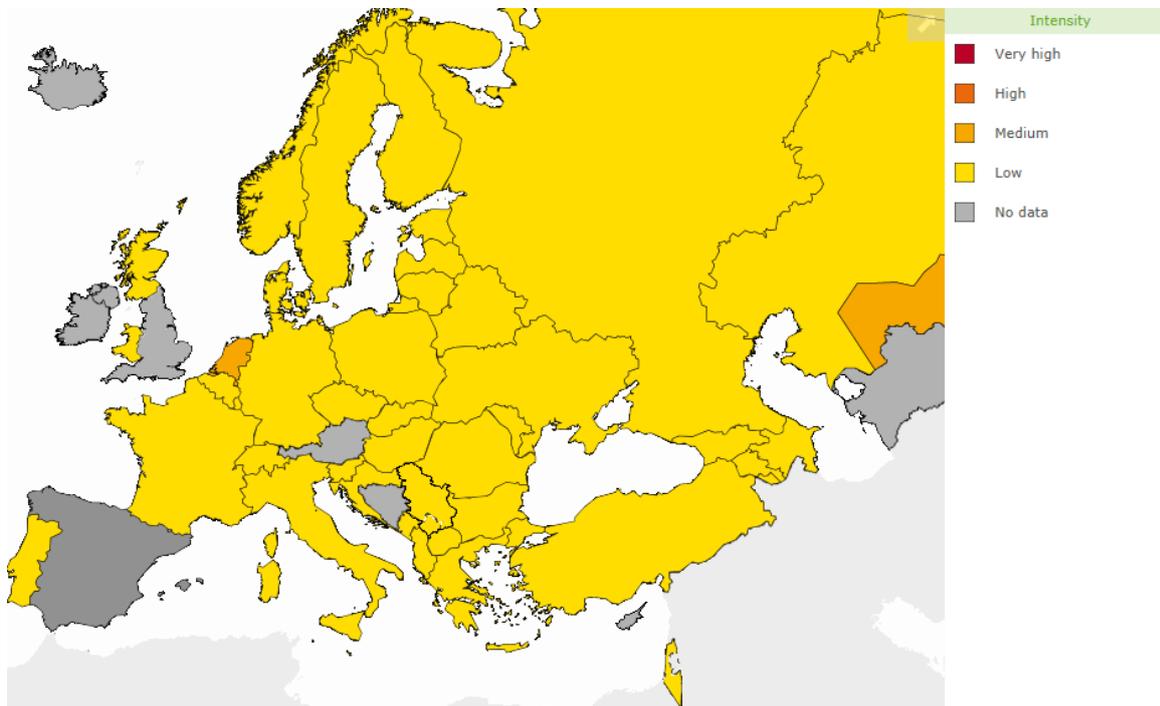
Of 43 countries reporting on influenza activity for week 15/2017, 2 reported medium intensity and 41 reported a return to baseline levels with low intensity (Fig. 1).

However, of the 43 countries reporting on geographic spread of influenza, 1 reported widespread, 2 regional, 27 local or sporadic influenza activity, indicating that influenza viruses are still circulating and 13 countries reported no influenza activity (Fig. 2).

