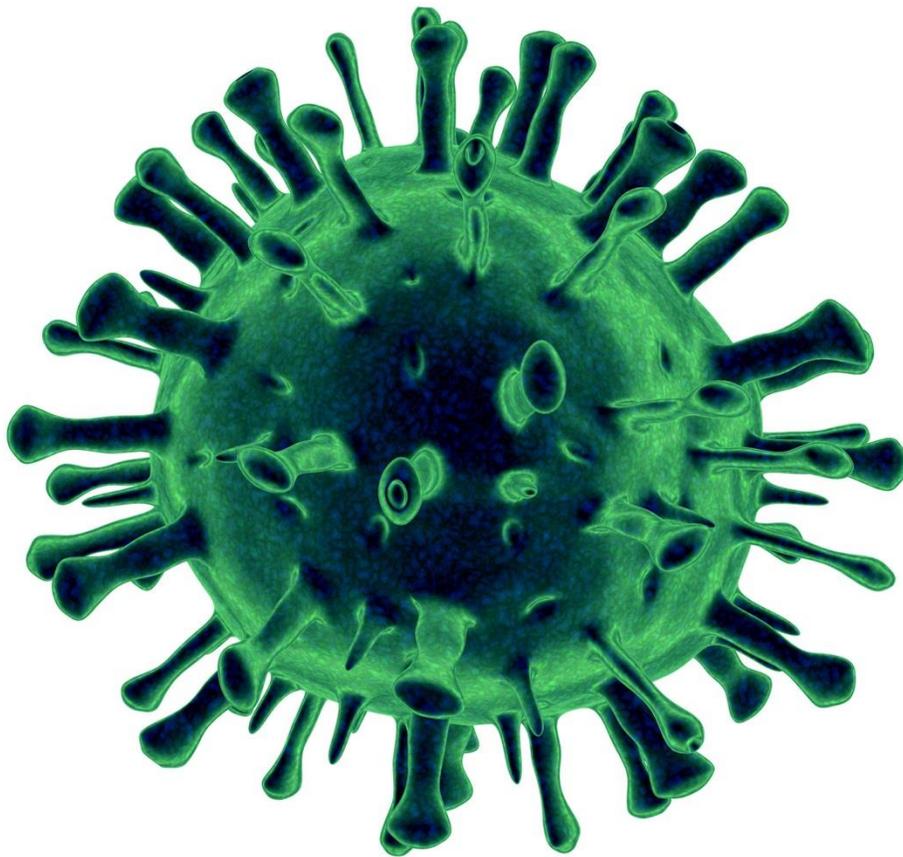


# Surveillance of Influenza in Northern Ireland

2015 – 2016



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## Summary

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Overall, the 2015/16 influenza season was characterised by low levels of influenza activity in the community, with higher levels of activity in the hospital setting. This season, influenza A(H1N1) pdm09 was the predominant circulating strain (59%), followed by a substantial proportion of influenza B (20%) later in the season. A small number of influenza A (H3) cases were also detected.

Primary care activity started to increase in late December, approximately two weeks earlier than seen in 2014/15 and 2013/14, and subsequently followed a similar pattern as seen in 2013/14. Peak ILI rates did not reach the peaks seen in 2014/15 and did not cross the 2015/16 MEM baseline threshold. Primary care indicators decreased to pre-season levels approximately two weeks earlier than in the previous two seasons, giving a similar overall duration.

ILI consultation rates were not predominantly seen in any one age group, with rates fluctuating in all age groups throughout the season. At the beginning of the influenza season rates in 0-4 year olds peaked at 43.6 per 100,000 in week 46. However in subsequent weeks rates in the 44-65 year age group were highest, with a peak of 59.8 per 100,000 in week 8. Weekly rates in the 15-44 year age group were second highest over the season, peaking in week 9 at 44.7 per 100,000 population.

Despite the relatively low ILI consultation rates in primary care, influenza activity seen in the hospital setting was higher than the two previous seasons. This season virology source information was used to measure hospital non-ICU laboratory confirmed influenza case numbers, and this source coding was retrospectively applied to data from the previous two seasons. In 2015/16 the number of influenza cases from hospital sources was higher than seen in both 2014/15 and 2013/14 (620 compared to 378 and 351 respectively). Similarly the number of laboratory confirmed influenza cases in Intensive Care Units/High Dependency Units (ICU/HDU) was higher this season than the previous two seasons, at 111 cases compared to 68 and 52 respectively. A total of 15 of these individuals died, giving a similar fatality rate as 2014/15 (14% in 2015/16 compared to 15% in 2014/15).

The higher level of hospital activity contributed to higher overall virology activity, with total influenza positive specimens of 939, compared to 611 in 2014/15 and 466 in 2013/14. However an increase in testing was also seen, meaning that the overall positivity proportion this season was 14%, slightly higher than in 2014/15 (13%) and 9% in 2013/14. An increase in both testing and positivity was also seen in sentinel samples, with 98 positive results from 227 tests, giving an overall positivity rate of 43% (compared to 41% in 2014/15 and 25% in 2013/14). Although higher overall, the proportion of respiratory samples positive for influenza reached peak weekly levels of 28% compared to 36% in 2014/15.

This season there have been 11 respiratory outbreaks reported, seven of which were influenza positive. One of the non-flu outbreaks was positive for metapneumovirus. The low number of outbreaks compared to last year (when 43 outbreaks were reported) reflects the difference between a season predominated by A(H1N1)pdm09 to one dominated by A(H3), which

predominantly affects older adults and is associated with higher numbers of respiratory outbreaks in Care Homes.

Uptake for the 2015/16 seasonal influenza vaccine in each of the Joint Committee of Vaccinations and Immunisations (JCVI) recommended target groups was: 74.4% for individuals over 65 year olds; 59.9% for those in a clinical risk group aged under 65 years; 55.1% in pregnant women; and 24.6% 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 50.5% among 2 – 4 year olds and 76.8% 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 (DoH), 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 2015 (commencing 28/09/2015) to week 20 2016 (ending 22/05/2016).

This report describes influenza activity in Northern Ireland in the 2015/16 season from week 40 2015 to week 20 2016.

## Enhanced influenza surveillance systems

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### In-hours Sentinel GP Practice surveillance

In 2015/16, 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. In 2015/16 the Northern Ireland threshold was 49.4 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 2015/16, all respiratory specimens were tested by PCR for influenza A and its main subtypes (AH1 and AH3), influenza B and Respiratory Syncytial Virus (RSV). In addition, selected respiratory samples from some 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 due to 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 (e.g. 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 at the 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) is collected weekly, in collaboration with the Critical Care Network for Northern Ireland (CCANNI). The PHA reports weekly aggregate data on the number of cases, deaths and other relevant 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. 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), collect, collate and report influenza vaccination uptake rates for the Joint Committee on Vaccination and Immunisation (JCVI) recommended target groups at intervals over the winter season.

In 2015/16, the JCVI recommended the seasonal 2015/16 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 individuals defined as morbidly obese; and Health Care Workers. The quadrivalent live attenuated influenza vaccine (LAIV) continued to be offered to all pre-school children aged 2 years or older on 1 September 2015 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 pregnant women
- 60% for pre-school children over the age of 2 years
- 75% for primary-school aged children

## Observations

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

In 2015/16, the weekly sentinel GP consultation rate for 'flu/FLI' started to increase early in the season in week 43. Rates then remained steady until increasing further in week 51, with rates following a similar pattern to those seen in 2013/14 thereafter (Figure 1). Rates peaked in week 8 at 37.5 consultations per 100,000 population, however they did not reach the MEM threshold of 49.4 consultations per 100,000 population. Rates remained around this peak level for approximately five weeks until falling sharply in week 13 to 10.0 per 100,000 population. Similar to previous seasons, rates fell gradually in the last few weeks of the season before reaching pre-season levels by week 18 (Figure 1).

