Influenza Surveillance in Ireland – Weekly Report

Influenza Weeks 51 & 52 2016 (19th December 2016 – 1st January 2017)

Data for week 52 2016 should be interpreted with caution, as reporting levels are affected during the Christmas/New Year Holiday period.

Summary

Overall, influenza activity in Ireland increased during weeks 51 and 52 2016 (up to the week ending January 1, 2017). Influenza A(H3) is the predominant influenza virus circulating this season. Confirmed influenza hospitalisations and influenza outbreaks are currently at high levels and are continuing to increase, with those aged 65 years and older most affected. Respiratory admissions reported from a sentinel hospital network were at very high levels. It is recommended that antivirals be considered for the treatment or prevention of influenza in high risk groups.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 50.9 per 100,000 population in week 52 2016, a decrease compared to the rate of 60.8 per 100,000 reported during week 51 2016.
  - The ILI rates have been above the Irish baseline ILI threshold (18.3/100,000) for four consecutive weeks (weeks 49 - 52 2016) and were above the medium intensity threshold level in week 51 2016.
  - The latest ILI age specific rates were highest in those aged 65 years and older.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services increased significantly during weeks 51 and 52 2016, reaching the highest level reported since the 2010/11 season.
- National Virus Reference Laboratory (NVRL):
  - Influenza positivity remained elevated during weeks 51 and 52 2016, with 186 (22.7%) influenza A positive specimens reported from the NVRL from sentinel GP and non-sentinel sources.
  - Influenza A(H3) is the predominant circulating influenza virus this season to date.
  - Positive detections of respiratory syncytial virus (RSV) have decreased, however remained at elevated levels during weeks 51 and 52 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 all seasonal respiratory viruses are also being reported.
- Respiratory admissions: Respiratory admissions data reported from a network of sentinel hospitals for week 52 2016 reached the highest level ever reported.
- Hospitalisations: 173 confirmed influenza hospitalised cases were notified to HPSC during weeks 51 and 52 2016, bringing the season total to 270. The majority of hospitalised cases this season to date was in those aged 65 years and older.
- Critical care admissions: 15 confirmed influenza cases have been admitted to critical care units and reported to HPSC this season to date. The majority of cases have been in those aged 65 years and older.
- Mortality: Seven confirmed influenza cases died and were notified to HPSC this season to date.
- Outbreaks: 15 acute respiratory infection and influenza outbreaks were reported to HPSC during weeks 51 and 52 2016, bringing the season total to 36.
- International: The ECDC seasonal influenza risk assessment stated that if influenza A(H3) continues to predominate in Europe it is likely that those over 65 years will be the most severely affected this season.

1. GP sentinel surveillance system - Clinical Data

- During week 52 2016, 117 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 50.9 per 100,000 population, a decrease compared to the rate of 60.8 per 100,000 reported during week 51 2016. The ILI rates have been above the Irish baseline ILI threshold (18.3/100,000 population) for four consecutive weeks (weeks 49 - 52 2016). During week 51 2016, ILI rates were above the medium intensity threshold for the first time this season.
- ILI age specific rates were highest in those aged 65 years and older (at 70.8/100,000), followed by the 15-64 year age group (at 58.5/100,000) during week 52 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 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.

