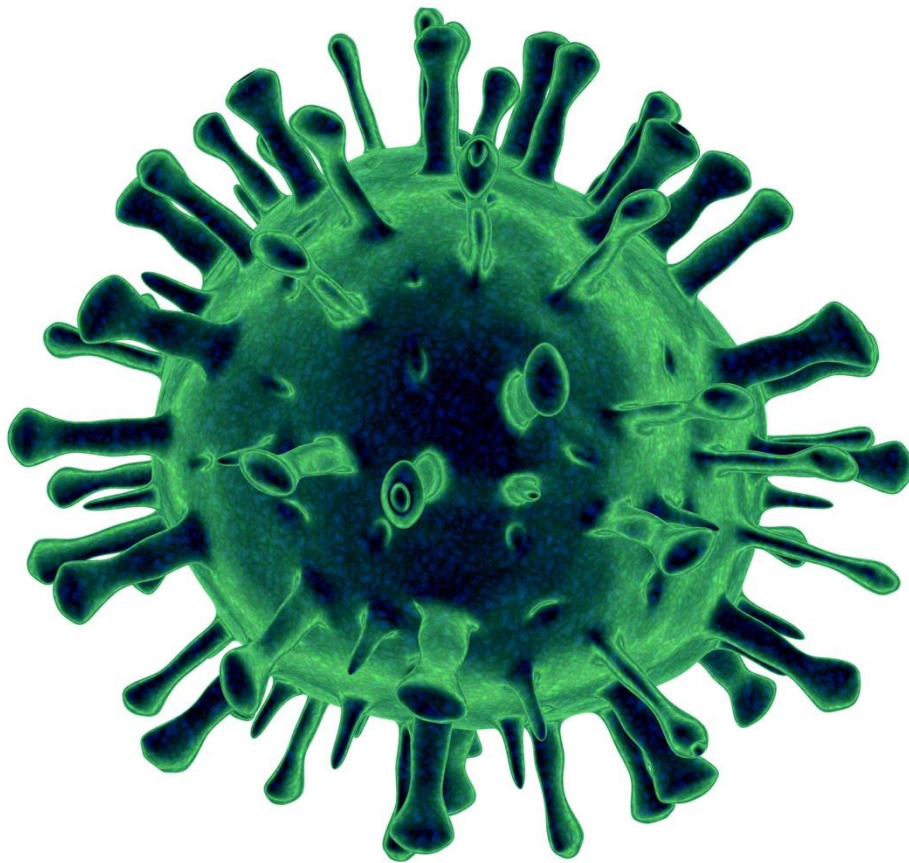


# Surveillance of Influenza in Northern Ireland

2014 – 2015



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## Summary

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Overall, the 2014/15 influenza season was characterised by moderate levels of influenza activity. Activity across all surveillance systems started to increase at around the same time as 2013/14, in early January, and was of similar duration (14 weeks). Activity peaked earlier, in mid-February, and reached generally higher levels throughout the season, compared to last year.

Whilst primary care influenza and influenza-like illness consultation rates were higher than in 2013/14 for the majority of the season, they were still low overall and only exceeded the baseline threshold for two weeks. Consultation rates were not predominantly seen in any one age group, with rates fluctuating in all age groups throughout the season. However, weekly rates were most consistently highest among older adults (those over 65 years).

Activity seen in the other influenza surveillance systems was also higher than last year, and showed that the severity and impact of influenza was greater this year and affected older age groups most frequently. The proportion of respiratory samples positive for influenza reached peak weekly levels of 36% compared to 26% in 2013/14. There were 43 respiratory-related outbreaks, compared to three in 2013/14.

The number of patients with confirmed influenza admitted to Intensive Care Units/High Dependency Units (ICU/HDU) was 68, compared to 52 in 2013/14. There were fewer deaths, 10 in 2014/15 versus 15 in 2013/15, and almost all had one or more co-morbidities. Excess mortality was reported for four weeks this season, compared to none last year, with those over 65 years of age most affected.

This season, influenza A(H3) was the predominant circulating strain (75%), followed by a substantial proportion of influenza B (19%) later in the season. A small number of influenza A (H1N1) pdm09 cases were also detected. The Public Health England - Respiratory Virus Unit and West of Scotland - Specialist Virology Centre, which carries out strain characterisation on influenza strains from across the United Kingdom, showed that the majority of influenza A(H3) and B strains had drifted from the strains contained in the 2014/15 Northern Hemisphere seasonal influenza vaccine.

Uptake for the 2014/15 seasonal influenza vaccine in each of the Joint Committee of Vaccinations and Immunisations (JCVI) recommended target groups was: 73.4% for individuals over 65 year olds; 71.8% for those in a clinical risk group aged under 65 years; 56.1% in pregnant women; and 22.6% for Health Care Workers. This year roll out of the universal childhood influenza vaccine programme continued, with pre-school children (2 to 4 years) and all primary school children being offered the live attenuated influenza vaccine (LAIV) in Northern Ireland. Uptake rate was 55.4% among 2 – 4 year olds and 79.7% in primary school children.

## Introduction

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In Northern Ireland, the activity of influenza and other respiratory viruses is monitored by the Public Health Agency (PHA). Data are collated from a number of surveillance systems to provide information on the type of influenza strains circulating in the region, the timing of influenza activity, the burden of influenza on the community and health services, the degree of excess mortality and the uptake of influenza vaccine. Outputs from the surveillance activities are used to produce timely reports that inform the Department of Health, Social Services and Public Safety (DHSSPS), health professionals, the media, and the public. Surveillance is carried out all year, with regular outputs published every week or second week from week 40 2014 (w/c 29/09/2014) to week 20 2015 (ending 17/05/2015).

This report describes influenza activity in Northern Ireland in the 2014/15 season from week 40 2014 to week 20 2015.

## Enhanced influenza surveillance systems

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### In-hours Sentinel GP Practice surveillance

In 2014/15, 37 GP practices in Northern Ireland participated in the sentinel GP surveillance system, covering 11.6% of the population. Every week, all sentinel GP practices report the number of combined GP consultations for influenza and influenza-like illness ('flu/FLI) and the number of GP consultations for acute respiratory infections (ARI) by age group. Thirty-two of the 37 practices also participate in enhanced virological surveillance and provide nasal and throat swabs from a sample of patients presenting with clinical symptoms of influenza.

The PHA reports combined 'flu/FLI sentinel GP consultations rates per 100,000 population. Rates are calculated using the practice populations.

A threshold for 'flu/FLI GP consultation rate is calculated annually to distinguish baseline activity from seasonal influenza activity and compare activity with previous years. This year, the Northern Ireland threshold is 52.0 consultations per 100,000 population. The threshold is calculated using the Moving Epidemic Method (MEM), which is used by the European Centre for Disease Prevention and Control, and has been adopted by each UK scheme reporting GP 'flu/FLI consultation rates to standardise reporting of influenza activity across the UK and Europe. Further details of the method have been previously described (Vega et al, 2012).

### GP Out-of-Hours surveillance

Every week, the GP Out-of Hours (OOH) surveillance system automatically extracts clinical consultation figures for 'flu/FLI and ARI by age group from all GP OOH Centres in Northern Ireland.

## **Virological surveillance**

The Regional Virology Laboratory (RVL) tests respiratory samples from sentinel GP practices, as well as from hospitals and non-sentinel GP practices (non-sentinel sources).

In 2014/15, all respiratory specimens were tested by PCR for influenza A and its main subtypes (H1N1pdm09, AH1 and AH3), influenza B and Respiratory Syncytial Virus (RSV). In addition, respiratory samples from hospital settings were tested for *mycoplasma pneumoniae* and *bordetella pertussis*, *chlamydomphila pneumoniae*, metapneumovirus, parainfluenza, *pneumocystis jirovecii*, respiratory adenovirus and rhinovirus.

The PHA annual report also provides surveillance information on RSV. It is not useful to report on other respiratory viruses because of the variation in testing methods from year to year.

