PHE Weekly National Influenza Report

Summary of UK surveillance of influenza and other seasonal respiratory illnesses

9 April 2015 – Week 15 report (up to week 14 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 14 2015 (ending 5 April), influenza continues to circulate, with influenza B predominating and indicators of influenza activity decreasing and at low levels. The Department of Health alert issued on the prescription of antiviral medicines by GPs is still active.

- Community influenza surveillance
  - In week 14 respiratory syndromic indicators remained stable compared to the previous week.
  - Seven new acute respiratory outbreaks have been reported in the past seven days: three in care homes (one flu B and two not tested/results not yet available); one in hospital (one flu B); one in school (not tested) and two in other settings (two flu B).
- Overall weekly influenza GP consultation rates across the UK
  - The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system remained stable and through the RCGP system decreased slightly in week 14.
  - In week 14, overall weekly influenza-like illness (ILI) GP consultations decreased in Scotland and Northern Ireland and remained stable in Wales.
- Influenza-confirmed hospitalisations
  - 23 new admissions to ICU/HDU with confirmed influenza (15 influenza B, four influenza A(H1N1)pdm09, two influenza A unknown subtype and two influenza A(H3N2)) were reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (117 Trusts in England) in week 14, a rate of 0.06 compared to 0.08 per 100,000 the previous week.
  - 23 new hospitalised confirmed influenza cases (21 influenza B and two influenza A(H3N2)) were reported through the USISS sentinel hospital network across England (21 Trusts), a rate of 0.28 compared to 0.62 per 100,000 the previous week.
- All-cause mortality data
  - In week 14 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
  - Eight samples were positive for influenza through the English GP sentinel schemes (seven B and one A(H3)) with a positivity of 31% compared to 36% the previous week.
  - 70 influenza positive detections were recorded through the DataMart scheme (55 B, 10 A(H3) and five influenza A(H1N1)pdm09), positivity of 9.1% compared to 10.6% the previous week) with the highest positivity seen in 45-64 year olds (13.4%).
  - 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.
  - WHO have published their recommendations for the composition of the 2015/16 northern hemisphere influenza vaccine.
- International situation
  - Influenza activity in the northern hemisphere is decreasing but remains elevated. The proportion of influenza B viruses are increasing and some countries in Asia, Europe and North Africa reported high levels of activity associated with influenza A(H1N1)pdm09 viruses. In the European Region, influenza activity continued to decrease in most reporting countries, although the proportion of influenza virus positive samples remains high.

Community surveillance

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In week 14 respiratory syndromic indicators remained stable compared to the previous week and seven new acute respiratory outbreaks were reported in the last seven days.

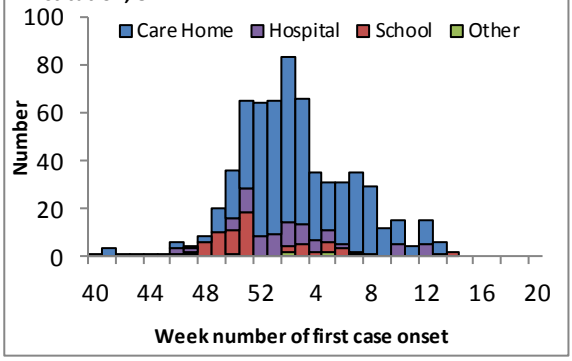
- PHE Real-time Syndromic Surveillance

-In week 14 respiratory syndromic indicators remained stable compared to the previous week.
-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: three in care homes (one flu B and two not tested/results not yet available); one in hospital (one flu B); one in school (not tested) and two in other settings (two flu B). So far in the 2014/15 flu season, 664 outbreaks (497 in care homes, 81 in hospitals, 76 in schools and 10 in other settings) have been reported in the UK including 130 with flu A(H3) infection, 165 flu A(untyped), 24 flu B, four flu A(untyped)/flu B, two flu A (H1N1)pdm09, eight rhinovirus, six RSV, five parainfluenza, four hMPV, one enterovirus, 19 other mixed respiratory virus infections and 297 not tested/test results not yet available.

