Influenza Surveillance in Ireland – Weekly Report

Influenza Week 7 2016 (15th – 21st February 2016)

Intensive Care Society of Ireland

Summary

Influenza activity in Ireland was at moderate to high levels during week 7 2016 (week ending February 21, 2016). Influenza A(H1)pdm09 is the predominant virus circulating. Reports of hospitalisations/ICU admissions associated with influenza and influenza outbreaks remain elevated. 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 71.1 per 100,000 population in week 7 2016, remaining stable compared to the updated rate of 72.0 per 100,000 reported during week 6 2016.
    - ILI rates remained above the Irish baseline ILI threshold (18 per 100,000 population).
    - ILI age specific rates were highest in the 5-14 year age group.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services decreased, however remained elevated.
- National Virus Reference Laboratory (NVRL): Influenza positivity reported from the NVRL for all respiratory specimens (sentinel and non-sentinel) remained elevated at 29.4% during week 7 2016, compared to 30.3% during the previous week. Of 561 sentinel and non-sentinel specimens tested, 165 were influenza positive: 103 A(H1)pdm09, 1 A(H3), 7 A(not subtyped) and 54 B.
    - Influenza A(H1)pdm09 is the predominant virus circulating; co-circulating with influenza B.
    - Influenza A(H1)pdm09 positivity remains high, accounting for 62.4% of all flu positive specimens.
    - RSV activity has continued to decline and 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 decreased for the fourth consecutive week during week 7 2016.
- Hospitalisations: 886 confirmed influenza hospitalised cases were notified to HPSC for the 2015/2016 season to date: 460 were associated with influenza A(H1)pdm09, 3 with A(H3), 136 with A (not subtyped) and 287 with influenza B.
- Critical care admissions: 15 confirmed influenza cases admitted to critical care units were reported to HPSC since the last surveillance report, bringing the season total to 85 cases.
- Mortality: 25 confirmed influenza cases died and were reported to HPSC for the 2015/2016 season.
- Outbreaks: Six confirmed influenza outbreaks were notified to HPSC during week 7 2016, two in HSE-E and one in each of the following: HSE-MW, -NW, -SE and -S.
- International: Overall, influenza activity has continued to increase in Europe, with influenza A(H1N1)pdm09 viruses predominating this season to date.

1. GP sentinel surveillance system - Clinical Data

- During week 7 2016, 197 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 71.1 per 100,000 population, remaining stable compared to the updated rate of 72.0 per 100,000 reported during week 6 2016. ILI rates remain above the Irish baseline ILI threshold (18/100,000 population) and medium intensity ILI threshold (57/100,000 population) (figure 1).
- ILI age specific rates were highest in the 5-14 year age group, at 85.1/100,000 population, during week 7 2016. Age specific rates decreased in the 0-4 and 5-14 year age groups and increased in the 15-64 year age group and in those aged 65 years and older during week 7 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.

