Influenza Surveillance in Ireland – Weekly Report

Influenza Week 3 2019 (14th – 20th January 2019)

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Intensive Care Society of Ireland

Summary

Influenza activity in Ireland decreased during week 3 2019 (week ending 20th January 2019). Influenza-like illness rates remain above baseline levels. Influenza A(H1N1)pdm09 is the dominant circulating virus to date this season. Confirmed influenza hospitalisations decreased in week 3. It is recommended that antivirals be considered for the treatment and prophylaxis of influenza in at-risk groups.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 42.5 per 100,000 population in week 3 2019. This is a decrease compared to the updated rate of 51.6 per 100,000 reported during week 2 2019.
  - ILI rates are above the Irish baseline threshold (17.5 per 100,000 population).
  - ILI age specific rates increased in children aged less than 5 years and decreased in older children and adults during week 3 2019
- National Virus Reference Laboratory (NVRL):
  - Influenza detections decreased during week 3 2019, with 155 (23%) influenza positive specimens reported by the NVRL from sentinel and non-sentinel sources: 141 influenza A(H1N1)pdm09, 6 A(H3N2) and 8 A(not subtyped).
  - Influenza A(H1N1)pdm09 is the dominant circulating virus in the 2018/2019 season to date.
  - 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 3 2019.
  - Co-infections of all seasonal respiratory viruses were reported during week 3 2019. Seventeen percent of influenza cases detected from non-sentinel sources were co-infected with another respiratory virus.
  - Human metapneumovirus, adenovirus, parainfluenza virus and picornavirus (which includes both rhinovirus and enterovirus) continue to be detected.
- Hospitalisations: Two hundred and fifteen confirmed influenza hospitalised cases were notified to HPSC during week 3 2019, bringing the season total to 767. 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: Fifty five confirmed influenza cases were admitted to critical care units and reported to HPSC during the 2018/2019 season to date.
- Mortality: Twenty one deaths in influenza cases were notified to HPSC in the 2018/2019 season to date.
- Outbreaks: Three influenza outbreaks and three acute respiratory infection (ARI) outbreaks were notified to HPSC during week 3 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 3 2019, 99 influenza-like illness (ILI) cases were reported by sentinel GPs, corresponding to an ILI consultation rate of 42.5 per 100,000 population. This was a decrease compared to the rate of 51.6 per 100,000 population reported during week 2 2019 (figure 1).
- The ILI rate for week 3 2019 was above the Irish baseline ILI threshold (17.5/100,000 population) (figure 1).
- ILI age specific rates increased in children aged less than 5 years (62/100,000) and decreased in older children and adults (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.

