



This report is published weekly on the [PHE website](#). For further information on the surveillance schemes mentioned in this report, please see the [PHE website](#) and the [related links](#) at the end of this document.

| [Summary](#) | [Community surveillance](#) | [GP consultation rates](#) | [Hospitalisations](#) | [All-cause mortality](#) | [Microbiological surveillance](#) | [Vaccination](#) | [International](#) | [Acknowledgements](#) | [Related links](#) |

#### Summary

**During week 01 (ending 07 January 2018), allowing for Christmas reporting breaks, influenza activity continues to increase across all surveillance indicators with notable increases for respiratory outbreaks and influenza confirmed hospitalisations, although there are early signs that influenza swab positivity levels in primary and secondary care are stabilising. Influenza A and B are co-circulating, Respiratory Syncytial Virus (RSV) has reached peak activity and is now decreasing. The Department of Health has issued an [alert](#) on the prescription of antiviral medicines by GPs.**

#### • [Community influenza surveillance](#)

- Two hundred and thirty-three new acute respiratory outbreaks have been reported in the past 7 days. Two hundred and nine outbreaks were from care homes, where 38 tested positive for influenza A(unknown subtype), 32 were positive for influenza B, three were positive for mixed infections (two for influenza B and A(unknown subtype) and another for RSV and influenza B). Twenty outbreaks were from hospitals where six tested positive for influenza A(unknown subtype), four for influenza A(H3), four for influenza B and another for RSV. Three outbreaks were from schools with no test results available. The remaining outbreak was from the Other settings category, and tested positive for influenza A(unknown subtype).

#### • [Overall weekly influenza GP consultation rates across the UK](#)

- Due to bank holidays in week 01 (ending 07 January 2018), GP surgeries were only open for four days – data should therefore be interpreted with caution.
- In week 01, the overall weekly influenza-like illness (ILI) GP consultation rate was 37.3 per 100,000 in England, compared to 21.0 per 100,000 in week 52. This is above the baseline threshold of 13.1 per 100,000 for this season. In the devolved administrations, ILI rates increased further with all countries being above their respective baseline thresholds.
- Through the Syndromic Surveillance systems, GP in hours consultations for influenza like illness (ILI) increased and remain above seasonally expected levels with the highest rates in the 45-64 years age group. There were also further increases in influenza-like illness indicators in emergency department attendances and NHS 111 cold/flu calls.

#### • [Influenza-confirmed hospitalisations](#)

- In week 01, there were 240 new admissions to ICU/HDU with confirmed influenza (16 influenza A(H1N1)pdm09, 18 influenza A(H3N2), 89 influenza A(unknown subtype) and 117 influenza B) reported across the UK (121/144 Trusts in England) through the USISS mandatory ICU scheme with a rate of 0.51 per 100,000 for England, compared to 0.31 in the previous week. This is above the baseline threshold of 0.05 per 100,000 for the 2017/18 season.
- In week 01, there were 758 hospitalised confirmed influenza cases (47 influenza A(H1N1)pdm09, 157 influenza A(H3N2), 135 influenza A(unknown subtype) and 419 influenza B) reported through the USISS sentinel hospital network (all levels of care) (22 NHS Trusts across England), with a rate of 7.38 per 100,000 compared to 4.89 per 100,000 in the previous week. This is above the baseline threshold of 0.56 per 100,000 for the 2017/18 season.
- There were five new influenza admission (one influenza A(H1N1)pdm09, two influenza A(unknown subtype) and two influenza B) reported from the six Severe Respiratory Failure centres in the UK in week 01.

#### • [All-cause mortality data](#)

- In week 50 2017, no statistically significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England. In the devolved administrations, significant excess all-cause mortality was observed in Scotland in week 50 2017, but not in Wales or Northern Ireland.

#### • [Microbiological surveillance](#)

- Fifty-four samples tested positive for influenza (three influenza A(H1N1)pdm09, seven influenza A(H3), 11 influenza A(unknown subtype) and 33 influenza B) through the UK GP sentinel schemes, with an overall positivity of 47.0% compared to 52.6% in week 52.
- One thousand positive detections were recorded through the DataMart scheme (340 influenza A(H3), 92 influenza A(unknown subtype), 42 influenza A(H1N1)pdm09 and 526 influenza B) with a positivity of 28.6% in week 01 compared to 28.8% in week 52, which is above the baseline threshold of 8.6%. RSV activity continued to decrease at 6.9% in week 01.

#### • [Vaccination](#)

- Up to week 01 2018, in 96.7% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2017/18 influenza vaccine in targeted groups was: 46.9% in under 65 years in a clinical risk group, 45.5% in pregnant women and 71.3% in 65+ year olds. In 96.7% of GP practices reporting weekly to Immform, the provisional proportion of children in England who had received the 2017/18 influenza vaccine in targeted groups was: 40.8% in 2 year olds and 42.0% in 3 year olds.
- Provisional data from the second monthly collection of influenza vaccine uptake by frontline healthcare workers show 59.3% were vaccinated by 30 November 2017, compared to 55.6% vaccinated in the previous season by 30 November 2016.
- Provisional data from the second monthly collection of influenza vaccine uptake for children of school years Reception, 1, 2, 3 and 4 age show the provisional proportion of children in England who received the 2017/18 influenza vaccine via school, pharmacy or GP practice by 30 November 2017 in targeted groups was as follows: 50.0% in children of school year Reception age (4-5 years); 48.9% in children of school Year 1 age (5-6 years); 48.3% in children of school Year 2 age (6-7 years); 45.7% in children of school Year 3 age (7-8 years) and 44.4% in children of school Year 4 age (8-9 years).
- Provisional data from the second monthly collection of influenza vaccine uptake in GP patients up to 30 November is available. The report provides uptake at national, Local Team (LT), Area Team (AT), Clinical Commissioning Group (CCG) and at Local Authority (LA) levels.

#### • [International situation](#)

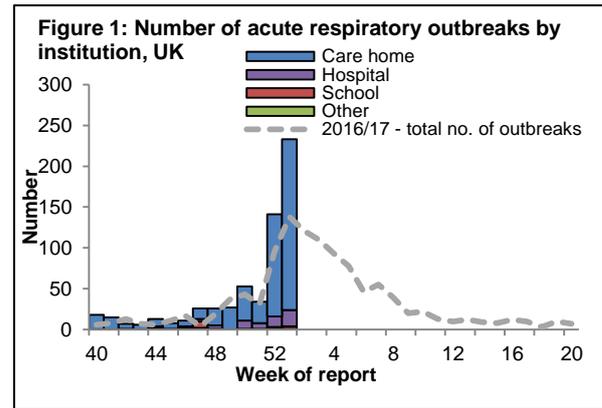
- Globally, influenza activity increased in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere decreased at inter-seasonal levels. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections.

