Influenza Surveillance in Ireland – Weekly Report

Influenza Week 49 2016 (5th – 11th December 2016)

Summary

Influenza activity in Ireland has increased and is now above baseline levels during week 49 2016 (week ending December 11, 2016). Influenza A(H3) is the predominant influenza virus circulating this season to date. Confirmed influenza hospitalisations and acute respiratory infection outbreaks in community hospitals/residential care facilities have increased. Respiratory admissions reported from a network of sentinel hospitals were at high levels.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 25.8 per 100,000 population in week 49 2016, an increase compared to the updated rate of 15.5 per 100,000 reported during week 48 2016.
  - ILI rates are above the Irish baseline threshold (18.3 per 100,000 population).
  - ILI rates increased in all age groups, compared to the previous week.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services increased during week 49 2016, compared to the previous week.
- National Virus Reference Laboratory (NVRL):
  - Influenza positivity increased during week 49 2016, with 50 (12.6%) influenza positive specimens reported from the NVRL from sentinel GP and non-sentinel sources. All were positive for influenza A(H3).
  - Influenza A(H3) is the predominant circulating influenza virus this season to date.
  - Positive detections of respiratory syncytial virus (RSV) remained at high levels, however levels started to decrease during week 49 2016. RSV circulated earlier and at higher levels this season than are normally observed.
  - Human metapneumovirus (hMPV), adenovirus and parainfluenza virus positive detections continue to be reported. Coinfections of seasonal respiratory viruses are also being reported.
- Respiratory admissions: The latest respiratory admissions data reported from a network of sentinel hospitals remained at high levels.
- Hospitalisations: 26 confirmed influenza hospitalised cases were notified to HPSC during week 49 2016. The majority of hospitalised cases have been associated with influenza A.
- Critical care admissions: Three confirmed influenza A cases have been admitted to critical care units and reported to HPSC this season to date.
- Mortality: One confirmed influenza case died and was notified to HPSC during week 49 2016; this is the first influenza-associated death reported this season.
- Outbreaks: Eight acute respiratory infection/influenza outbreaks were reported to HPSC during week 49 2016, bringing the season total to 16.
- International: Influenza activity is increasing in some countries of the European Region; however, overall activity remained at low levels. The majority of influenza viruses detected to date this season in the European Region were influenza A, with most of those subtyped being A(H3N2).

1. GP sentinel surveillance system - Clinical Data

- During week 49 2016, 63 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 25.8 per 100,000 population, an increase compared to the updated rate of 15.5 per 100,000 reported during week 48 2016. The ILI rate for week 49 2016 was above the Irish baseline ILI threshold (18.3/100,000 population) (figure 1).
- ILI age specific rates increased in all age groups during week 49 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 2016/2017 influenza season to 18.3 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 (58.7/100,000 population) and high (113.3/100,000 population) intensity ILI thresholds are shown in figure 1.

