

Influenza Surveillance in Ireland – Weekly Report

Influenza Week 1 2019 (31st December 2018 – 6th January 2019)



Summary

Influenza activity in Ireland increased during week 1 2019 (week ending 6th January 2019). Influenza-like illness rates are above baseline levels. Influenza A(H1N1)pdm09 is the predominant circulating virus to date this season, some influenza A(H3N2) and influenza B viruses have also been detected. Confirmed influenza hospitalisations are increasing. Respiratory syncytial virus (RSV) activity is decreasing.

- **Influenza-like illness (ILI):** The sentinel GP influenza-like illness (ILI) consultation rate was 34 per 100,000 population in week 1 2019. This is a significant increase compared to the rate of 10.6 per 100,000 reported during week 52 2018.
 - 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 during week 1 2019, with the highest rates reported in the 15-64 year age group, followed by those aged 65 years and older.
- **National Virus Reference Laboratory (NVRL):**
 - Influenza detections increased during week 1 2019, compared to recent weeks, with 116 (23%) influenza positive specimens reported by the NVRL from sentinel and non-sentinel sources: 100 A(H1N1)pdm09, 5 A(H3N2), 10 A (not subtyped) and 1 influenza B.
 - Influenza A(H1N1)pdm09 is the predominant circulating virus in the 2018/2019 season to date, with low numbers of influenza A(H3N2) and Influenza B also detected.
 - The NVRL has carried out genetic characterisation of 15 influenza A(H1N1)pdm09 positive specimens to date this season. All belonged to the influenza A(H1N1)pdm09 vaccine virus clade, genetic clade 6B.1, represented by A/Michigan/50/2015 in the 2018/2019 vaccine.
 - Respiratory syncytial virus (RSV) detections continued to decrease during week 1 2019
 - Co-infections of all seasonal respiratory viruses were reported during week 1 2019.
 - Human metapneumovirus, adenovirus, parainfluenza virus and picornavirus (which includes both rhinovirus and enterovirus) continue to be detected.
- **Hospitalisations:** One hundred and fifty one confirmed influenza hospitalised cases were notified to HPSC during week 1 2019, bringing the season total to 282. The majority of hospitalisations were associated with influenza A. Where information on subtype was available, most of the hospitalised cases were due to influenza A(H1N1)pdm09.
- **Critical care admissions:** Twenty nine confirmed influenza cases were admitted to critical care units and reported to HPSC during the 2018/2019 season to date.
- **Mortality:** Six deaths in influenza cases were notified to HPSC during the 2018/2019 season to date.
- **Outbreaks:** One influenza outbreak, one RSV outbreak and two acute respiratory infection (ARI) outbreaks were notified to HPSC during week 1 2019.
- **International:** Influenza activity is increasing in Europe and in other countries in the temperate zone of the northern hemisphere.

1. GP sentinel surveillance system - Clinical Data

- During week 1 2019, 77 influenza-like illness (ILI) cases were reported by sentinel GPs, corresponding to an ILI consultation rate of 34 per 100,000 population. This was an increase compared to the rate of 10.6 per 100,000 reported during week 52 2018 (figure 1).
- The ILI rate for week 1 2019 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 in week 1 2019, with the highest rates reported in the 15-64 year age group, followed by those aged 65 years and older (figure 2).
- HPSC, in consultation with the European Centre for Disease Prevention and Control (ECDC) has revised the Irish baseline ILI threshold for the 2018/2019 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 (62.3/100,000 population) and high (122.2/100,000 population) intensity ILI thresholds are shown in figure 1.

