Influenza Surveillance in Ireland – Weekly Report

Influenza Week 12 2016 (21st – 27th March 2016)

Summary

Influenza activity in Ireland was at baseline levels during week 12 2016 (week ending March 27, 2016). Reports of hospitalisations/ICU admissions associated with influenza continue to be reported. Influenza A(H1)pdm09 and influenza B are co-circulating, with positivity continuing to decrease in recent weeks.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 20.2 per 100,000 population in week 12 2016, a slight increase compared to the updated rate of 16.4 per 100,000 reported during week 11 2016.
    - During weeks 11 and 12 2016, ILI rates were fluctuating around the Irish baseline ILI threshold (18 per 100,000 population).
    - ILI age specific rates were low in all age groups during week 12 2016.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services decreased during week 12 2016, compared to the previous week.
- National Virus Reference Laboratory (NVRL): Influenza positivity reported from the NVRL for all respiratory specimens (sentinel and non-sentinel) decreased to 17% during week 12 2016. Of 278 sentinel and non-sentinel specimens tested, 48 were influenza positive: 24 A(H1)pdm09, 1 A(H3), 3 A (not subtyped) and 20 B.
    - Influenza A(H1)pdm09 and influenza B are currently co-circulating. Overall, positive detections of influenza A(H1)pdm09 and influenza B have decreased each week for six consecutive weeks.
    - Sporadic detections of RSV, adenovirus and human metapneumovirus were reported during week 12 2016. 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.
- Hospitalisations: 1603 confirmed influenza hospitalised cases were notified to HPSC for the 2015/2016 season to date: 849 were associated with influenza A(H1)pdm09, 6 with A(H3), 228 with A (not subtyped) and 520 with influenza B.
- Critical care admissions: Two confirmed influenza cases admitted to critical care units were reported to HPSC since the last surveillance report, bringing the season total to 127 cases.
- Mortality: 46 notified influenza cases died and were reported to HPSC for the 2015/2016 season.
- Outbreaks: No new acute respiratory/influenza outbreaks were notified to HPSC during week 12 2016.
- International: In the European Region, influenza activity has peaked for the 2015/2016 season. Influenza A(H1N1)pdm09 viruses have predominated this season in most countries, although in recent weeks there has been a shift towards influenza B circulation.

1. GP sentinel surveillance system - Clinical Data

- During week 12 2016, 48 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 20.2 per 100,000 population, a slight increase compared to the updated rate of 16.4 per 100,000 reported during week 11 2016. ILI rates were just above the Irish baseline ILI threshold (18/100,000 population) during week 12 2016 (figure 1).
- ILI age specific rates remained low in all age groups during week 12 2016 (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.

