PHE Weekly National Influenza Report

Summary of UK surveillance of influenza and other seasonal respiratory illnesses

12 February 2015 – Week 7 report (up to week 6 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 6 2015 (ending 8 February), influenza activity decreased across most indicators compared to the previous week in England. Significant excess all-cause mortality continues to be seen in 65+ year olds, coinciding with circulating influenza and cold snaps. The Department of Health alert issued on the prescription of antiviral medicines by GPs is still active.

- Community influenza surveillance
  - In week 6 the majority of syndromic indicators for respiratory symptoms were stable.
  - 34 new acute respiratory outbreaks have been reported in the past seven days, 30 in care homes (six flu A(untyped), one flu A(H3), one mixed infection with flu A(H3) and adenovirus, and the rest not tested/results not available yet), three in hospitals (two flu A(untyped) and one not tested), one in a school (flu A (untyped)).
- Overall weekly influenza GP consultation rates across the UK
  - The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system was stable in week 6.
  - In week 5, overall weekly influenza-like illness (ILI) GP consultations increased in Scotland (26.0 per 100,000) , decreased in Northern Ireland (41.4 per 100,000) and remained stable in Wales (12.6 per 100,000)
- Influenza-confirmed hospitalisations
  - 26 new admissions to ICU/HDU with confirmed influenza (17 A unknown subtype, six A(H3N2), one influenza A(H1N1)pdm09 and two B) were reported through the USISS mandatory ICU/HDU surveillance scheme across the UK (125 Trusts in England) in week 6, a rate of 0.05 per 100,000 compared to 0.08 per 100,000 the previous week.
  - 41 new hospitalised confirmed influenza cases (22 influenza A(H3N2), 16 A unknown subtype and three influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network across England (21 Trusts), a rate of 0.50 per 100,000 compared to 0.75 per 100,000 the previous week.
- All-cause mortality data
  - In week 6 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 6, significant excess all-cause mortality was seen in Scotland, Wales and Northern Ireland. Since week 40 2014, significant excess mortality has been seen in England from week 50 to 6 2015, coinciding with circulating influenza and cold snaps.
- Microbiological surveillance
  - 31 samples were positive for influenza through the UK GP sentinel schemes (18 A(H3), four A(H1N1)pdm09, two A(not subtyped) and seven B, positivity of 28.7% compared to 41.2% the previous week (updated)).
  - In week 6 2015, 117 influenza positive detections were recorded through the DataMart scheme (79 A(H3), 19 A(not subtyped), six influenza A(H1N1)pdm09 and 13 B, a positivity of 11.3% compared to 18.6% the previous week, with the highest levels seen in 65+ year olds (16.5%).
  - 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 third monthly collection of influenza vaccine uptake by frontline healthcare workers show 52.6% were vaccinated by 31 December 2014 from 98.1% 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 6 the majority of syndromic indicators for respiratory symptoms were stable and 34 new acute respiratory outbreaks were reported in the last seven days.

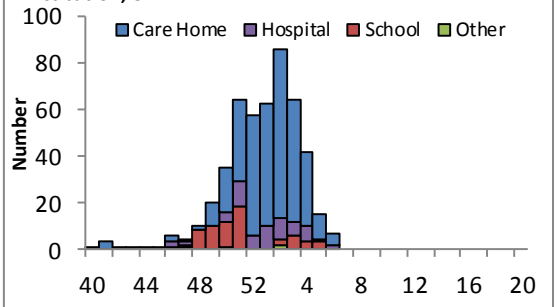
- PHE Real-time Syndromic Surveillance

-In week 6 there were further small increases in GP consultation rates for upper respiratory tract infections in children <15 years. However, indicators stabalised across several other syndromic surveillance systems, including NHS 111 calls, GP out of hours and emergency department admissions.

- Acute respiratory disease outbreaks

-34 new acute respiratory outbreaks have been reported in the past seven days, 30 in care homes (six flu A(untyped), one flu A(H3), one mixed infection with flu A(H3) and adenovirus, and the rest not tested/results not available yet), three in hospitals (two flu A(untyped) and one not tested), one in a school (flu A (untyped)). So far in the 2014/15 flu season, 514 outbreaks (378 in care homes, 68 in schools, 63 in hospitals and five in other settings) have been reported in the UK including 75 with flu A(H3) infection, 137 flu A (untyped), one flu B, one flu A(untyped)/flu B, eight rhinovirus, five RSV, three parainfluenza, one enterovirus, one hMPV, 11 mixed infections with different respiratory viruses and 268 not tested (or test results not yet available or tested negative).

