



PHE Weekly National Influenza Report

Summary of UK surveillance of influenza and other seasonal respiratory illnesses

01 February 2018 – Week 05 report (up to week 04 data)

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.

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Summary

During week 04 (ending 28 January 2018), influenza activity continues to circulate but is stabilising across several indicators. Influenza A and B are co-circulating. The Department of Health has issued an [alert](#) on the prescription of antiviral medicines by GPs.

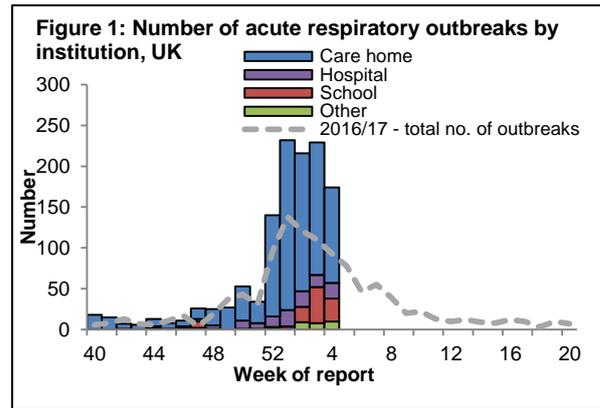
- [Community influenza surveillance](#)
 - One hundred and seventy-four new acute respiratory outbreaks have been reported in the past 7 days compared to 229 in the previous week. One hundred and seventeen outbreaks were from care homes, where 27 tested positive for influenza A(unknown subtype), 32 were positive for influenza, one was positive for a mixed infection of influenza A(unknown subtype) and influenza B. Nineteen outbreaks were from hospitals where four tested positive for influenza A(unknown subtype), 10 for influenza B, one for a mixed infection of influenza A(unknown subtype) and influenza B. Twenty-eight outbreaks were from schools with no test results available. The remaining 10 outbreaks were reported from the Other settings category, where three tested positive for influenza B and two for influenza A(unknown subtype).
- [Overall weekly influenza GP consultation rates across the UK](#)
 - In week 04, the overall weekly influenza-like illness (ILI) GP consultation rate was 52.1 per 100,000 in England, compared to 54.1 per 100,000 in week 03. This is above the medium intensity threshold of 24.2 per 100,000 for this season. In the devolved administrations, ILI rates have decreased but remain above their respective baseline thresholds.
 - Through the Syndromic Surveillance systems, GP consultations for influenza-like illnesses (ILI) decreased in adults however slight increases were noted in the 1-4 years and 5-14 years age group. A similar picture was noted for NHS 111 cold/flu calls and GP Out of Hours consultations for ILI continued to decrease across all age groups. Emergency department attendances for respiratory infections have levelled off and attendances for acute respiratory infections decreased slightly.
- [Influenza-confirmed hospitalisations](#)
 - In week 04, there were 177 new admissions to ICU/HDU with confirmed influenza (seven influenza A(H1N1)pdm09, 12 influenza A(H3N2), 56 influenza A(unknown subtype) and 102 influenza B) reported across the UK (120/144 Trusts in England) through the USSS mandatory ICU scheme with a rate of 0.39 per 100,000 for England, compared to 0.53 in the previous week. This is above the baseline threshold of 0.05 per 100,000 for the 2017/18 season.
 - In week 04, there were 757 hospitalised confirmed influenza cases (43 influenza A(H1N1)pdm09, 97 influenza A(H3N2), 190 influenza A(unknown subtype) and 427 influenza B) reported through the USSS sentinel hospital network (all levels of care) (21 NHS Trusts across England), with a rate of 7.66 per 100,000 compared to 8.25 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 two new influenza admissions (one influenza A(unknown subtype) and one influenza A(H3N2)) reported from the six Severe Respiratory Failure centres in the UK in week 04.
- [All-cause mortality data](#)
 - In week 04 2018, statistically significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm overall and in the 65+ year olds in England. In the devolved administrations, statistically significant excess all-cause mortality for all ages was observed in Scotland and in Northern Ireland in week 04 2018, but not in Wales.
- [Microbiological surveillance](#)
 - One hundred and one samples tested positive for influenza (12 influenza A(H1N1)pdm09, 25 influenza A(H3), five influenza A(unknown subtype) and 59 influenza B) through the UK GP sentinel schemes, with an overall positivity of 46.8% compared to 49.6% in week 03.
 - Nine hundred and nine positive detections were recorded through the DataMart scheme (232 influenza A(H3), 98 influenza A(unknown subtype), 37 influenza A(H1N1)pdm09 and 542 influenza B) with a positivity of 28.4% in week 04 compared to 27.6% in week 03, which is above the baseline threshold of 8.6%. RSV activity continued to decrease at 2.1% in week 04.
- [Vaccination](#)
 - Up to week 04 2018, in 96.9% 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: 48.7% in under 65 years in a clinical risk group, 47.1% in pregnant women and 72.4% in 65+ year olds. In 96.8% 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: 42.6% in 2 year olds and 44.0% in 3 year olds.
 - Provisional data from the third monthly collection of influenza vaccine uptake by frontline healthcare workers show 63.9% were vaccinated by 31 December 2017, compared to 61.8% vaccinated in the previous season by 31 December 2016.
 - Provisional data from the third 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 31 December 2017 in targeted groups was as follows: 61.8% in children of school year Reception age (4-5 years); 60.0% in children of school Year 1 age (5-6 years); 59.5% in children of school Year 2 age (6-7 years); 56.7% in children of school Year 3 age (7-8 years) and 54.8% in children of school Year 4 age (8-9 years).
 - Provisional data from the third monthly collection of influenza vaccine uptake in GP patients up to 31 December 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 continued to increase 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 accounted for the majority of influenza detections but influenza B (mainly from the Yamagata lineage) has increased proportionally.