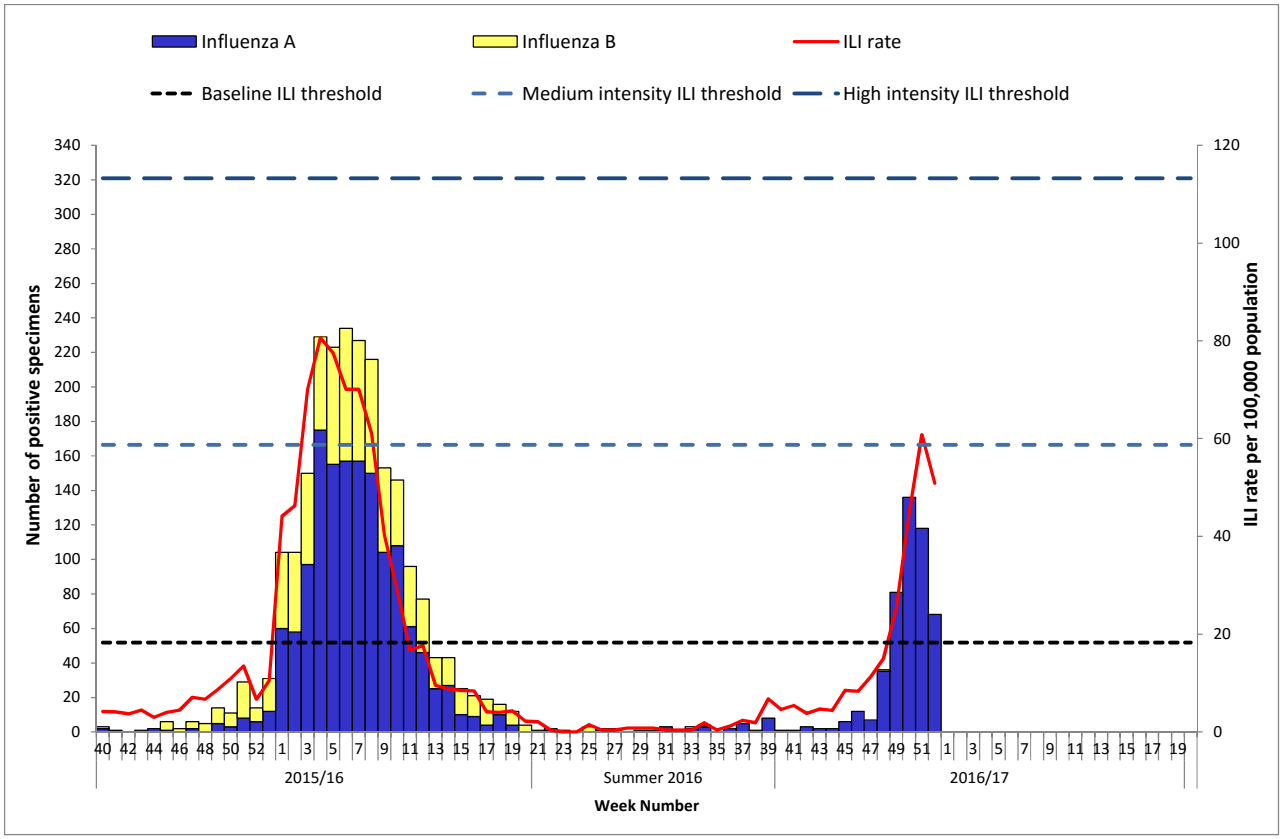

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[1] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

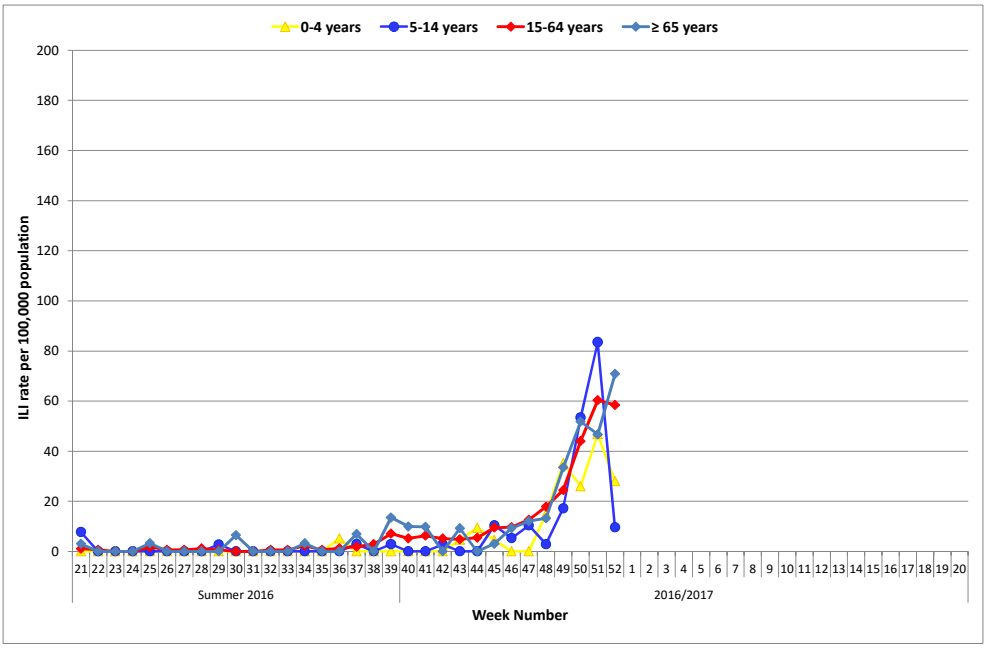

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2016 and the 2016/2017 influenza season to date. *Source: ICGP.*

