Influenza Surveillance in Ireland – Weekly Report

Influenza Week 50 2017 (11th – 17th December 2017)

Summary

Most indicators of influenza activity in Ireland have continued to increase during week 50 2017 (week ending 17th December 2017). Influenza-like illness rates are above baseline levels and influenza positivity has increased. Influenza A(H3N2) and B are currently co-circulating in the community. It is now recommended that antivirals be considered for the treatment and prophylaxis of influenza in at-risk groups. Respiratory syncytial virus (RSV) activity has started to decrease.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 20.3 per 100,000 population in week 50 2017. This is a significant increase compared to the updated rate of 6.8 per 100,000 reported during week 49 2017.
  - ILI rates are above the Irish baseline threshold (17.5 per 100,000 population) for the first time this season.
  - ILI age specific rates increased in all age groups except for those aged 0-4 years.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours service increased during week 50 2017.
- National Virus Reference Laboratory (NVRL):
  - Influenza positivity increased during week 50 2017, with 58 (12.3%) influenza positive specimens reported from the NVRL from sentinel GP and non-sentinel sources: 36 A(H3N2) and 22 B.
  - Influenza A(H3N2) and B are predominating this season, with low numbers of influenza A(H1N1)pdm09 also being reported.
  - Respiratory syncytial virus (RSV) positivity remained at high levels during week 50 2017, however decreased relative to week 49 2017.
  - 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: Nineteen confirmed influenza hospitalised cases were notified to HPSC during week 50 2017, bringing the season total to 73. These hospitalisations were associated with a mix of influenza A(H3N2), A(H1N1)pdm09 and influenza B.
- Critical care admissions: Two confirmed influenza cases were admitted to critical care units and reported to HPSC during weeks 40-50 2017.
- Mortality: There were no notifications of confirmed influenza deaths occurring during weeks 40-50 2017.
- Outbreaks: Three acute respiratory infection (ARI)/influenza general outbreaks were notified to HPSC during week 50 2017. Two of these outbreaks were associated with influenza.
- International: Influenza activity remained at low levels in the European Region. Influenza A(H3N2) and influenza B are co-circulating. ECDC has published a Risk assessment for seasonal influenza, EU/EEA, 2017–2018.

1. GP sentinel surveillance system - Clinical Data

- During week 50 2017, 49 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 20.3 per 100,000 population, an increase compared to the updated rate of 6.8 per 100,000 reported during week 49 2017. The ILI rate for week 50 2017 was above the Irish baseline ILI threshold (17.5/100,000 population) for the first time this season (figure 1).
- ILI age specific rates increased in all age groups except for the 0-4 year age group during week 50 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.