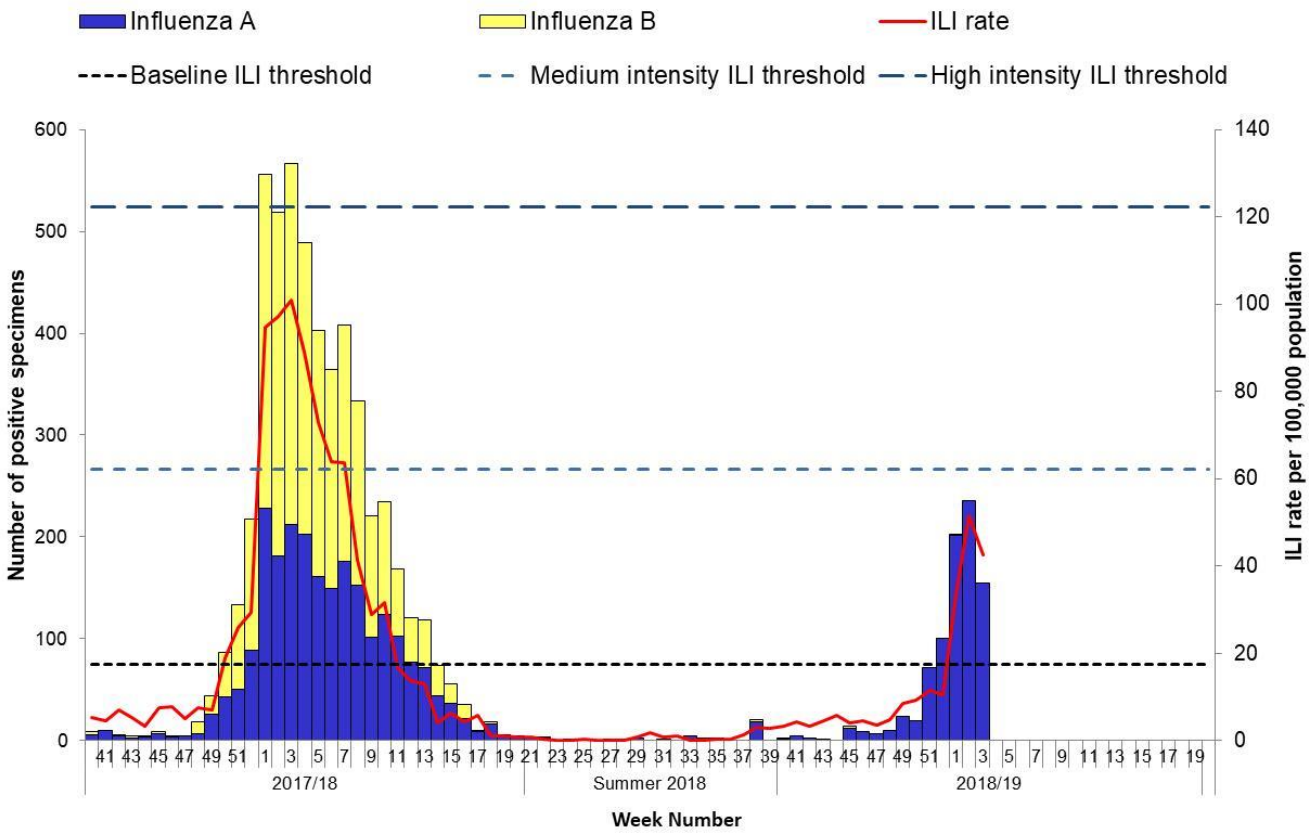

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[*] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

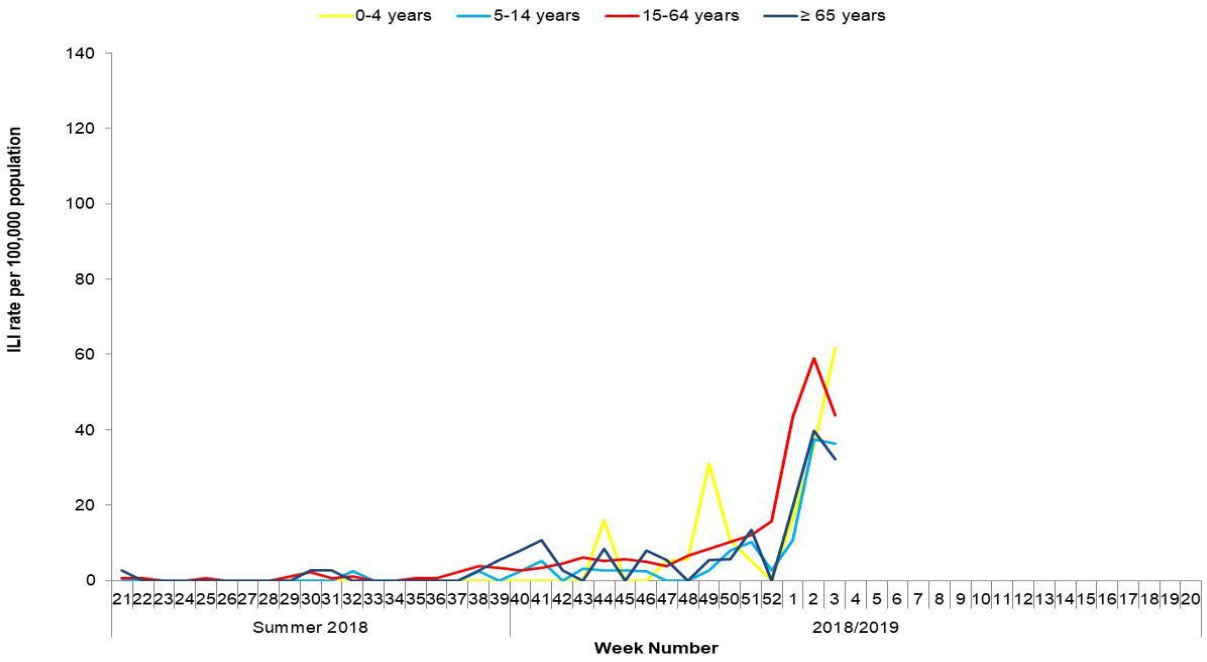

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2018 and the 2018/2019 influenza season to date. *Source: ICGP.*

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 decreased during week 3 2019, with 155 (23%) influenza positive specimens reported by the NVRL from sentinel and non-sentinel sources, compared to an updated figure of 236 (25%) detections for week 2 2019
- Of the positives during week 3 2019, 141 (91%) were influenza A(H1N1)pdm09, 6 (4%) were influenza A(H3N2) and 8 (5%) were influenza A(not subtyped)
- Data from the NVRL for week 3 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 3 2019 (table 2 & figure 5).
- Co-infections of all seasonal respiratory viruses were reported during week 3 2019. Seventeen percent of influenza cases detected from non-sentinel sources were co-infected with another respiratory virus.
- Human metapneumovirus, adenovirus, parainfluenza virus and picornavirus (which includes both rhinovirus and enterovirus) continue to be detected (table 2).
- The overall proportion of non-sentinel specimens positive for respiratory viruses was 35% during week 3 2019.