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 remained elevated during weeks 51 and 52 2016, with 186 (22.7%) influenza A positive specimens reported from the NVRL from sentinel GP and non-sentinel sources. Influenza A(H3) is the predominant influenza virus circulating this season to date. Data from the NVRL for weeks 51 and 52 2016 and the 2016/17 season to date are detailed in tables 1 and 2.
- Week 51 2016:
    - 17 of 33 (51.5%) sentinel specimens were influenza positive: all were positive for A(H3).
    - 101 of 484 (20.9%) non-sentinel specimens were influenza positive: 94 A(H3) and 7 A (not subtyped)
- Week 52 2016:
    - No sentinel GP specimens were reported by the NVRL for week 52 2016.
    - 68 of 301 (22.6%) non-sentinel specimens were influenza positive: 65 A(H3) and 3 A (not subtyped).
- Respiratory syncytial virus (RSV) positivity decreased however remained elevated during weeks 51 and 52 2016, with 120 (15.3%; n=785) positive non-sentinel specimens reported by the NVRL. In total 961 RSV positive non-sentinel specimens have been detected by the NVRL this season. RSV 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, 31 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 weeks 51 and 52 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 high during weeks 51 and 52 2016, at 46% and 40%, respectively.**Respiratory viruses routinely tested for by the NVRL are detailed above.*

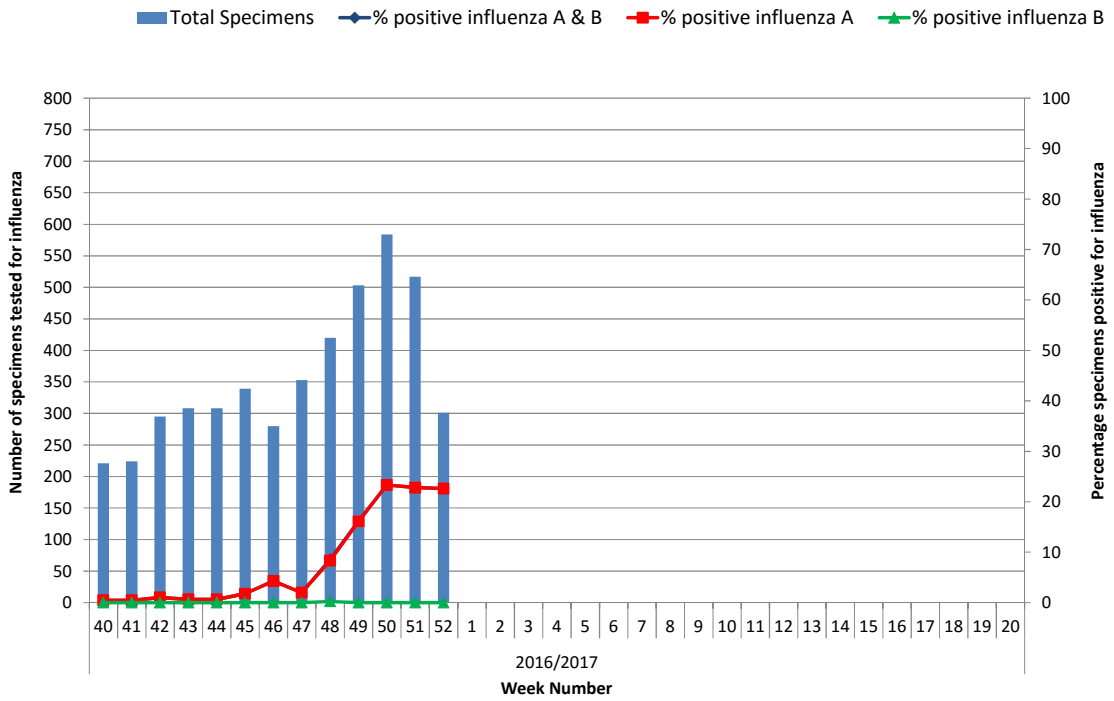

Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2016/2017 influenza season. *Source: NVRL*

