PHE Weekly National Influenza Report

Summary of UK surveillance of influenza and other seasonal respiratory illnesses

27 October 2016 – Week 43 report (up to week 42 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

At the start of the 2016/17 influenza season, activity is at low levels in week 42 (ending 23 October 2016). Respiratory Syncytial Virus (RSV) is starting to circulate.

- Community influenza surveillance
  - Through the GP In Hours Syndromic Surveillance system, GP respiratory indicators showed seasonal increases in week 42.
  - Thirteen new acute respiratory outbreaks have been reported in the past 7 days. Twelve outbreaks were from care homes where two tested positive for rhinovirus. The other outbreak was from a school and tested negative for influenza and other respiratory viruses.
- Overall weekly influenza GP consultation rates across the UK
  - In week 42, the overall weekly influenza-like illness (ILI) GP consultation rate was 6.4 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 42, four admissions to ICU/HDU with confirmed influenza (2 influenza A(H1N1)pdm09 and 2 influenza A(unknown subtype)) were reported across the UK (136 Trusts) through the USISS mandatory ICU scheme.
  - In week 42, no hospitalised confirmed influenza cases were reported through the USISS sentinel hospital network (18 NHS Trusts across England).
  - No confirmed influenza admissions have been reported from the six Severe Respiratory Failure centres in the UK in week 42.
- All-cause mortality data
  - In week 42 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
  - One sample tested positive for influenza (A(H3N2)) through GP sentinel schemes across the UK.
  - Eight influenza positive detections were recorded through the DataMart scheme (4 influenza A(H3N2), 2 influenza A(not subtyped) and 2 influenza B). A positivity of 0.7% was seen in week 42, with the highest positivity seen in the 15-44 year olds (2.0%).This is below the all-age threshold for 2016/17 season of 8.6%.
  - Through the DataMart scheme, it has been noted that RSV activity has increased (overall positivity is at 7.3% in week 42 compared to 5.9% in week 41) and is starting to circulate with positivity in <5 year olds now at 20.7% in week 42.
- Vaccination
  - Up to week 42 2016, in 86.9% 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: 28.9% in under 65 years in a clinical risk group, 28.4% in pregnant women, 50.7% in 65+ year olds. In 89.5% of GP practices to Immform, the provisional proportion of children in England who had received the 2016/17 influenza vaccine was as follows: 14.1% in all 2 year olds, 15.0% in all 3 year olds and 11.3% 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.

Community surveillance

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During week 41, GP respiratory indicators showed seasonal increases. Thirteen new acute respiratory outbreaks were reported in the past 7 days.

- PHE Real-time Syndromic Surveillance

- During week 42 GP consultations for respiratory conditions showed continued seasonal increases.

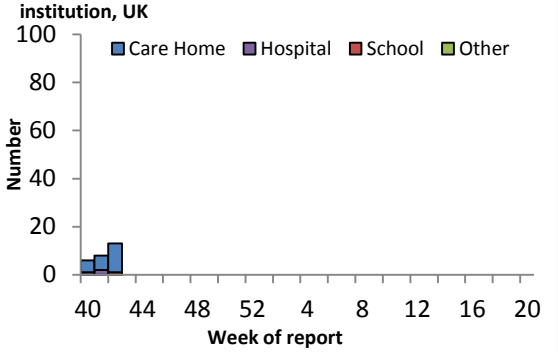
- For further information, please see the syndromic surveillance webpage.

- Acute respiratory disease outbreaks

- Thirteen new acute respiratory outbreaks have been reported in the past 7 days. Twelve outbreaks were from care homes where two tested positive for rhinovirus. The other outbreak was from a school which tested negative for influenza and other respiratory viruses.