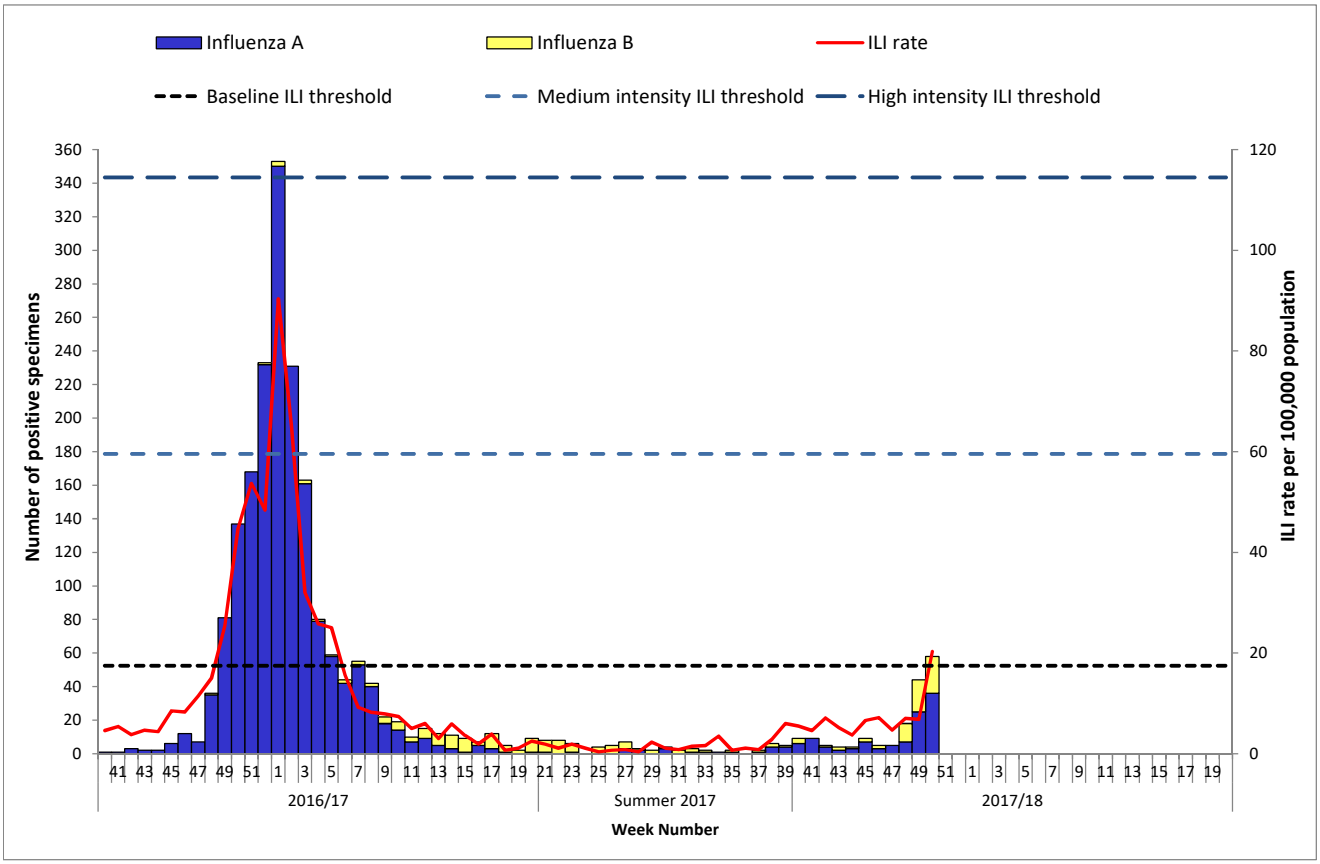

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[*] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