Every year, during the influenza season, RVL also sends a sample of influenza specimens to the Public Health England - Respiratory Virus Unit (PHE- RVU) for antiviral resistance monitoring and further strain identification.

## **Outbreak surveillance**

Respiratory-related outbreaks in institutional settings (care homes, hospitals and schools etc.) are reported to the PHA as they occur. Sampling to identify the virus involved is encouraged throughout the season. The PHA uses a standardised proforma at the beginning, during and end of each confirmed influenza outbreak to collect relevant epidemiological information.

## **Intensive Care Unit/High Dependency Unit surveillance**

Since 2011/12, Northern Ireland has participated in the UK mandatory Intensive Care Unit (ICU) surveillance scheme. Epidemiological information on laboratory-confirmed cases of influenza admitted to Intensive Care Unit/High Dependency Unit (ICU/HDU) are collected, weekly, from the Critical Care Network for Northern Ireland (CCANI). The PHA reports weekly aggregate data on the number of cases, deaths and other epidemiological information.

## **Mortality surveillance**

The Northern Ireland Statistics and Research Agency (NISRA) provide data to the PHA on the number of death registrations by registration week, both all-cause and deaths due to selected respiratory infections. NISRA obtains deaths on selected respiratory infections by searching death certificates for keywords associated with influenza, including; bronchiolitis; bronchitis; influenza; and pneumonia. The PHA reports the number of death registrations with selected respiratory infections by week and as a proportion of all-cause death registrations. Due to delays in death registrations, the number of registered deaths in any given week will not equal the number of deaths that actually occurred in the week.

The PHA also reports excess mortality estimations by week of death. The Public Health England (PHE) calculates excess mortality on behalf of PHA using the Mortality Monitoring in Europe (EuroMOMO) model. EuroMOMO is a project coordinated by the Statens Serum

Institut in Denmark. It provides European countries with a common approach to analyse mortality data and compare it to other countries. The model produces weekly expected and observed number of deaths, corrected for reporting delay and standardised for the population by age group and region. Excess mortality is reported if the number of observed deaths exceeds the number of expected deaths. Despite delay correction, reported mortality data is still provisional due to the time delay in registration and observations can vary from week to week.

## **Vaccine uptake surveillance**

The PHA, in liaison with influenza immunisation co-ordinators in primary care, the Health and Social Care Board (HSCB) and Health and Social Care Trusts (HSCT), collects, collates and reports influenza vaccination uptake rates for the Joint Committee on Vaccination and Immunisation (JCVI) recommended target groups at intervals over the winter season.

In 2014/15, the JCVI recommended the seasonal 2014/15 trivalent influenza vaccine for: all individuals aged 65 years and over; individuals between 6 months and 65 years of age in a clinical at-risk group, including pregnant women; and Health Care Workers. The quadrivalent live attenuated influenza vaccine (LAIV) has also been extended to include pre-school children aged 2 years or older on 1 September 2014 and all children attending primary school.

Every year the DHSSPS establishes regional targets for influenza immunisation uptake. This year's targets are:

- 75% for individuals 65 years and over
- 75% for individuals under 65 years in a clinical at risk group
- 60% for pre-school children over the age of 2 years
- 75% for primary-school aged children

## Observations

### Sentinel GP 'flu/FLI' consultation rates

In 2014/15, the weekly sentinel GP consultation rate for 'flu/FLI' started to increase in week 1 2015 and went above the MEM threshold of 52.0 consultations per 100,000 in week 7 2015 at 58.3 per 100,000 population, when it peaked. Rates remained above the MEM threshold for two weeks before decreasing back to pre-season activity rates by week 15, with low level fluctuations for the remainder of the season (Figure 1).

When compared to previous seasons, peak sentinel GP consultation rates occurred earlier and reached higher levels than in 2013/14 and 2011/2, but were lower than 2012/13 and considerably lower than the last notable season of 2010/11. The duration of this season's activity was similar to 2013/14, but shorter than 2011/12 and 2012/13 (Figure 2).

Age-specific GP sentinel consultation rates fluctuated in all age groups throughout the season. The highest level of activity was most frequently seen in those over 65 years (peaking at 70.6 per 100,000 in week 9 2015), although the highest peak rate was in those aged under 4 years (71.7 per 100,000 in week 8 2015), with rates highest from week 43 to week 50 but with wide fluctuations throughout the season (range 0.0 to 71.7 per 100,000). The lowest peak rate was in the 15-44 years age group (58.1 per 100,000 in week 8 2015) (Figure 3).

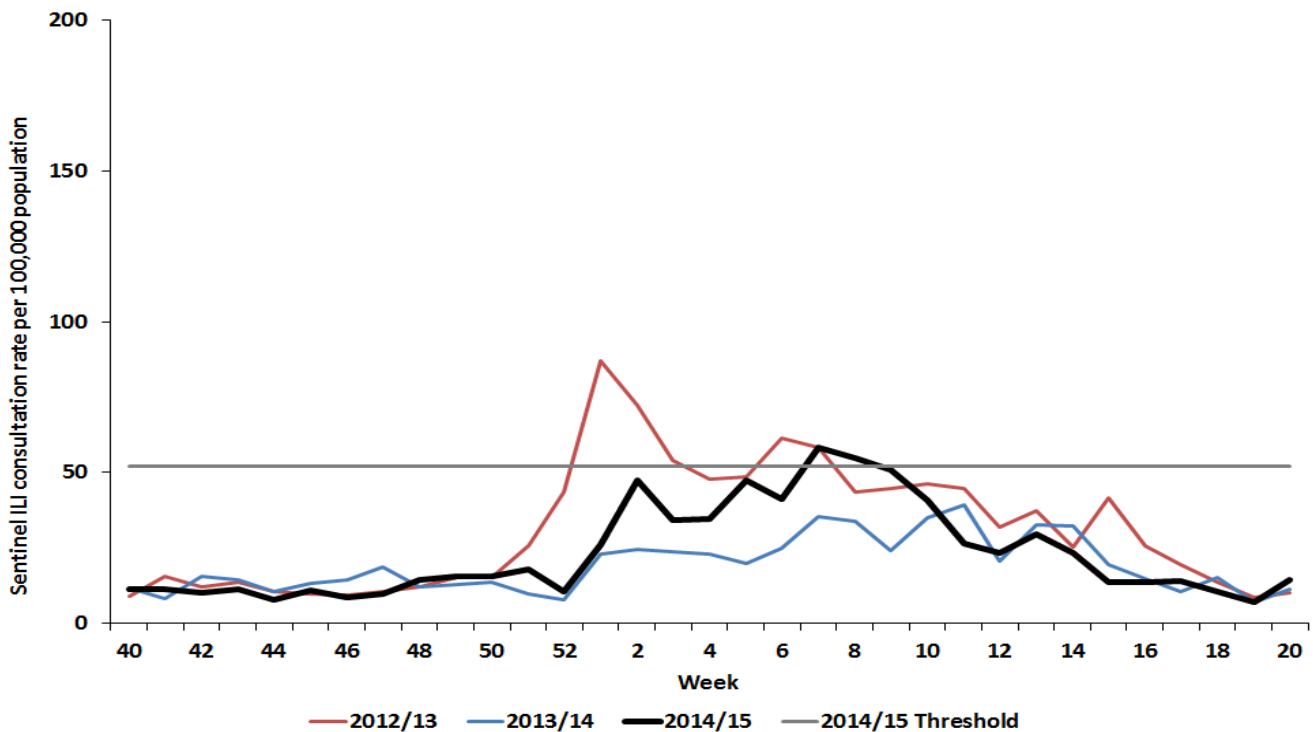


Figure 1: Sentinel GP consultation rate per 100,000 population for combined flu and flu-like illness 2012/13 – 2014/15