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

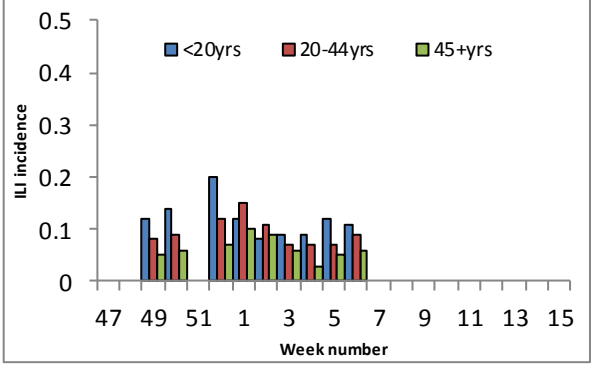


-Outbreaks should be recorded on HPZone and reported to the local Health Protection Teams and Respscidsc@phe.gov.uk.

- 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 6, 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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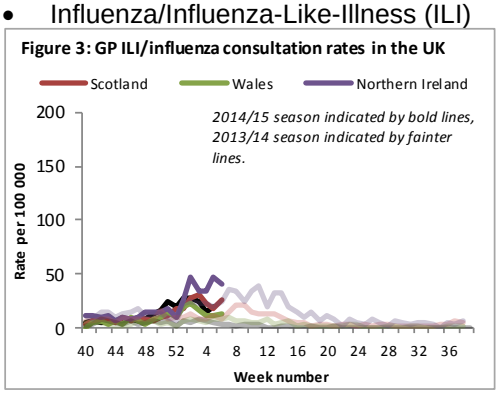
In week 6 overall weekly influenza-like illness GP consultations increased in Scotland, remained stable in Wales and decreased in Northern Ireland.

- Influenza/Influenza-Like-Illness (ILI)

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



Northern Ireland

-The Northern Ireland influenza rate decreased from 47.6 in week 5 to 41.4 in per 100,000 in week 6 (Figure 3).

-The highest rates were seen in 65-74 year olds (54.5 per 100,000), 75+ year olds (51.7 per 100,000) and <1 year olds (51.4 per 100,000).

Wales

-The Welsh influenza rate remained stable at 12.6 per 100,000 in week 6 (Figure 3).

-The highest rates were seen in 45-64 year olds (18.96 per 100,000), 65-74 year olds (15.63 per 100,000) and 15-44 year olds (14.8 per 100,000).

Scotland

-The Scottish ILI rate increased from 18.5 to 26.0 per 100,000 in week 6 (Figure 3).

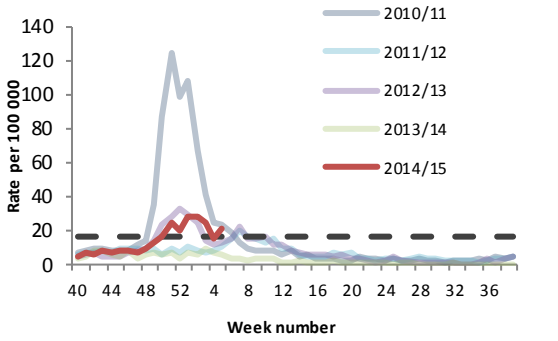
-The highest rates were seen in 45-64 year olds (31.3 per 100,000), 15-44 year olds (29.4 per 100,000) and 65-74 year olds (21.6 per 100,000).