When compared to previous seasons, sentinel GP consultation rates began to increase at an earlier stage in the season, however they did not reach comparable levels to 2014/15. Rates followed a similar pattern to those seen in 2013/14, with an earlier reduction being the main difference (Figure 1).

Age-specific GP sentinel consultation rates fluctuated in all age groups throughout the season, but were generally lower than those seen in 2014/15 and 2013/14. The highest level of activity was most frequently seen in those aged 45-64 years (peaking at 59.8 per 100,000 in week 8 2015) and 15-44 years (peaking at 48.6 per 100,000 in week 9). The next highest peak was seen in those aged 0-4 years, at 43.6 per 100,000 early in the season in week 43. The peak in those aged over 65 years was 37.6 per 100,000 in week 45, with the lowest peak occurring in those aged 5-14 years, at 29.1 per 100,000 in week 11 (Figure 2).

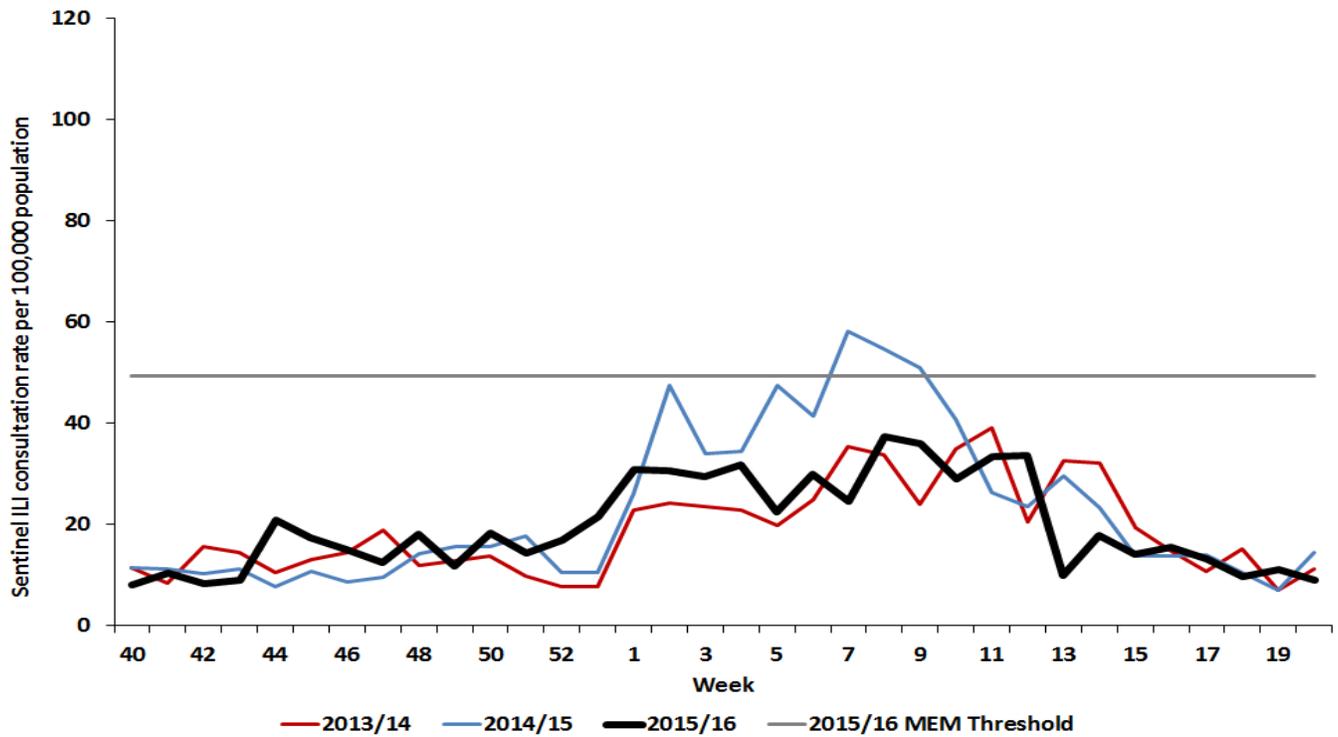


Figure 1: Sentinel GP consultation rate per 100,000 population for combined flu and flu-like illness 2013/14 – 2015/16