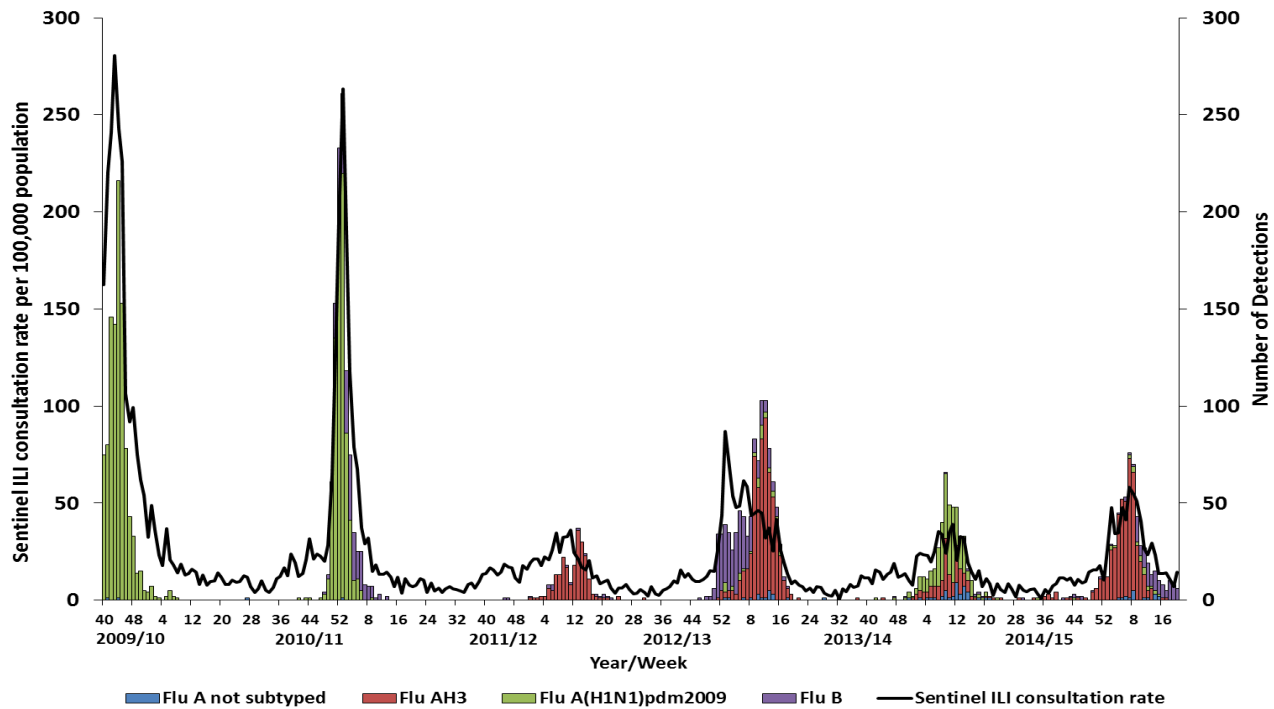


Figure 2: Sentinel GP consultation rate per 100,000 population for combined flu and flu-like illness 2009/10 - 2014/15 with positive detections of influenza

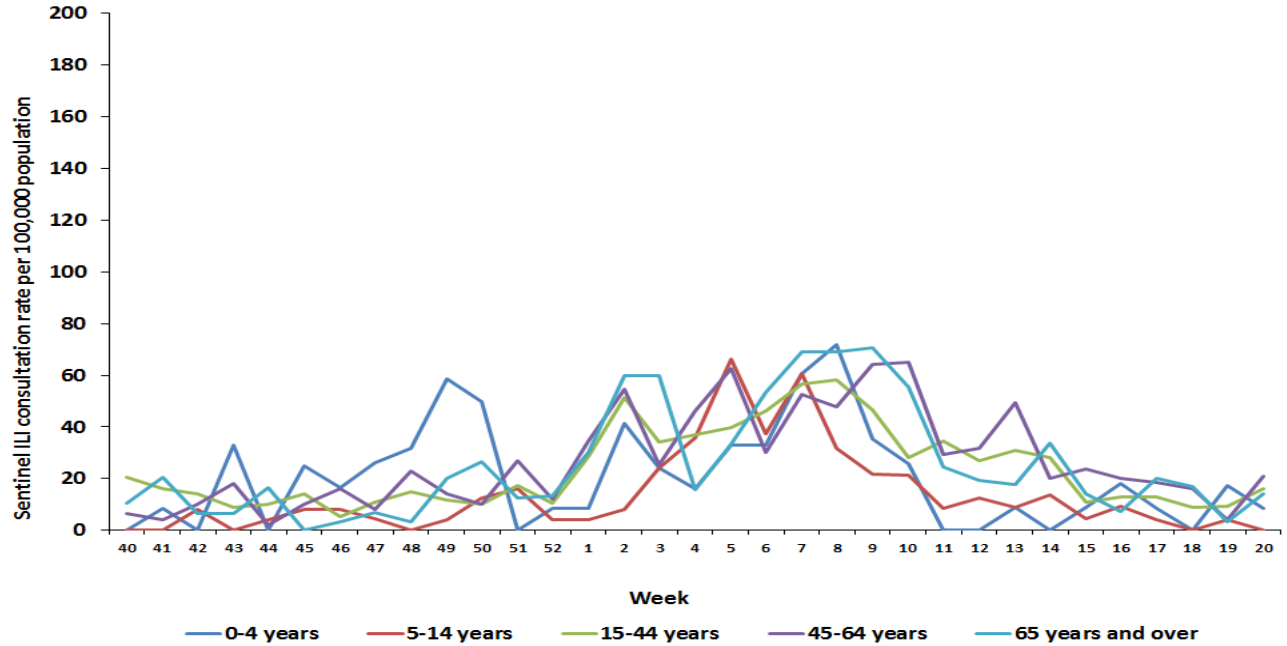


Figure 3: Sentinel GP age-specific consultation rates per 100,000 population for combined flu and flu-like illness from weeks 40 - 20, 2014/15



## GP Out-of-Hours 'flu/FLI consultation rates

In 2014/15, GP OOH 'flu/FLI consultation rates remained low throughout the season. Activity began to increase in week 51 2014, peaking in week 6 (12.4 per 100,000) and week 8 (12.0 per 100,000), before decreasing to similar pre-season activity levels in week 15 2015 (Figure 4). The proportion of 'flu/FLI calls to total calls remained low throughout the season, peaking at 2.1% in week 7 2015. Total call rates peaked during the holiday periods of New Year, Easter and May-Day, when GP practices are closed. GP OOH 'flu/FLI consultation rates were also highest during these holiday periods.

In comparison with previous seasons, activity was similar to 2013/14, but notably lower than 2012/3 when influenza A(H3N2) was the predominant strain.

By age group, the highest consultation rates were in the 0-4 year olds (20.9 per 100,000 in week 7) (Figure 5).

