PHE Weekly National Influenza Report

Summary of UK surveillance of influenza and other seasonal respiratory illnesses

19 February 2015 – Week 8 report (up to week 7 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 7 2015 (ending 15 February), influenza continues to circulate with activity levels generally similar to last week. Significant excess all-cause mortality has been seen mainly in 65+ year olds, with suggestion impact is now decreasing. The Department of Health alert issued on the prescription of antiviral medicines by GPs is still active.

- Community influenza surveillance
  - In week 7 the majority of syndromic indicators for respiratory symptoms were stable.
  - 27 new acute respiratory outbreaks have been reported in the past seven days, 25 in care homes (seven flu A(untyped), four flu A(H3) and the rest not tested/results not available yet), one in a school (not tested) and one in another setting (Flu B).
- Overall weekly influenza GP consultation rates across the UK
  - The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system increased in week 7.
  - In week 7, overall weekly influenza-like illness (ILI) GP consultations increased in Scotland (45.4 per 100,000) , Northern Ireland (58.3 per 100,000) and Wales (15.6 per 100,000)
- Influenza-confirmed hospitalisations
  - 48 new admissions to ICU/HDU with confirmed influenza (24 A unknown subtype, 13 A(H3N2), three influenza A(H1N1)pdm09 and eight B) were reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (122 Trusts in England) in week 7, a rate of 0.08 compared to 0.06 per 100,000 the previous week.
  - 44 new hospitalised confirmed influenza cases (17 influenza A(H3N2), 14 influenza B, nine A unknown subtype and four influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network across England (23 Trusts), a rate of 0.52 compared to 0.65 per 100,000 the previous week.
- All-cause mortality data
  - In week 7 2015, significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England in 65+ year olds. In the devolved administrations in week 7, significant excess all-cause mortality was also seen in Northern Ireland. Since week 40 2014, significant excess mortality has been seen in England from week 50 2014 onwards, coinciding with circulating influenza and cold snaps, with suggestions impact is now decreasing.
- Microbiological surveillance
  - 69 samples were positive for influenza through the UK GP sentinel schemes (40 A(H3), five A(H1N1)pdm09, 11 A(not subtyped) and 13 B, positivity of 40.1% compared to 31.3% the previous week (updated)).
  - In week 7 2015,159 influenza positive detections were recorded through the DataMart scheme (107 A(H3), 16 A(not subtyped), 13 influenza A(H1N1)pdm09 and 23 B, a positivity of 15.1% compared to 12.4% the previous week, with the highest levels seen in 65+ year olds (21.4%).
  - Characterisation of influenza A(H3N2) 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 H3N2 virus selected for the 2015 Southern Hemisphere influenza vaccine.
- Vaccination
  - Up to week 4 2015 in 92% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2014/15 influenza vaccine in targeted groups was as follows: 72.5% in 65+ year olds, 50.1% in under 65 years in a clinical risk group, 43.9% in pregnant women, 38.3% in all 2 year olds, 41.1% in all 3 year olds and 32.6% in all 4 year olds. This is the last week of reporting for weekly uptake data.
  - Provisional data from the fourth monthly collection of influenza vaccine uptake by frontline healthcare workers show 54.6% were vaccinated by 31 January 2015 from 100.0% of Trusts.
  - PHE have published their mid-season flu vaccine effectiveness estimate.
- International situation
  - Globally influenza activity remained high in the northern hemisphere with influenza A(H3N2) viruses predominating. In the European Region, the influenza season is well underway, particularly in western and central European countries.

Community surveillance

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In week 7 the majority of syndromic indicators for respiratory symptoms remained stable and 27 new acute respiratory outbreaks were reported in the last seven days.

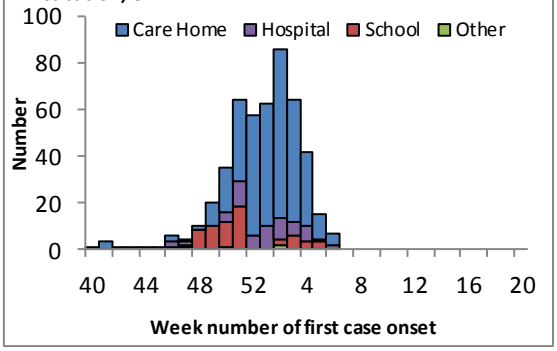
- PHE Real-time Syndromic Surveillance

-In week 7 the majority of syndromic indicators for respiratory symptoms were stable.
-For further information, please see the syndromic surveillance webpage.

- Acute respiratory disease outbreaks

-27 new acute respiratory outbreaks have been reported in the past seven days; 25 in care homes (seven flu A(untyped), four flu A(H3) and the rest not tested/results not available yet), one in a school (not tested) and one in another setting (Flu B). So far in the 2014/15 flu season, 539 outbreaks (402 in care homes, 68 in schools, 63 in hospitals and six in other settings) have been reported in the UK including 87 with flu A(H3), 137 flu A (untyped), three flu B, two flu A(untyped)/flu B, two flu A (H1N1)pdm09, eight rhinovirus, five RSV, three parainfluenza, one enterovirus, one hMPV, 12 mixed infections with different respiratory viruses and 278 not tested (or test results not yet available or tested negative).