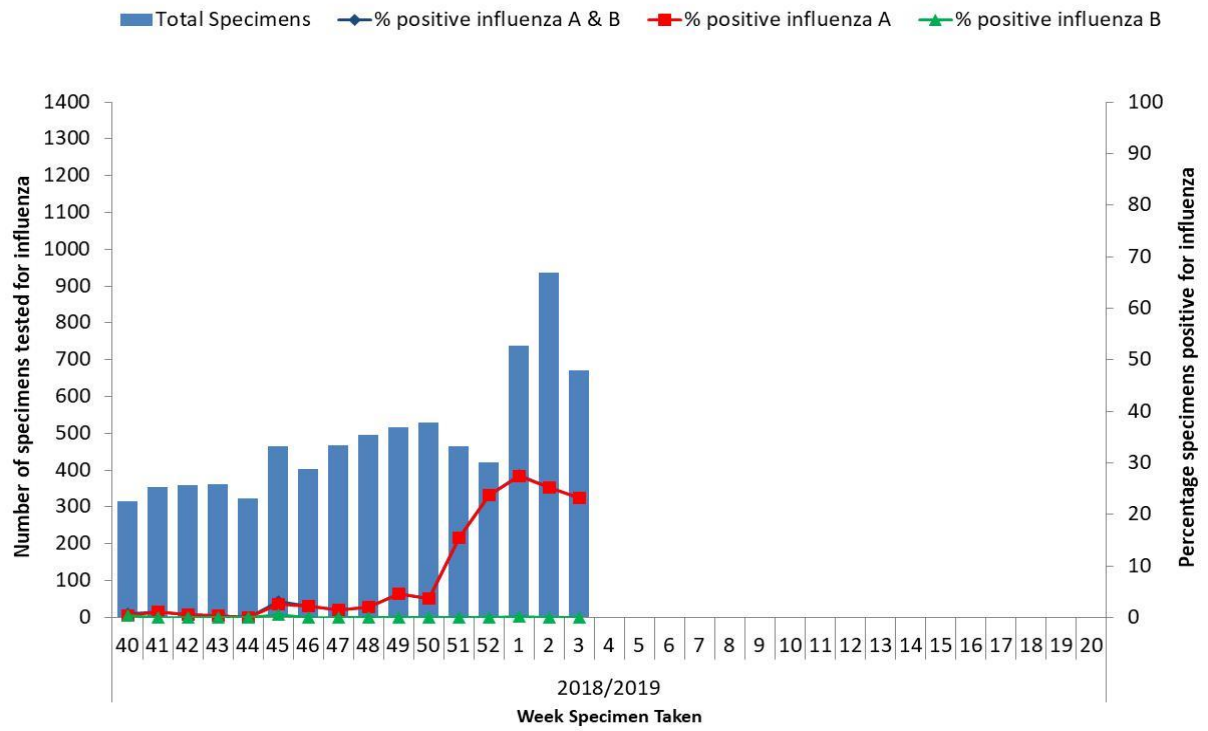

Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2018/2019 influenza season. *Source: NVRL.*

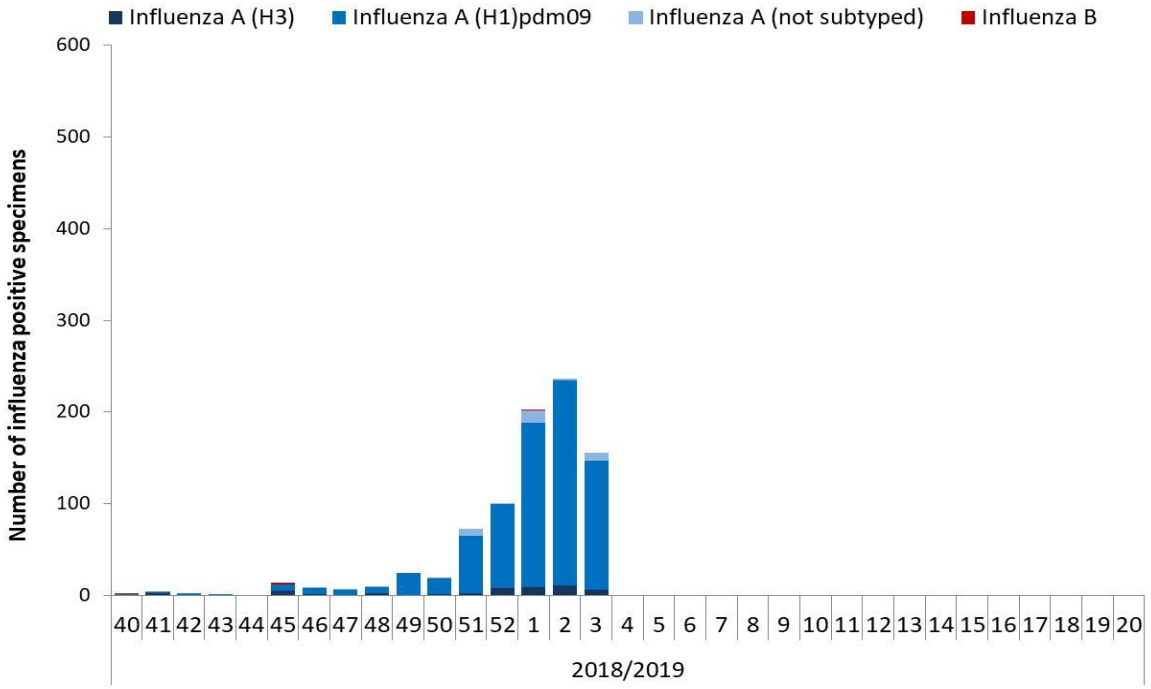

Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2018/2019 influenza season. *Source: NVRL.*

