Influenza Surveillance in Ireland – Weekly Report

Influenza Week 9 2016 (29th February – 6th March 2016)

Summary

Influenza activity in Ireland decreased significantly during week 9 2016 (week ending March 6, 2016). Influenza A(H1)pdm09 is the predominant virus circulating. Reports of hospitalisations/ICU admissions associated with influenza and influenza outbreaks continue to be reported. It is recommended that antivirals be considered for the treatment and prevention of influenza in high risk groups.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 42.9 per 100,000 population in week 9 2016, a decrease compared to the updated rate of 60.8 per 100,000 reported during week 8 2016.
    - ILI rates remained above the Irish baseline ILI threshold (18 per 100,000 population).
    - ILI age specific rates decreased in the 0-4, 5-14 and 15-64 year age groups and increased slightly in those aged 65 years and older during week 9 2016, compared to the previous week.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services decreased further during week 9 2016.
- National Virus Reference Laboratory (NVRL): Influenza positivity reported from the NVRL for all respiratory specimens (sentinel and non-sentinel) decreased to 22% during week 9 2016. Of 503 sentinel and non-sentinel specimens tested, 111 were influenza positive: 71 A(H1)pdm09, 2 A (H3), 2 A (not subtyped) and 36 B.
    - Influenza A(H1)pdm09 is the predominant virus circulating; co-circulating with influenza B.
    - Positive detections of influenza A(H1)pdm09 and influenza B decreased significantly during week 9 2016, compared to the previous week.
    - RSV activity remains at low levels.
- All influenza A(H1)pdm09 and A(H3) viruses characterised in Ireland this season, belong to genetic groups that are antigenically similar to the strains recommended for inclusion in the 2015/2016 trivalent influenza vaccines. Influenza B viruses characterised this season in Ireland, belong to the B/Victoria lineage, these viruses are not present in the 2015/2016 trivalent vaccine used in Ireland. Trivalent vaccines are the most widely used influenza vaccines in Europe.
- Respiratory admissions: Respiratory admissions reported from a network of sentinel hospitals increased slightly during week 9 2016, compared to the previous week.
- Hospitalisations: 1258 confirmed influenza hospitalised cases were notified to HPSC for the 2015/2016 season to date: 671 were associated with influenza A(H1)pdm09, 5 with A(H3), 170 with A (not subtyped) and 412 with influenza B.
- Critical care admissions: Seven confirmed influenza cases admitted to critical care units were reported to HPSC since the last surveillance report, bringing the season total to 110 cases.
- Mortality: 38 confirmed influenza cases died and were reported to HPSC for the 2015/2016 season.
- Outbreaks: Five acute respiratory/influenza outbreaks were notified to HPSC during week 9 2016.
- International: Overall, influenza activity remained widespread in Europe, with the majority of countries reporting decreasing trends. Influenza A(H1N1)pdm09 viruses predominated this season to date.

1. GP sentinel surveillance system - Clinical Data

- During week 9 2016, 115 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 42.9 per 100,000 population, a decrease compared to the updated rate of 60.8 per 100,000 reported during week 8 2016. ILI rates are now below the medium intensity ILI threshold (57/100,000 population), however remain above the Irish baseline ILI threshold (18/100,000 population) (figure 1).
- ILI age specific rates were highest in the 5-14 (49.4/100,000 population) and the 15-64 (45.6/100,000 population) year age groups during week 9 2016. ILI age specific rates decreased in the 0-4, 5-14 and 15-64 year age groups and increased slightly in those aged 65 years and older during week 9 2016, compared to the previous week (figure 2).
- HPSC in consultation with the European Centre for Disease Prevention and Control (ECDC) has revised the Irish baseline ILI threshold for the 2015/2016 influenza season to 18 per 100,000 population; this threshold indicates the likelihood that influenza is circulating in the community. The Moving Epidemic Method (MEM) has been adopted by ECDC to calculate thresholds for GP ILI consultations in a standardised approach across Europe.[1]
- The baseline ILI threshold, medium (57/100,000 population) and high (114/100,000 population) intensity ILI thresholds are shown in figure 1.