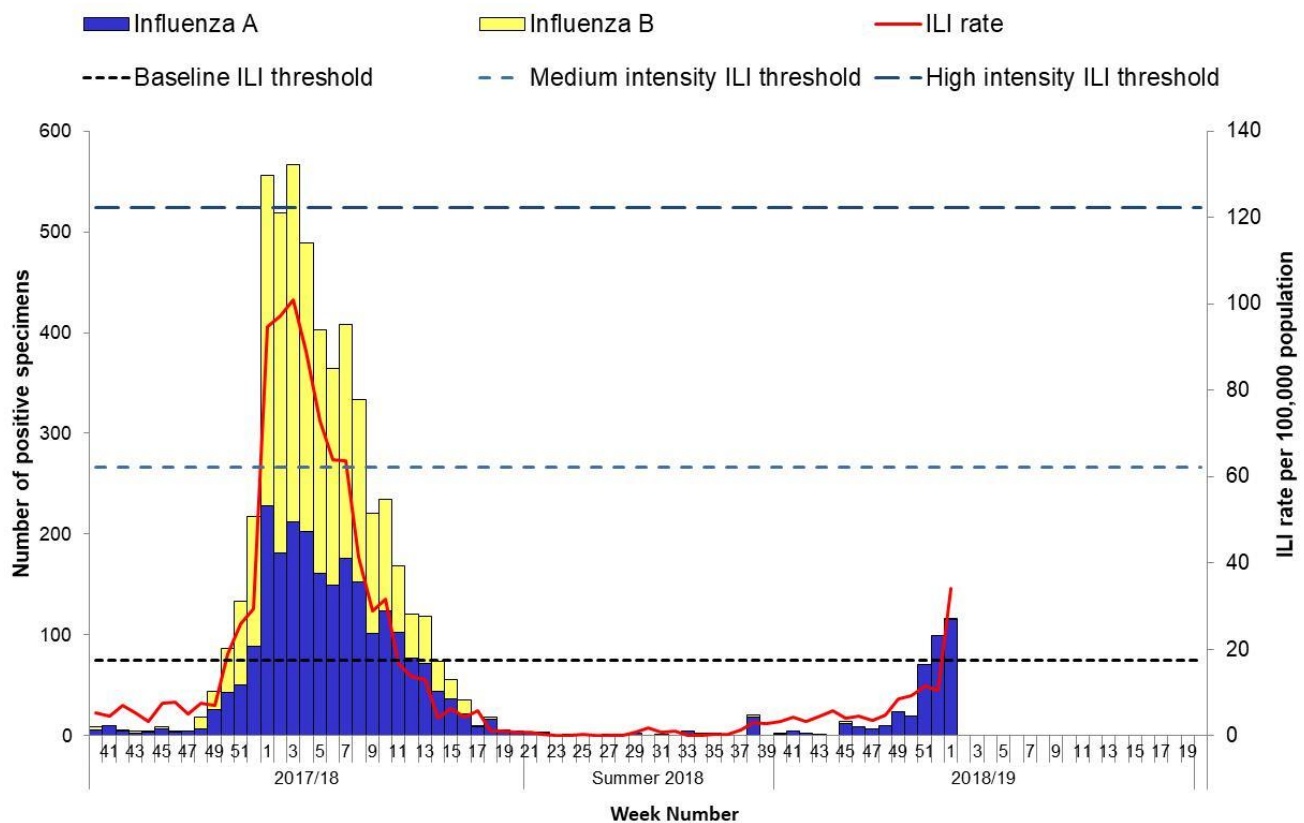


Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds* and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
 Source: ICGP and NVRL

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

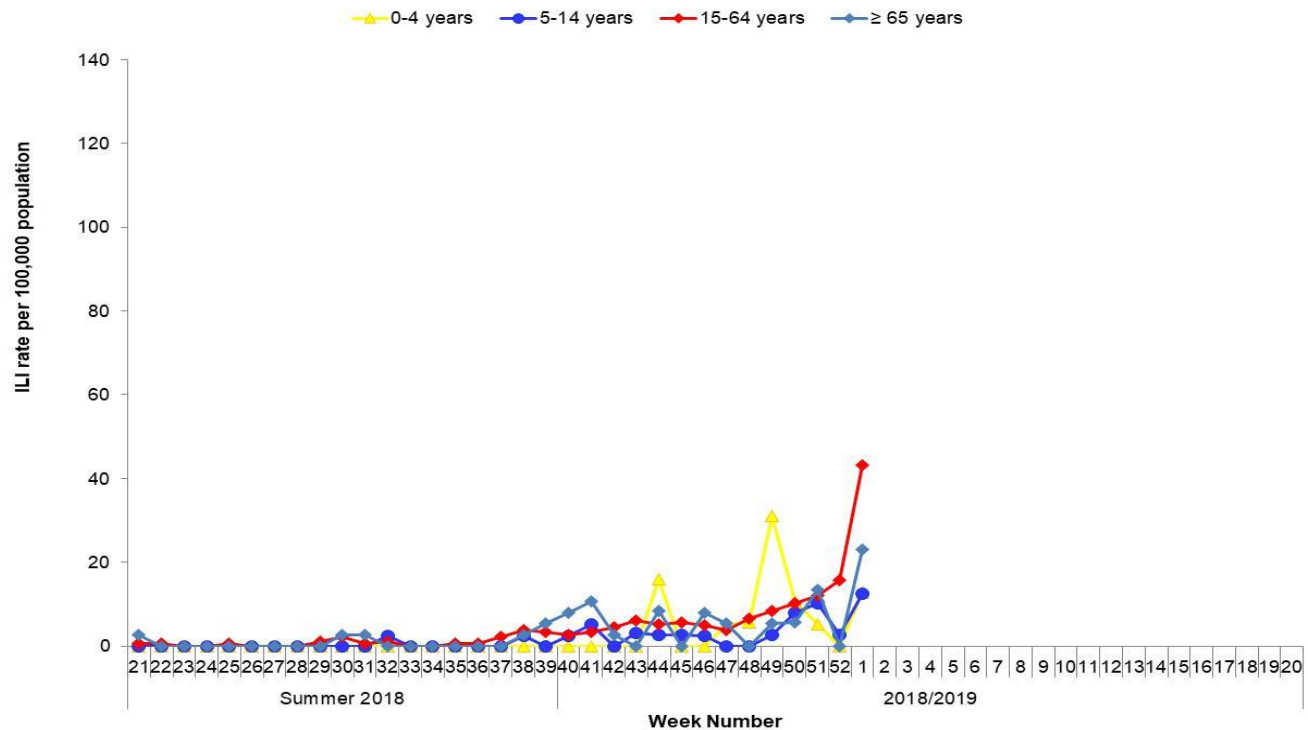


Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2018 and the 2018/2019 influenza season to date. *Source: ICGP.*