RCGP (England and Wales)

-Confirmed data is available up to week 5 2015. The weekly ILI consultation rate through the RCGP surveillance system increased from 15.6 in week 4 to 20.6 per 100,000 in week 5 (Figure 4*). By age group, the highest rate was seen in 15-44 year olds (24.1 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

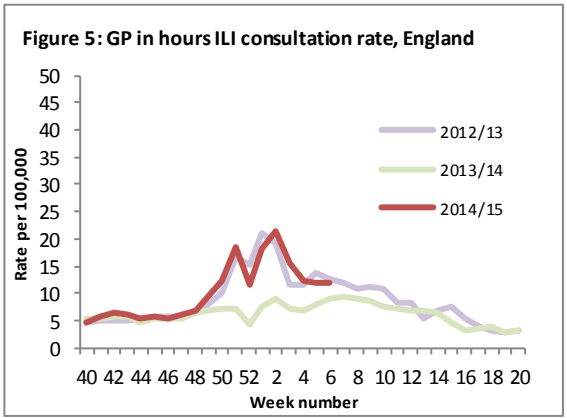


GP In Hours Syndromic Surveillance System (England)

-The weekly ILI consultation rate through the GP In Hours Syndromic Surveillance system was at similar levels compared to the previous week (11.9 per 100,000 in week 6, 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 6, 26 new admissions to ICU/HDU with confirmed influenza (17 A unknown subtype, six A(H3N2), one influenza A(H1N1)pdm09 and two B) were reported through the national USISS mandatory ICU scheme across the UK (125 Trusts in England). 41 new hospitalised confirmed influenza cases (22 influenza A(H3N2), 16 A unknown subtype and three influenza A(H1N1)pdm09) 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 6)

-In week 6, 26 new admissions to ICU/HDU with confirmed influenza (17 A unknown subtype, six A(H3N2), one influenza A(H1N1)pdm09 and two B) were reported across the UK (125/156 Trusts in England) through the USISS mandatory ICU scheme (Figures 6 and 7), a rate of 0.05 per 100,000 compared to 0.08 per 100,000 the previous week. Two new confirmed influenza deaths were reported in week 6 2015. A total of 833 admissions (589 A unknown subtype, 179 A(H3N2), 41 A(H1N1)pdm09) and 24 B) and 81 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

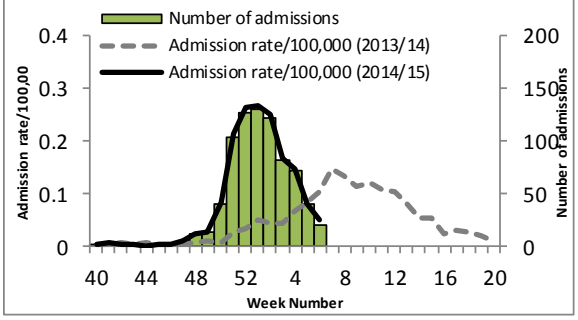
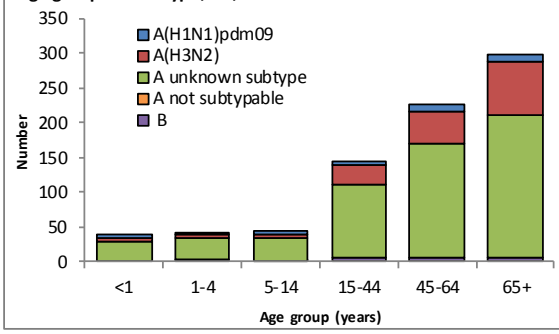


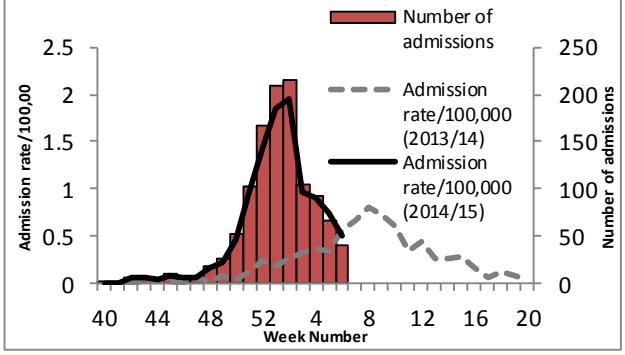
Figure 7: Cumulative ICU influenza admissions (USISS mandatory) by age group and flu type, UK, since week 40 2014



- USISS sentinel weekly hospitalised confirmed influenza cases, England (week 6)

