



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

**At the start of the 2016/17 influenza season, activity is at low levels in week 43 (ending 30 October 2016). Respiratory Syncytial Virus (RSV) is circulating.**

- [Community influenza surveillance](#)
  - Through the GP In Hours Syndromic Surveillance system, there were no further increases in GP consultations for a range of respiratory diseases in week 43.
  - Seven new acute respiratory outbreaks have been reported in the past 7 days. Five outbreaks were from care homes where one tested positive for rhinovirus, another for parainfluenza and one for influenza A(not subtyped). One outbreak was from a hospital with no test results available. The remaining outbreak was from a school with no test results available.
- [Overall weekly influenza GP consultation rates across the UK](#)
  - In week 43, the overall weekly influenza-like illness (ILI) GP consultation rate was 5.6 per 100,000 in England and is below the baseline threshold. In the devolved administrations, ILI rates remained low and similar to the previous week.
- [Influenza-confirmed hospitalisations](#)
  - In week 43, no admissions to ICU/HDU with confirmed influenza were reported across the UK (135/156 Trusts in England) through the USSS mandatory ICU scheme.
  - In week 43, no hospitalised confirmed influenza cases were reported through the USSS sentinel hospital network (22 NHS Trusts across England).
  - No confirmed influenza admissions have been reported from the six Severe Respiratory Failure centres in the UK in week 43.
- [All-cause mortality data](#)
  - In week 43 2016, no statistically significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England overall and by age group and across the devolved administrations.
- [Microbiological surveillance](#)
  - No samples tested positive for influenza through GP sentinel schemes across the UK.
  - Ten influenza positive detections were recorded through the DataMart scheme (6 influenza A(H3N2), 3 influenza A(not subtyped) and 1 influenza B). A positivity of 0.9% was seen in week 43, with the highest positivity seen in the 65+ year olds (1.6%). This is below the all-age threshold for 2016/17 season of 8.6%.
  - Through the DataMart scheme, it has been noted that RSV is now circulating with an overall positivity of 7.8% in week 43 compared to 7.3% in week 42. The highest positivity was in the <5 year olds at 21.3% in week 43.
- [Vaccination](#)
  - Up to week 43 2016, in 88.1% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2016/17 influenza vaccine in targeted groups was as follows: 32.6% in under 65 years in a clinical risk group, 31.7% in pregnant women, 55.1% in 65+ year olds. In 90.8% of GP practices to Immform, the provisional proportion of children in England who had received the 2016/17 influenza vaccine was as follows: 19.5% in all 2 year olds, 20.5% in all 3 year olds and 16.4% in all 4 year olds.
- [International situation](#)
  - Influenza activity is low and at inter-seasonal levels in the Northern Hemisphere but showing signs of decreasing in the Southern hemisphere.

During week 43, there were no further increases in GP consultations through the syndromic surveillance schemes. Seven new acute respiratory outbreaks were reported in the past 7 days.

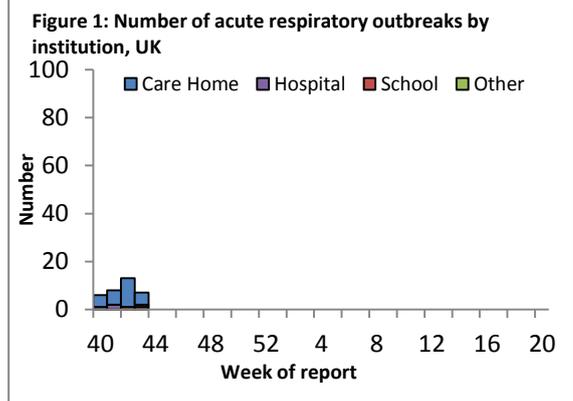
- PHE Real-time Syndromic Surveillance

- Overall, during week 43 there were no further increases in GP consultations for a range of respiratory conditions, which remain at or below seasonally expected levels.
- For further information, please see the syndromic surveillance [webpage](#).

- Acute respiratory disease outbreaks

- Seven new acute respiratory outbreaks have been reported in the past 7 days. Five outbreaks were from care homes where one tested positive for rhinovirus, one for parainfluenza and another for influenza A(not subtyped). One outbreak was from a hospital with no test results available. The remaining outbreak was from a school with no test results available.

