PHE Weekly National Influenza Report

Summary of UK surveillance of influenza and other seasonal respiratory illnesses

23 April 2015 – Week 17 report (up to week 16 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.

Summary

In week 16 2016 (ending 19 April), influenza activity has decreased to baseline levels. The Department of Health alert issued on the prescription of antiviral medicines by GPs is still active.

- Community influenza surveillance
  - In week 16 all respiratory syndromic indicators were within seasonally expected levels.
  - Seven new acute respiratory outbreaks have been reported in the past seven days: six in care homes (three flu B and three not tested/results not available yet) and one in a hospital (one flu B).
- Overall weekly influenza GP consultation rates across the UK
  - The weekly ILI consultation rate through both the GP In Hours Syndromic Surveillance system and RCGP system decreased from week 15 to week 16.
  - In week 16, overall weekly influenza-like illness (ILI) GP consultations remained stable in Wales, Northern Ireland and Scotland.
- Influenza-confirmed hospitalisations
  - 27 new admissions to ICU/HDU with confirmed influenza (23 influenza B, three influenza A unknown subtype and one influenza A/(H1N1)pdm09) were reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (128 Trusts in England) in week 16, a rate of 0.06 compared to 0.08 per 100,000 the previous week.
  - 22 new hospitalised confirmed influenza cases (21 influenza B and one influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network across England (20 Trusts), a rate of 0.30 compared to 0.41 per 100,000 the previous week.
- All-cause mortality data
  - In week 16 2015, 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. Since week 40 2014, significant excess mortality has been observed in England in weeks 50-7 predominantly in 65+ year olds, peaking in week 2 2015. This period of significant excess coincided with circulating influenza and cold snaps.
- Microbiological surveillance
  - None of the five samples tested were positive for influenza through the English GP sentinel schemes.
  - 41 influenza positive detections were recorded through the DataMart scheme (37 B, two A(H3) and two influenza A(H1N1)pdm09, a positivity of 5.4% compared to 8.5% the previous week) with the highest positivity seen in 65+ year olds (8.3%).
  - Characterisation of influenza B viruses by the PHE Respiratory Virus Unit indicates that a proportion of the viruses circulating this season are distinguishable from the Northern Hemisphere 2014/15 vaccine strain and are similar to the influenza B virus selected for the 2015/16 Northern Hemisphere influenza vaccine.
- Vaccination
  - Up to the end of January 2015, the provisional proportion of people in England who had received the 2014/15 influenza vaccine in targeted groups was 50.3% in under 65 years in a clinical risk group, 44.1% in pregnant women, 72.8% in 65+ year olds, 38.5% in all 2 year olds, 41.3% in all 3 year olds and 32.9% in all 4 year olds.
  - Provisional data from the fifth monthly collection of influenza vaccine uptake by frontline healthcare workers show 54.9% were vaccinated by 28 February 2015 from 100.0% of Trusts.
  - End-of season reports for vaccine uptake in targeted groups and frontline healthcare workers are due to be published on 21 May.
  - The Annual Flu Letter and Flu Plan for 2015/16 have now been published.
- International situation
  - Influenza activity declined further in the northern hemisphere and was low in most regions globally. While influenza A(H3N2) viruses predominated this season in the northern hemisphere, the proportions of influenza A(H1N1)pdm09 and B viruses increased during the past few weeks. Influenza activity remains at inter-seasonal levels in the southern hemisphere.

Community surveillance

| Back to top |

In week 16 all respiratory syndromic indicators were within seasonally expected levels and seven new acute respiratory outbreaks were reported in the last seven days.

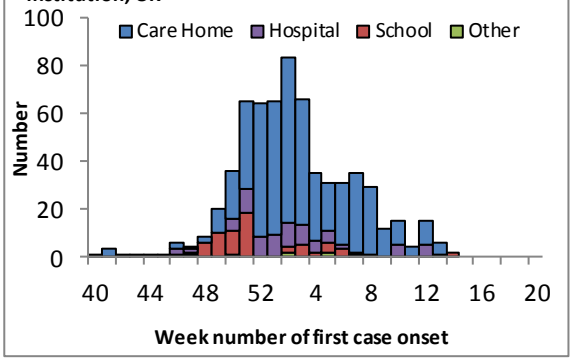
- PHE Real-time Syndromic Surveillance

-In week 16 all respiratory syndromic indicators were within 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 seven days: six in care homes (three flu B and three not tested/results not available yet) and one in a hospital (1 flu B). So far in the 2014/15 influenza season, 678 outbreaks (508 in care homes, 84 in hospitals, 76 in schools and 10 in other settings) have been reported in the UK including 132 with flu A(H3) infection, 167 flu A(untyped), 31 flu B, four flu A(untyped)/flu B, two flu A(H1N1)pdm09, eight rhinovirus, six RSV, five parainfluenza, four hMPV, one enterovirus, 19 mixed infections and 298 not tested/test results not yet available/tested negative.