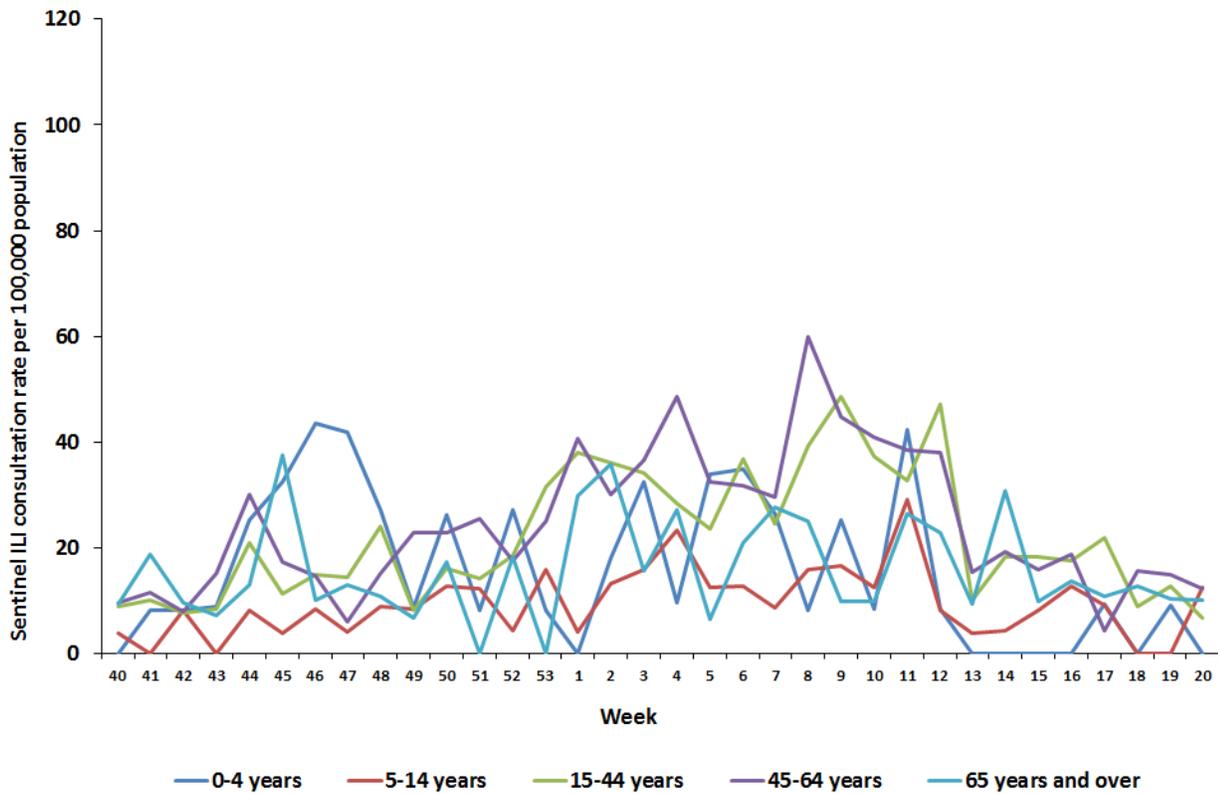


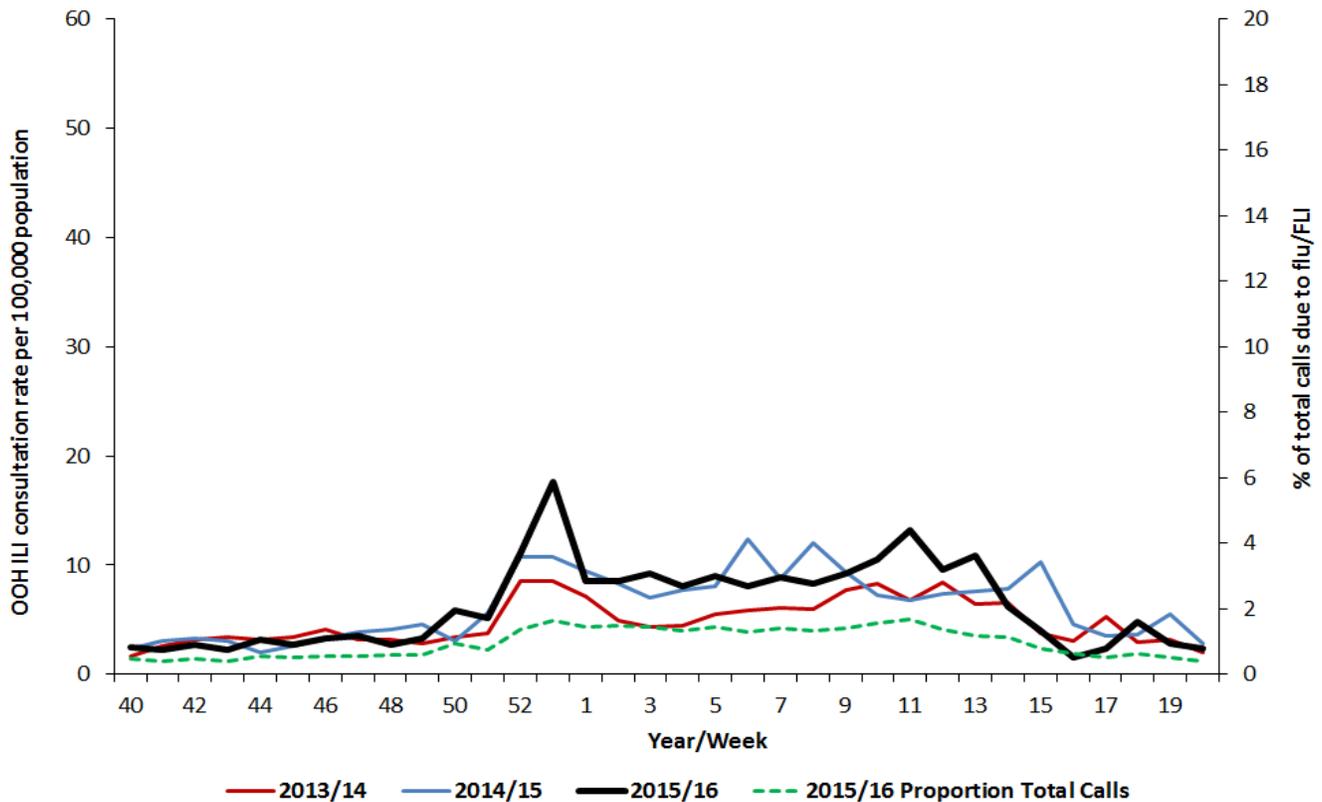
Figure 2: Sentinel GP age-specific consultation rates per 100,000 population for combined flu and flu-like illness from weeks 40 - 20, 2015/16

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

In 2015/16, GP OOH 'flu/FLI consultation rates remained low throughout the season. Activity began to increase in week 49 2015, peaking in week 53 (17.6 per 100,000). Rates then fell and remained steady for 10 weeks, before increasing slightly in week 11 (13.2 per 100,000). Since week 13 the rates have been steadily decreasing and were at pre-season activity levels by week 16 (Figure 3). The proportion of 'flu/FLI calls to total calls remained low throughout the season, peaking at 1.6% in both weeks 53, 2015 and 10, 2016. Total call rates peaked during the holiday periods of New Year, St Patrick's Day, 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 higher than in both 2014/15 and 2013/14 throughout the earlier and main part of the season, but similar to 2014/15 in later parts of the season.

By age group, the highest consultation rates were in the 15-44 year olds (23.7 per 100,000 in week 53) (Figure 4).



**Figure 3: OOH consultation rate per 100,000 population and proportion of total OOH calls for combined flu and flu-like illness 2013/14 - 2015/16**

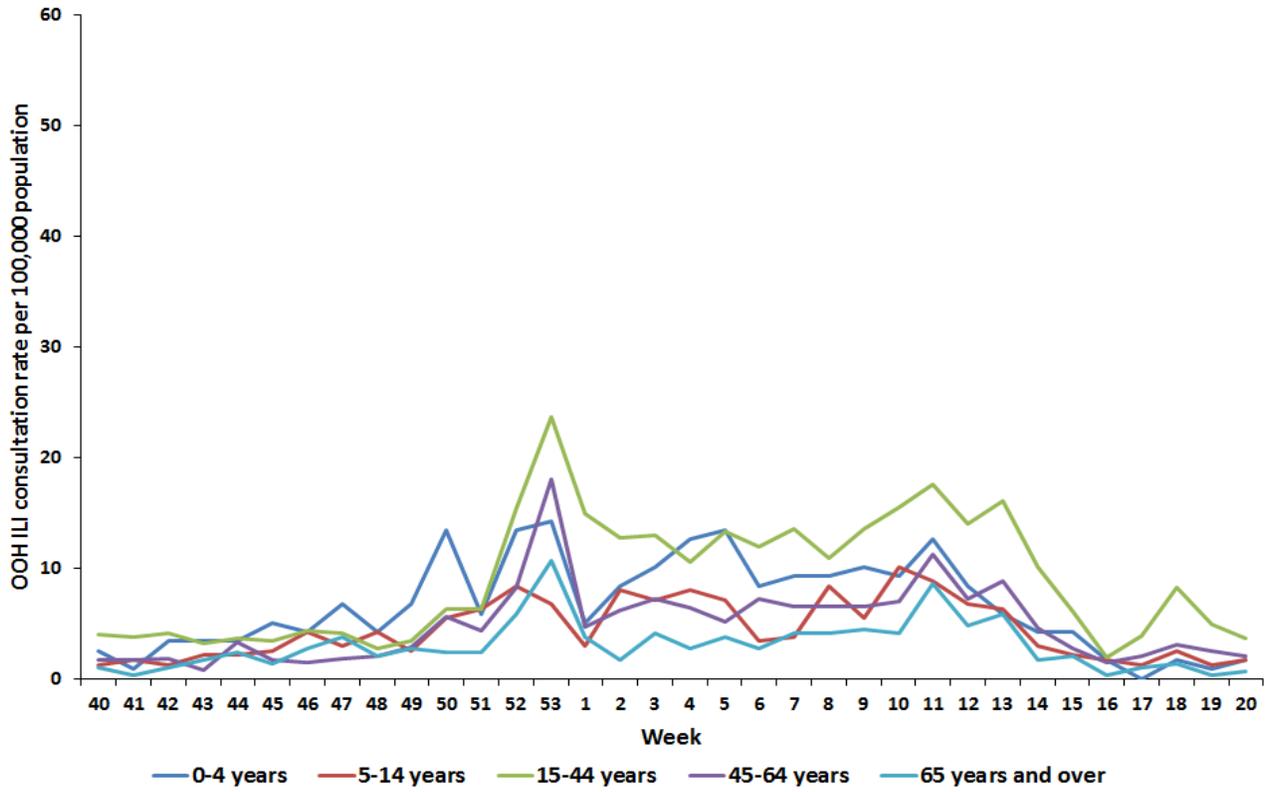
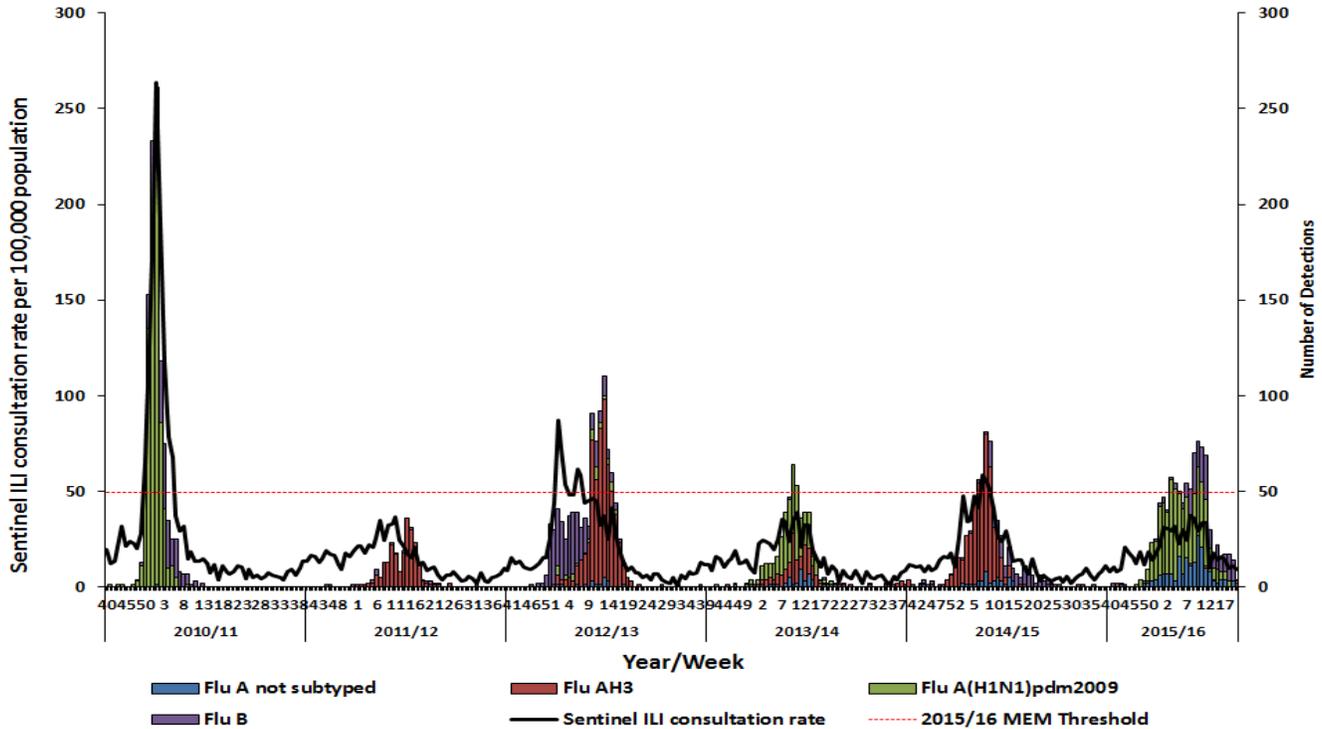