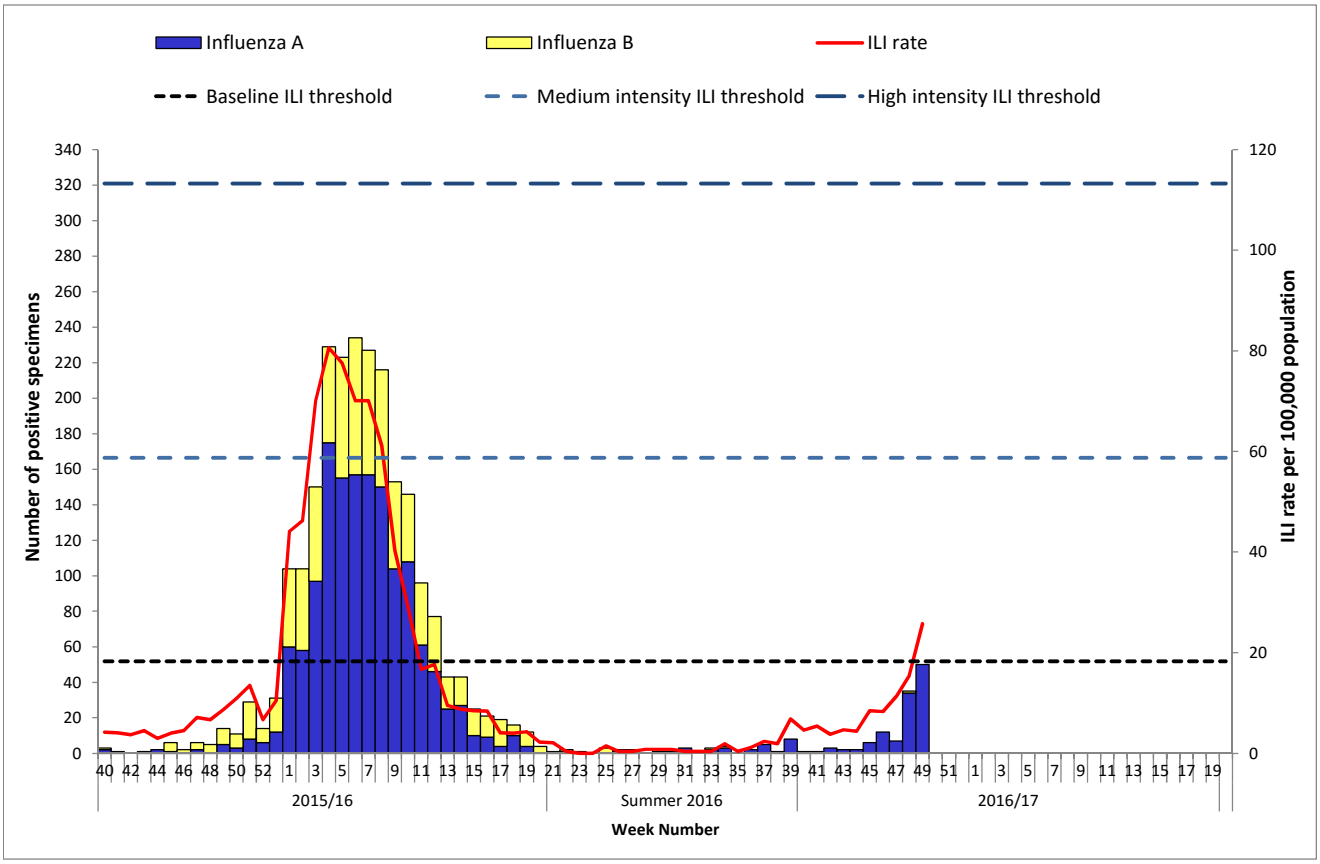

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[1] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