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

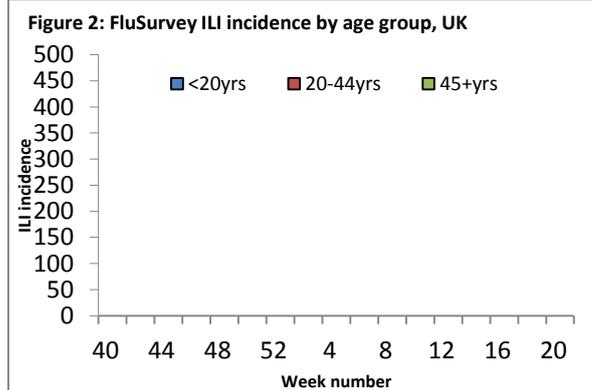


- FluSurvey

- 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.

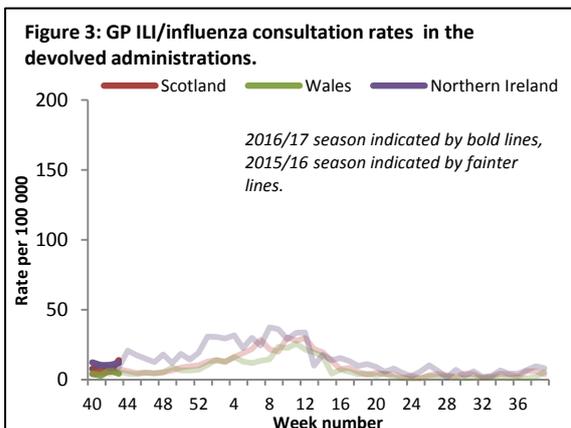
- Data will be available soon.

- 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 43, overall weekly influenza-like illness GP consultations remained low in England, Wales, Northern Ireland and Scotland.

- Influenza/Influenza-Like-Illness (ILI)



Northern Ireland

-The Northern Ireland ILI rate was at 11.8 per 100,000 in week 43 compared to 10.5 per 100,000 in week 42 (Figure 3). This remains below the baseline threshold (47.9 per 100,000).

-The highest rates were seen in the 1-4 year olds (52.4 per 100,000) and 15-44 year olds (14.6 per 100,000).

### Wales

-The Welsh ILI rate was at 4.2 per 100,000 in week 43 compared to 6.8 per 100,000 in week 42 (Figure 3). This remains below the baseline threshold (10.3 per 100,000).

- The highest rates were seen in the 15-44 year olds (6.8 per 100,000) and 45-64 year olds (6.4 per 100,000).

### Scotland

-The Scottish ILI rate has increased and is at 14.0 per 100,000 in week 43 compared to 6.0 per 100,000 in week 42 (Figure 3). This remains below baseline threshold (36.1 per 100,000).

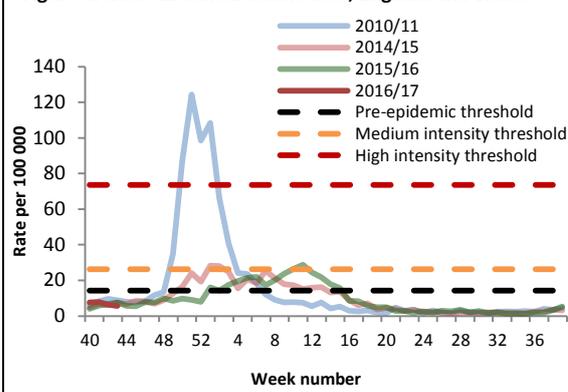
-The highest rates were seen in 45-64 year olds (16.1 per 100,000) and 15-44 year olds (15.3 per 100,000).

### RCGP (England and Wales)

- The weekly ILI consultation rate through the RCGP surveillance is 5.6 per 100,000 in week 43 compared to 6.4 per 100,000 in week 42. This is below the baseline threshold (14.3 per 100,000) (Figure 4\*). By age group, the highest rates were seen in <1 year olds (13.5 per 100,000) and 75+ year olds (7.3 per 100,000).

*\*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.*

Figure 4: RCGP ILI consultation rates , England and Wales



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

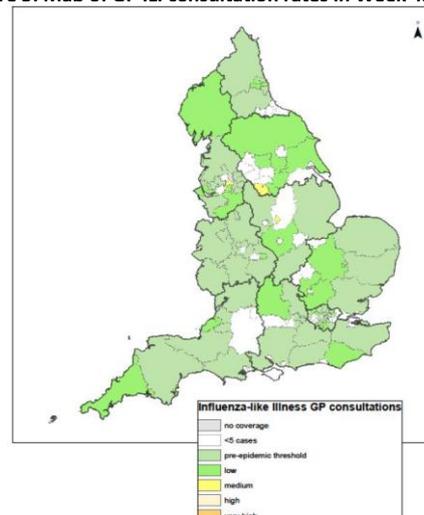
-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system has decreased at 5.5 per 100,000 in week 43 (Figure 5).

