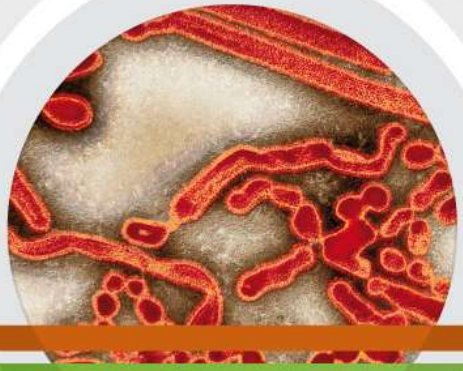


SURVEILLANCE REPORT

# Weekly influenza surveillance overview

5 April 2013

## Main surveillance developments in week 13/2013 (25–31 March 2013)

*This first page contains the main developments for this week and can be printed separately or together with the more detailed information that follows.*

Weekly reporting on influenza surveillance in Europe for the 2012–13 season started in week 40/2012. Active influenza transmission began around week 49/2012 with ILI/ARI rates peaking in almost all countries between weeks 52/2012 and 8/2013.

- Nineteen of 26 reporting countries indicated low-intensity transmission.
- Decreasing or stable trends were reported by almost all reporting countries.
- The proportion of influenza-positive sentinel specimens remained high (40%) but has continued to decrease since the peak observed in week 5/2013 (61%) and with a considerably lower number of specimens tested.
- Since week 40/2012, 47% of sentinel surveillance specimens testing positive for influenza virus have been type A, and 53% type B. Of the influenza A viruses subtyped, the proportion of A(H1)pdm09 viruses has been 63%.
- Thirty-two hospitalised laboratory-confirmed influenza cases were reported by six countries, including one fatality.

In all reporting countries, influenza activity continued to decline or had already returned to baseline levels. After more than three months of active transmission, a long period compared to other years, the 2012–13 influenza season is waning and slowly moving towards its close.

**Sentinel surveillance of influenza-like illness (ILI)/ acute respiratory infection (ARI):** Decreasing or stable trends were reported by all countries except Bulgaria which reported an increasing trend but low influenza activity. For more information, **click here**.

**Virological surveillance:** Twenty-three countries tested 562 sentinel specimens, of which 227 (40%) were positive for influenza virus. For more information, **click here**.

**Hospital surveillance of influenza laboratory-confirmed cases:** A total of 32 hospitalised laboratory-confirmed influenza cases were reported, with one fatality. For more information, **click here**.

# Sentinel surveillance (ILI/ARI)

## Weekly analysis – epidemiology

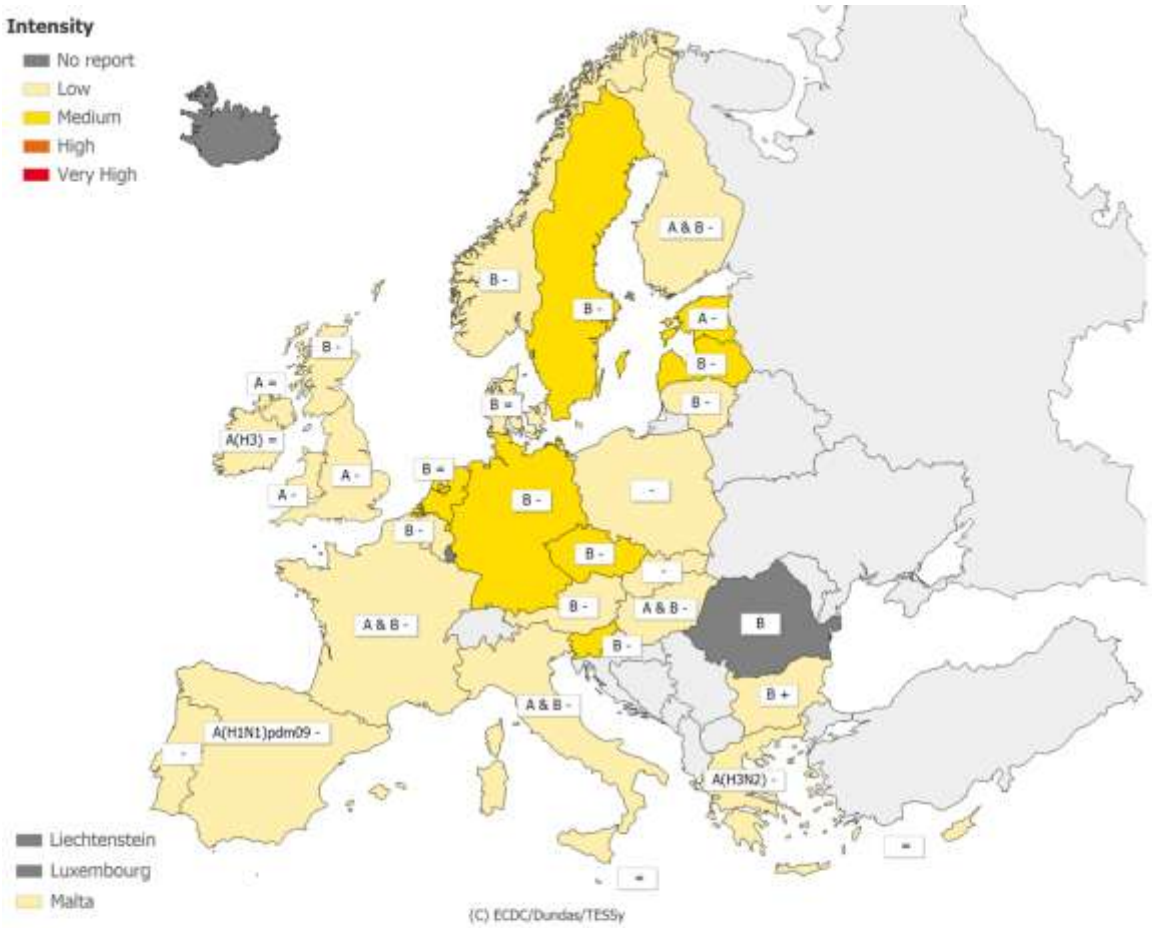
For week 13/2013, 26 countries reported clinical data. Seven countries reported medium intensity while 19 countries reported low intensity, as compared to 13 in week 12/2013. No country reported high intensity (Table 1, Map 1).