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

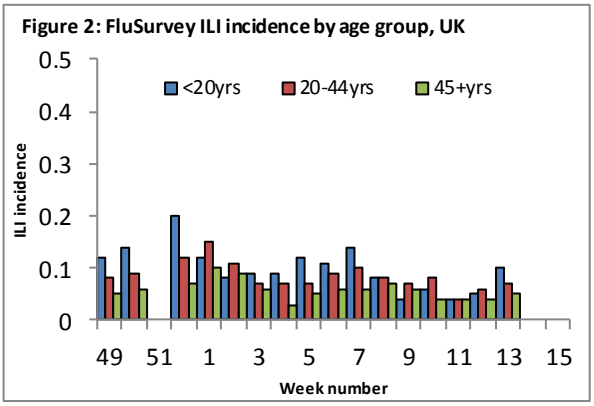


-Outbreaks should be recorded on HPZone and reported to the local Health Protection Teams and Respscidsc@phe.gov.uk.

- 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

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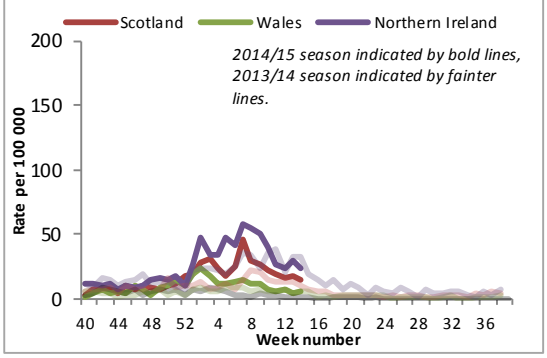
In week 14 overall weekly influenza-like illness GP consultations decreased in Scotland and Northern Ireland and remained stable in Wales. Due to a bank holiday in week 14, GP surgeries were only open for four days – data should therefore be interpreted with caution.

- Influenza/Influenza-Like-Illness (ILI)

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



Northern Ireland

-The Northern Ireland influenza consultation rate decreased from 29.5 to 23.4 per 100,000 in week 14 (Figure 3).

-The highest rates were seen in 65-74 year olds (41.1 per 100,000), 15-44 year olds (28.0 per 100,000) and 75+ year olds (25.1 per 100,000).

Wales

-The Welsh influenza rate remained stable at 5.5 per 100,000 in week 14 (Figure 3).

-The highest rates were seen in 15-44 year olds (7.7 per 100,000), 45-64 year olds (7.5 per 100,000) and 75+ year olds (3.4 per 100,000).

Scotland

-The Scottish ILI rate decreased slightly from 17.4 to 15.3 per 100,000 in week 14 (Figure 3).

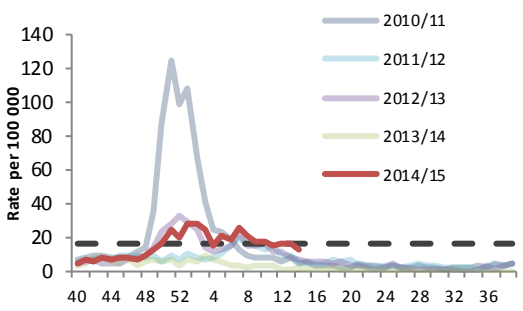
-The highest rates were seen in 45-64 year olds (23.3 per 100,000), under one year olds (22.0 per 100,000) and 65-74 year olds (14.8 per 100,000).