Figure 5 represents a map of GP ILI consultation rates in Week 43 across England by Local Authorities, using influenza-like illness surveillance thresholds.

*Thresholds are calculated using a standard methodology for setting ILI thresholds across Europe (the "Moving Epidemic Method" (MEM)) and are based on six previous influenza seasons (excluding the 2009/10 H1N1 pandemic)*

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

Figure 5: Map of GP ILI consultation rates in Week 43



## **Influenza confirmed hospitalisations**

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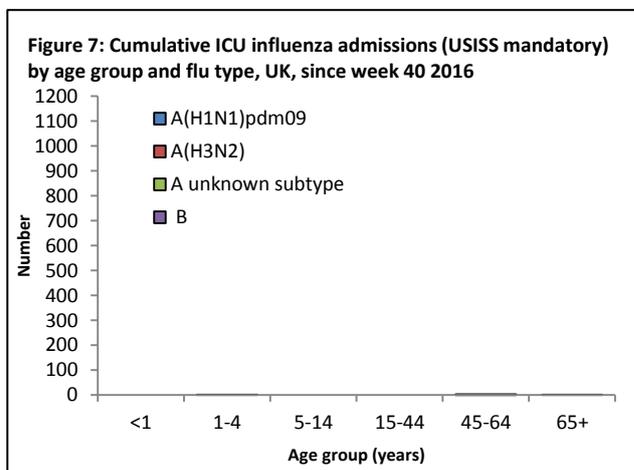
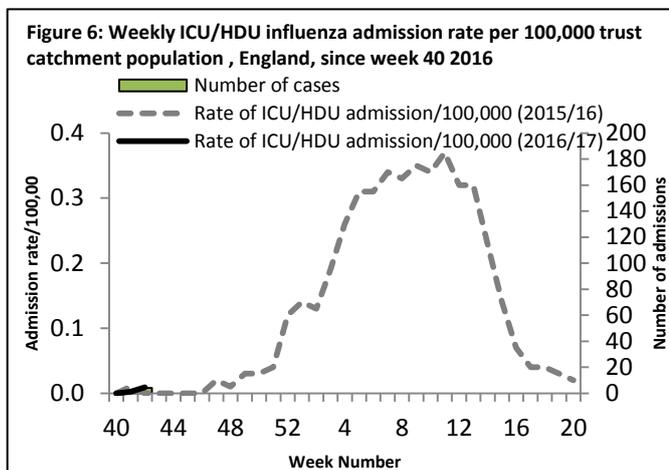
**In week 43, there were no admissions to ICU/HDU with confirmed influenza reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (135 Trusts). No hospitalised confirmed influenza cases were reported through the USISS sentinel hospital network across England (22 Trusts).**

A national mandatory collection (USISS mandatory ICU scheme) is operating in cooperation with the Department of Health to report the number of confirmed influenza cases admitted to Intensive Care Units (ICU) and High Dependency Units (HDU) and number of confirmed influenza deaths in ICU/HDU across the UK. A confirmed case is defined as an individual with a laboratory confirmed influenza infection admitted to ICU/HDU. In addition a sentinel network (USISS sentinel hospital network) of acute NHS trusts is established in England to report weekly laboratory confirmed hospital admissions. Further information on these systems is available through the [website](#). Please note data in previously reported weeks are updated and so may vary by week of reporting.

- Number of new admissions and fatal confirmed influenza cases in ICU/HDU (USISS mandatory ICU scheme), UK (week 43)

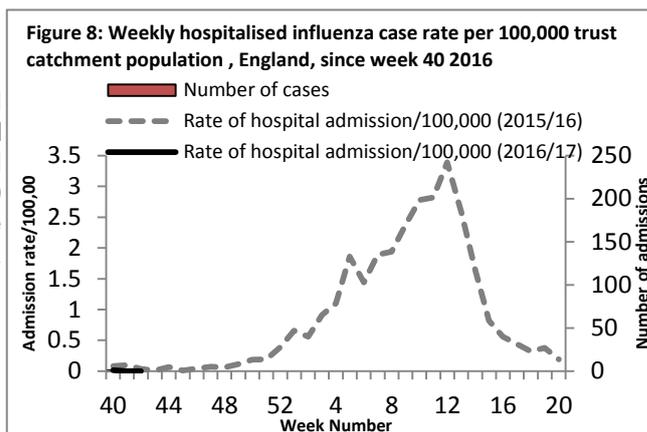
- In week 43, there were no admissions to ICU/HDU with confirmed influenza reported across the UK (135/156 Trusts) through the USISS mandatory ICU scheme, with a rate of 0.00 per 100,000 compared to a rate of 0.01 per 100,000 in week 42 (Figures 6 and 7). No confirmed influenza deaths were reported in week 43 2016.