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

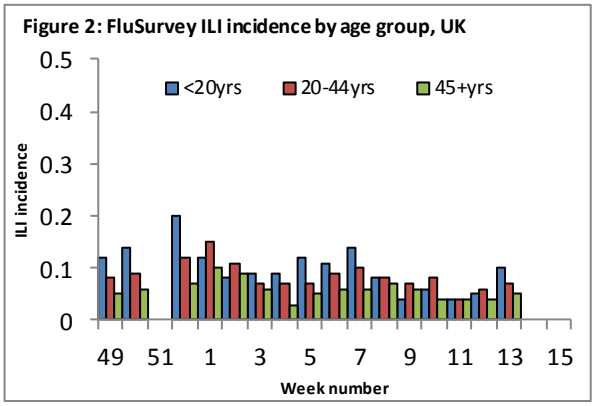


-Outbreaks should be recorded on HPZone and reported to the local Health Protection Teams and Respscidsc@phe.gov.uk.

- FluSurvey

-Internet-based surveillance of influenza in the general population is undertaken through the FluSurvey project (http://flusurvey.org.uk) run by the London School of Hygiene and Tropical Medicine.
-In week 13 (the last week of reporting), the incidence of ILI reports by age group was highest in under 20 year olds (Figure 2, NB. No data is currently available for week 51).

Figure 2: FluSurvey ILI incidence by age group, UK



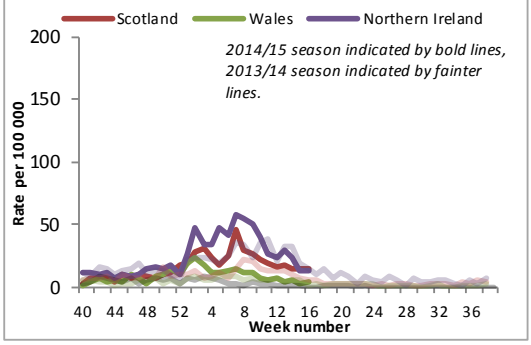
Weekly consultation rates in national sentinel schemes

| Back to top |

In week 16 overall weekly influenza-like illness GP consultations remained stable in Wales, Northern Ireland and Scotland.

- Influenza/Influenza-Like-Illness (ILI)

Figure 3: GP ILI/influenza consultation rates in the UK



Northern Ireland

-The Northern Ireland influenza consultation rate remained stable at 13.8 per 100,000 in week 16 (Figure 3).

-The highest rates were seen in under one year olds (57.3 per 100,000), 45-64 year olds (20.2 per 100,000) and 15-44 year olds (12.8 per 100,000).

Wales

-The Welsh influenza rate remained stable at 3.7 per 100,000 in week 16 (Figure 3).

-The highest rates were seen in 65-74 year olds (7.6 per 100,000), 5-14 year olds (5.5 per 100,000) and 45-64 year olds (4.3 per 100,000).

Scotland

-The Scottish ILI rate remained stable at 15.4 per 100,000 in week 16 (Figure 3).

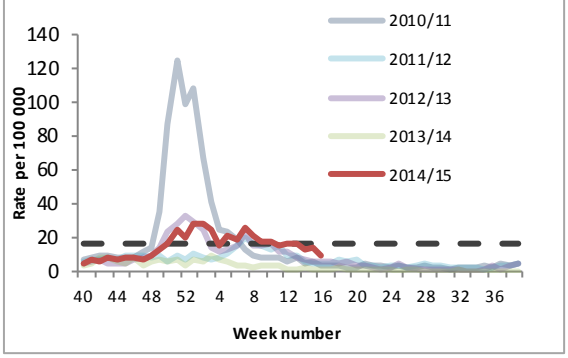
-The highest rates were seen in 75+ year olds (20.9 per 100,000), 45-64 year olds (18.9 per 100,000) and 65-74 year olds (17.3 per 100,000).

RCGP (England and Wales)

-The weekly ILI consultation rate through the RCGP surveillance system decreased from 13.7 to 8.8 in week 16 (Figure 4*). By age group, the highest rate was seen in 45-64 year olds (12.2 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. The threshold to indicate a likelihood of influenza community circulation for as calculated through the Moving Epidemic Method is 16 per 100,000.*

Figure 4: RCGP ILI consultation rates , England and Wales

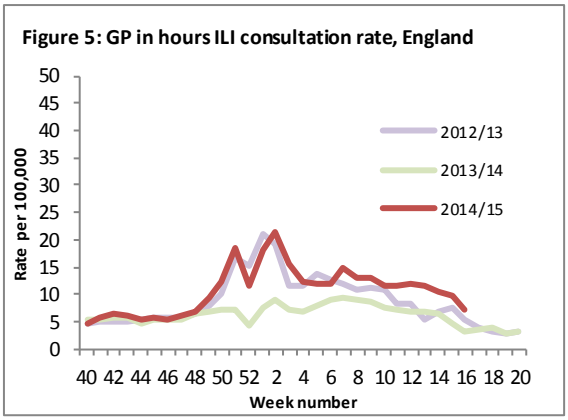


GP In Hours Syndromic Surveillance System (England)

-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system decreased from 9.6 to 7.2 per 100,000 in week 16, Figure 5).