2. Influenza and Other Respiratory Virus Detections - NVRL

The data reported in this section for the 2018/2019 influenza season refer 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 detections increased during week 1 2019, compared to recent weeks, with 116 (23%) influenza positive specimens reported by the NVRL from sentinel and non-sentinel sources: 100 A(H1N1)pdm09, 5 A(H3N2), 10 A (not subtyped) and 1 influenza B. Of subtyped influenza A viruses, 95% were due to influenza A(H1N1)pdm09 and 5% were due to A(H3N2).
- Data from the NVRL for week 1 2019 and the 2018/2019 season to date are detailed in tables 1 and 2.
- Influenza A(H1N1)pdm09 is the dominant circulating virus this season to date, with low numbers of A(H3N2) and influenza B also being reported (figures 3 & 4).
- The NVRL have carried out genetic characterisation of 15 influenza A(H1N1)pdm09 positive specimens to date this season. All belonged to the influenza A(H1N1)pdm09 vaccine virus clade, genetic clade 6B.1, represented by A/Michigan/50/2015 in the 2018/2018 influenza vaccine (matched H1N1 vaccine component).
- Further genetic and antigenic testing is ongoing at the NVRL.
- Respiratory syncytial virus (RSV) detections continued to decrease during week 1 2019 (table 2 & figure 5).
- Co-infections of all seasonal respiratory viruses were reported during week 1 2019.
- Human metapneumovirus, adenovirus, parainfluenza virus and picornavirus (which includes both rhinovirus and enterovirus) continue to be detected (table 2).

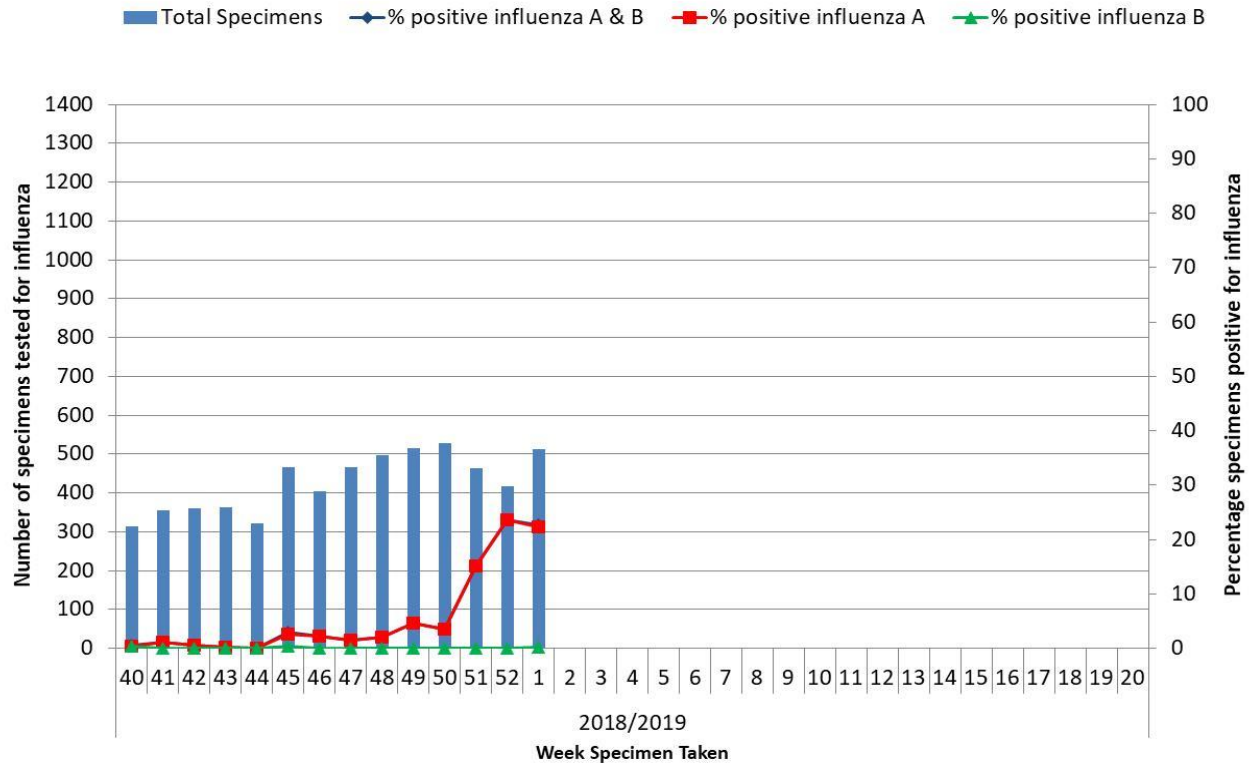


Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2018/2019 influenza season. Source: NVRL.