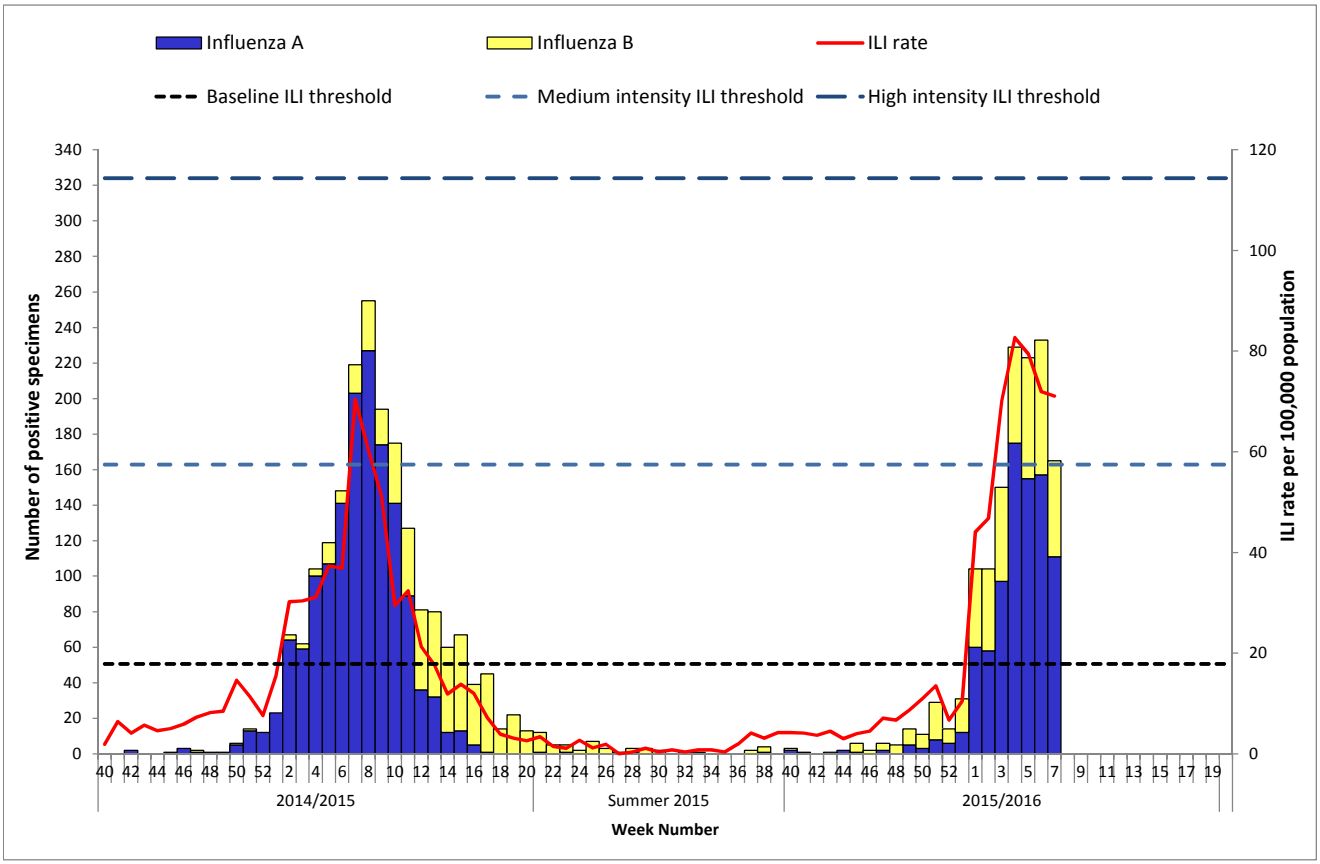

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[1] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