The geographic pattern of influenza activity was reported as widespread by seven countries, and regional or local by 17. Only Cyprus and Poland reported no activity (Table 1, Map 2).

Decreasing or stable trends were reported by all countries except Bulgaria which reported an increasing trend but low influenza activity (Table 1, Map 2).

ILI/ARI rates peaked between weeks 52/2012 and 8/2013 in all reporting countries but Romania, where a peak was observed in week 11/2013. Since week 12/2013, all countries reporting have reported declining rates or have already reached baseline levels.

## Map 1. Intensity for week 13/2013

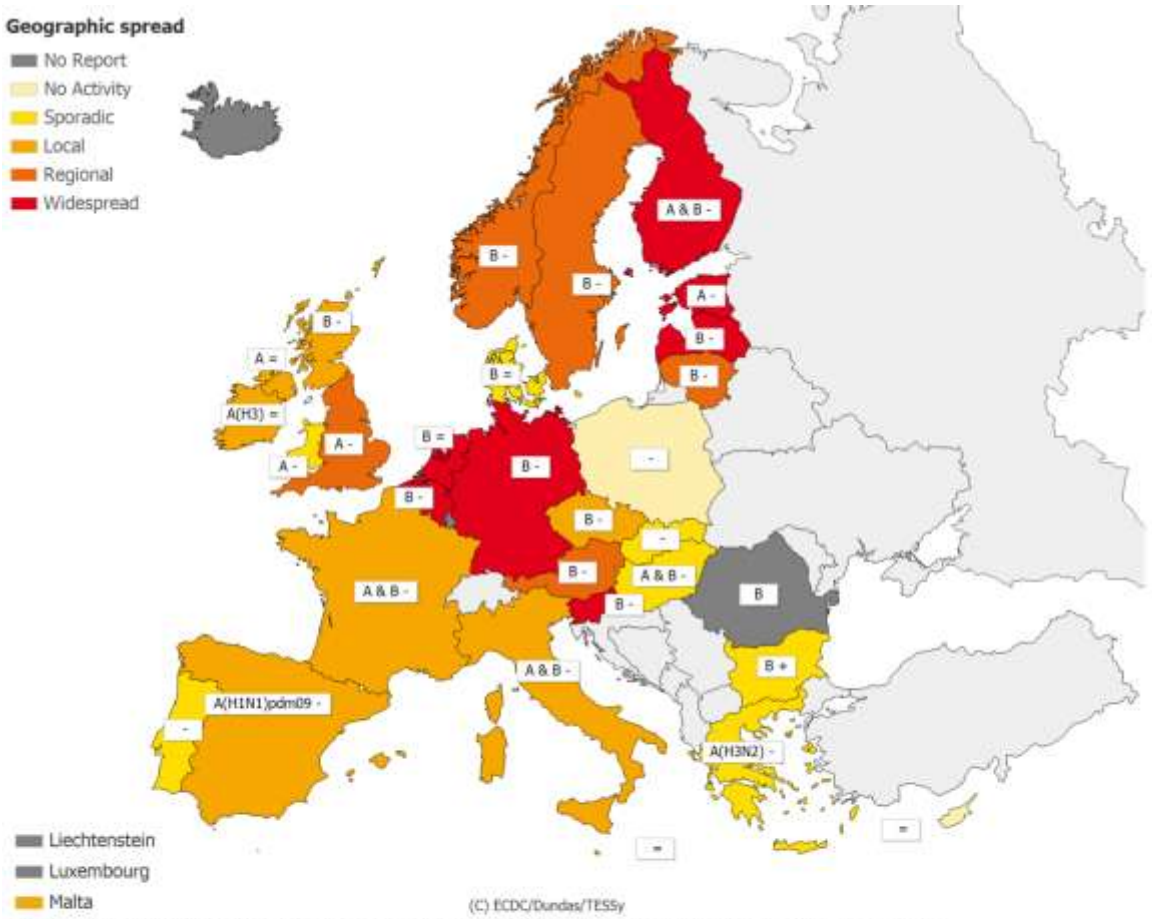



* A type/subtype is reported as dominant when at least ten samples have been detected as influenza positive in the country and of those > 40 % are positive for the type/subtype.