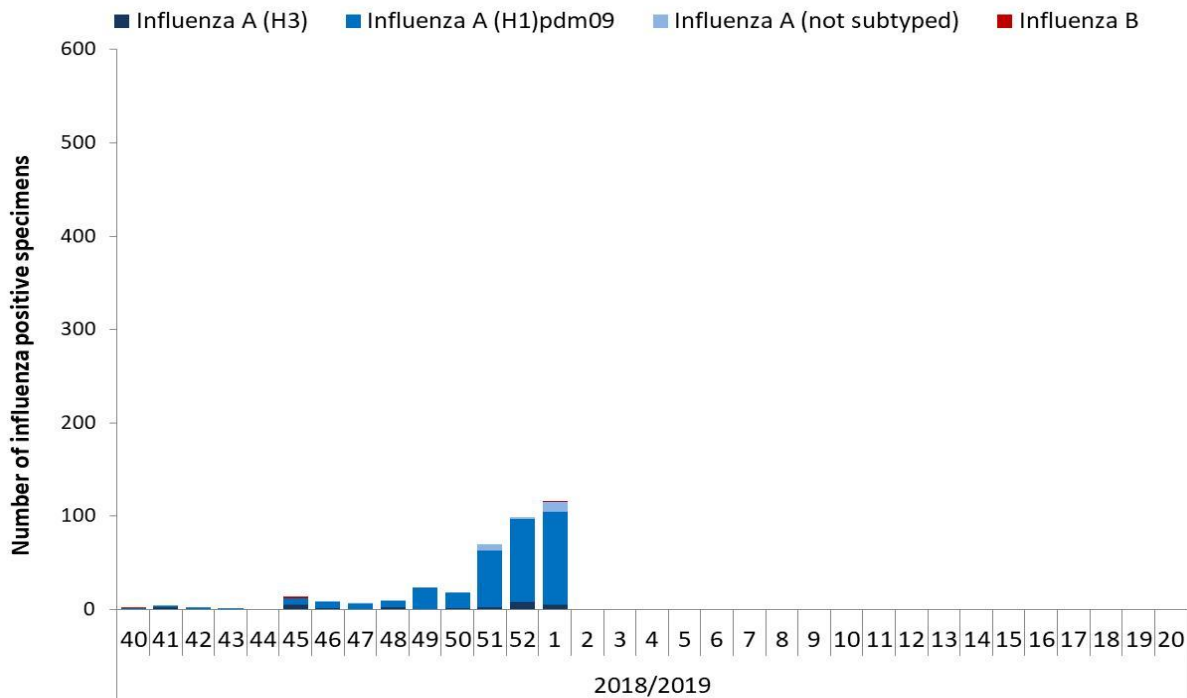


Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2018/2019 influenza season. Source: NVRL.