A total of five admissions (3 influenza a(H1N1)pdm09, 2 influenza A(unknown subtype)) and no confirmed deaths have been reported since week 40 2016.



- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 43)

- In week 43, there were no hospitalised confirmed influenza cases reported through the USISS sentinel hospital network from 22 NHS Trusts across England (Figure 8), a rate of 0.00 per 100,000 compared to 0.00 per 100,000 in the previous week. A total of one hospitalised confirmed influenza admission (influenza A(H3N2)) has been reported since week 40 2016.



- USISS Severe Respiratory Failure Centre confirmed influenza admissions, UK (week 43)

- In week 43, there were no confirmed influenza admissions reported from the six Severe Respiratory Failure (SRF) centres in the UK. There have been no admissions reported since week 40 2016.

### All-cause mortality data

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**In week 43, no statistically significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England. In the devolved administrations, no significant excess mortality was noted in week 43 2016.**

Seasonal mortality is seen each year in the UK, with a higher number of deaths in winter months compared to the summer. Additionally, peaks of mortality above this expected higher level typically occur in winter, most commonly the result of factors such as cold snaps and increased circulation of respiratory viruses, in particular influenza. Weekly mortality surveillance presented here aims to detect and report acute significant weekly excess mortality above normal seasonal levels in a timely fashion. Excess mortality is defined as a significant number of deaths reported over that expected for a given point in the year, allowing for weekly variation in the number of deaths. The aim is not to assess general mortality trends or precisely estimate the

excess attributable to different factors, although some end-of-winter estimates and more in-depth analyses (by age, geography etc.) are undertaken.

- Excess overall all-cause mortality, England and Wales

-- In week 42 2016, an estimated 9,768 all-cause deaths were registered in England and Wales (source: [Office for National Statistics](#)). This is a slight increase compared to the 9,719 estimated death registrations in week 41 2016.

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

-In week 43 2016 in England, no excess mortality by date of death above the upper 2 z-score threshold was seen in England after correcting ONS disaggregate data for reporting delay with the standardised [EuroMoMo](#) algorithm (Table 1). No significant excess was seen in any age groups or subnationally. This data is provisional due to the time delay in registration; numbers may vary from week to week.

- In the devolved administrations, no significant excess mortality above the threshold was seen in week 43 2016 (Table 2).

**Table 2: Excess mortality by UK country\***

Country	Excess detected in week 43 2016?	Weeks with excess in 2016/17
England	x	NA
Wales	x	NA
Scotland	x	NA
Northern Ireland	-	-

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

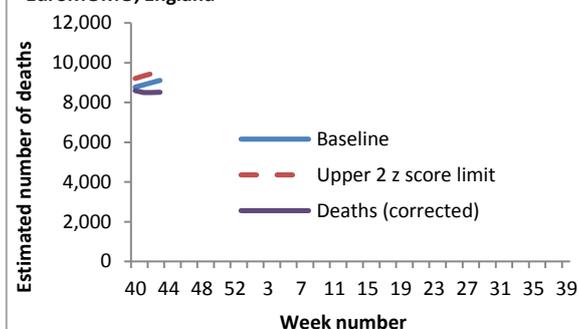
NB. Separate total and age-specific models are run for England which may lead to discrepancies between Tables 1 + 2

**Table 1: Excess mortality by age group, England\***

Age group (years)	Excess detected in week 43 2016?	Weeks with excess in 2016/17
<5	x	NA
5-14	x	NA
15-64	x	NA
65+	x	NA

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

**Figure 9: Excess mortality in all ages by week of death, EuroMOMO, England**



## Microbiological surveillance

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In week 43 2016, no samples tested positive for influenza through the UK GP sentinel schemes. Ten positive detections were recorded through the DataMart scheme (6 influenza A(H3N2), 3 influenza A(not subtyped) and 1 influenza B).

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

-In week 43, no samples tested positive for influenza through the UK GP sentinel swabbing schemes, an overall positivity of 0.0% compared to 0.6% in week 42 (Table 3).