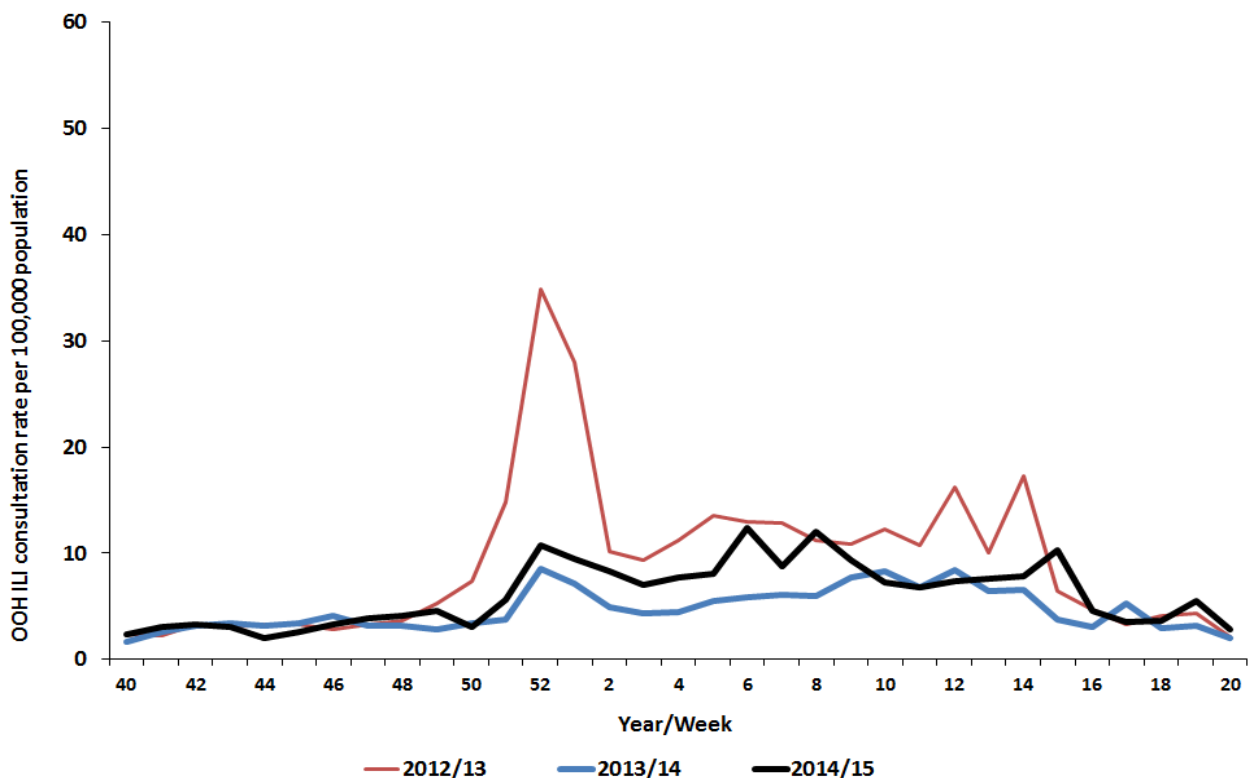
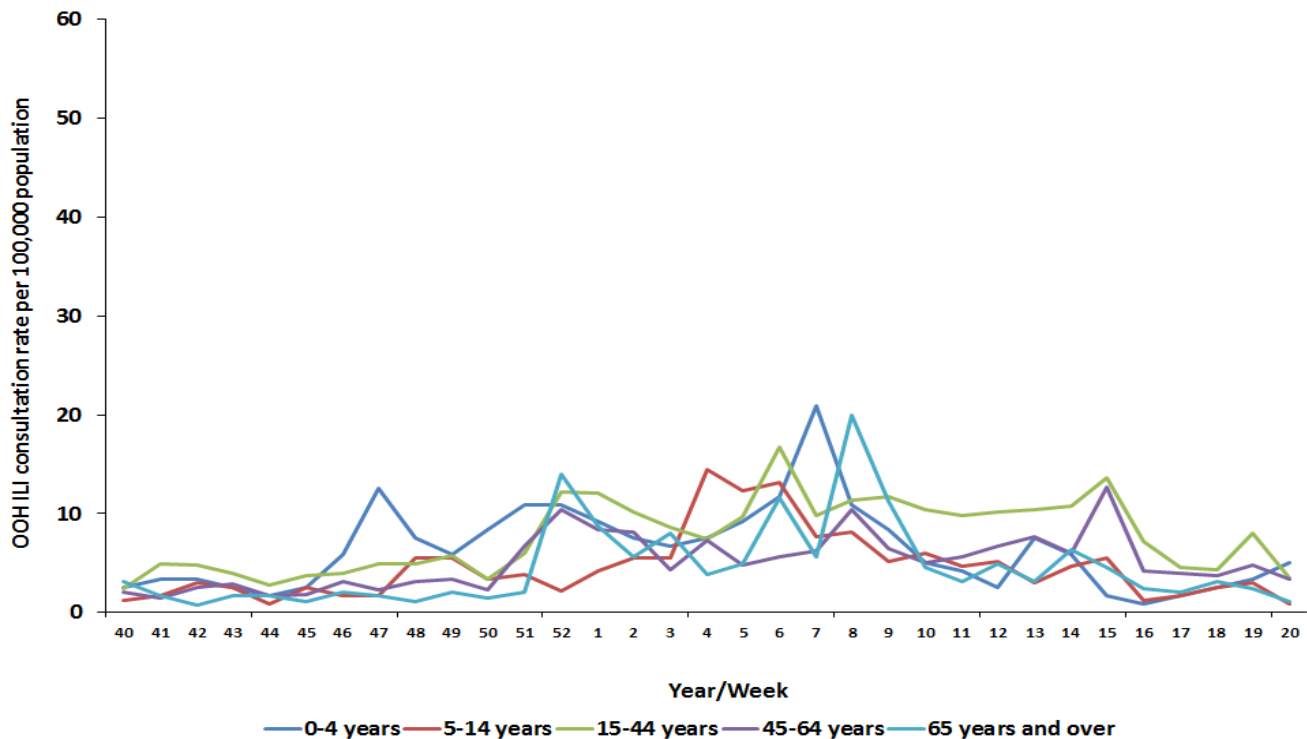


Figure 4: OOH consultation rate per 100,000 population for combined flu and flu-like illness 2012/13 - 2014/15



**Figure 5: OOH call rates of flu and flu-like illness by age-group from weeks 40- 20 2014/15**

## Virological activity

### Influenza

During the 2014/15 season from week 40 2014 to week 20 2015, RVL tested 4,794 respiratory samples from all sources (219 from GP sentinel practices; 4,575 from non-sentinel sources). Overall, 13% (611/4794) samples were positive for influenza virus. The overall proportion of positive influenza samples from GP sentinel practices was 41% (89/219) compared to 11% (522/4,575) from non-sentinel sources.

Influenza A(H3) was the dominant circulating virus for most of the season, especially early in the season, accounting for 75% (457/611) of all positive specimens. Influenza B made up the next highest proportion with 19% of positive specimens (113/610), and predominated later in the season. Influenza A(H1N1)pdm09 and influenza A (subtype not reported) accounted for 4% (24/611) and 3% (17/611) respectively. The relative proportion of influenza strains followed the same pattern for GP sentinel samples and non-sentinel samples (Table 1).

The first influenza A(H3) detection occurred in week 40 2014 and the first influenza B detection in week 41 2014. The proportion of positive samples (all sources) began to increase in week 52 2014, and peaked in week 6 2015 (35%; 55/159) and again in week 8 2015 (35%; 81/229). The positivity proportion peaked earlier and higher than the 2013/14 season (26% in week 10) (Figure 6: The number of samples tested (all sources) for influenza in Northern Ireland from weeks 40-20, 2013/14 & 2014/15 with the proportion positive).

Overall, the highest proportion of positive influenza samples was seen in those over 65 years of age (48%), with influenza A(H3) most frequently seen in older age groups (Table 2). The median age for confirmed cases of influenza A(H3) was 66 years. This compares to a median age of 45 years for influenza A(H1N1)pdm09, the predominant strain in 2013/14.

**Table 1: Number and proportion of influenza strains to positive influenza samples according to sample source, during week 40 2014 to week 20 2015**

	All Sources (n=611)	GP Sentinel Practices (n=89)	Non-Sentinel Sources (n=522)
Influenza A (H3)	457 (75%)	64 (72%)	393 (75%)
Influenza B	113 (18%)	18 (20%)	95 (18%)
Influenza A (H1N1)pdm09	24 (4%)	5 (6%)	19 (4%)
Influenza A (not subtyped)	17 (3%)	2 (2%)	15 (3%)
<b>Total Positive</b>	<b>13%</b>	<b>41%</b>	<b>11%</b>