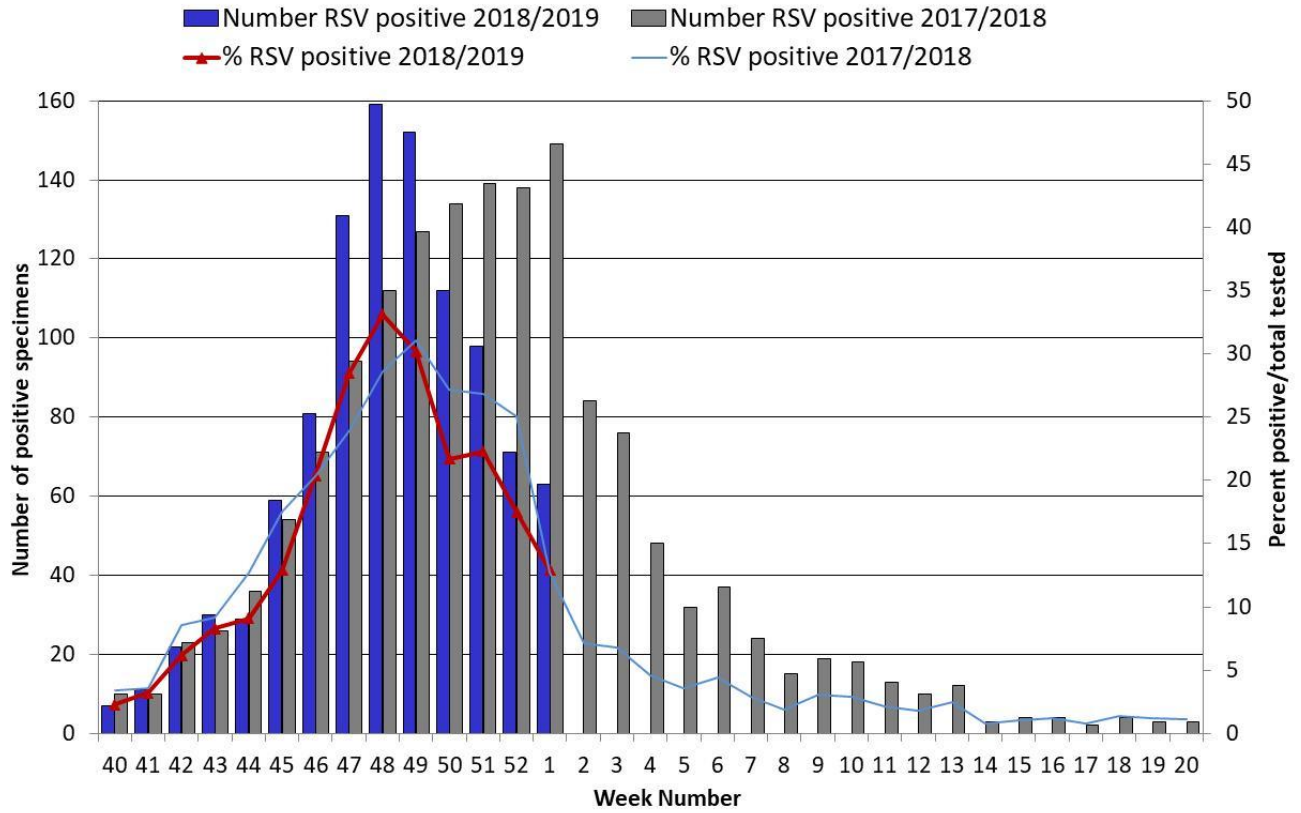


Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2018/2019 season, compared to the 2017/2018 season. Source: NVRL.

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 1 2019 and the 2018/2019 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	
1 2019	Sentinel	26	9	34.6	8	0	1	9	0
	Non-sentinel	487	107	22.0	92	5	9	106	1
	Total	513	116	22.6	100	5	10	115	1
2018/2019	Sentinel	145	28	19.3	25	0	2	27	1
	Non-sentinel	5840	349	6.0	299	26	21	346	3
	Total	5985	377	6.3	324	26	23	373	4

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 1 2019 and the 2018/2019 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
1 2019	Sentinel	26	1	3.8	1	3.8	0	0.0	0	0.0	0	0.0	0	0.0	2	7.7
	Non-sentinel	487	63	12.9	7	1.4	0	0.0	1	0.2	3	0.6	3	0.6	31	6.4
	Total	513	64	12.5	8	1.6	0	0.0	1	0.2	3	0.6	3	0.6	33	6.4
2018/2019	Sentinel	145	18	12.4	4	2.8	1	0.7	0	0.0	1	0.7	2	1.4	13	9.0
	Non-sentinel	5840	1025	17.6	152	2.6	2	0.0	17	0.3	48	0.8	159	2.7	273	4.7
	Total	5985	1043	17.4	156	2.6	3	0.1	17	0.3	49	0.8	161	2.7	286	4.8

[†] 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.

The geographical spread of influenza/ILI during week 1 2019 is shown in figure 6. Sporadic activity was reported in HSE-Midlands and HSE-West and localised activity was reported in all other areas (figure 6).