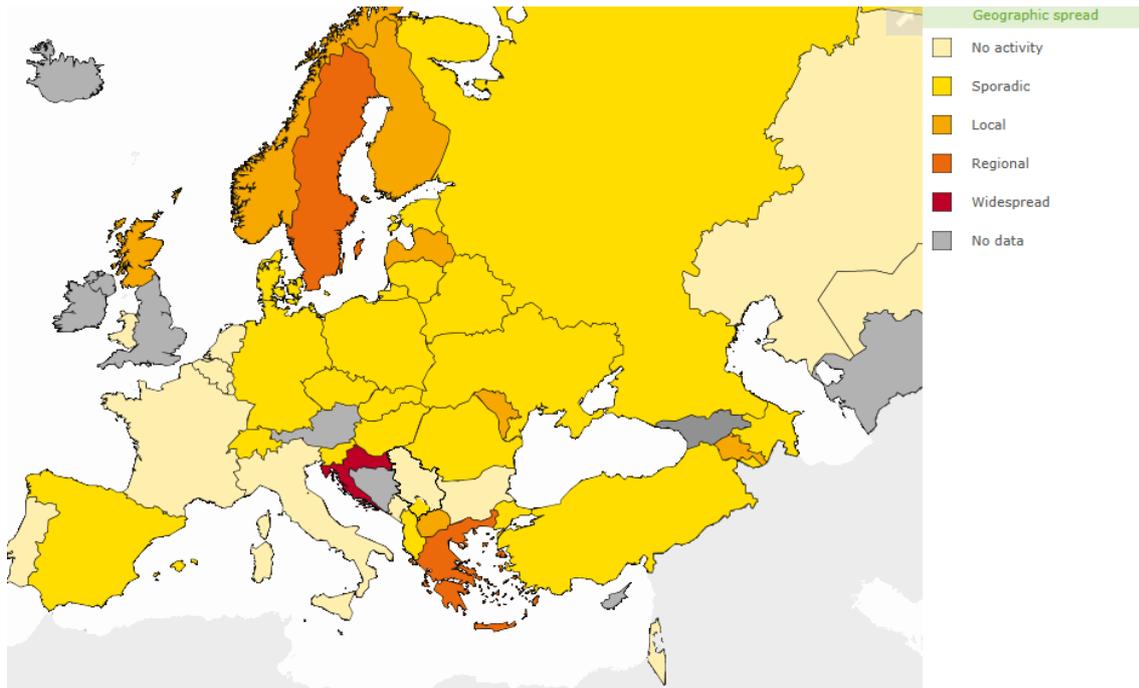
The proportion of influenza virus detections among sentinel specimens was 14%, which is slightly lower compared to week 14/2017 (17%), with 13 of 35 countries reporting dominance of influenza B viruses.

## Maps of qualitative indicators in the European Region

**Fig. 1. Intensity in the European Region, week 15/2017**



**Fig. 2. Geographic spread in the European Region, week 15/2017**



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)**

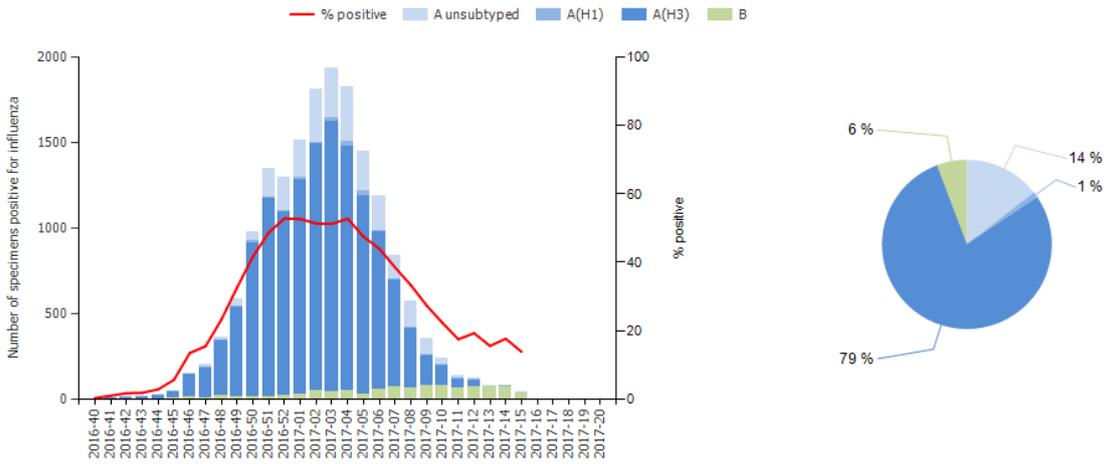
For week 15/2017, 59 (14%) of 416 sentinel specimens tested positive for influenza viruses (Table 1). Of these, 95% were type B and 5% type A viruses. The proportion of type B viruses commonly increases in the second half of an influenza season.

Of 9 countries across the region that each tested at least 10 sentinel specimens, only 2 reported proportions of influenza virus detections of 30% or above.

Of 2 subtyped A viruses, both were A(H3N2). The lineage of 18 influenza B viruses was determined, of which 2 were B/Yamagata and 16 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 758 influenza B viruses that have been ascribed to a lineage since week 40/2016, 428 (56%) were of the B/Yamagata lineage and 330 (44%) were of the B/Victoria lineage.

**Fig. 3. Influenza virus detections in sentinel-source specimens by type and subtype, by week**



The data in the pie chart is cumulative.