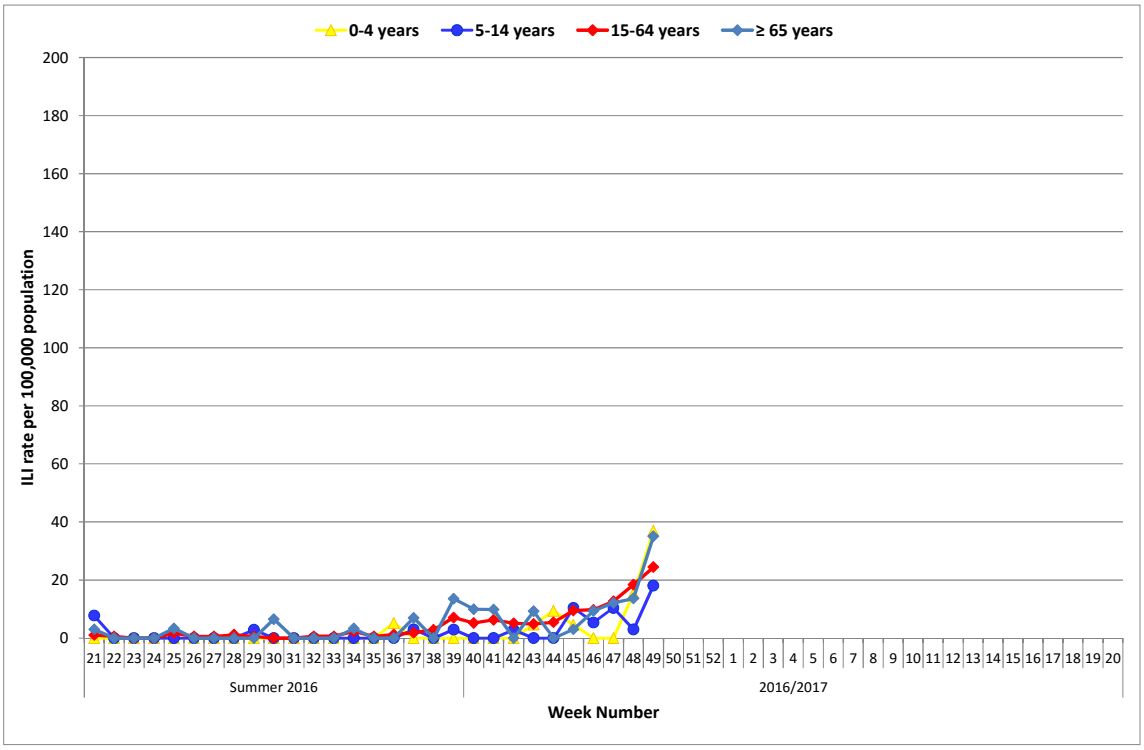

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2016 and the 2016/2017 influenza season to date. *Source: ICGP.*

2. Influenza and Other Respiratory Virus Detections - NVRL

The data reported in this section for the 2016/2017 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 increased during week 49 2016, with 50 (12.6%) influenza positive specimens reported, all of which were positive for influenza A(H3).
    - 12 of 36 (33.3%) sentinel specimens were influenza positive, all were positive for A(H3).
    - 38 of 361 (10.5%) non-sentinel specimens were influenza positive, all were positive for A(H3).
- Influenza A(H3) is the predominant influenza virus circulating this season to date.
- Data from the NVRL for week 49 2016 and the 2016/17 season to date are detailed in tables 1 and 2.
- Respiratory syncytial virus (RSV) positivity remained at high levels, with 104 (28.8%; n=361) positive non-sentinel specimens reported by the NVRL during week 49 2016. In total 686 RSV positive non-sentinel specimens have been detected by the NVRL this season. RSV has circulated earlier this season and at higher levels than are normally observed. Figure 5 shows the number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2016/17 season, compared to the 2015/16 season. For the 2016/17 season to date, 15 RSV positive specimens have been detected from sentinel GP sources.
- Human metapneumovirus (hMPV), adenovirus and parainfluenza virus (PIV) positive specimens were reported by the NVRL during week 49 2016 (table 2). Coinfections of all seasonal respiratory viruses* were reported over recent weeks.
- The overall proportion of non-sentinel specimens positive for respiratory viruses*, remained elevated during week 49 2016, at 42.9%, compared to 46.5% during week 48 2016.