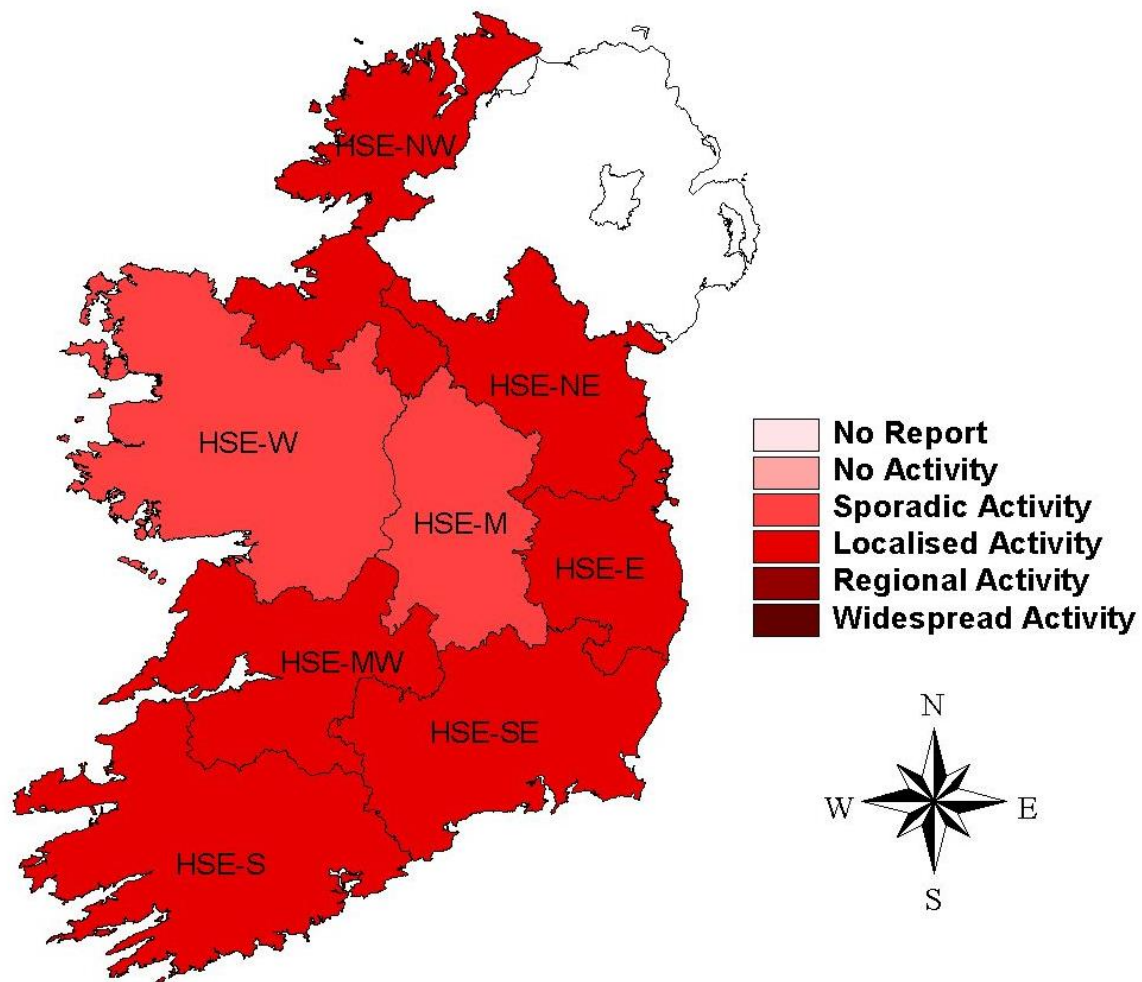


Figure 6: Map of provisional influenza activity by HSE-Area during week 1 2019

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 the network of sentinel hospitals were at moderate levels, at 266, during week 1 2019. However, data were not received from three hospitals (figure 7).