-In week 6, 41 new hospitalised confirmed influenza cases (22 influenza A(H3N2), 16 A unknown subtype and three influenza A(H1N1)pdm09) were reported through the USISS sentinel hospital network from 21 NHS Trusts across England (Figure 8), a rate of 0.50 per 100,000 compared to 0.75 per 100,000 the previous week. A total of 1,139 hospitalised confirmed influenza admissions (758 A(H3N2), 326 A unknown subtype, 33 B and 22 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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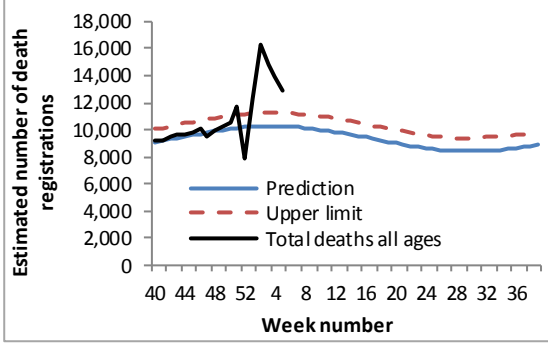
In week 6 2015, significant excess all-cause mortality by week of death was seen through the EuroMOMO algorithm in England in 65+ year olds. In the devolved administrations in week 6, significant excess all-cause mortality was seen in Scotland, Wales and Northern Ireland. Since week 40 2014, significant excess mortality has been seen in England from week 50 to 6 2015, coinciding 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 5 2015, an estimated 12,900 all-cause deaths were registered in England and Wales (source: Office for National Statistics). This is less than the 13,934 estimated death registrations in week 4, 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 6 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 6 2015, 15-64 year olds in weeks 51-1 and weeks 1-2 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 6 2015, excess mortality above the threshold was seen in weeks 51-6 in Scotland, weeks 42/50/52-6 in Wales and weeks 3-6 in Northern Ireland (Table 2).

Table 1: Excess mortality by age group,England*

Age group (years)	Excess detected in week 6 2015?	Weeks with excess in 2014/15
<5	×	1-2
5-14	×	NA
15-64	×	51-1
65+	✓	50-6

** 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 by week of death, EuroMOMO, England

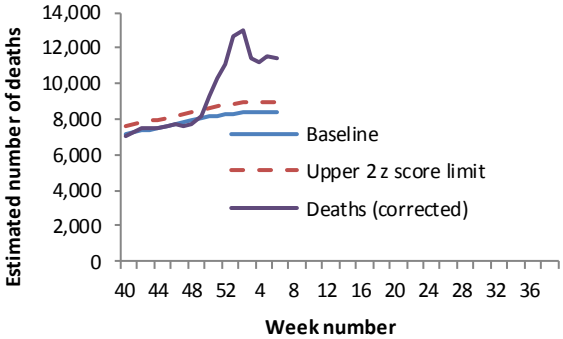


Table 2: Excess mortality by UK country*

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

** 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 6 2015, 31 samples were positive for influenza through the UK GP sentinel schemes (18 A(H3), four A(H1N1)pdm09, two A(not subtyped) and seven B, positivity of 28.7%). 117 influenza positive detections were recorded through the DataMart scheme (79 A(H3), 19 A(not subtyped), six influenza A(H1N1)pdm09 and 13 B, positivity of 11.3%).

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

-In week 6,15 samples were positive for influenza in England (10 A(H3), four B and one A(H1N1)pdm09), 12 in Scotland (seven A(H3), three A(H1N1)pdm09 and two B), three in Northern Ireland (two A(not subtyped) and one A(H3)) and one in Wales (one B) (Table 3).

Table 3: Sentinel influenza surveillance in the UK

Week	England	Scotland	Northern Ireland	Wales
3	57/223 (25.6%)	21/85 (24.7%)	5/8 (-)	4/6 (-)
4	33/147 (22.4%)	29/81 (35.8%)	5/12 (42.0%)	2/4 (-)
5	60/156 (38.5%)	37/80 (46.3%)	8/14 (57.1%)	2/10 (20.0%)
6	15/62 (24.2%)	12/33 (36.4%)	3/8 (-)	1/5(-)

NB. Proportion positive omitted when fewer than 10 specimens tested

- Respiratory DataMart System (England)