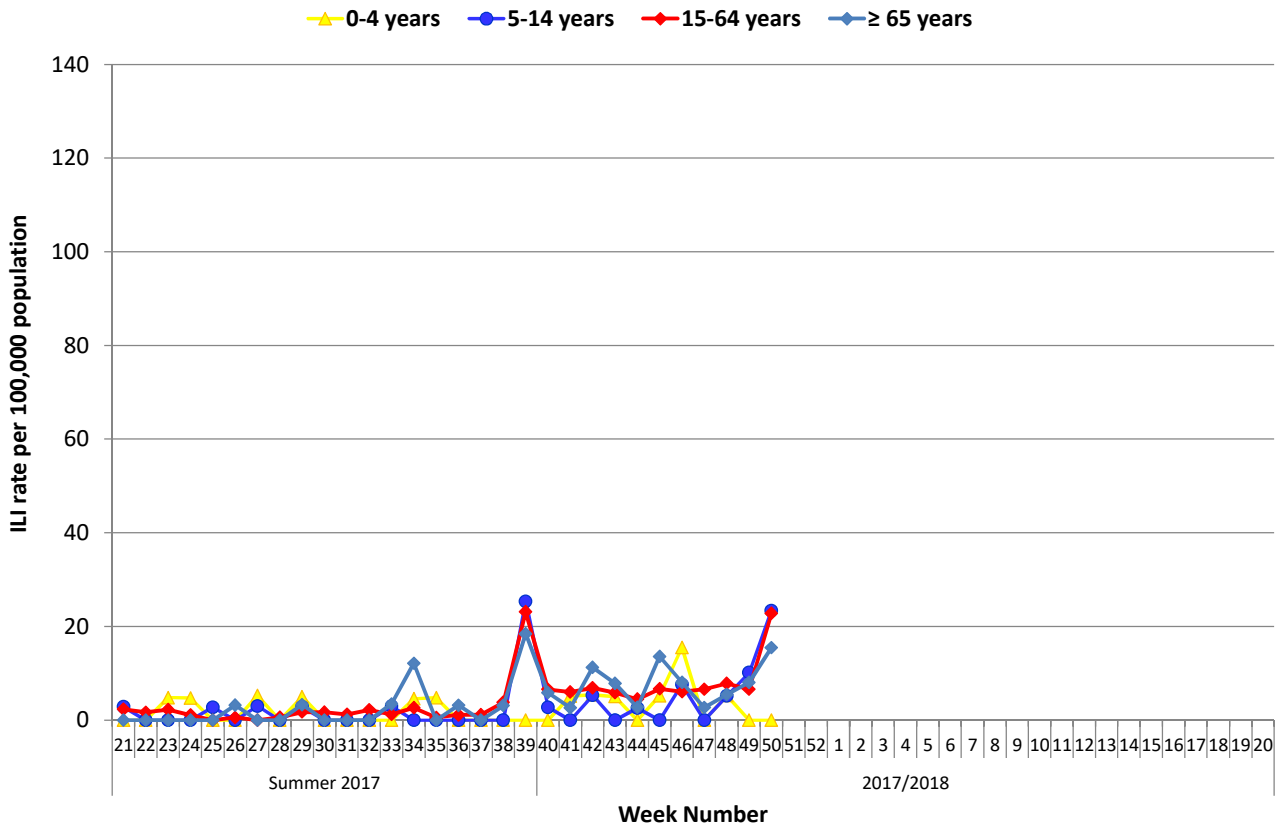

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2017 and the 2017/2018 influenza season to date. *Source: ICGP.*

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 increased during week 50 2017, with 58 (12.3%) influenza positive specimens reported by the NVRL from sentinel GP and non-sentinel sources: 36 influenza A(H3N2) and 22 influenza B. Data from the NVRL for week 50 2017 and the 2017/2018 season to date are detailed in tables 1 and 2.
- Influenza A(H3N2) and influenza B are the predominant influenza viruses circulating this season. Low numbers of influenza A(H1N1)pdm09 have also been reported (figures 3 & 4).
- Respiratory syncytial virus (RSV) positivity remained elevated during week 50 2017, however decreased relative to week 49 2017 (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.