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

Figure 5: GP in hours ILI consultation rate, England



Influenza confirmed hospitalisations

| Back to top |

In week 16, 27 new admissions to ICU/HDU with confirmed influenza (23 influenza B, three influenza A unknown subtype and one influenza A/(H1N1)pdm09) were reported through the national USISS mandatory ICU scheme across the UK (128 Trusts in England). 22 new hospitalised confirmed influenza cases (21 influenza B and one influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network across England (20 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 has been 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 16)

-In week 16, 27 new admissions to ICU/HDU with confirmed influenza (23 influenza B, three influenza A unknown subtype and one influenza A/(H1N1)pdm09) were reported across the UK (128/156 Trusts in England) through the USISS mandatory ICU scheme (Figures 6 and 7), a rate of 0.06 per 100,000 compared to 0.08 per 100,000 the previous week. Six new confirmed influenza deaths were reported in week 16 2015. A total of 1,361 admissions (731 A unknown subtype, 262 A(H3N2), 117 A(H1N1)pdm09 and 251 B) and 139 confirmed influenza deaths have been reported since week 40 2014.

Figure 6: Weekly ICU/HDU influenza admission rate per 100,000 trust catchment population , England, since week 40 2014

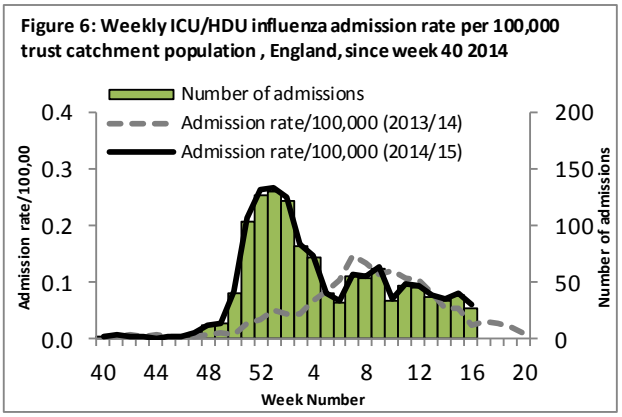
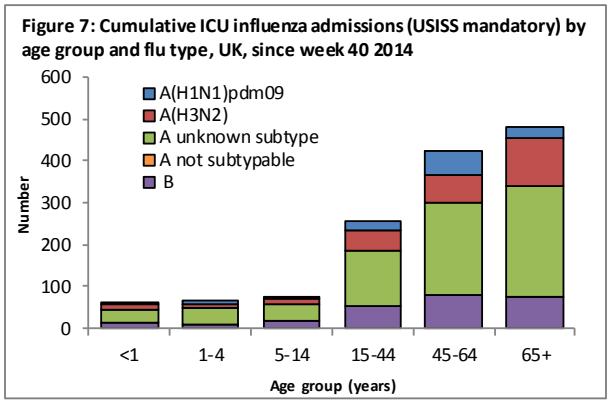


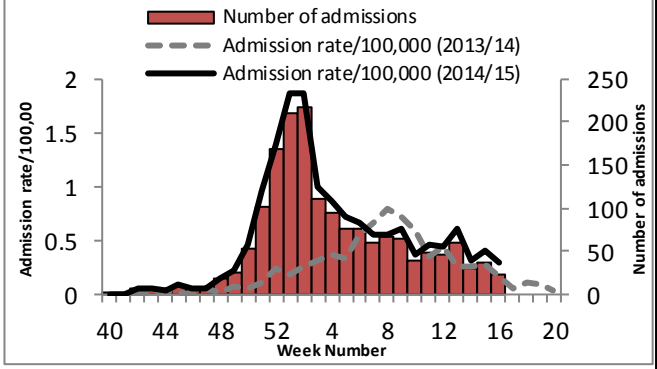
Figure 7: Cumulative ICU influenza admissions (USISS mandatory) by age group and flu type, UK, since week 40 2014



- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 16)

-In week 16, 22 new hospitalised confirmed influenza cases (23 influenza B and one influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network from 20 NHS Trusts across England (Figure 8), a rate of 0.30 per 100,000 compared to 0.41 per 100,000 the previous week. A total of 1,670 hospitalised confirmed influenza admissions (882 A(H3N2), 407 A unknown subtype, 319 B and 62 A(H1N1pdm09)) have been reported since week 40.