**Two hundred and thirty-three new acute respiratory outbreaks were reported in the past 7 days.**

- Acute respiratory disease outbreaks

- Two hundred and thirty-three new acute respiratory outbreaks have been reported in the past 7 days. Two hundred and nine outbreaks were from care homes, where 38 tested positive for influenza A(unknown subtype), 38 were positive for influenza B, three were positive for mixed infections (two for influenza B and A(unknown subtype) and another for RSV and influenza B), three were positive for human metapneumovirus (hMPV), two were positive for seasonal coronavirus, two were positive for RSV, one was positive for parainfluenza and another for rhinovirus. Twenty outbreaks were from hospitals where six tested positive for influenza A(unknown subtype), four for influenza A(H3), four for influenza B and another for RSV. Three outbreaks were from schools with no test results available. The remaining outbreak was from the Other settings category, and tested positive for influenza A(unknown subtype).

-Outbreaks should be recorded on HPZone and reported to the local Health Protection Teams and [respcidsc@phe.gov.uk](mailto:respcidsc@phe.gov.uk)



- Medical Officers of Schools Association (MOSA) & PHE surveillance scheme

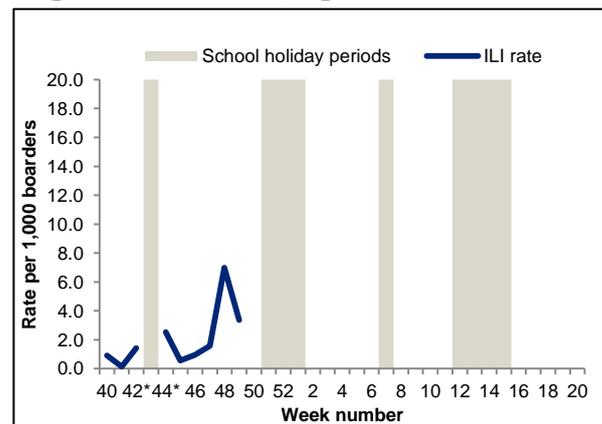
- Boarding schools in England within the MOSA network are recruited each season to report various respiratory related illnesses including influenza like illnesses (ILI). For the 2017/18 season, 21 MOSA schools have agreed to participate in the scheme, including a total of 7,575 boarders.

- The overall ILI rate (all boarders) for week 49 was 3.4 per 1,000 boarders compared to 7.0 per 1,000 boarders in the previous week.

-Since week 40, 12 outbreaks have been reported from three MOSA schools, with a total of 95 ILI cases identified. Out of the 12 outbreaks, one tested positive for influenza B and another was negative for influenza.

- If you are a MOSA school and would like to participate in this scheme, please email [mosa@phe.gov.uk](mailto:mosa@phe.gov.uk) for more information.

**Figure 2: MOSA ILI rates, England**



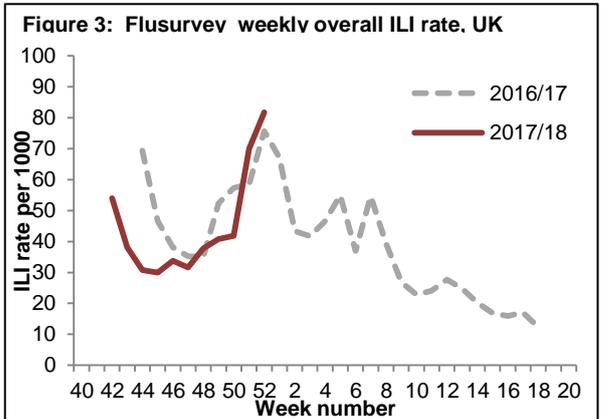
\*represents weeks where not all schools will be reporting due to varying school holiday periods.

- FluSurvey

- Internet-based surveillance of influenza-like illness in the general population is undertaken through the FluSurvey. A project run jointly by PHE and the London School of Hygiene and Tropical Medicine.

- The overall ILI rate (all age groups) for week 52 was 81.7 per 1,000 (153/1,872 people reported at least 1 ILI) (Figure 3) compared to 70.0 per 1,000 in week 51, with the highest rate seen in the 20-44 year olds (130.8 per 1,000).

- If you would like to become a participant of the FluSurvey project please do so by visiting the <https://flusurvey.org.uk/en/accounts/register/> website for more information.



In week 01, allowing for Christmas reporting breaks, the overall weekly influenza-like illness (ILI) GP consultation rate has increased further and continues to be above the baseline threshold in England. In the devolved administrations, ILI rates increased further with all countries being above their respective baseline thresholds.

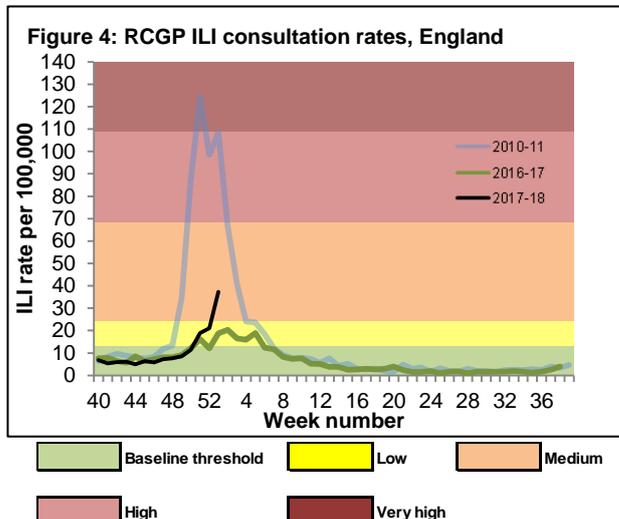
- GP ILI consultations in the UK

**RCGP (England)**

- The weekly ILI consultation rate through the RCGP surveillance is at 37.3 per 100,000 in week 01 compared to 21.0 per 100,000 in week 52. This is above the baseline threshold (13.1 per 100,000) and above the medium activity threshold (Figure 3\*). By age group, the highest rates were seen in 45-64 year olds (54.9 per 100,000) and 65-74 year olds (38.2 per 100,000).

- Due to bank holidays in week 01 (ending 07 January 2018), GP surgeries were only open for four days – data should therefore be interpreted with caution.

\*The Moving Epidemic Method (MEM) has been adopted by the European Centre for Disease Prevention and Control to calculate thresholds for GP ILI consultations for the start of influenza activity (based on 10 seasons excluding 2009/10) in a standardised approach across Europe. For MEM intensity threshold values, please visit: <https://www.gov.uk/guidance/sources-of-uk-flu-data-influenza-surveillance-in-the-uk#clinical-surveillance-through-primary-care>



**UK**

- In week 01, overall weekly ILI consultation rates across the countries of the UK have increased further and were above their respective medium activity thresholds in all countries (Table 1).

- By age group, the highest rates were seen in the 45-64 year olds in Northern Ireland and Wales (74.8 per 100,000 and 53.2 per 100,000 respectively) and in the 75+ year olds in Scotland (212.2 per 100,000).