One hundred and seventy-four new acute respiratory outbreaks were reported in the past 7 days.

- Acute respiratory disease outbreaks

- One hundred and seventy-four new acute respiratory outbreaks have been reported in the past 7 days compared to 229 in the previous week. One hundred and seventeen outbreaks were from care homes, where 27 tested positive for influenza A(unknown subtype), 32 were positive for influenza, one was positive for a mixed infection of influenza A(unknown subtype) and influenza B and another was positive for human metapneumovirus (hMPV). Nineteen outbreaks were from hospitals where four tested positive for influenza A(unknown subtype), 10 for influenza B, one for a mixed infection of influenza A(unknown subtype) and influenza B and another for respiratory syncytial virus (RSV). Twenty-eight outbreaks were from schools with no test results available. The remaining 10 outbreaks were reported from the Other settings category, where three tested positive for influenza B and two for influenza A(unknown subtype).

-Outbreaks should be recorded on HPZone and reported to the local Health Protection Teams and respcidsc@phe.gov.uk



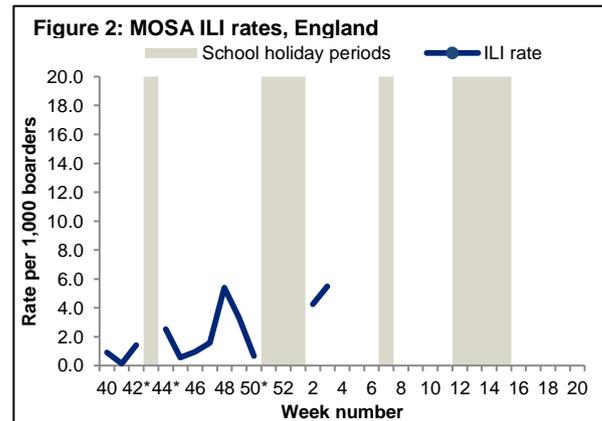
- Medical Officers of Schools Association (MOSA) & PHE surveillance scheme

- 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 03 was 5.5 per 1,000 boarders compared to 4.3 per 1,000 boarders in week 02.

-Since week 40, 25 outbreaks have been reported from nine MOSA schools, with a total of 159 ILI cases identified. Out of the 25 outbreaks, four tested positive for influenza B and two outbreaks were negative for influenza and other respiratory viruses.

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



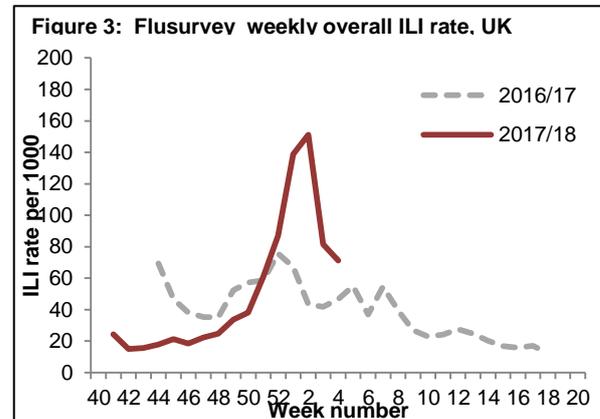
*represents weeks where not all schools will be reporting due to varying school holiday periods.

- 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 04 was 71.2 per 1,000 (233/3,271 people reported at least 1 ILI) (Figure 3) compared to 81.5 per 1,000 in week 03.

- 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.



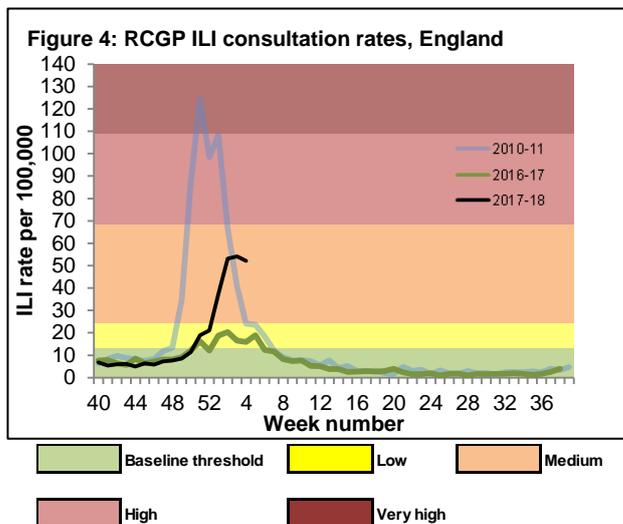
In week 04, the overall weekly influenza-like illness (ILI) GP consultation rate decreased slightly but remains above the baseline threshold in England. In the devolved administrations, ILI rates have decreased but remain above their respective baseline thresholds.

- GP ILI consultations in the UK

RCGP (England)

- The weekly ILI consultation rate through the RCGP surveillance is at 52.1 per 100,000 in week 04 compared to 54.1 per 100,000 in week 03. This is above the baseline threshold (13.1 per 100,000) and above the medium activity threshold (Figure 4*). By age group, the highest rates were seen in 45-64 year olds (65.5 per 100,000) and 15-44 year olds (52.8 per 100,000).