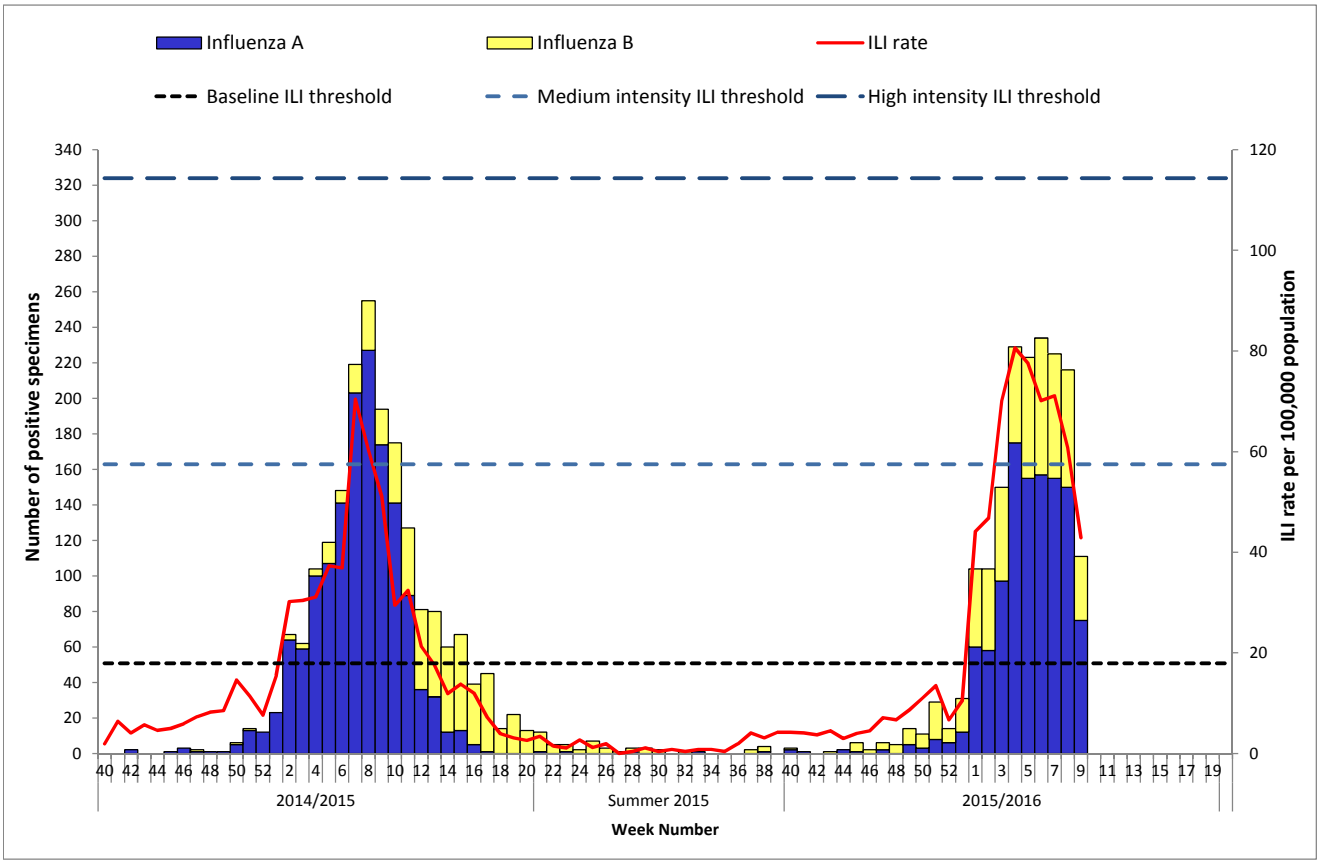

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[1] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

[1] For further information on the Moving Epidemic Method (MEM) to calculate ILI thresholds: http://www.ncbi.nlm.nih.gov/pubmed/22897919

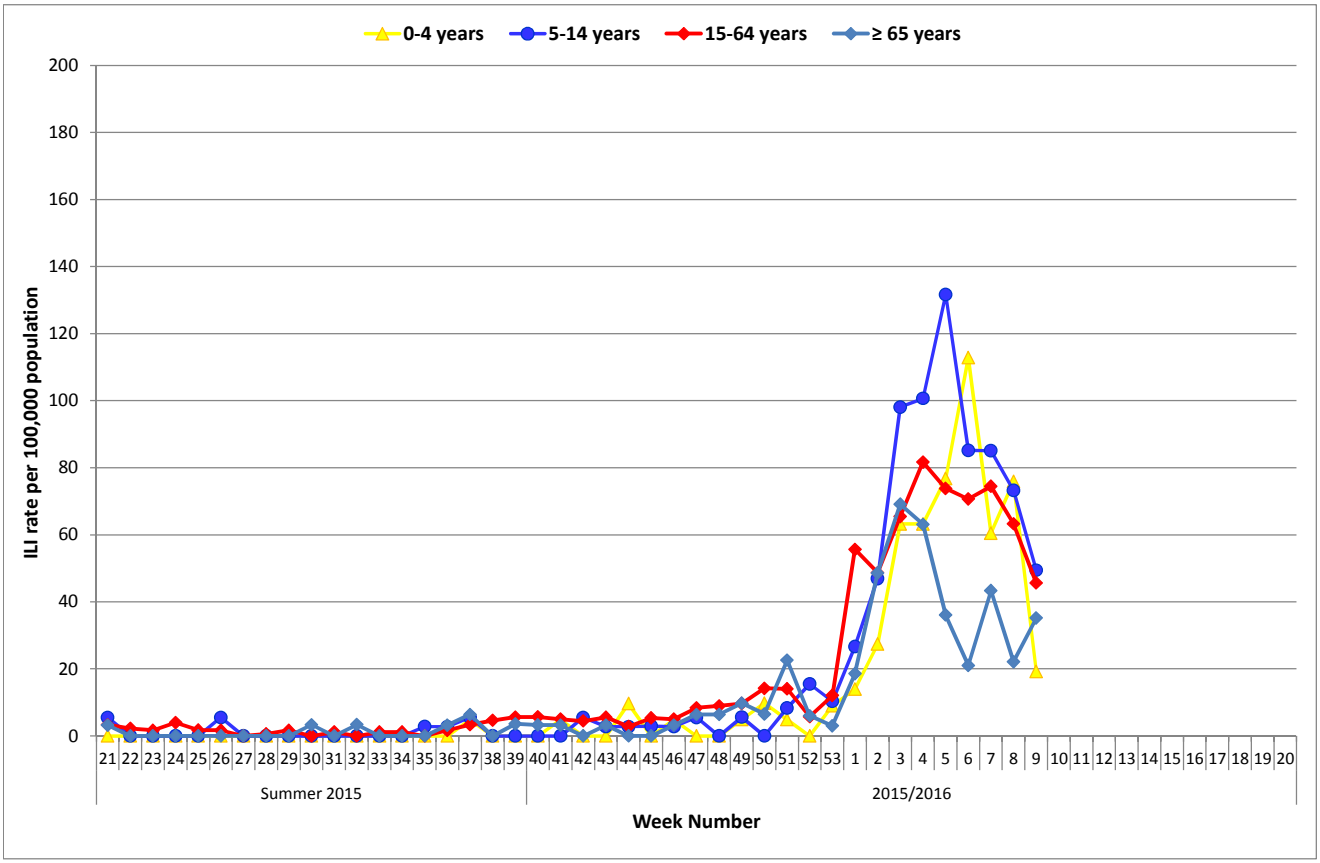

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2015 and the 2015/2016 influenza season to date. *Source: ICGP.*