  ** Respiratory viruses routinely tested for by the NVRL are detailed above.*

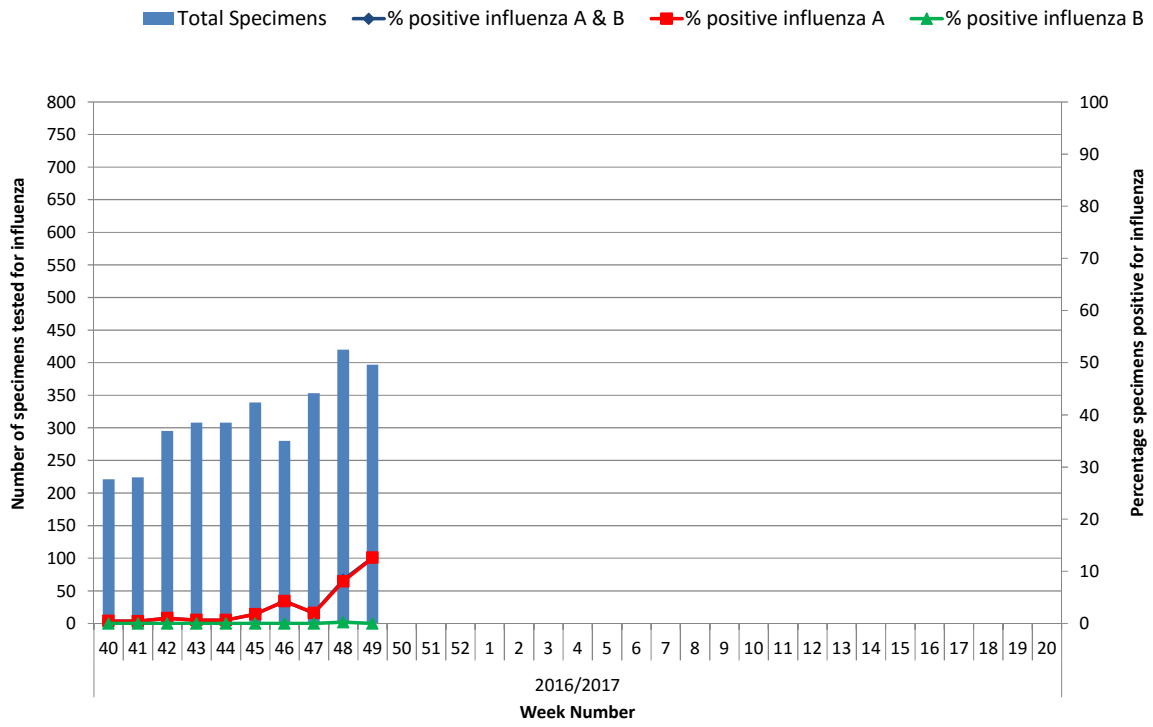

Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2016/2017 influenza season. *Source: NVRL*

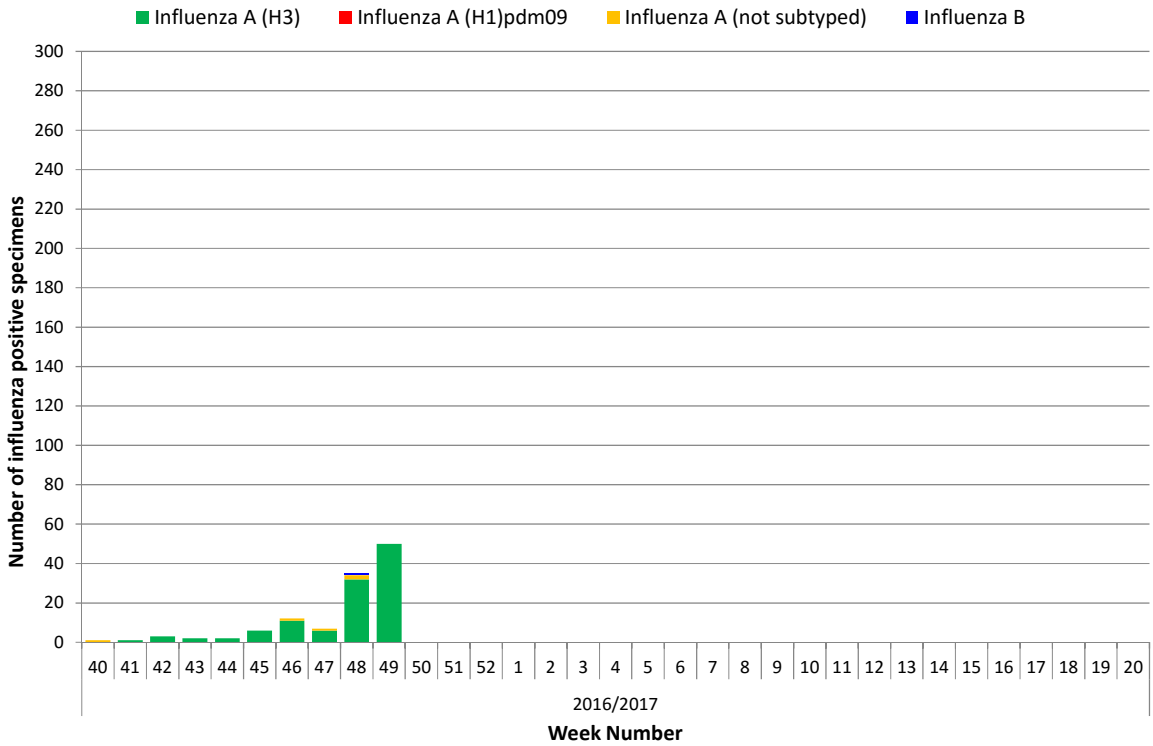

Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2016/2017 influenza season. *Source: NVRL.*