In week 6 2015, out of the 995 respiratory specimens reported through the Respiratory DataMart System, 117 samples (11.3%) were positive for influenza (79 A(H3), 19 A(not subtyped), 6 influenza A(H1N1)pdm and 13 B (Figure 11*)), with the highest level seen in 65+ year olds (16.5%, Figure 12).The overall positivity for RSV remained low at 2.8% in week 6, with the highest positivity remaining in children under 5 years (5.3%, Figure 13). Positivity for rhinovirus increased to 11.6% in week 6, while other respiratory viruses remained at low levels: adenovirus 2.0%, parainfluenza 2.6% and hMPV 2.3 %.

Figure 11: DataMart samples positive for influenza, England

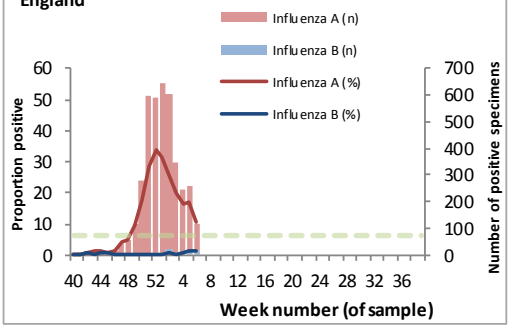


Figure 12: Datamart % positive for influenza by age, England

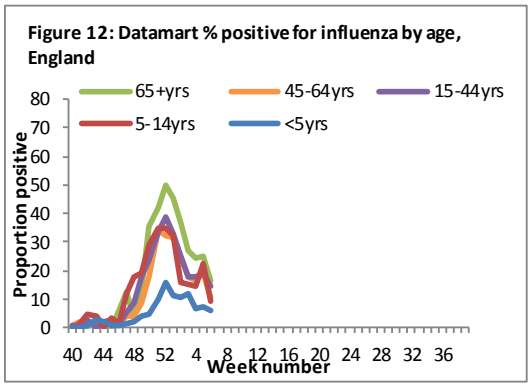
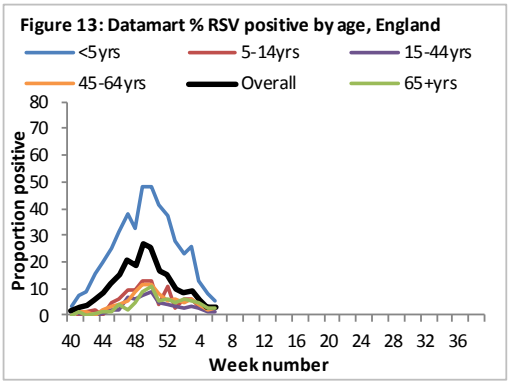


Figure 13: Datamart % RSV positive by age, England



**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 193 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-three 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.

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

- Antiviral susceptibility

Since week 40 2014, 109 influenza viruses (62 A(H3N2), 40 A(H1N1)pdm09 and 7 B) have been tested for oseltamivir susceptibility in the UK and all but two H3N2 are sensitive. The 61 flu A(H3N2), 11 A(H1N1)pdm09 and 7 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 1 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 1 Feb 2015, E&W

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
S. pneumoniae	Penicillin	3,128	92
	Macrolides	3,385	82
	Tetracycline	3,253	85
H. influenzae	Amoxicillin/ampicillin	12,596	74
	Co-amoxiclav	11,591	95
	Macrolides	4,687	19
	Tetracycline	12,562	98
S. aureus	Methicillin	4,486	86
	Macrolides	4,390	72
MRSA	Clindamycin	496	43
	Tetracycline	579	84
MSSA	Clindamycin	2,152	79
	Tetracycline	3,422	92