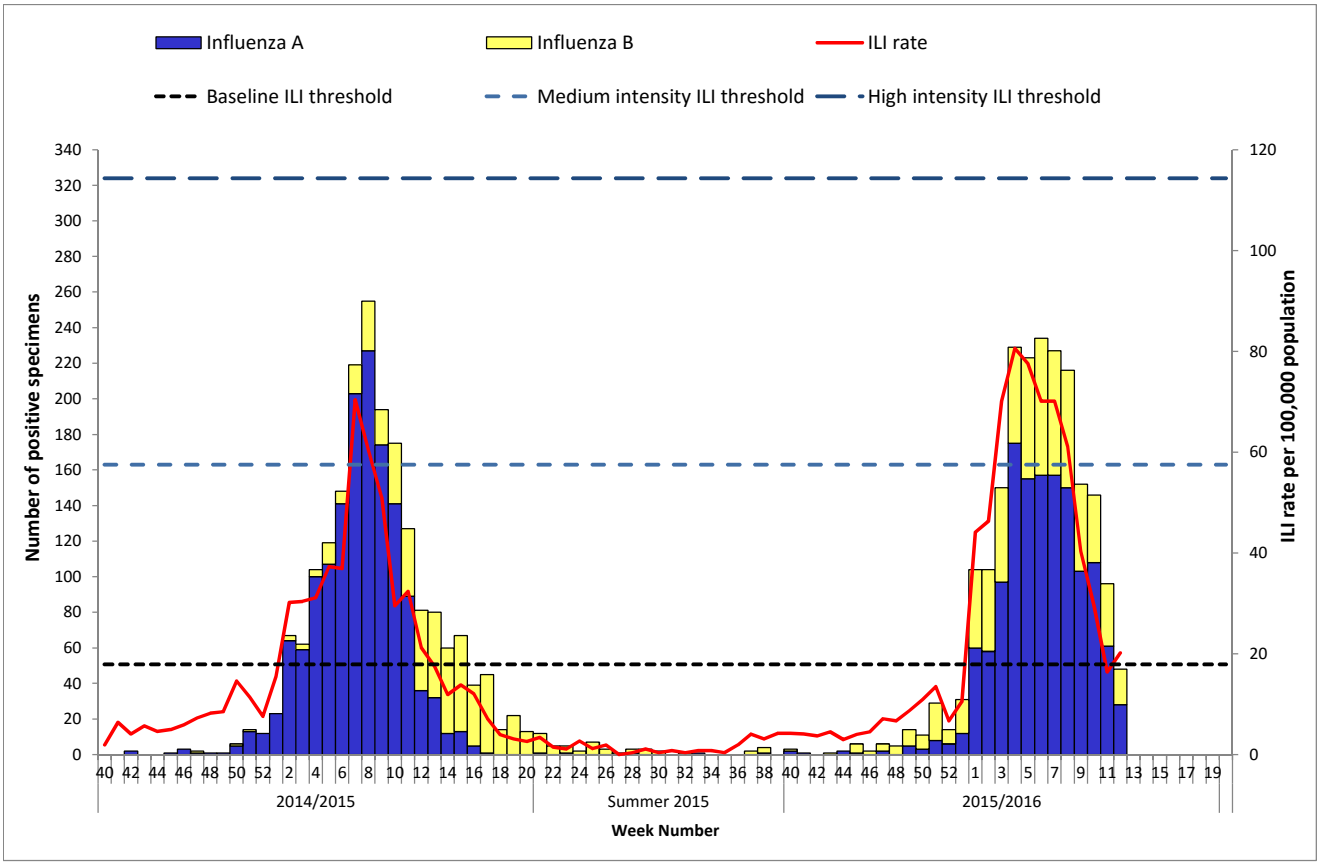

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[1] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