**Table 1: GP ILI consultations in the UK for all ages with MEM thresholds applied\***

| GP ILI consultation rates (all ages) | Week number |     |     |     |     |     |     |     |     |      |      |      |      |       |   |   |   |
|--------------------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|-------|---|---|---|
|                                      | 40          | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | 49   | 50   | 51   | 52   | 1     | 2 | 3 | 4 |
| England (RCGP)                       | 6.8         | 5.4 | 5.9 | 6.1 | 5.0 | 6.4 | 5.9 | 7.3 | 7.6 | 8.5  | 11.4 | 18.9 | 21.0 | 37.3  |   |   |   |
| Wales                                | 5.7         | 6.5 | 6.6 | 5.4 | 5.0 | 5.4 | 6.2 | 6.4 | 5.9 | 6.4  | 8.7  | 13.2 | 16.7 | 38.9  |   |   |   |
| Scotland                             | 5.0         | 7.3 | 4.2 | 7.5 | 6.0 | 5.2 | 4.2 | 5.4 | 9.3 | 15.1 | 32.5 | 41.0 | 46.3 | 107.2 |   |   |   |
| Northern Ireland                     | 3.4         | 3.9 | 3.7 | 3.3 | 4.0 | 3.6 | 4.5 | 5.3 | 4.0 | 8.2  | 10.1 | 20.7 | 22.7 | 52.6  |   |   |   |

\*The Moving Epidemic Method (MEM) has been adopted by the European Centre for Disease Prevention and Control to calculate thresholds for GP ILI consultations for the start of influenza activity (based on 10 seasons excluding 2009/10), in a standardised approach across Europe. For MEM threshold values for each country, please visit: <https://www.gov.uk/guidance/sources-of-uk-flu-data-influenza-surveillance-in-the-uk#clinical-surveillance-through-primary-care>

**GP In Hours Syndromic Surveillance System (England)**

-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system is at 34.9 per 100,000 in week 01 (Figure 5).

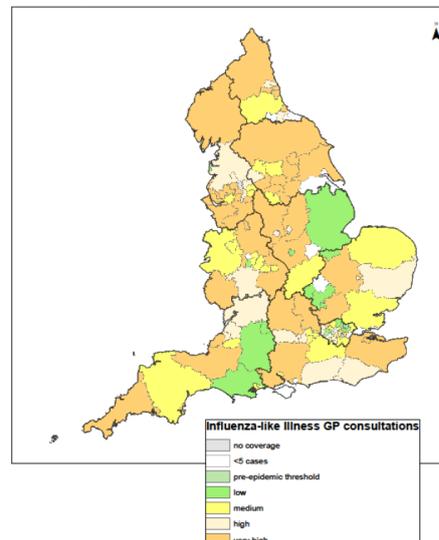
During week 01, GP consultations for influenza-like illnesses increased and remain above seasonally expected levels with the highest rates in the 45-64 years age group. There were also further increases in influenza-like illness indicators in emergency department attendances and NHS 111 cold/flu calls.

Figure 5 represents a map of GP ILI consultation rates in week 01 across England by upper tier Local Authorities (utLA), with influenza-like illness surveillance MEM thresholds applied.

ILI consultation rates presented for each utLA on the map should be interpreted in context of regional and national ILI activity; as MEM thresholds are calculated (based on previous influenza seasons from 2012/13 onwards) separately for each of the nine PHE centres and utLA rates are then compared to Centre-level thresholds only, therefore utLAs with higher background rates than the Centre may appear to have higher ILI activity.

-For further information, please see the syndromic surveillance [webpage](#).

**Figure 5: Map of GP ILI consultation rates in week 01**



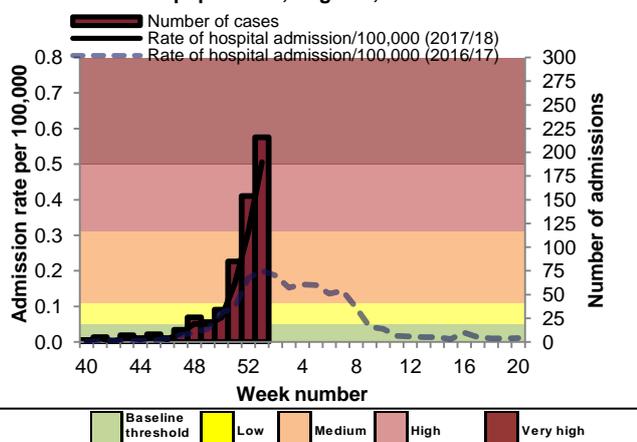
In week 01, there were 240 new admissions to ICU/HDU with confirmed influenza: (16 influenza A(H1N1)pdm09, 18 influenza A(H3N2), 89 influenza A(unknown subtype) and 117 influenza B) reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (121 Trusts in England). There were 758 hospitalised confirmed influenza cases (47 influenza A(H1N1)pdm09, 157 influenza A(H3N2), 135 influenza A(unknown subtype) and 419 influenza B) reported through the USISS sentinel hospital network across England (22 Trusts).

- Number of new admissions and fatal confirmed influenza cases in ICU/HDU (USISS mandatory ICU scheme), UK (week 01)

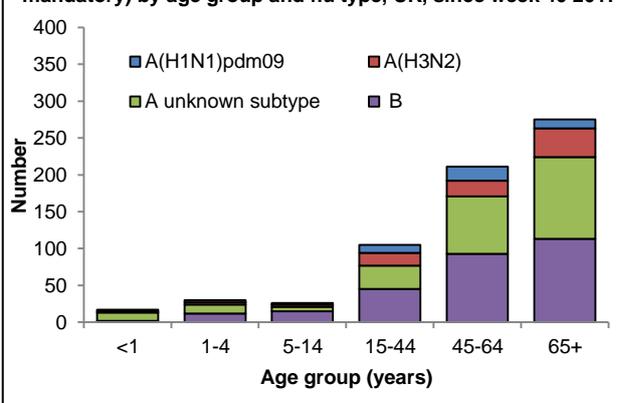
- In week 01, there were 240 new admissions to ICU/HDU with confirmed influenza (16 influenza A(H1N1)pdm09, 18 influenza A(H3N2), 89 influenza A(unknown subtype) and 117 influenza B) reported across the UK (121/144 Trusts in England) through the USISS mandatory ICU scheme, with a rate of 0.51 per 100,000 for England data (Figures 6 and 7), this is above the very high impact threshold of 0.50 per 100,000. A total of 27 deaths were reported to have occurred in week 01 in the UK.

A total of 664 new ICU admissions (49 influenza A(H1N1)pdm09, 85 influenza A(H3N2), 250 influenza A(unknown subtype) and 280 influenza B) and 85 confirmed deaths have been reported in the UK since week 40 2017.