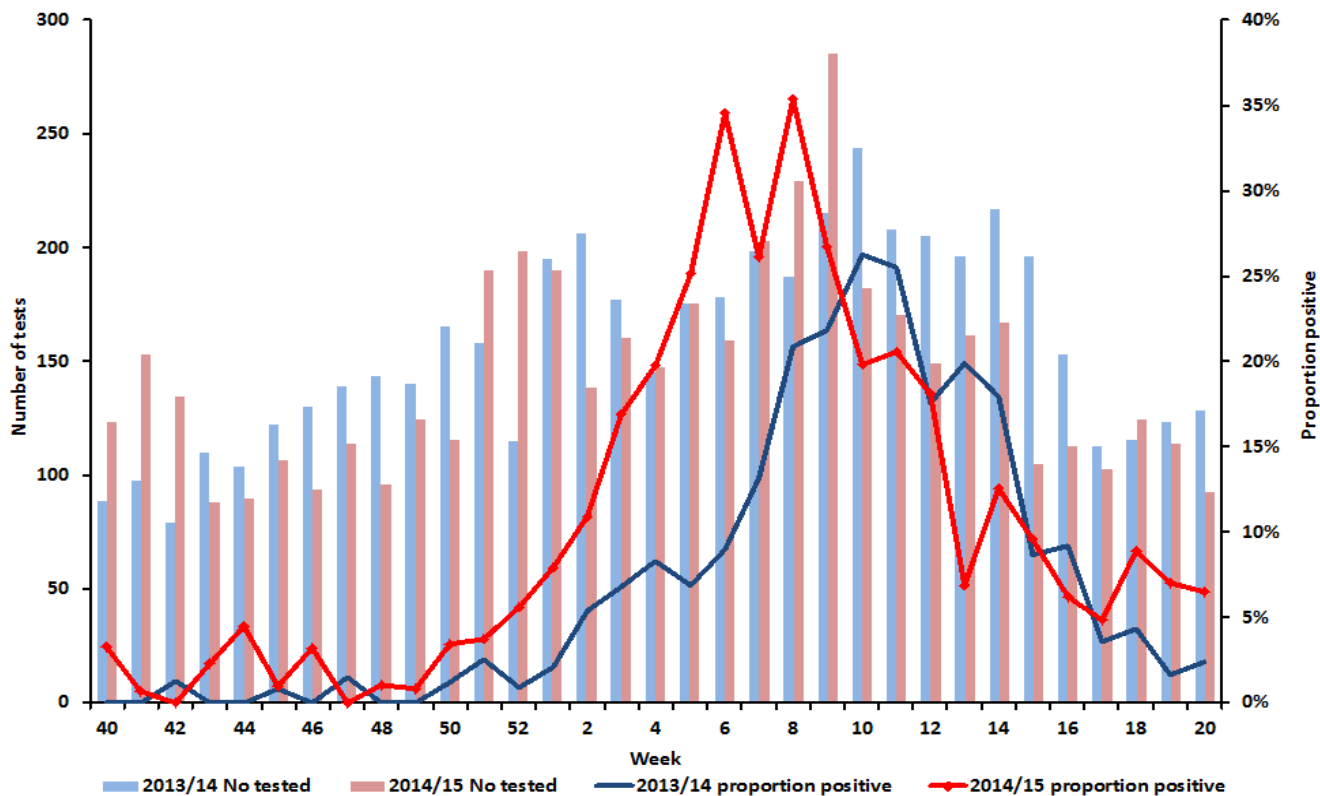


Figure 6: The number of samples tested (all sources) for influenza in Northern Ireland from weeks 40-20, 2013/14 & 2014/15 with the proportion positive

Table 2: Proportion of positive influenza samples by age group, all sources, during week 40 2014 to week 20 2015

	0-4 yrs	5-14 yrs	15-44 yrs	45-64 yrs	Over 65 yrs
Influenza A (H3)	33 (70%)	34 (81%)	67 (66%)	78 (84%)	244 (83%)
Influenza B	8 (17%)	7 (17%)	28 (27%)	34 (12%)	36 (12%)
Influenza A (H1NI)pdm09	3 (6%)	1 (2%)	5 (5%)	9 (2%)	6 (2%)
Influenza A (not subtyped)	3 (6%)	0 (0%)	2 (2%)	5 (2%)	7 (2%)
<b>Total Positive**</b>	<b>47 (8%)</b>	<b>42 (7%)</b>	<b>102 (17%)</b>	<b>126 (21%)</b>	<b>293 (48%)</b>

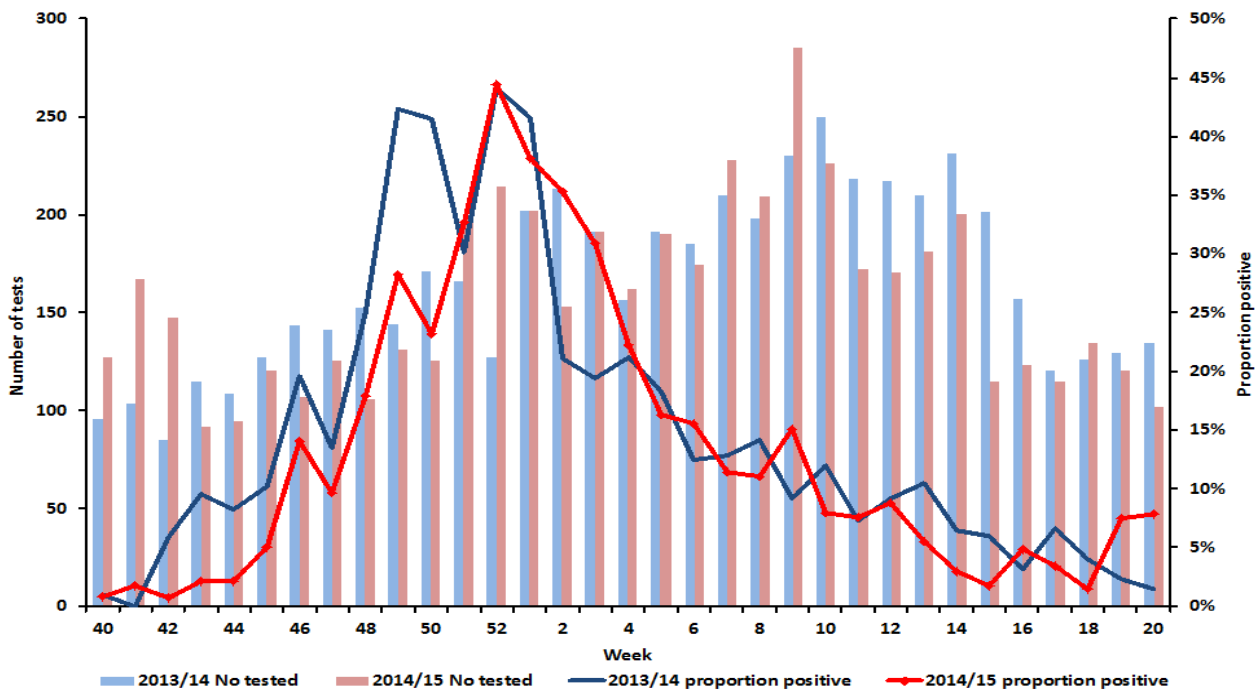
\*Age was unknown for 1 case positive for influenza A (H3)

\*\* Due to rounding, total percentages do not add-up to precisely 100%

## Respiratory Syncytial Virus

During the 2014/15 season from week 40 2014 to week 20 2015, RVL tested 5,207 respiratory specimens from all sources, with an overall positivity proportion of 15% (756/5207). The principal activity period occurred from week 46 2014 to week 9 2015, with the proportion of positive samples peaking at week 52 at 44% (Figure 7).

The majority (60%; 454/756) of RSV detections were in the 0-4 year age group. This is lower than the proportion seen in this age group for seasons 2012/13 and 2013/14 (81% and 65% respectively).



**Figure 7: Number of samples tested for RSV and proportion positive in Northern Ireland 2013/14 and 2014/15**

### Antiviral resistance

In 2014/15, the PHE-RVU reported no cases from Northern Ireland resistant to antiviral treatments, oseltamivir or zanamivir.

