Influenza Surveillance in Ireland – Weekly Report

Week 5 2017 (30th January – 5th February 2017)

Summary

Overall, influenza activity in Ireland decreased further during week 5 2017 (up to the week ending February 5, 2017). Influenza A(H3) is the predominant influenza virus circulating this season, with those aged 65 years and older most affected from severe influenza. Influenza hospitalisations and outbreaks in residential care facilities and acute hospital settings continue to be reported. Excess deaths from all causes in those aged 65 years and older were reported in December and January, most likely associated with the circulation of influenza A(H3N2). Antivirals should be considered for the treatment and prevention of influenza in high risk groups.

- Influenza-like illness (ILI): The sentinel GP influenza-like illness (ILI) consultation rate was 25.3 per 100,000 population in week 5 2017, remaining stable compared to the updated rate of 26.9 per 100,000 reported during week 4 2017.
  - ILI rates have been above the Irish baseline ILI threshold (18.3/100,000) for nine consecutive weeks, between weeks 49 2016 and 5 2017. ILI rates remain below the medium intensity threshold level.
  - ILI age specific rates were highest in the 5-14 and 15-64 year age groups during week 5 2017.
- GP Out of Hours: The proportion of influenza–related calls to GP Out-of-Hours services decreased slightly to 2.2% during week 5 2017, compared to 2.9% in week 4 2017.
- National Virus Reference Laboratory (NVRL):
  - Influenza positivity decreased during week 5 2017, with 44 (12.3%) influenza positive specimens reported by the NVRL from sentinel GP and non-sentinel sources: 43 A(H3N2) and 1 B.
  - Influenza A(H3N2) is the predominant circulating influenza virus this season to date.
  - Respiratory syncytial virus (RSV), human metapneumovirus (hMPV), adenovirus and parainfluenza virus positive detections continue to be reported. Coinfections of all seasonal respiratory viruses have been reported throughout the 2016/17 season.
- Respiratory admissions: Respiratory admissions data reported from a network of sentinel hospitals for week 5 2017 increased slightly compared to week 4 2017.
- Hospitalisations: 47 confirmed influenza hospitalised cases were notified to HPSC during week 5 2017, bringing the season total to 1162. The majority of hospitalised cases this season to date, were in those aged 65 years and older.
- Critical care admissions: 38 confirmed influenza cases have been 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.
- Mortality: 57 influenza cases died and were notified to HPSC this season to date.
- Outbreaks: Five influenza outbreaks were reported to HPSC during week 5 2017, three in residential care facilities and two in acute hospital settings.
- International: In the European region, influenza activity remained elevated and widespread and has already peaked in many countries. Influenza A(H3N2) is the predominant virus circulating this season, with those aged 65 years and older most severely affected. Excess all-cause mortality has been reported among the elderly in Europe this season, most likely due to the circulation of influenza A(H3N2) and also associated with severe weather conditions in some countries.

1. GP sentinel surveillance system - Clinical Data

- During week 5 2017, 61 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 25.3 per 100,000 population, remaining stable compared to the updated rate of 26.9 per 100,000 reported during week 4 2017. The ILI rates have been above the Irish baseline ILI threshold (18.3/100,000 population) for nine consecutive weeks (weeks 49 2016 – 5 2017). ILI rates remained below the medium intensity threshold during week 5 2017. ILI rates peaked during week 1 2017 at 90.4/100,000 and have decreased each week for the last four consecutive weeks.
- ILI age specific rates were highest in the 5-14 and 15-64 year age groups during week 5 2017. ILI age specific rates for all age groups remain significantly lower than peak rates reported at the end of December/early January (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 (18.3/100,000 population), medium (58.7/100,000 population) and high (113.3/100,000 population) intensity ILI thresholds are shown in figure 1.