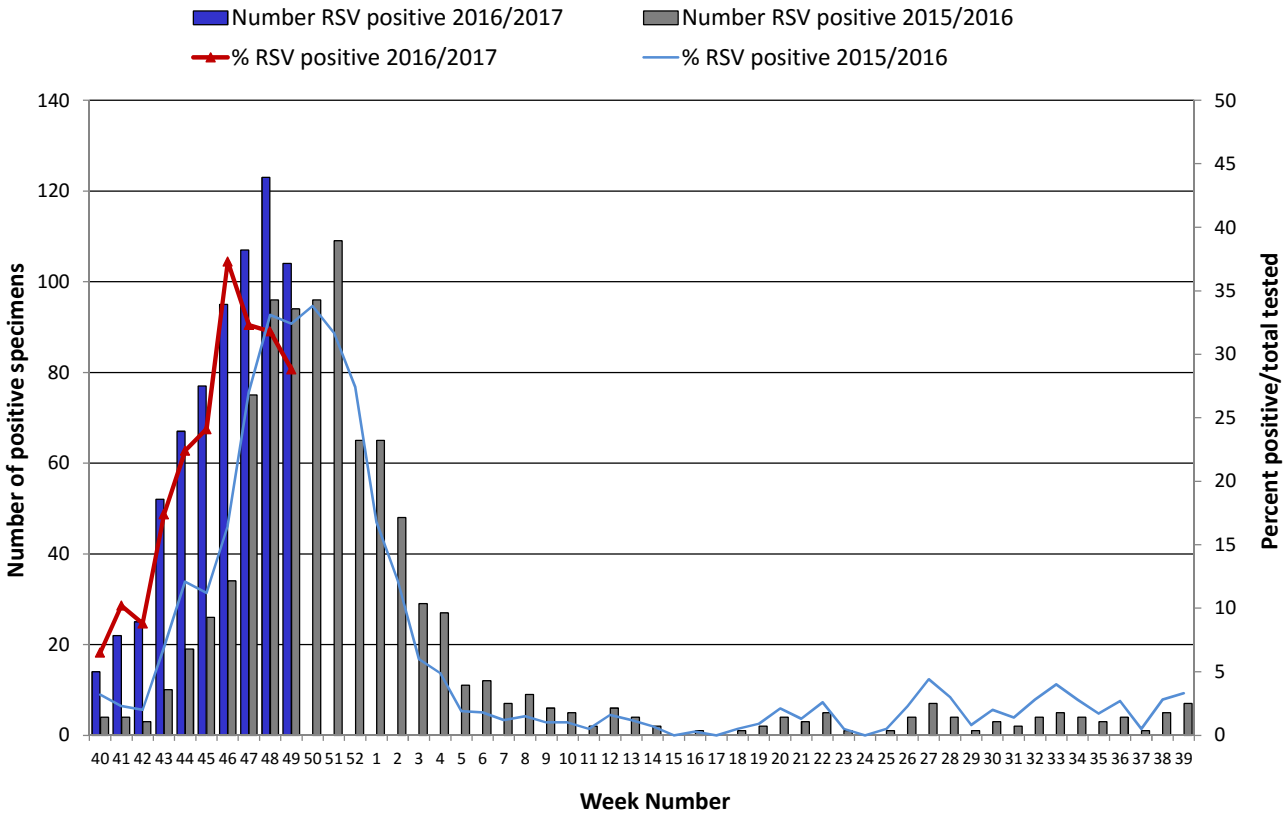

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2016/2017 season, compared to the 2015/2016 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 49 2016 and the 2016/2017 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	
49 2016	Sentinel	36	12	33.3	0	12	0	12	0
	Non-sentinel	361	38	10.5	0	38	0	38	0
	Total	**397**	**50**	**12.6**	**0**	**50**	**0**	**50**	**0**
2016/2017	Sentinel	177	27	15.3	0	27	0	27	0
	Non-sentinel	2968	92	3.1	0	86	5	91	1
	Total	**3145**	**119**	**3.8**	**0**	**113**	**5**	**118**	**1**

Table 2: Number of sentinel and non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 49 2016 and the 2016/2017 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
49 2016	Sentinel	36	2	5.6	1	2.8	0	0.0	0	0.0	0	0.0	0	0.0	3	8.3
	Non-sentinel	361	104	28.8	3	0.8	0	0.0	1	0.3	2	0.6	0	0.0	7	1.9
	Total	**397**	**106**	**26.7**	**4**	**1.0**	**0**	**0.0**	**1**	**0.3**	**2**	**0.5**	**0**	**0.0**	**10**	**2.5**
2016/2017	Sentinel	177	15	8.5	1	0.6	0	0.0	0	0.0	3	1.7	2	1.1	9	5.1
	Non-sentinel	2968	686	23.1	50	1.7	0	0.0	10	0.3	39	1.3	40	1.3	63	2.1
	Total	**3145**	**701**	**22.3**	**51**	**1.6**	**0**	**0.0**	**10**	**0.3**	**42**	**1.3**	**42**	**1.3**	**72**	**2.3**

[†] 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 week 49 2016 is shown in figure 6. Localised influenza activity was reported in HSE-S and –SE and sporadic activity was reported in all other areas during week 49 2016.

