Influenza Surveillance in Ireland – Weekly Report

Influenza Week 49 2017 (4th – 10th December 2017)

Summary

Most indicators of influenza activity in Ireland have started to increase, however overall activity levels remained at low levels during week 49 2017 (week ending 10th December 2017). Low numbers of confirmed cases of influenza A(H3N2), A(H1N1)pdm09 and B have been reported this season. Respiratory syncytial virus (RSV) activity remained elevated.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 7.6 per 100,000 population in week 49 2017, remaining low and stable compared to the updated rate of 7.1 per 100,000 reported during week 48 2017.
  - ILI rates were below the Irish baseline threshold (17.5 per 100,000 population).
  - ILI age specific rates remained below baseline in all age groups.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services was at low levels during week 49 2017.
- National Virus Reference Laboratory (NVRL):
  - Influenza positivity increased during week 49 2017, with 25 (6.6%) influenza positive specimens reported from the NVRL from sentinel GP and non-sentinel sources: 10 influenza A(H3N2), 3 A(H1N1)pdm09, 2 A (not subtyped) and 10 B.
  - Low numbers of influenza A(H3N2), A(H1N1)pdm09 and B have been reported from sentinel GP and non-sentinel sources to date this season.
  - Respiratory syncytial virus (RSV) positivity remained elevated during week 49 2017, as expected at this time of year.
  - Human metapneumovirus, parainfluenza virus and picornavirus (which includes both rhinovirus and enterovirus) positive detections have continued to be reported at increased levels since September 2017, compared to the summer period.
- Hospitalisations: Twenty-one confirmed influenza hospitalised cases were notified to HPSC during week 49 2017, bringing the season total to 54. These hospitalisations were associated with a mix of influenza A(H3N2), A(H1N1)pdm09, and influenza B.
- Critical care admissions: One confirmed influenza case was admitted to a critical care unit and reported to HPSC for the 2017/2018 season to date.
- Mortality: There were no reports of any confirmed influenza deaths occurring during weeks 40-49 2017.
- Outbreaks: No acute respiratory infection (ARI)/influenza general outbreaks were notified to HPSC during week 49 2017.
- International: Influenza activity remained at low levels in the European Region.

1. GP sentinel surveillance system - Clinical Data

- During week 49 2017, 19 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 7.6 per 100,000 population, remaining low, and stable compared to the updated rate of 7.1 per 100,000 reported during week 48 2017. The ILI rate for week 49 2017 was below the Irish baseline ILI threshold (17.5/100,000 population) (figure 1).
- ILI age specific rates were low in all age groups during week 49 2017 (figure 2).
- HPSC in consultation with the European Centre for Disease Prevention and Control (ECDC) has revised the Irish baseline ILI threshold for the 2017/2018 influenza season to 17.5 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 (17.5/100,000 population), medium (59.6/100,000 population) and high (114.5/100,000 population) intensity ILI thresholds are shown in figure 1.