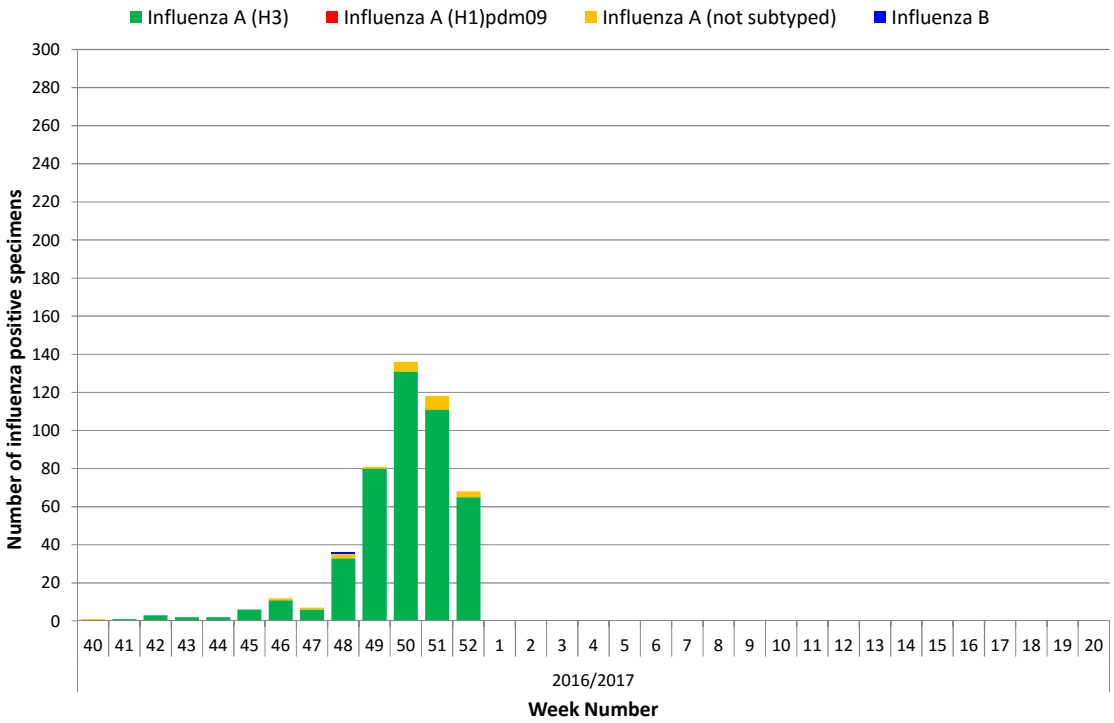

Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2016/2017 influenza season. *Source: NVRL.*