RCGP (England and Wales)

-The weekly ILI consultation rate through the RCGP surveillance system decreased slightly from 16.3 to 13.1 per 100,000 in week 14 (Figure 4*). By age group, the highest rate was seen in 45-64 year olds (16.0 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. 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

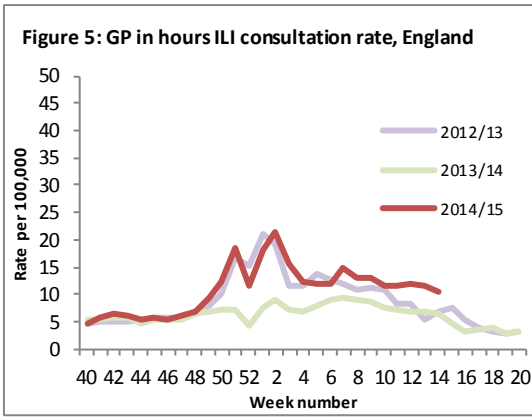


GP In Hours Syndromic Surveillance System (England)

-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system remained stable compared to the previous week (10.5 in week 14 compared to 11.6 per 100,000 in week 13, Figure 5).

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

Figure 5: GP in hours ILI consultation rate, England



Influenza confirmed hospitalisations

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In week 14, 23 new admissions to ICU/HDU with confirmed influenza (15 influenza B, four influenza A(H1N1)pdm09, two influenza A unknown subtype and two influenza A(H3N2)) were reported through the national USISS mandatory ICU scheme across the UK (117 Trusts in England). 23 new hospitalised confirmed influenza cases (21 influenza B and two influenza A(H3N2)) were reported through the USISS sentinel hospital network across England (21 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 14)

-In week 14, 23 new admissions to ICU/HDU with confirmed influenza (15 influenza B, four influenza A(H1N1)pdm09, two influenza A unknown subtype and two influenza A(H3N2)) were reported across the UK (117/156 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. Five new confirmed influenza deaths were reported in week 14 2015. A total of 1,279 admissions (723 A unknown subtype, 259 A(H3N2), 111 A(H1N1)pdm09 and 186 B) and 130 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

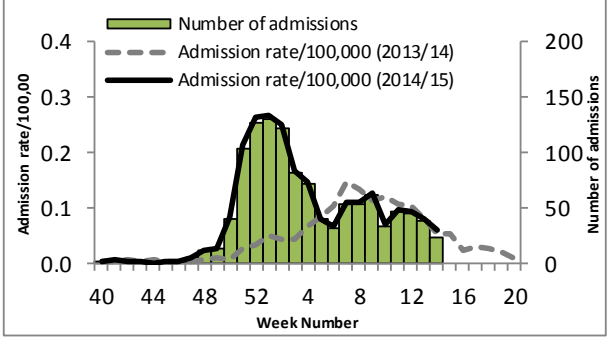
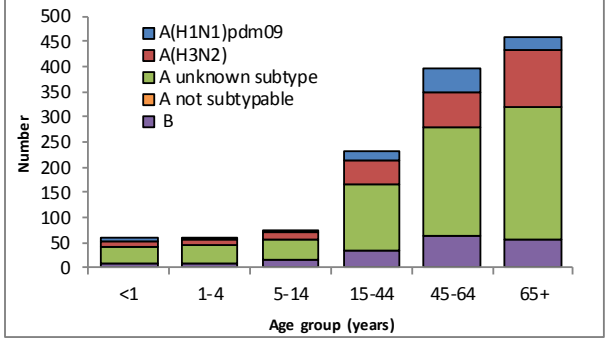


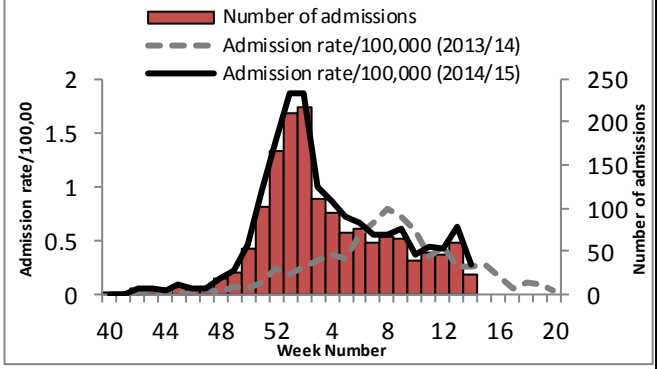
Figure 7: Cumulative ICU influenza admissions (USISS mandatory) by age group and flu type, UK, since week 40 2014



- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 14)

-In week 14, 23 new hospitalised confirmed influenza cases (21 influenza B and two influenza A(H3N2)) were reported through the USISS sentinel hospital network from 21 NHS Trusts across England (Figure 8), a rate of 0.28 per 100,000 compared to 0.62 per 100,000 the previous week. A total of 1,594 hospitalised confirmed influenza admissions (870 A(H3N2), 409 A unknown subtype, 257 B and 58 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

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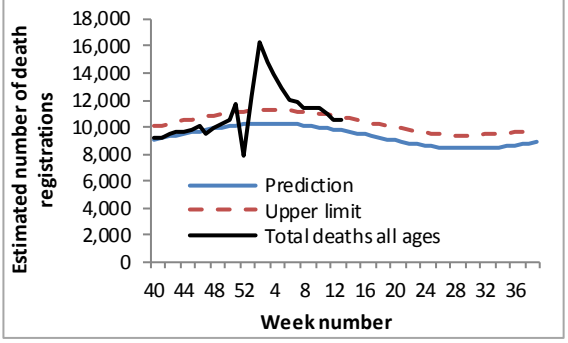
In week 14 2015, no statistically significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England overall and by age group and across the devolved administrations. Since week 40 2014, significant excess mortality has been observed in England in weeks 50-7 predominantly 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 13 2015, an estimated 10,493 all-cause deaths were registered in England and Wales (source: Office for National Statistics). This is slightly less than the 10,568 estimated death registrations in week 12, and remains below the 95% upper limit of expected death registrations for the time of year as calculated by PHE (Figure 9). The sharp drop in number of deaths in week 52 corresponds to a week when there were bank holidays and fewer days when deaths were registered and so 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 14 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 weeks 1-2 and 5 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 14 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 14 2015?	Weeks with excess in 2014/15
<5	×	1-2, 5
5-14	×	NA
15-64	×	51-2
65+	×	50-7

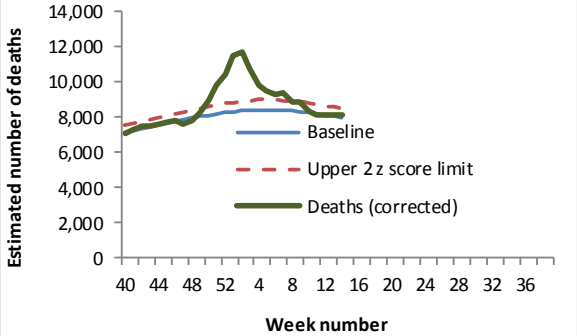
** Excess mortality is calculated as the observed minus the expected number of deaths in weeks above threshold*

Table 2: Excess mortality by UK country*

Country	Excess detected in week 14 2015?	Weeks with excess in 2014/15
England	×	50-7
Wales	×	42, 1-3
Scotland	×	51-9
Northern Ireland	NA	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

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In week 14 2015, eight samples were positive for influenza through the English GP sentinel schemes (seven B and one (AH3), with a positivity of 30.8%). 70 influenza positive detections were recorded through the DataMart scheme (55 B, 10 A(H3) and five influenza A(H1N1)pdm09).

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

-In week 14, eight samples were positive for influenza in England (seven B and one A(H3)), two in Scotland (one B and one A(not subtyped)), none in Northern Ireland and no samples were tested for influenza in Wales (Table 3).