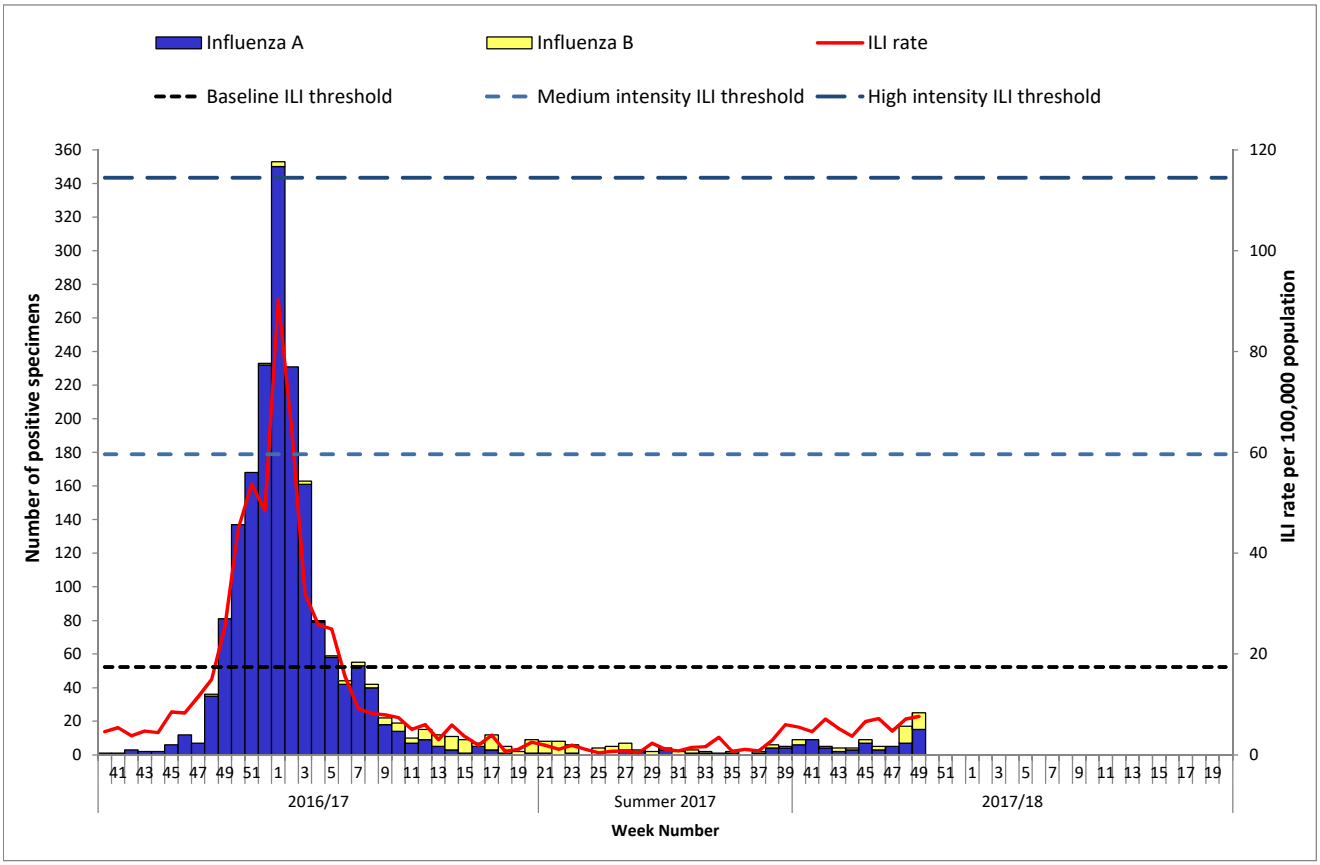

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds* and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