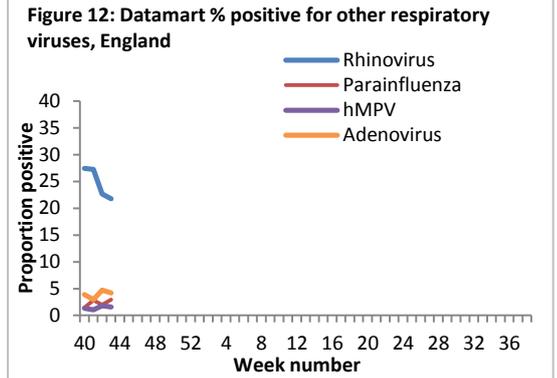
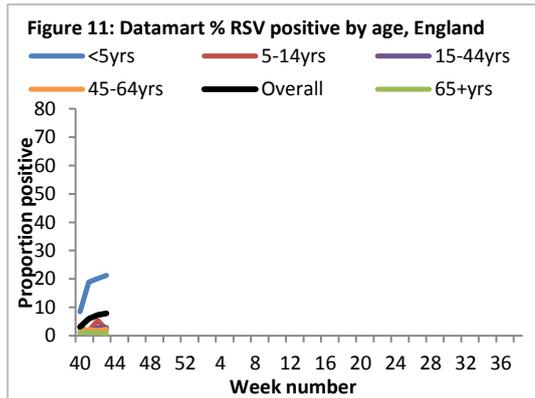
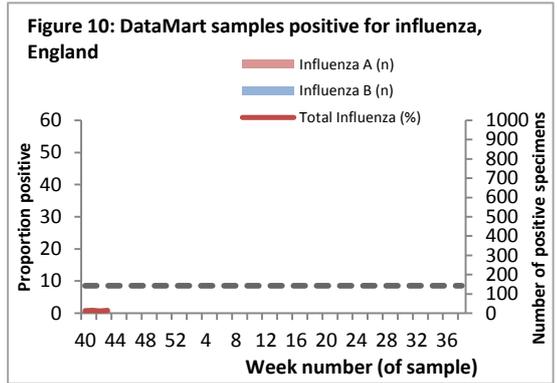
**Table 3: Sentinel influenza surveillance in the UK**

Week	England	Scotland	Northern Ireland	Wales
40	0/42 (0%)	1/62 (1.6%)	0/2 (-)	0/3 (-)
41	0/75 (0%)	0/69 (0%)	0/3 (-)	0/3 (-)
42	0/79 (0%)	0/78 (0%)	0/2 (-)	1/3 (-)
43	0/48 (0%)	0/54 (0%)	0/1 (-)	0/2 (-)

NB. Proportion positive omitted when fewer than 10 specimens tested

- Respiratory DataMart System (England)

In week 43 2016, out of the 1,058 respiratory specimens reported through the Respiratory DataMart System, 10 samples (0.9%) were positive for influenza (6 influenza A(H3N2), 3 influenza A(not subtyped) and 1 influenza B) (Figure 10). The highest positivity was in the 65+ year olds at 1.6%. The overall positivity for RSV has increased slightly from 7.3% in week 42 to 7.8% in week 43. The highest positivity was noted in the <5 year olds at 21.3%. (Figure 11). Positivity for rhinovirus decreased from 22.7% in week 42 to 21.8% in week 43. Positivity for adenovirus decreased slightly from 4.8% in week 42 to 4.2% in week 43. Positivity for parainfluenza increased slightly from 2.0% in week 42 to 2.9% in week 43 whereas the positivity for hMPV remained low at 1.5% in week 43 (Figure12).



\*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 2016/17.

- 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.

Since the start of the 2016/17 winter influenza season in week 40 2016, the PHE Respiratory Virus Unit has antigenically characterised one A(H1N1)pdm09 influenza virus. The virus was antigenically similar to the A/California/7/2009 Northern Hemisphere 2016/17 (H1N1)pdm09 vaccine strain.

One influenza B virus has been isolated and antigenically characterised since week 40 2016. The virus was characterised as belonging to the B/Yamagata/16/88-lineage and was antigenically similar to B/Phuket/3073/2013, the influenza B/Yamagata-lineage component of 2016/17 Northern Hemisphere quadrivalent vaccine.

No influenza A(H3N2) influenza viruses have been characterised to date this season.