Legend:

| | | | |
|---|---|---|---|
| **No report** | Intensity level was not reported | **+** | Increasing clinical activity |
| **Low** | No influenza activity or influenza at baseline levels | **-** | Decreasing clinical activity |
| **Medium** | Usual levels of influenza activity | **=** | Stable clinical activity |
| **High** | Higher than usual levels of influenza activity | **A** | Type A |
| **Very high** | Particularly severe levels of influenza activity | **A & B** | Type A and B |
| | | **A(H1N1)pdm 09** | Type A, Subtype (H1N1)pdm09 |
| | | **A(H3)** | Type A, Subtype H3 |
| | | **A(H3N2)** | Type A, Subtype H3N2 |
| | | **B** | Type B |

**Map 2. Geographic spread for week 13/2013**




* A type/subtype is reported as dominant when at least ten samples have been detected as influenza positive in the country and of those > 40 % are positive for the type/subtype.

Legend:

| | |
|---|---|
| **No report** | Activity level was not reported |
| **No activity** | No evidence of influenza virus activity (clinical activity remains at baseline levels) |
| **Sporadic** | Isolated cases of laboratory confirmed influenza infection |
| **Local outbreak** | Increased influenza activity in local areas (e.g. a city) within a region, or outbreaks in two or more institutions (e.g. schools) within a region (laboratory confirmed) |
| **Regional activity** | Influenza activity above baseline levels in one or more regions with a population comprising less than 50% of the country's total population (laboratory confirmed) |
| **Widespread** | Influenza activity above baseline levels in one or more regions with a population comprising 50% or more of the country's population (laboratory confirmed) |

| | |
|---|---|
| **+** | Increasing clinical activity |
| **-** | Decreasing clinical activity |
| **=** | Stable clinical activity |
| **A** | Type A |
| **A & B** | Type A and B |
| **A(H1N1)pdm 09** | Type A, Subtype (H1N1)pdm09 |
| **A(H3)** | Type A, Subtype H3 |
| **A(H3N2)** | Type A, Subtype H3N2 |
| **B** | Type B |

**Table 1. Epidemiological and virological overview by country, week 13/2013**

| Country | Intensity | Geographic spread | Trend | No. of sentinel specimens | Dominant type | Percentage positive | ILI per 100 000 | ARI per 100 000 | Epidemio-logical overview | Virological overview |
|---|---|---|---|---|---|---|---|---|---|---|
| Austria | Low | Regional | Decreasing | 11 | B | 72.7 | 1046.1 | - | Graphs | Graphs |
| Belgium | Low | Widespread | Decreasing | 26 | B | 46.2 | 89.8 | 1565.1 | Graphs | Graphs |
| Bulgaria | Low | Sporadic | Increasing | 0 | B | 0.0 | - | 860.4 | Graphs | Graphs |
| Cyprus | Low | No activity | Stable | - | - | 0.0 | -* | -* | Graphs | Graphs |
| Czech Republic | Medium | Local | Decreasing | 15 | B | 60.0 | 72.7 | 1022.8 | Graphs | Graphs |
| Denmark | Low | Sporadic | Stable | 0 | B | 0.0 | 51.7 | - | Graphs | Graphs |
| Estonia | Medium | Widespread | Decreasing | 14 | A | 50.0 | 14.9 | 423.6 | Graphs | Graphs |
| Finland | Low | Widespread | Decreasing | 11 | A & B | 45.5 | - | - | Graphs | Graphs |
| France | Low | Local | Decreasing | 55 | A & B | 23.6 | - | 1426.3 | Graphs | Graphs |
| Germany | Medium | Widespread | Decreasing | 110 | B | 56.4 | - | 1186.3 | Graphs | Graphs |
| Greece | Low | Sporadic | Decreasing | 5 | A(H3N2) | 60.0 | 119.4 | - | Graphs | Graphs |
| Hungary | Low | Sporadic | Decreasing | 26 | A & B | 38.5 | 87.6 | - | Graphs | Graphs |
| Iceland | | | | 0 | - | 0.0 | - | - | Graphs | Graphs |
| Ireland | Low | Local | Stable | 10 | A(H3) | 60.0 | 23.8 | - | Graphs | Graphs |
| Italy | Low | Local | Decreasing | 19 | A & B | 26.3 | 207.2 | - | Graphs | Graphs |
| Latvia | Medium | Widespread | Decreasing | 1 | B | 0.0 | 229.9 | 969.1 | Graphs | Graphs |
| Lithuania | Low | Regional | Decreasing | 11 | B | 72.7 | 42.5 | 669.3 | Graphs | Graphs |
| Luxembourg | | | | 8 | - | 12.5 | -* | -* | Graphs | Graphs |
| Malta | Low | Local | Stable | - | - | 0.0 | -* | -* | Graphs | Graphs |
| Netherlands | Medium | Widespread | Stable | 24 | B | 45.8 | 70.5 | - | Graphs | Graphs |
| Norway | Low | Regional | Decreasing | 0 | B | 0.0 | 17.0 | - | Graphs | Graphs |
| Poland | Low | No activity | Decreasing | 29 | None | 17.2 | 257.0 | - | Graphs | Graphs |
| Portugal | Low | Sporadic | Decreasing | 1 | None | 0.0 | 0.0 | - | Graphs | Graphs |
| Romania | | | | 8 | B | 50.0 | - | - | Graphs | Graphs |
| Slovakia | Low | Sporadic | Decreasing | 5 | None | 60.0 | 174.0 | 1514.2 | Graphs | Graphs |
| Slovenia | Medium | Widespread | Decreasing | 23 | B | 65.2 | 25.2 | 1203.3 | Graphs | Graphs |
| Spain | Low | Local | Decreasing | 62 | A(H1N1) pdm09 | 27.4 | 35.3 | - | Graphs | Graphs |
| Sweden | Medium | Regional | Decreasing | 19 | B | 26.3 | 10.7 | - | Graphs | Graphs |
| UK - England | Low | Regional | Decreasing | 41 | A | 12.2 | 7.7 | 288.1 | Graphs | Graphs |
| UK - Northern Ireland | Low | Local | Stable | 11 | A | 63.6 | 37.4 | 489.9 | Graphs | Graphs |
| UK - Scotland | Low | Local | Decreasing | 15 | B | 40.0 | 14.2 | 494.9 | Graphs | Graphs |
| UK - Wales | Low | Sporadic | Decreasing | 2 | A | 0.0 | 9.5 | - | Graphs | Graphs |
| **Europe** | | | | **562** | | **40.4** | | | | Graphs |