## Respiratory Outbreaks

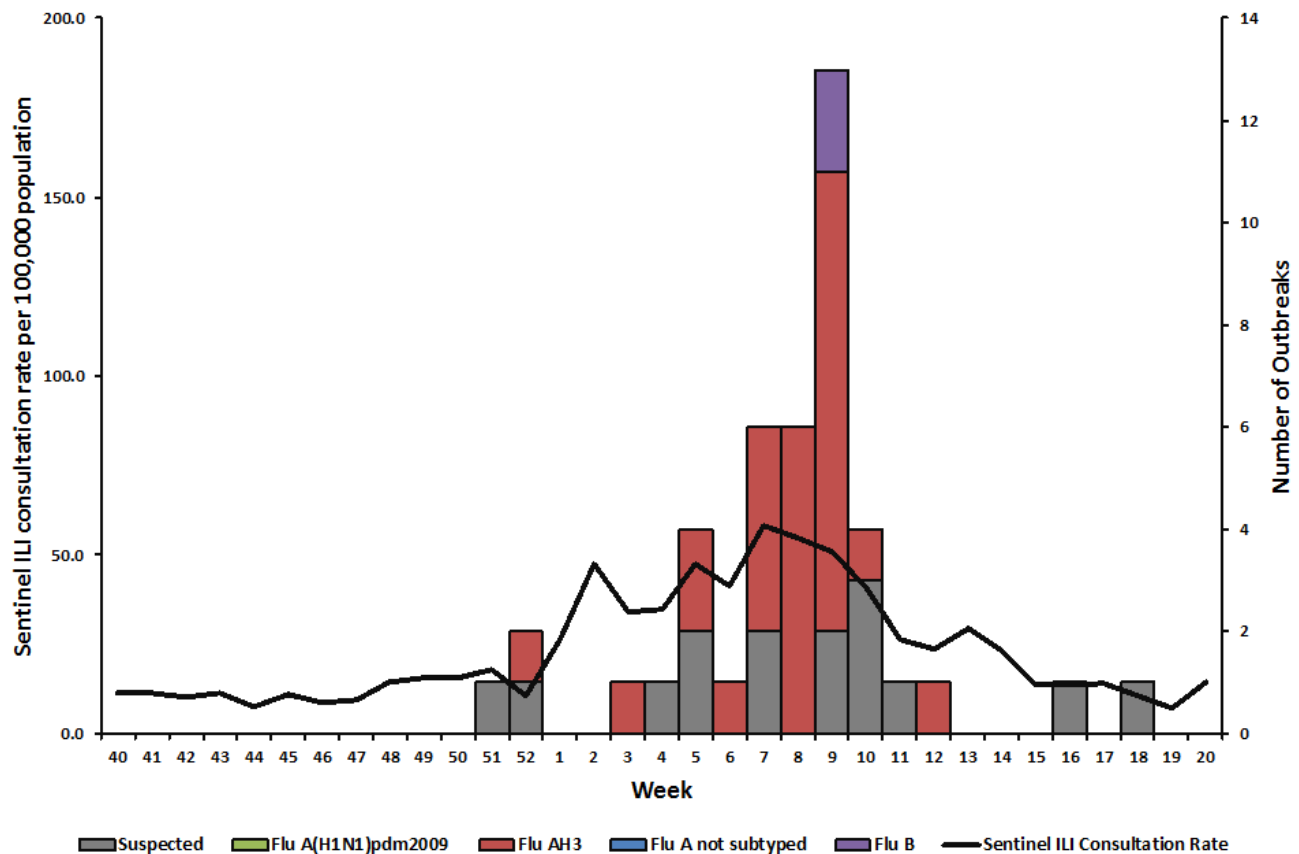
During the 2014/15 season, 43 respiratory-related outbreaks were reported to the PHA, of which 28 were laboratory-confirmed influenza. The majority were caused by influenza A(H3) (26), with the remaining two caused by influenza B.

All forty-three outbreaks occurred in care homes, including residential homes, nursing homes and/or homes for adults with specialist needs, including dementia.

The peak period when outbreaks were notified to the PHA was between week 7 to week 10 (29/43; 60%) (Figure 12).

From the information reported by care homes for laboratory-confirmed influenza outbreaks, the median attack rate among residents was 31% (range 7% to 63%). Vaccine coverage for symptomatic residents was high- as seen in previous years- with a median vaccination uptake of 95% (range 40% - 100%). A mean of 14% (range 0 - 67%) cases from the 28 confirmed flu outbreaks were hospitalised due to respiratory conditions.

More respiratory outbreaks were reported to the PHA this season in comparison with 2013/14, when only three were reported. Respiratory outbreaks were generally reported later in the season than this year; in March and April (compared to February in 2013/14).



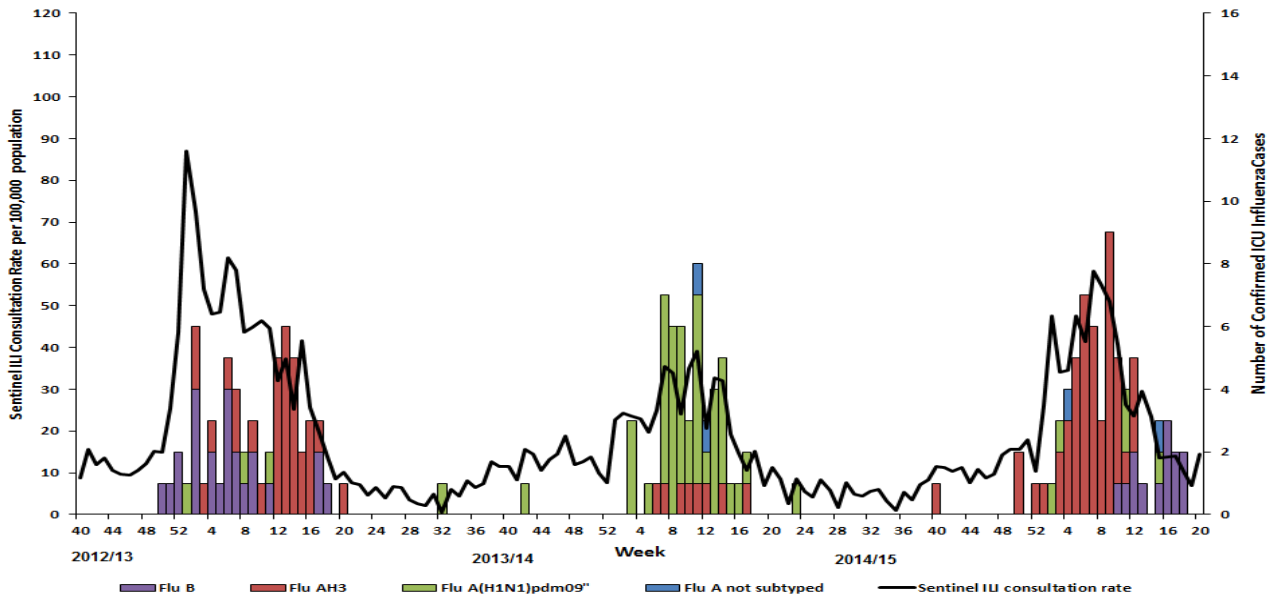
**Figure 8: Number of influenza outbreaks by subtype per week and sentinel consultation rate, 2014/15**

## Intensive Care surveillance

During the 2014/15 season, 68 laboratory-confirmed influenza cases were admitted to ICU/HDU in Northern Ireland, of which 10 died, giving a case fatality rate of 15%. The predominant strain was influenza A(H3) (48/68; 71%), followed by influenza B (13/68; 19%) occurring later in the season. The remaining strains were influenza A(H1N1)pdm09 (5/68; 7%) and influenza A (subtype not reported) (2/68; 3%) Figure 9.

The median age of cases admitted to ICU/HDU was 61.5 years (range 0–89 years). The majority of ICU/HDU cases (54/68; 79%) were over 45 years of age. Five out of 68 (7%) were under 15 years of age. Fifty of 68 (74%) cases were in a clinical risk group and eligible for the 2014/15 influenza vaccine, of which only 27/50 (54%) received it. Nine out of ten deaths had one or more co-morbidity, and five were in a clinical at risk group and thus eligible for influenza vaccination. Three of 5 individuals in a clinical at risk group received the 2014/15 influenza vaccine (Table 3).