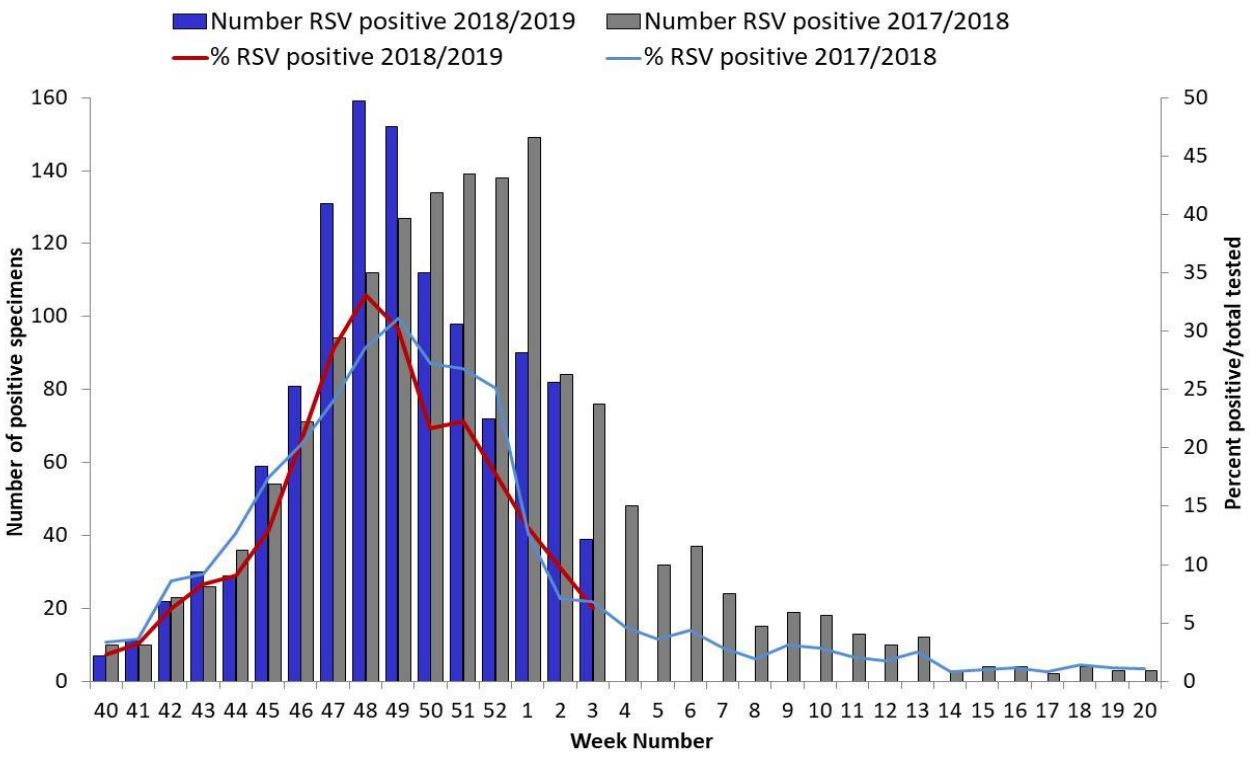

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2018/2019 season, compared to the 2017/2018 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 3 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	
3 2019	Sentinel	50	28	56.0	20	0	8	28	0
	Non-sentinel	621	127	20.5	121	6	0	127	0
	Total	**671**	**155**	**23.1**	**141**	**6**	**8**	**155**	**0**
2018/2019	Sentinel	320	111	34.7	98	2	10	110	1
	Non-sentinel	7500	747	10.0	673	45	26	744	3
	Total	**7820**	**858**	**11.0**	**771**	**47**	**36**	**854**	**4**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 3 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
3 2019	Sentinel	50	3	6.0	1	2.0	0	0.0	0	0.0	0	0.0	0	0.0	3	6.0
	Non-sentinel	621	39	6.3	4	0.6	0	0.0	0	0.0	2	0.3	2	0.3	45	7.2
	Total	**671**	**42**	**6.3**	**5**	**0.7**	**0**	**0.0**	**0**	**0.0**	**2**	**0.3**	**2**	**0.3**	**48**	**7.2**
2018/2019	Sentinel	320	28	8.8	6	1.9	1	0.3	0	0.0	1	0.3	2	0.6	23	7.2
	Non-sentinel	7500	1174	15.7	174	2.3	2	0.0	19	0.3	65	0.9	165	2.2	377	5.0
	Total	**7820**	**1202**	**15.4**	**180**	**2.3**	**3**	**0.0**	**19**	**0.2**	**66**	**0.8**	**167**	**2.1**	**400**	**5.1**

[†] 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 3 2019 is shown in figure 6. Localised influenza activity was reported in all areas (figure 6).