**Incidence per 100 000 is not calculated for these countries as no population denominator is provided.*
*Liechtenstein does not report to the European Influenza Surveillance Network.*

# Description of the system

Surveillance is based on nationally organised sentinel networks of physicians, mostly general practitioners (GPs), covering at least 1 to 5% of the population in their countries. All EU/EEA Member States (except Liechtenstein) participate. Depending on their country's choice, each sentinel physician reports the weekly number of patients seen with ILI, ARI, or both to a national focal point. From the national level, both numerator and denominator data are then reported to the European Surveillance System (TESSy) database. Additional semi-quantitative indicators of intensity, geographic spread, and trend of influenza activity at the national level are also reported.

# Virological surveillance

## Weekly analysis – virology

For week 13/2013, 23 countries tested 562 sentinel specimens, of which 227 (40%) were positive for influenza virus, the lowest percentage observed since the peak of 61% in week 5/2013. Since week 5/2013, the number of sentinel specimens tested has decreased by a factor of five, while the proportion of positive specimens has remained substantial. Of the 227 viruses detected, 75 (33%) were type A and 152 (67%) type B (Tables 1–2, Figure 1).

In addition, 1 305 non-sentinel source specimens (e.g. specimens collected for diagnostic purposes in hospitals) were found to be positive for influenza virus, of which 669 (51%) were type A and 636 (49%) type B (Table 2).

Of the 14 619 influenza virus detections in sentinel specimens since week 40/2012, 6 880 (47%) were type A, and 7 739 (53%) were type B viruses. Of 6 113 influenza A viruses subtyped, 3 853 (63%) were A(H1)pdm09 and 2 260 (37%) were A(H3) (Table 2, Figure 2). Of the 2 744 type B viruses ascribed to lineage, 2 486 (91%) were Yamagata and 258 (9%) Victoria (Table 2).

Of the 1 896 antigenic characterisations of influenza A viruses reported for sentinel and non-sentinel specimens since week 40/2012, 1 213 (64%) have been characterised as A/Victoria/361/2011(H3N2)-like. Of the 1 869 antigenic characterisations of influenza B viruses reported, 931 (50%) have been characterised as B/Estonia/55669/2011-like (B/Yamagata/16/88-lineage), and 408 (22%) as B/Wisconsin/1/2010-like (Table 3).

Since week 40/2012, 1 437 genetic characterisations of influenza viruses were reported for sentinel and non-sentinel specimens. Of the 394 A(H1)pdm09 viruses characterised, 295 (75%) belonged to genetic group 6 represented by A/St Petersburg/27/2011. Of the 315 A(H3) viruses characterised, 238 (76%) belonged to the A/Victoria/208/2009 clade, falling within genetic group 3C, represented by A/Victoria/361/2011 (Table 4).

More details on circulating viruses can be found in the February report prepared by the Community Network of Reference Laboratories (CNRL) coordination team. The viruses circulating this season remain well-matched with the vaccine viruses for the 2012–13 season. However, observational studies, such as that done by the I-MOVE consortium, indicate that adjusted vaccine effectiveness is in the range 50–60% (see I-MOVE Report).

A total of 1 028 viruses have been tested for antiviral susceptibility as reported by Denmark, Germany, Greece, the Netherlands, Norway, Portugal, Romania, Spain, Sweden and the UK. Seven A(H1N1)pdm09 viruses tested for neuraminidase inhibitor susceptibility showed the H275Y amino acid substitution associated with highly reduced inhibition by oseltamivir. These specimens were taken from two immunocompromised oseltamivir-treated hospitalised patients in the Netherlands, two hospitalised oseltamivir-treated patients in Germany and one in Denmark, and from two untreated outpatients with no epidemiological link to the UK.