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

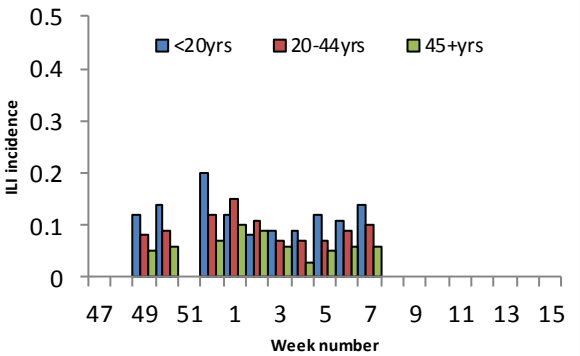


-Outbreaks should be recorded on HPZone and reported to the local Health Protection Teams and Respscidsc@phe.gov.uk.

- 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. Please see the website for information on how to register.
-In week 7, 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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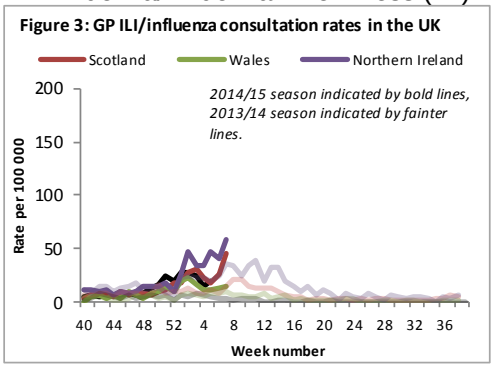
In week 7 overall weekly influenza-like illness GP consultations increased in Scotland, Northern Ireland and Wales.

- Influenza/Influenza-Like-Illness (ILI)

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



Northern Ireland

-The Northern Ireland influenza rate increased from 41.4 in week 6 to 58.3 in per 100,000 in week 7 (Figure 3).

-The highest rates were seen in <1 year olds (108.6* per 100,000), 65-74 year olds (87.7 per 100,000) and 5-14 year olds (60.7 per 100,000).

*small denominator for <1 year olds in NI

Wales

-The Welsh influenza rate increased from 12.6 in week 6 to 15.6 per 100,000 in week 7 (Figure 3).

-The highest rates were seen in 45-64 year olds (21.4 per 100,000), 15-44 year olds (19.7 per 100,000) and 65-74 year olds (13.3 per 100,000).

Scotland

-The Scottish ILI rate increased from 25.9 in week 6 to 45.4 per 100,000 in week 7 (Figure 3).

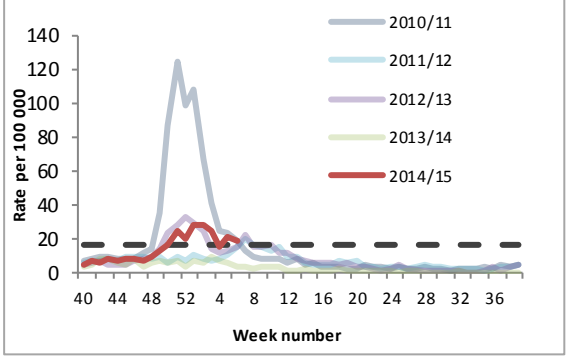
-The highest rates were seen in 45-64 year olds (57.1 per 100,000), 75+ year olds (55.2 per 100,000) and 15-44 year olds (44.7 per 100,000).

RCGP (England and Wales)

-Confirmed data is available up to week 6 2015. The weekly ILI consultation rate through the RCGP surveillance system decreased slightly from 20.6 in week 5 to 18.3 per 100,000 in week 6 (Figure 4*). By age group, the highest rate was seen in 5-14 year olds (24.2 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

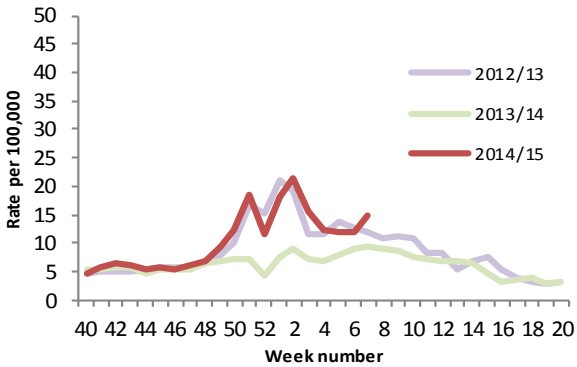


GP In Hours Syndromic Surveillance System (England)

-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system increased slightly compared to the previous week (from 11.9 in week 6 to 14.9 per 100,000 in week 7, 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 7, 48 new admissions to ICU/HDU with confirmed influenza (24 A unknown subtype, 13 A(H3N2), three influenza A(H1N1)pdm09 and eight B) were reported through the national USISS mandatory ICU scheme across the UK (122 Trusts in England). 44 new hospitalised confirmed influenza cases (17 influenza A(H3N2), 14 influenza B, nine A unknown subtype and four influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network across England (23 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 7)