2. Influenza and Other Respiratory Virus Detections - NVRL

The data reported in this section for the 2015/2016 influenza season refers to sentinel and non-sentinel respiratory specimens routinely tested for influenza, respiratory syncytial virus (RSV), adenovirus, parainfluenza viruses types 1, 2, 3 & 4 (PIV-1, -2, -3 & -4) and human metapneumovirus (hMPV) by the National Virus Reference Laboratory (NVRL) (figures 3, 4 & 5, tables 1 & 2).

- Influenza positivity reported from the NVRL for all respiratory specimens (sentinel and non-sentinel) decreased to 22.1% during week 9 2016, compared to 32.0% during the previous week. Of 503 sentinel and non-sentinel specimens tested, 111 were influenza positive: 71 A(H1)pdm09, 2 A (H3), 2 A (not subtyped) and 36 B.
    - During week 9 2016, 64% of influenza positive specimens were influenza A(H1)pdm09 and 32% were influenza B. Positive detections of influenza A(H1)pdm09 and influenza B decreased significantly during week 9 2016, compared to the previous week.
- Influenza A(H1)pdm09 was the predominant virus circulating in Ireland during week 9 2016, co-circulating with influenza B (figures 3 & 4).
- Data from the NVRL for week 9 2016 and the 2015/2016 season to date are detailed in tables 1 and 2.
- RSV positivity remained at low levels, following the RSV peak in week 51 2015. Five (5/503; 1.0%) RSV positive sentinel and non-sentinel specimens were reported during week 9 2016. Figure 5 shows the number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2015/2016 season, compared to the 2014/2015 season.
- One adenovirus and two human metapneumovirus (hMPV) virus positive sentinel and non-sentinel specimens were reported by the NVRL during week 9 2016 (table 2).
- The overall proportion of non-sentinel specimens positive for seasonal respiratory viruses* decreased to 23% during week 9 2016. ** Seasonal respiratory viruses tested by the NVRL are detailed above.*

- Genetic characterisation of influenza viruses circulating this season in Ireland has been carried out by the NVRL, on 46 influenza positive specimens to date. Thirty-five influenza A(H1)pdm09 viruses have been genetically characterised; all belong to the genetic group A/South Africa/3626/2013 (subgroup 6B), which is a genetic group of viruses that is antigenically similar to the 2015/2016 influenza A(H1)pdm09 vaccine strain. Two influenza A(H3) viruses have been genetically characterised, both belong to the genetic group A/Hong Kong/4801/2014 (3C.2a), which is a genetic group of viruses that is antigenically similar to the 2015/2016 influenza A(H3) vaccine strain. Nine influenza B viruses were characterised as belonging to the genetic group B/Victoria/2/87 (clade 1A), which is a genetic group of viruses antigenically similar to B/Brisbane/60/2008. The B/Victoria viruses are not present in the 2015/2016 trivalent influenza vaccine used in Ireland.
- Trivalent influenza vaccines are the most widely used influenza vaccines in Europe. The most prevalent influenza B virus lineage detected this season in Europe, is B/Victoria, which is not present in trivalent vaccines. Most influenza A(H1N1)pdm09 and A(H3N2) viruses genetically characterised in Europe this season to date, belong to genetic groups that are antigenically similar to the 2015/2016 influenza vaccine strains. Recommendations for the vaccine composition for the 2016/2017 season in the northern hemisphere are available: including a virus of the B/Victoria lineage in trivalent vaccines is advised.
- In Ireland, further genetic testing is ongoing, and the NVRL and HPSC are carefully monitoring the situation.