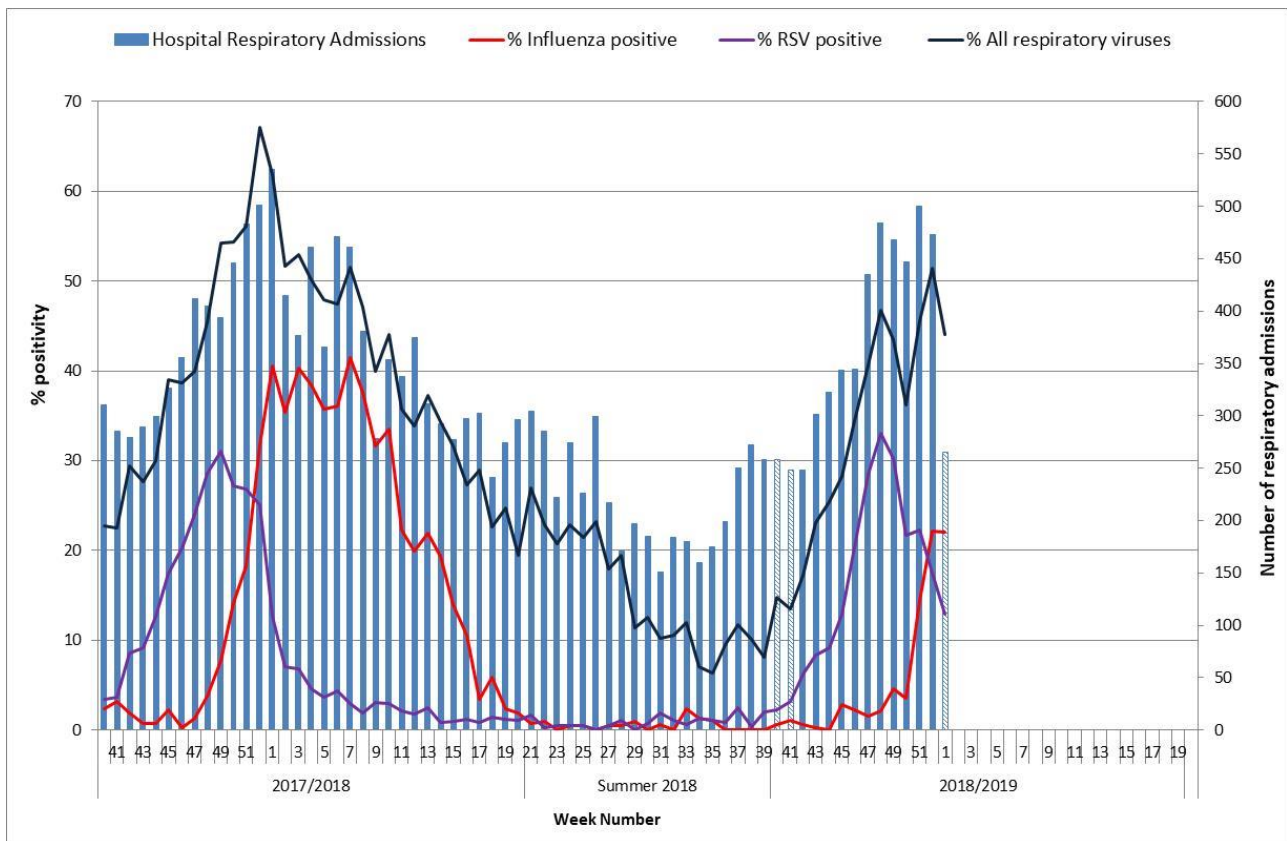


Figure 7: Number of respiratory admissions reported from the sentinel hospital network and % positivity for influenza, RSV and all seasonal respiratory viruses tested[‡] by the NVRL by week and season. Source: Departments of Public Health - Sentinel Hospitals & NVRL.

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 to 6% during week 1 2019 from 3% in week 52 2018. There were 975 calls relating to self-reported influenza (figure 8).

[‡] 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). Weeks where data were missing or unavailable are represented by the hatched bar

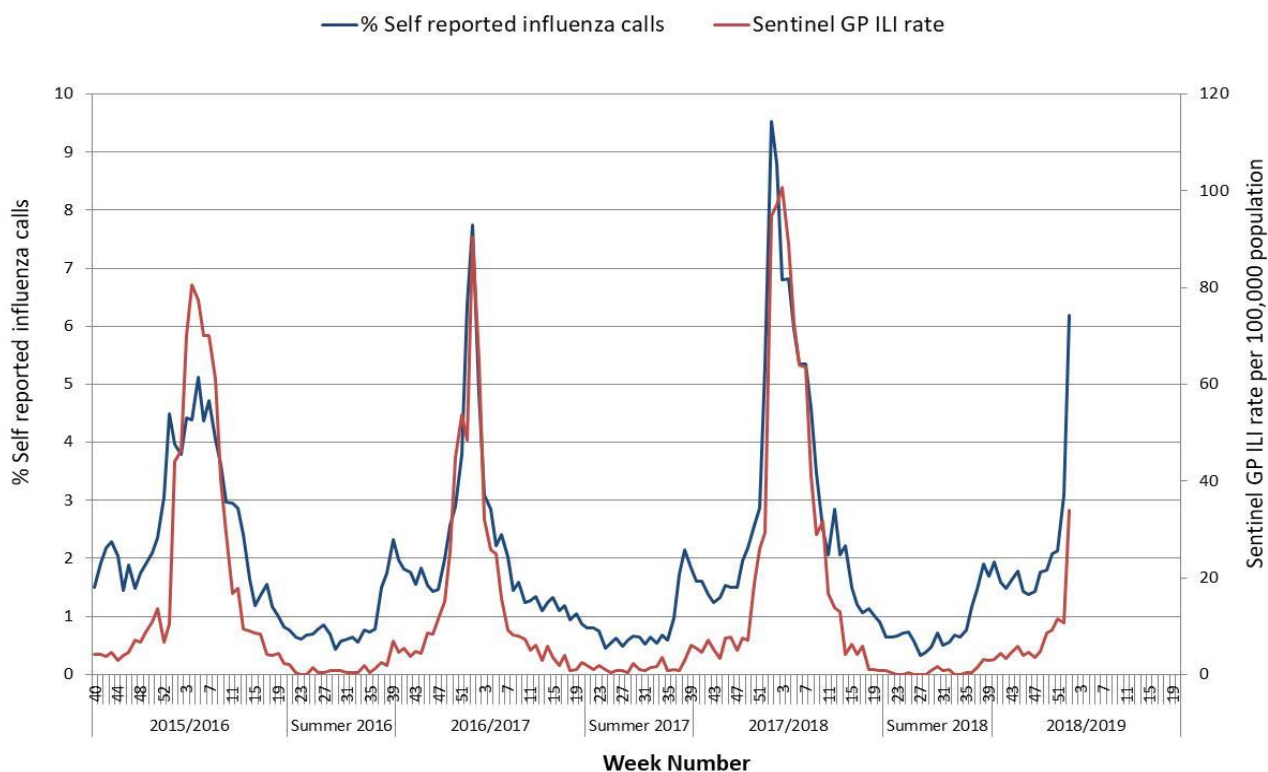


Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.

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 week 1 2019 to 358 (compared to 69 in the previous week). During week 1 2019, 86 cases were due to influenza A(H1N1)pdm09, 7 were due to A(H3N2), 264 were due to influenza A (not subtyped) and 1 was due to influenza B. For the 2018/2019 influenza season to date, 634 confirmed influenza cases have been notified to HPSC: 170 were due to influenza A(H1N1)pdm09, 17 were due to A(H3N2), 439 were due to A (not subtyped), 7 were due to influenza B and one was due to influenza type/subtype not reported.

RSV notifications were at high levels during week 1 2019, with 355 cases notified.