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

Figure 1: Number of acute respiratory outbreaks by institution, UK



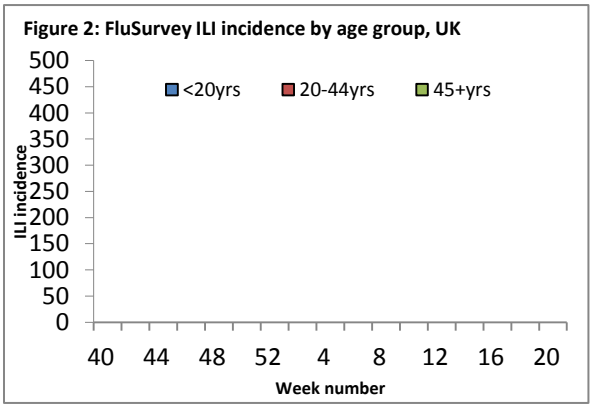
- FluSurvey

- Internet-based surveillance of influenza 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 is expected later in the season.

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

Figure 2: FluSurvey ILI incidence by age group, UK



Weekly consultation rates in national sentinel schemes

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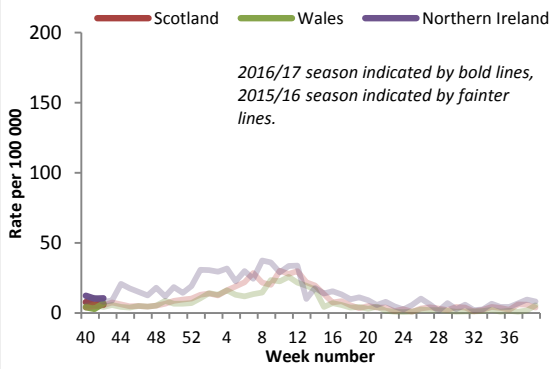
In week 42, overall weekly influenza-like illness GP consultations were low in England, Wales, Northern Ireland and Scotland.

- Influenza/Influenza-Like-Illness (ILI)

Figure 3: GP ILI/influenza consultation rates in the devolved administrations.



Northern Ireland

-The Northern Ireland ILI rate was at 10.5 per 100,000 in week 42 compared to 10.3 per 100,000 in week 41 (Figure 3). This remains below the baseline threshold (47.9 per 100,000).

-The highest rates were seen in the 1-4 year olds (21.5 per 100,000) and 45-64 year olds (21.3 per 100,000).

Wales

-The Welsh ILI rate was at 6.9 per 100,000 in week 42 compared to 3.0 per 100,000 in week 41 (Figure 3). This remains below the baseline threshold (10.3 per 100,000).

- The highest rates were seen in the 1-4 year olds (13.3 per 100,000) and 15-44 year olds (11.9 per 100,000).

Scotland

-The Scottish ILI rate was at 6.0 per 100,000 in week 42 compared to 7.0 per 100,000 in week 41 (Figure 3). This remains below baseline threshold (36.1 per 100,000).

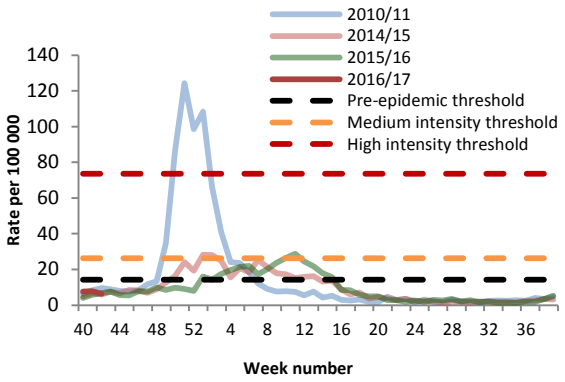
-The highest rates were seen in 75+ year olds (7.8 per 100,000) and 15-44 year olds (7.0 per 100,000).