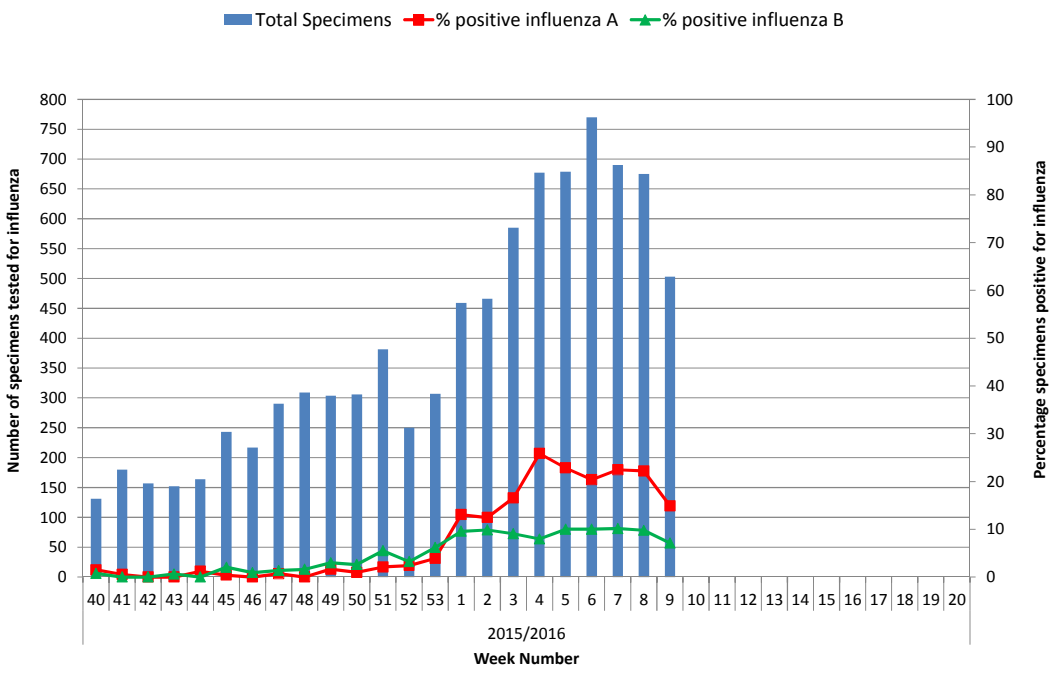

Figure 3: Number of sentinel and non-sentinel specimens tested by the NVRL for influenza and percentage influenza positive by week for the 2015/2016 influenza season. *Source: NVRL*

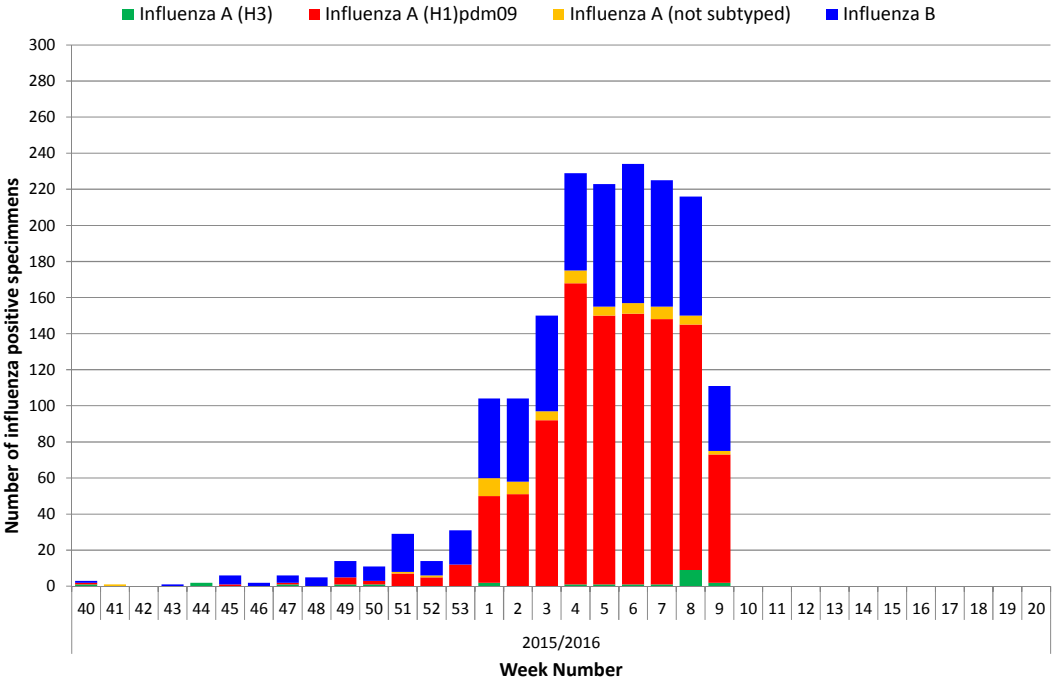

Figure 4: Number of positive influenza specimens by influenza type/subtype from sentinel and non-sentinel sources tested by the NVRL, by week for the 2015/2016 influenza season. *Source: NVRL.*