**Figure 6: Weekly ICU/HDU influenza admission rate per 100,000 trust catchment population, England, since week 40 2017**



**Figure 7: Cumulative ICU influenza admissions (USISS mandatory) by age group and flu type, UK, since week 40 2017**



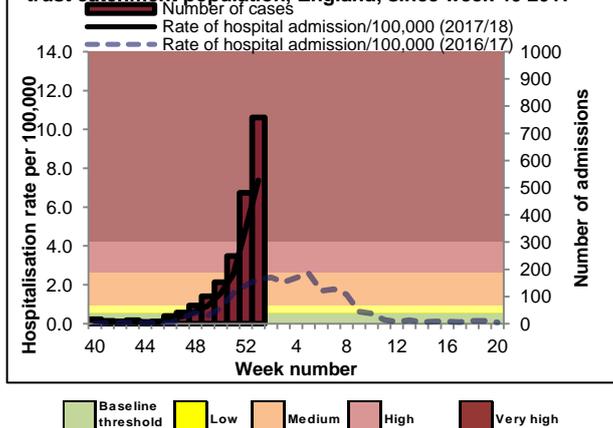
\*The Moving Epidemic Method (MEM) has been adopted by the European Centre for Disease Prevention and Control to calculate thresholds for ICU/HDU admission rates for the start of influenza activity (based on 6 seasons) in a standardised approach across Europe. For MEM threshold values, please visit: <https://www.gov.uk/guidance/sources-of-uk-flu-data-influenza-surveillance-in-the-uk#disease-severity-and-mortality-data>

- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 01)

- In week 01, there were 758 hospitalised confirmed influenza cases (47 influenza A(H1N1)pdm09, 157 influenza A(H3N2), 135 influenza A(unknown subtype) and 419 influenza B) reported through the USISS sentinel hospital network from 22 NHS Trusts across England (Figure 8), a provisional rate of 7.38 per 100,000 in England compared to 4.89 per 100,000 in the previous week and above the very high impact threshold of 4.20 per 100,000.

- A total of 1,938 hospitalised confirmed influenza admissions (199 influenza A(H1N1)pdm09, 432 influenza A(H3N2), 448 influenza A(unknown subtype) and 859 influenza B) have been reported since week 40 2017 via the sentinel scheme.

**Figure 8: Weekly hospitalised influenza case rate per 100,000 trust catchment population, England, since week 40 2017**



\*The Moving Epidemic Method (MEM) has been adopted by the European Centre for Disease Prevention and Control to calculate thresholds for hospital admission rates for the start of influenza activity (based on 6 seasons) in a standardised approach across Europe. For MEM threshold values, please visit: <https://www.gov.uk/guidance/sources-of-uk-flu-data-influenza-surveillance-in-the-uk#disease-severity-and-mortality-data>

- USISS Severe Respiratory Failure Centre confirmed influenza admissions, UK (week 01)

- In week 01, there were five new influenza admission (one influenza A(H1N1)pdm09, two influenza A(unknown subtype) and two influenza B) reported from the six Severe Respiratory Failure (SRF) centres in the UK. Since week 40, a total of nine laboratory confirmed influenza admissions (one influenza A(H1N1)pdm09, four influenza A(unknown subtype) and four influenza B) were reported from the SRFs for the season to date.

In week 50 2017 in England, no statistically significant excess all-cause mortality by week of death was observed through the EuroMOMO algorithm in England. In the devolved administrations, significant excess all-cause mortality was observed in Scotland in week 50 2017, but not in Wales or Northern Ireland.

- All-cause death registrations, England and Wales

- In week 49 2017, an estimated 10,781 all-cause deaths were registered in England and Wales (source: [Office for National Statistics](#)). This is a slight decrease compared to the 10,538 estimated death registrations in week 48 2017.

- Excess all-cause mortality by age group, England, Wales, Scotland and Northern Ireland

- In week 50 2017 in England, no excess mortality by week of death above the upper 2 z-score threshold was seen overall, by age group or subnationally, after correcting ONS disaggregate data for reporting delay with the standardised EuroMOMO algorithm (Figure 9). This data is provisional due to the time delay in registration; numbers may vary from week to week.

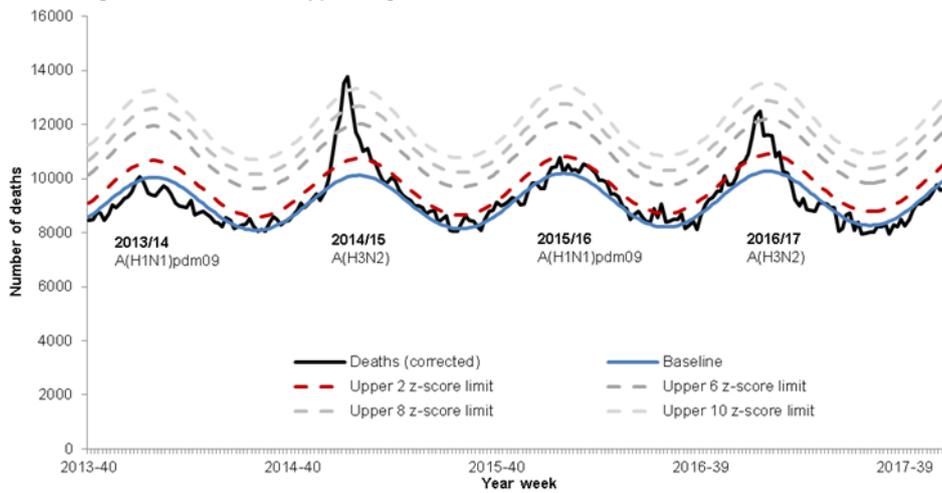
- In the devolved administrations, significant excess mortality above the threshold was observed Scotland in week 50, but not in Wales and Northern Ireland (Table 2).

**Table 2: Excess mortality by UK country, for all ages\***

| Country          | Excess detected in week 50 2017? | Weeks with excess in 2017/18 |
|------------------|----------------------------------|------------------------------|
| England          | ×                                | NA                           |
| Wales            | ×                                | NA                           |
| Scotland         | ✓                                | 41,49,50                     |
| Northern Ireland | ×                                | NA                           |

\* Excess mortality is calculated as the observed minus the expected number of deaths in weeks above threshold

**Figure 9: Weekly observed and expected number of all-age all-cause deaths, with the dominant circulating strain influenza A type, England, 2013 to 2017**

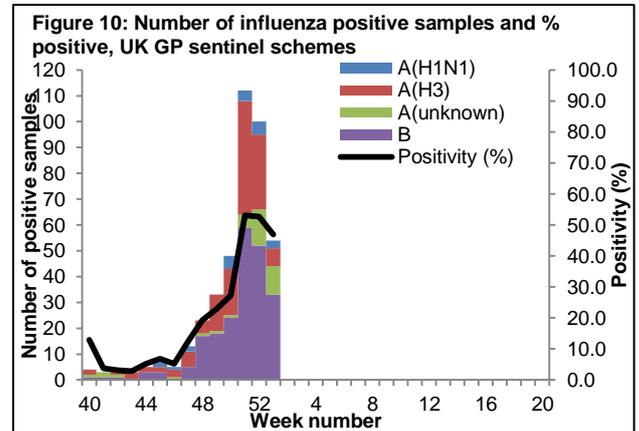


In week 01 2018, 54 samples tested positive for influenza (three influenza A(H1N1)pdm09, seven influenza A(H3), 11 influenza A(unknown subtype) and 33 influenza B) with an overall positivity of 47.0% compared to 52.6% in week 52. One thousand positive detections were recorded through the DataMart scheme (340 influenza A(H3), 92 influenza A(unknown subtype), 42 influenza A(H1N1)pdm09 and 526 influenza B) with a positivity of 28.6% in week 01 compared to 28.8% in week 52, which is above the baseline threshold of 8.6%. RSV activity continued to decrease at 6.9% in week 01.