Figure 8: Weekly hospitalised influenza case rate per 100,000 trust catchment population , England, since week 40 2014



All-cause mortality data

| Back to top |

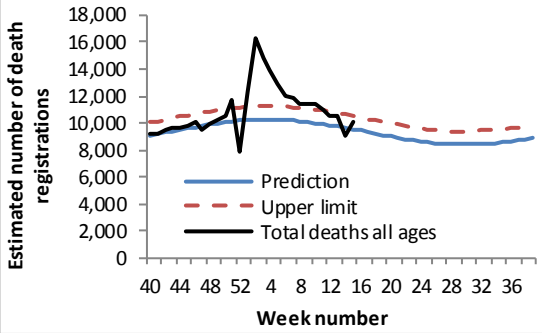
In week 16 2015, no statistically significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England overall and by age group and across the devolved administrations. Since week 40 2014, significant excess mortality has been observed in England in weeks 50-7 predominantly in 65+ year olds, peaking in week 2 2015. This period of significant excess coincided with circulating influenza and cold snaps.

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 15 2015, an estimated 10,089 all-cause deaths were registered in England and Wales (source: Office for National Statistics). This is more than the 9,062 estimated death registrations in week 14, but remains below the 95% upper limit of expected death registrations for the time of year as calculated by PHE (Figure 9). Weeks 52, 1 and 14 correspond to a week when there were bank holidays and fewer days when deaths were registered. Therefore the decrease in deaths seen is likely to be artificial and result in subsequent increases in following weeks.

Figure 9: Observed & predicted all-cause death registrations, E&W



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

-Since week 40 2014 up to week 16 2015 in England, 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 in 65+ year olds in weeks 50-7 2015, 15-64 year olds in weeks 51-2, and week 2 in under five year olds (Figure 10, Table 1). This period of statistically significant excess coincided with circulating influenza and cold snaps. This data is provisional due to the time delay in registration; numbers may vary from week to week.

-In the devolved administrations, up to week 16 2015, excess mortality above the threshold was seen in weeks 51-9 in Scotland, weeks 42 and 1-3 in Wales and weeks 3-4 and 8-9 in Northern Ireland (Table 2).

Table 1: Excess mortality by age group,England*

Age group (years)	Excess detected in week 16 2015?	Weeks with excess in 2014/15
<5	×	2
5-14	×	NA
15-64	×	51-2
65+	×	50-7

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

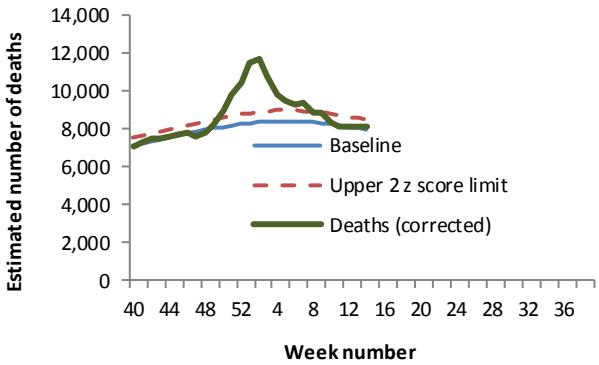
Table 2: Excess mortality by UK country*

Country	Excess detected in week 16 2015?	Weeks with excess in 2014/15
England	×	50-5,7
Wales	×	42, 1-3
Scotland	×	51-9
Northern Ireland	×	3-4, 8-9

** 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 10. Excess mortality in 65+ year olds, EuroMOMO, England



Microbiological surveillance

| Back to top |

In week 16 2015, none of the five samples tested were positive for influenza through the English GP sentinel schemes. 41 influenza positive detections were recorded through the DataMart scheme (37 B, two A(H3) and two influenza A(H1N1)pdm09).

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

-In week 15, no samples were positive for influenza in England, nine were positive in Scotland (eight B and one A(H3)), and none were positive in Northern Ireland and Wales (Table 3).

Table 3: Sentinel influenza surveillance in the UK

Week	England	Scotland	Northern Ireland	Wales
12	33/71 (46.5%)	5/43 (11.6%)	5/10 (50.0%)	0/2 (-)
13	11/30 (36.7%)	15/38 (39.5%)	2/8 (-)	0/0 (-)
14	12/40 (30.0%)	3/32 (9.4%)	1/9 (-)	0/0 (-)
15	7/18 (38.9%)	6/23 (26.1%)	0/1 (-)	0/0 (-)
16	0/5 (-)	9/24 (37.5%)	0/4 (-)	0/0 (-)

NB. Proportion positive omitted when fewer than 10 specimens tested

- Respiratory DataMart System (England)

In week 16 2015, out of the 758 respiratory specimens reported through the Respiratory DataMart System, 41 samples (5.4%) were positive for influenza including 2 A(H3), 2 influenza A(H1N1)pdm09 and 37 B (Figure 11*), with the highest positivity in 65+ year olds (8.3%, Figure 12). The overall positivity for RSV remained at low levels (0.7%)(Figure 10). Positivity for rhinovirus remained stable at 9.6%; adenovirus decreased to 4.4%; parainfluenza decreased to 9.6%; human metapneumovirus (hMPV) decreased to 2.4% (Figure 13).