Figure 4: OOH call rates of flu and flu-like illness by age-group from weeks 40- 20 2015/16

# Virological activity

## Influenza



**Figure 5: Sentinel GP combined consultation rates for flu/ILI and number of influenza positive detections 2010/11 – 2015/16**

During the 2015/16 season from week 40 2015 to week 20 2016, RVL tested 6,934 respiratory samples from all sources (231 from GP sentinel practices; 6,703 from non-sentinel sources). Overall, 14% (939/6,934) samples were positive for influenza virus. The overall proportion of positive influenza samples from GP sentinel practices was 43% (99/231) compared to 13% (840/6,703) from non-sentinel sources.

Influenza A(H1N1)pdm09 was the dominant circulating virus for most of the season, especially early in the season, accounting for 59% (557/939) of all positive specimens. Influenza B made up the next highest proportion with 20% of positive specimens (186/939) and predominated later in the season, while influenza A(H3) accounted for 1% (9/939). This season a rise was noted in the proportion of samples typed as influenza A (subtype not reported) which accounted for 20% (187/939) of positive influenza specimens. The relative proportion of influenza strains followed the same pattern for GP sentinel samples and non-sentinel samples (Table 1).

The first influenza A(H1N1)pdm09 detection occurred in week 47 2015 and the first influenza B detection in week 52 2015. The proportion of positive samples (all sources) began to increase

in week 51 2015, and peaked in week 10 2016 (28%; 76/274). The positivity proportion peaked later and at a lower magnitude than in the 2014/15 season (35% in weeks 6 & 8) (Figure 6).

Overall, the highest proportion of positive influenza samples was seen in those aged between 15-64 years (60%), with influenza A(H1N1)pdm09 most frequently seen in this age group (Table 2). The median age for confirmed cases of influenza A(H1N1pdm09) was 46 years. This compares to a median age of 66 years for influenza A(H3), the predominant strain in 2014/15.

**Table 1: Number and proportion of influenza strains to positive influenza samples according to sample source, during week 40 2015 to week 20 2016**

	<b>All Sources (n=939)</b>	<b>GP Sentinel Practices (n=99)</b>	<b>Non-Sentinel Sources (n=840)</b>
<b>Influenza A (H1N1)pdm09</b>	<b>557 (59%)</b>	<b>61 (62%)</b>	<b>496 (59%)</b>
<b>Influenza B</b>	<b>186 (20%)</b>	<b>27 (27%)</b>	<b>159 (19%)</b>
<b>Influenza A (H3)</b>	<b>9 (1%)</b>	<b>0 (0%)</b>	<b>9 (1%)</b>
<b>Influenza A (not subtyped)</b>	<b>187 (20%)</b>	<b>11 (11%)</b>	<b>176 (21%)</b>
<b>Total Positive</b>	<b>14%</b>	<b>43%</b>	<b>13%</b>