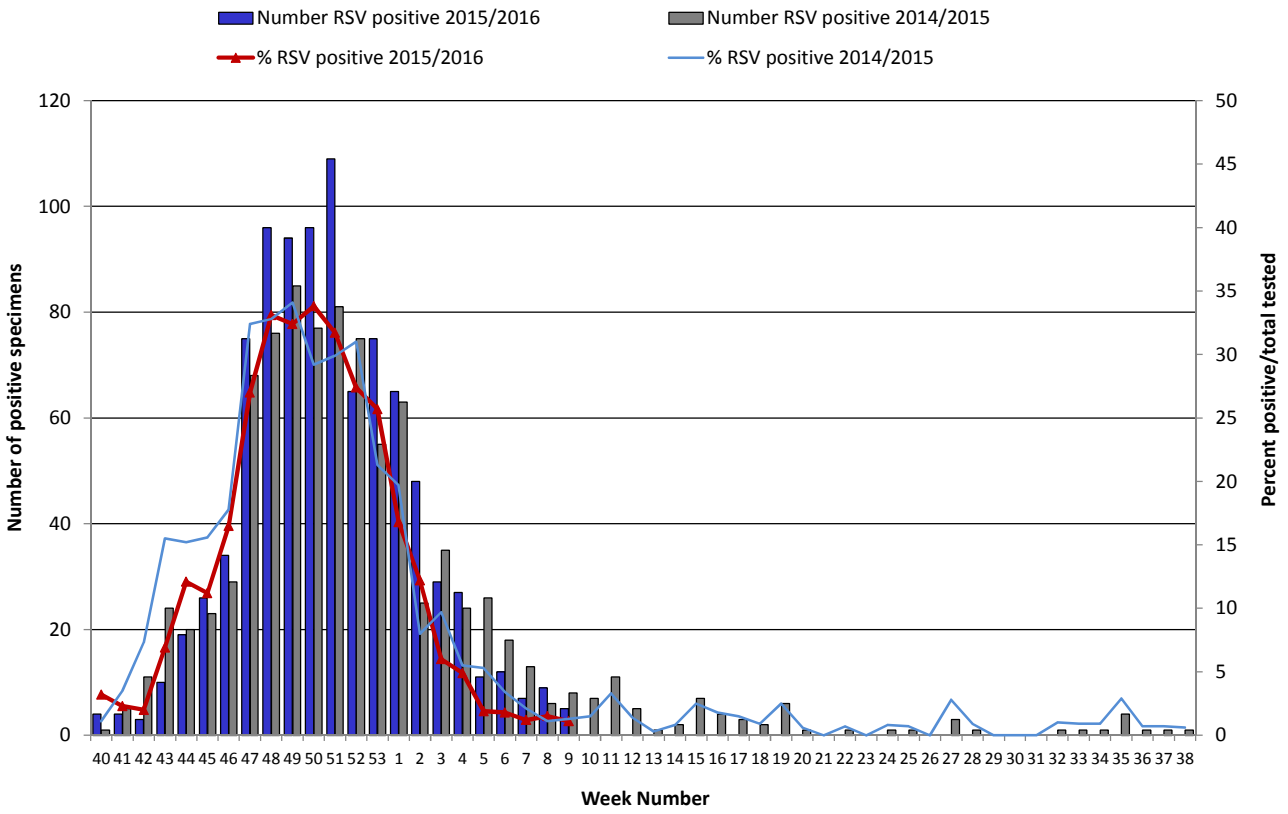

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL by week during the 2015/2016 season, compared to the 2014/2015 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 9 2016 and the 2015/2016 season to date. *Source: NVRL*

Week	Specimen type	Total tested	Number influenza positive	% Influenza positive	Influenza A				Influenza B
					A (H1)pdm09	A (H3)	A (not subtyped)	Total influenza A	
9 2016	Sentinel	33	12	36.4	5	0	0	5	7
	Non-sentinel	470	99	21.1	66	2	2	70	29
	Total	**503**	**111**	**22.1**	**71**	**2**	**2**	**75**	**36**
2015/2016	Sentinel	967	495	51.2	273	4	7	284	211
	Non-sentinel	7928	1226	15.5	771	19	50	840	386
	Total	**8895**	**1721**	**19.3**	**1044**	**23**	**57**	**1124**	**597**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 9 2016 and the 2015/2016 season to date. *Source: NVRL*

Week	Specimen type	Total tested	RSV	% RSV	Adenovirus	% Adenovirus	PIV-1	% PIV-1	PIV-2	% PIV-2	PIV-3	% PIV-3	PIV-4	% PIV-4	hMPV	% hMPV
9 2016	Sentinel	33	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Non-sentinel	470	5	1.1	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	2	0.4
	Total	**503**	**5**	**1.0**	**1**	**0.2**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**2**	**0.4**
2015/2016	Sentinel	967	27	2.8	11	1.1	6	0.6	1	0.1	0	0.0	0	0.0	15	1.6
	Non-sentinel	7928	923	11.6	80	1.0	65	0.8	27	0.3	35	0.4	0	0.0	156	2.0
	Total	**8895**	**950**	**10.7**	**91**	**1.0**	**71**	**0.8**	**28**	**0.3**	**35**	**0.4**	**0**	**0.0**	**171**	**1.9**

[†] Please note that non-sentinel specimens relate to specimens referred to the NVRL (other than sentinel specimens) and may include more than one specimen from each case.

3. Regional Influenza Activity by HSE-Area

The geographical spread of influenza activity is reviewed on a weekly basis using sentinel GP ILI consultation rates, laboratory data and outbreak data.

The geographical spread of influenza/ILI during the week ending March 6, 2016 (week 9 2016) is shown in figure 6. Regional influenza activity was reported in HSE-E, -NE and -SE and localised influenza activity was reported in HSE-M, -MW, -S, -NW, and -W during week 9 2016.

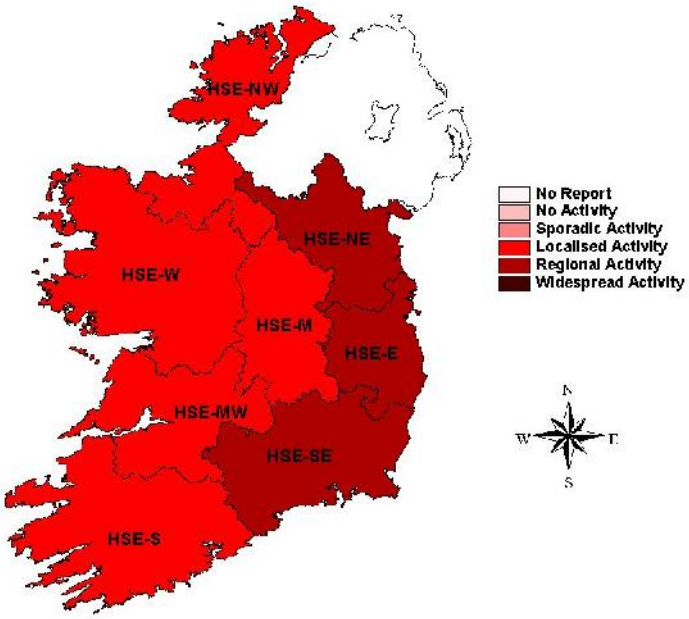

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 9 2016

Sentinel hospitals

The Departments of Public Health have established at least one sentinel hospital in each HSE-Area, to report data on total, emergency and respiratory admissions on a weekly basis. For the 2015/2016 influenza season, eight sentinel hospitals are regularly reporting respiratory admissions data.