- Antiviral susceptibility

Since week 40 2016, one influenza A(H1N1)pdm09 and one influenza B viruses have been tested for oseltamivir and zanamivir susceptibility, both of them were sensitive to oseltamivir and zanamivir.

- Antimicrobial susceptibility

-Table 4 shows in the 12 weeks up to 30 October 2016, 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 30 October 2016, E&W

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
<i>S. pneumoniae</i>	Penicillin	2,567	88
	Macrolides	2,862	81
	Tetracycline	2,761	82
<i>H. influenzae</i>	Amoxicillin/ampicillin	12,354	70
	Co-amoxiclav	12,559	88
	Macrolides	4,967	13
<i>S. aureus</i>	Tetracycline	12,393	98
	Methicillin	5,790	92
	Macrolides	6,248	68
MRSA	Clindamycin	295	45
	Tetracycline	450	84
MSSA	Clindamycin	2,987	78
	Tetracycline	4,905	93

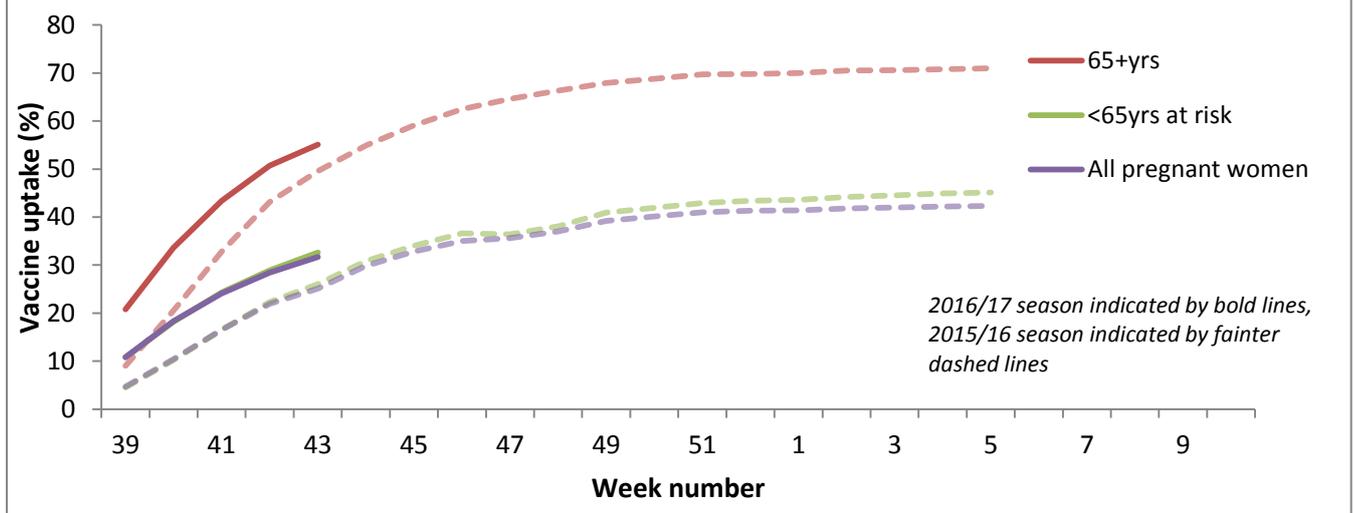
\*Macrolides = erythromycin, azithromycin and clarithromycin