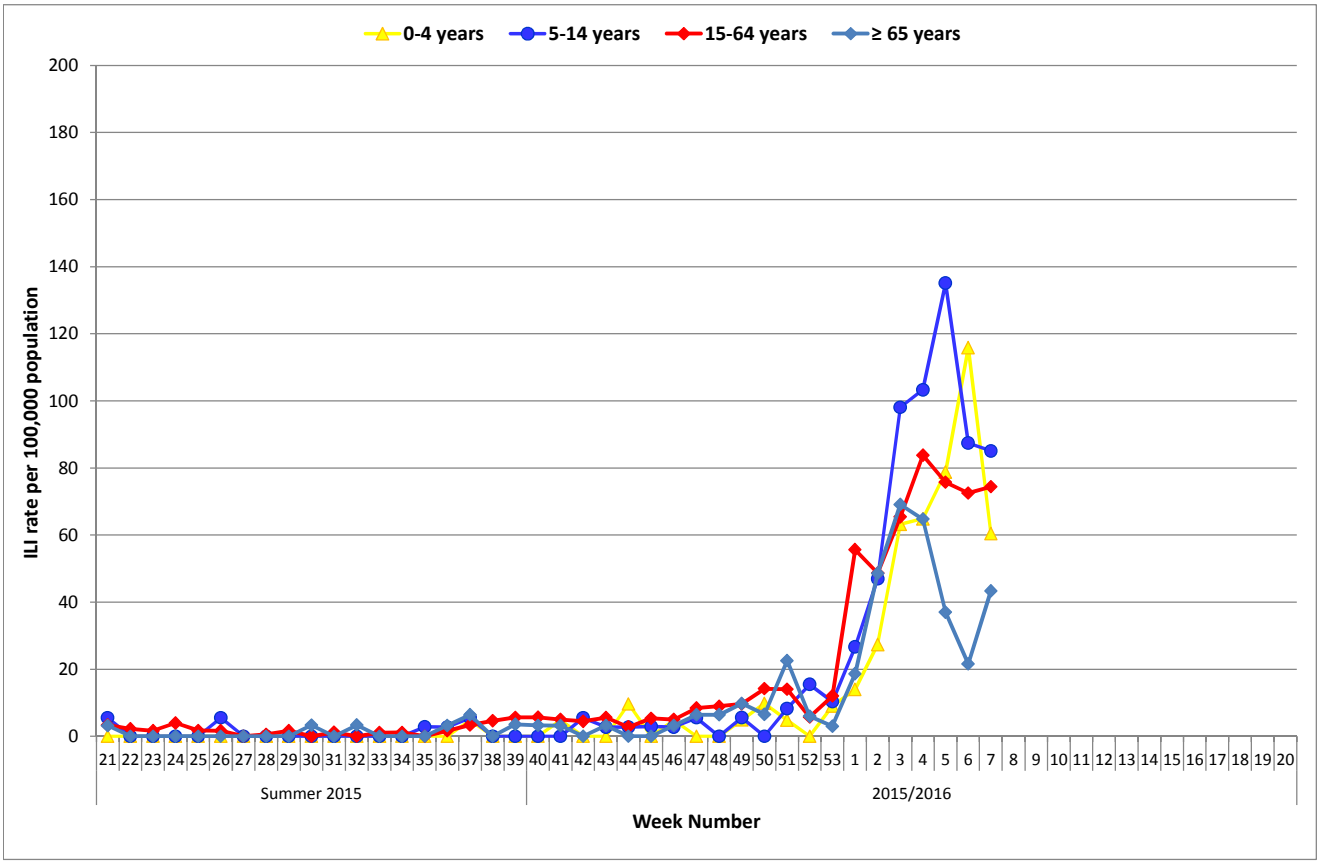

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2015 and the 2015/2016 influenza season to date. *Source: ICGP.*

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) remained elevated at 29.4% during week 7 2016, compared to 30.3% during the previous week. Of 561 sentinel and non-sentinel specimens tested, 165 were influenza positive: 103 A(H1)pdm09, 1 A(H3), 7 A (not subtyped) and 54 B.
    - During week 7 2016, 62% of influenza positive specimens were influenza A(H1)pdm09 and 33% were influenza B. Influenza B positivity has remained stable for the last three weeks, at 30-33%. Influenza A(H1)pdm09 positivity remained elevated, following a peak during week 4 2016.
- Influenza A(H1)pdm09 was the predominant virus circulating in Ireland during week 7 2016, co-circulating with influenza B (figures 3 & 4).
- Data from the NVRL for week 7 2016 and the 2015/2016 season to date are detailed in tables 1 and 2.
- RSV positivity has continued to decrease, following the RSV peak in week 51 2015. Six (6/561; 1.1%) respiratory syncytial virus (RSV) positive sentinel and non-sentinel specimens were reported during week 7 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.
- Nine adenovirus, nine human metapneumovirus (hMPV) and two parainfluenza virus positive sentinel and non-sentinel specimens were reported by the NVRL during week 7 2016 (table 2).
- The overall proportion of non-sentinel specimens positive for seasonal respiratory viruses* remained high, at 30.7% during week 7 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 28 influenza positive specimens to date. Seventeen 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.
- In Ireland, further genetic testing is ongoing, and the NVRL and HPSC are carefully monitoring the situation.