6. Influenza Hospitalisations

One hundred and fifty one confirmed influenza hospitalised cases were notified to HPSC during week 1 2019. For the 2018/2019 influenza season to date, 282 confirmed influenza hospitalised cases (99% influenza A and 1% influenza B) have been notified to HPSC: 77 were due to A(H1N1)pdm09, 2 were due to A(H3N2), 200 were due to A (not subtyped) and three were due to influenza B. Age specific rates for hospitalised influenza cases are reported in table 3, with the highest rates reported in those aged less than five years.

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.

Twenty nine confirmed influenza cases (eleven associated with influenza A(H1N1)pdm09 and eighteen with influenza A - not subtyped) were admitted to critical care units and reported to HPSC during the 2018/2019 influenza season to date. Information on underlying conditions was available for twenty five ICU patients and nineteen had underlying medical conditions. Vaccination status was reported for sixteen, fifteen of whom had not been vaccinated. The age specific rates for admission to critical care are shown in table 3. These ICU rates are based on small numbers.

Table 3: Age specific rates for confirmed influenza cases hospitalised and admitted to critical care during the 2018/2019 influenza season to date. Age specific rates are based on the 2016 CSO census.

Age (years)	Hospitalised		Admitted to ICU	
	Number	Age specific rate per 100,000 population	Number	Age specific rate per 100,000 population
<1	11	17.7	0	0
1-4	51	18.9	1	0.4
5-14	31	4.6	0	0
15-24	8	1.4	0	0
25-34	32	4.9	3	0.5
35-44	23	3.1	3	0.4
45-54	32	5.1	6	1.0
55-64	31	6.1	5	1.0
≥65	63	9.9	9	1.4
Unknown			2	
Total	282	5.9	29	0.6

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.

- Six deaths in notified influenza cases were reported to HPSC in the 2018/2019 influenza season to date.
- 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[§]

- One influenza outbreak due to influenza A(H3N2), in a community hospital/long-stay unit in HSE-East, was notified to HPSC during week 1 2019.
- One RSV outbreak in a nursing home in HSE-East was notified to HPSC during week 1 2019.
- Two acute respiratory infection (ARI) outbreaks were reported during week 1 2019; one was in a community hospital/long-stay unit in HSE-South East and the other was in a hotel in HSE-South
- For the 2018/2019 influenza season to date, 18 influenza/ARI general outbreaks have been notified; four were due to influenza, four were due to RSV, two were due to rhinovirus/enterovirus, one was due to human metapneumovirus, one was due to coronavirus and the pathogen was not reported for the remaining six outbreaks. Table 4 summarises respiratory outbreaks notified on CIDR during the 2018/2019 season to date.

Table 4: Summary of respiratory outbreaks by HSE area and disease during 2018/2019 *Source: CIDR*

HSE area	Acute respiratory infection	Influenza	Respiratory syncytial virus infection	Total
HSE-E	1	2	1	4
HSE-M	2			2
HSE-NW			3	3
HSE-NE		1		1
HSE-SE	2	1		3
HSE-S	4			4
HSE-W	1			1
Total	8	3	3	18

10. International Summary

- Influenza activity continued to increase in the European Region during week 52 2018. Influenza A(H1N1)pdm09 and A(H3N2) were detected in similar proportions in sentinel samples. However, two thirds of non-sentinel positives, and most hospitalised cases, were due to influenza A(H1N1)pdm09.
- The predominant A(H1N1)pdm09 and A(H3N2) viruses that are circulating match the vaccine components, although fewer than 50 A(H3N2) viruses have been genetically characterized and only 13 have been antigenically characterized so far.
- For week 52 2018, data from 13 Member States and areas reporting to the EuroMOMO project indicated that all-cause mortality is at expected levels for this time of year.
- Influenza activity continued to increase in North American, with influenza A(H1N1)pdm09 predominating.
- National Influenza Centres (NICs) and other national influenza laboratories from 102 countries, areas or territories reported data to FluNet for the time period from 10th to 23rd December 2018. The WHO GISRS laboratories tested more than 97,188 specimens during that time period; 12,945 were positive for influenza viruses, of which 12,148 (94%) were typed as influenza A and 797 (6%) as influenza B. Of the sub-typed influenza A viruses, 5823 (77%) were influenza A(H1N1)pdm09 and 1739 (23%) were influenza A(H3N2). Of the characterised B viruses, 40 (40%) belonged to the B-Yamagata lineage and 59 (60%) to the B-Victoria lineage.

[§] Excludes family outbreaks

- 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 22nd, 2018, the WHO vaccine strain selection committee recommended that trivalent vaccines for use in the 2018/2019 northern hemisphere influenza season contain the following: an A/Michigan/50/2015 (H1N1)pdm09-like virus, an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus and a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage). It is recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

http://www.who.int/influenza/vaccines/virus/recommendations/2018_19_north/en/

On September 27, 2018, the WHO vaccine strain selection committee recommended that trivalent vaccines for use in the 2019 southern hemisphere influenza season contain the following: an A/Michigan/50/2015 (H1N1)pdm09-like virus; an A/Switzerland/8060/2017 (H3N2)-like virus and a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage). It is recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage). <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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