RCGP (England and Wales)

- The weekly ILI consultation rate through the RCGP surveillance is 6.4 per 100,000 in week 42 compared to 7.8 per 100,000 in week 41. 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 (13.3 per 100,000) and 75+ year olds (10.0 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)

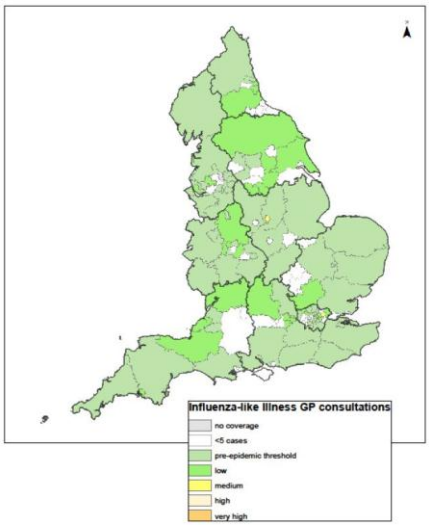
-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system has decreased at 5.6 per 100,000 in week 42 (Figure 5).

Figure 5 represents a map of GP ILI consultation rates in Week 42 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 42



Influenza confirmed hospitalisations

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In week 42, there were four admissions to ICU/HDU with confirmed influenza (2 influenza A(H1N1)pdm09 and 2 influenza A(unknown subtype)) reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (136 Trusts). No hospitalised confirmed influenza cases were reported through the USISS sentinel hospital network across England (18 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 42)

- In week 42, there were four admissions to ICU/HDU with confirmed influenza (2 influenza A(H1N1)pdm09 and 2 influenza A(unknown subtype)) reported across the UK (136/156 Trusts) through the USISS mandatory ICU scheme, with a rate of 0.01 per 100,000 compared to a rate of 0.00 per 100,000 in week 41 (Figures 6 and 7). No confirmed influenza deaths were reported in week 42 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.

Figure 6: Weekly ICU/HDU influenza admission rate per 100,000 trust catchment population , England, since week 40 2016

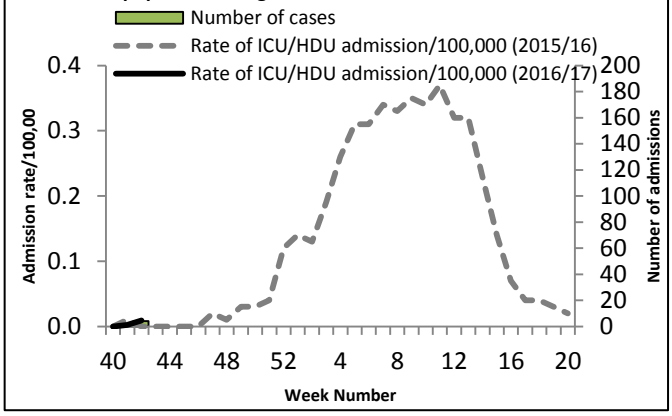
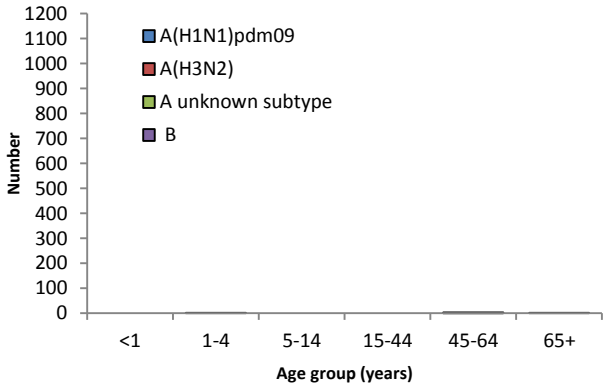