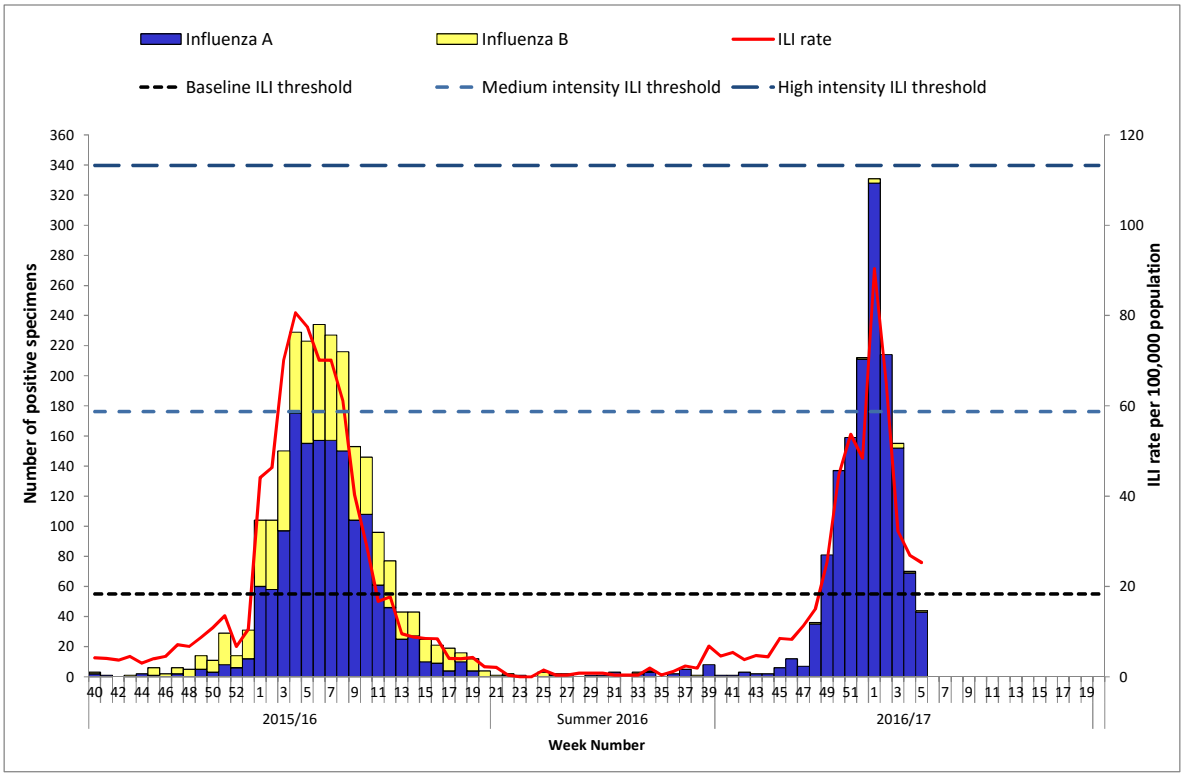

Figure 1: ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold, medium and high intensity ILI thresholds[1] and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: ICGP and NVRL