- Sentinel swabbing schemes in England (RCGP) and the Devolved Administrations

-In week 01, 54 samples tested positive for influenza (three influenza A(H1N1)pdm09, seven influenza A(H3), 11 influenza A(unknown subtype) and 33 influenza B) with an overall positivity of 47.0% compared to 52.6% in week 52 through the UK GP sentinel swabbing schemes (Figure 10).

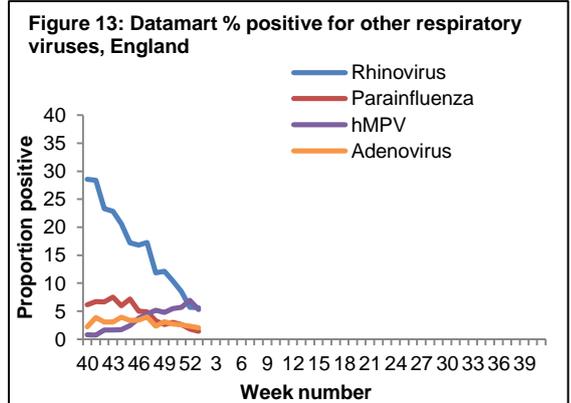
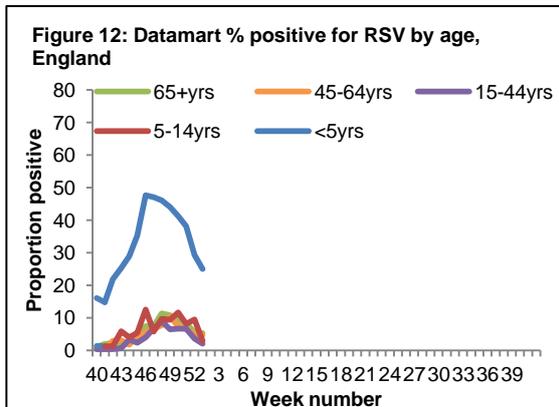
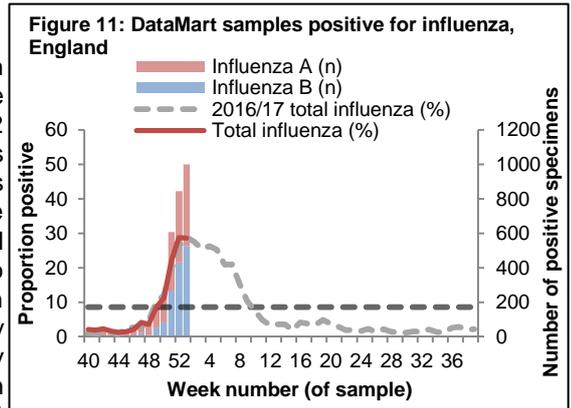
Since week 40, a total of 413 samples (136 influenza A(H3), 38 influenza (unknown subtype), 22 influenza A(H1N1)pdm09 and 217 influenza B) tested positive for influenza through this scheme.



NB. Positivity (%) omitted when fewer than 10 specimens were tested

- Respiratory DataMart System (England)

In week 01 2018, out of the 3,497 respiratory specimens reported through the Respiratory DataMart System, 1,000 samples (28.6%) were positive for influenza (340 influenza A(H3), 92 influenza A(unknown subtype), 42 influenza A(H1N1)pdm09 and 526 influenza B) (Figure 11), which is above the MEM baseline threshold for this season of 8.6%. This compares to 28.8% in week 52. The highest positivity for influenza by age group was seen in the 65+ year olds at 33.1% in week 01. The overall positivity for RSV continued to decrease at 6.9% in week 01 compared to 9.3% in week 52. The highest positivity for RSV by age group was seen in the <5 year olds at 25.0% in week 01 (Figure 12). Rhinovirus positivity remained low at 5.6% in week 01. Adenovirus and parainfluenza positivity remained low at 2.0% and 1.4% respectively in week 01. Human metapneumovirus (hMPV) positivity decreased slightly in week 01, at 5.3% (Figure 13).



\*The Moving Epidemic Method has been adopted by the European Centre for Disease Prevention and Control to calculate thresholds for GP ILI consultations for the start of influenza activity in a standardised approach across Europe. The threshold to indicate a likelihood of influenza community circulation for Datamart % positive as calculated through the Moving Epidemic Method is 8.6% in 2017/18.

- Virus characterisation

PHE characterises the properties of influenza viruses through one or more tests, including [genome sequencing](#) (genetic analysis) and [haemagglutination inhibition \(HI\)](#) assays (antigenic analysis). These data are used to compare how similar the currently circulating influenza viruses are to the strains included in seasonal influenza vaccines, and to monitor for changes in circulating influenza viruses. The interpretation of genetic and antigenic data sources is complex due to a number of factors, for example, not all viruses can be cultivated in sufficient quantity for antigenic characterisation, so that viruses with sequence information may not be able to be antigenically characterised as well. Occasionally, this can lead to a biased view of the properties of circulating viruses, as the viruses which can be recovered and analysed antigenically, may not be fully representative of majority variants, and genetic characterisation data does not always predict the antigenic characterisation

The PHE Respiratory Virus Unit (RVU) has characterised 180 influenza viruses detected since week 37 (Table 3). Sixty-seven influenza B viruses have been analysed; 63 were characterised as belonging to the B/Yamagata/16/88-lineage and 4 belonging to the B/Victoria/2/1987-lineage. All characterised B/Yamagata/16/88-lineage viruses to date are antigenically similar to B/Phuket/3073/2013, the influenza B/Yamagata-lineage component of the 2017/18 Northern Hemisphere quadrivalent vaccine. Three of the B/Victoria/2/87-lineage viruses are antigenically similar to B/Brisbane/60/2008, the influenza B/Victoria-lineage component of 2017/18 Northern Hemisphere trivalent and quadrivalent vaccines. A single influenza B virus has been characterised where sequencing of the haemagglutinin (HA) gene shows this virus belongs within genetic clade 1A of the B/Victoria lineage, in a subgroup characterised by deletion of two amino acids in the HA. These double deletion subgroup viruses are antigenically distinct from the 2017/18 N.hemisphere B/Victoria lineage vaccine component, with similar viruses having been identified in a minority of influenza B/Victoria lineage viruses in the 2016/17 season in the US and Norway, and since detected in low proportions in other countries, including in Europe.

Genetic characterisation of 63 A(H3N2) influenza viruses detected since late summer, showed that the majority belong to genetic subclade 3C.2a, with 36 belonging to a cluster within this genetic subclade designated as 3C.2a1. One virus belonging to the genetic subclade 3C.3a was detected. The Northern Hemisphere 2017/18 influenza A(H3N2) vaccine strain A/HongKong/4801/2014 belongs in genetic subclade 3C.2a. Of the 50 A(H1N1)pdm09 influenza viruses that have been characterised, all belong in the genetic subgroup 6B.1, which was the predominant genetic subgroup in the 2016/17 season and to date during the current season. The 28 viruses antigenically analysed are similar to the A/Michigan/45/2015 Northern Hemisphere 2017/18 (H1N1)pdm09 vaccine strain.