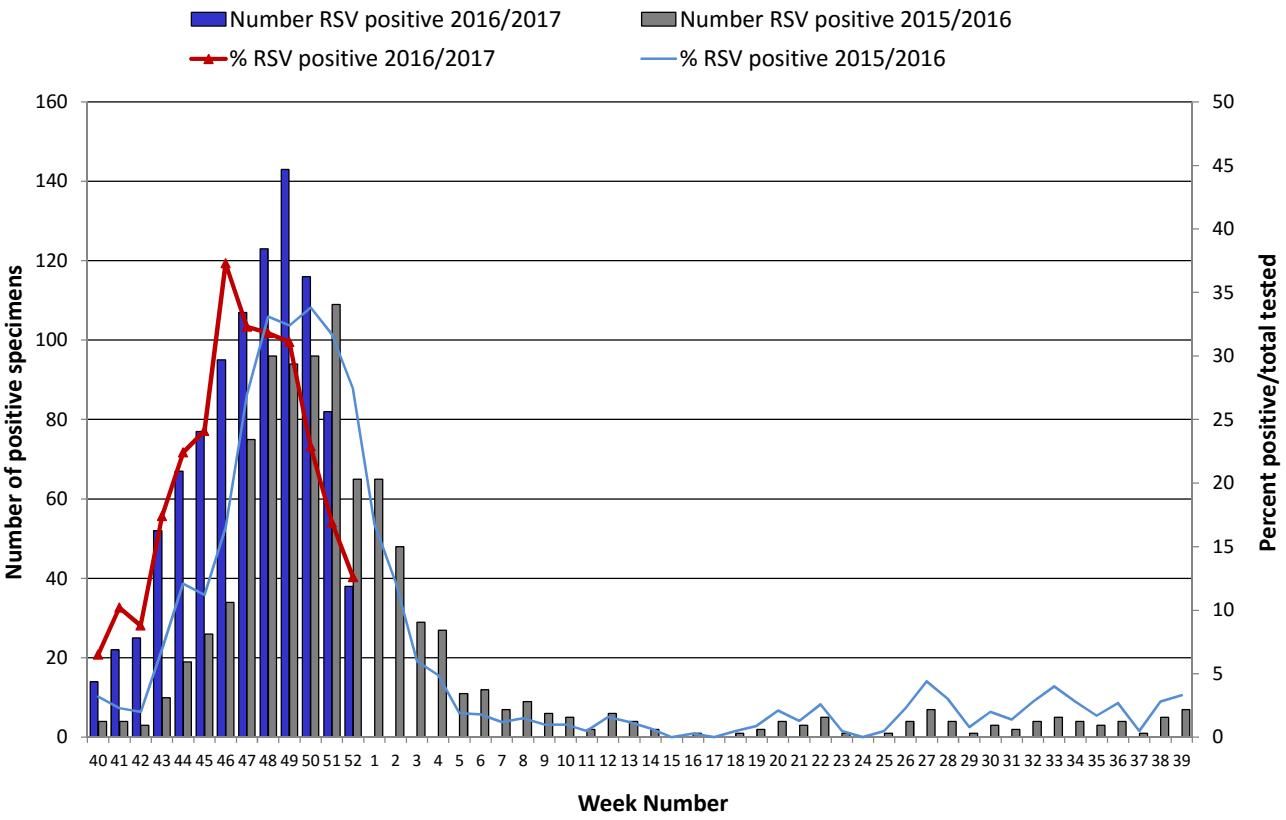

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2016/2017 season, compared to the 2015/2016 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for weeks 51 and 52 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	
51 2016	Sentinel	33	17	51.5	0	17	0	17	0
	Non-sentinel	484	101	20.9	0	94	7	101	0
	Total	**517**	**118**	**22.8**	**0**	**111**	**7**	**118**	**0**
52 2016	Sentinel	0	0	0.0	0	0	0	0	0
	Non-sentinel	301	68	22.6	0	65	3	68	0
	Total	**301**	**68**	**22.6**	**0**	**65**	**3**	**68**	**0**
2016/2017	Sentinel	295	92	31.2	0	92	0	92	0
	Non-sentinel	4359	381	8.7	0	359	21	380	1
	Total	**4654**	**473**	**10.2**	**0**	**451**	**21**	**472**	**1**

Table 2: Number of sentinel and non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for weeks 51 and 52 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
51 2016	Sentinel	33	2	6.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	6.1
	Non-sentinel	484	82	16.9	9	1.9	0	0.0	1	0.2	7	1.4	5	1.0	16	3.3
	Total	**517**	**84**	**16.2**	**9**	**1.7**	**0**	**0.0**	**1**	**0.2**	**7**	**1.4**	**5**	**1.0**	**18**	**3.5**
52 2016	Sentinel	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Non-sentinel	301	38	12.6	4	1.3	0	0.0	0	0.0	0	0.0	1	0.3	9	3.0
	Total	**301**	**38**	**12.6**	**4**	**1.3**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**1**	**0.3**	**9**	**3.0**
2016/2017	Sentinel	295	31	10.5	1	0.3	0	0.0	2	0.7	3	1.0	4	1.4	13	4.4
	Non-sentinel	4359	961	22.0	71	1.6	0	0.0	11	0.3	51	1.2	49	1.1	101	2.3
	Total	**4654**	**992**	**21.3**	**72**	**1.5**	**0**	**0.0**	**13**	**0.3**	**54**	**1.2**	**53**	**1.1**	**114**	**2.4**

[†] 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 weeks 51 and 52 2016 is shown in figure 6. Widespread influenza activity was reported in HSE-E and -S, regional influenza activity was reported in HSE-MW and HSE-SE, localised activity was reported in HSE-M, -NE and –NW and sporadic influenza activity was reported in HSE-W during week 51 2016. During week 52 2016, widespread influenza activity was reported in HSE-E, -SE and -S, regional influenza activity was reported in HSE-MW, localised activity was reported in HSE-M, -NE and –NW and sporadic influenza activity was reported in HSE-W (figure 4).