*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 04, overall weekly ILI consultation rates across the countries of the UK have decreased compared to the previous week but remain above their respective medium activity thresholds in all countries, except in Wales which continues to be above its high activity threshold (Table 1).

- By age group, the highest rates were seen in the 45-64 year olds in Northern Ireland, Wales and Scotland (62.9 per 100,000; 79.4 per 100,000 and 108.9 per 100,000 respectively).

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	53.1	54.1	52.1
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	36.4	62.1	74.7	53.0
Scotland	10.0	15.3	8.3	10.8	12.4	11.7	10.3	9.1	9.4	18.4	32.5	40.3	44.9	107.2	113.9	102.1	82.3
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	65.2	52.1	44.2

*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 40.1 per 100,000 in week 04 (Figure 5).

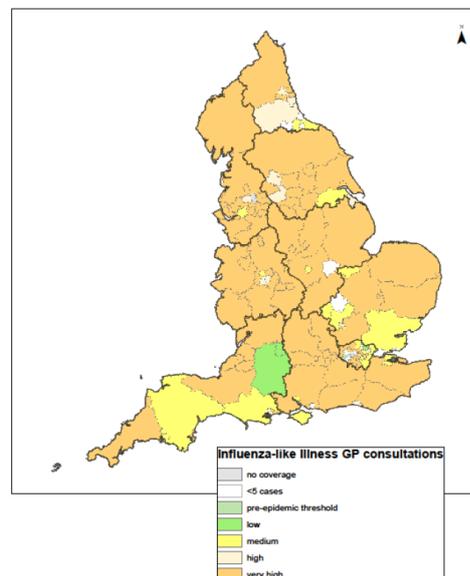
During week 04, GP consultations for influenza-like illnesses (ILI) decreased in adults however slight increases were noted in the 1-4 years and 5-14 years age group. A similar picture was noted for NHS 111 cold/flu calls and GP Out of Hours consultations for ILI continued to decrease across all age groups. Emergency department attendances for respiratory infections have levelled off and attendances for acute respiratory infections decreased slightly.

Figure 5 represents a map of GP ILI consultation rates in week 04 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 04

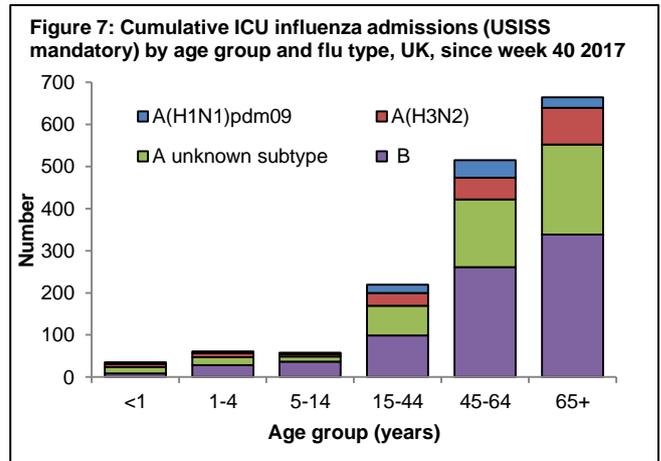
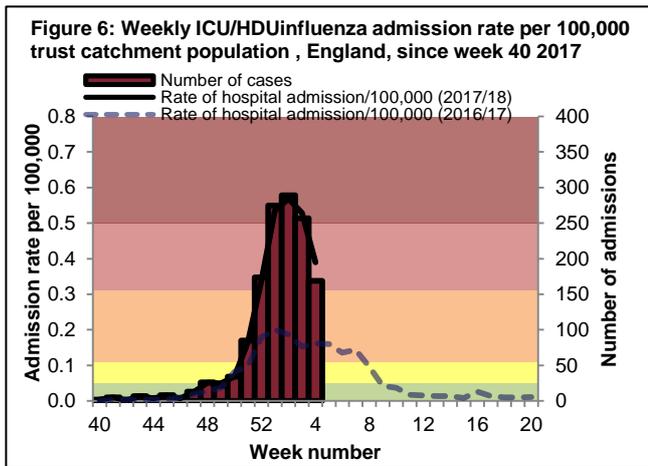


In week 04 2018 there were 177 new admissions to ICU/HDU with confirmed influenza: (seven influenza A(H1N1)pdm09, 12 influenza A(H3N2), 56 influenza A(unknown subtype) and 102 influenza B) reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (120 Trusts in England). There were 757 hospitalised confirmed influenza cases (43 influenza A(H1N1)pdm09, 97 influenza A(H3N2), 190 influenza A(unknown subtype) and 427 influenza B) were reported through the USISS sentinel hospital network across England (21 Trusts).

- Number of new admissions and fatal confirmed influenza cases in ICU/HDU (USISS mandatory ICU scheme), UK (week 03)

- In week 04, there were 177 new admissions to ICU/HDU with confirmed influenza (seven influenza A(H1N1)pdm09, 12 influenza A(H3N2), 56 influenza A(unknown subtype) and 102 influenza B) reported across the UK (116/144 Trusts in England) through the USISS mandatory ICU scheme, with a rate of 0.39 per 100,000 compared to 0.53 per 100,000 in the previous week for England data (Figures 6 and 7), this is above the high impact threshold of 0.31 per 100,000. A total of 30 deaths were reported to have occurred in week 03 in the UK.