Respiratory admissions reported from a network of sentinel hospitals increased slightly during week 9 2016 to 327, compared to 317 during the previous week (figure 7). All eight sentinel hospitals reported data each week for the 2015/2016 season to date.

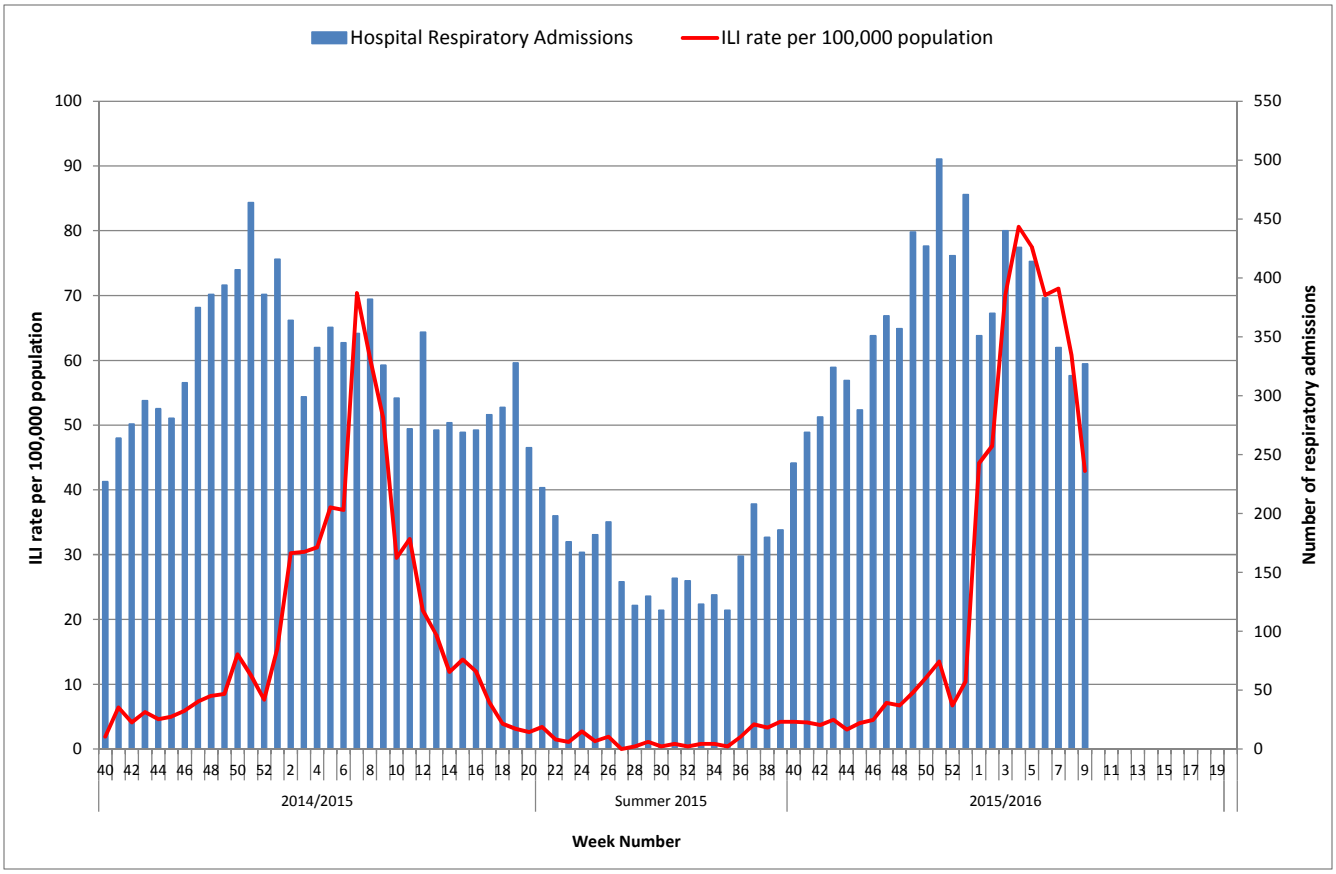

Figure 7: Number of respiratory admissions reported from sentinel hospitals and ILI sentinel GP consultation rate per 100,000 population by week and season. *Source: Departments of Public Health - Sentinel Hospitals & ICGP.*

4. GP Out-Of-Hours services surveillance

The Department of Public Health in HSE-NE is collating national data on calls to nine of thirteen GP Out-of-Hours services in Ireland. Records with clinical symptoms reported as flu or influenza are extracted for analysis. This information may act as an early indicator of increased ILI activity. However, data are self-reported by callers and are not based on coded influenza diagnoses.

The proportion of influenza–related calls to GP Out-of-Hours services decreased during week 9 2016 to 3.4%, compared to 4.1% during week 8 2016 (figure 8).