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

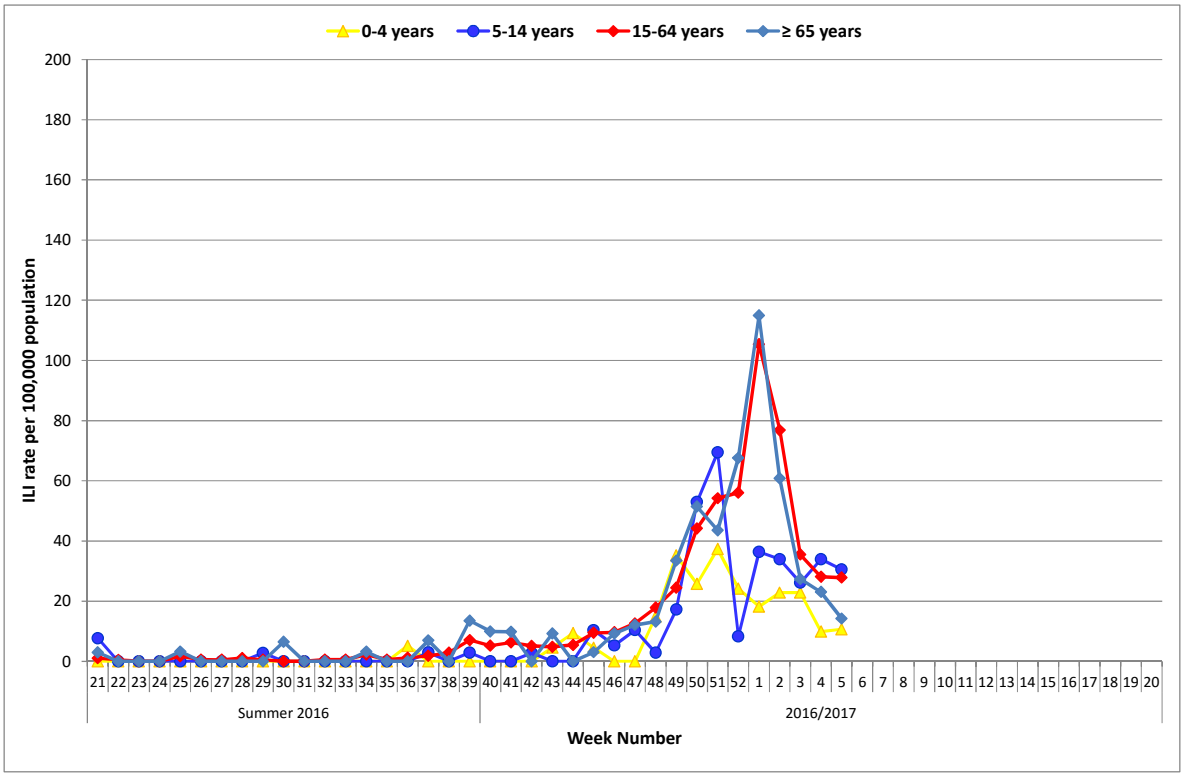

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2016 and the 2016/2017 influenza season to date. *Source: ICGP.*

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 decreased for the fourth consecutive week during week 5 2017, with 44 (12.3%) influenza 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 week 5 2017 and the 2016/17 season to date are detailed in tables 1 and 2.
- Week 5 2017:
  - 12 of 27 (44.4%) sentinel specimens were influenza positive: all were positive for A(H3).
  - 32 of 332 (9.6%) non-sentinel specimens were influenza positive: 31 A(H3) and one influenza B.
- Respiratory syncytial virus (RSV) positivity remained low during week 5 2017, with 14 (4.2%) positive non-sentinel specimens reported by the NVRL. In total 1159 RSV positive non-sentinel specimens have been detected by the NVRL this season. RSV circulated earlier 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, 40 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 week 5 2017 (table 2). Coinfections of all seasonal respiratory viruses* have been reported throughout the 2016/17 season.
- The overall proportion of non-sentinel specimens positive for respiratory viruses* decreased further to 20.8% during week 5 2017, compared to 24.1% during week 4 2017.**Respiratory viruses routinely tested for by the NVRL are detailed above.*

- Genetic characterisation of influenza viruses circulating this season in Ireland has been carried out by the NVRL, on 34 influenza A(H3N2) positive specimens to date.
    - 71% (n=24) of A(H3N2) viruses analysed clustered in a new genetic subclade 3C.2a1, represented by A/Bolzano/7/2016, a subgroup of the vaccine component 3C.2a clade. One specimen (3%) falls into the 3C.2a clade, represented by A/Hong Kong/4801/2014. ECDC has reported that these 3C.2a1 viruses are antigenically similar to the 2016/17 A(H3N2) vaccine strain (clade 3C.2a) but are evolving rapidly.
    - A further 26% (n=9) of A(H3N2) viruses analysed clustered in subgroup 3C.3a, represented by A/Switzerland/9715293/2013, the A(H3N2) strain included in the 2015/16 vaccine.
- Further genetic and antigenic testing is ongoing at the NVRL.