This season there were more ICU/HDU cases (68) than in 2013/14 (52), but the case fatality ratio was lower (15% versus 29%). The predominant strain was influenza A (H3), compared to influenza A(H1N1)pdm09 in 2013/14. The proportion of cases under 15 years of age was lower this season (5/68; 7%) compared to last (8/52; 15%).



**Figure 9: Number of ICU admissions with confirmed influenza and sentinel consultation rate 2012/13 – 2014/15**

**Table 3: ICU admissions with confirmed influenza**

Age Group	No. of patients	Co-morbidity	Flu vaccine clinical risk group	Vaccinated	Flu A (H1N1) pdm09	Flu A (H3)	Flu A (untyped)	Flu B	Deaths *
0-4	3	2	2	0	0	2	1	0	0
5-14	2	0	0	0	0	2	0	0	0
15-44	9	4	3	3	1	6	0	2	2
45-64	22	17	13	9	3	11	1	7	4
65+	32	24	32	18	1	27	0	4	4
<b>All</b>	<b>68</b>	<b>47</b>	<b>50</b>	<b>30</b>	<b>5</b>	<b>48</b>	<b>2</b>	<b>13</b>	<b>10</b>

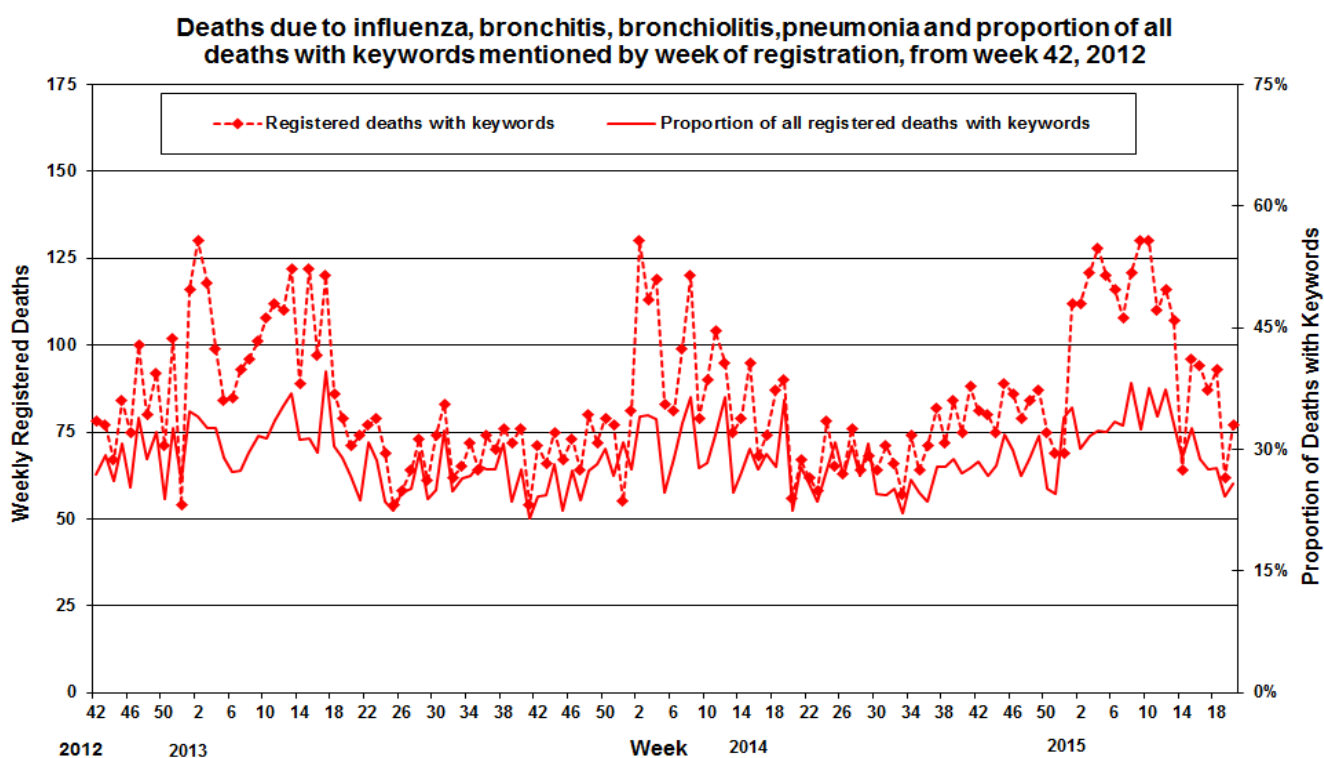
*\*Deaths in critical care patients confirmed with influenza, however, these deaths may not necessarily be due to influenza. Eight of the ten deaths mentioned respiratory factors on the medical certificate of cause of death, none of which mentioned influenza specifically as a cause.*

## **Mortality**

During the 2014/15 season (week 40 to week 20), the overall proportion of registered deaths with respiratory keywords to all-cause death registrations was 31%. The total number of weekly registered deaths with respiratory keywords peaked at 130 each in weeks 9 & 10 respectively, with the proportion of registered deaths with respiratory keywords peaking at 36% in weeks 8 & 10 (Figure 10). The highest proportion of deaths with respiratory keywords occurred around the same time as the highest 'flu/FLI sentinel GP consultation rates were seen (week 7 and 8) (Figure 1).

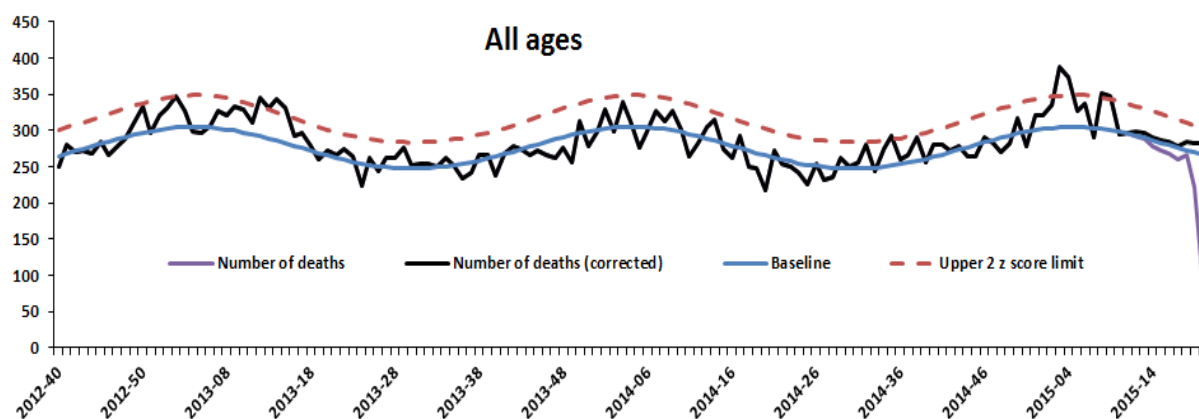
The overall proportion of registered deaths with respiratory deaths this year (31%) was slightly higher than in 2013/14 (29%), although the weekly proportion peaked to the same percentage (36%) in weeks 8, 12 and 19 (Figure 10).





**Figure 10: Deaths due to influenza, bronchitis, pneumonia and proportion of all deaths with keywords mentioned by week of registration, from week 42, 2012**

During 2014/15 season, excess mortality in Northern Ireland was reported in weeks 3, 4, 8 and 9 (Figure 11). This compares with no periods of excess mortality in 2013/14.



**Figure 11: All age excess all-cause mortality by week of death, Northern Ireland 2012-2015 (calculated using the standardised EuroMOMO algorithm)**

## Seasonal Influenza Vaccine uptake

As of the end of March 2015, the proportion of people aged 65 years and over who received the 2014/15 seasonal influenza vaccine was 73.4% and 71.8% in those under 65 years of age in a clinical risk group. Compared to 2013/14, vaccine uptake has slightly decreased in both groups (75.4% and 76.4% respectively), although the number of people receiving the vaccine in each group has stayed the same or increased. The reason for the lower uptake is probably as a result of increased number of people eligible for the vaccine (larger number of those over 65 year and in clinical risk groups) and because children in clinical risk groups, who would previously be in the under 65 years target group now receive the vaccine in school through the childhood vaccination programme, yet remain on the primary care clinical risk list (Table 4).