Macrolides = erythromycin, azithromycin and clarithromycin

Vaccination

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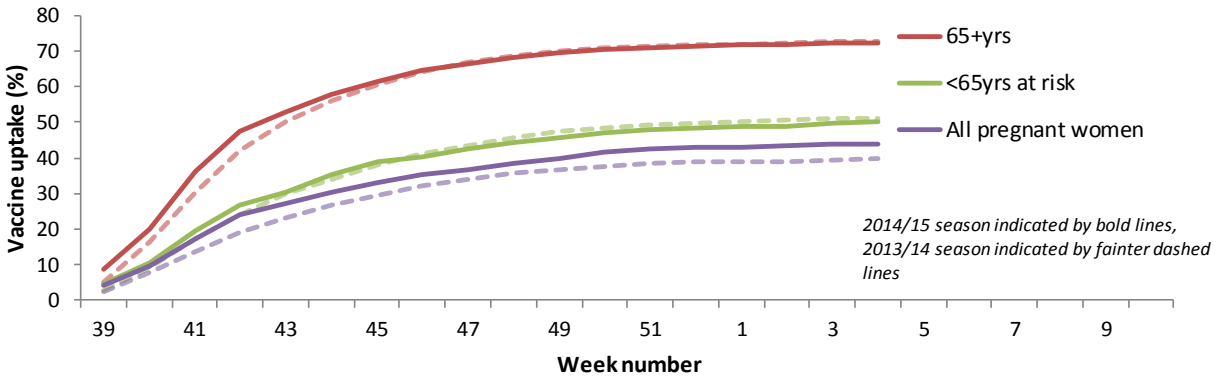
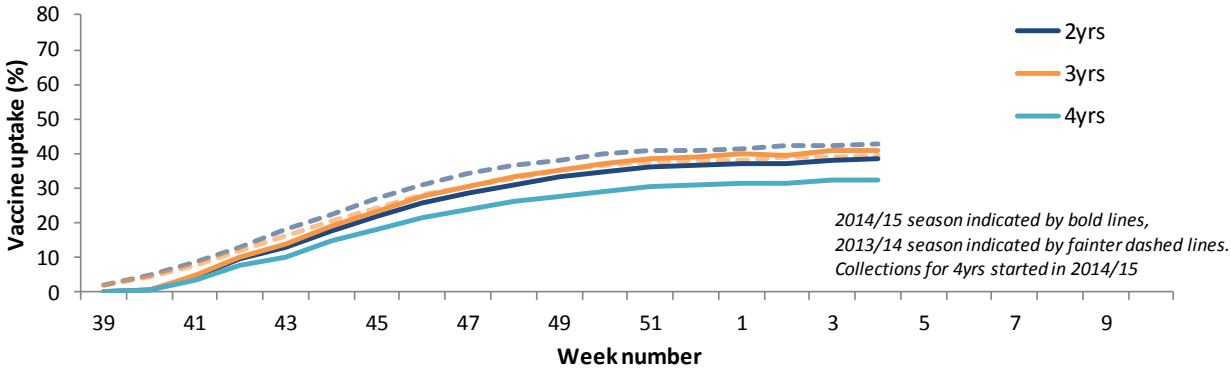
- Up to week 4 2015 in 92% of GP practices reporting weekly to Immform, the provisional proportion of people in England who had received the 2014/15 influenza vaccine in targeted groups was as follows (Figure 13):
    - 50.1% in under 65 years in a clinical risk group
    - 43.9% in pregnant women
    - 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 third monthly collection of influenza vaccine uptake by frontline healthcare workers show 52.6% were vaccinated by 31 December 2014 from 98.1% of Trusts, compared to 53.1% vaccinated the previous season by 31 December 2013. 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 06 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 05/2015, 30 countries reported increasing influenza activity, and the overall proportion of influenza-virus-positive sentinel specimens was the same as in the previous week: 49%. Excess all-cause mortality among the elderly (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 05/2015. Twelve countries, mostly in central and eastern Europe, and Wales (United Kingdom) reported low intensity of influenza activity, but nine of them reported increasing trends, indicating that the season has not yet fully started there. Seven countries (Albania, Belgium, Hungary, Italy, Latvia, Luxembourg and Switzerland) reported high intensity of influenza activity with widespread geographic activity and increasing or stable trends. In addition, 29 countries, predominantly in western, northern and central Europe, reported medium-intensity influenza activity; 21 of them reported patterns of widespread geographic activity, with laboratory-confirmed influenza cases in 50% or more of their administrative units (or reporting sites), and trends were still increasing in 16 countries. Overall, 30 countries and Northern Ireland (United Kingdom) reported increasing influenza activity, with nine countries reporting stable trends. Belarus, Portugal and the United Kingdom (Scotland) reported decreasing trends.