A total of 1,552 new admissions (98 influenza A(H1N1)pdm09, 191 influenza A(H3N2), 491 influenza A(unknown subtype) and 772 influenza B) and 193 confirmed deaths have been reported in the UK since week 40 2017.



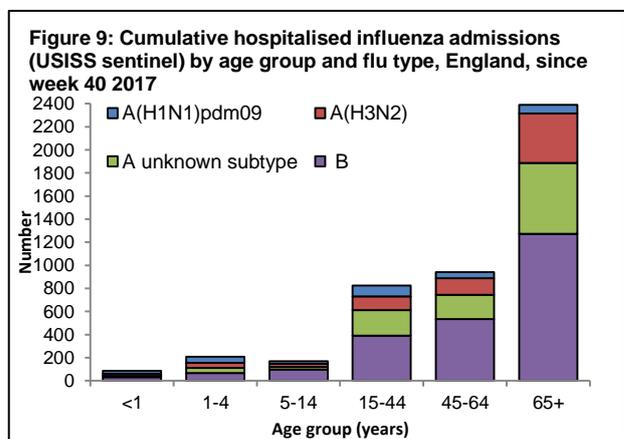
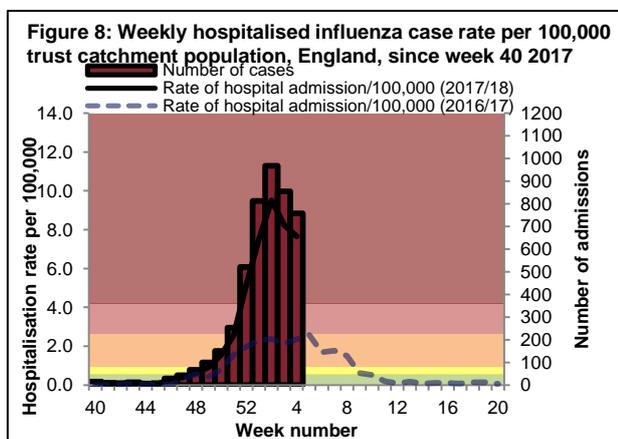
Legend for Figure 6: Baseline threshold (light green), Low (yellow), Medium (orange), High (light red), Very high (dark red)

*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 04)

- In week 04, there were 757 hospitalised confirmed influenza cases (43 influenza A(H1N1)pdm09, 91 influenza A(H3N2), 190 influenza A(unknown subtype) and 427 influenza B) reported from 21 NHS Trusts across England through the USISS sentinel hospital network, with a rate of 7.66 per 100,000 compared to 8.25 per 100,000 in the previous week (Figures 6 and 7), this is above the very high impact threshold of 4.20 per 100,000.

A total of 4,618 hospitalised confirmed influenza admissions (317 influenza A(H1N1)pdm09, 785 influenza A(H3N2), 1,121 influenza A(unknown subtype) and 2,395 influenza B) have been reported since week 40 2017 via the sentinel scheme.



Legend for Figure 8: Baseline threshold (light green), Low (yellow), Medium (orange), High (light red), Very high (dark red)

*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 Severe Respiratory Failure Centre confirmed influenza admissions, UK (week 04)

- In week 04, there were two new influenza admissions (one influenza A(unknown subtype) and one influenza A(H3N2)) reported from the six Severe Respiratory Failure (SRF) centres in the UK. Since week 40, a total of 22 laboratory confirmed influenza admissions (four influenza A(H1N1)pdm09, two influenza A(H3N2), seven influenza A(unknown subtype) and nine influenza B) were reported from the SRFs for the season to date.

In week 04 2018, statistically significant excess all-cause mortality by week of death was observed through the EuroMOMO algorithm overall and in the 65+ year olds in England. In the devolved administrations, statistically significant excess all-cause mortality for all ages was observed in Scotland and in Northern Ireland in week 04 2018 but not in Wales.

- All-cause death registrations, England and Wales

- In week 03 2018, an estimated 14,256 all-cause deaths were registered in England and Wales (source: [Office for National Statistics](#)). This is a decrease compared to the 15,050 estimated death registrations in week 02 2018.

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

- In week 04 2018 in England, statistically significant excess mortality by week of death above the upper 2 z-score threshold was seen overall (this excess has been seen from week 49 to week 04). By age group statistically significant excess mortality was seen in the 65+ year olds (this excess has been seen from week 49 to week 04) (Figure 10) and subnationally in the North East & West, Yorkshire & Humber, East Midlands, East of England, London and South East & West regions, after correcting ONS disaggregate data for reporting delay with the standardised [EuroMOMO](#) algorithm. This data is provisional due to the time delay in registration; numbers may vary from week to week.

- In the devolved administrations, statistically significant excess all-cause mortality for all ages was observed in Scotland and in Northern Ireland in week 04 2018 but not in Wales (Table 2).