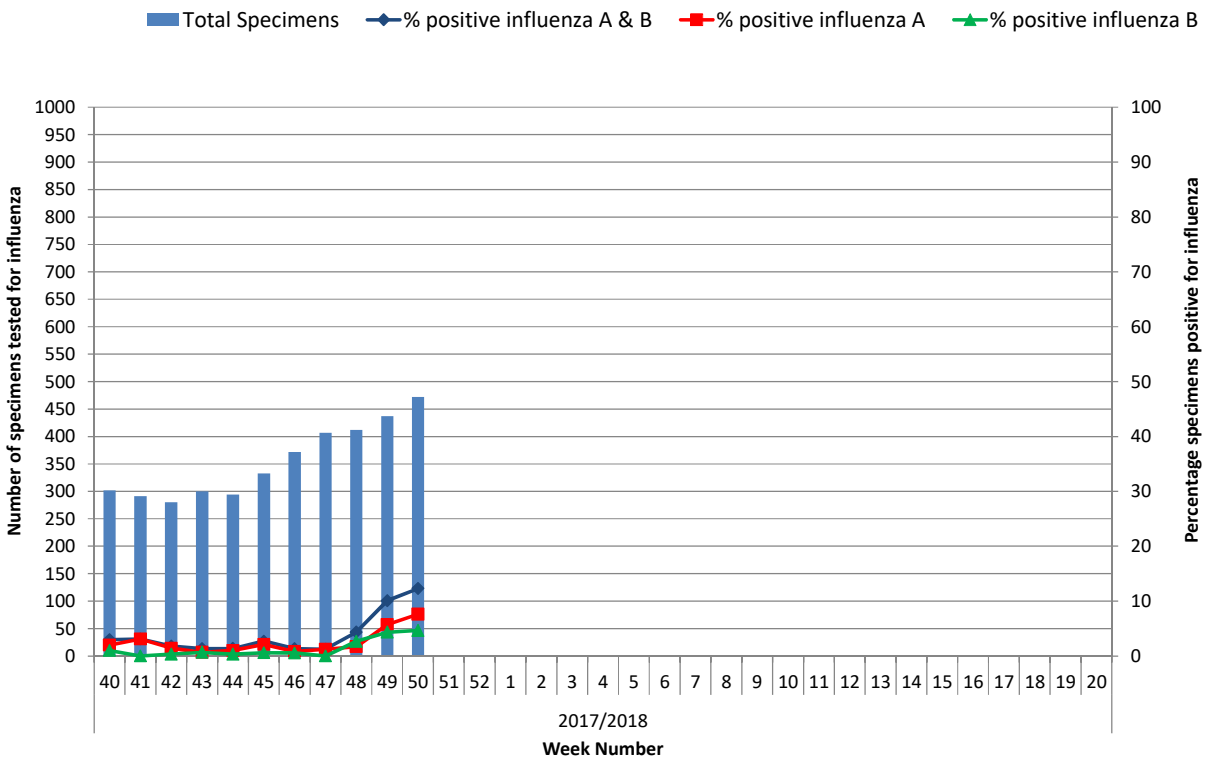

Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2017/2018 influenza season. *Source: NVRL*

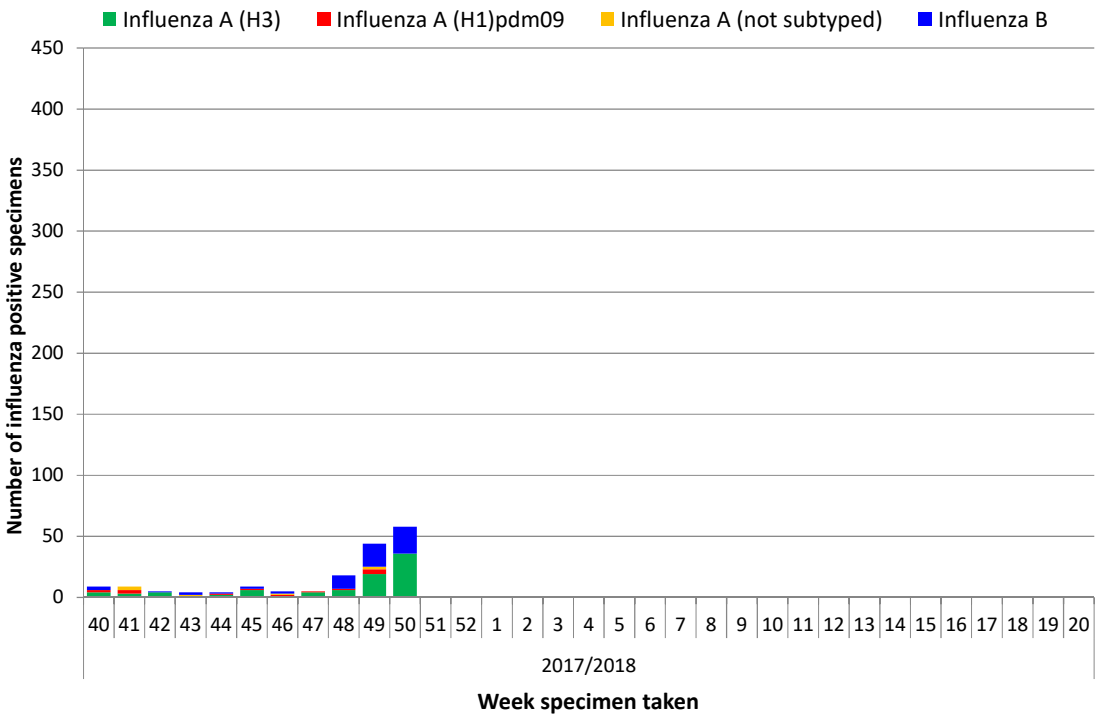

Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2017/2018 influenza season. *Source: NVRL.*