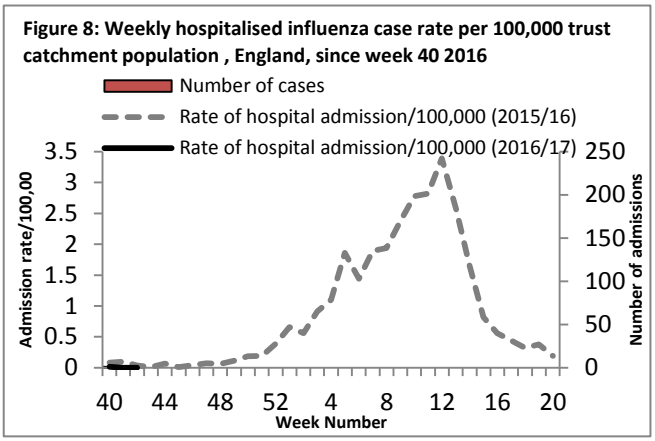
Figure 7: Cumulative ICU influenza admissions (USISS mandatory) by age group and flu type, UK, since week 40 2016



- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 42)

- In week 42, there were no hospitalised confirmed influenza cases reported through the USISS sentinel hospital network from 18 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.

Figure 8: Weekly hospitalised influenza case rate per 100,000 trust catchment population , England, since week 40 2016



- USISS Severe Respiratory Failure Centre confirmed influenza admissions, UK (week 42)

- In week 42, there were no confirmed influenza admissions reported from the six Severe Respiratory Failure (SRF) centres in the UK.

All-cause mortality data

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In week 42, 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 42 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 41 2016, an estimated 9,719 all-cause deaths were registered in England and Wales (source: Office for National Statistics). This is an increase compared to the 9,291 estimated death registrations in week 40 2016.

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

-In week 42 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 42 2016 (Table 2).

Table 1: Excess mortality by age group,England*

Age group (years)	Excess detected in week 42 2016?	Weeks with excess in 2016/17
<5	×	NA
5-14	×	NA
15-64	×	NA
65+	×	NA

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

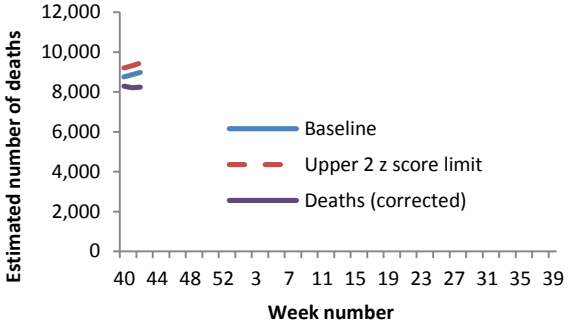
Table 2: Excess mortality by UK country*

Country	Excess detected in week 42 2016?	Weeks with excess in 2016/17
England	×	NA
Wales	×	NA
Scotland	×	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

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



Microbiological surveillance

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In week 42 2016, one sample tested positive for influenza (A(H3N2)) through the UK GP sentinel schemes. Eight positive detections were recorded through the DataMart scheme (4 influenza A(H3N2), 2 influenza A(not subtyped) and 2 influenza B).

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

-In week 42, one sample tested positive for influenza (A(H3N2)) through the UK GP sentinel swabbing schemes, an overall positivity of 0.8% compared to 0.0% in week 41 (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%)	0/67 (0%)	0/3 (-)	0/3 (-)
42	0/66 (0%)	0/54 (0%)	0/1 (-)	1/3 (-)

NB. Proportion positive omitted when fewer than 10 specimens tested

- Respiratory DataMart System (England)

In week 42 2016, out of the 1,108 respiratory specimens reported through the Respiratory DataMart System, eight samples (0.7%) were positive for influenza (4 influenza A(H3N2), 2 influenza A(not subtyped) and 2 influenza B) (Figure 10). The highest positivity was in the 15-44 year olds at 2.0%. RSV is now starting to circulate with an overall positivity 7.3% in week 42 compared to 5.9% in week 41. The highest positivity was noted in the <5 year olds at 20.7%. RSV activity has started a couple of weeks earlier than seen in previous seasons (Figure 11). Positivity for rhinovirus decreased from 27.1% in week 41 to 22.1% in week 42. A slight increase was noted in the positivity for adenovirus from 2.9% in week 41 to 4.6% in week 42. Positivities for other viruses were low, with parainfluenza at 2.0% and hMPV at 2.1% (Figure12).