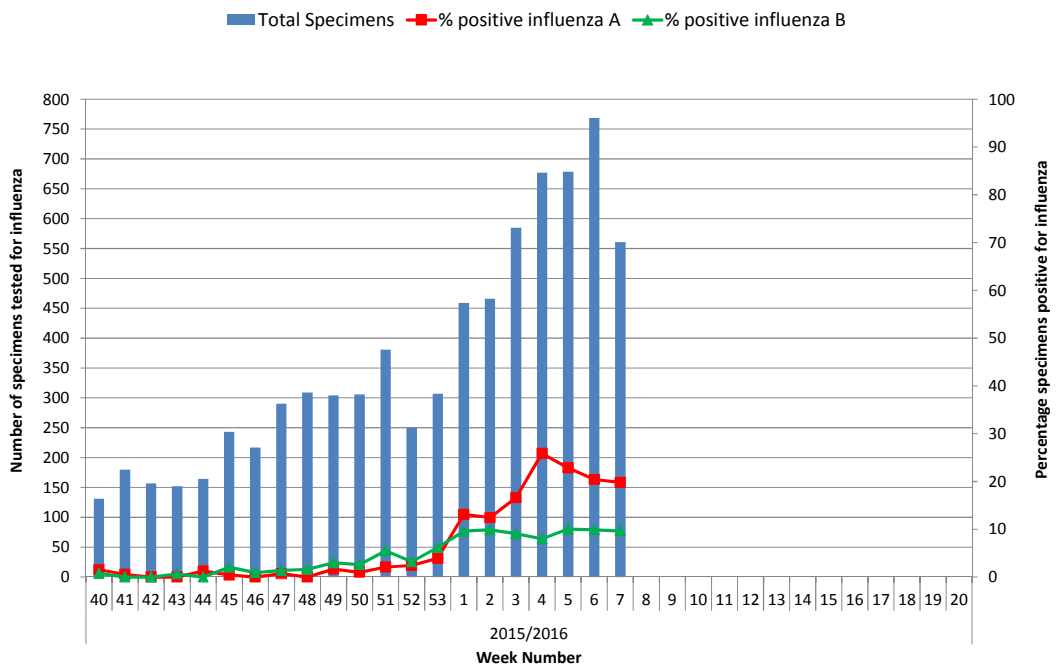

Figure 3: Number of sentinel and non-sentinel specimens tested by the NVRL for influenza and percentage influenza positive by week for the 2015/2016 influenza season. *Source: NVRL*

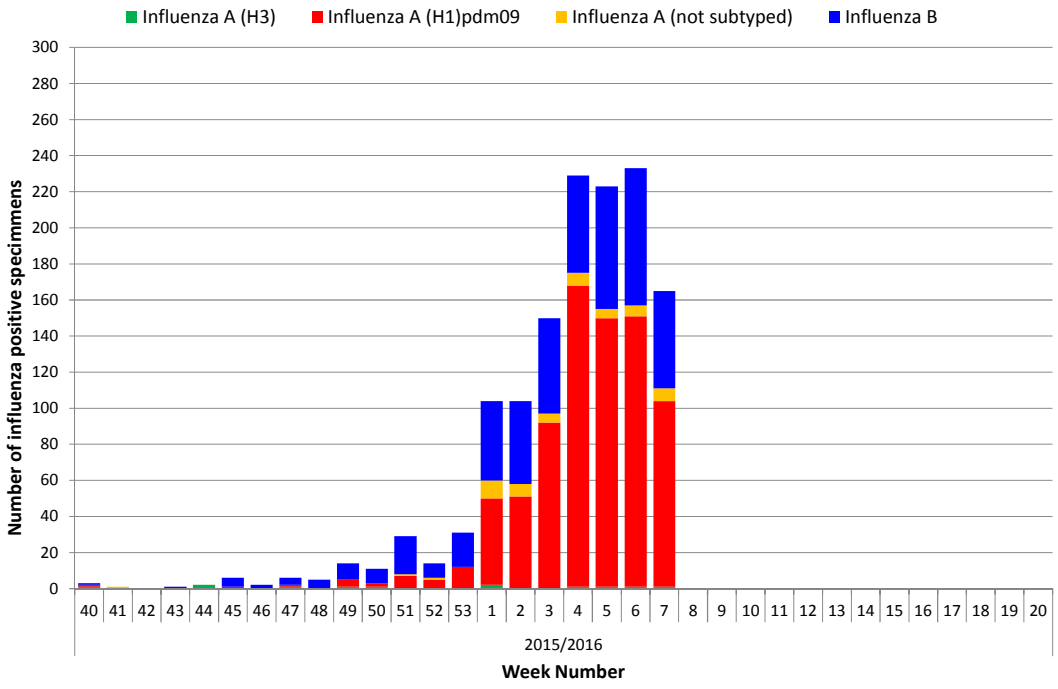

Figure 4: Number of positive influenza specimens by influenza type/subtype from sentinel and non-sentinel sources tested by the NVRL, by week for the 2015/2016 influenza season. *Source: NVRL.*