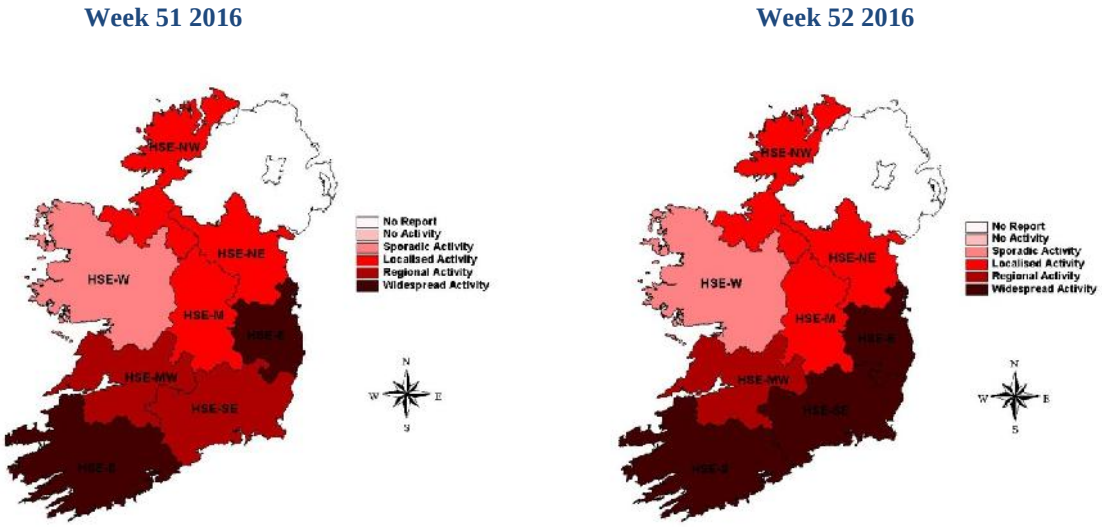

Figure 4: Map of provisional influenza activity by HSE-Area during weeks 51 and 52 2016

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 were at very high levels during weeks 51 and 52 2016, at 493 and 550, respectively (figure 7). Respiratory admissions reported during week 52 2016 reached the highest level ever reported. 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 50 and 52 2016.