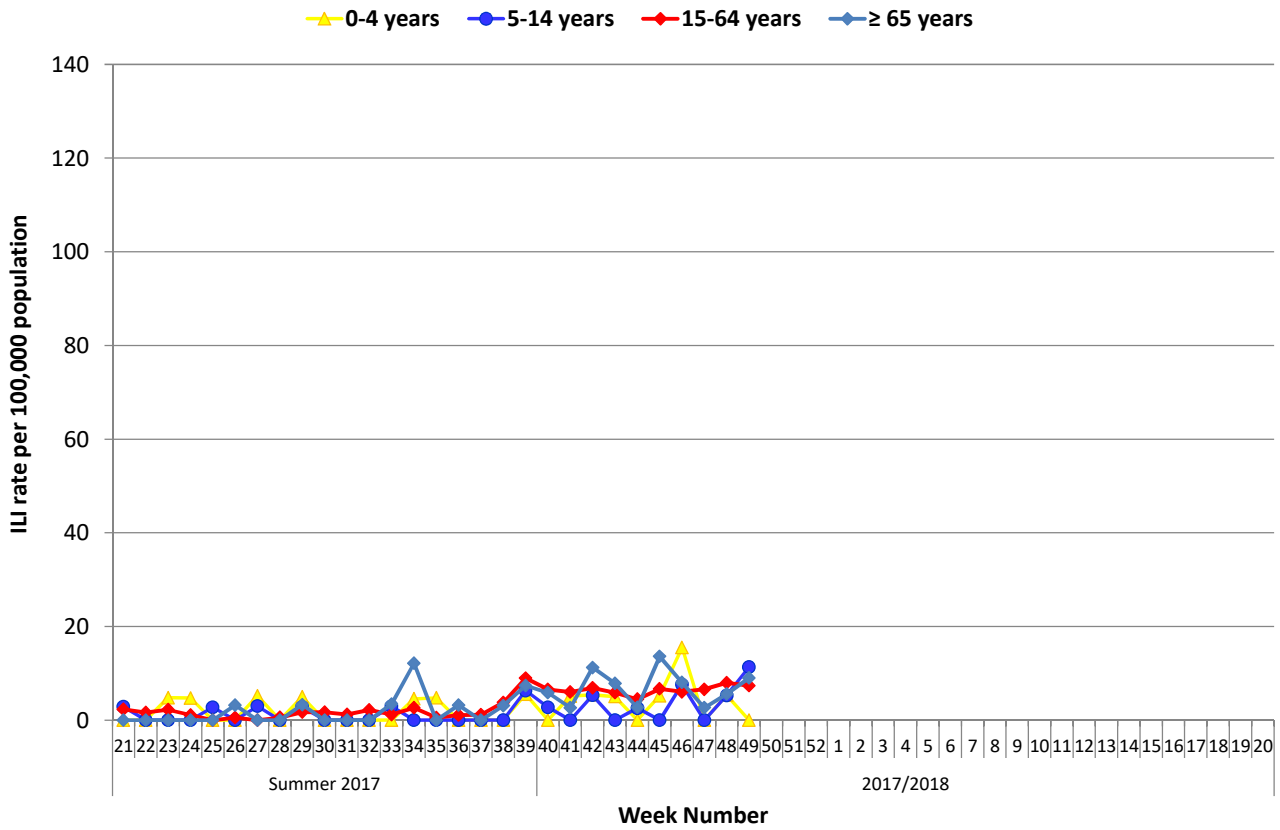

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2017 and the 2017/2018 influenza season to date. *Source: ICGP.*

2. Influenza and Other Respiratory Virus Detections - NVRL

The data reported in this section for the 2017/2018 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 and tables 1 & 2).

- Influenza positivity was at low levels, however increased during week 49 2017, with 25 (6.6%) influenza positive specimens reported from the NVRL from sentinel GP and non-sentinel sources: 10 influenza A(H3N2), 3 A(H1N1)pdm09, 2 A (not subtyped) and 10 B. Data from the NVRL for week 49 2017 and the 2017/2018 season to date are detailed in tables 1 and 2.
- Low numbers of influenza A(H3N2), A(H1N1)pdm09 and B have been reported from sentinel GP and non-sentinel sources to date this season (figures 3 & 4).
- Respiratory syncytial virus (RSV) positivity remained elevated during week 49 2017, as expected at this time of year (table 2 & figure 5).
- Human metapneumovirus, parainfluenza virus and picornavirus[1] (which includes both rhinovirus and enterovirus) positive detections have continued to be reported at increased levels since September 2017, compared to the summer period. Sporadic detections of adenovirus have also continued to be reported since week 40 2017 (table 2).

[1]*It should be noted that there are no historic data on picornaviruses for seasonal comparisons. Data on picornaviruses are not included in this report. Respiratory viruses routinely tested for by the NVRL and reported in the influenza surveillance report are detailed above.*

Virus Characterisation:

- The recommended composition of trivalent influenza vaccines for the 2017/2018 influenza season in the Northern Hemisphere included: an A/Michigan/45/2015 (H1N1)pdm09-like virus; an A/Hong Kong/4801/2014 (H3N2)-like virus; and a B/Brisbane/60/2008-like virus (B/Victoria lineage). For quadrivalent vaccines, a B/Phuket/3073/2013-like virus (B/Yamagata lineage) was recommended. Trivalent influenza vaccines are the most widely used influenza vaccines in Europe. http://www.who.int/influenza/vaccines/virus/recommendations/en/
- Genetic characterisation of influenza viruses circulating this season in Ireland has been carried out by the NVRL, on six influenza A(H3N2), five influenza A(H1N1)pdm09 and three influenza B positive specimens to date. Further genetic and antigenic testing is ongoing at the NVRL.
- Of the six influenza A(H3N2) viruses genetically characterised, five viruses belonged to clade 3C.2a, the vaccine virus clade, represented by A/Hong Kong/4801/2014. One virus belonged to subclade 3C.2a1, represented by A/Singapore/INFIMH-16-0019/2016. Both 3C.2a (vaccine virus clade) and 3C.2a1 viruses circulated last season in Ireland and Europe, with 3C.2a1 viruses predominating last season. Viruses in these two groups are antigenically similar; however both clade and subclade are evolving rapidly, thereby requiring continued monitoring.
- Five influenza A(H1N1)pdm09 viruses were characterised and belonged to the 6B.1 genetic clade, represented by A/Michigan/45/2015, the influenza A(H1N1)pdm09 vaccine virus clade.
- Three influenza B viruses were genetically characterised, all were B/Yamagata lineage viruses, clustering in clade 3 represented by B/Phuket/3073/2013. The most prevalent influenza B lineage virus detected this season to date in Europe, is B/Yamagata.