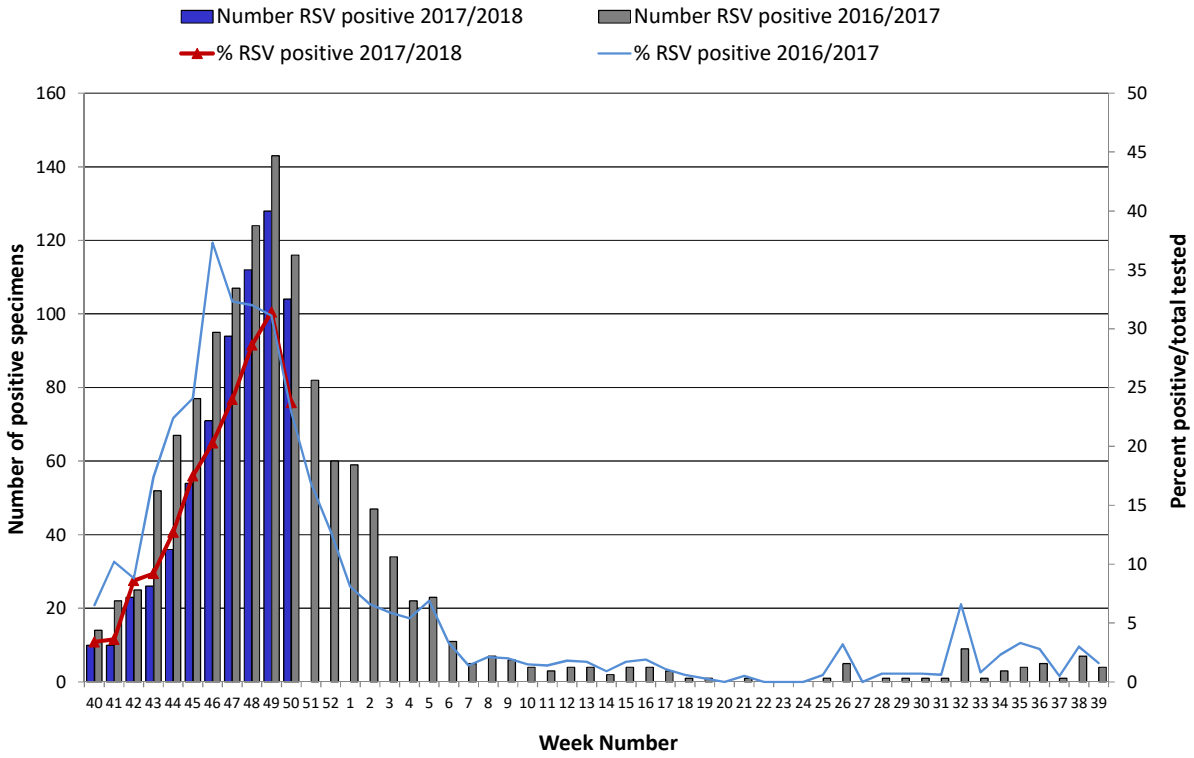

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2017/2018 season, compared to the 2016/2017 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 50 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	
50 2017	Sentinel	34	3	8.8	0	2	0	2	1
	Non-sentinel	438	55	12.6	0	34	0	34	21
	Total	**472**	**58**	**12.3**	**0**	**36**	**0**	**36**	**22**
2017/2018	Sentinel	209	30	14.4	1	12	2	15	15
	Non-sentinel	3691	140	3.8	13	74	5	92	48
	Total	**3900**	**170**	**4.4**	**14**	**86**	**7**	**107**	**63**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 50 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
50 2017	Sentinel	34	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Non-sentinel	438	104	23.7	3	0.7	2	0.5	8	1.8	0	0.0	1	0.2	26	5.9
	Total	**472**	**104**	**22.0**	**3**	**0.6**	**2**	**0.4**	**8**	**1.7**	**0**	**0.0**	**1**	**0.2**	**26**	**5.5**
2017/2018	Sentinel	209	9	4.3	5	2.4	12	5.7	0	0.0	0	0.0	2	1.0	5	2.4
	Non-sentinel	3691	668	18.1	89	2.4	136	3.7	40	1.1	10	0.3	33	0.9	265	7.2
	Total	**3900**	**677**	**17.4**	**94**	**2.4**	**148**	**3.8**	**40**	**1.0**	**10**	**0.3**	**35**	**0.9**	**270**	**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 -Northwest and sporadic influenza activity was reported in HSE-Midlands, -Midwest, -Northeast, -South and -West during week 50 2017. No influenza activity was reported in HSE-Southeast during week 50 2017 (figure 6).