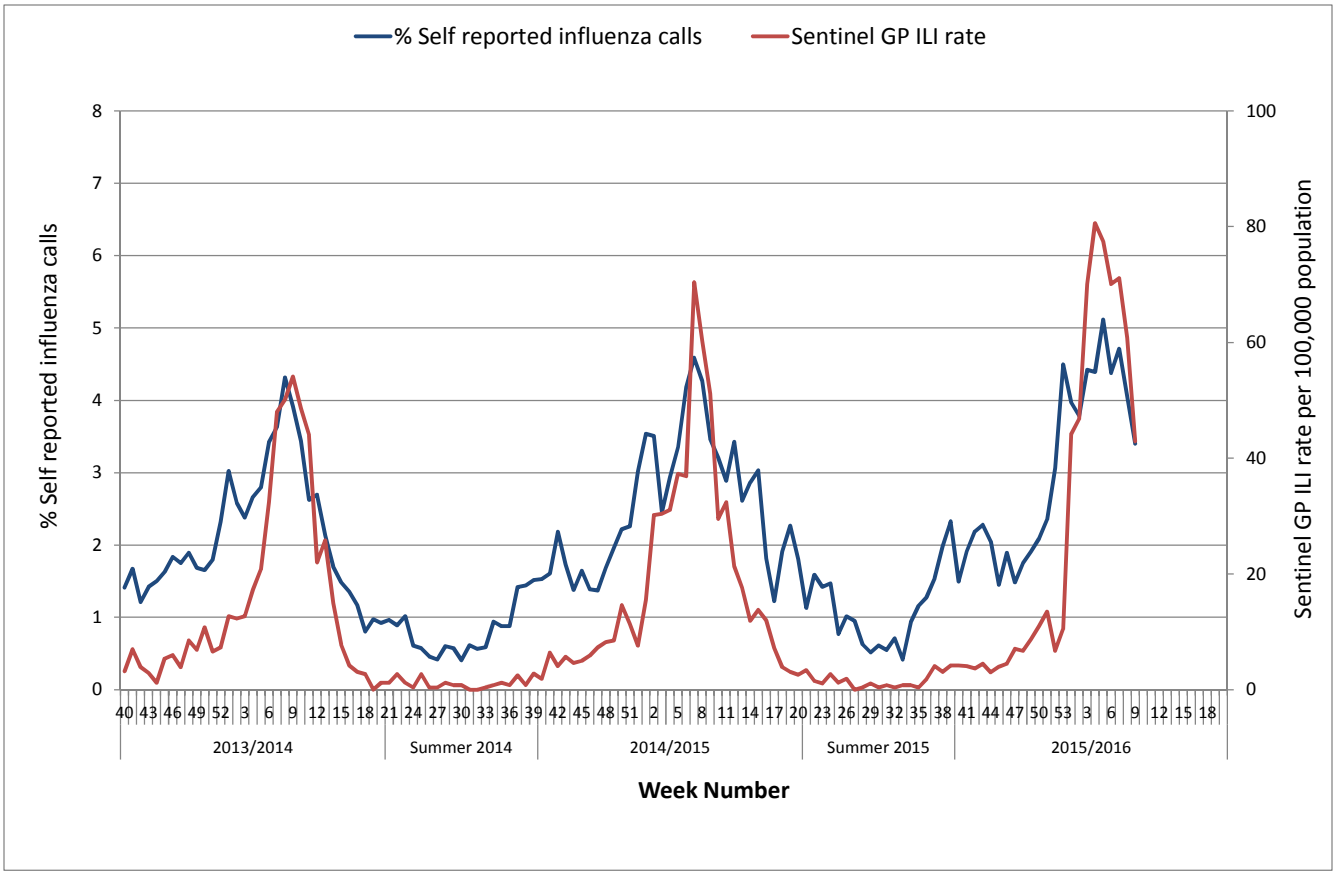

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

5. Influenza & RSV notifications

Influenza and RSV cases notifications are reported on Ireland's Computerised Infectious Disease Reporting System (CIDR), including all positive influenza/RSV specimens reported from all laboratories testing for influenza/RSV and reporting to CIDR.

Influenza and RSV notifications are reported in the Weekly Infectious Disease Report for Ireland. RSV notifications remained low during the week ending March 6, 2016, with 23 cases notified, compared to 20 during the previous week. Influenza notifications remained stable during the week ending March 6, 2016, with 393 cases notified, compared to 401 during the previous week.

6. Influenza Hospitalisations

During week 9 2016 (week ending March 6, 2016), 177 confirmed influenza hospitalised cases were notified to HPSC, bringing the 2015/2016 season total to 1258. Of these 1258 notified hospitalised cases: 671 were associated with influenza A(H1)pdm09, 5 with A(H3), 170 with A (not subtyped) and 412 with influenza B. The highest age specific rates were in those aged less than five years (table 3). The median age of hospitalised cases for the season to date is 28 years (ranging from 0-94 years).

7. Critical Care Surveillance

The Intensive Care Society of Ireland (ICSI) are continuing with the enhanced surveillance system set up during the 2009 pandemic, on all critical care patients with confirmed influenza. HPSC process and report on this information on behalf of the regional Directors of Public Health/Medical Officers of Health.

Seven confirmed influenza cases admitted to critical care units were reported to HPSC since the last surveillance report. For the 2015/2016 season to date, 110 confirmed influenza cases (74 associated with influenza A(H1)pdm09, one with A(H3), 13 with influenza A-not subtyped and 22 with influenza B) were admitted to critical care units and reported to HPSC. The highest age specific rates were in those aged less than one year. The median age of cases admitted to critical care units for the season to date is 51 years (ranging from 0-86 years) (table 3).