Since week 40/2014, 8 countries (Finland, France, Ireland, Romania, Slovakia, Spain, Sweden and the United Kingdom) have reported a total of 1651 laboratory-confirmed hospitalized influenza cases. Of these, 1215 cases were admitted to intensive care units (ICUs): 790 (65%) being reported by the United Kingdom. Of the 1651 confirmed cases, 1514 (92%) were positive for influenza A virus (533 subtyped: 429 A(H3N2) and 104 A(H1N1)pdm09) and 137 for influenza B virus. For week 05/2015, 168 laboratory-confirmed hospitalized influenza cases were reported, with 68 admitted to ICUs: one by Finland, one by Ireland, two by Romania, 28 by Spain, one by Sweden and 35 by the United Kingdom. Of the influenza viruses detected in ICU patients, 60 (88%) were diagnosed as type A and eight as type B. Of the 24 subtyped influenza A viruses, 21 (87%) were A(H3N2) and three (13%) were A(H1N1)pdm09. Since week 40/2014, the group aged ≥65 accounted for the highest number of cases among cases with available information on age (438 cases: 204 in ICUs and 234 in other wards)

About three quarters of A(H3N2) viruses characterized so far exhibit 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 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 effective.

Since week 40/2014, the antigenic characteristics of 378 influenza viruses have been reported, and 554 viruses have been characterized genetically. The 63 A(H1N1)pdm09 viruses antigenically characterized to date are similar to the components included in the 2014–2015 northern hemisphere vaccines.

Of the 87 influenza B viruses characterized antigenically, 84 were of the Yamagata lineage included in the current 2014–2015 northern hemisphere trivalent and quadrivalent vaccines, and three of the Victoria lineage. Twenty-three (27%) of the Yamagata lineage viruses were similar to B/Massachusetts/2/2012, a genetic clade 2 virus, while 58 (69%) were like B/Phuket/3073/2013, the genetic clade 3 virus recommended for the southern hemisphere 2015 influenza season vaccines. Additionally, one B/Wisconsin/1/2010-like and two B/Florida/4/2006-like Yamagata lineage viruses have been reported. All 91 B Yamagata lineage viruses characterized genetically to date belong to clade 3, represented by B/Phuket/3073/2013. The three influenza B Victoria lineage viruses were B/Brisbane/60/2008-like (recommended for inclusion in quadrivalent vaccines).

Analyses of A(H3N2) viruses included 228 viruses characterized antigenically, of which 139 (61%) were A/Switzerland/9715293/2013-like: dissimilar to the vaccine virus, A/Texas/50/2012. Of the 417 A(H3N2) viruses characterized genetically, 259 (62%) fell in genetic subgroup 3C.2a, represented by A/Hong

Kong/5738/2014; 104 (25%) in subgroup 3C.3, represented by A/Samara/73/2013; and 45 (11%) in genetic subgroup 3C.3a, represented by A/Switzerland/9715293/2013. Viruses in genetic groups 3C.2a and 3C.3a have been shown to be antigenically dissimilar to the current A(H3N2) vaccine virus. Seven 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 06 February 2015 (Centre for Disease Control report)

During week 4 (January 25-31, 2015), influenza activity decreased, but remained elevated in the United States. The proportion of outpatient visits for influenza-like illness (ILI) was 4.1%, above the national baseline of 2.0%. All 10 regions reported ILI at or above region-specific baseline levels. Puerto Rico and 26 states experienced high ILI activity; New York City and eight states experienced moderate ILI activity; six states experienced low ILI activity; 10 states experienced minimal ILI activity; and the District of Columbia had insufficient data. The geographic spread of influenza in Puerto Rico and 40 states was reported as widespread; Guam, the U.S. Virgin Islands, and nine states reported regional activity; and the District of Columbia and one state reported local activity.

The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold. During week 4, 8.5% of all deaths reported through the 122 Cities Mortality Reporting System were due to P&I. This percentage was above the epidemic threshold of 7.2% for week 4.

Of 22,122 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, 3,869 (17.5%) were positive for influenza. (2,185 influenza A subtype not performed, 1,345 influenza A (H3), 334 influenza B and five influenza A(H1N1)pdm09).