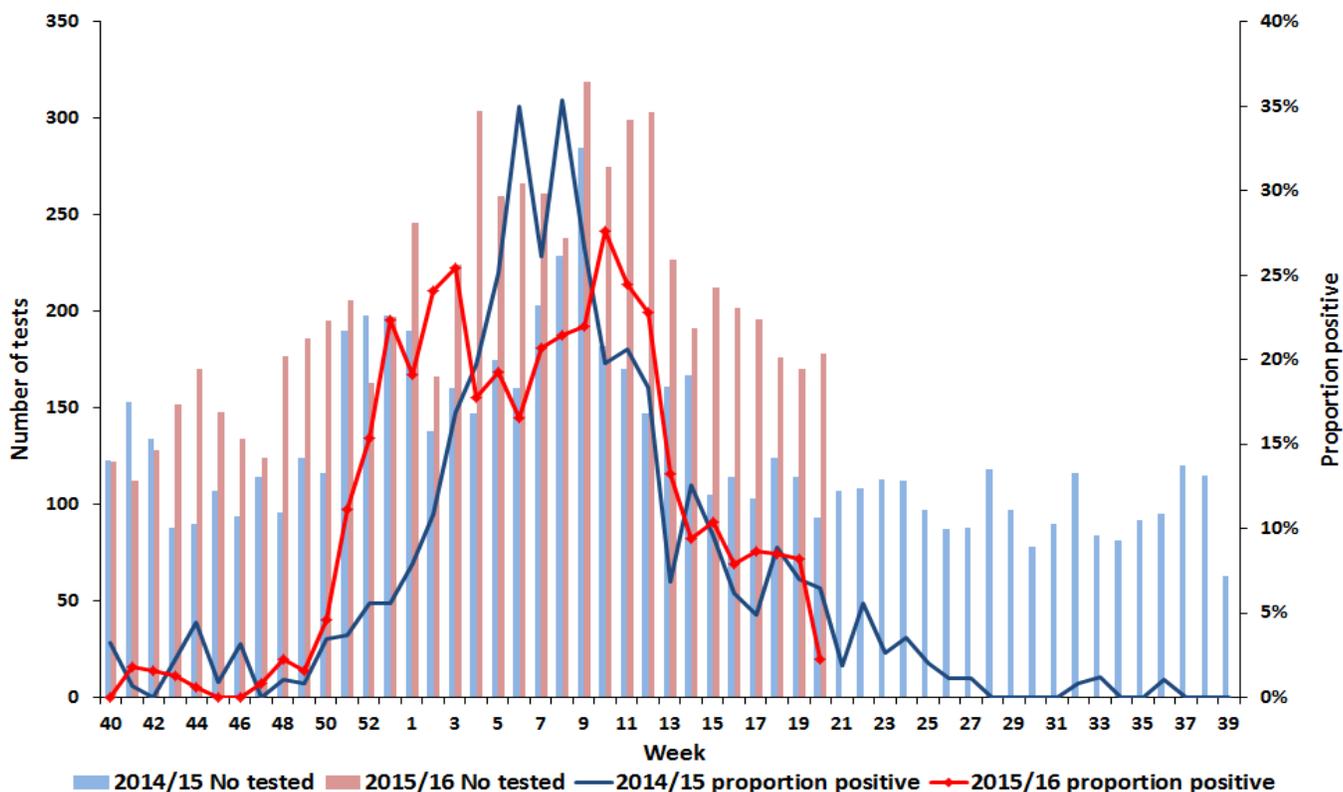


Figure 6: The number of samples tested (all sources) for influenza in Northern Ireland from weeks 40-20, 2014/15 & 2015/16 with the proportion positive

Table 2: Proportion of positive influenza samples by age group, all sources, during week 40 2015 to week 20 2016

	0-4 yrs	5-14 yrs	15-44 yrs	45-64 yrs	Over 65 yrs
Influenza A (H1N1)pdm09	77 (69%)	24 (60%)	179 (60%)	160 (60%)	116 (52%)
Influenza B	22 (20%)	12 (30%)	76 (26%)	34 (13%)	42 (19%)
Influenza A (H3)	0 (0%)	0 (0%)	0 (0%)	3 (1%)	6 (3%)
Influenza A (not subtyped)	12 (11%)	4 (10%)	43 (14%)	71 (26%)	57 (26%)
<b>Total Positive*</b>	<b>111 (12%)</b>	<b>40 (4%)</b>	<b>298 (32%)</b>	<b>268 (29%)</b>	<b>221 (24%)</b>

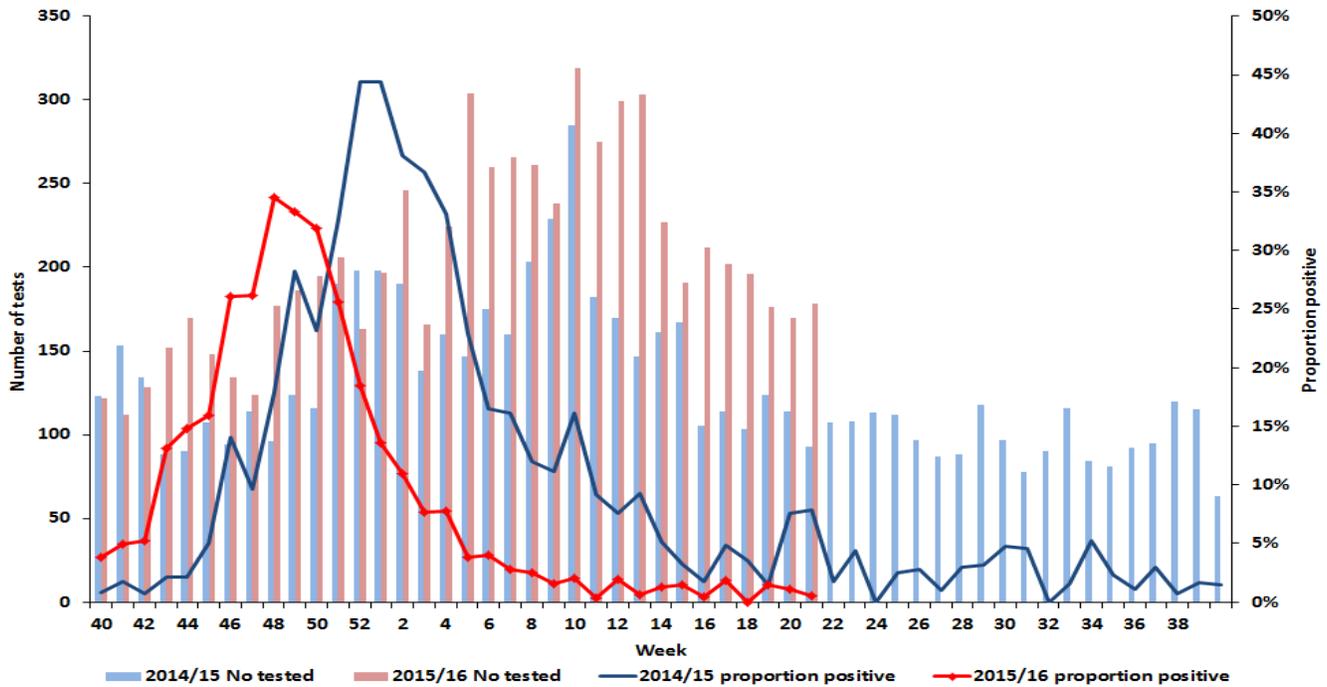
NB: Age was unknown for 1 case positive for influenza A (H1N1)pdm09

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

## Respiratory Syncytial Virus

During the 2015/16 season from week 40 2015 to week 20 2016, RVL tested 6,934 respiratory specimens from all sources, with an overall positivity proportion of 9% (603/6,934). The principal activity period occurred from week 43 2015 to week 3 2016, with the proportion of positive samples peaking in week 48 at 36% (Figure 7).

The majority (71%; 431/603) of RSV detections were in the 0-4 year age group. This is higher than the proportion seen in this age group for seasons 2013/14 and 2014/15 (65% and 60% respectively).



**Figure 7: Number of samples tested for RSV and proportion positive in Northern Ireland 2014/15 and 2015/16**

## Antiviral resistance

In 2015/16, the PHE-RVU reported no cases from Northern Ireland resistant to antiviral treatments, oseltamivir or zanamivir.

## Respiratory Outbreaks

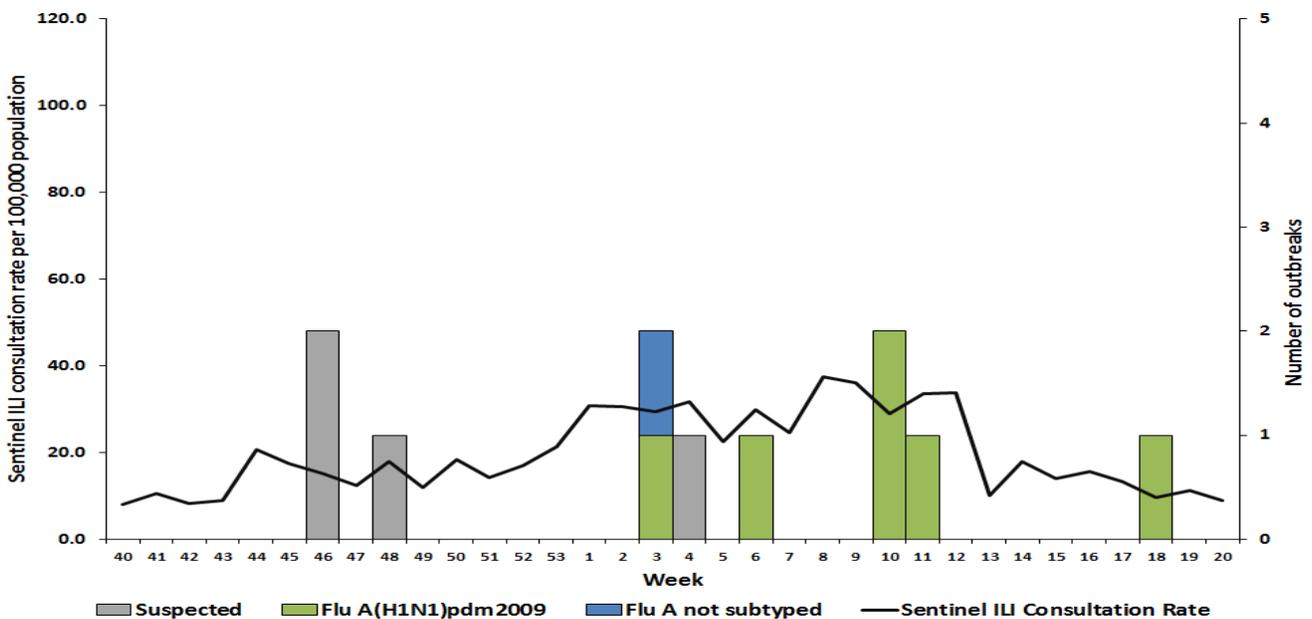
During the 2015/16 season, eleven respiratory-related outbreaks were reported to the PHA, of which seven were laboratory-confirmed as influenza. The majority were caused by influenza A(H1N1)pdm09 (n=6), with the remaining outbreak caused by influenza A (not subtyped).