Table 3: Age specific rates for confirmed influenza cases hospitalised and admitted to critical care during the 2015/2016 influenza season to date. Age specific rates are based on the 2011 CSO census.

	Hospitalised		Admitted to ICU	
Age (years)	Number	Age specific rate per 100,000 pop.	Number	Age specific rate per 100,000 pop.
<1	72	99.4	11	15.2
1-4	255	89.8	7	2.5
5-14	194	31.1	4	0.6
15-24	64	11.0	2	0.3
25-34	123	16.3	3	0.4
35-44	122	16.2	18	2.6
45-54	80	13.8	13	2.2
55-64	102	22.0	26	5.6
≥65	246	45.9	26	4.9
Total	**1258**	**27.4**	**110**	**2.4**

8. Mortality Surveillance

Influenza-associated deaths include all deaths where influenza is reported as the primary/main cause of death by the physician or if influenza is listed anywhere on the death certificate as the cause of death. HPSC receives daily mortality data from the General Register Office (GRO) on all deaths from all causes registered in Ireland. These data have been used to monitor excess all-cause and influenza and pneumonia deaths as part of the influenza surveillance system and the European Mortality Monitoring Project. These data are provisional due to the time delay in deaths' registration in Ireland. http://www.euromomo.eu/

- Thirty-eight confirmed influenza cases (26 associated with influenza A(H1)pdm09, five with influenza A-not subtyped and seven with influenza B) died and were reported to HPSC for the 2015/2016 season to date. The median age of confirmed influenza cases who died this season is 64 years.
- No excess all-cause mortality was reported in Ireland during week 9 2016. For the 2015/2016 season to date, excess all-cause mortality was reported during weeks 1 and 4 2016, after correcting GRO data for reporting delays with the standardised EuroMOMO algorithm. Please note these data are provisional due to the time delay in deaths' registration in Ireland.

9. Outbreak Surveillance

- Five acute respiratory infection/influenza general outbreaks were notified to HPSC during week 9 2016 (week ending 06/03/2016).
- To date this season (up to the week ending March 6, 2016), 45 acute respiratory/influenza outbreaks have been reported to HPSC: 24 outbreaks associated with influenza (19 with influenza A(H1)pdm09, two with influenza A –not subtyped and three with influenza B), eight with RSV, two with parainfluenza type 1, two with hMPV and nine with unknown pathogens. Thirty-two outbreaks were in community hospital/residential care facilities, nine were in acute hospital settings, two were in schools and two in day-care centres (one of which was for those with intellectual disabilities). Family outbreaks are not included in this report. *All outbreaks notified to HPSC are reported in the HPSC Outbreak Weekly Report.*

10. International Summary

As of March 7 2016, in the Northern Hemisphere high levels of influenza activity continued with influenza A(H1N1)pdm09 predominating and an increase in the proportion of influenza B viruses detected. In the Southern Hemisphere and in tropical countries influenza activity was generally low. In Europe ongoing high levels of influenza activity continued to be reported, although in some countries activity seemed to have peaked already. Influenza A(H1N1)pdm09 accounted for most virus detections with an increase in the proportion of influenza B detections. In the Russian Federation and Ukraine, elevated SARI activity continued but at lower levels compared to previous weeks. In North America, influenza activity increased further with influenza A(H1N1)pdm09 predominating in Canada and United States of America and A(H3N2) in Mexico.

A predominance of influenza A(H1N1)pdm09 viruses has characterised the 2015/2016 influenza season in most countries in the European Region; this subtype may cause more severe disease and deaths in those aged less than 65 years, than A(H3N2) viruses. Most of the viruses characterised to date this season in Europe have been similar to the strains recommended for inclusion in the trivalent or quadrivalent vaccines for the 2015/2016 season for the northern hemisphere.

See ECDC and WHO influenza surveillance reports for further information. ECDC and WHO have both published mid-season influenza risk assessments, available on the ECDC and WHO websites.

- Further information is available on the following websites:

Northern Ireland	http://www.fluawareni.info/
Europe – ECDC	http://ecdc.europa.eu/
Public Health England	http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/SeasonalInfluenza/
United States CDC	http://www.cdc.gov/flu/weekly/fluactivitysurv.htm
Public Health Agency of Canada	http://www.phac-aspc.gc.ca/fluwatch/index-eng.php

- Information on Middle Eastern Respiratory Syndrome Coronavirus (MERS), including the latest ECDC rapid risk assessment is available on the ECDC website. Further information and guidance documents are also available on the HPSC and WHO websites.
- Further information on avian influenza is available on the ECDC website. The latest ECDC rapid risk assessment on highly pathogenic avian influenza A of H5 type is also available on the ECDC website.

11. WHO recommendations on the composition of influenza virus vaccines

On February 25, 2016, the WHO vaccine strain selection committee recommended that trivalent vaccines for use in the 2016/2017 influenza season (northern hemisphere winter) contain the following: an A/California/7/2009 (H1N1)pdm09-like virus; an A/Hong Kong/4801/2014 (H3N2)-like virus; a B/Brisbane/60/2008-like virus. http://www.who.int/influenza/vaccines/virus/recommendations/en/

The WHO vaccine strain selection committee recommended that trivalent vaccines for use in the 2015/2016 influenza season (northern hemisphere winter) contain the following: an A/California/7/2009 (H1N1)pdm09-like virus; an A/Switzerland/9715293/2013 (H3N2)-like virus; a B/Phuket/3073/2013-like virus. http://www.who.int/influenza/vaccines/virus/recommendations/en/

Further information on influenza in Ireland is available at www.hpsc.ie

Acknowledgements

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