-In week 7, 48 new admissions to ICU/HDU with confirmed influenza (24 A unknown subtype, 13 A(H3N2), three influenza A(H1N1)pdm09 and eight B) were reported across the UK (122/156 Trusts in England) through the USISS mandatory ICU scheme (Figures 6 and 7), a rate of 0.08 per 100,000 compared to 0.06 per 100,000 the previous week. Six new confirmed influenza deaths were reported in week 7 2015. A total of 893 admissions (619 A unknown subtype, 192 A(H3N2), 48 A(H1N1)pdm09) and 34 B) and 89 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

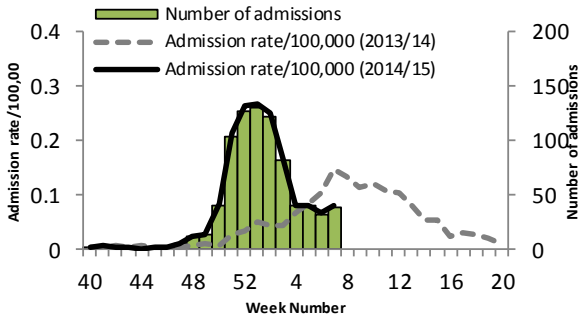
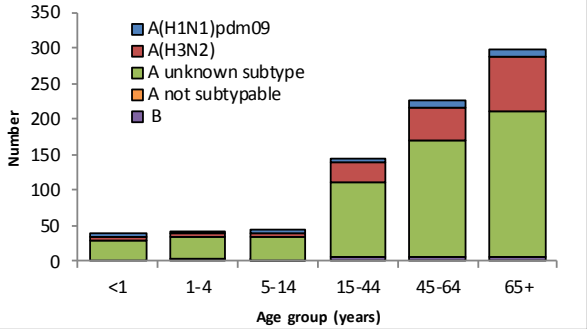


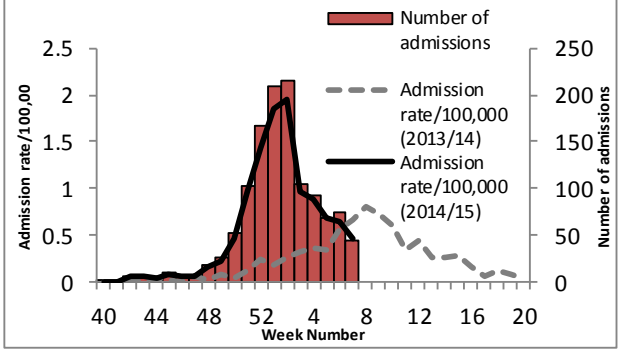
Figure 7: Cumulative ICU influenza admissions (USISS mandatory) by age group and flu type, UK, since week 40 2014



- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 7)

-In week 7, 44 new hospitalised confirmed influenza cases (17 influenza A(H3N2), 14 influenza B, nine A unknown subtype and four influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network from 23 NHS Trusts across England (Figure 8), a rate of 0.52 per 100,000 compared to 0.65 per 100,000 the previous week. A total of 1,213 hospitalised confirmed influenza admissions (802 A(H3N2), 336 A unknown subtype, 49 B and 26 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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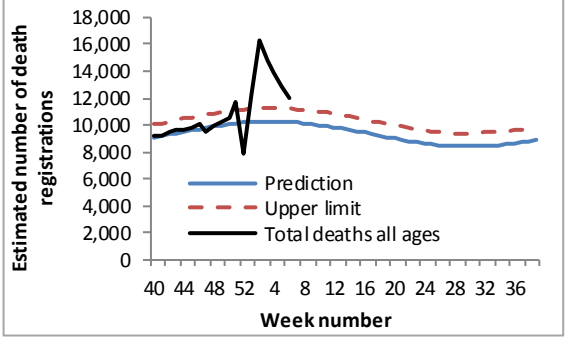
In week 7 2015, significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England in 65+ year olds. In the devolved administrations in week 7, significant excess all-cause mortality was also seen in Northern Ireland. Since week 40 2014, significant excess mortality has been seen in England from week 50 2014 onwards mainly in 65+ year olds, coinciding with circulating influenza and cold snaps, with suggestions impact is now decreasing.

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 6 2015, an estimated 12,039 all-cause deaths were registered in England and Wales (source: Office for National Statistics). This is less than the 12,900 estimated death registrations in week 5, but remains above 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 7 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 to 7 2015, 15-64 year olds in weeks 51-2 and weeks 1,2 and 4 in under five year olds (Figure 10, Table 1). This coincides 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 7 2015, excess mortality above the threshold was seen in weeks 51-4 and 6 in Scotland, weeks 42 and 52-3 in Wales and weeks 3-7 in Northern Ireland (Table 2).