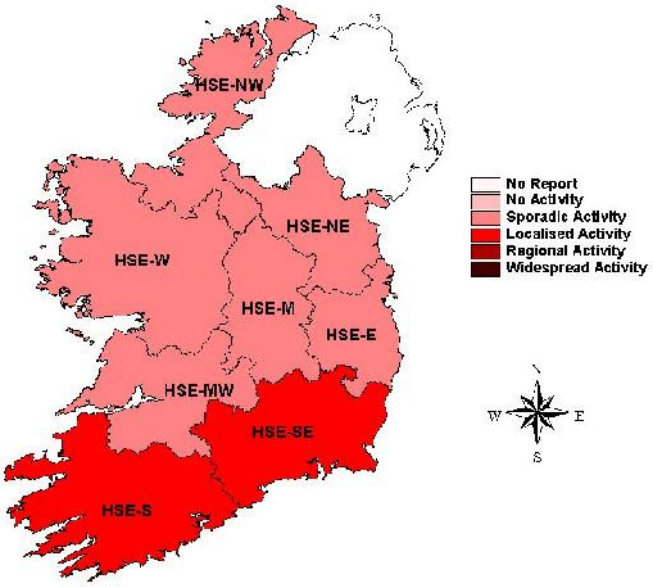

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 49 2016

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 2016/2017 influenza season, eight sentinel hospitals are regularly reporting respiratory admissions data in a timely manner.

Respiratory admissions reported from a network of sentinel hospitals remained high during week 49 2016, at 469 (figure 7). It should be noted that data were incomplete at the time of publication of this report, with data missing from one of eight sentinel hospitals during weeks 48 and 49 2016.