One A(H3N2) virus from Sweden showed the D151N substitution previously associated with reduced inhibition by oseltamivir and zanamivir. No data on immune status or antiviral drug exposure were reported for this patient. One type B virus from an outpatient in the UK not exposed to antivirals showed reduced inhibition by oseltamivir and normal inhibition by zanamivir, associated with the I221T substitution. None of the remaining 447 A(H1N1)pdm09 viruses, 253 A(H3N2) and 307 type B viruses tested for neuraminidase inhibitor susceptibility showed genetic or phenotypic ($IC_{50}$) evidence for (highly) reduced inhibition.

Forty-seven A(H1N1)pdm09 and 39 A(H3N2) viruses screened for M2-blocker susceptibility carried the S31N amino acid substitution in the M2 protein associated with M2-blocker resistance.

For week 13/2013, 16 countries reported 275 respiratory syncytial virus detections, continuing the decline observed since week 52/2012 toward the baseline level (Figure 4).

**Table 2. Weekly and cumulative influenza virus detections by type, subtype and surveillance system, weeks 40/2012–13/2013**

| Virus type/subtype | Current period Sentinel | Current period Non-sentinel | Season Sentinel | Season Non-sentinel |
|---|---|---|---|---|
| Influenza A | 75 | 669 | 6880 | 31937 |
| A(H1)pdm09 | 22 | 114 | 3853 | 11740 |
| A(H3) | 37 | 103 | 2260 | 4509 |
| A(subtype unknown) | 16 | 452 | 767 | 15688 |
| Influenza B | 152 | 636 | 7739 | 18726 |
| B(Vic) lineage | 11 | 4 | 258 | 155 |
| B(Yam) lineage | 73 | 33 | 2486 | 1834 |
| Unknown lineage | 68 | 599 | 4995 | 16737 |
| **Total influenza** | **227** | **1305** | **14619** | **50663** |

*Note: A(H1)pdm09 and A(H3) include both N-subtyped and non-N-subtyped viruses*

**Figure 1. Proportion of sentinel specimens positive for influenza virus, weeks 40/2012–13/2013**

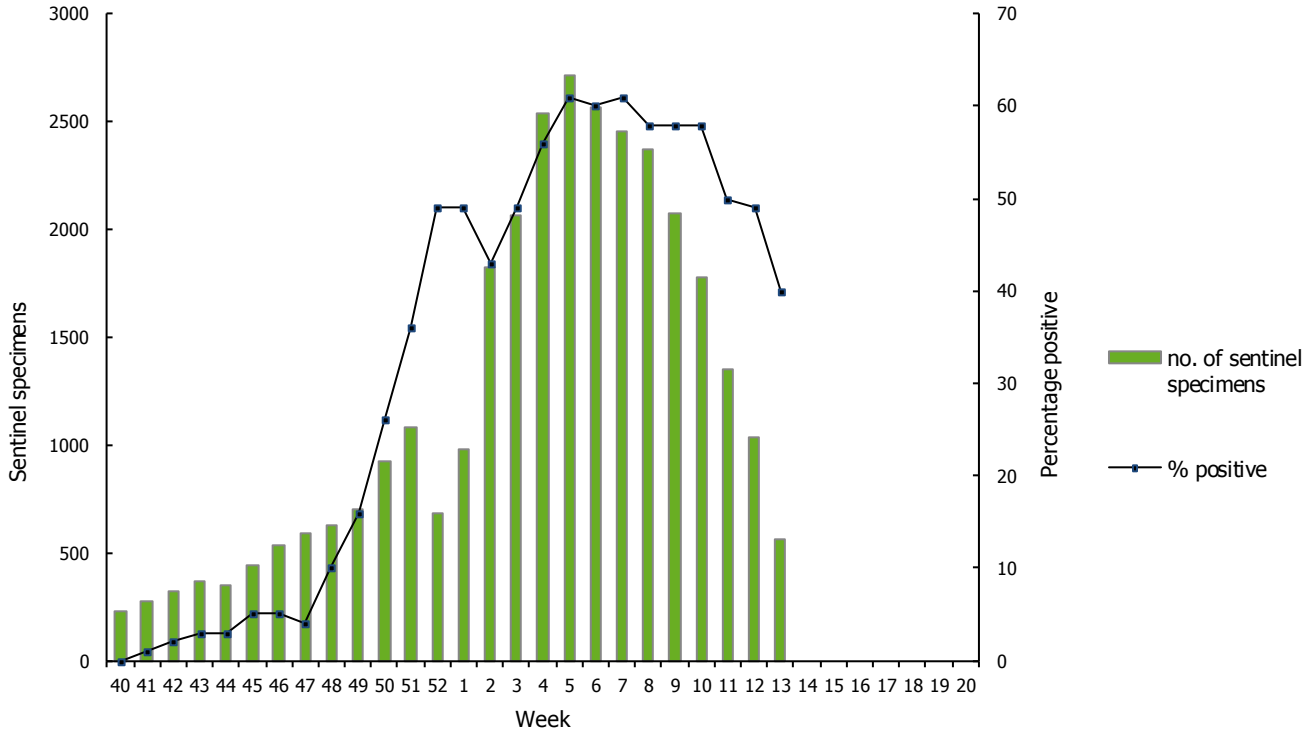


**Figure 2. Number of sentinel specimens positive for influenza virus, by type, subtype and by week of report, weeks 40/2012–13/2013**