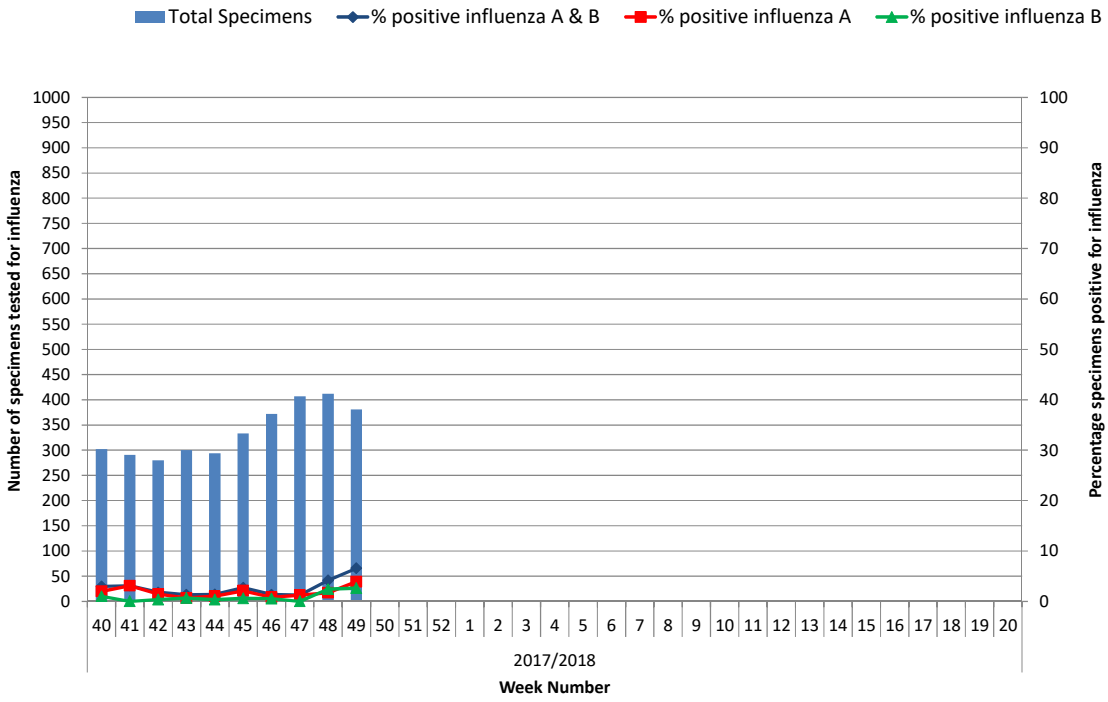

Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2017/2018 influenza season. *Source: NVRL*

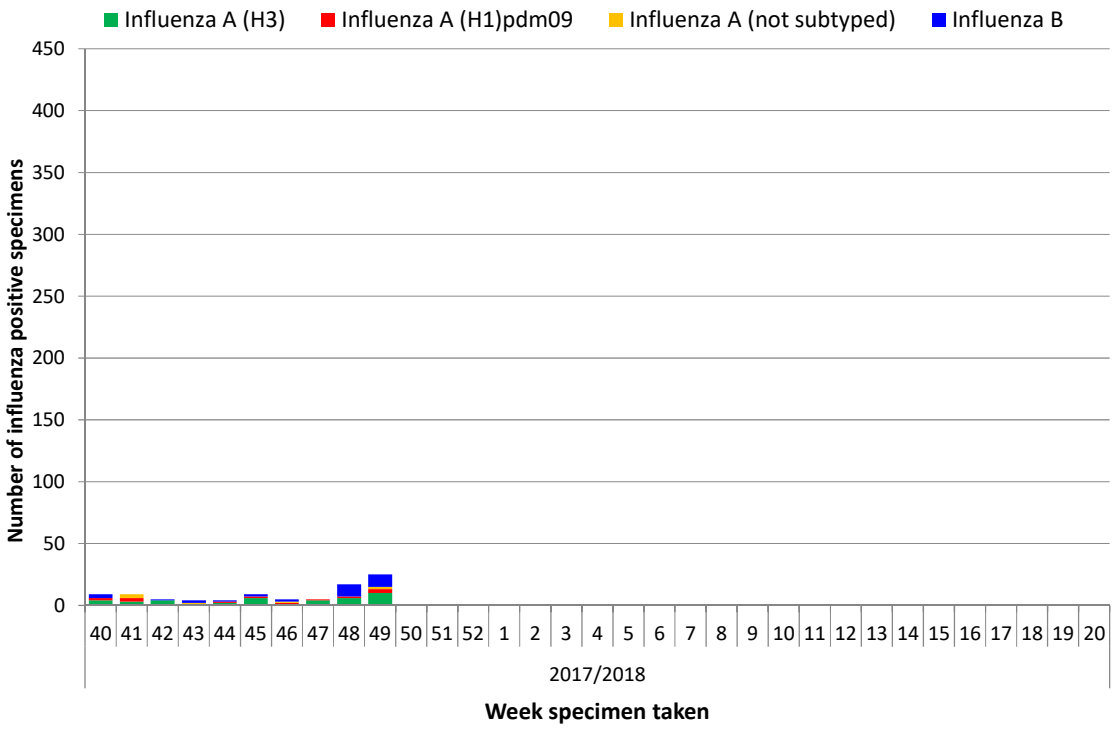

Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2017/2018 influenza season. *Source: NVRL.*