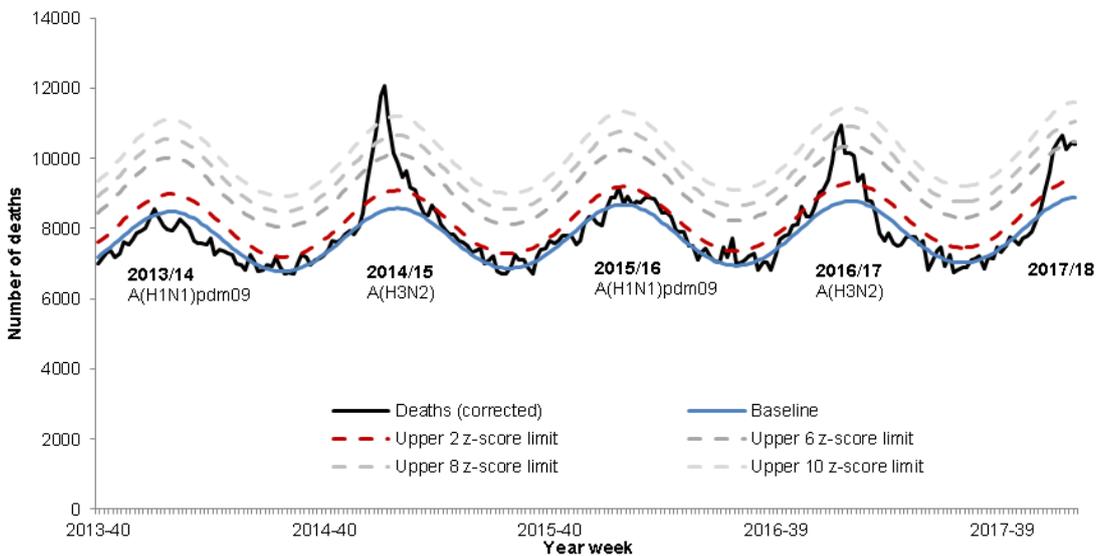
Table 2: Excess mortality by UK country, for all ages*

Country	Excess detected in week 04 2018?	Weeks with excess in 2017/18
England	✓	49-04
Wales	×	52
Scotland	✓	49-04
Northern Ireland	✓	49-04

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

* NA refers to no excess seen

Figure 10: Weekly observed and expected number of all-cause deaths in 65+ year olds, with the dominant circulating influenza A subtype, England, 2013 to 2018

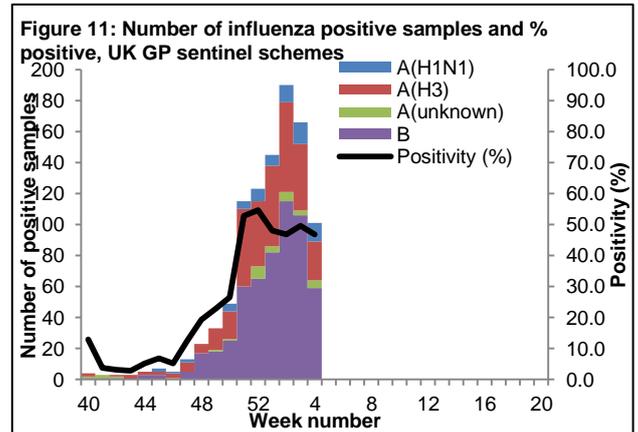


In week 04 2018, 101 samples tested positive for influenza (12 influenza A(H1N1)pdm09, 25 influenza A(H3), five influenza A(unknown subtype) and 59 influenza B) through the UK GP sentinel schemes, with an overall positivity of 46.8% compared to 49.6% in week 03. Nine hundred and nine positive detections were recorded through the DataMart scheme (232 influenza A(H3), 98 influenza A(unknown subtype), 37 influenza A(H1N1)pdm09 and 542 influenza B) with a positivity of 28.4% in week 04 compared to 27.6% in week 03, which is above the baseline threshold of 8.6%. RSV activity continued to decrease at 2.1% in week 04.

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

-In week 04, 101 samples tested positive for influenza (12 influenza A(H1N1)pdm09, 25 influenza A(H3), five influenza A(unknown subtype) and 59 influenza B) through the UK GP sentinel schemes, with an overall positivity of 46.8% compared to 49.6% in week 03 through the UK GP sentinel swabbing schemes (Figure 11).

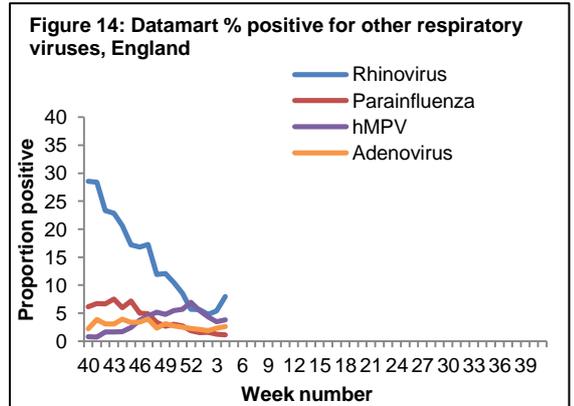
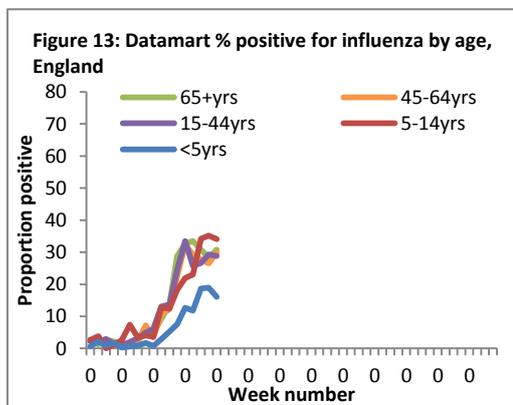
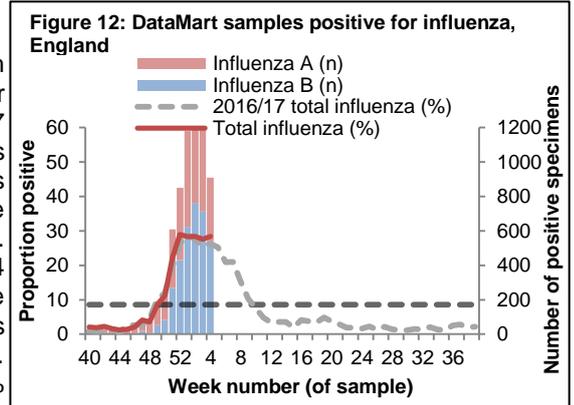
Since week 40, a total of 988 samples (327 influenza A(H3), 33 influenza (unknown subtype), 67 influenza A(H1N1)pdm09 and 561 influenza B) tested positive for influenza through this scheme.