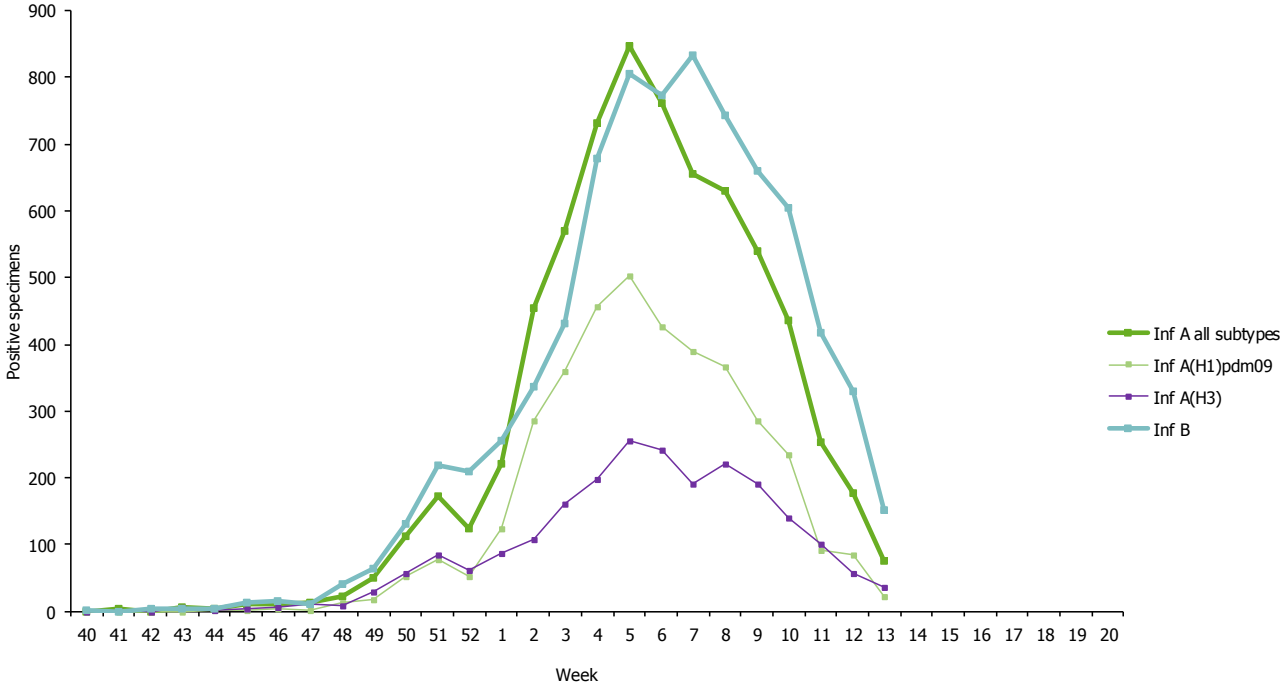



**Figure 3. Number of non-sentinel specimens positive for influenza virus by type, subtype and week of report, weeks 40/2012–13/2013**