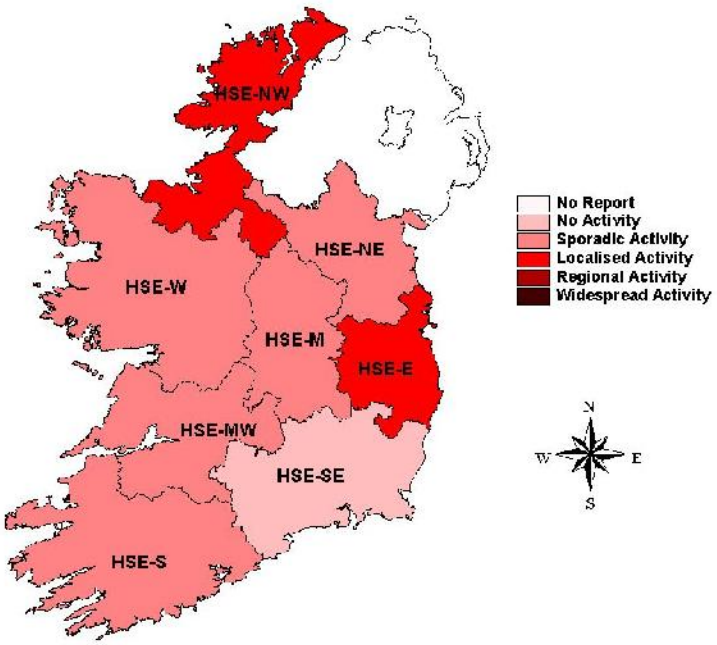

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 50 2017

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; with 405 respiratory admissions reported during week 48 2017 (figure 7). During weeks 49 and 50 2017, 336 (from 7/8 hospitals) and 361 (from 6/8 hospitals) respiratory admissions were reported.