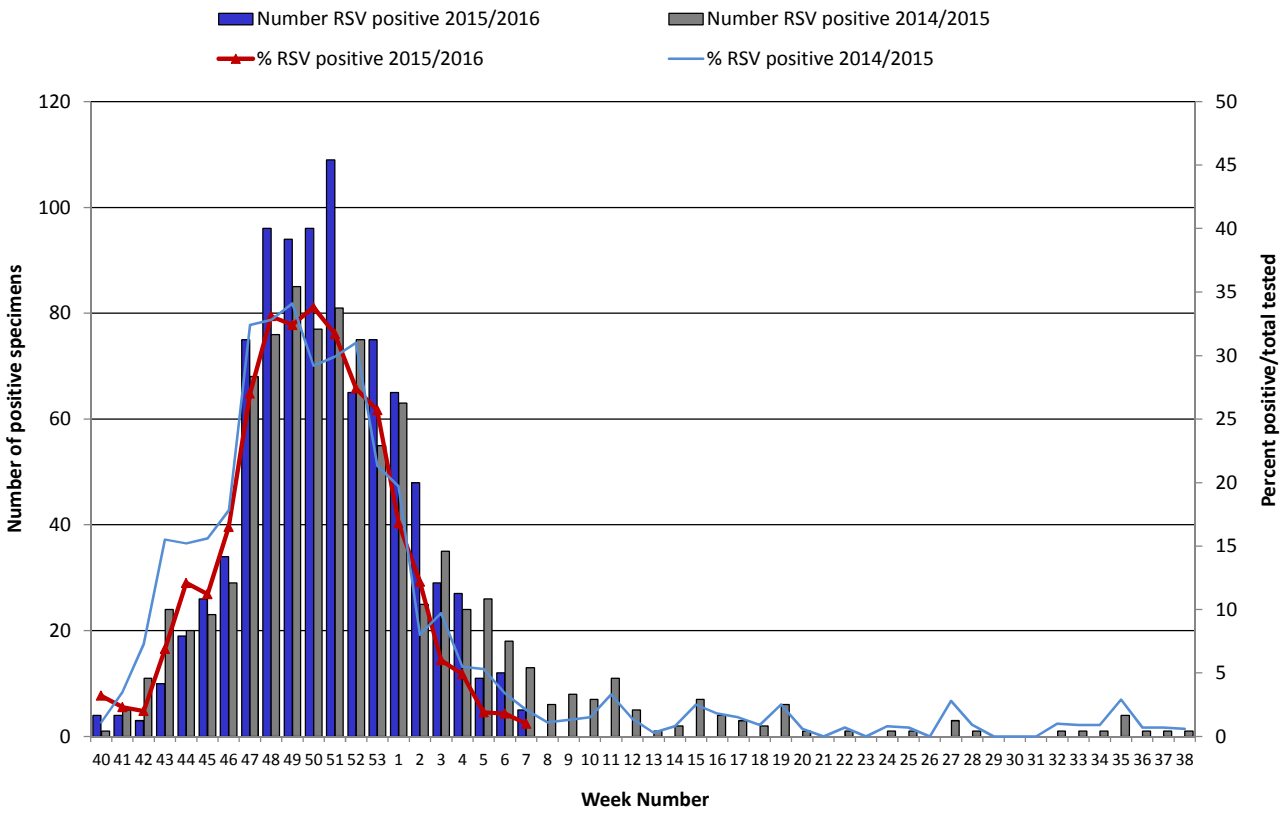

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL by week during the 2015/2016 season, compared to the 2014/2015 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 7 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	
7 2016	Sentinel	62	36	58.1	18	1	0	19	17
	Non-sentinel	499	129	25.9	85	0	7	92	37
	Total	**561**	**165**	**29.4**	**103**	**1**	**7**	**111**	**54**
2015/2016	Sentinel	817	412	50.4	228	3	7	238	174
	Non-sentinel	6770	921	13.6	565	9	43	617	304
	Total	**7587**	**1333**	**17.6**	**793**	**12**	**50**	**855**	**478**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 7 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
7 2016	Sentinel	62	1	1.6	1	1.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Non-sentinel	499	5	1.0	8	1.6	1	0.2	1	0.2	0	0.0	0	0.0	9	1.8
	Total	**561**	**6**	**1.1**	**9**	**1.6**	**1**	**0.2**	**1**	**0.2**	**0**	**0.0**	**0**	**0.0**	**9**	**1.6**
2015/2016	Sentinel	817	26	3.2	10	1.2	6	0.7	1	0.1	0	0.0	0	0.0	14	1.7
	Non-sentinel	6770	907	13.4	70	1.0	65	1.0	26	0.4	31	0.5	0	0.0	147	2.2
	Total	**7587**	**933**	**12.3**	**80**	**1.1**	**71**	**0.9**	**27**	**0.4**	**31**	**0.4**	**0**	**0.0**	**161**	**2.1**

[†] 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 February 21, 2016 (week 7 2016) is shown in figure 6. Widespread influenza activity was reported in HSE-E, -SE, -S, -MW and –W, regional influenza activity was reported in HSE-NE and -NW and localised influenza activity HSE-M during week 7 2016.