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

- Respiratory DataMart System (England)

In week 04 2018, out of the 3,200 respiratory specimens reported through the Respiratory DataMart System, 909 samples (28.4%) were positive for influenza (232 influenza A(H3), 98 influenza A(unknown subtype), 37 influenza A(H1N1)pdm09 and 542 influenza B) (Figure 12), which is above the MEM baseline threshold for this season of 8.6%. This compares to 27.6% in week 03. The highest positivity for influenza by age group was seen in the 5-14 year olds at 34.1% in week 04 (Figure 13). The overall positivity for RSV continued to decrease at 2.1% in week 04 compared to 3.3% in week 03. The highest positivity for RSV by age group was seen in the <5 year olds at 5.8% in week 04. Rhinovirus positivity increased to 8.0% in week 04 compared to 5.4% in week 03. Adenovirus and parainfluenza positivity remained low at 2.6% and 1.1% respectively in week 04. Human metapneumovirus (hMPV) positivity remained low at 3.8% in week 04 (Figure 14).



*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 488 influenza viruses detected since week 37 (Table 3). Two hundred and thirty five influenza B viruses have been analysed; 231 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 159 A(H3N2) influenza viruses detected since late summer, showed that the majority belong to genetic subclade 3C.2a, with 72 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.

The A(H1N1)pdm09 influenza viruses that have been genetically 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 57 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	24	37	33	94
A(H3N2)	1	158	0	159
B/Yamagata-lineage	41	100	90	231
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, 46 influenza A(H3N2) have been tested for oseltamivir susceptibility; 43 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 and twenty-two influenza A(H1N1)pdm09 virus have been tested for oseltamivir susceptibility and all but one were fully susceptible. The two A(H1N1)pdm09 oseltamivir resistant virus has the H275Y amino acid substitution, which emerged in a child following oseltamivir treatment. This virus remains susceptible to zanamivir. Thirty-two of the 122 influenza A(H1N1)pdm09 virus were also tested for zanamivir susceptibility and were all fully susceptible. Ninety-three influenza B viruses have been tested for both oseltamivir and were all fully susceptible. Eighty-one out of the 93 influenza B viruses have also been tested for zanamivir susceptibility and were all fully susceptible.

- Antimicrobial susceptibility

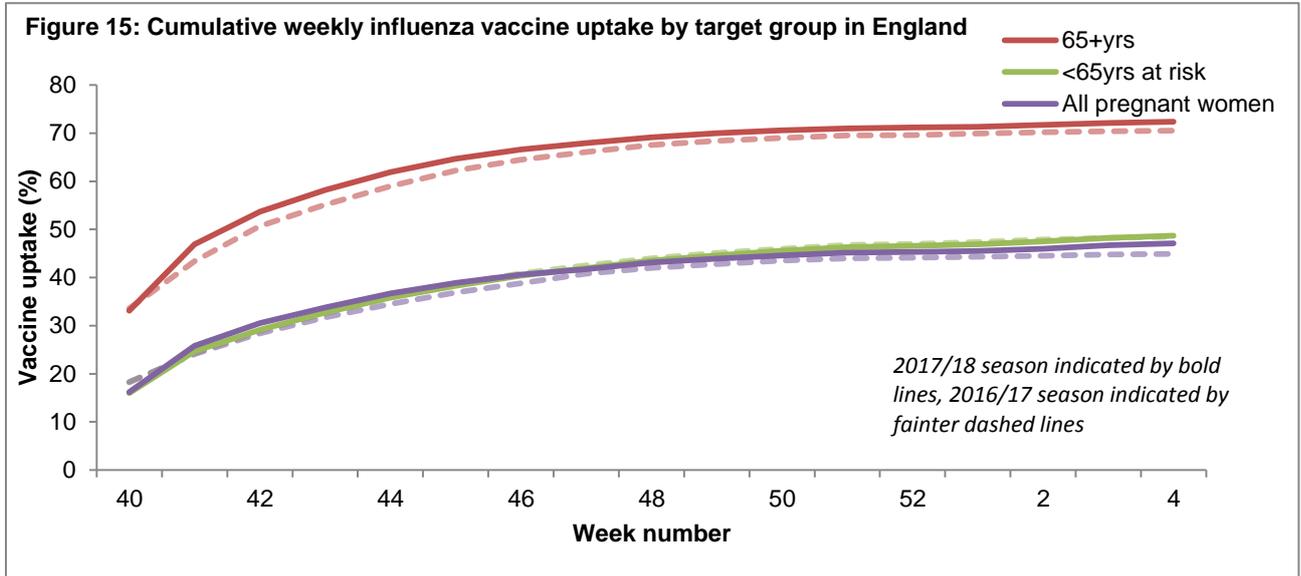
-Table 4 shows in the 12 weeks up to 28 January 2018, the proportion of all lower respiratory tract isolates of *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, MRSA and MSSA tested and susceptible to antibiotics. These organisms are the key causes of community acquired 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 28 January 2018, E&W