**Table 3: Viruses characterised by PHE Reference Laboratory, 2017/18**

| Virus              | No. viruses characterised |              |                |       |
|--------------------|---------------------------|--------------|----------------|-------|
|                    | Genetic and antigenic     | Genetic only | Antigenic only | Total |
| A(H1N1)pdm09       | 13                        | 22           | 15             | 50    |
| A(H3N2)            | 0                         | 63           | 0              | 63    |
| B/Yamagata-lineage | 10                        | 48           | 5              | 63    |
| B/Victoria-lineage | 4                         | 0            | 0              | 4     |

- Antiviral susceptibility

Influenza positive samples are screened for mutations in the virus neuraminidase gene known to confer oseltamivir and/or zanamivir resistance. Additionally, testing of influenza A (H1N1)pdm09, A(H3N2), and influenza B virus isolates for neuraminidase inhibitor susceptibility (oseltamivir and zanamivir) is performed at PHE-RVU using a functional assay. The data summarized below combine the results of both testing methods. The samples tested are routinely obtained for surveillance purposes, but diagnostic testing of patients suspected to be infected with neuraminidase inhibitor-resistant virus is also performed.

During the current 2017/18 season so far, 38 influenza A(H3N2) have been tested for oseltamivir susceptibility; 35 are susceptible. Two viruses have a deletion in the neuraminidase gene, at amino acids 245 to 248. This deletion reduces susceptibility to oseltamivir, but is not likely to reduce zanamivir susceptibility. One of these two oseltamivir resistant viruses has a E119V amino acid substitution in addition, also affecting oseltamivir susceptibility but not zanamivir. A third virus has a R292K amino acid change, which causes resistance to oseltamivir and reduced susceptibility to zanamivir. Of 33 A(H3N2) viruses with zanamivir susceptibility testing data, 32 are susceptible and one (R292K mutant) has reduced susceptibility. One hundred influenza A(H1N1)pdm09 virus have been tested for oseltamivir susceptibility and all were fully susceptible. Twenty-three of the 100 influenza A(H1N1)pdm09 virus were also tested for zanamivir susceptibility and were fully susceptible. Seventeen influenza B viruses have been tested for both oseltamivir and were all fully susceptible. Fifteen out of the 17 influenza B viruses have also been tested for zanamivir susceptibility and were all fully susceptible.

- Antimicrobial susceptibility

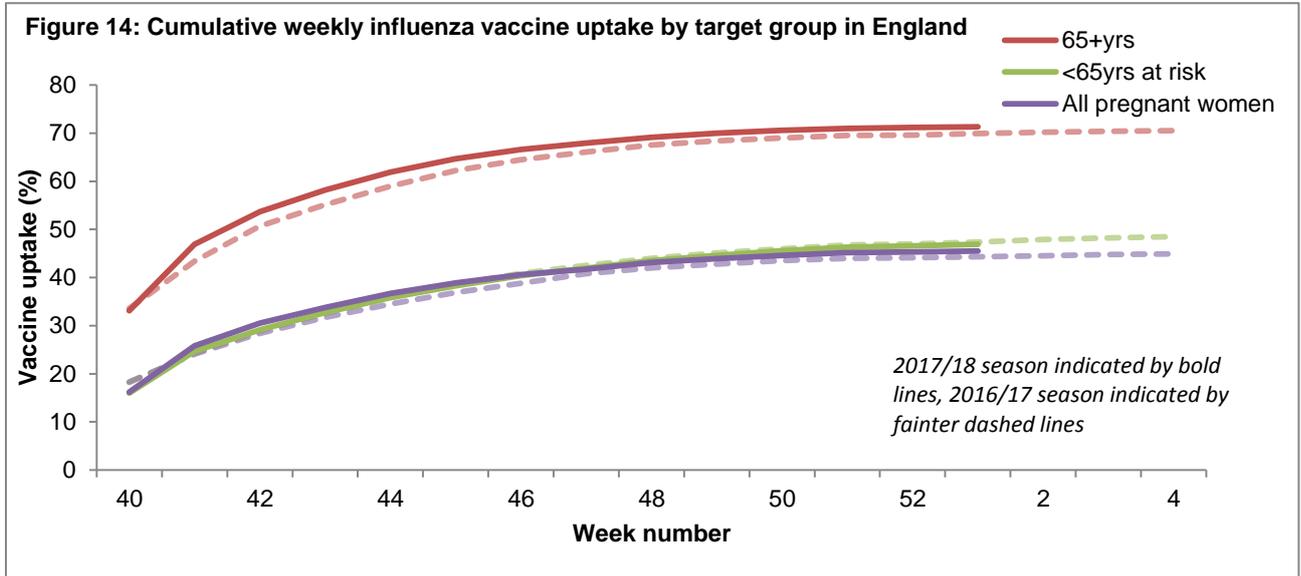
-Table 4 shows in the 12 weeks up to 07 January 2018, the proportion of all lower respiratory tract isolates of *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, MRSA and MSSA tested and susceptible to antibiotics. These organisms are the key causes of community acquired pneumonia (CAP) and the choice of antibiotics reflects the British Thoracic Society empirical guidelines for management of CAP in adults.

**Table 4: Antimicrobial susceptibility surveillance in lower respiratory tract isolates, 12 weeks up to 07 January 2018, E&W**

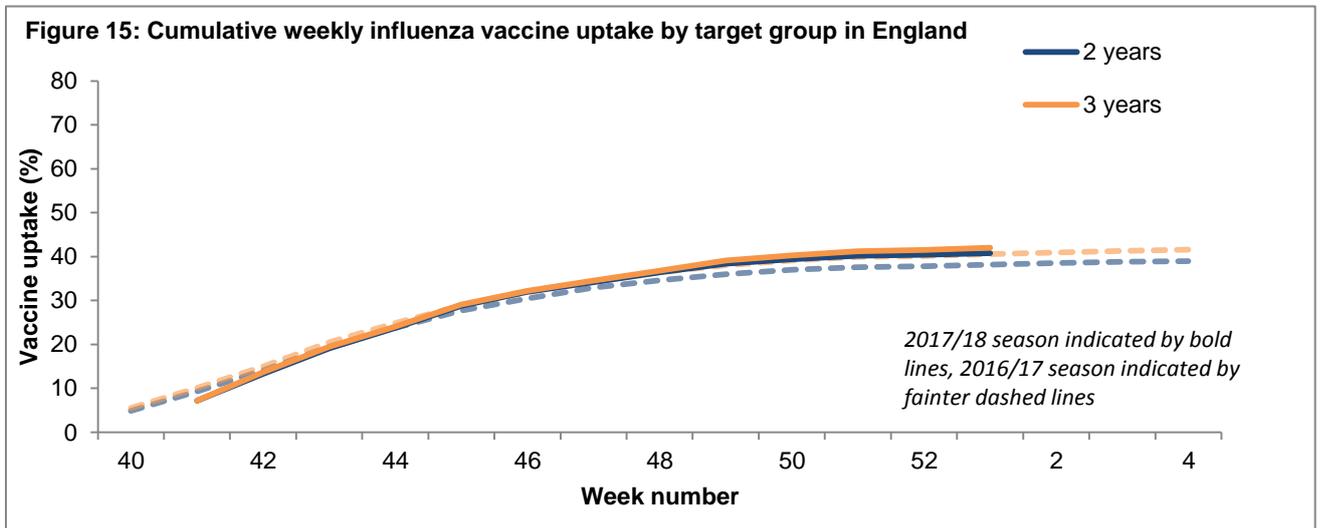
| Organism             | Antibiotic             | Specimens tested (N) | Specimens susceptible (%) |
|----------------------|------------------------|----------------------|---------------------------|
| <i>S. pneumoniae</i> | Penicillin             | 4054                 | 90                        |
|                      | Macrolides             | 4453                 | 83                        |
|                      | Tetracycline           | 4364                 | 86                        |
| <i>H. influenzae</i> | Amoxicillin/ampicillin | 15499                | 68                        |
|                      | Co-amoxiclav           | 16465                | 85                        |
|                      | Macrolides             | 6986                 | 3                         |
|                      | Tetracycline           | 16618                | 98                        |
| <i>S. aureus</i>     | Methicillin            | 6677                 | 92                        |
|                      | Macrolides             | 7359                 | 67                        |
| MRSA                 | Clindamycin            | 362                  | 44                        |
|                      | Tetracycline           | 491                  | 81                        |
| MSSA                 | Clindamycin            | 3973                 | 77                        |
|                      | Tetracycline           | 5685                 | 93                        |