Table 3: Sentinel influenza surveillance in the UK

Week	England	Scotland	Northern Ireland	Wales
11	16/40 (40.0%)	7/43 (16.3%)	5/6 (-)	0/3 (-)
12	29/67 (43.3%)	5/43 (11.6%)	5/10 (50.0%)	0/2 (-)
13	10/28 (35.7%)	15/38 (39.5%)	2/8 (-)	0/0 (-)
14	8/26 (30.8%)	2/21 (9.5%)	0/7 (-)	0/0 (-)

NB. Proportion positive omitted when fewer than 10 specimens tested

- Respiratory DataMart System (England)

In week 14 2015, out of the 772 respiratory specimens reported through the Respiratory DataMart System, 70 samples (9.1%) were positive for influenza (10 A(H3), five influenza A(H1N1)pdm09 and 55 B (Figure 11*), with the highest positivity in 45-64 year olds (13.4%, Figure 12). The overall positivity for RSV remained at low levels (1.3%) in week 14. Positivity for rhinovirus decreased to 9.2%; adenovirus positivity decreased to 4.7%; parainfluenza positivity increased to 8.1% and human metapneumovirus (hMPV) positivity decreased to 2.3% in week 14 (Figure 13).

Figure 11: DataMart samples positive for influenza, England

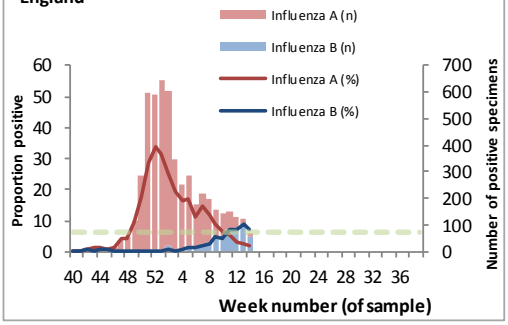


Figure 12: Datamart % positive for influenza by age, England

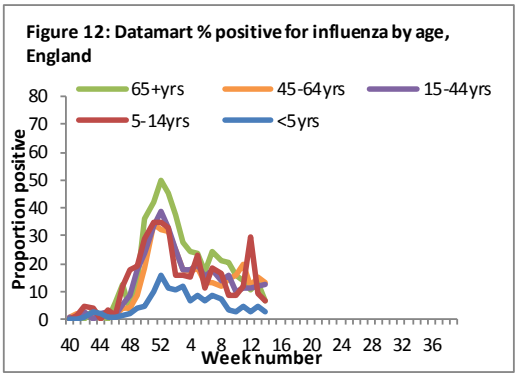
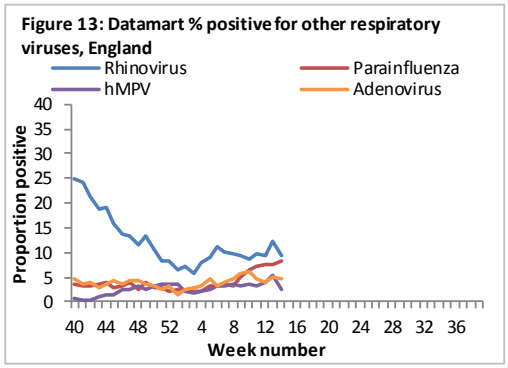


Figure 13: Datamart % positive for other respiratory viruses, England



**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 56 influenza B viruses as belonging to the B/Yamagata/16/88 lineage. Of these, 51 (91%) 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 51 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. One influenza B virus has 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): 240 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 57 (24%) showed reduced reactivity in antigenic tests with A/Texas/50/2012 antiserum. These 57 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 76 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, 194 influenza viruses (88 A(H3N2), 81 A(H1N1)pdm09 and 25 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 85 flu A(H3N2), 21 A(H1N1)pdm09 and 25 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 29 March 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 29 March 2015, E&W

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
S. pneumoniae	Penicillin	3,335	93
	Macrolides	3,628	83
	Tetracycline	3,480	85
H. influenzae	Amoxicillin/ampicillin	15,099	74
	Co-amoxiclav	14,221	95
	Macrolides	5,726	20
	Tetracycline	15,192	99
S. aureus	Methicillin	4,698	87
	Macrolides	4,609	71
MRSA	Clindamycin	508	44
	Tetracycline	569	87
MSSA	Clindamycin	2,239	78
	Tetracycline	3,615	92

**Macrolides = erythromycin, azithromycin and clarithromycin*

Vaccination

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- 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

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Influenza activity in the northern hemisphere is decreasing but remains elevate. The proportion of influenza B viruses are increasing and some countries in Asia, Europe and North Africa reported high levels of activity associated with influenza A(H1N1)pdm09 viruses. In the European Region, influenza activity continued to decrease in most reporting countries, although the proportion of influenza virus positive samples remains high.