**Table 1. Influenza virus detections in sentinel-source specimens by type and subtype, week 15/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>3</b>	<b>5</b>	<b>16 219</b>	<b>90</b>
A(H1N1)pdm09	0	0	186	1
A(H3N2)	2	100	13 540	99
A not subtyped	1	-	2 493	-
<b>Influenza B</b>	<b>56</b>	<b>95</b>	<b>1 749</b>	<b>10</b>
B/Victoria lineage	16	89	330	44
B/Yamagata lineage	2	11	428	56
Unknown lineage	38	-	991	-
<b>Total detections / Total tested</b>	<b>59 / 416</b>	<b>14</b>	<b>17 968 / 49 048</b>	<b>37</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**

Of the 12 countries that conduct sentinel surveillance of severe acute respiratory infection (SARI) for week 15/2017, 9 countries reported 1,728 SARI cases. Among these cases, 197 respiratory specimens were collected, 44 (22%) of which tested positive for influenza viruses in 7 countries (Armenia, Belarus, Georgia, Kazakhstan, Republic of Moldova, Russian Federation and Ukraine).

Since week 40/2016, a total of 16 countries have reported 36 815 SARI cases. Of these 10 162 were tested for influenza viruses, 3 505 (34%) of which were positive: 2 704 (77%) were type A and 801 (23%) type B viruses. Of the influenza A viruses, 2 491 (92%) were A(H3N2), 6 (<1%) were A(H1N1)pdm09 and 207 (8%) were not subtyped.

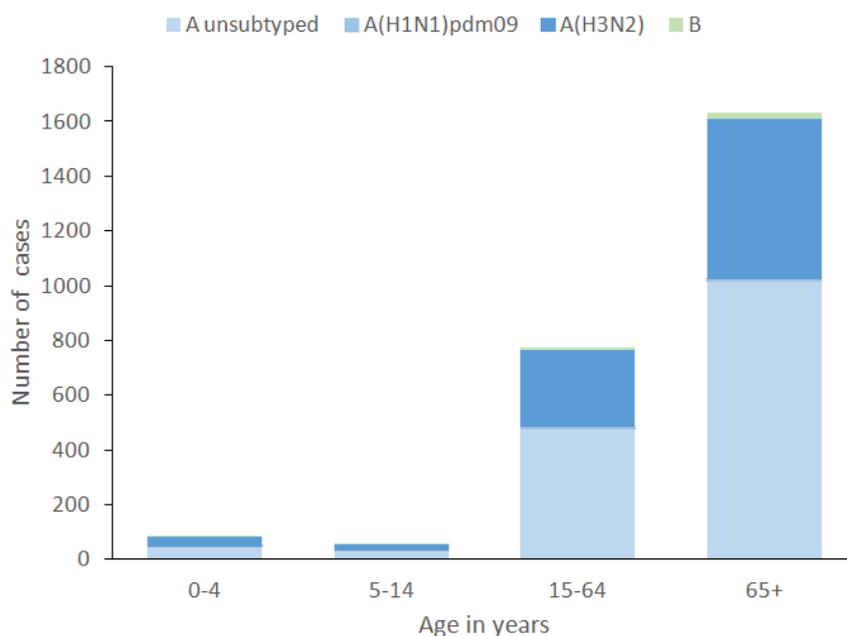
For week 15/2017, of 9 countries that conduct surveillance of hospitalized laboratory-confirmed influenza cases, 2 countries (Czech Republic and Sweden) reported 3 cases, 2 in intensive care units (ICU) and 1 in other wards. Of the patients admitted to ICU, 1 was infected with influenza type A virus and 1 with influenza B. The other ward case was infected with A(H3N2).

Since week 40/2016, 9 countries reported a total of 3 641 cases that have been admitted to ICU; 3 550 (98%) were infected with influenza type A viruses (2 112 - unsubtype, 1 311 - A(H3N2) and 127 - A(H1N1)pdm09) and 91 with type B viruses.

Since week 40/2016, 5 countries have reported 3 736 laboratory-confirmed influenza cases admitted to non-ICU wards; 3 691 (99%) were infected with influenza type A viruses (2 062 - unsubtype, 1 622 - A(H3N2), 7 - A(H1N1)pdm09), and 45 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 2 585 cases admitted to ICU; the majority of cases (64%; n=1 654) were aged ≥65 years, 791 (31%) were aged 15–64 years and 140 (5%) were aged under 15 years (Fig. 4). In total, 921 deaths have been reported, 523 from ICUs and 398 from other wards, with 749 (81%) of the patients aged 65 years or older. Of all fatal cases, 912 (99%) were due to influenza A with 449 (>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 40/2016-15/2017**



## Mortality monitoring

Data from 20 countries or regions reporting to the [Euromomo](#) project were received for week 15/2017 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 December 2016 and 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), which usually leads to increased mortality among the elderly.