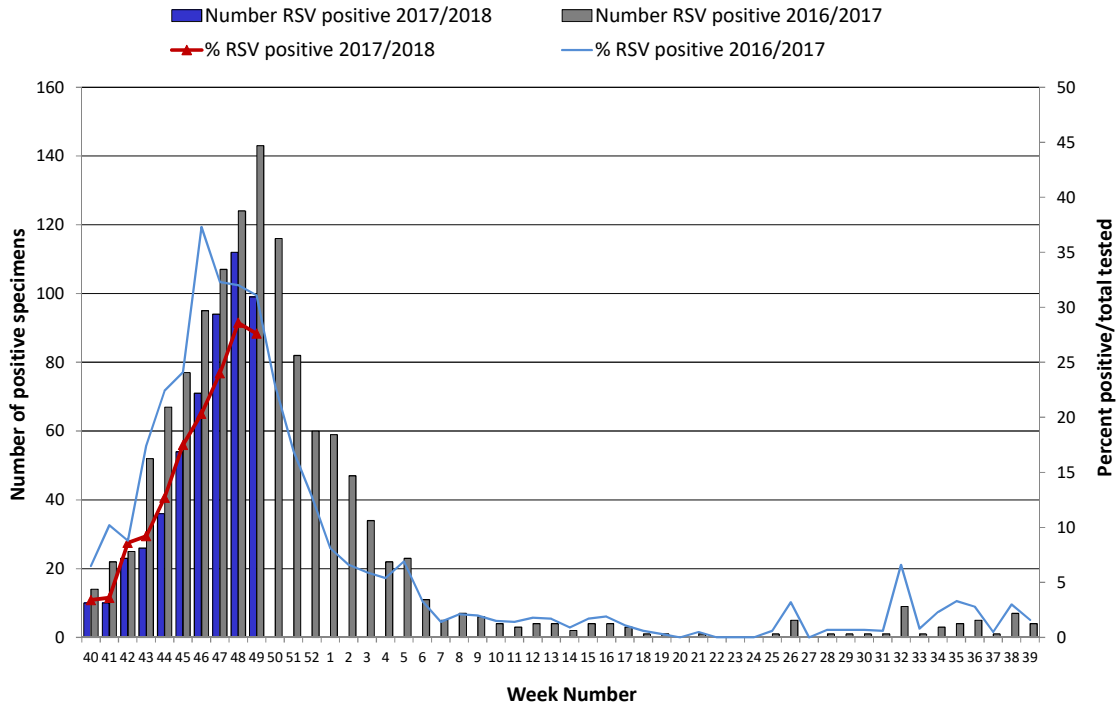

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2017/2018 season, compared to the 2016/2017 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 49 2017 and the 2017/2018 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 2017	Sentinel	22	3	13.6	0	2	0	2	1
	Non-sentinel	359	22	6.1	3	8	2	13	9
	Total	**381**	**25**	**6.6**	**3**	**10**	**2**	**15**	**10**
2017/2018	Sentinel	168	18	10.7	1	7	2	10	8
	Non-sentinel	3204	74	2.3	12	34	5	51	23
	Total	**3372**	**92**	**2.7**	**13**	**41**	**7**	**61**	**31**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 49 2017 and the 2017/2018 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 2017	Sentinel	22	0	0.0	0	0.0	1	4.5	0	0.0	0	0.0	0	0.0	2	9.1
	Non-sentinel	359	99	27.6	5	1.4	9	2.5	2	0.6	0	0.0	2	0.6	27	7.5
	Total	**381**	**99**	**26.0**	**5**	**1.3**	**10**	**2.6**	**2**	**0.5**	**0**	**0.0**	**2**	**0.5**	**29**	**7.6**
2017/2018	Sentinel	168	8	4.8	5	3.0	12	7.1	0	0.0	0	0.0	2	1.2	4	2.4
	Non-sentinel	3204	535	16.7	82	2.6	130	4.1	30	0.9	10	0.3	32	1.0	230	7.2
	Total	**3372**	**543**	**16.1**	**87**	**2.6**	**142**	**4.2**	**30**	**0.9**	**10**	**0.3**	**34**	**1.0**	**234**	**6.9**

[†] 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

Influenza activity is based on sentinel GP ILI consultation rates, laboratory data and outbreaks.