Table 1: Excess mortality by age group,England*

Age group (years)	Excess detected in week 7 2015?	Weeks with excess in 2014/15
<5	×	1-2,4
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*

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

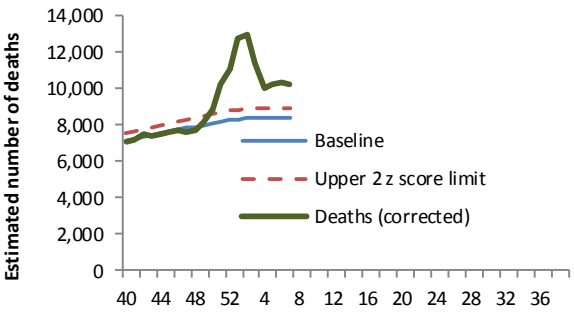


Table 2: Excess mortality by UK country*

Country	Excess detected in week 7 2015?	Weeks with excess in 2014/15
England	✓	50-7
Wales	×	42,52-3
Scotland	×	51-4,6
Northern Ireland	✓	3-7

** 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

Microbiological surveillance

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In week 7 2015, 69 samples were positive for influenza through the UK GP sentinel schemes (40 A(H3), five A(H1N1)pdm09, 11 A(not subtyped) and 13 B, positivity of 40.1%). 159 influenza positive detections were recorded through the DataMart scheme (107 A(H3), 16 A(not subtyped), 13 influenza A(H1N1)pdm09 and 23 B, positivity of 15.1%).

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

-In week 7, 46 samples were positive for influenza in England (32 A(H3), nine B and five A(H1N1)pdm09), 15 in Scotland (eight A(untyped), four B and three A(H3)), eight in Northern Ireland (five A(H3) and three A(not subtyped)) and none in Wales (Table 3).

Table 3: Sentinel influenza surveillance in the UK

Week	England	Scotland	Northern Ireland	Wales
4	33/147 (22.4%)	29/83 (34.9%)	5/12 (41.7%)	0/4 (-)
5	60/159 (37.7%)	37/80 (46.3%)	8/14 (57.1%)	0/10 (0%)
6	16/69 (23.2%)	29/77 (37.7%)	6/15 (40%)	1/5 (-)
7	46/122 (37.7%)	15/38 (39.5%)	8/8 (-)	0/4 (-)

NB. Proportion positive omitted when fewer than 10 specimens tested

- Respiratory DataMart System (England)

In week 7 2015, out of the 1053 respiratory specimens reported through the Respiratory DataMart System, 159 samples (15.1%) were positive for influenza (107 A(H3), 16 A(not subtyped), 13 influenza A(H1N1)pdm09 and 23 B (Figure 11*)), with the highest level seen in 65+ year olds (21.4%, Figure 12).The overall positivity for RSV remained low at 3.3% in week 7, with the highest positivity remaining in children under 5 years (7.1%, Figure 13). Positivity for rhinovirus remained stable at 11.0% in week 7, while other respiratory viruses remained at low levels: adenovirus 3.7%, parainfluenza 3.6% and hMPV 3.3 %.

Figure 11: DataMart samples positive for influenza, England

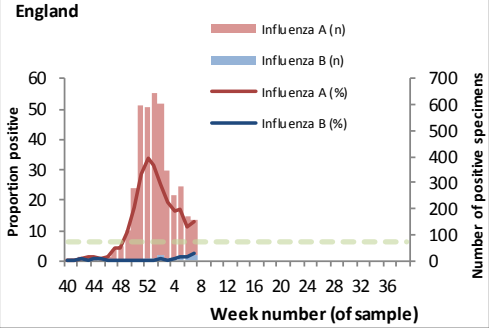


Figure 12: Datamart % positive for influenza by age, England

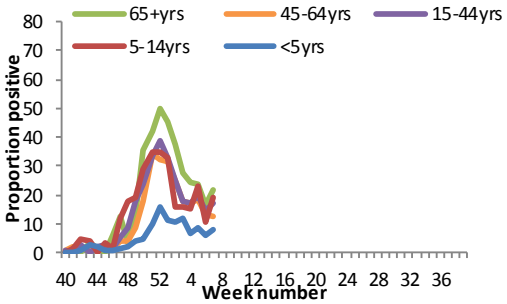
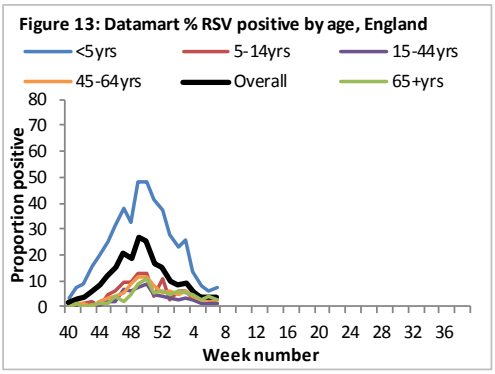


Figure 13: Datamart % RSV positive by age, England



**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

Since week 40 2014, the PHE Respiratory Virus Unit (RVU) has isolated and antigenically characterised 202 influenza A(H3N2) viruses. Of these, the majority were similar to the A/Texas/50/2012 H3N2 Northern Hemisphere 2014/15 vaccine strain, however 50 (25%) showed reduced reactivity in antigenic tests with A/Texas/50/2012 antiserum. These 50 isolates are antigenically similar to A/Switzerland/9715293/2013, the H3N2 virus selected for the 2015 Southern 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.