Figure 11: DataMart samples positive for influenza, England

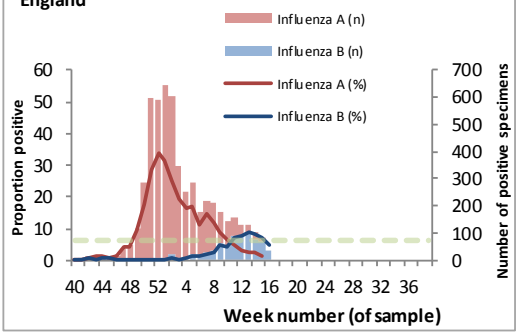


Figure 12: Datamart % positive for influenza by age, England

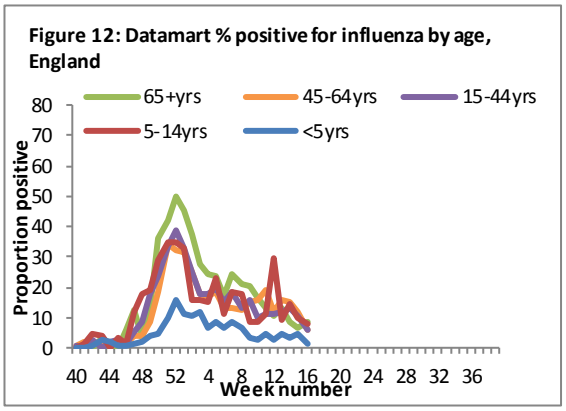
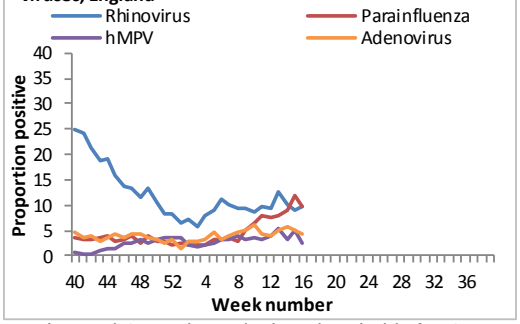


Figure 13: Datamart % positive for other respiratory viruses, England



**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 6%.*

- Virus characterisation

Influenza B: Since week 40 2014, the PHE Respiratory Virus Unit (RVU) has isolated and antigenically characterised 62 influenza B viruses as belonging to the B/Yamagata/16/88 lineage. Of these, 57 (92%) showed reduced reactivity in antigenic tests with antiserum to the 2014/15 Northern hemisphere B/Yamagata-lineage trivalent and quadrivalent vaccine virus, B/Massachusetts/2/2012. These 57 isolates are antigenically similar to B/Phuket/3073/2013, the influenza B/Yamagata lineage virus selected for 2015/16 Northern Hemisphere influenza vaccines. B/Phuket/3073/2013 is related to, but antigenically and genetically distinguishable, from the B/Massachusetts/2/2012 vaccine virus. Four influenza B viruses have been isolated and antigenically characterised as belonging to the B/Victoria/2/87 lineage, similar to the influenza B/Victoria-lineage component of the 2014/15 Northern Hemisphere quadrivalent vaccine.

Influenza A(H3N2): 241 A(H3N2) influenza viruses have been isolated and antigenically characterised. The majority were similar to the A/Texas/50/2012 H3N2 Northern Hemisphere 2014/15 vaccine strain, however 55 (23%) showed reduced reactivity in antigenic tests with A/Texas/50/2012 antiserum. These 55 isolates are antigenically similar to A/Switzerland/9715293/2013, the H3N2 virus selected for the 2015/16 Northern Hemisphere influenza vaccine. A/Switzerland/9715293/2013 is related to, but antigenically and genetically distinguishable, from the A/Texas/50/2012 vaccine virus. A portion of recent influenza A(H3N2) viruses do not grow sufficiently for antigenic characterization. For many of these viruses, RVU performs genetic characterisation. Of 181 A(H3N2) viruses characterised genetically by RVU to date, some of which were not able to be antigenically characterised, the majority (80%) fall into a genetic subgroup which has been shown to be antigenically distinguishable from the current A(H3N2) vaccine virus.

Influenza A(H1N1)pdm09: 47 influenza A(H1N1)pdm09 viruses have been isolated and antigenically characterised as similar to the A/California/7/2009 Northern Hemisphere 2014/15 vaccine strain.

- Antiviral susceptibility

Since week 40 2014, 207 influenza viruses (89 A(H3N2), 90 A(H1N1)pdm09 and 28 B) have been tested for oseltamivir susceptibility in the UK and all but four H3N2 are sensitive. Of the four oseltamivir resistant cases, three have an E119V amino acid substitution in the neuraminidase taken from neuraminidase inhibitor treatment patients. These three viruses remain susceptible to zanamivir. The 86 flu A(H3N2), 24 A(H1N1)pdm09 and 28 B were also tested against zanamivir and all but one H3N2 are sensitive. This zanamivir resistant virus has an R292K amino acid substitution in the neuraminidase which is known to cause resistance to oseltamivir and also reduce susceptibility to zanamivir. This sample was taken from a child who had received oseltamivir treatment.