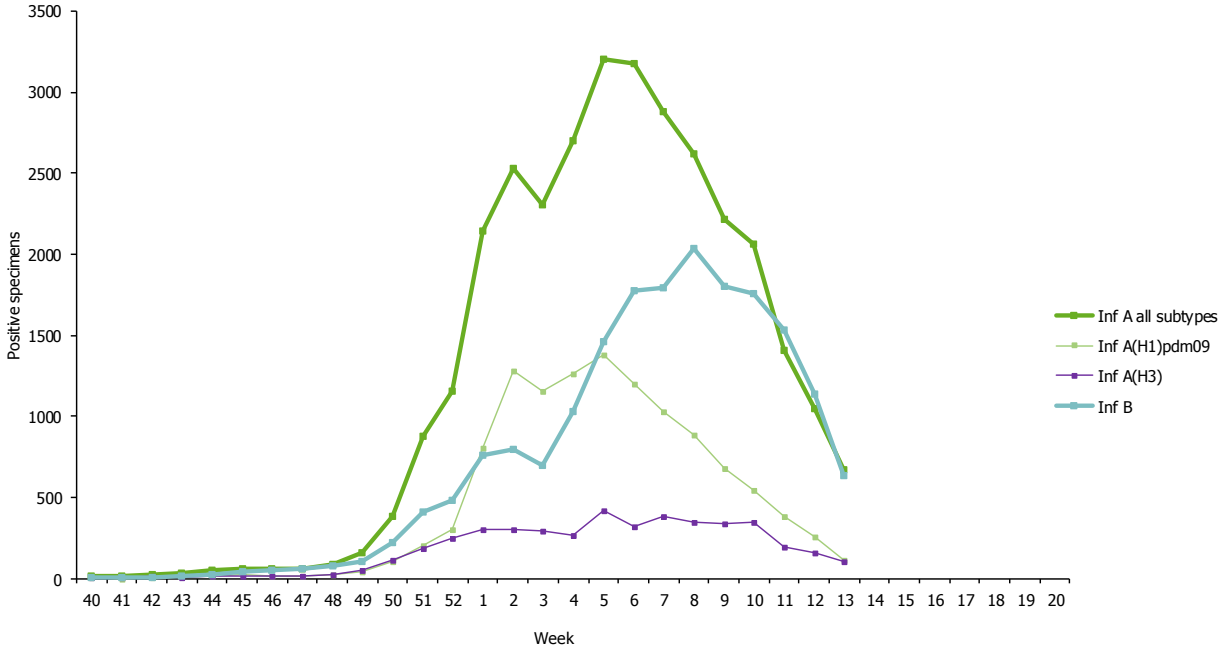


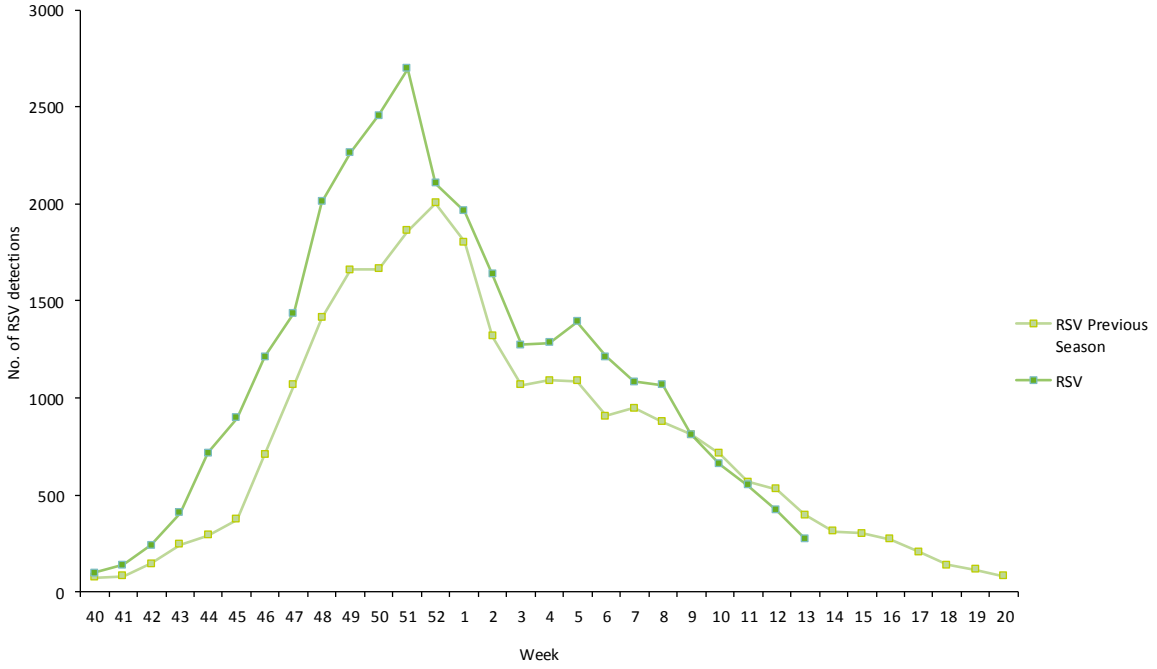
**Table 3. Results of antigenic characterisations of sentinel and non-sentinel influenza virus isolates, weeks 40/2012–13/2013**

| Antigenic group | Number of viruses |
|---|---|
| A(H1)pdm09 A/California/7/2009 (H1N1)-like | 668 |
| A(H1)pdm09 not attributed to category | 9 |
| A(H3) A/Perth/16/2009 (H3N2)-like | 2 |
| A(H3) A/Victoria/361/2011 (H3N2)-like | 1213 |
| A(H3) not attributed to category | 4 |
| B/Brisbane/60/2008-like (B/Victoria/2/87 lineage) | 210 |
| B(Vic) lineage not attributed to category | 4 |
| B/Estonia/55669/2011-like (B/Yamagata/16/88-lineage) | 931 |
| B/Florida/4/2006-like (B/Yamagata/16/88 lineage) | 23 |
| B/Wisconsin/1/2010-like (B/Yamagata/16/88-lineage) | 408 |
| B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) | 250 |
| B(Yam) lineage not attributed to category | 43 |
| **Total** | **3765** |

**Table 4. Results of genetic characterisations of sentinel and non-sentinel influenza virus isolates, weeks 40/2012–13/2013**

| Phylogenetic group | Number of viruses |
|---|---|
| A(H1)pdm09 clade repr. A/California/7/2009 | 13 |
| A(H1)pdm09 group 6 representative A/St Petersburg/27/2011 | 295 |
| A(H1)pdm09 group 7 representative A/St Petersburg/100/2011 | 79 |
| A(H1)pdm09 not attributed to clade/group | 7 |
| A(H3) clade repr. A/Victoria/208/2009 | 56 |
| A(H3) clade repr. A/Victoria/208/2009 – A/Alabama/05/2010 group 5 | 20 |
| A(H3) clade repr. A/Victoria/208/2009 – A/Stockholm/18/2011 group 3A | 1 |
| A(H3) clade repr. A/Victoria/208/2009 – A/Victoria/361/2011 group 3C | 238 |
| B(Vic) lineage - clade representative B/Brisbane/60/2008 | 128 |
| B(Yam) lineage - clade repr. B/Bangladesh/3333/2007 | 271 |
| B(Yam)-lineage clade repr. B/Wisconsin/1/2010 | 125 |
| B(Yam)-lineage clade repr. B/Estonia/55669/2011 | 197 |
| B(Yam)-lineage clade representative B/Brisbane/3/2007 | 7 |
| **Total** | **1437** |

**Figure 4. Respiratory syncytial virus (RSV) detections, sentinel and non-sentinel, weeks 40/2012–13/2013**




# Description of the system

According to the nationally defined sampling strategy, sentinel physicians take nasal or pharyngeal swabs from patients with ILI, ARI or both and send the specimens to influenza-specific reference laboratories for virus detection, (sub-)typing, antigenic or genetic characterisation and antiviral susceptibility testing.