Eight influenza-associated paediatric deaths were reported to CDC during week 4. Four deaths were associated with an influenza A (H3) virus and occurred during weeks 1, 2, and 4. Four deaths were associated with an influenza A virus for which no subtyping was performed and occurred during weeks 50, 51, 52, and 4. A total of 69 influenza-associated paediatric deaths have been reported during the 2014-2015 season from New York City and 27 states

CDC has characterized 734 influenza viruses [21 A(H1N1)pdm09, 569 A(H3N2), and 144 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. 178 (31.3%) of the 569 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. 391 (68.7%) of the 569 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.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 06 February 2015 (Public Health Agency report)

In week 4, all influenza indicators continue to decline indicating that peak of the influenza season in Canada has passed.

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. Detections of respiratory syncytial virus (RSV) continue to be the second most frequently detected virus after influenza. Since week 38, detections of RSV have been higher than in the previous season.

On February 5, 2015, a Canadian interim vaccine effectiveness (VE) study by the PCIRN-SOS Network was published in Eurosurveillance. This study which examined VE for those seriously ill and in hospital found the overall VE for those less than 65 years of age to be 11% and minus 25% for those over 65 years of age. Almost all (99%) cases were laboratory confirmed with H3N2. These poor VE estimates are not unexpected given the high degree of drift of the circulating virus from the vaccine strain observed in Canada this season.

Evidence from the National Microbiology Laboratory does indicate that the other vaccine components will continue to provide protection against the circulating A(H1N1) and B strains.

The number of positive tests decreased from 2,959 in week 03 to 2,388 in week 04. The percentage of positive influenza tests also decreased from 28.3% to 25.0%. To date, 97% of influenza detections have been influenza A, and 99.8% of those subtyped have been A(H3N2). To date this season, detailed information on age and type/subtype has been received for 25,918 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 15.5% of cases were in adults ≥65 years of age.

The national influenza-like-illness (ILI) consultation remained relatively the same as the previous week at 66.8 consultations per 1,000, which is above expected levels.

In week 04, 23 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network: 22 cases of influenza A and one case of influenza B. Among the reported cases, 5 (22%) were <2 years of age, 13 (56%) were 2 to 9 years of age and five (22%) were 10-16 years of age. Two cases were admitted to the ICU. To date this season, 467 hospitalizations have been reported by the IMPACT network, 441 (94%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 99% (139/141) were A(H3N2). To date, 53 cases were admitted to the ICU, of which 33 (60%) were 2 to 9 years of age. Three deaths have been reported.

In week 04, 78 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 04, 63 cases (81%) were in adults over the age of 65 and 74 cases (95%) had influenza A. To date this season, 1,411 cases have been reported; 1,392 (99%) with influenza A. The majority of cases (83%) were among adults ≥65 years of age. One hundred ICU admissions have been reported and 76 cases were adults ≥65 years of age. A total of 79 ICU cases reported to have at least one underlying condition or comorbidity. Of the 74 ICU cases with known immunization status, 24 (32%) reported not having been vaccinated this season. Sixty-four deaths have been reported, 57 (89%) of the deaths were adults >65 years of age.

- 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 08 February 2015 (WHO website)

Influenza A(H7N9)

The most recent cases of human infection with influenza A(H7N9) were reported by National Health and Family Planning Commission (NHFPC) of China to WHO on 08 February 2015 (83 case). Cases ranged in age from 1 to 88 years with a median age of 56 years. Of the 83 cases, there were 19 deaths reported, ranged in age from 7 to 78 years with a mean age of 50 years. 60 of these 83 cases were male. The majority (78 cases, 93%) reported exposure to live poultry or live poultry markets; the exposure history of 4 cases is unknown.

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 23 January 2015, 718 human cases of H5N1 avian influenza have been officially reported to WHO from 16 countries, of which 413 (57.5%) died.

- Novel coronavirus 3 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 971 confirmed cases have been reported internationally, resulting in a current global total of 975 cases, with the most recent cases reported on 11 February 2015 from Kingdom of Saudi Arabia. Further information on management and guidance of possible cases is available online.

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- 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)