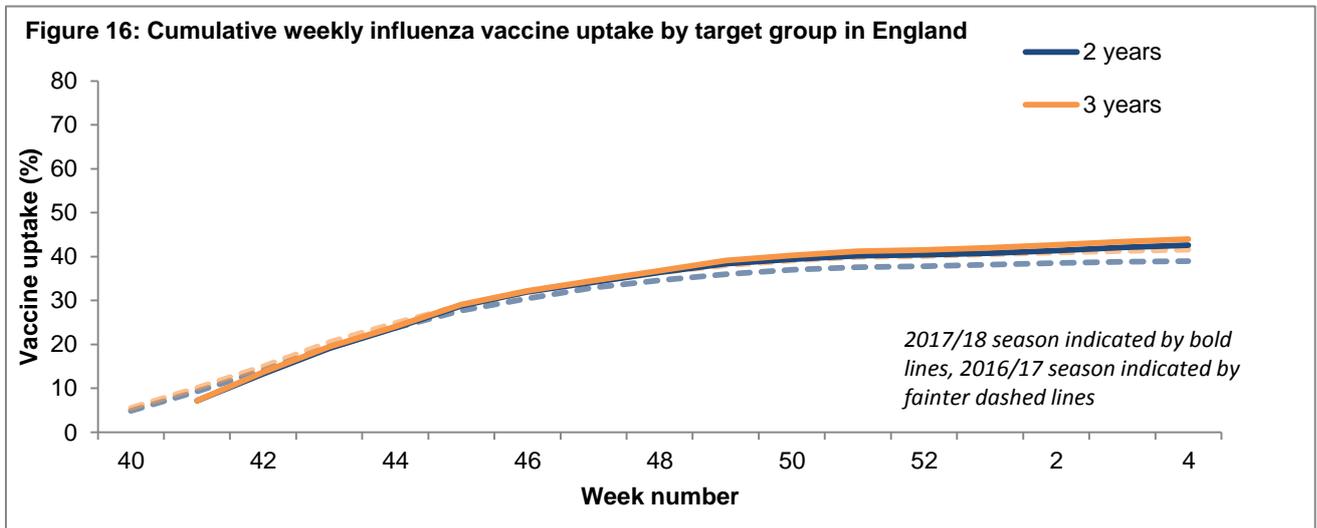
Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
<i>S. pneumoniae</i>	Penicillin	4372	90
	Macrolides	4829	83
	Tetracycline	4727	86
<i>H. influenzae</i>	Amoxicillin/ampicillin	17735	68
	Co-amoxiclav	18971	85
	Macrolides	7983	3
	Tetracycline	19064	98
<i>S. aureus</i>	Methicillin	7309	91
	Macrolides	7989	67
MRSA	Clindamycin	420	45
	Tetracycline	569	83
MSSA	Clindamycin	4291	77
	Tetracycline	6166	94

*Macrolides = erythromycin, azithromycin and clarithromycin

- Up to week 04 2018 in 96.9% 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 15):
 - 48.7% in under 65 years in a clinical risk group
 - 47.1% in pregnant women
 - 72.4% 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 04 2018 in 96.8% 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 16):
 - 42.6% in 2 year olds
 - 44.0% in 3 year olds



- Provisional data from the third monthly collection of influenza vaccine uptake by frontline healthcare workers show 63.9% were vaccinated by 31 December 2017 from 99.6% of all organisations, compared to 61.8% vaccinated in the previous season by 31 December 2016. The [report](#) provides uptake at national, NHS local team, “old” area teams and Trust-level.

- Provisional data from the third [monthly](#) collection of influenza vaccine uptake for children of school years Reception, 1,2, 3 and 4 age (from a sample of 96.7% 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 31 December 2017 in targeted groups was as follows:
 - 61.8% in children school year Reception age (4-5 years)
 - 60.0% in children school year 1 age (5-6 years)
 - 59.5% in children school year 2 age (6-7 years)
 - 56.7% in children school year 3 age (7-8 years)
 - 54.8% in children school year 4 age (8-9 years)
- Provisional data from the third [monthly](#) collection of influenza vaccine uptake in GP patients up to 31 December 2017 show that in 98.0% 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:
 - 46.6% in under 65 year olds in a clinical risk group
 - 45.3% in pregnant women
 - 71.2% in 65+ year olds
- Provisional data from the third [monthly](#) collection of influenza vaccine uptake in GP patients up to 31 December 2017 show that in 97.4% 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:
 - 40.4% in 2 year olds
 - 41.5% in 3 year olds

International Situation

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Influenza activity continued to increase 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 accounted for the majority of influenza detections but influenza B (mainly from the Yamagata lineage) has increased proportionally.

- [Europe](#) updated on 26 January 2018 (Joint ECDC-WHO Europe Influenza weekly update)

In week 03/2018, overall influenza activity was widespread in the majority of reporting countries, while increasing activity was observed in eastern European countries. Both influenza A and B are co-circulating with a higher proportion of type B viruses. Different patterns of type B and A subtype circulation were observed between countries in the Region.

In week 03/2018, influenza activity was at variable levels across the region. Of 42 Member States reporting on intensity, Ireland, Italy, Luxembourg, Malta, and Spain reported high intensity, 16 medium and 21 low intensity.