For details of the current virus strains recommended by WHO for vaccine preparation click here.

# Hospital surveillance – severe influenza disease

## Weekly analysis of hospitalised laboratory-confirmed influenza cases

For week 13/2013, 32 hospitalised laboratory-confirmed influenza cases were reported by Belgium, France, Romania, Spain, Sweden and the UK, including one fatality. Twenty-five cases tested positive for influenza A virus and seven for influenza B virus (Table 5).

Of the 2 850 hospitalised laboratory-confirmed influenza cases reported since week 40/2012, 1 677 (59%) were related to influenza type A and 1 173 (41%) to type B. Of 1 027 subtyped influenza viruses, 704 (69%) were A(H1)pdm09 and 323 (31%) A(H3) (Table 5).

Of the 2 850 hospitalised laboratory-confirmed influenza cases reported since week 40/2012, 191 had a fatal outcome (Table 6). Of 126 fatal cases with known vaccination status, 17 (13%) had received the seasonal influenza vaccine.

**Table 5. Number of hospitalised laboratory-confirmed influenza cases and fatalities by influenza type and subtype, week 13/2013 and cumulative for the season**

| Pathogen | Number of cases during current week | Cumulative number of cases since the start of the season | Cumulative number of fatal cases since the start of the season |
|---|---|---|---|
| Influenza A | 25 | 1677 | 128 |
| A(H1)pdm09 | 8 | 707 | 70 |
| A(H3) | 5 | 323 | 16 |
| A(subtyping not performed) | 12 | 647 | 42 |
| Influenza B | 7 | 1173 | 63 |
| **Total** | **32** | **2850** | **191** |

**Table 6. Cumulative number of hospitalised laboratory-confirmed influenza cases, weeks 40/2012–13/2013**

| Country | Number of cases | Incidence of cases per 100 000 population | Number of fatal cases reported | Incidence of fatal cases per 100 000 population | Estimated population covered |
|---|---|---|---|---|---|
| Belgium | 370 | | 10 | | |
| France | 715 | | 117 | | |
| Ireland | 302 | | 2 | | |
| Romania | 102 | 1.75 | 19 | 0.33 | 5813728 |
| Slovakia | 46 | 0.85 | 4 | 0.07 | 5408148 |
| Spain | 396 | | 33 | | |
| Sweden | 109 | | 6 | | |
| United Kingdom | 810 | 1.37 | | | 59255492 |
| **Total** | **2850** | | **191** | | |

# Country comments and specific information concerning hospitalised cases and mortality

This section is compiled from specific comments and published reports available from national websites (if so indicated). They are intended to provide additional information on influenza-associated hospitalisations (including emergency hospital consultations), higher-level care load, and mortality.

**The EUROMOMO mortality monitoring system**

Pooled analysis of week 13/2013 data, based on 12 countries or regions, showed similar excess mortality patterns to the previous weeks, with excess mortality among people aged 65 years and above which started in week 1/2013 and may still be ongoing. Cumulative winter excess mortality among older people (cumulative from week 40/2012 to week 13/2013) showed excess mortality levels comparable to those of the 2011-2012 winter season.

No excess mortality in younger age groups has been detected so far this season.

Excess mortality levels in the most recent weeks are difficult to interpret because the adjustment of delayed registrations may be imprecise. Results of pooled analysis may vary depending on which countries are included in the weekly analysis.

Individual country analysis showed a diverse temporal pattern of all-cause mortality in people aged 65 years and above. While in some countries mortality increased at the end of 2012 (Denmark, Ireland, Sweden, UK (England and Scotland), the increases observed in other countries started in 2013 (Belgium, France, Ireland and the Netherlands). Meanwhile Finland, Germany (Berlin), Greece, Portugal and Spain have had only very moderate or no mortality increases so far (to around 2 z-scores above the baseline).

The diverse mortality pattern may be explained by the pattern of influenza activity this season in Europe, but other factors such as the long and cold winter may also have played a role.

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*This report was written by an editorial team at the European Centre for Disease Prevention and Control (ECDC): Eeva Broberg, Julien Beauté and René Snacken. The bulletin text was reviewed by the Community Network of Reference Laboratories for Human Influenza in Europe (CNRL) coordination team: Adam Meijer, Rod Daniels, John McCauley and Maria Zambon. On behalf of the EISN members, the bulletin text was reviewed by Amparo Larrauri Cámara (Instituto de Salud Carlos III, Spain), Vincent Enouf (Institut Pasteur, France) and Anne Mazick (Statens Serum Institut, Copenhagen). In addition, the report is reviewed by experts of WHO Regional Office for Europe.*