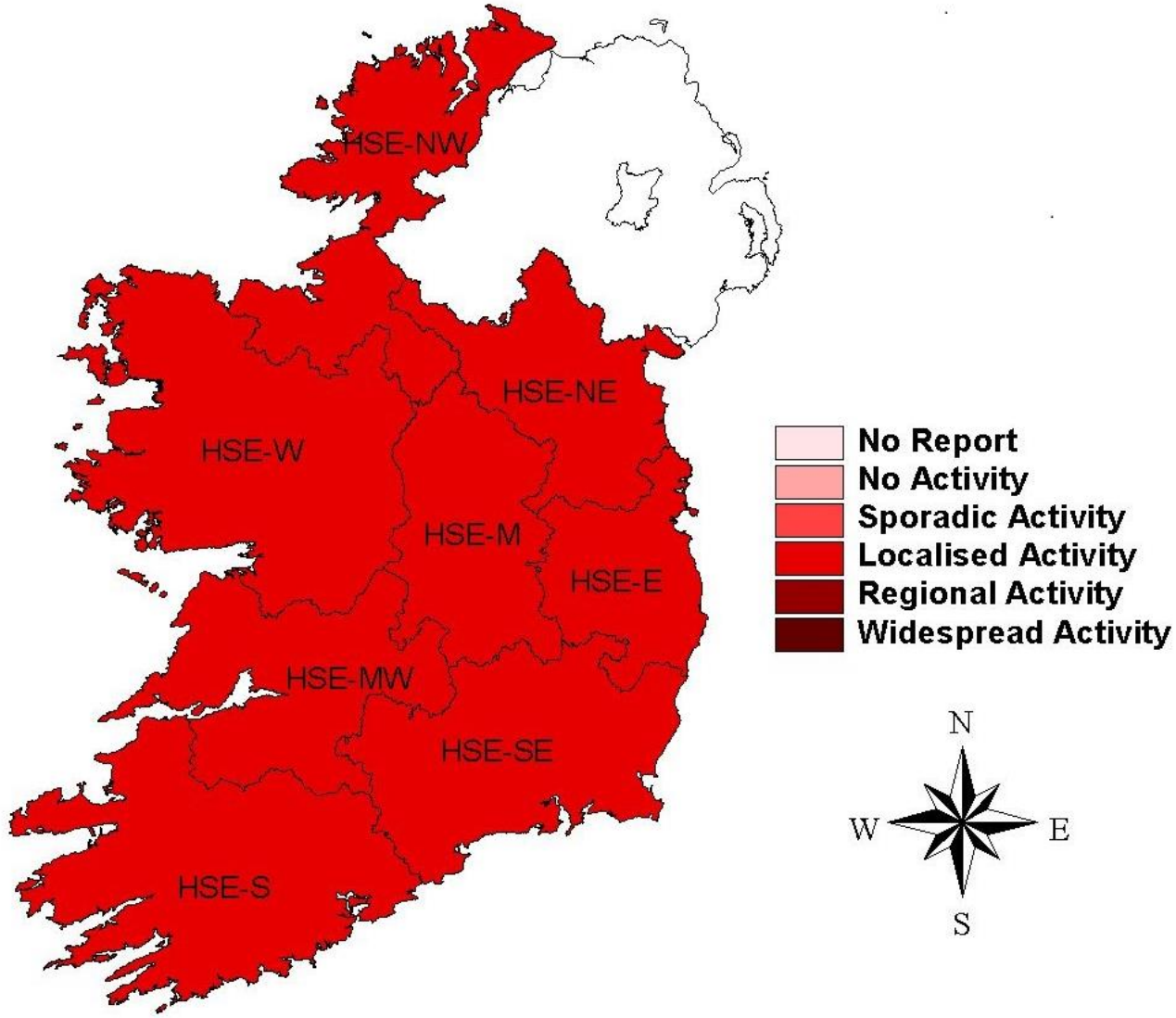

Figure 6: Map of provisional influenza activity by HSE-Area during week 3 2019

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 491, during week 3 2019. This was an increase compared to week 2 2019 when 453 respiratory admissions were reported. All eight hospitals reported data (figure 7).