For week 03/2018, 1,933 (52%) of 3,715 sentinel specimens tested positive for influenza viruses. Of these, 40% were type A and 60% were type B. Out of 475 subtyped A viruses, 66.5% were influenza A(H1N1)pdm09 and 33.5% A(H3N2). Of 348 B viruses ascribed to a lineage, 96% were B/Yamagata and 4% B/Victoria.

For week 03/2018, 319 laboratory-confirmed influenza-infected cases from ICUs were reported, with the majority reported by the United Kingdom (64%). A total of 405 cases were reported from other wards, with the majority of cases reported by Ireland (48%) and Spain (35%).

Since week 40/2017, 11 countries have reported laboratory-confirmed hospitalized influenza cases in ICUs. Influenza type A virus was detected in 59% and influenza type B in 41% of the cases in ICUs. Of 596 subtyped influenza A viruses, 65% were A(H1N1)pdm09 and 35% A(H3N2) viruses. Of 1 888 cases with known age, 50% were between 15 and 64 years old and 45% 65 years and older.

For week 03/2017, data from 19 countries or regions reporting to the [EuroMOMO](#) project were received and included in the pooled analyses of all-cause excess mortality. Over the past few weeks, there has been increased all-cause mortality among the elderly, notably in some countries in the south of the European Region (Italy, Portugal and Spain) and the United Kingdom (Scotland).

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 26 January 2018 (Centre for Disease Control report)

During week 03, influenza activity increased in the United States.

The most frequently identified influenza virus subtype reported by public health laboratories during week 03 was influenza A(H3). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased slightly.

A cumulative rate of 41.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported.

The proportion of outpatient visits for influenza-like illness (ILI) was 6.6%, which is above the national baseline of 2.2%.

- [Canada](#) updated on 19 January 2018 (Public Health Agency report)

Overall, influenza activity in Canada remains high but there is some indication that activity is starting to slow down.

The majority of influenza detections continue to be A(H3N2), although 40% of detections were influenza B in week 03. In week 03, the percentage of tests positive for influenza increased slightly from 29% in week 02 to 31% in week 03.

In week 03, 3.0% of visits to healthcare professionals were due to influenza-like illness; a decrease compared to the previous week, and slightly above the 5-year average.

In week 03, 182 influenza-associated hospitalizations were reported by participating provinces and territories.

To date this season, 2,643 influenza-associated hospitalizations have been reported, 80% of which were associated with influenza A, and 1,814 cases (69%) were in adults 65 years of age or older. To date, 241 ICU admissions and 110 deaths have been reported.

- [Global influenza update](#) updated on 22 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 decreased at inter-seasonal levels. Worldwide, influenza A accounted for the majority of influenza detections but influenza B (mainly from the Yamagata lineage) has increased proportionally. The majority of countries who have started the season have reported influenza like illness rates reaching moderate levels and a few reaching high levels. Some countries have reported levels of hospitalisations and ICU admissions as reaching or exceeding peak levels of previous influenza seasons.

In North America, overall influenza activity remained high, with detections of predominantly influenza A(H3N2) viruses.

In Europe, influenza activity increased above baseline levels in most countries in Northern, Western and Southwestern Europe with sharp increases in some countries. Activity remained low in countries in Eastern Europe. Influenza B remained the virus most frequently detected 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 some countries, with influenza A(H1N1)pdm09 and B viruses present in the region.

In Central Asia, influenza activity remained low. In East Asia, high levels of illness indicators and influenza activity were reported in most of the countries. Influenza B-Yamagata lineage virus was predominantly detected followed by influenza A(H3N2) viruses.

In South East Asia, low levels of influenza activity were reported.

In Southern Asia, increased influenza activity continued to increase in Iran, with detection of all seasonal subtypes.

In Northern Africa, detections of influenza A(H1N1)pdm09 virus sharply increased in Algeria and Tunisia. Detections of influenza B virus remained high in Egypt (together with influenza A(H1N1)pdm09) and Morocco.

In Western Africa, influenza activity continued to decrease across the region. In Middle Africa, there were no updates available for this reporting period. In Eastern Africa, influenza activity remained low across the region.

In the Caribbean and Central American countries, respiratory illness indicators and influenza activity remained low in general.

In the tropical countries of South America, low to no influenza activity was reported.

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

The WHO GISRS laboratories tested more than 225,174 specimens between 25 December 2017 to 07 January 2018. 70,504 were positive for influenza viruses, of which 43,898 (62.3%) were typed as influenza A and 26,606 (37.7%) as influenza B. Of the sub-typed influenza A viruses, 6,160 (41.1%) were influenza A(H1N1)pdm09 and 8,825 (58.9%) were influenza A(H3N2). Of the characterized B viruses, 6,960 (89.2%) belonged to the B-Yamagata lineage and 845 (10.8%) 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 31 January 2018

Up to 31 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 1,136 suspect cases in the UK that have been investigated for MERS-CoV and tested negative.

Between [9 December 2017 and 17 January 2018](#), the National IHR Focal Point of The Kingdom of Saudi Arabia reported 20 additional cases of Middle East Respiratory Syndrome (MERS), including nine deaths. In addition, one death from a previously reported case was reported to WHO.

On [2 January 2018](#), the National IHR Focal Point of Malaysia reported one case of Middle East Respiratory Syndrome Coronavirus (MERS-CoV).

Globally, since September 2012, WHO has been notified of 2,143 laboratory-confirmed cases of infection with MERS-CoV, including at least 750 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

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Related links

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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](#))