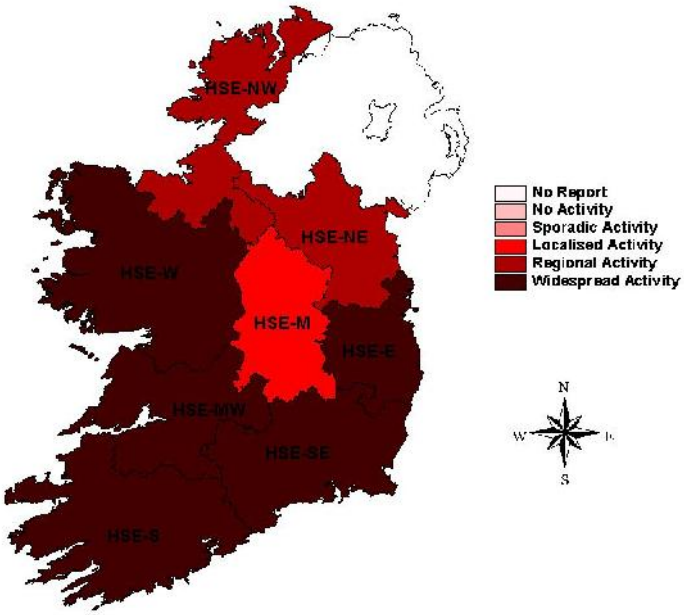

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 7 2016

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 decreased for the fourth consecutive week during week 7 2016 to 331, compared to 383 during the previous week (figure 7). It should be noted that data were missing from one sentinel hospital during week 7 2016.