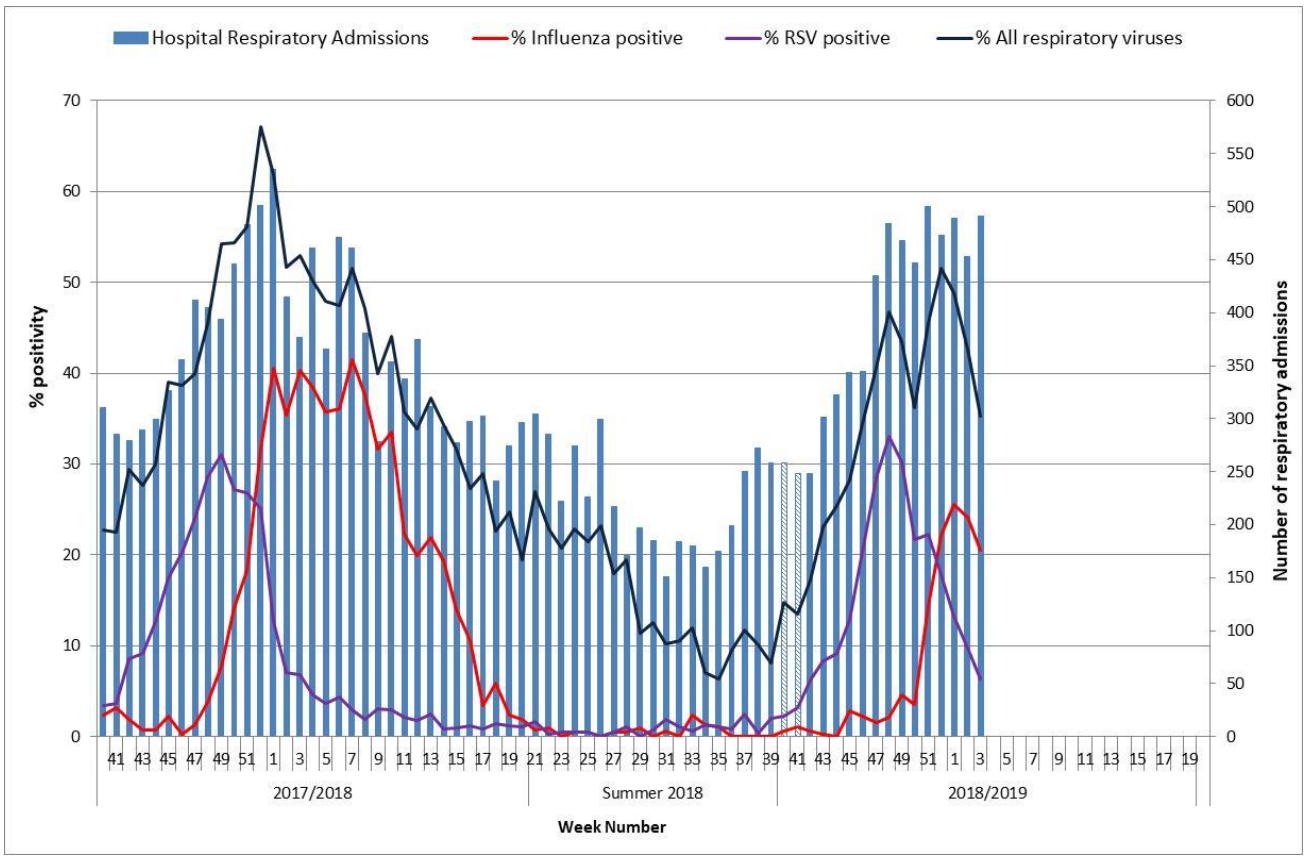

Figure 7: Number of respiratory admissions reported from the sentinel hospital network and % positivity for influenza, RSV and all seasonal respiratory viruses tested[‡] by the NVRL by week and season. *Source: Departments of Public Health - Sentinel Hospitals & NVRL.*

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 decreased to 3.4% in week 3 2019 compared to 5.6% in week 2. Five services reported data for week 3 and there were 581 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