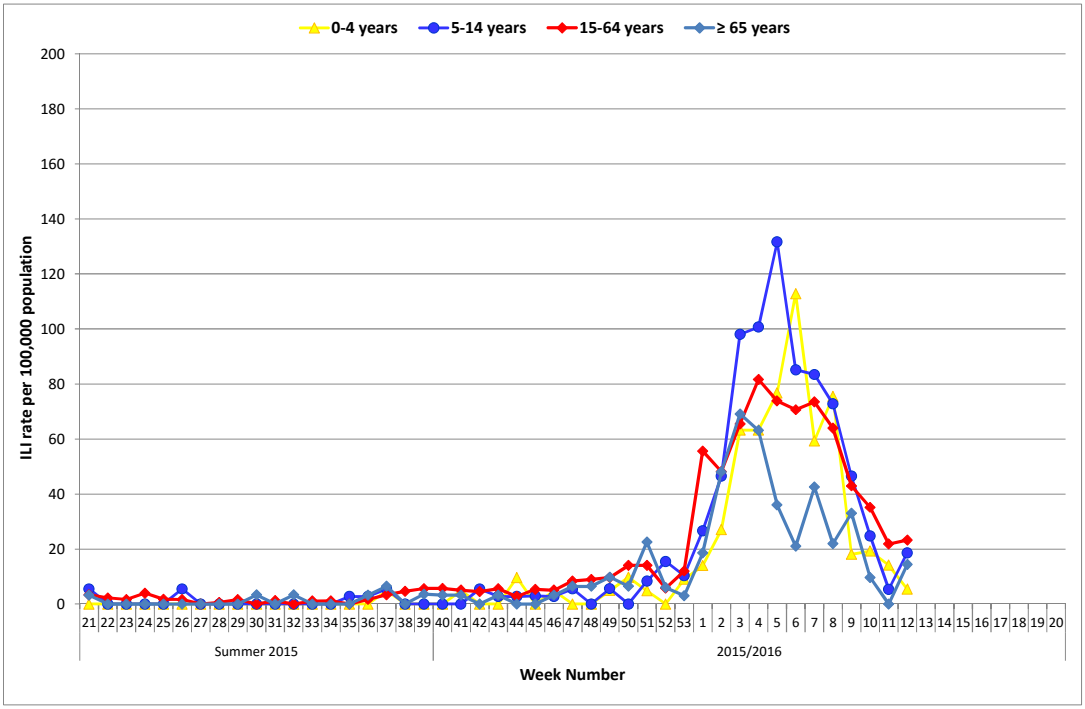

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2015 and the 2015/2016 influenza season to date. *Source: ICGP.*

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 17% during week 12 2016, compared to 22% during the previous week. Of 278 sentinel and non-sentinel specimens tested, 48 were influenza positive: 24 A(H1)pdm09, 1 A(H3), 3 A (not subtyped) and 20 B.
    - Overall, positive detections of influenza A(H1)pdm09 and influenza B have decreased each week for six consecutive weeks. During week 12 2016, 50% of influenza positive specimens were influenza A(H1)pdm09 and 42% were influenza B.
- Influenza A(H1)pdm0 and influenza B are currently co-circulating (figures 3 & 4).
- Data from the NVRL for week 12 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. 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.
- Ten adenovirus and five human metapneumovirus (hMPV) virus positive sentinel and non-sentinel specimens were reported by the NVRL during week 12 2016 (table 2).
- The overall proportion of non-sentinel specimens positive for seasonal respiratory viruses* remained stable at 25% during week 12 2016, compared to 25% during the previous week. ** 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.