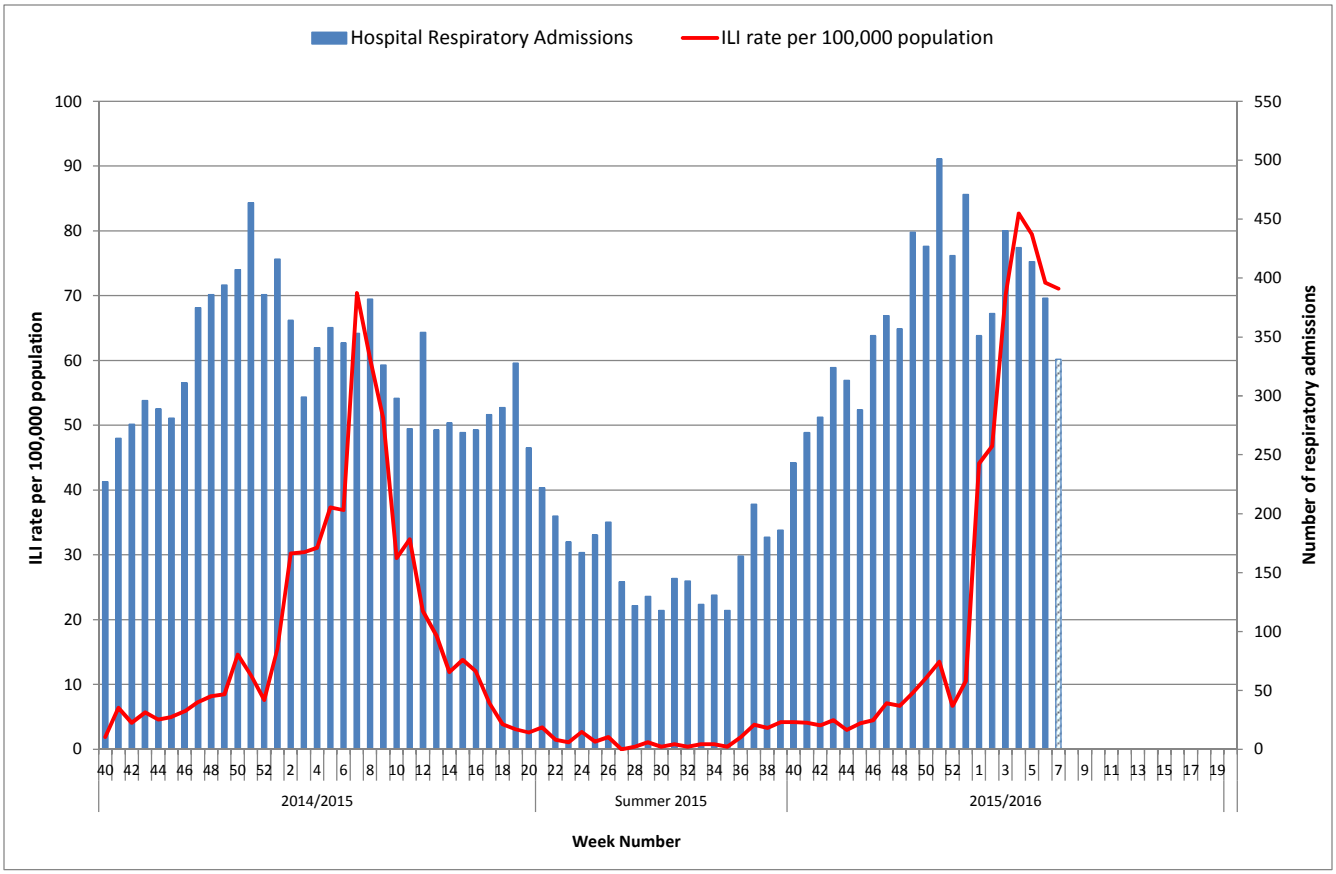

Figure 7: Number of respiratory admissions reported from sentinel hospitals and ILI sentinel GP consultation rate per 100,000 population by week and season. *Source: Departments of Public Health - Sentinel Hospitals & ICGP. Data were missing from one sentinel hospital for week 7 2016; hatched area.*

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 slightly during week 7 2016 to 4.2%, compared to 4.4% during week 6 2016 (figure 8).