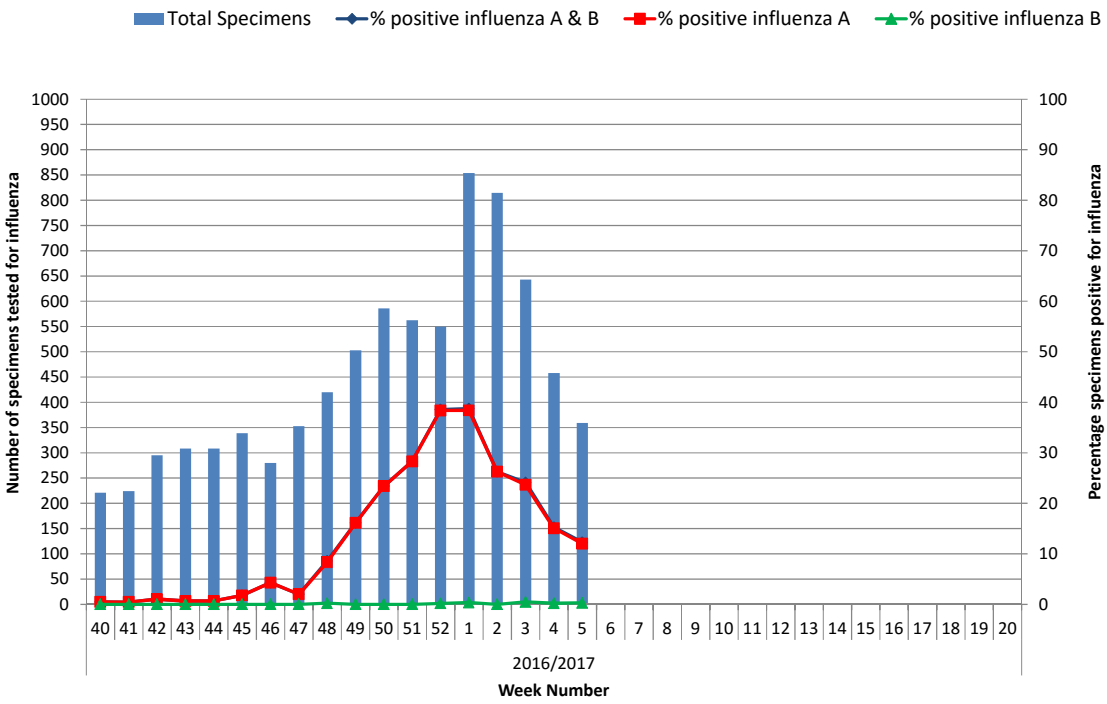

Figure 3: Number of specimens (from sentinel and non-sentinel sources combined) tested by the NVRL for influenza and percentage influenza positive by week for the 2016/2017 influenza season. *Source: NVRL*