## Vaccination

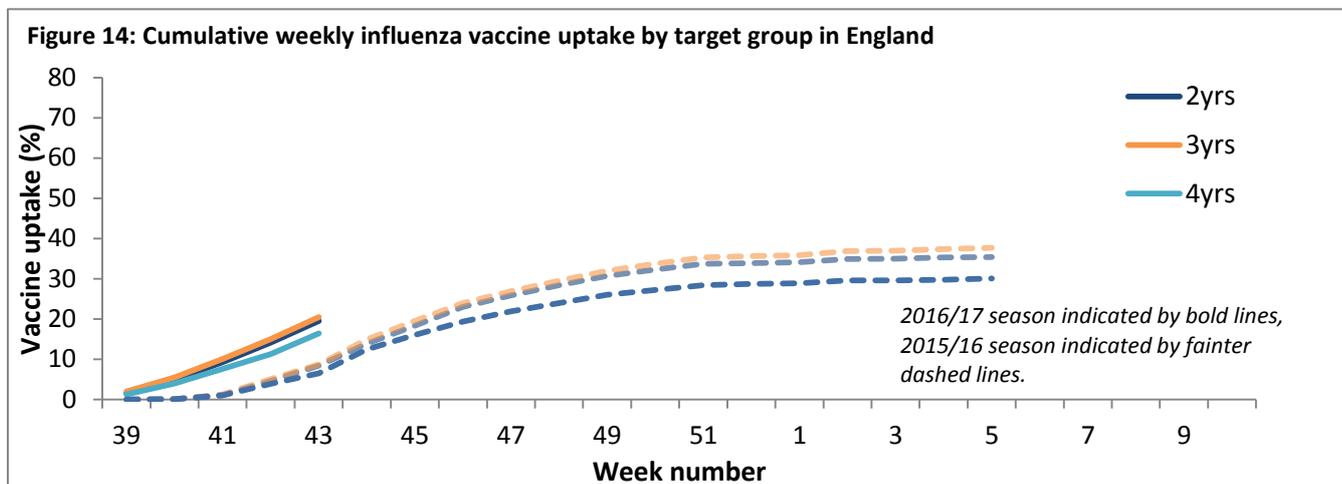
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- Up to week 43 2016 in 88.1% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2016/17 influenza vaccine in targeted groups was as follows, with vaccination activity starting earlier than last season (Figure 13):
  - 32.6% in under 65 years in a clinical risk group
  - 31.7% in pregnant women
  - 55.1% in 65+ year olds

Figure 13: Cumulative weekly influenza vaccine uptake by target group in England



- In 2016/17, all two-, three- and four-year-olds continue to be eligible for flu vaccination. In addition, the programme has been extended to children of school years 1, 2 and 3 age. Up to week 42 2016 in 90.8% of GP practices reporting weekly to Immform, the provisional proportion of children in England who had received the 2016/17 influenza vaccine in targeted groups was as follows (Figure 14):
  - 19.5% in all 2 year olds
  - 20.5% in all 3 year olds
  - 16.4% in all 4 year olds



## International Situation

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**Influenza activity is low and at inter-seasonal levels in the Northern Hemisphere but showing signs of decreasing in the Southern hemisphere.**

- [Europe](#) updated on 28 October 2016 (Joint ECDC-WHO Influenza weekly update)

In week 42/2016, influenza activity in the WHO European Region has remained at low levels with sporadic detections across the region.

For week 42/2016, of 740 sentinel specimens tested, 11 were positive for influenza virus. Of these 11 influenza viruses, 9 (82%) were A(H3N2).

For week 42/2016, 70 specimens from non-sentinel sources (such as hospitals, schools, nursing homes and other care institutions) tested positive for influenza viruses (Table 2). Similar to the previous week, 87% were type A and 12% type B. All influenza A viruses subtyped were A(H3N2) (11 of 61 influenza A).

No influenza-infected cases were reported by countries that conduct surveillance based on SARI or hospitalized laboratory-confirmed influenza cases in intensive care units or other wards.

- [United States of America](#) updated on 28 October 2016 (Centre for Disease Control report)

During week 42, influenza activity was low in the United States.

The most frequently identified influenza virus type reported by public health laboratories during week 42 was influenza A. The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low.

Nationwide during week 42, the proportion of outpatient visits for influenza-like illness (ILI) was 1.3%, which is below the national baseline of 2.2%.

- [Canada](#) updated on 28 October 2016 (Public Health Agency report)

Influenza activity is at interseasonal levels with the majority regions in Canada reporting low or no influenza activity.

In week 42, sporadic or localized influenza activities were reported in 23 regions across six provinces or territories (BC, AB, MB, ON, QC and YK).

A total of 80 positive influenza detections were reported in week 42. Influenza A(H3N2) continues to be the most common subtype detected.

In week 42, 1.1% of visits to sentinel healthcare professionals were due to influenza-like symptoms.

Three laboratory-confirmed influenza outbreaks were reported in week 42.

Less than five hospitalizations due to influenza A(H3N2) were reported in week 42. All hospitalizations were reported in adults ≥65 years.

- [Global influenza update](#) updated on 31 October 2016 (WHO website)

Influenza activity in temperate southern hemisphere countries continued to decrease or remained low. Influenza activity in the temperate zone of the northern hemisphere remained at inter-seasonal levels

In temperate South America, influenza and respiratory syncytial virus (RSV) activity decreased throughout the sub-region.

In the temperate countries of Southern Africa, influenza detections continued to decrease.

In Oceania, influenza virus activity continued to decrease in the last few weeks. Influenza A(H3N2) remained the dominant circulating influenza virus. In Australia, activity decreased from the peak in September.