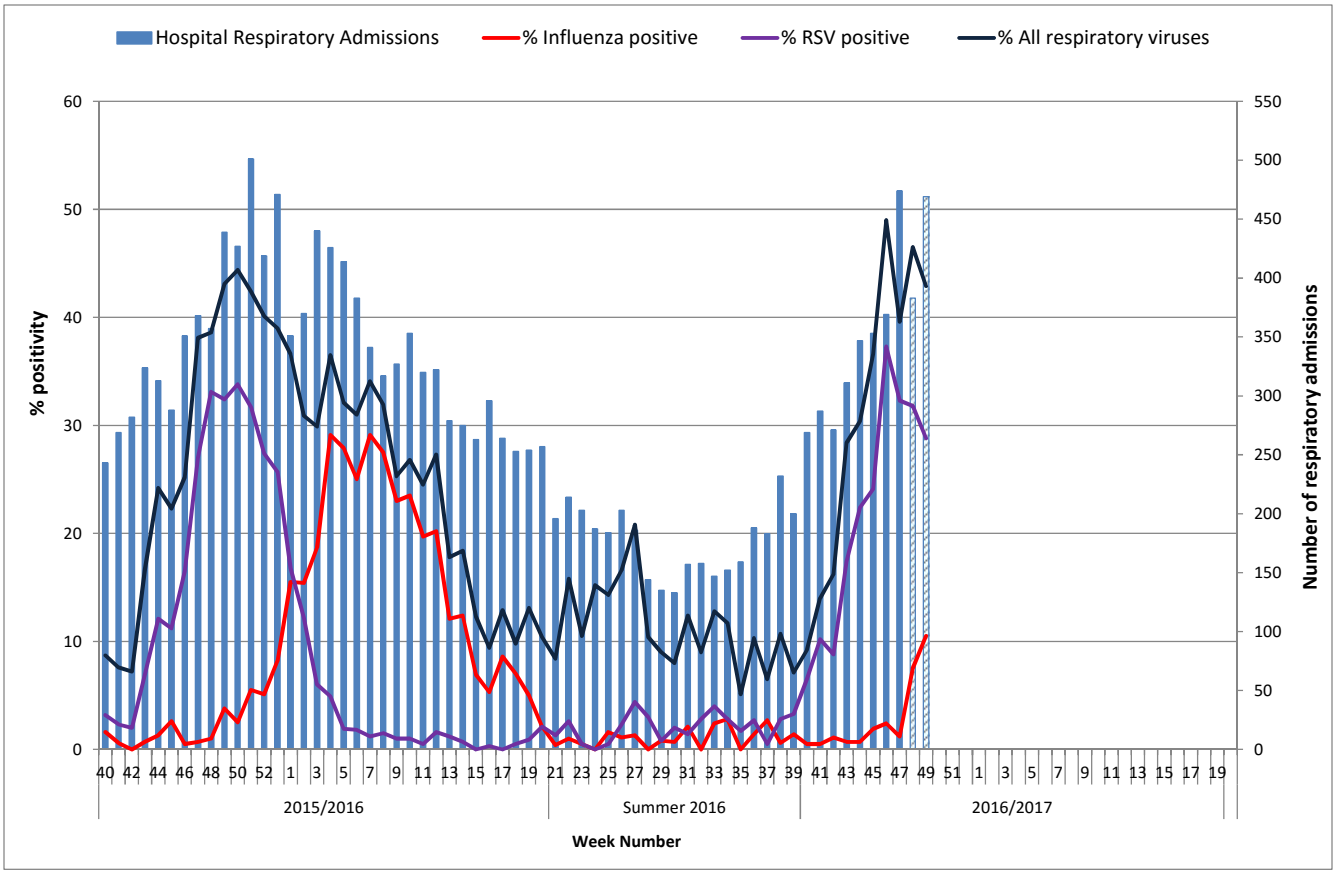

Figure 7: Number of respiratory admissions reported from sentinel hospitals and % positivity for influenza, RSV and all respiratory viruses tested* by the NVRL by week and season. *Source: Departments of Public Health - Sentinel Hospitals & NVRL. *All respiratory viruses tested refer to non-sentinel respiratory specimens routinely tested by the NVRL including influenza, RSV, adenovirus, parainfluenza viruses and human metapneumovirus (hMPV). Data were incomplete during weeks 48 and 49 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 increased during week 49 2016 to 2.9%, compared to 2.0% during week 48 2016 (figure 8).