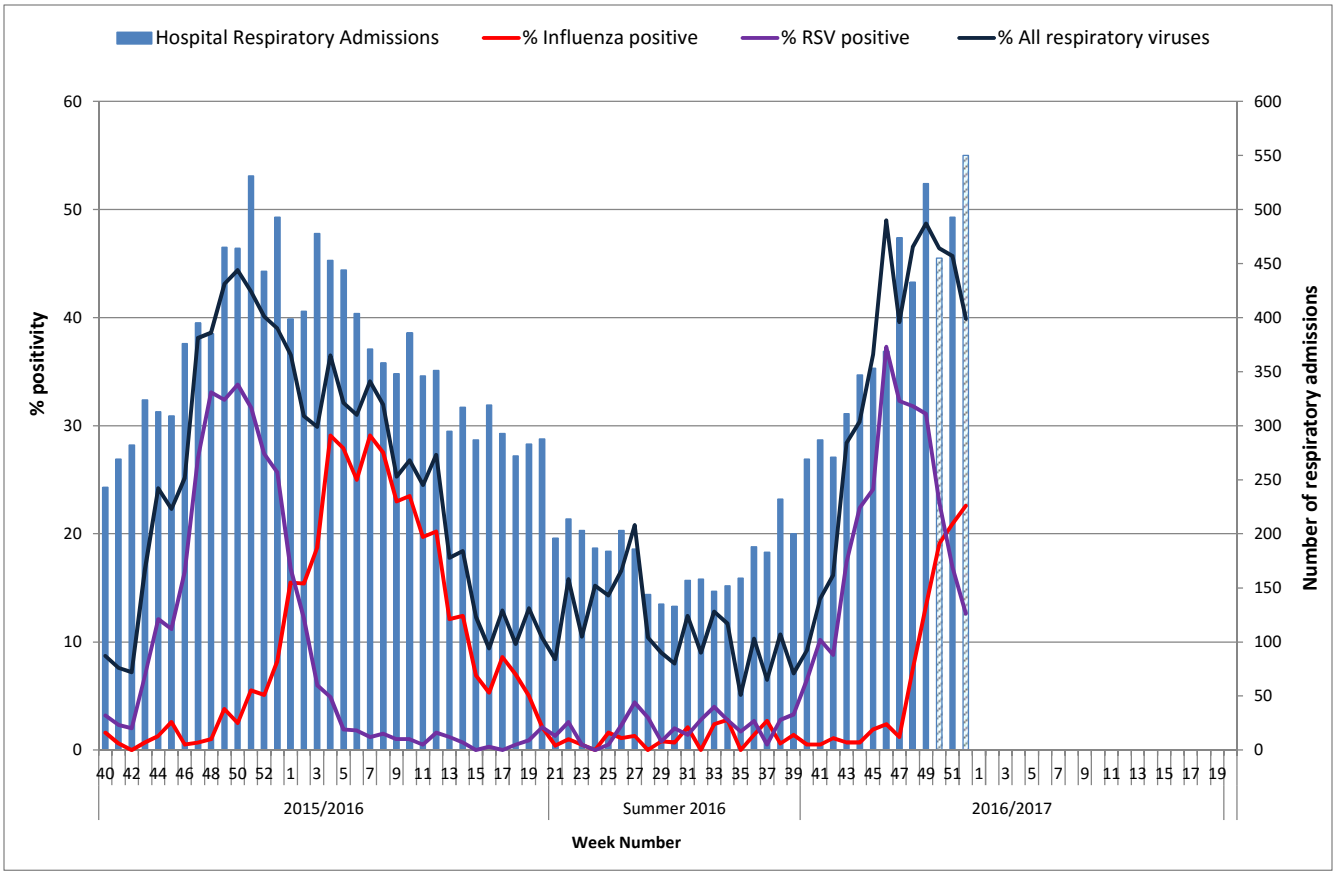

Figure 7: Number of respiratory admissions reported from sentinel hospitals and % positivity for influenza, RSV and all respiratory viruses tested* by the NVRL by week and season. *Source: Departments of Public Health - Sentinel Hospitals & NVRL. *All respiratory viruses tested refer to non-sentinel respiratory specimens routinely tested by the NVRL including influenza, RSV, adenovirus, parainfluenza viruses and human metapneumovirus (hMPV). Data were incomplete during weeks 50 and 52 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 significantly during weeks 51 and 52 2016 to 4.1% and 6.8%, respectively, compared to 2.9% during week 50 2016. The proportion reported in week 52 2016 is at the highest level reported since the 2010/2011 season (figure 8).