Localised influenza activity was reported in HSE-East and sporadic influenza activity was reported in HSE-Midlands, -Midwest, -Northeast, -South and -West during week 49 2017. No influenza activity was reported in HSE-Northwest and -Southeast during week 49 2017 (figure 6).

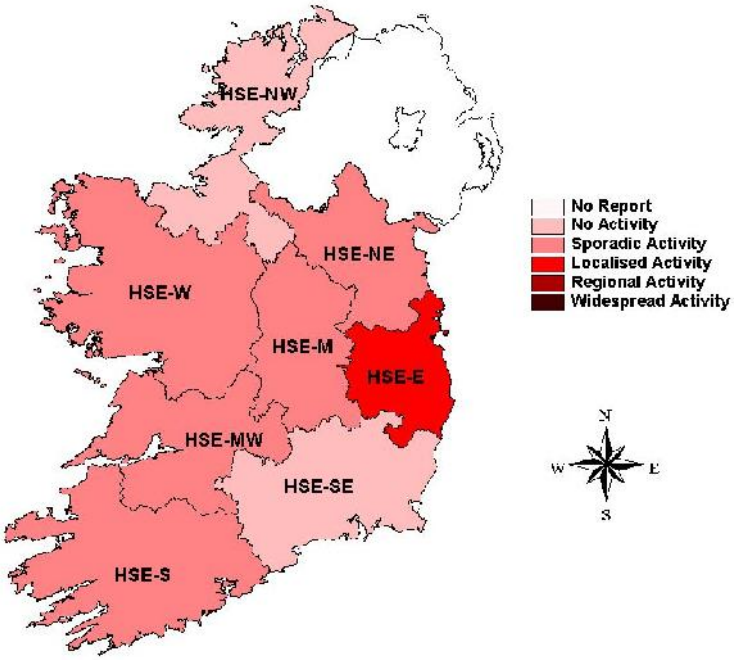

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 49 2017

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.

Respiratory admissions reported from a network of sentinel hospitals, based on the latest complete data, were at moderate levels; at 412 during week 47 and 405 during week 48 2017 (figure 7). During week 49 2017, seven of eight sentinel hospitals reported 336 respiratory admissions.