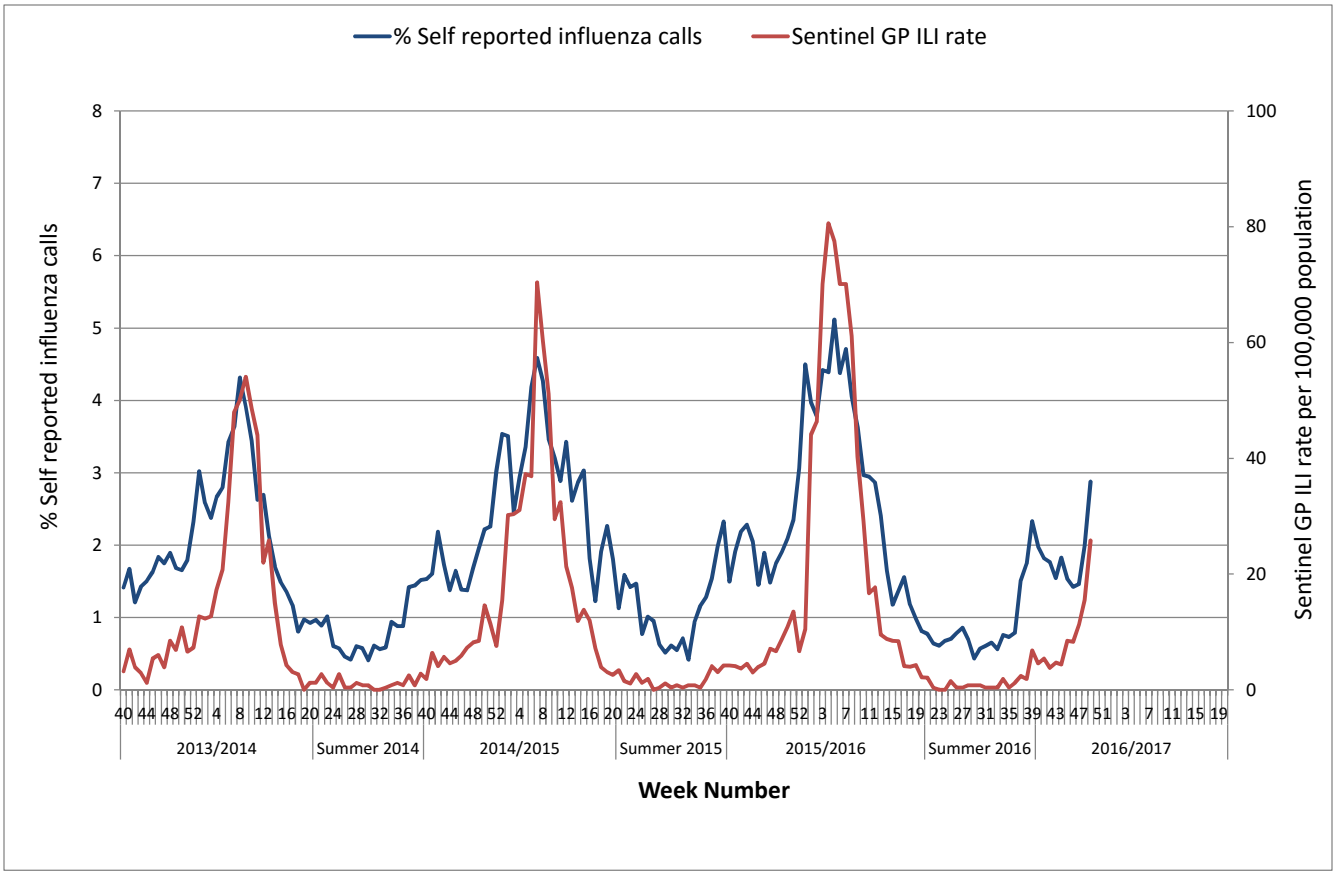

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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. Influenza notifications continued to increase during week 49 2016, with 57 confirmed influenza cases notified: 30 A(H3) and 27 A (not subtyped). RSV notifications remained at high levels, with 197 cases notified during week 49 2016, compared to 293 during the previous week. RSV notifications are beginning to decrease.

6. Influenza Hospitalisations

Twenty-six confirmed influenza hospitalised cases were notified to HPSC during week 49 2016: 10 associated with influenza A(H3) and 16 with influenza A (not subtyped). To date this season (up to the week ending December 11, 2016), 46 confirmed influenza hospitalised cases have been notified to HPSC: 22 associated with influenza A(H3), 22 with influenza A (not subtyped) and two with influenza B. The majority of cases were in those aged 65 years and older.

7. Critical Care Surveillance

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

Three confirmed influenza A cases (one associated with influenza A(H3) and two with influenza A - not subtyped) were admitted to critical care units and reported to HPSC this season to date. All three cases were in those aged 65 years and older.

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/

- One confirmed influenza A(H3) case died and was notified to HPSC during week 49 2016; this is the first influenza-associated death reported this season.
- During week 49 2016, no excess all-cause mortality was reported in Ireland after correcting GRO data for reporting delays with the standardised EuroMOMO algorithm.

9. Outbreak Surveillance

Eight acute respiratory infection (ARI)/influenza outbreaks were reported to HPSC during week 49 2016, four associated with influenza, one with RSV and three with no pathogens identified. To date this season (up to the week ending December 11, 2016), 16 ARI/influenza outbreaks were reported to HPSC, six of which were associated with influenza A, one was associated with RSV, one with parainfluenza virus and eight with no pathogens identified. The majority of ARI/influenza outbreaks reported to date this season were in residential care facilities/community hospitals, mainly affecting those aged 65 years and older. One confirmed influenza A outbreak was in an acute hospital setting.

10. International Summary

Influenza activity is increasing in some countries of the European Region; however, overall activity remained at low levels. Influenza A(H3) viruses have predominated this season to date. As of December 12th 2016, globally, influenza activity in the temperate zone of the northern hemisphere increased slightly. In North America, influenza activity increased slightly with influenza A(H3N2) virus predominating. ILI levels remained below seasonal thresholds. In the United States, RSV activity continued to be reported. In East Asia, influenza activity increased slightly with influenza A(H3N2) remaining the dominant virus circulating. In Western Asia influenza detections remained low. In Northern Africa, influenza detections increased in Morocco with influenza A(H3N2) viruses dominating. See ECDC and WHO influenza surveillance reports for further information.

- 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.
- The latest ECDC and WHO risk assessments on influenza A(H5N8) have been published on the ECDC and WHO websites. Further information on the public health measures for protecting and managing people exposed to highly pathogenic avian influenza A(H5N8) in Europe has been published on the Eurosurveillance website.
- Further information on avian influenza is 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/

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

Acknowledgements

This report was prepared by Lisa Domegan and Joan O'Donnell, HPSC. HPSC wishes to thank the sentinel GPs, the ICGP, NVRL, Departments of Public Health, ICSI and HSE-NE for providing data for this report.