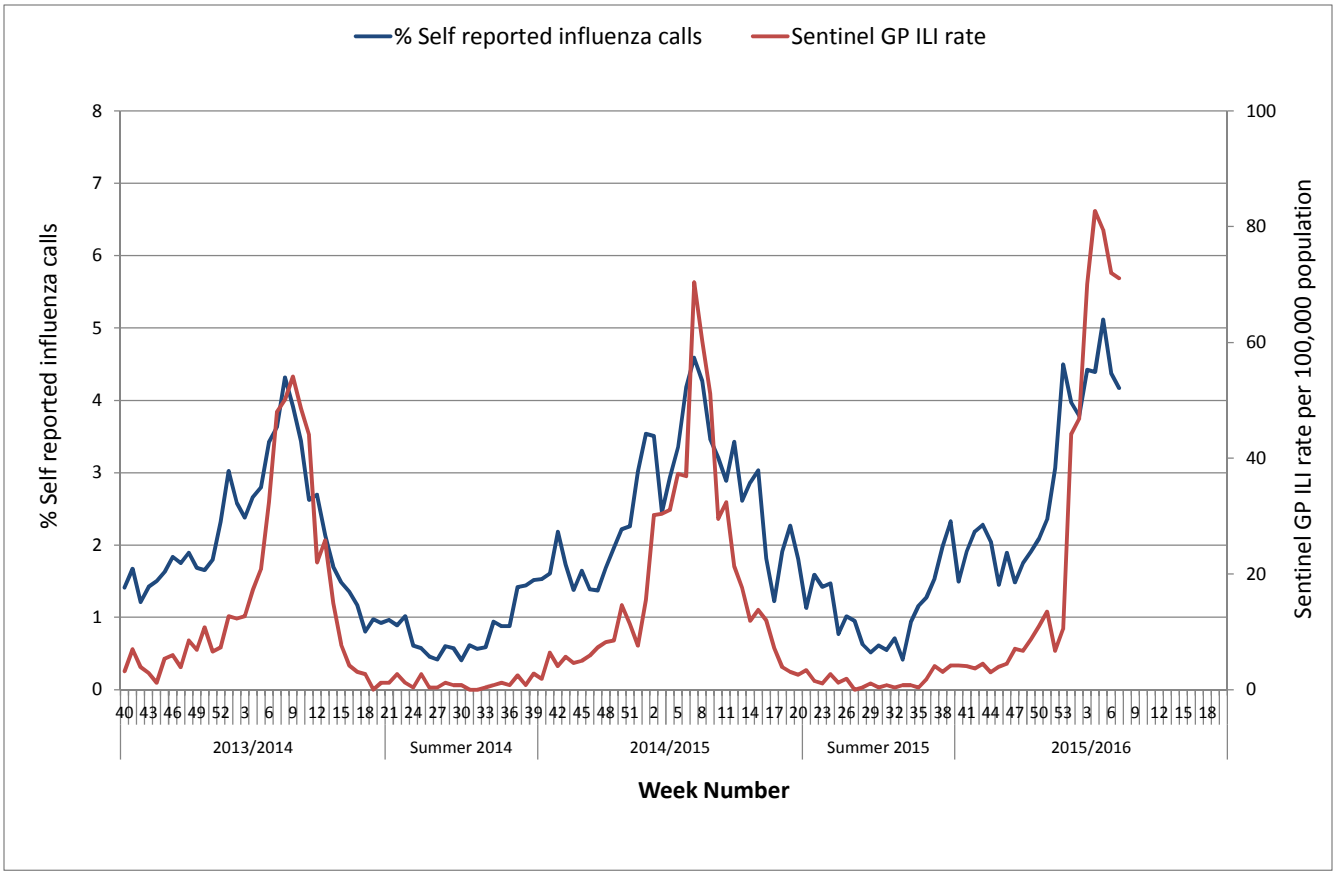

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 continued to decrease during the week ending February 21, 2016, with 23 cases notified, compared to 36 during the previous week. Influenza notifications increased further during the week ending February 21, 2016, with 551 cases notified, compared to 410 during the previous week.

6. Influenza Hospitalisations

During week 7 2016 (week ending 21/02/2016), 210 confirmed influenza hospitalised cases were notified to HPSC, bringing the 2015/2016 season total to 886. Of these 886 notified hospitalised cases: 460 were associated with influenza A(H1)pdm09, 3 with A(H3), 136 with A (not subtyped) and 287 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 27 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.

Fifteen confirmed influenza cases admitted to critical care units were reported to HPSC since the last surveillance report. For the 2015/2016 season to date, 85 confirmed influenza cases (54 associated with influenza A(H1)pdm09, 14 with influenza A-not subtyped and 17 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, followed by those aged 55-64 years. 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	50	69.1	8	11.0
1-4	173	60.9	3	1.1
5-14	146	23.4	4	0.6
15-24	55	9.5	0	0.0
25-34	89	11.8	3	0.4
35-44	87	11.5	13	1.9
45-54	56	9.7	13	2.2
55-64	74	16.0	23	5.0
≥65	156	29.1	18	3.4
Total	**886**	**19.3**	**85**	**1.9**

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/

- Twenty-five confirmed influenza cases (19 associated with influenza A(H1)pdm09, two with influenza A-not subtyped and four 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 7 2016. For the 2015/2016 season to date, excess all-cause mortality was reported during week 1 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

- Six confirmed influenza outbreaks were notified to HPSC during week 7 2016 (week ending 21/02/2016), two in HSE-E and one in each of the following: HSE-MW, -NW, -SE and -S. Five outbreaks were associated with influenza A(H1)pdm09 (three in acute hospital settings and two in residential care facilities) and one outbreak was associated with influenza B in a community hospital.
- To date this season (up to the week ending February 21, 2016), 37 acute respiratory/influenza outbreaks have been reported to HPSC: 17 outbreaks associated with influenza (14 with influenza A(H1)pdm09, one with influenza A –not subtyped and two with influenza B), eight with RSV, two with parainfluenza type 1, two with hMPV and eight with unknown pathogens. Twenty-seven outbreaks were in community hospital/residential care facilities, seven were in acute hospital settings, two were in schools and one in a day-care centre 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 February 22 2016, globally, influenza activity in the northern hemisphere continued to increase. Increasing influenza A(H1N1)pdm09 activity continued to be reported in northern, eastern and southern Europe. Belarus, Greece and Ireland reported high-intensity influenza activity and Finland, the Russian Federation and Ukraine reported very high activity. Influenza A(H1N1)pdm09 viruses predominated. In North America, northern Africa, central and western Asia, increasing activity predominantly of influenza A(H1N1)pdm09 virus was observed. In the temperate countries of northern Asia, activity was ongoing with various proportions of circulating seasonal influenza viruses.

Cases of severe disease, mainly in people aged 15–64 years, increased further in Europe during week 6 2016, mainly associated with influenza A(H1N1)pdm09. In Europe, the vast majority of subtyped influenza A viruses were A(H1N1)pdm09, and B viruses ascribed to a lineage were B/Victoria. 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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