- Europe updated on 2 April 2015 (Joint ECDC-WHO Influenza weekly update)

Influenza activity continued to decrease in most reporting countries, although the proportion of influenza-virus-positive specimens remained high (37%). Since week 51/2014 (15 weeks) the positivity rate has been over the threshold of 10% indicating seasonal influenza activity. Of the 42 countries that reported epidemiological data for week 13/2015, 13 indicated medium intensity of influenza activity; no country reported high intensity. Nine countries, mostly in northern Europe, reported geographically widespread influenza activity, in contrast to 16 in the previous week. Decreasing trends in respiratory-disease activity were reported by 30 countries. Georgia reported increasing rates of influenza-like illness (ILI).

For week 13/2015, 37% of sentinel specimens tested positive for influenza virus, with detections in 29 of the 33 countries that reported virological data. For the fifth consecutive week the total number of detections decreased. While influenza A viruses dominated from the start of the season, influenza B viruses have done

so since week 11/2015, representing 70% of the reported detections in week 13/2015. Of the subtyped type A viruses, 64% were A(H3N2) and 36% A(H1N1)pdm09. Of B viruses ascribed to lineage, 96% were B/Yamagata. B viruses were dominant in 13 countries, mostly in central Europe, and A(H3N2) viruses were dominant in Albania and Finland.

About two thirds of the A(H3N2) viruses characterized to date show evidence of antigenic differences from the virus included in the 2014–2015 northern hemisphere influenza vaccine. These differences may have contributed to the observed reduction in effectiveness of the A(H3N2) component of the vaccine and to the excess mortality reported among older age groups. The A(H1N1)pdm09 and B components of the vaccine are likely to be effective.

Since week 40/2014, eight countries (Finland, France, Ireland, Romania, Slovakia, Spain, Sweden and the United Kingdom) have reported a total of 5372 laboratory-confirmed hospitalized influenza cases. Of these, 3360 were reported to be in ICUs, including 1402 (42%) by France and 1231 (37%) by the United Kingdom. Of the 5372 confirmed cases, 4468 (83%) were positive for influenza A virus and 904 (17%) for influenza B virus. Of 2104 subtyped A viruses, 1564 (74%) were A(H3N2) and 540 (26%) A(H1N1)pdm09.

- United States of America Updated on 27 March 2015 (Centre for Disease Control report)

During week 12 (March 22-28, 2015), influenza activity continued to decrease, but remained elevated in the United States. The proportion of outpatient visits for influenza-like illness (ILI) was 2.0% which is at the national baseline of 2.0%. Five regions reported ILI at or above region-specific baseline levels. Puerto Rico and two states experienced high ILI activity; eight states experienced low ILI activity; New York City and 40 states experienced minimal ILI activity; and the District of Columbia had insufficient data. The geographic spread of influenza in four states was reported as widespread; the U.S. Virgin Islands and 20 states reported regional activity; Guam, Puerto Rico, and 22 states reported local activity; and the District of Columbia and four states reported sporadic activity.

Of 12,014 specimens tested and reported by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories during week 12, 1,300 (10.8%) were positive for influenza (155 influenza A subtype not performed, 99 influenza A(H3), 1,043 influenza B and three influenza A(H1N1)pdm09).

During week 12, 6.9% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.1% for week 12.