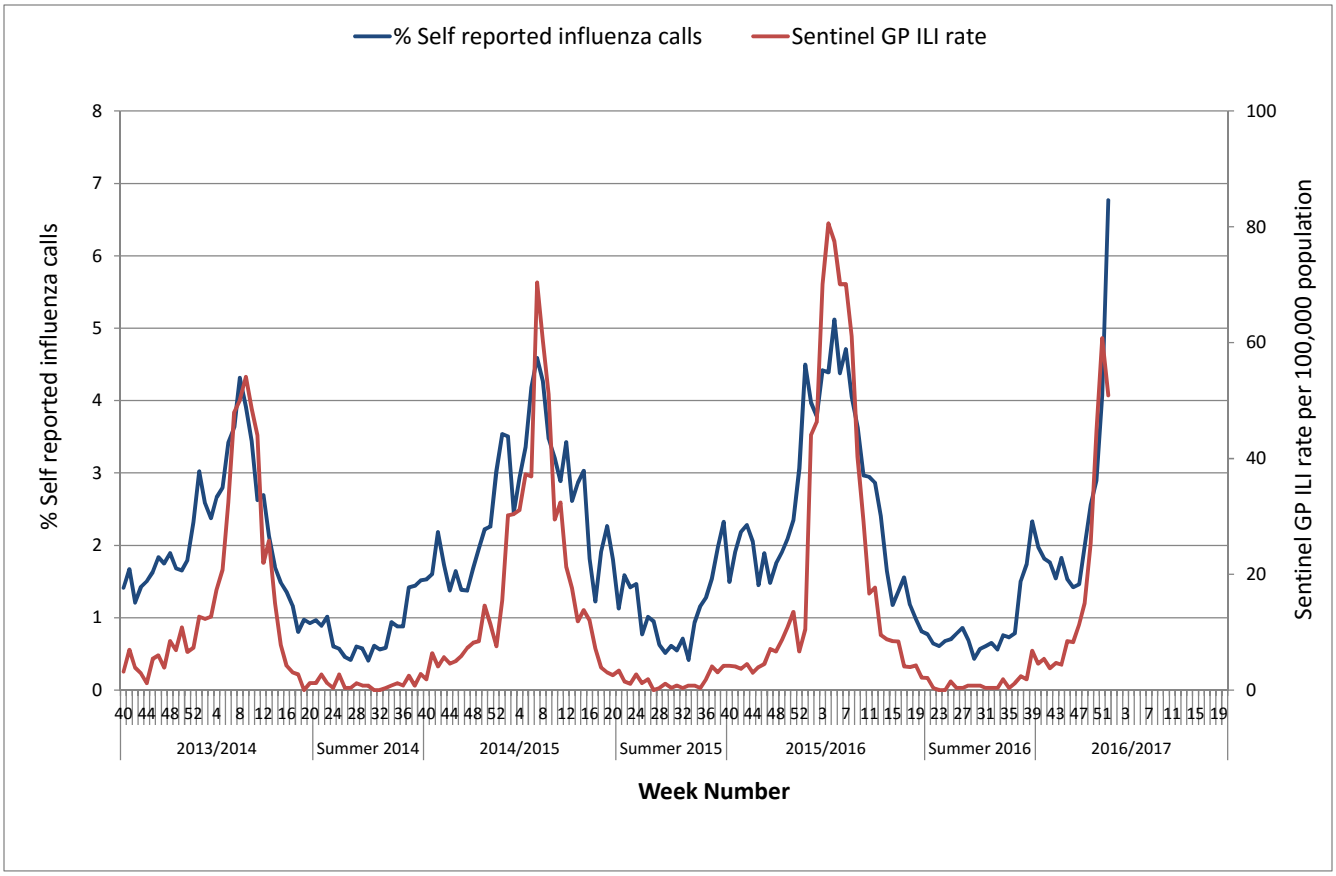

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 increased significantly during weeks 51 and 52 2016, with 234 and 107 confirmed influenza cases notified, respectively. Of the 341 confirmed influenza notified cases during weeks 51 and 52 2016, 155 were associated with influenza A(H3), 183 A (not subtyped) and three B. RSV notifications remained at high levels, with 252 and 106 cases notified during weeks 51 and 52 2016, respectively, compared to 359 during week 50 2016. RSV activity has started to decrease and appears to have passed its peak.

6. Influenza Hospitalisations

One hundred and seventy-three confirmed influenza hospitalised cases were notified to HPSC during weeks 51 and 52 2016: 50 associated with influenza A(H3), 121 with influenza A (not subtyped) and two with influenza B. To date this season (up to the week ending January 1, 2017), 270 confirmed influenza hospitalised cases have been notified to HPSC: 97 associated with influenza A(H3), 169 with influenza A (not subtyped) and four with influenza B. The majority of cases were in those aged 65 years and older (table 3).

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.

Fifteen confirmed influenza cases (five associated with influenza A(H3), nine with influenza A - not subtyped and one influenza B) were admitted to critical care units and reported to HPSC this season to date. The majority of cases were in those aged 65 years and older. Two paediatric cases have been reported this season to date (table 3).

Table 3: Age specific rates for confirmed influenza cases hospitalised and admitted to critical care during the 2016/2017 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	8	11.0	0	0.0
1-4	11	3.9	0	0.0
5-14	19	3.0	2	0.3
15-24	21	3.6	0	0.0
25-34	19	2.5	0	0.0
35-44	13	1.7	0	0.0
45-54	21	3.6	0	0.0
55-64	21	4.5	3	0.6
≥65	137	25.6	10	1.9
Total	**270**	**5.9**	**15**	**0.3**

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/

- To date this season, seven confirmed influenza cases died and were notified to HPSC. All deaths were in cases aged 60 years and older. Five were associated with influenza A(H3), one with influenza A (not subtyped) and one with influenza B.
- During weeks 51 and 52 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

Fifteen acute respiratory infection (ARI) and influenza outbreaks were reported to HPSC during weeks 51 and 52 2016, 14 were reported as influenza outbreaks and one ARI outbreak with no pathogens identified. To date this season (up to the week ending January 1, 2017), 36 ARI and influenza outbreaks were reported to HPSC, 19 of which were associated with influenza A, two were associated with RSV, one with parainfluenza virus, one with human metapneumovirus and 13 with no pathogens identified. The majority of ARI and influenza outbreaks reported to date this season were in residential care facilities/community hospitals, mainly affecting those aged 65 years and older. Four confirmed influenza A outbreaks were in acute hospital settings (up to the week ending January 1, 2017).

10. International Summary

Influenza activity continued to increase across the European Region, with influenza A(H3) viruses predominating. A risk assessment (RA) on seasonal influenza in EU/EEA countries was published by ECDC on 24 December 2016, stating that influenza viruses, mainly A(H3N2), started circulating early this season. If A(H3N2) viruses continue to predominate it is likely that those over 65 years will be the most severely affected age-group this season. More than half of the detected characterised A(H3N2) viruses belong to a new genetic clade, but all are antigenically similar to the vaccine strain. Further details are available on the ECDC website.

As of December 26th 2016, globally, influenza activity in the temperate zone of the northern hemisphere increased slightly, with some countries passing their seasonal threshold, which is early for the season. Worldwide, influenza A(H3N2) virus was predominant. 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

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