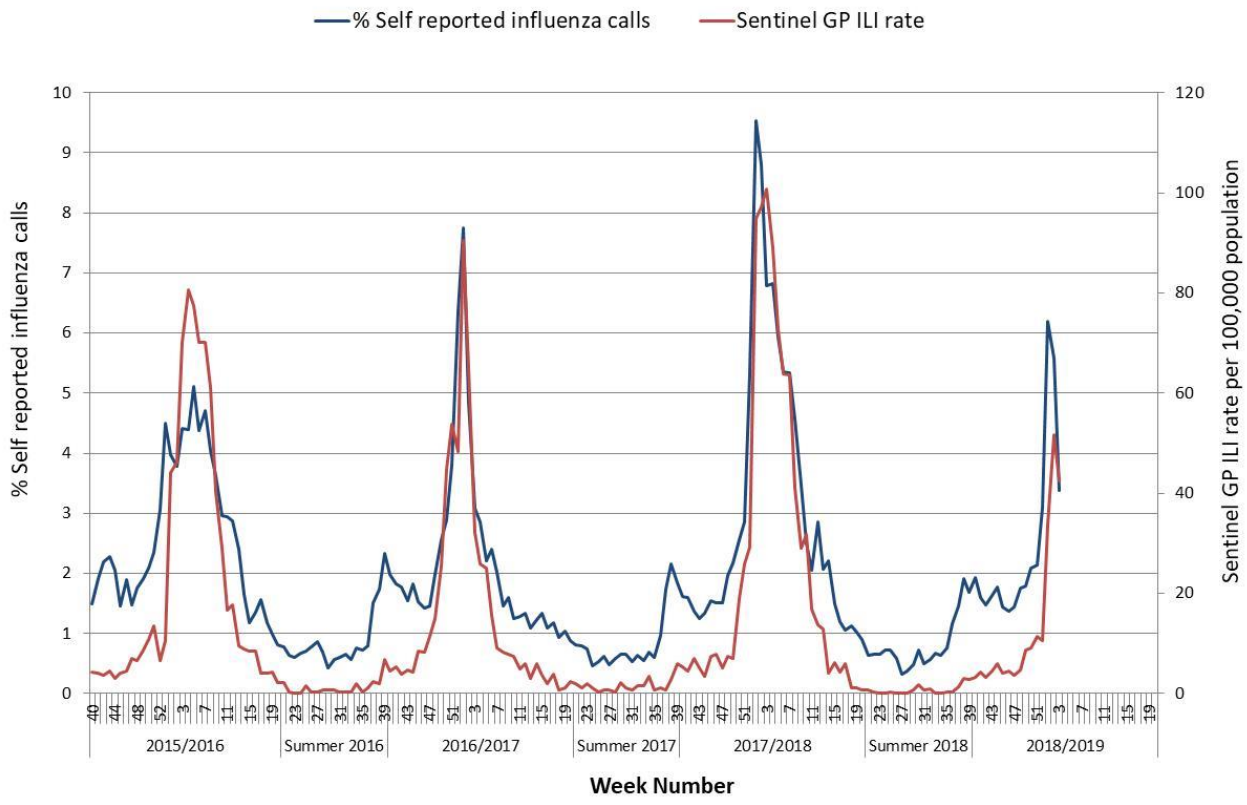

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 decreased during week 3 2019, with 511 cases reported compared to 590 in the previous week. During week 3 2019, 131 cases were due to influenza A(H1N1)pdm09, 5 were due to A(H3N2), 373 were due to influenza A (not subtyped) and 2 were due to influenza B.

For the 2018/2019 influenza season to date, 1,735 confirmed influenza cases have been notified to HPSC: 566 were due to influenza A(H1N1)pdm09, 31 were due to A(H3N2), 1,126 were due to A (not subtyped), 11 were due to influenza B and 1 was due to influenza type/subtype not reported.

RSV notifications were at moderate levels during week 3 2019, with 180 cases notified.

6. Influenza hospitalisations

Two hundred and fifteen confirmed influenza hospitalised cases were notified to HPSC during week 3 2019. For the 2018/2019 influenza season to date, 767 confirmed influenza hospitalised cases (99% influenza A and 1% influenza B) have been notified to HPSC: 240 were due to A(H1N1)pdm09, 6 were due to A(H3N2), 516 were due to A (not subtyped)) and 5 were due to influenza B (figure 9).

Age specific rates for hospitalised influenza cases are reported in table 3, with the highest rates reported in those aged less than five years old (57/100,000 population).