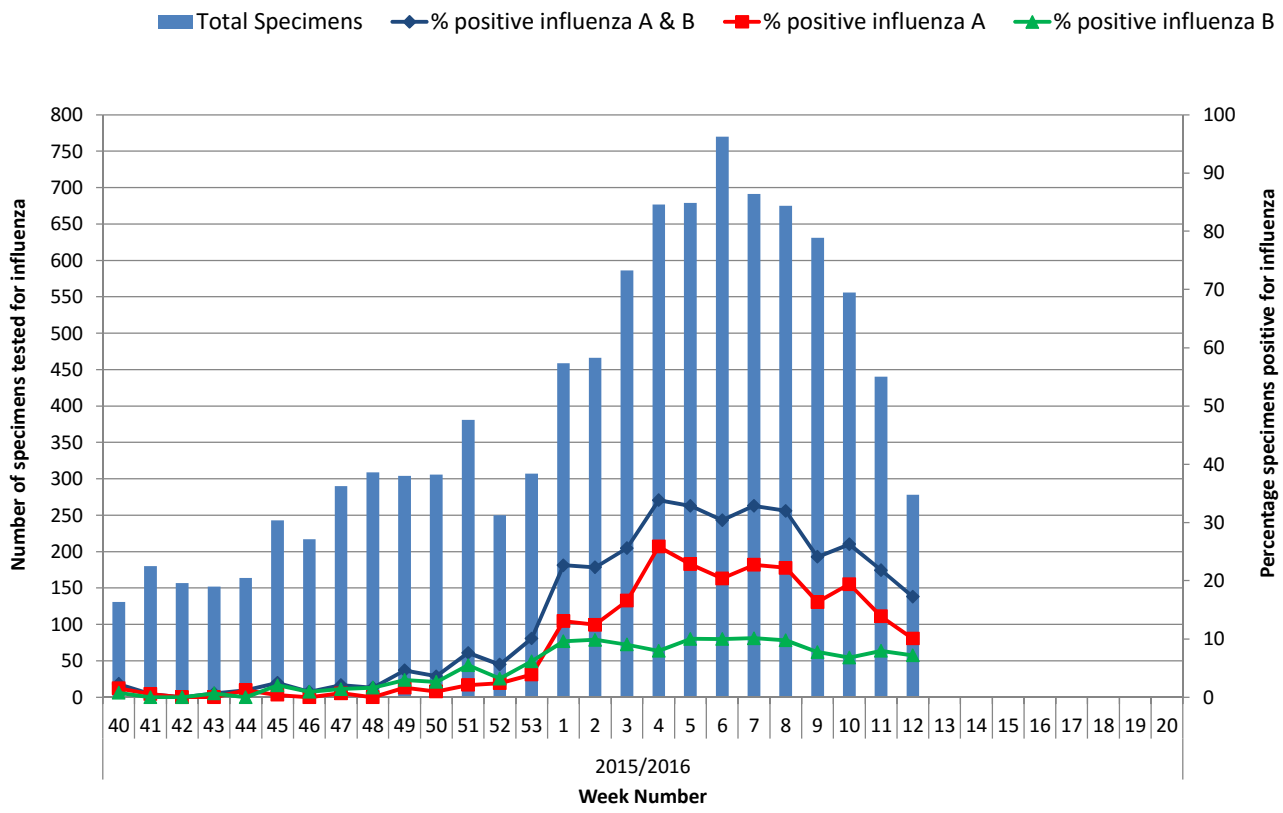

Figure 3: Number of sentinel and non-sentinel specimens tested by the NVRL for influenza and percentage influenza positive by week for the 2015/2016 influenza season. *Source: NVRL*

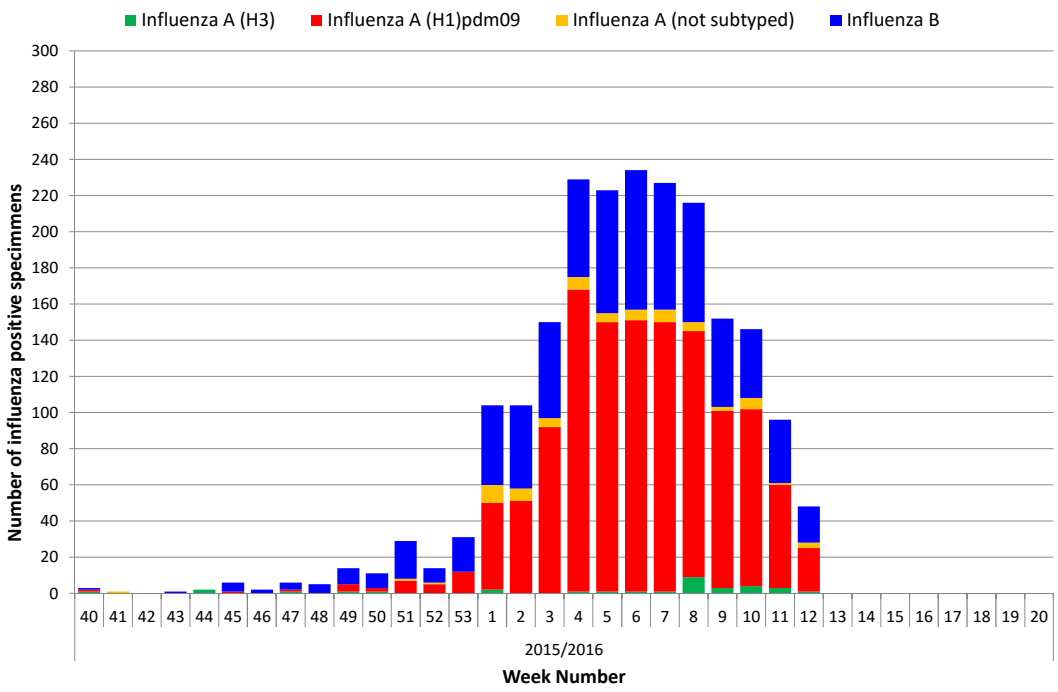

Figure 4: Number of positive influenza specimens by influenza type/subtype from sentinel and non-sentinel sources tested by the NVRL, by week for the 2015/2016 influenza season. *Source: NVRL.*