An estimated 56.1% of pregnant women received the 2014/15 influenza vaccine, compared to 58.0% last season. Vaccination uptake in pregnant women is recorded as an estimate because of the difficulty in accurately determining the number of pregnant women during an influenza season.

Uptake of Health Care Workers was 22.4% from all five Health and Social Care Trusts, which is a slight decrease compared to last year (24.0%). Uptake rate among 2-4 year olds was 55.4% and in primary school children 79.7% (Table 3).

**Table 4: Seasonal Influenza vaccine uptake 2012/13 – 2014/15**

<b>Northern Ireland GP Influenza Vaccine Coverage Data</b>			
	<b>2014/15</b>	<b>2013/14</b>	<b>2012/13</b>
Number of Practices	350	351	353
Number of practices submitting return by 31 March	350	351	353
Number of 65+ receiving influenza vaccine between 1st October and 31 March	217,299	217,563	212,848
Registered 65+ population of practices submitting a return	295,947	288,424	283,668
<b>Uptake rate for 65+ population at 31 March</b>	<b>73.4%</b>	<b>75.4%</b>	<b>75.0%</b>
Number of under 65 "at risk" population receiving influenza vaccine between 1 October and 31 March	168,515	166,992	169,697
"At risk" population under 65 years of practices submitting a return	234,860	218,712	211,661
<b>Uptake rate for under 65 "at risk" population at 31 March</b>	<b>71.8%</b>	<b>76.4%</b>	<b>80.2%</b>

<b>Uptake rate for trust frontline staff at 31 March</b>	<b>22.6%</b>	<b>24.0%</b>	<b>20.4%</b>
Number of preschool children receiving influenza vaccine between 1st October and 31 March	30,746**	28,247*	-
Registered population of preschool children submitting a return	56,561**	50,940*	-
<b>Uptake rate for preschool children at 31 March</b>	<b>54.4%**</b>	<b>55.5%*</b>	-
Total number of primary school children receiving influenza vaccine between 1st October and 31 March	16,7491††	18,082†	-
Total number of primary school children offered the vaccine	12,7812††	22,461†	-
<b>Uptake rate for primary school children at 31 March</b>	<b>79.7%</b>	<b>80.5%</b>	-

*\* 2013/14 preschool cohort includes children aged 2-3 years; \*\* 2014/15 preschool cohort includes children aged 2-4 years*

*† 2013/14 primary school cohort includes children in primary year 6 only; †† 2014/15 primary school cohort includes children in primary years 1-7*

## National situation

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During the 2014/15 season, a similar picture of moderate influenza activity was seen across the UK. Clinical indices generally peaked in early January until March, before decreasing towards seasonally expected levels.

Whilst primary care consultation rates were low to moderate overall, they peaked to higher levels than last year and were similar to 2012/13. Variation was seen across the devolved countries, with England and Wales staying above the MEM threshold for more weeks (16 and 10 week respectively) than Scotland and Northern Ireland (1 and 2 week respectively). Unlike Northern Ireland, a clear trend of highest rates was seen in those aged 45-64 years and over 75 years of age.

Similar to Northern Ireland, numerous respiratory-related outbreaks were seen across the UK in 2014/15. The majority of outbreaks occurred in care homes (75.1%), followed by hospitals (12.2%), schools (11.2%), and other settings (1.5%). Of those that were tested, the majority were due to influenza A(H3) or influenza A (untyped) (84.7%), with a small proportion attributable to influenza B (5.4%). Non-influenza respiratory viruses, such as RSV, accounted for 8.1% of outbreaks.

In 2014/15, excess all-cause mortality nationally was higher than in 2013/14 and above the upper limit for 12 weeks of the season, representing the highest proportion of deaths seen during the last nine seasons. Significant excess deaths were predominantly seen among the 65+ years age group, although some excess was also seen in under 5 year olds and 15-64 year olds.

Across the UK, the predominant influenza type was influenza A(H3N2), with influenza B circulating later in the season. A smaller proportion of influenza A(H1N1)pdm09 was also detected across all regions and in similar proportions.

Public Health England Respiratory Virus Unit (PHE-RVU) and the West of Scotland Specialist Virology Centre (WOSSVC) isolate and further antigenically and genetically characterise a number of influenza A and B viruses from across the UK. This year, the PHE-RVU reported reduced antigenic reactivity to the 2014/15 Northern Hemisphere vaccine strains in 23% (55/240) of influenza A(H3N2) and 91% (52/57) of influenza B isolates. Genetic characterisation was also performed on 76 influenza A(H3N2) viruses that did not grow sufficiently for antigenic characterisation. Of these, the majority (80.0%) fell into genetic subgroup 3C.2a, shown to be antigenically distinguishable from the current A(H3N2) vaccine virus. Genetic characterisation performed by WOSSVC also reported 75.8% influenza A (H3N2) in genetic subgroup 3C.2a and 3C.3a. Thirty-seven out of 41 (90.2%) influenza B virus isolates had drifted from the 2014/15 Northern Hemisphere vaccine strain.

Across the UK, four influenza A (H3N2) samples were found to be resistant to oseltamivir and one influenza A (H3N2) sample resistant to zanamivir. The World Health Organisation (WHO) reported very low numbers of oseltamivir and zanamivir resistance.

Internationally, respiratory viruses circulating showed a similar pattern to the UK with influenza

A (H3N2) and influenza A (H1N1) pdm09 the most commonly detected strains, and influenza B strains remaining stable or increased in the later part of the season. Strains across the Northern Hemisphere displayed similar genetic characterisation to the UK, with the majority of influenza A(H3) and B strains drifted from the 2014/15 Northern Hemisphere vaccine strain.

## Conclusion

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This year's influenza season was characterised by moderate levels of influenza activity. Whilst community influenza activity was low in Northern Ireland, only moving above the MEM threshold for two weeks, there were higher number of care home outbreaks than last year, higher number of individuals requiring admission to ICU/HDU and excess mortality in those over 65 years of age.

The season was dominated by influenza A (H3), with influenza B increasing later in the season. A small number of influenza A (H1N1) pdm09 specimens were also detected. Strain characterisation carried out by the Public Health England- Respiratory Virus Unit (PHE-RVU) and West of Scotland Specialist Virology Centre (WOSSVC) on influenza samples from across the UK showed that the majority of influenza A(H3) and B strains had drifted from the strains contained in the 2014/15 Northern Hemisphere seasonal flu vaccine.

In Northern Ireland, seasonal influenza vaccine uptake rates have historically been high and rates achieved during the 2014/15 season, again, compare favourably to those achieved across the UK. This season, compared to last year, a marginal decrease was seen in those over 65 years of age and in those under 65 in a clinical risk group. This has been seen in all UK countries and is likely to be at least partially accounted for by the increased cohort size of those aged 65 years and over, and those in clinical risk groups, so while the uptake rate decreased, the number vaccinated has remained very similar. Estimated uptake rates in pregnant women also decreased marginally compared to last year, although compared favourably to the rest of the UK. However, vaccine uptake rate for Health Care Workers has remained low, decreasing slightly since last year and not achieving the new 30% target. The importance of ensuring high uptake in target groups of the national influenza vaccination programme remains.

In 2014/15, the universal childhood influenza vaccine programme rollout continued into its second year with all pre-school and primary school vaccine being offered the vaccine in Northern Ireland. Uptake rates for pre-school and primary school children compared favourably to England, Scotland and Wales. Uptake in pre-school children was generally similar to the first year in 2013/14, whilst uptake in primary school children was hugely successful in Northern Ireland and exceeded the 75% target. There is initial evidence emerging from across the UK that the programme is having a positive impact on influenza activity within the community. The PHA is continuing to collaborate with colleagues across the UK to further understand the impact of the programme.

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