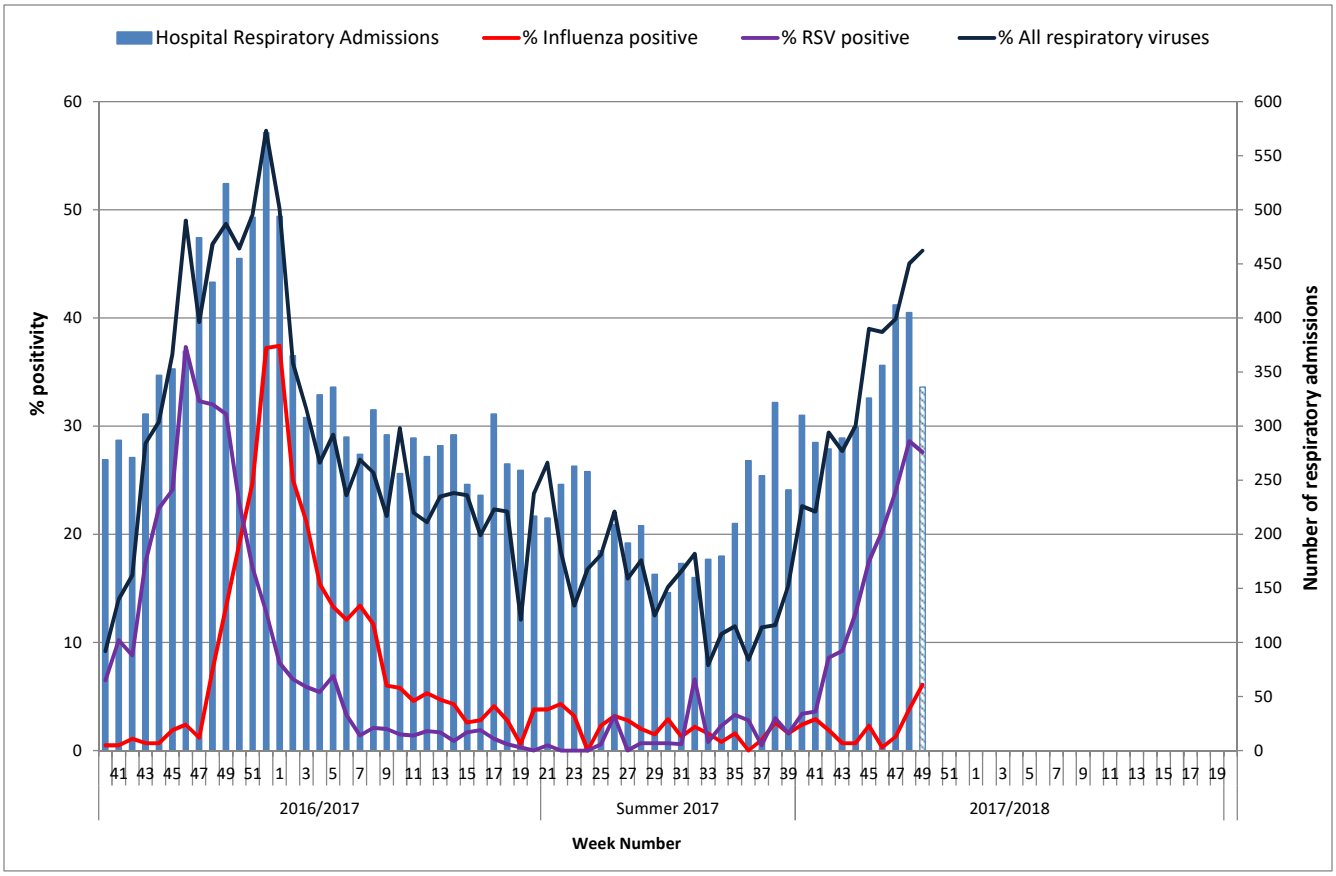

Figure 7: Number of respiratory admissions reported from the sentinel hospital network and % positivity for influenza, RSV and all seasonal respiratory viruses tested* by the NVRL by week and season. *Source: Departments of Public Health - Sentinel Hospitals & NVRL. *All seasonal respiratory viruses 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 week 49 2017 and are represented by the hatched bar*

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 slightly however remained at low levels during week 49 2017 at 2.2%, compared to 2.0% reported during week 48 2017. A slight increase in the proportion of influenza-related calls to GP Out-of-Hours services occurred between weeks 36-39 2017; this increase is usually observed each September when schools return from the summer break (figure 8).