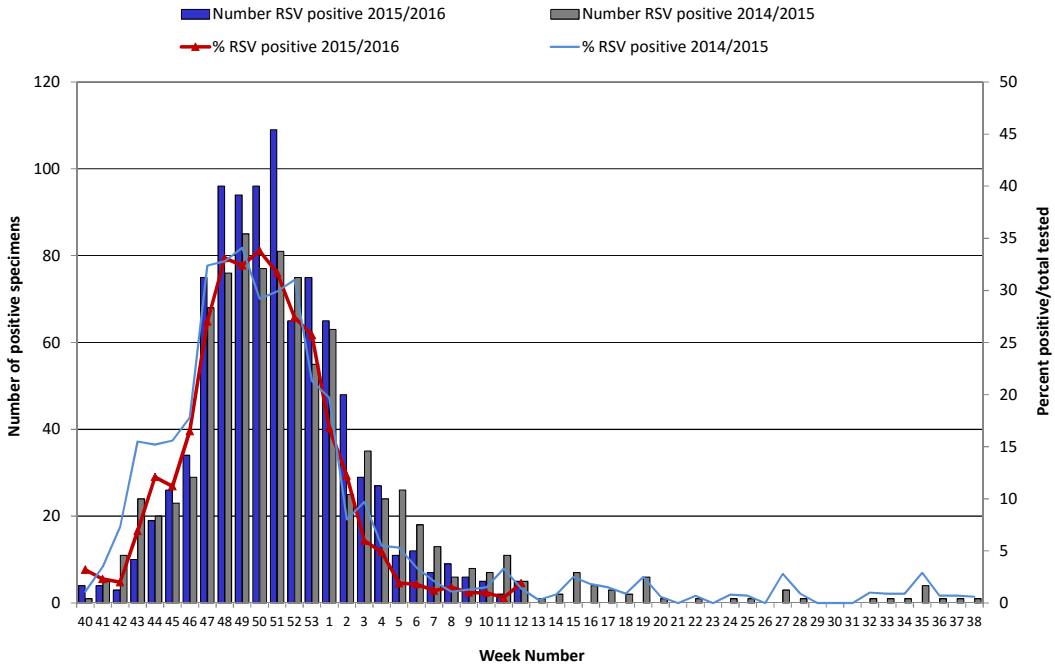

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL by week during the 2015/2016 season, compared to the 2014/2015 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 12 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	
12 2016	Sentinel	14	1	7.1	0	0	0	0	1
	Non-sentinel	264	47	17.8	24	1	3	28	19
	Total	**278**	**48**	**17.3**	**24**	**1**	**3**	**28**	**20**
2015/2016	Sentinel	1076	545	50.7	303	5	7	315	230
	Non-sentinel	9223	1509	16.4	949	27	60	1036	473
	Total	**10299**	**2054**	**19.9**	**1252**	**32**	**67**	**1351**	**703**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 12 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
12 2016	Sentinel	14	0	0.0	1	7.1	0	0.0	0	0.0	0	0.0	0	0.0	1	7.1
	Non-sentinel	264	5	1.9	9	3.4	0	0.0	0	0.0	0	0.0	0	0.0	4	1.5
	Total	**278**	**5**	**1.8**	**10**	**3.6**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**5**	**1.8**
2015/2016	Sentinel	1076	27	2.5	12	1.1	6	0.6	1	0.1	0	0.0	0	0.0	16	1.5
	Non-sentinel	9223	936	10.1	110	1.2	65	0.7	27	0.3	39	0.4	0	0.0	168	1.8
	Total	**10299**	**963**	**9.4**	**122**	**1.2**	**71**	**0.7**	**28**	**0.3**	**39**	**0.4**	**0**	**0.0**	**184**	**1.8**

[†] 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 27, 2016 (week 12 2016) is shown in figure 6. Localised influenza activity was reported in HSE-E and sporadic influenza activity was reported in HSE-M, -MW, -NE, -NW, -SE, -S and -W during week 12 2016.