Figure 10: DataMart samples positive for influenza, England

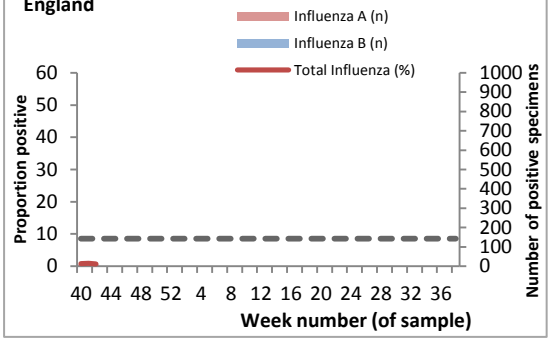


Figure 11: Datamart % RSV positive by age, England

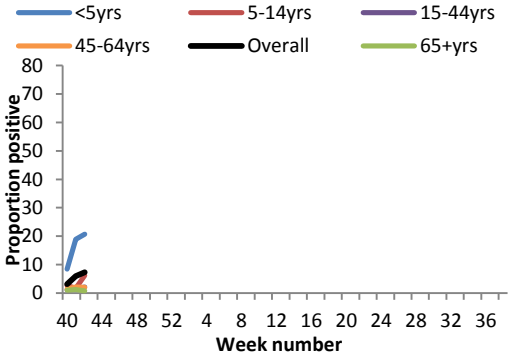
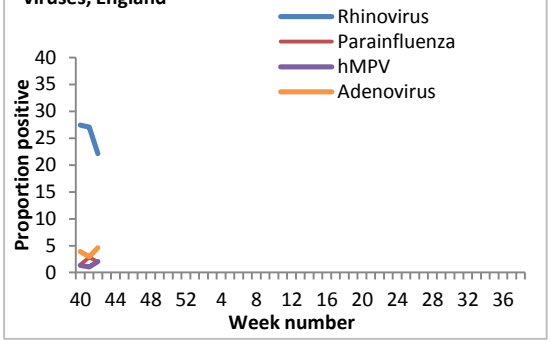


Figure 12: Datamart % positive for other respiratory viruses, England



**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 23 October 2016, the proportion of all lower respiratory tract isolates of *Streptococcus pneumoniae*, *Haemophilus influenza, 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 23 October 2016, E&W

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
S. pneumoniae	Penicillin	2,473	88
	Macrolides	2,773	80
	Tetracycline	2,688	81
H. influenzae	Amoxicillin/ampicillin	12,264	70
	Co-amoxiclav	12,454	88
	Macrolides	4,960	13
	Tetracycline	12,281	98
S. aureus	Methicillin	5,642	92
	Macrolides	6,083	68
MRSA	Clindamycin	287	42
	Tetracycline	451	84
MSSA	Clindamycin	2,873	78
	Tetracycline	4,751	93