CDC has characterized 1,409 influenza viruses [39 A(H1N1)pdm09, 1,044 A(H3N2), and 326 influenza B viruses] collected by U.S. laboratories since October 1, 2014. 242 (23.2%) of the 1,044 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. 802 (76.8%) of the 1,044 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. 240 (73.6%) of the influenza B viruses tested belong to B/Yamagata/16/88 lineage and the remaining 86 (26.4%) influenza B viruses tested belong to B/Victoria/02/87 lineage. 230 (95.8%) of the 240 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. Ten (4.2%) of the B/Yamagata-lineage viruses tested showed reduced titers to B/Massachusetts/2/2012. 82 (95.3%) of the 86 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. Four (4.7%) of the B/Victoria-lineage viruses tested showed reduced titers to B/Brisbane/60/2008.

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 27 March 2015 (Public Health Agency report)

The majority of influenza activity is continuing to occur in the Central and Atlantic provinces. Influenza B detections continue to increase steadily across Canada while detections of influenza A continues to steadily decrease. This increase in influenza B is expected as influenza B often shows up later in the flu season. 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 decreased in week 12 to 20.5 consultations per 1,000, which is below expected levels.

In week 12, 148 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories, which is similar to the number reported the previous week. Of the 148

hospitalizations, 97 (66%) were due to influenza A and 97 (65%) were in patients ≥65 years of age. Since the start of the 2014-15 season, 6,499 hospitalizations have been reported; 6,008 (92.4%) 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 340 ICU admissions have been reported to date: 54% (n=183) were in adults ≥65 years of age and 32% (n=110) were in adults 20-64 years. A total of 479 deaths have been reported since the start of the season: three children <5 years of age, three children 5-19 years, 40 adults 20-64 years, and 433 adults ≥65 years of age. Adults 65 years of age or older represent 90% 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 23 March 2015 (WHO website)

Globally, influenza activity remained elevated in the northern hemisphere with influenza A(H3N2) viruses predominating, although some countries in Asia, Europe and North Africa reported high levels of activity associated with influenza A(H1N1)pdm09 viruses.

In North America, influenza activity was decreasing but remained above the threshold. Influenza A(H3N2) viruses predominated so far this season.

In Europe, influenza activity appeared to have peaked in many countries. Influenza A(H3N2)virus continued to be predominant.

In northern Africa and the middle East, influenza activity continued to decrease with influenza A(H1N1)pdm09 viruses predominating, except in Egypt, where there was co-circulation with influenza A(H3N2) and influenza B viruses.

In the temperate countries of eastern Asia, influenza A(H3N2) was predominant Asia with very little influenza A(H1N1)pdm09 virus activity, while in western Asia, influenza A(H1N1)pdm09 and influenza B were predominant.

In tropical countries of the Americas, influenza activity remained low with mainly A(H3N2) viruses detected.

In tropical Asia, influenza activity patterns varied with influenza(H1N1)pdm09 predominant in Bhutan and India, influenza A(H3N2) predominant in the Hong Kong Special Administrative Region, and influenza B predominant in south China.

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

The term “swine flu” has recently been used incorrectly to refer to the seasonal influenza A(H1N1)pdm09 virus which infects humans during influenza season. The term “swine flu” means influenza viruses that circulate in swine population (pigs) and infect pigs. A(H1N1)pdm09 is not “swine flu” virus. Please see the link below for more information on the terminology of influenza viruses infections in humans.

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 7 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 11 March 2015 (WHO website)

Influenza A(H7N9)

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 3 March 2015, 784 human cases of H5N1 avian influenza have been officially reported to WHO from 16 countries, of which 429 (54.7%) died.

- Middle East respiratory syndrome coronavirus (MERS-CoV) latest update on 26 March 2015

Up to 31 March 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 224 suspect cases in the UK that have been investigated for MERS-CoV and tested negative.

A further 1,086 confirmed cases have been reported internationally, resulting in a current global total of 1,090 cases, with the most recent case reported on 26 March 2015 from the Kingdom of Saudi Arabia. Further information on management and guidance of possible cases is available online.

Acknowledgements

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