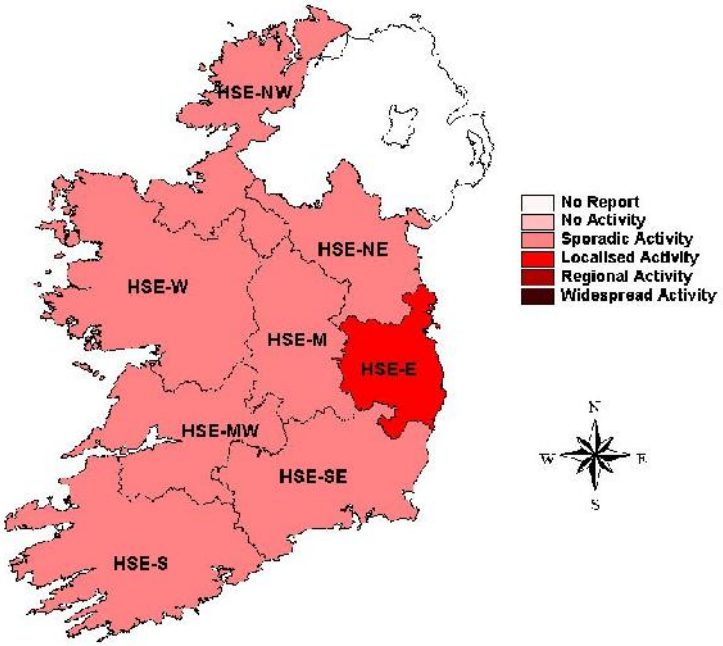

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 12 2016

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 have decreased significantly to 289 during week 11 2016 and 210 during week 12 2016, compared to peak admissions reported during week 51 2015 (n=501) (figure 7). It should be noted that seven of eight sentinel hospitals reported data during week 11 2016 and six of eight sentinel hospitals reported during week 12 2016.