Twenty-eight 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.

Twenty influenza B viruses have been isolated and antigenically characterised as belonging to B/Yamagata/16/88 lineage, the influenza B component of the 2014-2015 Northern Hemisphere trivalent and quadrivalent vaccines.

- Antiviral susceptibility

Since week 40 2014, 136 influenza viruses (72 A(H3N2), 52 A(H1N1)pdm09 and 12 B) have been tested for oseltamivir susceptibility in the UK and all but two H3N2 are sensitive. The 72 flu A(H3N2), 15 A(H1N1)pdm09 and 12 B were also tested against zanamivir and all but one H3N2 are sensitive. The resistant H3N2 influenza virus has an R292K amino acid substitution in the neuraminidase. This sample was taken from a child who had received oseltamivir treatment. The R292K substitution is known to cause resistance to oseltamivir and also reduces susceptibility to zanamivir.

- Antimicrobial susceptibility

-Table 4 shows in the 12 weeks up to 8 February 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 8 Feb 2015, E&W

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
S. pneumoniae	Penicillin	3,349	92
	Macrolides	3,631	82
	Tetracycline	3,486	85
H. influenzae	Amoxicillin/ampicillin	13,567	74
	Co-amoxiclav	12,613	95
	Macrolides	5,171	20
	Tetracycline	13,592	98
S. aureus	Methicillin	4,712	86
	Macrolides	4,610	72
MRSA	Clindamycin	530	41
	Tetracycline	613	84
MSSA	Clindamycin	2,207	80
	Tetracycline	3,562	92

Macrolides = erythromycin, azithromycin and clarithromycin

Vaccination

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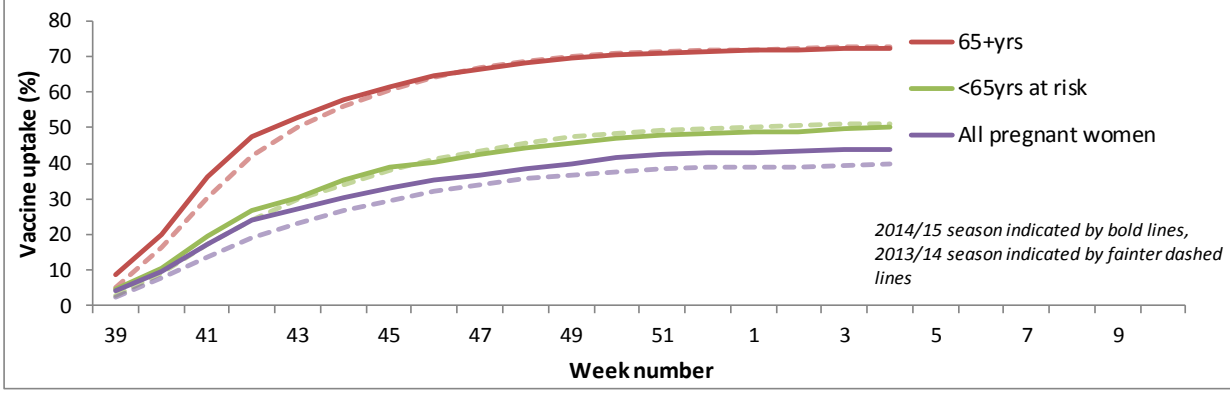
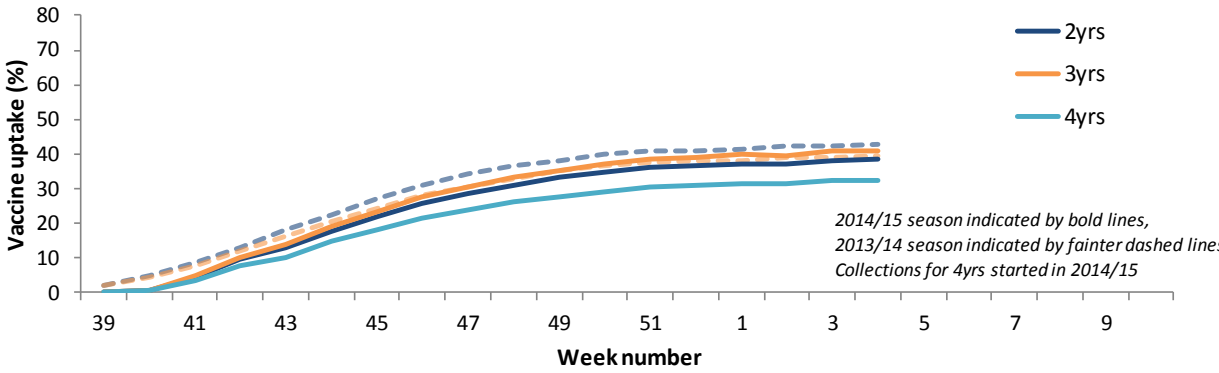
- Up to week 4 2015 in 92% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2014/15 influenza vaccine in targeted groups was as follows (Figure 13):
    - 50.1% in under 65 years in a clinical risk group
    - 43.9% in pregnant women
    - 72.5% in 65+ year olds