Nine of the eleven outbreaks occurred in care homes, including residential homes, nursing homes and/or homes for adults with specialist needs. The two remaining outbreaks were reported from hospital settings.

Outbreaks were notified to the PHA was between weeks 46 and week 11 with no discernible peak in activity (Figure 8).

From the information reported by care homes for laboratory-confirmed influenza outbreaks, the median attack rate among residents was 15% (range 7% to 37%). Vaccine coverage for symptomatic residents was high, as seen in previous years, with a median vaccination uptake of 95% (range 89% - 100%). A mean of 40% (range 0 - 60%) cases from the five confirmed care home flu outbreaks were hospitalised due to respiratory conditions.

Fewer respiratory outbreaks were reported to the PHA this season in comparison with 2014/15, when 43 were reported, 28 of which were confirmed as influenza. Respiratory outbreaks were generally reported earlier in the season this year; beginning in November (compared to December in 2014/15).



**Figure 8: Number of influenza outbreaks by subtype per week and sentinel consultation rate, 2015/16**

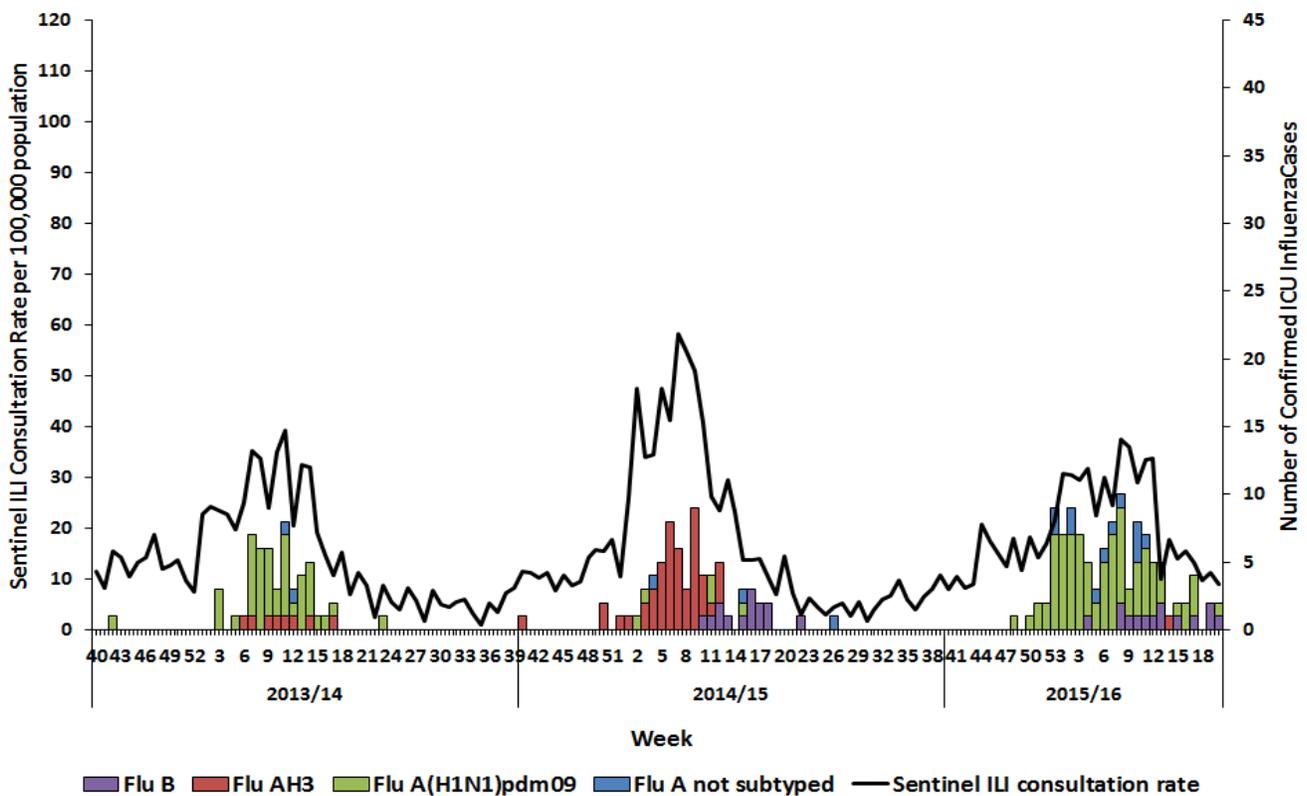
### Intensive Care surveillance

During the 2015/16 season, there were 111 laboratory-confirmed influenza cases in ICU/HDU in Northern Ireland, of which 16 died, giving a case fatality rate of 14%. The predominant strain

was A(H1N1)pdm09 (84/111; 76%), followed by influenza B (14/111; 13%) occurring later in the season. The remaining strains were influenza A(H3) (1/111; 1%) and influenza A (subtype not reported) (12/111; 11%) (Figure 9).

The median age of cases admitted to ICU/HDU was 49 years (range 0–85 years). More than half of ICU/HDU cases were over 45 years of age (63/111; 57%). Twenty out of 111 (18%) were under 15 years of age. Sixty-eight (61%) cases were in a clinical risk group and eligible for the 2015/16 influenza vaccine, of which only 24/68 (35%) received it. Fifteen out of sixteen deaths had one or more co-morbidity, and thirteen were in a clinical at risk group and thus eligible for influenza vaccination. Five of the 13 individuals (38%) in a clinical at risk group received the 2015/16 influenza vaccine (Table 3).

This season there were more ICU/HDU cases than in 2014/15 (n=68), but the case fatality ratio was similar (14% versus 15%). The predominant strain was A(H1N1)pdm09, compared to influenza A(H3) in 2014/15. The proportion of cases under 15 years of age was higher this season (20/111; 18%) compared to last (5/68; 7%).