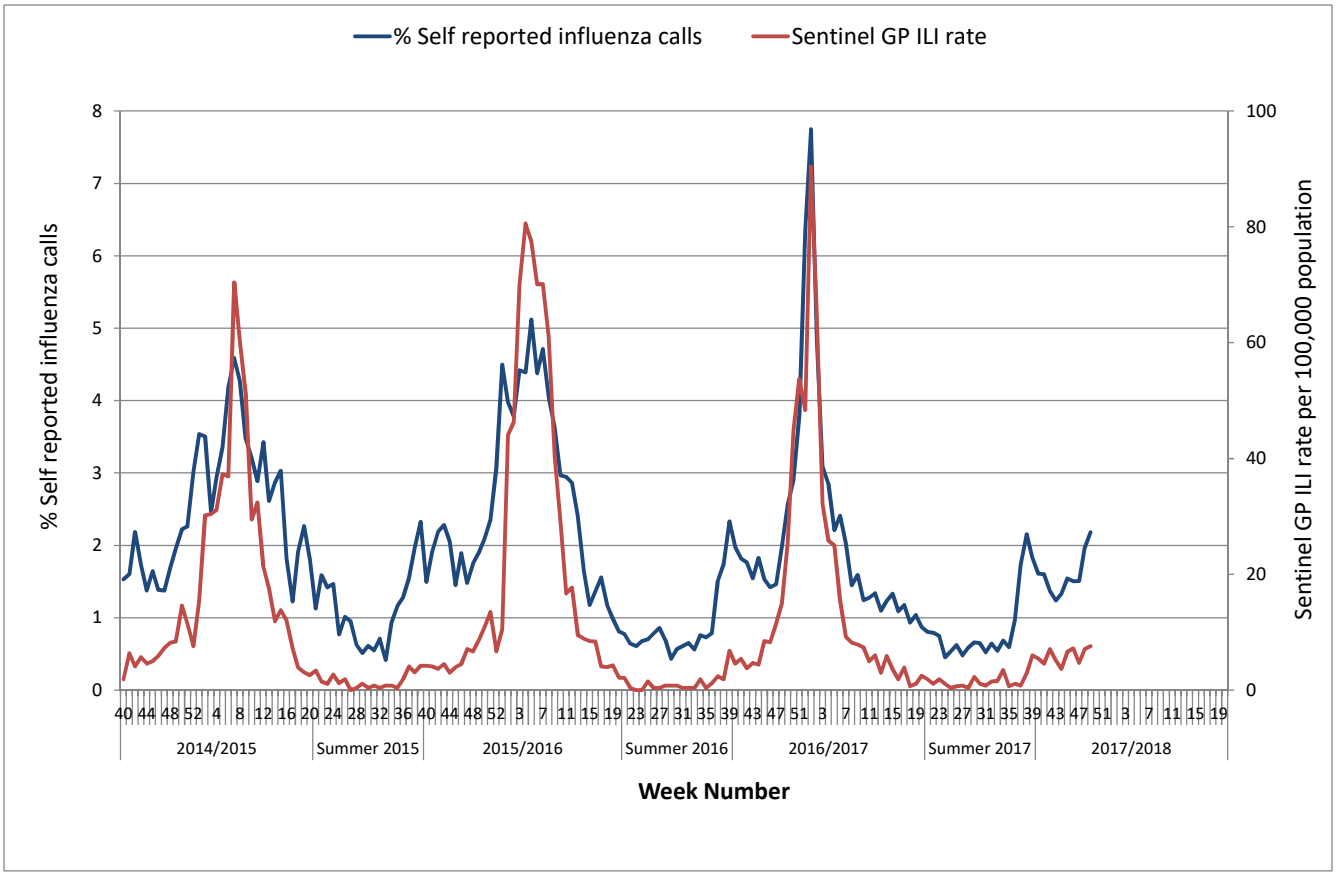

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 during week 49 2017 were at low levels, however increased to 43, compared to nine in the previous week. During week 49 2017, five cases were associated with influenza A(H3N2), five with A(H1N1)pdm09, 12 with A (not subtyped) and 21 cases were associated with influenza B. RSV notifications were at high levels during week 49 2017, with 278 cases notified, compared to 159 cases notified during week 48 2017.

6. Influenza Hospitalisations

Twenty-one confirmed influenza hospitalised cases were notified to HPSC during week 49 2017, four associated with influenza A(H3N2), three with influenza A(H1N1)pdm09, four influenza A (not subtyped) and 10 with influenza B. For the 2017/2018 influenza season to date, 54 confirmed influenza hospitalised cases have been notified to HPSC: 11 associated with influenza A(H3N2), nine with influenza A(H1N1)pdm09, 15 with influenza A (not subtyped) and 19 with influenza B.

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.

One confirmed influenza case was admitted to critical care and reported to HPSC during weeks 40 - 49 2017.

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/

- No confirmed influenza cases died and were notified to HPSC during weeks 40 - 49 2017.
- No excess all-cause mortality was reported this season in Ireland after correcting GRO data for reporting delays with the standardised EuroMOMO algorithm.

9. Outbreak Surveillance

- No acute respiratory infection (ARI)/influenza general outbreaks were notified to HPSC during week 49 2017.
- For the 2017/2018 influenza season to date, four influenza/ARI general outbreaks in residential care facilities/long stay units/other residential settings have been notified; one in HSE-South associated with influenza A(H1N1)pdm09 and three in HSE-Northwest (one associated with RSV and two with picornavirus - which includes both rhinoviruses and enteroviruses). *Family outbreaks are not included in this surveillance report.*

10. International Summary

- Influenza activity remained low across the European Region. From sentinel sources, a slightly higher proportion of influenza B viruses compared to influenza A viruses has been detected. Approximately equal proportions of A(H1N1)pdm09 and A(H3N2) viruses have been detected. For influenza B viruses from both sentinel and non-sentinel sources, B/Yamagata lineage viruses have greatly outnumbered those of the B/Victoria lineage. While low in number, of the A(H3N2) viruses genetically characterised 61% belonged to clade 3C.2a, the vaccine virus clade, as described in the WHO recommendations for vaccine composition for the Northern Hemisphere 2017/2018 and 39% to clade 3C.2a1 of which the viruses are antigenically similar to those of clade 3C.2a.
- As of December 11th 2017, globally, influenza activity continued to increase in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity appeared to have decreased at inter-seasonal levels. In Central America and the Caribbean, influenza activity remained low. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections. The US CDC reported that several influenza activity indicators are higher in the United States than typically observed for this time of the year with 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.
- 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 March 2, 2017, the WHO vaccine strain selection committee recommended that trivalent vaccines for use in the 2017/2018 northern hemisphere influenza season contain the following: an A/Michigan/45/2015 (H1N1)pdm09-like virus; an A/Hong Kong/4801/2014 (H3N2)-like virus; a B/Brisbane/60/2008-like virus. It is recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus.

On September 28, 2017, the WHO vaccine strain selection committee recommended that trivalent vaccines for use in the 2018 southern hemisphere influenza season contain the following: an A/Michigan/45/2015 (H1N1)pdm09-like virus; an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus; a B/Phuket/3073/2013-like virus.It is recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and 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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