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



- The childhood universal influenza vaccination programme has extended from 2-3 year olds in 2013/14 to 2-4 year olds in 2014/15. Up to week 4 2015 in 92% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2014/15 influenza vaccine in targeted groups was as follows (Figure 14):
    - 38.3% in all 2 year olds
    - 41.1% in all 3 year olds
    - 32.6% in all 4 year olds

Figure 15: Cumulative weekly influenza vaccine uptake by target group in England



- Provisional data from the fourth monthly collection of influenza vaccine uptake by frontline healthcare workers show 54.6% were vaccinated by 31 January 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.
- Provisional data from the third monthly collection of influenza vaccine uptake up to 31 December 2014 by targeted groups has been published. The report provides uptake at national, area team and CCG 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. It will provide protection

against the other circulating strains this season. Early use of antivirals for prophylaxis and treatment of vulnerable populations remains important.

International Situation

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Globally influenza activity remained high in the northern hemisphere with influenza A(H3N2) viruses predominating. In the European Region, the influenza season is well underway, particularly in western and central European countries.

- Europe 13 February 2015 (Joint ECDC-WHO Influenza weekly update)

The influenza season is well under way, particularly in western and central countries in the WHO European Region. For week 06/2015, 20 countries reported increasing influenza activity with Influenza A(H1N1)pdm09, A(H3N2) and type B viruses continued to circulate in the Region, with A(H3N2) predominating. Of 2625 sentinel specimens, 1331 (51%) tested positive for influenza virus with positive detections being made in all 33 countries that reported virological data. Excess all-cause mortality among elderly people (aged ≥65 years), concomitant with increased influenza activity and the predominance of A(H3N2) viruses, has been observed in recent weeks in Belgium, France, Portugal, Spain, Switzerland and the United Kingdom (England, Scotland and Wales). Across all countries, a pooled analysis shows a higher level of mortality among elderly people than in the four previous seasons.

Forty-two countries reported epidemiological data for week 06/2015. Ten countries, mostly in central and eastern Europe, and England (United Kingdom) reported low intensity of influenza activity, with two reporting increasing trends, indicating that the season has not yet fully started in these countries. Eight countries, mostly in the western part of the Region, reported high intensity of influenza activity, either localized or widespread geographically, with mostly increasing or stable trends. In addition, 23 countries, predominantly in western, northern and central Europe, reported medium-intensity influenza activity. Of these, 14 reported laboratory-confirmed influenza cases in 50% or more of their administrative units (or reporting sites) and trends were still increasing in 10. Overall, 20 countries reported increasing influenza activity, with 14 reporting stable trends.

Since week 40/2014, eight countries (Finland, France, Ireland, Romania, Slovakia, Spain, Sweden and the United Kingdom) have reported a total of 2161 laboratory-confirmed hospitalized influenza cases. Of these, 1572 cases were admitted to intensive care units (ICUs): 826 (53%) being reported by the United Kingdom. Of the 2161 confirmed cases, the following were subtyped: 1970 (91%) were positive for influenza A virus (706 subtyped: 551 A(H3N2) and 155 A(H1N1)pdm09) and 186 for influenza B virus. For week 06/2015, 229 laboratory-confirmed hospitalized influenza cases were reported, with 144 admitted to ICUs: four by Finland, 87 by France, two by Ireland, four by Romania, 18 by Spain, three by Sweden and 26 by the United Kingdom. Of the influenza viruses detected in ICU patients, 131 (91%) were diagnosed as type A and ten as type B. Of the 27 subtyped influenza A viruses, 20 (74%) were A(H3N2) and seven (26%) were A(H1N1)pdm09. Where data on age are available, since the start of the season, the two age groups with the highest numbers of cases have been those aged 15–64 years (482) and ≥65 years (668). Among the cases in the highest age bracket, 349 were admitted to ICUs and 319 to other wards. Among those aged ≥65, influenza A(H3N2) accounted for 209 cases and A(H1N1)pdm09 for 43.

Most of the A(H3N2) viruses characterized so far show antigenic differences from the virus included in the 2014–2015 northern hemisphere influenza vaccine. A reduction in the effectiveness of the A(H3N2) component of the vaccine may therefore be expected, which in turn may contribute to the excess mortality reported among elderly people in six European countries. The vaccine is still expected to provide some cross-protection against A(H3N2) viruses, which may reduce the likelihood of severe outcomes, such as hospitalization or death, in some cases. The A(H1N1)pdm09 and B components of the vaccine are likely to be effective.