\*Macrolides = erythromycin, azithromycin and clarithromycin

- Up to week 01 2018 in 96.7% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2017/18 influenza vaccine in targeted groups was as follows (Figure 14):
  - 46.9% in under 65 years in a clinical risk group
  - 45.5% in pregnant women
  - 71.3% in 65+ year olds



- In 2017/18, all two- and three-year-olds continue to be eligible for flu vaccination, through their GPs. Up to week 01 2018 in 96.7% of GP practices reporting weekly to Immform, the provisional proportion of children in England who had received the 2017/18 influenza vaccine in targeted groups was as follows (Figure 15):
  - 40.8% in 2 year olds
  - 42.0% in 3 year olds



- Provisional data from the second monthly collection of influenza vaccine uptake by frontline healthcare workers show 59.3% were vaccinated by 30 November 2017 from 98.8% of all organisations, compared to 55.6% vaccinated in the previous season by 30 November 2016. The [report](#) provides uptake at national, NHS local team, “old” area teams and Trust-level.

- Provisional data from the second [monthly](#) collection of influenza vaccine uptake for children of school years Reception, 1,2, 3 and 4 age (from a sample of 100.0% of all Local Authorities in England) show the provisional proportion of children in England who received the 2017/18 influenza vaccine via school, pharmacy or GP practice by 30 November 2017 in targeted groups was as follows:
  - 50.0% in children school year Reception age (4-5 yrs)
  - 48.9% in children school year 1 age (5-6 yrs)
  - 48.3% in children school year 2 age (6-7 yrs)
  - 45.7% in children school year 3 age (7-8 yrs)
  - 44.4% in children school year 4 age (8-9 yrs)
- Provisional data from the second [monthly](#) collection of influenza vaccine uptake in GP patients up to 30 November 2017 show that in 96.9% of all GP practices in England responding to the main GP survey, the proportion of people in England who received the 2017/18 influenza vaccine was as follows:
  - 43.3% in under 65 year olds in a clinical risk group
  - 42.9% in pregnant women
  - 69.1% in 65+ year olds
- Provisional data from the second [monthly](#) collection of influenza vaccine uptake in GP patients up to 30 November 2017 show that in 96.6% of all GP practices in England responding to the child GP survey, the proportion of people in England who received the 2017/18 influenza vaccine was as follows:
  - 36.3% in 2 year olds
  - 36.9% in 3 year olds

## International Situation

[Back to top](#)

**Influenza activity increased in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere decreased at inter-seasonal levels. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections.**

- [Europe](#) updated on 05 January 2018 (Joint ECDC-WHO Europe Influenza weekly update)

In week 52/2017, while low intensity of influenza activity was reported by 28 of the 38 countries reporting on this indicator, medium intensity of influenza activity was reported by 10 countries (France, Ireland, Italy, Montenegro, the Netherlands, Norway, Spain, Switzerland, Turkey and the United Kingdom (England)).

No geographic spread of influenza was reported by 7 of the 38 countries reporting on this indicator; 14 countries reported sporadic cases, 1 reported local geographic spread, 7 countries reported regional spread, and 9 countries (Croatia, France, Ireland, Norway, Portugal, Spain, Sweden, Switzerland and Turkey) reported widespread activity.

For week 52/2017, 594 (43.6%) of 1,364 sentinel specimens tested positive for influenza viruses. Of these, 36% were type A and 64% were type B. Out of 154 subtyped A viruses, 71% were influenza A(H1N1)pdm09 and 29% A(H3N2). Of 94 B viruses ascribed to a lineage, 98% were B/Yamagata and 2% B/Victoria.

For week 52/2017, 318 laboratory-confirmed influenza-infected cases from intensive care units (ICU) were reported by the Czech Republic (n=1), France (n=166), Spain (n=28), Sweden (n=9), and the United Kingdom (n=114) and 127 cases were reported from other wards by Ireland (n=43) and Spain (n=84).

Since week 40/2017, nine countries have reported 960 laboratory-confirmed hospitalized influenza cases in ICU or other wards. Of 960 cases in ICU, 648 (67.5%) were infected with type A viruses (133 A(H1N1)pdm09, 90 A(H3N2), 425 A un-subtyped) and 312 (32.5%) with type B viruses. A higher proportion of patients with influenza type B virus infection was observed in other wards: of 631 patients, 258 (41%) were infected with influenza type A (32 A(H1N1)pdm09, 50 A(H3N2), 176 A un-subtyped) and 373 (59%) with influenza B viruses.

For week 52/2017, 6,347 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, 51% were type A and 49% type B viruses. The majority of viruses from non-sentinel specimens were not subtyped or assigned to a lineage.

For week 52/2017, data from 11 countries or regions reporting to the [EuroMOMO](#) project were received for week 52/2017 and included in the pooled analyses of all-cause excess mortality. All-cause excess mortality has been within normal ranges over the past weeks.

An [early risk assessment](#) based on data from EU/EEA countries was published by ECDC on 20 December 2017. First detections indicated circulation of A(H3N2) and B/Yamagata viruses in the highest proportions. As the A(H3N2) subtype dominated last season, a high proportion of the population should be protected.

- [United States of America](#) updated on 05 January 2018 (Centre for Disease Control report)

During week 52, influenza activity sharply increased in the United States.

The most frequently identified influenza virus subtype reported by public health laboratories during week 52 was influenza A(H3). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased.

A cumulative rate of 13.7 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported.

The proportion of outpatient visits for influenza-like illness (ILI) was 5.8%, which is above the national baseline of 2.2%.

One influenza-associated pediatric death (associated with an influenza A(unknown subtype) virus) was reported to CDC during week 52.

- [Canada](#) updated on 05 January 2018 (Public Health Agency report)

Overall, influenza activity continues to increase across Canada. All indicators of influenza activity increased in weeks 51 and 52, but are within the range of expected levels for this time of year.