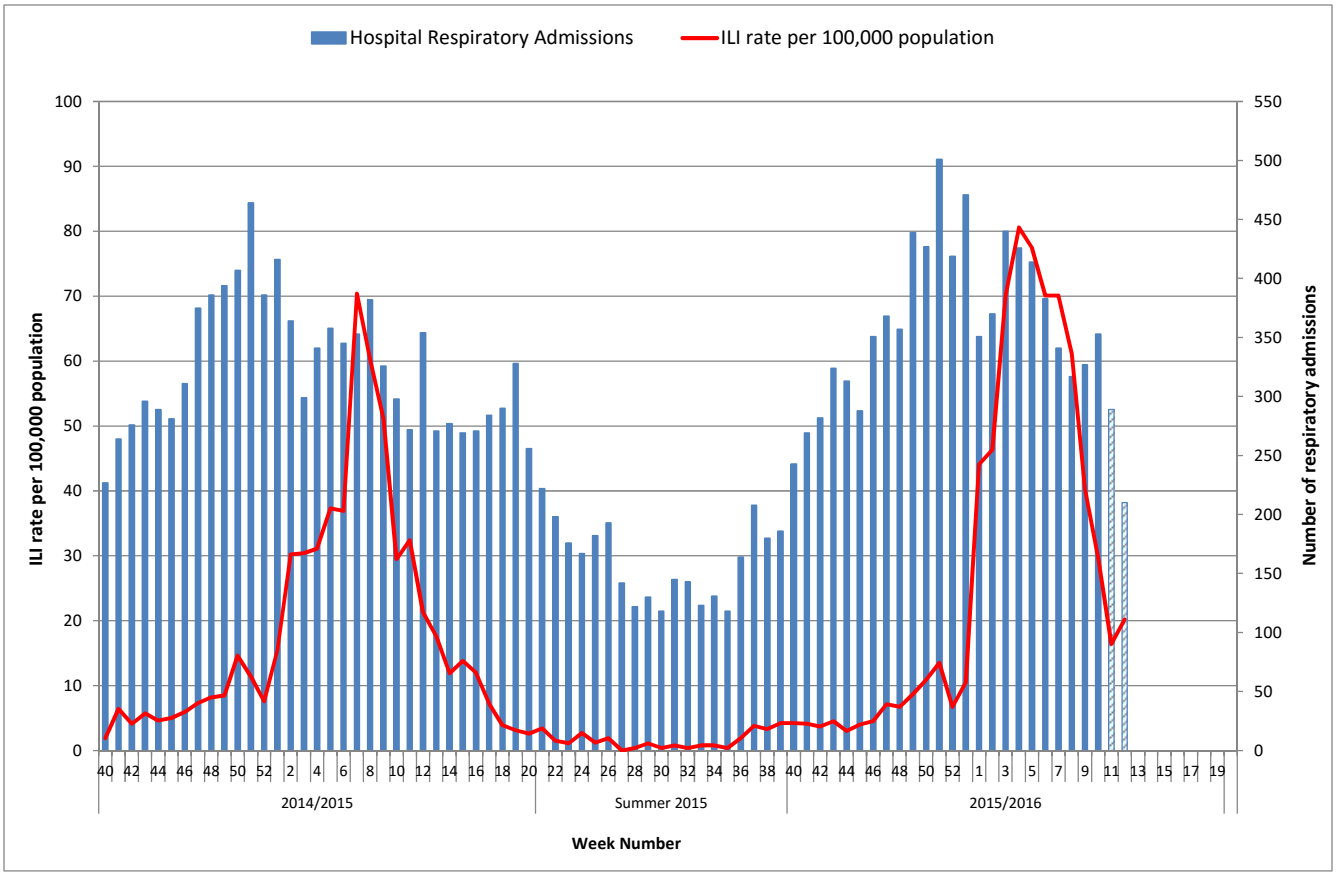

Figure 7: Number of respiratory admissions reported from sentinel hospitals and ILI sentinel GP consultation rate per 100,000 population by week and season. *Source: Departments of Public Health - Sentinel Hospitals & ICGP. Data were missing from one sentinel hospital for week 11 2016 and two sentinel hospitals for week 12 2016; these weeks are represented by the hatched bars.*

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 12 2016 to 2.7%, compared to 3.0% during week 11 2016 (figure 8). For the 2015/2016 season, the proportion of influenza–related calls to GP Out-of-Hours services peaked at 5.1% during week 5 2016.