Since week 40/2014, the antigenic characteristics of 529 influenza viruses have been reported (Table 1), and 675 viruses have been characterized genetically The 91 A(H1N1)pdm09 viruses antigenically characterized to date are similar to the components included in the 2014–2015 northern hemisphere vaccines. Of the 123 influenza B viruses characterized antigenically, 119 were of the Yamagata lineage, which is included in the current 2014–2015 northern hemisphere trivalent and quadrivalent vaccines. Four viruses were of the Victoria lineage.

Thirty-three (28%) of the Yamagata lineage viruses were similar to B/Massachusetts/2/2012, a virus from genetic clade 2, while 83 (70%) were like B/Phuket/3073/2013, the virus from genetic clade 3 recommended for the southern hemisphere 2015 influenza season vaccines. Although viruses from clade 2 and clade 3 are antigenically distinguishable, reference antisera raised against B/Massachusetts/2/2012 react well with

viruses from clade 3, which suggests that the current trivalent vaccine might give protection against B-Yamagata clade 3 viruses. In addition, one B/Wisconsin/1/2010-like and two B/Florida/4/2006-like Yamagata lineage viruses have been reported. One hundred and twenty-five B Yamagata lineage viruses characterized genetically to date belong to clade 3, represented by B/Phuket/3073/2013. The four influenza B Victoria lineage viruses were B/Brisbane/60/2008-like (recommended for inclusion in quadrivalent vaccines).

Analyses of A(H3N2) viruses included 315 viruses characterized antigenically, of which 215 (68%) were A/Switzerland/9715293/2013-like and dissimilar to the vaccine virus, A/Texas/50/2012. Of the 493 A(H3N2) viruses characterized genetically, 315 (64%) fell in genetic subgroup 3C.2a, represented by A/Hong Kong/5738/2014; 122 (25%) in subgroup 3C.3, represented by A/Samara/73/2013; and 47 (10%) in genetic subgroup 3C.3a, represented by A/Switzerland/9715293/2013. Viruses in genetic subgroups 3C.2a and 3C.3a have been shown to be antigenically dissimilar to the current A(H3N2) vaccine virus. Eight A(H3N2) viruses were not attributable to an antigenic category and nine were not ascribed to a genetic category. Together, these observations indicate that the current A(H3N2) component of influenza vaccines will probably have reduced effectiveness.

- United States of America 13 February 2015 (Centre for Disease Control report)

During week 5 (February 1-7, 2015), influenza activity decreased, but remained elevated in the United States. The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold of 7.2% for week 5. The proportion of outpatient visits for influenza-like illness (ILI) was 3.8%, above the national baseline of 2.0%. All 10 regions reported ILI at or above region-specific baseline levels. Puerto Rico and 15 states experienced high ILI activity; New York City and 15 states experienced moderate ILI activity; eight states experienced low ILI activity; 12 states experienced minimal ILI activity; and the District of Columbia had insufficient data.. The geographic spread of influenza in Puerto Rico and 32 states was reported as widespread; Guam, the U.S. Virgin Islands, and 16 states reported regional activity; and the District of Columbia and two states reported local activity..

Of 21,340 specimens tested and reported by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories during week 4, 3,174 (14.9%) were positive for influenza. (1,704 influenza A subtype not performed, 1,058 influenza A (H3), 406 influenza B and six influenza A(H1N1)pdm09).

11 influenza-associated paediatric deaths were reported to CDC during week 5. Four deaths were associated with an influenza A (H3) virus and occurred during weeks 52, 3 and. Five deaths were associated with an influenza A virus for which no subtyping was performed and occurred during weeks 53, 1, 2, and 3. One death was associated with an influenza B virus and occurred during week 4. One death was associated with an influenza A and influenza B virus co-infection and occurred during week 5. A total of 80 influenza-associated paediatric deaths have been reported during the 2014-2015 season from New York City and 28 states

CDC has characterized 809 influenza viruses [21 A(H1N1)pdm09, 634 A(H3N2), and 154 influenza B viruses] collected by U.S. laboratories since October 1, 2014. All 21 H1N1 viruses tested were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2014-2015 Northern Hemisphere influenza vaccine. 199 (31.4%) of the 634 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. 435 (68.6%) of the 634 viruses tested showed either reduced titres with antiserum produced against A/Texas/50/2012 or belonged to a genetic group that typically shows reduced titres to A/Texas/50/2012. Among viruses that showed reduced titres with antiserum raised against A/Texas/50/2012, most were antigenically similar to A/Switzerland/9715293/2013, the H3N2 virus selected for the 2015 Southern Hemisphere influenza vaccine. A/Switzerland/9715293/2013 is related to, but antigenically and genetically distinguishable from, the A/Texas/50/2012 vaccine virus. A/Switzerland-like H3N2 viruses were first detected in the United States in small numbers in March of 2014 and began to increase through the spring and summer.