**Figure 9: Number of ICU admissions with confirmed influenza and sentinel consultation rate 2013/14 – 2015/16**

**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*
<b>0-4</b>	17	7	8	1	13	0	1	3	1
<b>5-14</b>	3	2	3	0	3	0	0	0	0
<b>15-44</b>	28	15	14	4	24	0	1	3	3
<b>45-64</b>	41	29	22	6	31	0	9	1	8
<b>65+</b>	22	17	21	13	13	0	1	7	4
<b>All</b>	<b>111</b>	<b>70</b>	<b>68</b>	<b>24</b>	<b>84</b>	<b>1</b>	<b>12</b>	<b>14</b>	<b>16</b>

*\*Includes deaths in critical care patients who have confirmed influenza, however these deaths may not necessarily be due to influenza. Twelve of the sixteen deaths mentioned respiratory factors as a cause of death on the medical certificate, of which seven mentioned influenza specifically.*

## **Mortality**

During the 2015/16 season, the overall proportion of registered deaths with respiratory keywords to all-cause death registrations was 29%. The total number of weekly registered deaths with respiratory keywords peaked at 134 in week 1, with the proportion of registered deaths with respiratory keywords peaking at 34% in week 12 (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 (weeks 8 to 12) (Figure 10).

The overall proportion of registered deaths with respiratory deaths this year (29%) was lower than in 2014/15 (31%), and the weekly proportion peaked at a lower percentage (36% in weeks 8 & 10) (Figure 10).

During 2015/16 season, excess mortality in Northern Ireland was reported in weeks 49, 52 and 53 (Figure 11). This compares with four periods of excess mortality in 2015/16.

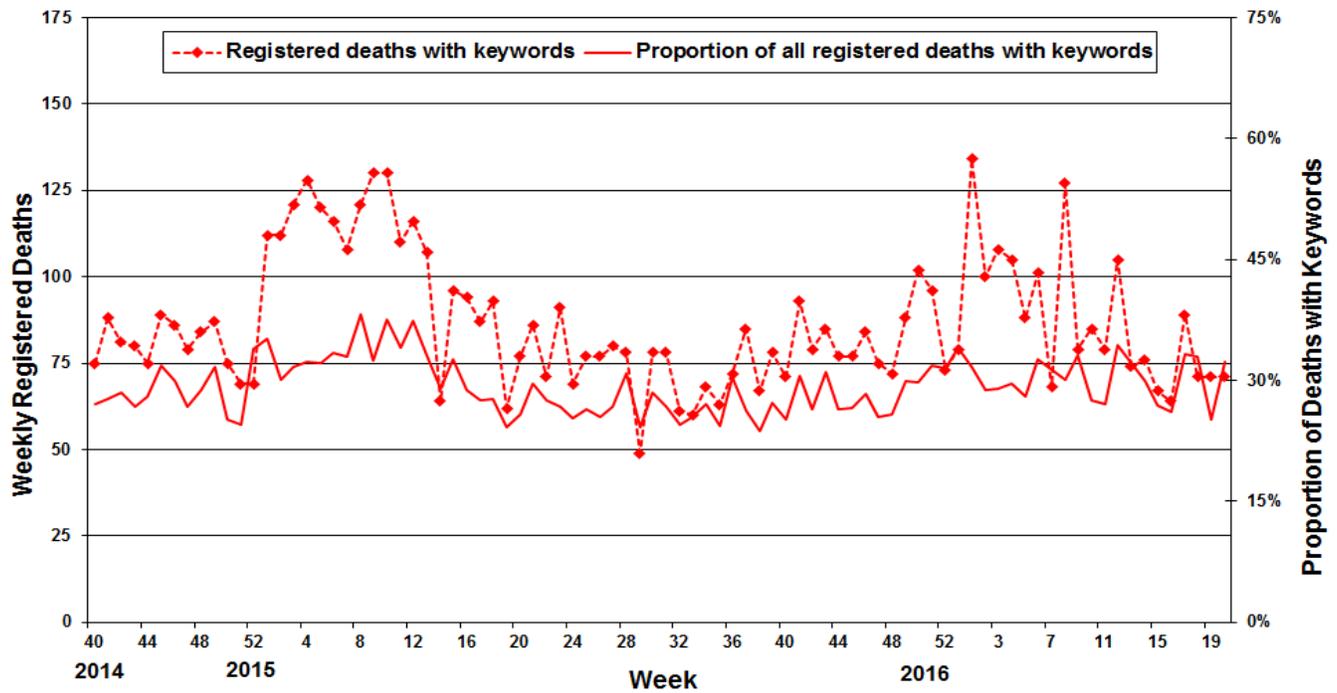


Figure 10: Deaths due to influenza, bronchitis, pneumonia and proportion of all deaths with keywords mentioned by week of registration, from week 40, 2014

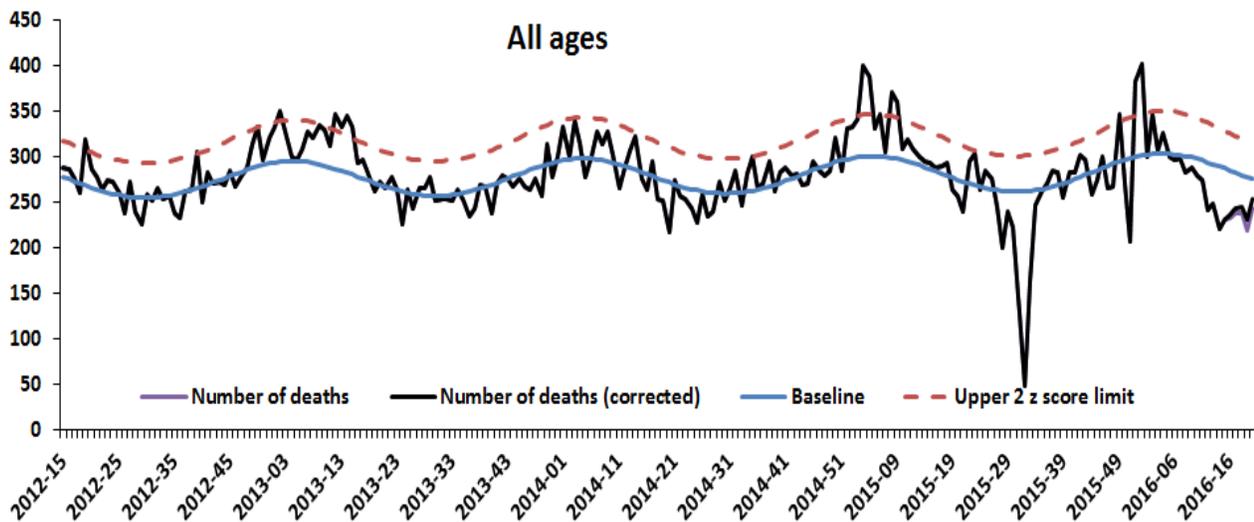


Figure 11: All age excess all-cause mortality by week of death, Northern Ireland 2012-2016 (calculated using the standardised EuroMOMO algorithm)

## Seasonal Influenza Vaccine uptake

As of the end of March 2016, the proportion of people aged 65 years and over who received the 2015/16 seasonal influenza vaccine was 74.4% and the proportion of people aged under 65 years of age in a clinical risk group who received the 2015/16 seasonal influenza vaccine was 59.9%. Compared to 2014/15, vaccine uptake has increased slightly in the over 65 years group (73.4% in 2014/15) but decreased in the under 65 years at risk group (71.8% in 2014/15). In the former group the population has remained steady, with a small decrease in the number of individuals vaccinated, however in the latter group the population has increased by approximately 6% whilst the number vaccinated has decreased by 13%. This means that one possible reason for the lower uptake recorded in 2015/16 is an increased number of people eligible for vaccination in this group (Table 4).

For the first time during the 2015/16 season, individuals with a BMI over 40 (morbidly obese category) were included in the under 65 years of age in a clinical risk group category and were offered the influenza vaccine. Most recent data suggests that to the end of March 2016, uptake among those with BMI>40 and without other comorbid conditions was 27.4%.

An estimated 55.1% of pregnant women received the 2015/16 influenza vaccine, compared to 56.1% in 2014/15. 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.

Similar to 2014/15, seasonal influenza vaccination was offered to pre-school children aged 2 and over, and all primary school children. The uptake rate among 2-4 year olds was 50.5% and the uptake rate in primary school children was 76.8% (Table 3). Both of these rates were slight reductions compared to 2014/15 when the uptake rates were 54.4% and 79.7% respectively.