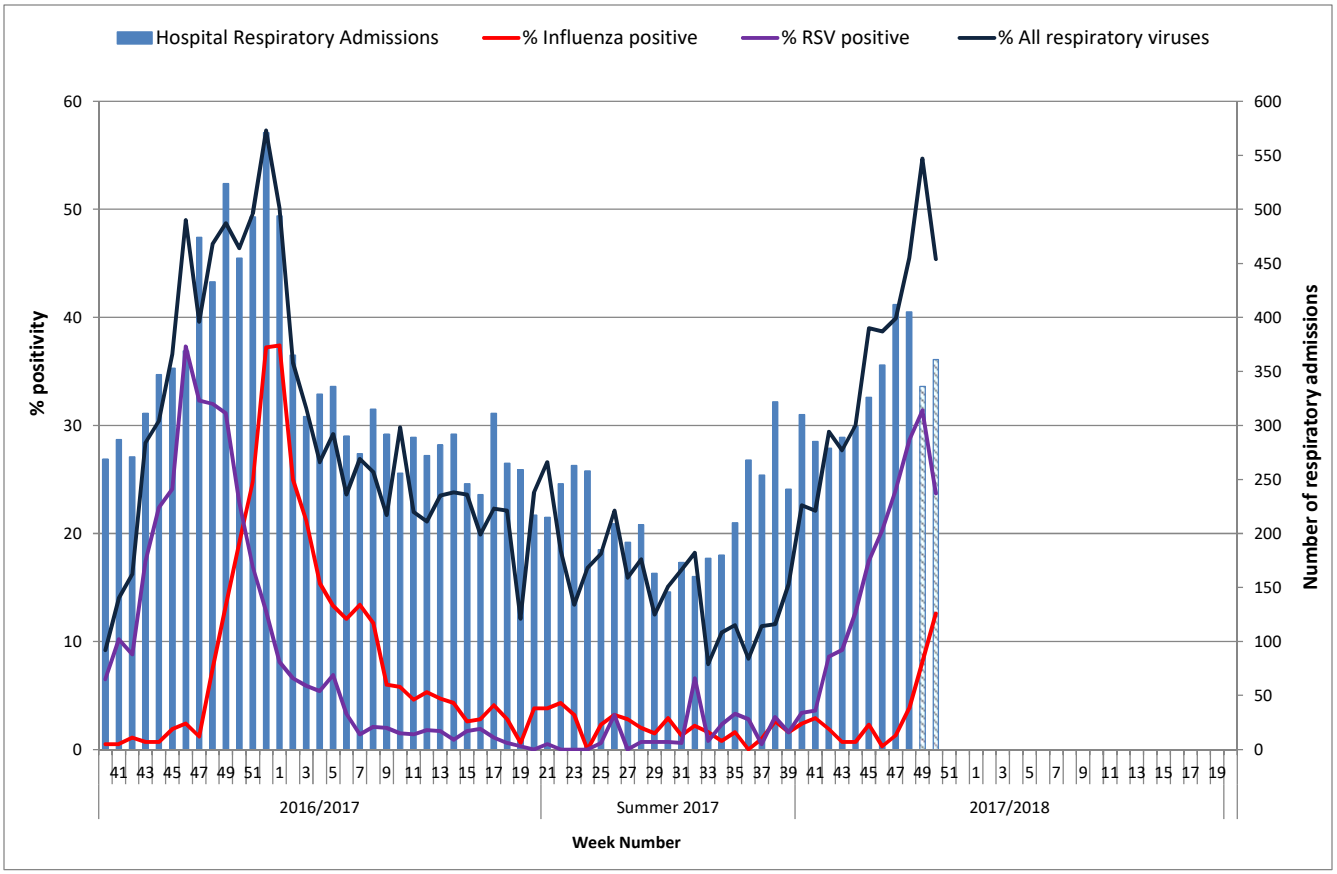

Figure 7: Number of respiratory admissions reported from the sentinel hospital network and % positivity for influenza, RSV and all seasonal respiratory viruses tested* by the NVRL by week and season. *Source: Departments of Public Health - Sentinel Hospitals & NVRL. *All seasonal respiratory viruses 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 weeks 49 and 50 2017 and 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 50 2017 to 2.6%, compared to 2.2% reported during week 49 2017 (figure 8).