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

- Canada 13 February 2015 (Public Health Agency report)

In week 5, all influenza indicators with the exception of ILI and influenza activity continued to decline. There is ongoing influenza activity in the Western, Central and the Atlantic provinces, predominantly due to influenza A. Influenza B detections have been increasing steadily, particularly in the Prairies and in Quebec.
A(H3N2) continues to be the most common type of influenza affecting Canadians. In both laboratory detections, hospitalizations and deaths and the majority of cases have been among seniors ≥65 years of age. A record number of long term care facility (LTCF) outbreaks have been reported this season to date

(n=910) and has surpassed the number of LTCF outbreaks reported in each of the past four seasons. Evidence from the National Microbiology Laboratory (NML) does indicate that this year's vaccine will continue to provide protection against the circulating A(H1N1) and B strains.

The number of positive influenza tests decreased from 2,409 in week 04 to 1,729 in week 05. The percentage of positive influenza A tests decreased from 23.1% to 19.5%. The percentage of positive influenza B tests have been increasing for the past few weeks to 2.2% in week 05, the highest this season thus far. The proportion of influenza B detections were highest in the Prairies and Quebec in week 05 (influenza B accounted for 15%-36% of all influenza detections). To date, 96% of influenza detections have been influenza A, and 99.7% of those subtyped have been A(H3N2). To date this season, detailed information on age and type/subtype has been received for 27,061 cases. A significantly greater proportion of laboratory detections of influenza have been reported in adults ≥65 years of age (62%) this season compared to the 2013-14 season when only 15.6% of cases were in adults ≥65 years of age.

The national influenza-like-illness (ILI) consultation rate increased to 55.0 consultations per 1,000, which is slightly above expected levels for week 05. The rate were highest among the 5 to 19 years of age group (64.9 consultations per 1,000) and lowest among the adults ≥65 years of age (33.9 consultations per 1,000).

In week 05, 16 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network: 12 cases of influenza A and four cases of influenza B. Among the reported cases, 6 (38%) were <2 years of age, 9 (56%) were 2 to 9 years of age and one (6%) was 10-16 years of age. One case was admitted to the ICU. To date this season, 489 hospitalizations have been reported by the IMPACT network, 458 (94%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 99% (142/144) were A(H3N2). To date, 56 cases were admitted to the ICU, of which 34 (61%) were 2 to 9 years of age. Three deaths have been reported.

In week 05, 89 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network. Among the cases in week 05, 71 cases (80%) were in adults over the age of 65 and 84 cases (94%) had influenza A. To date this season, 1,532 cases have been reported; 1,505 (98%) with influenza A. The majority of cases (83%) were among adults ≥65 years of age. One hundred and five ICU admissions have been reported and 78 cases were adults ≥65 years of age. A total of 81 ICU cases reported to have at least one underlying condition or comorbidity. Of the 72 ICU cases with known immunization status, 24 (33%) reported not having been vaccinated this season. Sixty-six deaths have been reported, 59 (89%) of the deaths were adults >65 years of age.

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 09 February 2015 (WHO website)

Globally influenza activity remained high in the northern hemisphere with influenza A(H3N2) viruses predominating so far this season. Antigenic characterization of most recent A(H3N2) viruses thus far indicated differences from the A(H3N2) virus used in the influenza vaccines for the northern hemisphere 2014-2015. The vast majority of influenza A(H3N2) viruses tested to date this season were sensitive to neuraminidase inhibitors.

In North America, the influenza activity seemed to have peaked. Influenza A(H3N2) virus predominated this season.

In Europe, the influenza season is well under way, particularly in western and central countries in the WHO European Region. Influenza A(H3N2) was the dominant virus detected this season.

In northern Africa and the middle East, influenza activity due to influenza A(H3N2) and B seemed to have peaked but increasing activity with influenza A(H1N1)pdm09 was reported by Algeria, and Iran.

In the temperate countries of Asia, influenza activity appeared to have peaked in northern China, but was still increasing in Japan and the Republic of Korea. Influenza A(H3N2) virus predominated so far.

In tropical countries of the Americas, influenza activity was low in most countries of the Caribbean, Central America and in the tropical countries of South America.

In tropical Asia, influenza activity increased in south China; China Hong Kong Special Administrative Region and India.

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

- Enterovirus D68 (EV-D68) 15 January 2015

From mid-August to 15 January 2015, CDC or state public health laboratories have 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 have 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 recent 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 12 February 2015 (WHO website)

Influenza A(H7N9)

On 09 February 2015, the National Health and Family Planning Commission (NHFPC) of China notified WHO of 1 additional laboratory-confirmed case of human infection with avian influenza A(H5N6) virus.

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 26 January 2015, 718 human cases of H5N1 avian influenza have been officially reported to WHO from 16 countries, of which 413 (57.5%) died. The patient had history of exposure to dead wild fowl.

- Novel coronavirus 16 February 2015

Up to 11 February 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 979 confirmed cases have been reported internationally, resulting in a current global total of 983 cases, with the most recent cases reported on 16 February 2015 from the Kingdom of Saudi Arabia. Further information on management and guidance of possible cases is available online.

Acknowledgements

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- MEM threshold methodology paper and UK pilot paper

Community surveillance

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Disease severity and mortality data

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Vaccination

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- Childhood flu programme information for healthcare practitioners (Public Health England)
- 2014/15 Northern Hemisphere seasonal influenza vaccine recommendations (WHO)