In the Caribbean countries, influenza and other respiratory virus activity remained low except in Cuba where influenza B virus detections continued and in French Guiana where ILI activity and influenza detections of influenza A(H3N2) viruses increased slightly. In Central America, influenza virus activity in most countries remained low, except in Costa Rica where there was a slight increase in influenza detections. RSV continued to circulate in several countries as the predominant respiratory virus.

In tropical South America, respiratory virus activities remained low.

In tropical countries of South Asia, influenza activity was low.

In South East Asia, a decreasing trend in influenza detection was observed, although detections continued to increase in Lao People's Democratic Republic (PDR) and Thailand

In tropical Africa, Burkina Faso and La Réunion Island (France) reported slightly increased influenza A(H3N2) virus activity.

In Northern temperate Asia, influenza activity remained low with predominantly influenza A(H3N2) detections in northern China.

In North America and Europe, influenza activity was low with few influenza virus detections and ILI levels below seasonal thresholds. In the United States, RSV activity increased.

Based on FluNet reporting, the WHO GISRS laboratories tested more than 70,925 specimens between 03 October 2016 and 16 October 2016. 2,979 were positive for influenza viruses, of which 2,540 (85.3%) were typed as influenza A and 439 (14.7%) as influenza B. Of the sub-typed influenza A viruses, 135 (6.6%) were influenza A(H1N1)pdm09 and 1,911 (93.4%) were influenza A(H3N2). Of the characterized B viruses, 21 (25.9%) belonged to the B-Yamagata lineage and 60 (74.1%) to the B-Victoria lineage.

- [Avian Influenza](#) latest update on 03 October 2016 (WHO website)

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

Since 2003, a total of 856 laboratory-confirmed cases of human infection with avian influenza A(H5N1) virus, including 452 deaths, have been reported to WHO from 16 countries. Although other influenza A(H5) viruses have the potential to cause disease in humans, no human cases have been reported so far. According to reports received by the World Organisation for Animal Health (OIE), various influenza A(H5) subtypes, such as influenza A(H5N1), A(H5N2), A(H5N6), A(H5N8) and A(H5N9), continue to be detected in birds in West Africa, Europe and Asia.

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

Since the last update on 19 July 2016, China reported five laboratory-confirmed human cases of A(H7N9) virus infection to WHO on [11 August 2016](#), including one fatal case. One cluster of three cases was reported for which the possibility of human-to-human transmission for two cases in the cluster cannot be excluded.

A total of 798 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 320 deaths, have been reported to WHO.

- [Middle East respiratory syndrome coronavirus \(MERS-CoV\)](#) latest update on 31 October 2016

Between [16 September and 10 October 2016](#) the National IHR Focal Point of Saudi Arabia seven (7) additional cases of Middle East Respiratory Syndrome (MERS) including one (1) fatal case.

Up to 02 November 2016, 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 872 suspect cases in the UK that have been investigated for MERS-CoV and tested negative.

Globally, since September 2012, WHO has been notified of 1,813 laboratory-confirmed cases of infection with MERS-CoV, including at least 645 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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This report was prepared by the Influenza section, Respiratory Diseases Department, Centre for Infectious Disease Surveillance and Control, Public Health England. We are grateful to all who provided data for this report including the RCGP Research and Surveillance Centre, the PHE Real-time Syndromic Surveillance team, the PHE Respiratory Virus Unit, the PHE Modelling and Statistics unit, the PHE Dept. of Healthcare Associated Infection & Antimicrobial Resistance, PHE regional microbiology laboratories, Office for National Statistics, the Department of Health, Health Protection Scotland, National Public Health Service (Wales), the Public Health Agency Northern Ireland, the Northern Ireland Statistics and Research Agency, QSurveillance<sup>®</sup> and EMIS and EMIS practices contributing to the QSurveillance<sup>®</sup> database.

## Related links

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### Weekly consultation rates in national sentinel schemes

- [Sentinel schemes operating across the UK](#)
- [RCGP scheme](#)
- Northern Ireland surveillance ([Public Health Agency](#))
- Scotland surveillance ([Health Protection Scotland](#))
- Wales surveillance ([Public Health Wales](#))
- [Real time syndromic surveillance](#)
- MEM threshold [methodology paper](#) and [UK pilot paper](#)

### Community surveillance

- [Outbreak reporting](#)
- [FluSurvey](#)
- [MOSA](#)

### 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](#))
- 2016/17 Northern Hemisphere seasonal influenza vaccine recommendations ([WHO](#))