Uptake of frontline Health Care Workers was 24.6% from all five Health and Social Care Trusts, which is a slight increase compared to last year (22.6%).

**Table 4: Seasonal Influenza vaccine uptake 2013/14 – 2015/16**

<b>Northern Ireland GP Influenza Vaccine Coverage Data</b>			
	<b>2015/16</b>	<b>2014/15</b>	<b>2013/14</b>
Number of Practices	349	350	351
Number of practices submitting return by 31 March	349	350	351
Number of 65+ receiving influenza vaccine between 1st October and 31 March	222,905	217,299	217,563
Registered 65+ population of practices submitting a return	299,465	295,947	288,424
<b>Uptake rate for 65+ population at 31 March</b>	<b>74.4%</b>	<b>73.4%</b>	<b>75.4%</b>
Number of under 65 "at risk" population receiving influenza vaccine between 1 October and 31 March	149,079	168,515	166,992
"At risk" population under 65 years of practices submitting a return	248,970	234,860	218,712
<b>Uptake rate for under 65 "at risk" population at 31 March</b>	<b>59.9%</b>	<b>71.8%</b>	<b>76.4%</b>
<b>Uptake rate for trust frontline staff at 31 March</b>	<b>24.6%</b>	<b>22.6%</b>	<b>24.0%</b>
Number of preschool children receiving influenza vaccine between 1st October and 31 March	28,386	30,746	28,247*
Registered population of preschool children submitting a return	56,160	56,561	50,940*
<b>Uptake rate for preschool children at 31 March</b>	<b>50.5%</b>	<b>54.4%</b>	<b>55.5%*</b>
Total number of primary school children receiving influenza vaccine between 1st October and 31 March	131,118	133,425	18,082†
Total number of primary school children offered the vaccine	170,721	167,491	22,461†
<b>Uptake rate for primary school children at 31 March</b>	<b>76.8%</b>	<b>79.7%</b>	<b>80.5%</b>

\* 2013/14 preschool cohort includes children aged 2-3 years only; 2014/15 and 2015/16 preschool cohort includes all pre-school children aged 2-4 years

† 2013/14 primary school cohort includes children in primary year 6 only; 2014/15 and 2015/16 primary school cohort includes all children in primary school

## United Kingdom and Republic of Ireland Summary

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During the 2015/16 season, moderate levels of influenza activity were seen in the community in the UK with more severe activity seen in ROI. In all regions influenza A(H1N1)pdm09 was the predominant circulating virus for the majority of the season, peaking late in the season, with influenza B peaking afterwards.

Primary care consultation rates were similar to 2014/15, with a later peak (week 11 compared to week 1 in 2014/15) being the main difference. Variation was seen across the devolved countries, with England and Wales exceeding the MEM baseline threshold for a number of weeks. England exceeded their baseline threshold for 14 weeks, with levels exceeding the medium threshold for one week, whilst Wales exceeded their baseline threshold for 13 weeks, six of which the medium threshold was also exceeded. Scotland and Northern Ireland did not exceed their threshold at any point during the season. ROI exceeded their baseline MEM threshold for 10 weeks during the season, with 6 of those weeks exceeding the medium intensity threshold.

The impact of A(H1N1)pdm09 was predominantly seen in young adults, and all regions reported high numbers of hospital and ICU/HDU cases. Peak admissions to hospital and ICU were higher than seen in the previous few seasons; the highest ever reported in ROI but lower than the last notable A(H1N1)pdm09 season in 2010 to 2011 in the UK regions.

Levels of excess all-cause mortality were lower than 2014/15, when the UK reported the highest excess mortality seen during the last nine seasons, but some excess mortality was seen in younger adults in the UK and in those aged 65 years and over in ROI. The majority of circulating A(H1N1)pdm09 circulating strains was antigenically similar to the A/California/7/2009 Northern Hemisphere 2015/16 (H1N1)pdm09 vaccine strain.

Unlike NI, the UK reported a similar level of respiratory illness outbreaks to the 2014/15 season, with the majority of these occurring in school settings (273/668; 41%). This compares to 75% of outbreaks occurring in care homes in 2014 to 2015. Of those that were tested, the majority of outbreaks were caused by influenza A(H1N1) pdm09 (52/123; 42.3%).

A total of 1,886 influenza A(H1N1)pdm09, ten influenza A(H3N2) and 80 influenza B have been tested for oseltamivir susceptibility in the UK by PHE RVU, with all but 12 influenza A(H1N1)pdm09 virus and one influenza A(H3N2) found to be susceptible. A total of 499 influenza A(H1N1)pdm09 and 80 influenza B have also been tested for zanamivir susceptibility in the UK and all were found to be sensitive.

## Conclusion

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This year's influenza season was characterised by low levels of community influenza activity, with the ILI consultation rate in primary care remaining below the MEM threshold throughout the season. Despite this low community activity, there were higher numbers of individuals requiring admission to ICU/HDU and increased virology activity for influenza infection from both sentinel and non-sentinel sources.

The 2015/16 season was dominated by influenza A (H1N1) pdm09, with influenza B increasing later in the season. A small number of influenza A (H3) specimens were also detected. Strain characterisation was 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. The majority of (>90%) of influenza B viruses characterised were from the B/Victoria/2/87-lineage and were antigenically similar to B/Brisbane/60/2008, the influenza B/Victoria-lineage component of 2015/16 Northern Hemisphere quadrivalent vaccines. Flu A(H1N1)pdm09 viruses showed some genetic diversity, but the majority remained antigenically similar to the vaccine strain.

In Northern Ireland, seasonal influenza vaccine uptake rates have historically been high and rates achieved during the 2015/16 season compare favourably to those achieved across the UK. This season, compared to last year, a marginal increase was seen in those over 65 years of age with an uptake of 74.4% compared to 73.4% in 2014/15. In those under 65 in a clinical risk group a reduction in uptake was seen, with a 2015/16 uptake of 59.9% compared to 71.8% in 2014/15. This group saw an increase in their numbers, possibly due to widening of the clinical parameters used to define 'at risk'. Coupled with a reduction in the number of individuals receiving the vaccine, this contributed to the overall reduction in uptake. Estimated uptake rates in pregnant women also decreased marginally compared to last year, although compared favourably to the rest of the UK. Vaccine uptake rate for Health Care Workers has remained low, and though an increase was seen since last year, the target of 30% uptake was not reached. The importance of ensuring high uptake in target groups of the national influenza vaccination programme remains.

In 2015/16, the universal childhood influenza vaccine programme rollout continued into its third year with all pre-school and primary school vaccine being offered the vaccine in Northern Ireland, similar to 2014/15. Uptake rates for pre-school and primary school children compared favourably to England, Scotland and Wales. Uptake in pre-school children reduced slightly compared to 2014/15, although remained high relative to the other regions. Uptake in primary school children was again hugely successful in Northern Ireland and exceeded the 75% target for the third year. 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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## References

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Surveillance of influenza and other respiratory viruses in the UK: 2015-16 report

Available online:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/526405/Flu\\_Annual\\_Report\\_2015\\_2016.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/526405/Flu_Annual_Report_2015_2016.pdf)

World Health Organization (2015) WHO: Recommended composition of influenza virus vaccines for use in the 2016-2017 northern hemisphere influenza season.

Available online:

[http://www.who.int/influenza/vaccines/virus/recommendations/201602\\_recommendation.pdf](http://www.who.int/influenza/vaccines/virus/recommendations/201602_recommendation.pdf)

Vega T, et al. Influenza surveillance in Europe: establishing epidemic thresholds by the Moving Epidemic Method. Influenza and Other Respiratory Viruses 2012. doi: 10.1111/j.1750-2659.2012.00422.x.