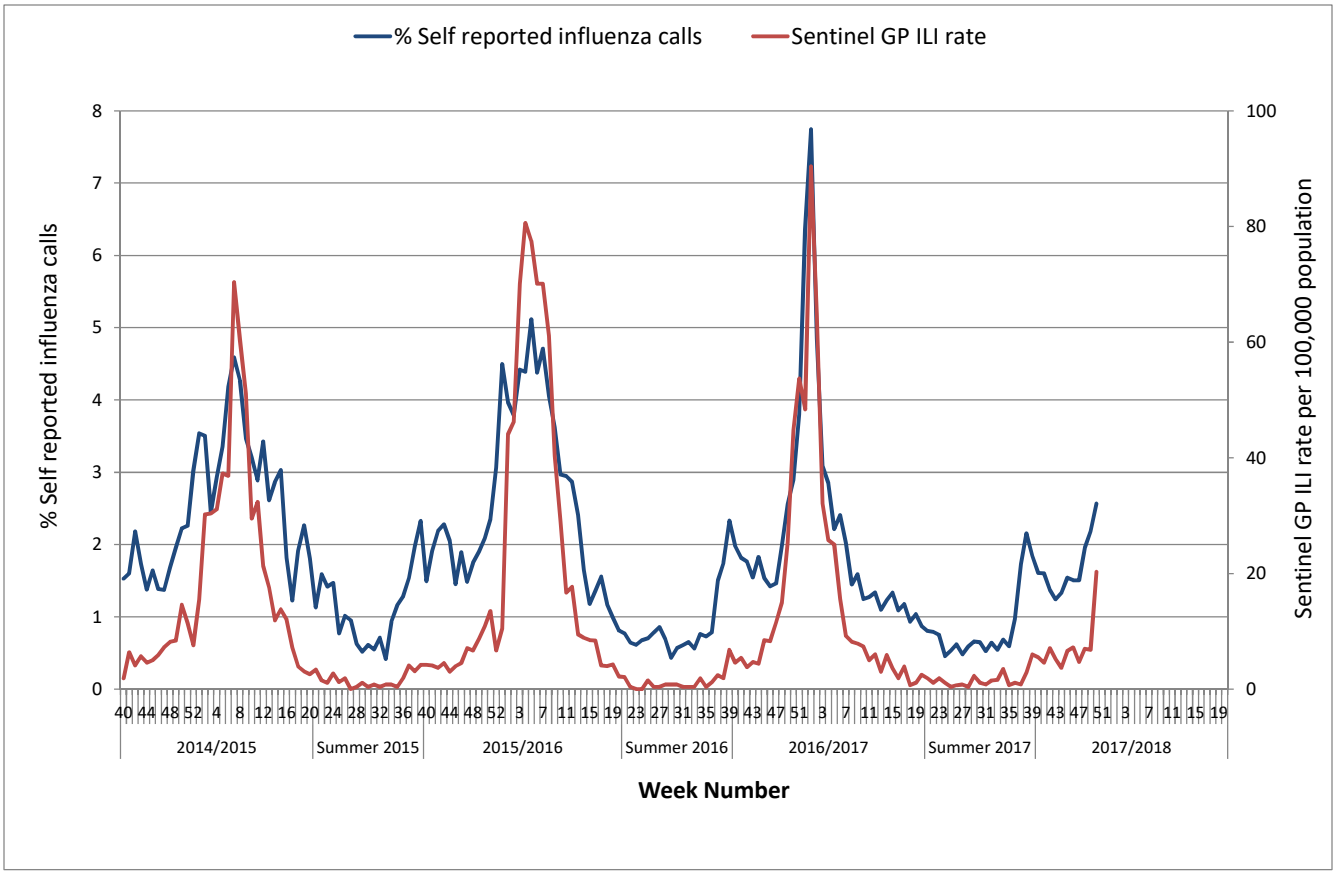

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 50 2017 increased to 78 from 43 in the previous week. During week 50 2017, 13 cases were associated with influenza A(H3N2), two with A(H1N1)pdm09, 25 with A (not subtyped) and 38 cases were associated with influenza B. RSV notifications were at high levels during week 50 2017, however decreased compared to the previous week, with 195 cases notified, compared to 278 cases notified during week 49 2017.

6. Influenza Hospitalisations

Nineteen confirmed influenza hospitalised cases were notified to HPSC during week 50 2017, three associated with influenza A(H3N2), one with influenza A(H1N1)pdm09, six influenza A (not subtyped) and nine with influenza B. For the 2017/2018 influenza season to date, 73 confirmed influenza hospitalised cases have been notified to HPSC: 14 associated with influenza A(H3N2), 11 with influenza A(H1N1)pdm09, 21 with influenza A (not subtyped), and 27 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.

Two confirmed influenza cases (one associated with influenza A(H3N2) and one with influenza B) were admitted to critical care units and reported to HPSC during weeks 40 - 50 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 deaths have been notified to HPSC during weeks 40 - 50 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

- Two influenza A outbreaks and one RSV outbreak were notified to HPSC during week 50 2017.
- For the 2017/2018 influenza season to date, seven influenza/ARI general outbreaks in residential care facilities/long stay units/other residential settings have been notified; three associated with influenza A (one each in HSE-South, -Midlands and –West), one in HSE-Midwest associated with RSV 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 from sentinel sources. Conversely, most detections from non-sentinel systems were influenza A viruses, with A(H3N2) being the majority. 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, 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.
- ECDC has published a Risk assessment for seasonal influenza, EU/EEA, 2017–2018.
- 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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