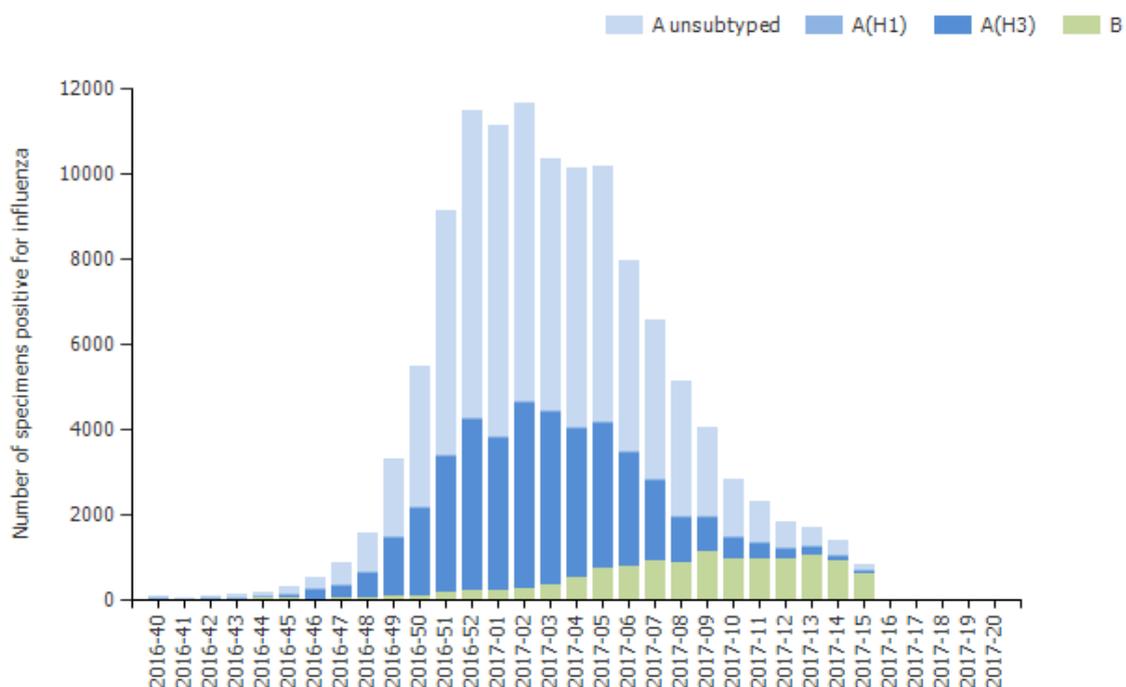
## Virus characteristics

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

For week 15/2017, 858 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, 24% were type A (with 94% of the subtyped viruses being A(H3N2)), and 76% type B. The increase in proportion of type B viruses corresponds to the sentinel detection data, however the number of influenza B viruses detected remained low and similar to that seen in recent previous 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, 89% were type A, with 99% of those subtyped being A(H3N2). Of 1 217 influenza type B viruses ascribed to a lineage, 75% were B/Yamagata lineage and 25% 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 15/2017 and cumulatively**

Virus type and subtype	Current Week		Season 2016-2017	
	Number	% <sup>a</sup>	Number	% <sup>a</sup>
<b>Influenza A</b>	<b>206</b>	<b>34</b>	<b>109 198</b>	<b>89</b>
A(H1N1)pdm09	3	1	351	1
A(H3N2)	49	99	39 028	99
A not subtyped	154	-	69 819	-
<b>Influenza B</b>	<b>652</b>	<b>66</b>	<b>13 108</b>	<b>11</b>
B/Victoria lineage	9	25	302	25
B/Yamagata lineage	20	75	915	75
Unknown lineage	623	-	11 891	-
<b>Total detections / Total tested</b>	<b>858 / 8 693</b>	<b>-</b>	<b>122 306 / 548 578</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 3 188 viruses have been reported (Table 3). Among 2 903 A(H3N2) viruses, 868 fell in the vaccine component clade (3C.2a) and 1 998 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 40/2016–15/2017**

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)	5
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	1998
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a) <sup>a, b, c</sup>	868
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a)	30
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>	58
B/Phuket/3073/2013 (Yamagata lineage clade 3) <sup>d</sup>	194

<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.

## Antiviral susceptibility testing

Neuraminidase inhibitor susceptibility has been assessed for 1 532 influenza viruses (1 387 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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