**Macrolides = erythromycin, azithromycin and clarithromycin*

Vaccination

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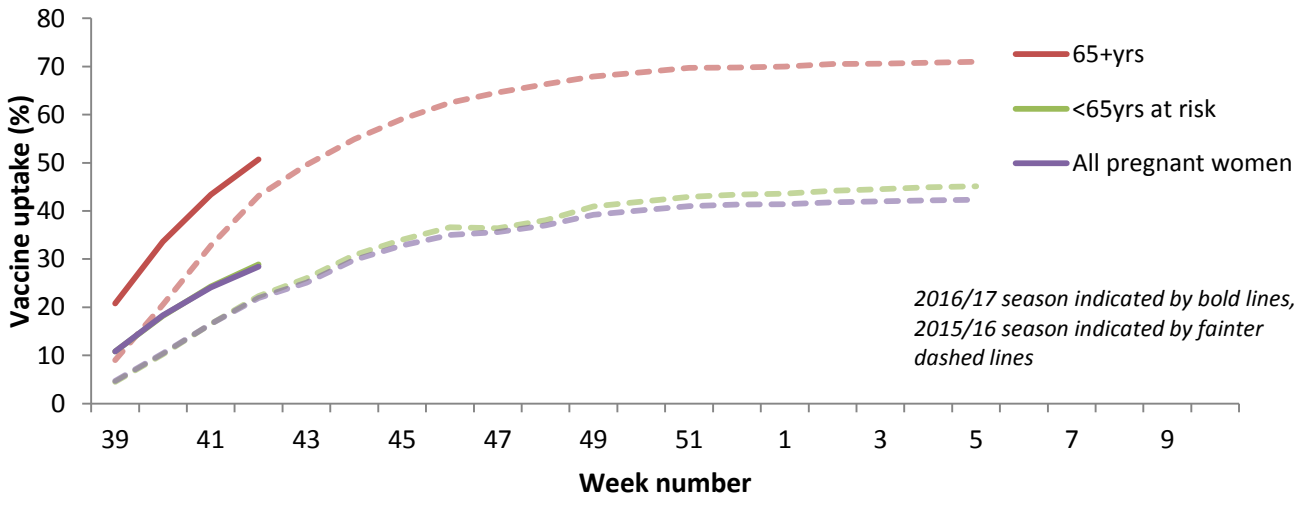
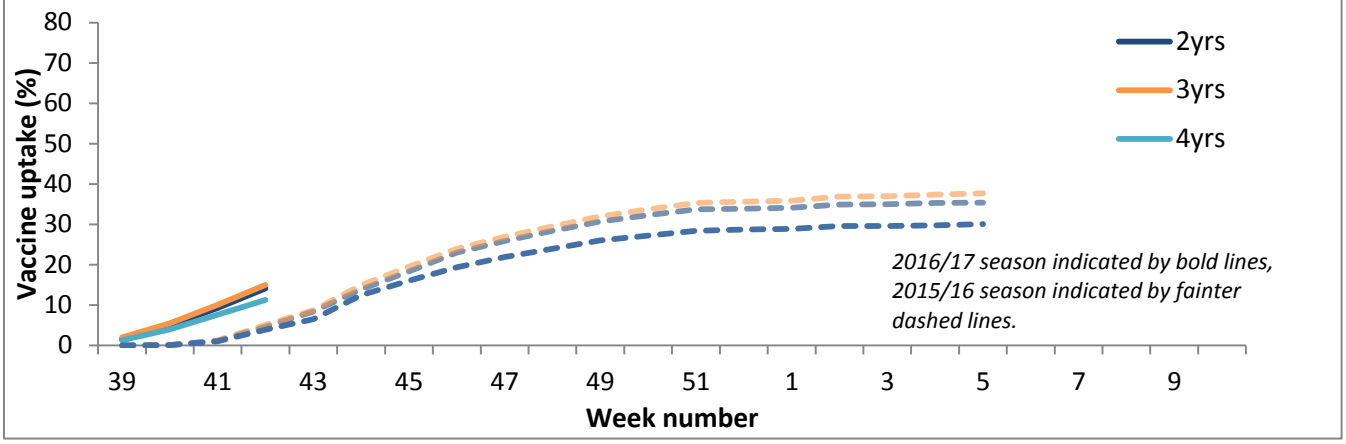
- Up to week 42 2016 in 86.9% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2016/17 influenza vaccine in targeted groups was as follows, with vaccination activity starting earlier than last season (Figure 13):
  - 28.9% in under 65 years in a clinical risk group
  - 28.4% in pregnant women
  - 50.7% 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 89.5% 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):
    - 14.1% in all 2 year olds
    - 15.0% in all 3 year olds
    - 11.3% in all 4 year olds

Figure 14: Cumulative weekly influenza vaccine uptake by target group in England



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 21 October 2016 (Joint ECDC-WHO Influenza weekly update)

In week 41/2016, influenza activity in the WHO European Region has remained at low levels with all countries reporting low intensity.