The majority of influenza detections continue to be A(H3N2), although the proportion of detections that are influenza B has been increasing steadily.

In week 52, 4.5% of visits to healthcare professionals were due to influenza-like illness; an increase compared to the previous week, and slightly below the 5-year average, but remains within the range of previous seasonal levels.

In week 51 & 52, 94 influenza-associated hospitalizations were reported by participating provinces and territories.

To date this season, 1,050 influenza-associated hospitalizations have been reported, 87% of which were associated with influenza A, and 710 cases (68%) were in adults 65 years of age or older. To date, 93 ICU admissions and 34 deaths have been reported.

- [Global influenza update](#) updated on 08 January 2018 (WHO website)

Influenza activity continued to increase in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity was at inter-seasonal levels. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections although influenza A(H1N1)pdm09 viruses were predominant in some countries.

In North America, overall influenza activity continued to increase in the region, with detections of predominantly influenza A(H3N2) viruses.

In Europe, influenza activity increased above baseline levels in most countries in Northern and Southwestern Europe with sharp increases in respiratory illness indicators in some countries. Activity remained low in countries in Eastern Europe. Influenza B virus detections remained frequent and the subtype of the influenza A viruses detected varied depending on the country and the surveillance system (outpatient or inpatient systems).

In Western Asia, increasing influenza activity was reported in Israel and Jordan with predominantly influenza B and A(H1N1)pdm09 virus detections, respectively.

In Central Asia, low to no influenza activity was reported. In East Asia, influenza activity continued to increase in recent weeks. In both Northern and Southern China, ILI and influenza activity continued to increase, with influenza B Yamagata-lineage viruses predominantly detected followed by influenza A(H3N2) viruses. Increasing detections of influenza B and A(H3N2) viruses were reported in the Republic of Korea.

In South East Asia, low levels of influenza activity were reported. In Southern Asia, increased influenza activity was reported in Iran with detection of all seasonal subtypes.

In Northern Africa, influenza activity was predominantly due to influenza A(H1N1)pdm09 virus detections. Activity increased in Egypt and Morocco; and Tunisia reported sharp increases in activity.

In Western Africa, influenza activity continued at lower levels compared to previous weeks with detections of influenza A(H1N1)pdm09 viruses predominantly reported. In Eastern Africa, sporadic influenza detections were reported in Madagascar, Mozambique, and the United Republic of Tanzania.

In the Caribbean, Central American countries and in the tropical countries of South America, low to no influenza activity was reported.

In the temperate zone of the Southern Hemisphere, influenza activity decreased overall to inter-seasonal levels.

The WHO GISRS laboratories tested more than 179,990 specimens between 11 December 2017 to 24 December 2017. 40,431 were positive for influenza viruses, of which 26,351 (65.2%) were typed as influenza A and 14,080 (34.8%) as influenza B. Of the sub-typed influenza A viruses, 3,357 (30.7%) were influenza A(H1N1)pdm09 and 7,582 (69.3%) were influenza A(H3N2). Of the characterized B viruses, 5,620 (86.3%) belonged to the B-Yamagata lineage and 891 (13.7%) to the B-Victoria lineage.

- [Avian Influenza](#) latest update on 27 December 2017 (WHO website)

### **Influenza A(H5) viruses**

Since the last update on [30 October 2017](#), one new laboratory-confirmed human case of influenza A(H5N6) virus infection was reported to WHO from China.

Influenza A(H5) subtype viruses have the potential to cause disease in humans and thus far, no human cases, other than those with influenza A(H5N1) and A(H5N6) viruses, have been reported to WHO. According to reports received by the World Organisation for Animal Health (OIE), various influenza A(H5) subtypes continue to be detected in birds in Africa, Europe and Asia.

### **Influenza A(H7N9)**

Since the last update on [30 October 2017](#), one new laboratory-confirmed human cases of influenza A(H7N9) virus infection was reported to WHO from China.

Since 2013, a total of 1,565 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 612 deaths, have been reported to WHO.

### **Influenza A(H9N2)**

Since the last update on [30 October 2017](#), one laboratory-confirmed human case of A(H9N2) was reported to WHO from China. Avian influenza A(H9N2) viruses are enzootic in poultry in China.

### **Influenza A(H1N1) variant viruses**

Since the last update on [30 October 2017](#), one new laboratory-confirmed human infection with influenza A(H1N1)v viruses was detected in the state of Iowa in the United States (U.S).

Since 2005, 21 cases of A(H1N1)v influenza virus infections have been reported to the U.S Centers for Disease Control and Prevention (CDC). This is the first case reported in 2017.

### **Influenza A(H1N2) variant viruses**

Since the last update on [30 October 2017](#), one new laboratory-confirmed human infection with influenza A(H1N2)v viruses was detected in the state of Colorado in the United States (U.S).

Since 2005, 13 cases of A(H1N2)v influenza virus infections have been reported to the U.S Centers for Disease Control and Prevention (CDC) and 4 of these occurred in 2017.

### **Influenza A(H3N2) variant viruses**

Since [30 October 2017](#), two human infections with influenza A(H3N2)v viruses were detected in the U.S. in several states.

Since reporting of novel influenza A viruses became nationally notifiable in 2005, 433 human infections with influenza A(H3N2)v viruses have been reported to the U.S. CDC and 61 of these occurred in 2017.

- [Middle East respiratory syndrome coronavirus \(MERS-CoV\)](#) latest update on 03 January 2018

Up to 10 January 2018, a total of four cases of Middle East respiratory syndrome coronavirus, MERS-CoV, (two imported and two linked cases) have been confirmed in the UK. On-going surveillance has identified 1,129 suspect cases in the UK that have been investigated for MERS-CoV and tested negative.

On [11 December 2017](#), the National IHR Focal Point of the United Arab Emirates (UAE) reported one additional case of Middle East Respiratory Syndrome (MERS-CoV) infection.

Between [31 October and 8 December 2017](#), the National IHR Focal Point of the Kingdom of Saudi Arabia reported 18 additional cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection, including five deaths. Additionally, two deaths from a previously reported case were reported to WHO.

Globally, since September 2012, WHO has been notified of 2,121 laboratory-confirmed cases of infection with MERS-CoV, including at least 740 related deaths. Further information on management and guidance of possible cases is available [online](#). The latest ECDC MERS-CoV risk assessment can be found [here](#), where it is highlighted that risk of widespread transmission of MERS-CoV remains low.

## Acknowledgements

[| Back to top |](#)

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## Related links

[| Back to top |](#)

### Sources of flu data

- [Clinical surveillance through primary care in the UK](#)
- [Outbreak reporting](#)
- [FluSurvey](#)
- [MOSA](#)
- [Real time syndromic surveillance](#)
- MEM threshold [methodology paper](#) and [UK pilot paper](#)

### Disease severity and mortality data

- [USISS](#) system
- [EuroMOMO](#) mortality project

### Vaccination

- Seasonal influenza vaccine programme ([Department of Health Book](#))
- Childhood flu programme information for healthcare practitioners ([Public Health England](#))
- 2017/18 Northern Hemisphere seasonal influenza vaccine recommendations ([WHO](#))