- Antimicrobial susceptibility

-Table 4 shows in the 12 weeks up to 12 April 2015, 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 12 April 2015, E&W

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
S. pneumoniae	Penicillin	3,064	93
	Macrolides	3,364	84
	Tetracycline	3,223	85
H. influenzae	Amoxicillin/ampicillin	13,630	74
	Co-amoxiclav	12,939	95
	Macrolides	5,219	20
	Tetracycline	13,729	99
S. aureus	Methicillin	4,569	86
	Macrolides	4,493	71
MRSA	Clindamycin	571	48
	Tetracycline	622	88
MSSA	Clindamycin	2,265	77
	Tetracycline	3,470	92

Macrolides = erythromycin, azithromycin and clarithromycin

Vaccination

| Back to top |

- Provisional data from the fourth monthly collection of influenza vaccine uptake up to 31 January 2015 by targeted groups has been published. The report provides uptake at national, area team and CCG level. Up to the end of January 2015, the provisional proportion of people in England who had received the 2014/15 influenza vaccine in targeted groups was as follows:
  - 50.3% in under 65 years in a clinical risk group
  - 44.1% in pregnant women
  - 72.8% in 65+ year olds
  - 38.5% in all 2 year olds
  - 41.3% in all 3 year olds
  - 32.9% in all 4 year olds

- Provisional data from the fifth monthly collection of influenza vaccine uptake by frontline healthcare workers show 54.9% were vaccinated by 28 February 2015 from 100.0% of Trusts, compared to 54.8% vaccinated the previous season by 31 January 2014. The report provides uptake at national, geographical area, area team (on behalf of primary care and independent sector healthcare providers) and individual Trust level.

- A mid-season influenza vaccine effectiveness estimate for the 2014/15 season in the United Kingdom has been published, with an adjusted value of 3.4% (upper 95% confidence interval of 35.5%) against primary care consultations with laboratory-confirmed influenza. The low value reflects mismatch between circulating A(H3N2) viruses and the 2014/15 northern hemisphere A(H3N2) vaccine strain. Annual flu vaccination remains the best protection we have against an unpredictable virus which can cause severe illness and deaths each year. Early use of antivirals for prophylaxis and treatment of vulnerable populations remains important.

International Situation

| Back to top |

Influenza activity declined further in the northern hemisphere and was low in most regions globally. While influenza A(H3N2) viruses predominated this season in the northern hemisphere, the proportions of influenza A(H1N1)pdm09 and B viruses increased during the past few weeks. Influenza activity remains at inter-seasonal levels in the southern hemisphere.

- Europe updated on 17 April 2015 (Joint ECDC-WHO Influenza weekly update)

Influenza activity continued to decrease in most reporting countries; the proportion of influenza-virus-positive specimens from sentinel sources decreased from 36% for week 14 to 28% for week 15. Since week 51/2014 the positivity rate has been over the threshold of 10%, indicating seasonal influenza activity. Of the 39 countries that reported epidemiological data for week 15/2015, six indicated medium intensity of influenza activity; no country reported high intensity. Four countries reported geographically widespread influenza activity. Decreasing trends in respiratory-disease activity were reported by 26 countries. No country reported increasing rates of influenza-like illness (ILI) or acute respiratory infections (ARI).

Influenza A(H1N1)pdm09, A(H3N2) and type B viruses continued to circulate in the WHO European Region, but type B viruses accounted for 69% of sentinel detections for week 15/2015.

The number of hospitalised influenza cases is returning to low levels.

Excess all-cause mortality among people aged 65 years and above, concomitant with increased influenza activity and the predominance of A(H3N2) viruses, had been observed in most countries participating in the European project for monitoring excess mortality for public health action (EuroMOMO), but has now abated (see the EuroMOMO website).

Antigenic drift in the A(H3N2) and B/Yamagata viruses was observed in the 2014–2015 influenza season, so the northern hemisphere vaccine did not provide optimal protection against the A(H3N2) viruses. The B/Yamagata component in the vaccine is likely to protect against the circulating viruses.

Of all the influenza viruses screened for reduced susceptibility to neuraminidase inhibitors, only four A(H3N2) viruses have shown this phenotype: three to oseltamivir only and one to oseltamivir and zanamivir.

- United States of America Updated on 17 April 2015 (Centre for Disease Control report)

During week 14 (April 5-11, 2015), influenza activity continued to decrease in the United States. The proportion of outpatient visits for influenza-like illness (ILI) was 1.8% which is below the national baseline of 2.0%. Three regions reported ILI at or above region-specific baseline levels. Puerto Rico and six states experienced low ILI activity; New York City and 44 states experienced minimal ILI activity; and the District of Columbia and the U.S. Virgin Islands had insufficient data. The geographic spread of influenza in four states was reported as widespread; Guam and 14 states reported regional activity; the District of Columbia and 19 states reported local activity; and Puerto Rico, the U.S. Virgin Islands, and 14 states reported sporadic activity.