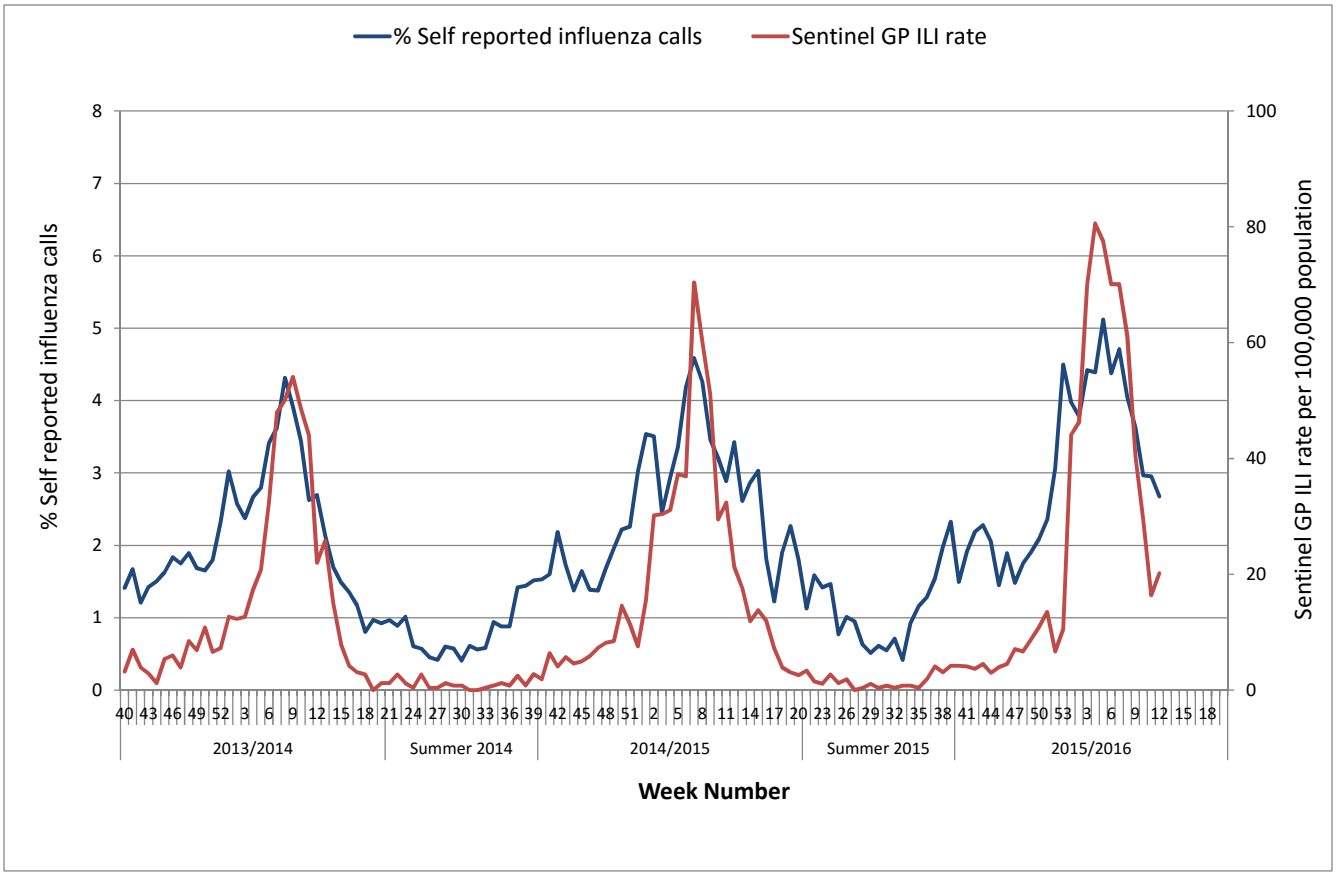

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 week 12 2016, with 6 cases notified. Influenza notifications decreased during week 12 2016, with 177 cases notified, a significant decrease compared to the peak (n=549) in notifications during week 7 2016.

6. Influenza Hospitalisations

During week 12 2016 (week ending March 27, 2016), 89 confirmed influenza hospitalised cases were notified to HPSC, a decrease compared to 113 cases during the previous week. For the 2015/2016 season to date, 1603 confirmed influenza hospitalised cases were notified to HPSC: 849 were associated with influenza A(H1)pdm09, 6 with A(H3), 228 with A (not subtyped) and 520 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 29 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.

Two confirmed influenza cases admitted to critical care units were reported to HPSC since the last surveillance report. For the 2015/2016 season to date, 127 confirmed influenza cases (86 associated with influenza A(H1)pdm09, one with A(H3), 18 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 52 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	93	128.4	11	15.2
1-4	328	115.5	10	3.5
5-14	245	39.3	6	1.0
15-24	78	13.4	2	0.3
25-34	155	20.5	3	0.4
35-44	149	19.7	19	2.7
45-54	99	17.1	15	2.6
55-64	126	27.2	28	6.0
≥65	330	61.6	33	6.2
Total	**1603**	**34.9**	**127**	**2.8**

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/

- Forty-six notified influenza cases died and were reported to HPSC for the 2015/2016 season to date: 30 associated with influenza A(H1)pdm09, eight with influenza A-not subtyped, seven with influenza B and one possible influenza case. 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 12 2016. For the 2015/2016 season to date, excess all-cause mortality was reported during weeks 1, 3 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

- No new acute respiratory infection/influenza general outbreaks were notified to HPSC during week 12 2016 (week ending March 27, 2016).
- To date this season (up to the week ending March 27, 2016), 51 acute respiratory/influenza outbreaks have been reported to HPSC: 28 outbreaks associated with influenza (23 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 11 with unknown pathogens. Thirty-six outbreaks were in community hospital/residential care facilities, ten were in acute hospital settings, two were in schools and three in day-care centres (two of which were 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 21 2016, globally, high levels of influenza activity continued to be reported. In some countries in northern Europe influenza B virus detections were increasing. In North America, influenza activity continued to increase and ARI and pneumonia activity were above thresholds in Mexico. In Northern Temperate Asia, influenza activity was ongoing with increasing levels of influenza B.

In the European Region, influenza activity peaked during weeks 5-7 2016. Influenza A(H1N1)pdm09 viruses have predominated this season in most countries, although in recent weeks there has been a shift towards influenza B circulation. In several European countries there were more reports of severe cases, predominantly associated with A(H1N1)pdm09 and in those aged 15-64 years, than in the previous season. The number of severe cases has been decreasing in recent weeks. Influenza A(H1)pdm09 viruses 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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