In week 41/2016, two of 488 sentinel specimens tested were positive for influenza A(H3), both specimens were from Spain.

For week 41/2016, 43 specimens from non-sentinel sources tested positive for influenza viruses, 88% were type A and 12% type B. Both influenza A(H1N1)pdm09 and A(H3N2) subtypes were detected.

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 21 October 2016 (Centre for Disease Control report)

During week 41, influenza activity was low in the United States.

The most frequently identified influenza virus type reported by public health laboratories during week 41 was influenza A. The percentage of respiratory specimens testing positive for influenza in clinical laboratories is low.

Nationwide during week 41, the proportion of outpatient visits for influenza-like illness (ILI) was 1.2%, which is below the national baseline of 2.2%.

- Canada updated on 21 October 2016 (Public Health Agency report)

Influenza activity is at inter-seasonal levels with the majority regions of Canada reporting low or no influenza activity.

In week 41, sporadic or localised influenza activity were reported in 13 regions across six regions.

In week 41, a total of 41 positive influenza detections were reported, with influenza A(H3N2) being the most detected subtype.

One laboratory-confirmed influenza outbreak in long-term care facility was reported in week 41.

Five hospitalizations due to influenza A(H3N2) were reported in week 41.

To date this this season, 38 hospitalizations have been reported, of which 22 (58%) were due to influenza A(H3N2) and 68% were in adults 65+. No ICU admissions or deaths have been reported.

- Global influenza update updated on 17 October 2016 (WHO website)

Influenza activity decreased in Oceania, South Africa and temperate South America. 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 most of the sub-region. In Chile, influenza-like illness (ILI) and laboratory confirmed influenza detections decreased but remained elevated with A(H3N2) viruses predominant followed by influenza B viruses. In Paraguay, ILI and severe acute respiratory infection (SARI) cases decreased with decreasing detections of respiratory viruses.

In the temperate countries of Southern Africa, influenza detections decreased with A(H1N1)pdm09 virus dominant.

In Oceania, influenza virus activity decreased in the last few weeks. Influenza A(H3N2) remained the dominant circulating influenza virus. In Australia, activity decreased but was still high, while in New Zealand ILI consultation rates remained below the seasonal baseline level.

In the Caribbean countries, influenza and other respiratory virus activity remained low except in Cuba where influenza B virus detections increased and in French Guiana where ILI activity and influenza detections increased slightly. In Central America, influenza virus activity remained low but detections of RSV increased in several countries.

In tropical South America, respiratory virus activities remained low in most of the countries, except in Colombia, where RSV activity increased.

In tropical countries of South Asia, influenza activity was generally low with predominantly influenza B detections.

In South East Asia, in general a decreasing trend in influenza detection was observed, although in Lao People's Democratic Republic (PDR) and Thailand increased number of influenza detections were reported in recent weeks.

In tropical countries of Africa, Ghana and Senegal reported slightly increased influenza 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 43,038 specimens between 19 September 2016 and 02 October 2016. 2,619 were positive for influenza viruses, of which 2,150 (82.1%) were typed as influenza A and 469 (17.9%) as influenza B. Of the sub-typed influenza A viruses, 161 (9.3%) were influenza A(H1N1)pdm09 and 1,577 (90.7%) were influenza A(H3N2). Of the characterized B viruses, 22 (19.6%) belonged to the B-Yamagata lineage and 90 (80.4%) 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 21 September 2016

Between 23 August and 11 September 2016 the National IHR Focal Point of Saudi Arabia reported five (5) additional cases of Middle East Respiratory Syndrome (MERS).

Up to 26 October 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 867 suspect cases in the UK that have been investigated for MERS-CoV and tested negative.

Globally, since September 2012, WHO has been notified of 1,806 laboratory-confirmed cases of infection with MERS-CoV, including at least 643 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.

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Related links | Back to top |

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)