Of 11,189 specimens tested and reported by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories during week 14, 1,076 (9.6%) were positive for influenza (90 influenza A subtype not performed, 46 influenza A(H3), 937 influenza B and three influenza A(H1N1)pdm09).

During week 14, 6.1% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.0% for week 14.

CDC has characterized 1,600 influenza viruses [39 A(H1N1)pdm09, 1,102 A(H3N2), and 459 influenza B viruses] collected by U.S. laboratories since October 1, 2014. 243 (22.1%) of the 1,102 H3N2 viruses tested have been characterized as A/Texas/50/2012-like, the influenza A (H3N2) component of the 2014-2015 Northern Hemisphere influenza vaccine. 859 (77.9%) of the 1,102 viruses tested showed either reduced titers with antiserum produced against A/Texas/50/2012 or belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. 332 (72.3%) of the influenza B viruses tested belong to B/Yamagata/16/88 lineage and the remaining 127 (27.7%) influenza B viruses tested belong to B/Victoria/02/87 lineage. 321 (96.7%) of the 332 B/Yamagata-lineage viruses were characterized as B/Massachusetts/2/2012-like, which is included as an influenza B component of the 2014-2015 Northern Hemisphere trivalent and quadrivalent influenza vaccines. Eleven (3.3%) of the B/Yamagata-lineage viruses tested showed reduced titers to B/Massachusetts/2/2012. 122 (96.1%) of the 127 B/Victoria-lineage viruses were characterized as B/Brisbane/60/2008-like, the virus that is included as an influenza B component of the 2014-2015 Northern Hemisphere quadrivalent influenza vaccine. Five (3.9%) of the B/Victoria-lineage viruses tested showed reduced titers to B/Brisbane/60/2008. All 39 H1N1 viruses tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2014-2015 Northern Hemisphere influenza vaccine.

Mid-season estimates of seasonal vaccine effectiveness in the United States suggest the 2014/15 vaccine has low effectiveness against circulating influenza A(H3N2) viruses.

- Canada Updated on 17 April 2015 (Public Health Agency report)

In week 14, influenza B continued to be the predominant influenza virus circulating in all provinces and territories. The number of influenza A and B detections remained similar to the previous week. Other circulating respiratory viruses continue to decrease with the end of the 2014-15 flu season approaching. Influenza B is having a greater impact on adults less than 65 years of age, compared to influenza A(H3N2), which circulated earlier in the season. Evidence from the National Microbiology Laboratory (NML) indicates that this year's vaccine will continue to provide protection against the circulating A(H1N1) and B strains.

The national influenza-like-illness (ILI) consultation rate increased in week 14 to 49.4 consultations per 1,000, which is above expected levels.

In week 14, 122 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*, which is similar to the number reported the previous week. Of the 122 hospitalizations, 84 (69%) were due to influenza A and 78 (64%) were in patients ≥65 years of age.

Since the start of the 2014-15 season, 6,847 hospitalizations have been reported; 6,195 (91%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.5% were A(H3N2). The majority of

cases (71%) were ≥65 years of age. A total of 358 ICU admissions have been reported to date: 53% (n=190) were in adults ≥65 years of age and 33% (n=119) were in adults 20-64 years. A total of 511 deaths have been reported since the start of the season: four children <5 years of age, three children 5-19 years, 41 adults 20-64 years, and 463 adults ≥65 years of age. Adults 65 years of age or older represent 91% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

Early estimates of seasonal vaccine effectiveness in Canada published in January and February suggest the 2014/15 vaccine has low effectiveness against circulating influenza A(H3N2) viruses.

- Global influenza update Updated on 20 April 2015 (WHO website)

Influenza activity declined further in the northern hemisphere and was low in most regions globally. While influenza A(H3N2) viruses predominated this season in the northern hemisphere, the proportions of influenza A(H1N1)pdm09 and B viruses increased during the past few weeks.

In North America, influenza activity continued to decrease. While influenza A(H3N2) had predominated this season, influenza B was the dominant virus during the recent weeks.

In Europe, influenza activity continued to decrease in most countries. Influenza A(H3N2) predominated this season, but the proportion of influenza B detections was predominant in the last weeks.

In northern Africa and the Middle East, influenza activity continued to decrease in most of the region. Influenza A viruses remained predominant in the region.

In western Asia, influenza activity continued to decrease or remained low in most countries in the region, with a predominance of influenza A viruses. Influenza detections however remained high or possibly increased in Jordan and Turkey.

In the temperate countries of Asia, influenza activity continued to decrease except in the Republic of Korea where activity remained high. Influenza A(H3N2) virus was predominant with an increase of influenza B virus detections in the Republic of Korea. In northern China influenza B virus remained predominant but detections decreased.

In tropical countries of the Americas, influenza activity was low in most countries.