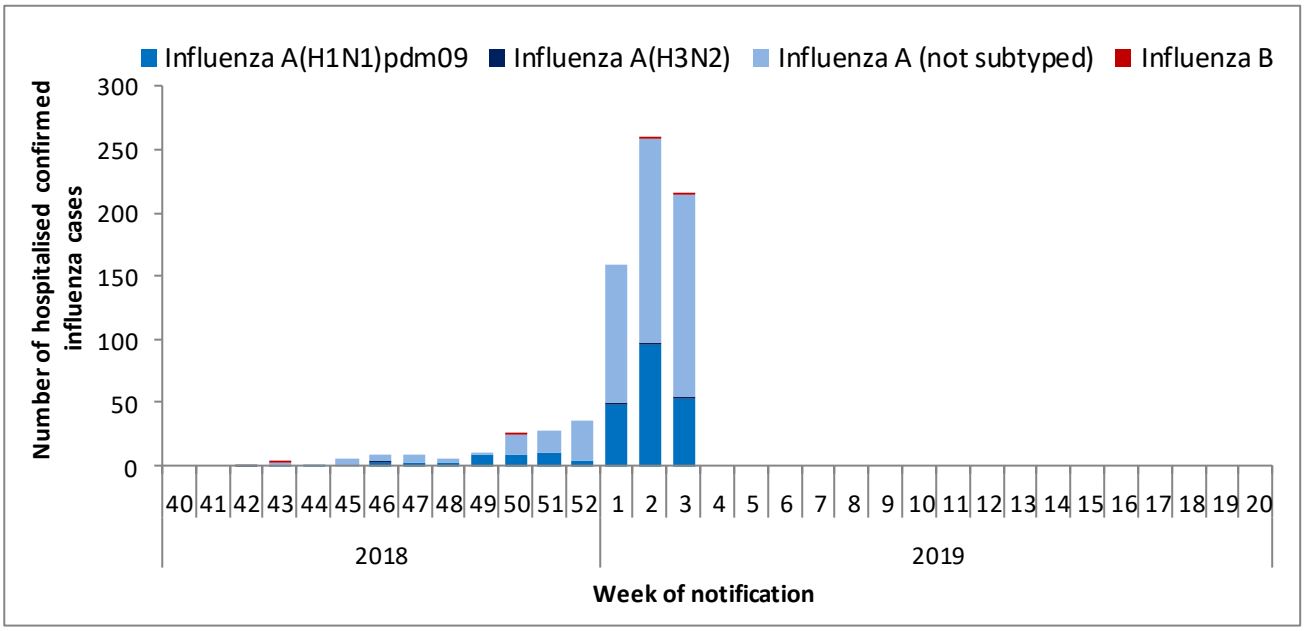

Figure 9.Number of confirmed influenza cases hospitalised by influenza type/subtype and by week of notification.
Source: Ireland's Computerised Infectious Disease Reporting System (CIDR).

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.

Fifty five confirmed influenza cases (twenty two associated with influenza A(H1N1)pdm09 and thirty three with influenza A(not subtyped)) were admitted to critical care units and reported to HPSC during the 2018/2019 influenza season to date. The age specific rates for admission to critical care are shown in table 3. The highest ICU admission rates were in adults aged 45 years and older (2/100,000 population).

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.

	Hospitalised		Admitted to ICU	
Age (years)	Number	Age specific rate per 100,000 population	Number	Age specific rate per 100,000 population
<1	33	53	0	0
1-4	155	57.6	1	0.4
5-14	87	12.9	0	0
15-24	25	4.3	0	0
25-34	62	9.4	5	0.8
35-44	49	6.6	8	1.1
45-54	87	13.9	17	2.7
55-64	83	16.3	8	1.6
≥65	186	29.2	16	2.5
Unknown	0		0	
Total	**767**	**16.1**	**55**	**1.2**

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.

- Twenty one 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[§]

- Three influenza outbreaks were notified to HPSC during week 3 2019. Two were in hospitals in HSE-E and one was in a nursing home in HSE-E.
- Three acute respiratory infection (ARI) outbreaks were reported during week 3 2019. One was due to hMPV and was in a nursing home in HSE-NE, one was in a childcare facility in HSE-W and the remaining outbreak was in a day centre for people with disabilities in HSE-NW.
- For the 2018/2019 influenza season to date, 35 influenza/ARI general outbreaks have been notified; thirteen were due to influenza, six were due to RSV, three were due to coronavirus, three were due to human metapnuemovirus, two were due to rhinovirus/enterovirus and the pathogen was not reported for the remaining eight outbreaks. Table 4 summarises respiratory outbreaks notified on CIDR during the 2018/2019 season to date.

[§] Excludes family outbreaks

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

HSE area	Influenza	Respiratory syncytial virus infection	Acute respiratory infection	Total
HSE-E	9	1	1	11
HSE-M	0	0	2	2
HSE-MW	0	0	0	0
HSE-NE	1	0	2	3
HSE-NW	1	4	1	6
HSE-SE	1	0	2	3
HSE-S	1	0	6	7
HSE-W	0	1	2	3
Total	**13**	**6**	**16**	**35**

10. International Summary

- Influenza activity continued to increase in the European Region during week 2 2019. Both influenza A(H1N1)pdm09 and A(H3N2) are being detected in Europe, with A(H1N1)pdm09 slightly more prevalent.
- The influenza A(H1N1)pdm09 viruses that have been characterized to date are antigenically similar to the 2018–2019 northern hemisphere influenza vaccine virus. Fewer influenza A(H3N2) viruses have been antigenically characterized.
- For week 2 2019, data from 23 Member States and areas reporting to the EuroMOMO project indicated that all-cause mortality was at expected levels for this time of year, but a few countries are starting to observe some excess mortality in elderly populations.
- In the temperate zone of the northern hemisphere influenza activity continued to increase slowly.
- National Influenza Centres (NICs) and other national influenza laboratories from 104 countries, areas or territories reported data to FluNet for the time period from 24th December 2018 to 6th January 2019. The WHO GISRS laboratories tested more than 191,778 specimens during that time period; 37,161 were positive for influenza viruses, of which 38,493 (98%) were typed as influenza A and 668 (2%) as influenza B. Of the sub-typed influenza A viruses, 13,313 (79%) were influenza A(H1N1)pdm09 and 3,446 (21%) were influenza A(H3N2). Of the characterised B viruses, 45 (38%) belonged to the B-Yamagata lineage and 73 (62%) to the B-Victoria lineage.
- 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 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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