In tropical Asia, influenza activity mainly due to influenza A(H1N1)pdm09 viruses seemed to be declining in India. Influenza activity continued to decrease from its peak in southern China where influenza B virus was predominant, and in China Hong Kong Special Administrative Region where influenza A(H3N2) virus was the most frequently detected virus subtype.

In tropical Africa, increased influenza activity was reported from western Africa with a mixture of influenza A(H1N1)pdm09, A(H3N2) and B viruses circulating. Madagascar reported decreasing influenza activity after experiencing increased influenza activity from February, with a peak at the beginning of March, due to influenza A(H3N2) and B.

In the southern hemisphere, influenza activity remained at inter-seasonal levels.

The WHO vaccine recommendation for the northern hemisphere 2015-2016 season was made on 26 February 2015: it recommended that vaccines for use in the season (northern hemisphere) contain the following: an A/California/7/2009 (H1N1)pdm09-like virus; an A/Switzerland/9715293/2013 (H3N2)-like virus; a B/Phuket/3073/2013-like virus and a B/Brisbane/60/2008-like virus.

- Enterovirus D68 (EV-D68) Updated on 22 April 2015

From mid-August to 15 January 2015, CDC or state public health laboratories confirmed a total of 1,153 persons in 49 states and the District of Columbia with respiratory illness caused by EV-D68. Almost all of the confirmed cases were among children, many whom had asthma or a history of wheezing. Additionally, there were likely millions of mild EV-D68 infections for which people did not seek medical treatment and/or get tested.

ECDC published a rapid risk assessment; based on information currently available to ECDC, the risk of increased severe cases of EV-D68 in EU/EEA countries is assessed as moderate, in light of reports of such cases and because the circulation of this strain in the population seems to be geographically widespread in the EU.

The UK has an enhanced enterovirus surveillance system established as part of poliovirus elimination. Samples from individuals who present with neurological symptoms (such as acute flaccid paralysis or meningitis) and in whom enterovirus is detected should be sent for sub-typing at the reference laboratory. From 2012 to 1 September 2014, a total of 12 EV-D68 cases had been diagnosed, mainly in children. Following the reports from North America, guidance was developed highlighting that EV-D68 should be considered as a possible cause of disease in children with severe acute respiratory infections and/or with

unexplained neurological symptoms, when all other respiratory virus screens are negative and if a rhinovirus/enterovirus positive PCR is initially detected. Although no unexplained clusters of severe respiratory or neurological disease have been reported, since September 2014, a total of 33 sporadic cases have been detected in children and adults. From the information available to date, the majority seem to have presented with respiratory symptoms, with two children presenting with neurological symptoms.

- Avian Influenza latest update on 22 April 2015 (WHO website)

Influenza A(H7N9) latest update on 9 March 2015

On 9 March 2015, the National Health and Family Planning Commission (NHFPC) of China notified WHO of 59 additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including 17 fatal cases.

So far, the overall risk associated with the H7N9 virus has not changed. WHO does not advise special screening at points of entry with regard to this event, nor does it currently recommend any travel or trade restrictions.

For further updates please see the WHO website and for advice on clinical management please see information available online.

Influenza A(H5N1)

From 2003 through 31 March 2015, 826 human cases of H5N1 avian influenza have been officially reported to WHO from 16 countries, of which 440 (53.3%) died. Since the last WHO Influenza update on 3 March 2015, 42 new laboratory-confirmed human cases of avian influenza A(H5N1) virus infection, including 11 fatal cases, were reported to WHO from Egypt (37), China (three) and Indonesia (two). The cases reported from these three countries appear to be sporadic cases and the virus is known to be circulating endemically in poultry in these countries. Whenever avian influenza viruses are circulating in poultry, sporadic infections and small clusters of human cases are possible in people exposed to infected poultry or contaminated environments, therefore the additional sporadic human cases would not be unexpected. Although an increased number of animal-to-human infections have been reported by Egypt over the past few months, these influenza A(H5) viruses do not currently appear to transmit easily among people. As such, the risk of community-level spread of these viruses remains to be low. Although the risk assessment remains unchanged, further studies are needed to understand the risk factors for human infections and the potential role of mild cases if they are occurring. Further analyses on virus isolates from the animal sector and human cases need to be undertaken to better understand if changes in the transmissibility of the virus from animals to humans may be playing a role in the current situation.

- Middle East respiratory syndrome coronavirus (MERS-CoV) latest update on 9 April 2015

Up to 15 April 2015, a total of four cases of Middle East respiratory syndrome coronavirus, MERS-CoV, (two imported and two linked cases) have been confirmed in England. On-going surveillance has identified 281 suspect cases in the UK that have been investigated for MERS-CoV and tested negative.

A further 1,098 confirmed cases have been reported internationally, resulting in a current global total of 1,102 cases, with the most recent cases reported on 9 April 2015 from the Kingdom of Saudi Arabia. Further information on management and guidance of possible cases is available online.

Acknowledgements | Back to top |

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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)
- 2014/15 Northern Hemisphere seasonal influenza vaccine recommendations (WHO)