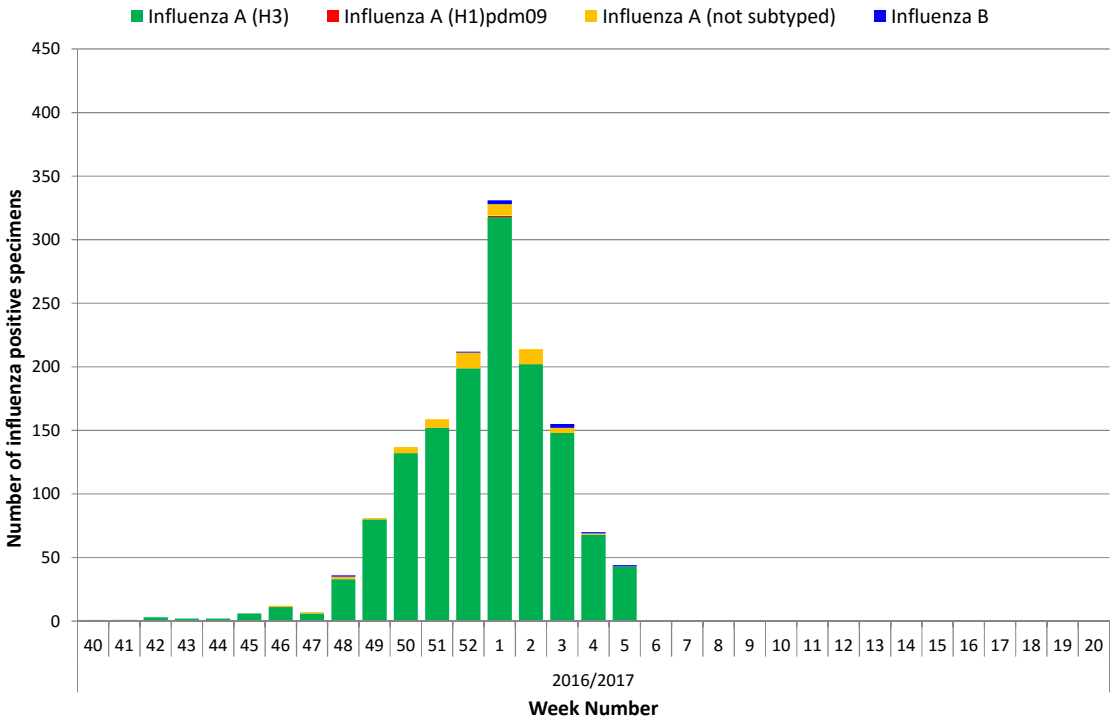

Figure 4: Number of positive influenza specimens (from sentinel and non-sentinel sources combined) by influenza type/subtype tested by the NVRL, by week for the 2016/2017 influenza season. *Source: NVRL.*

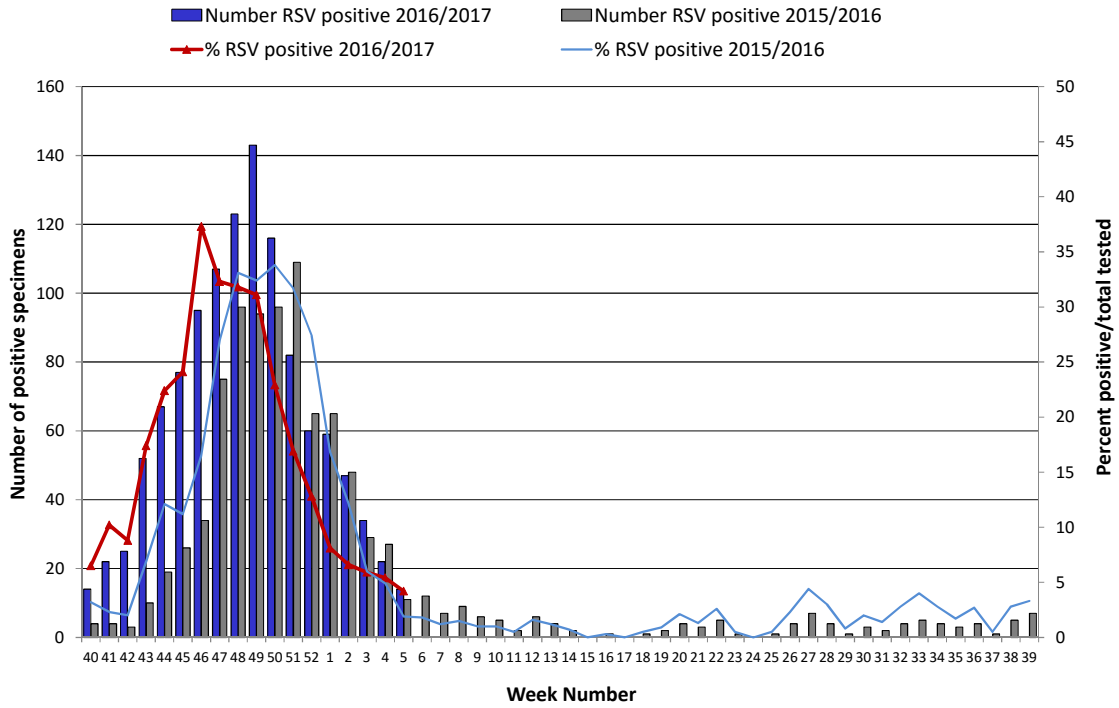

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2016/2017 season, compared to the 2015/2016 season. *Source: NVRL.*

Table 1: Number of sentinel and non-sentinel[†] respiratory specimens tested by the NVRL and positive influenza results, for week 5 2017 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	
5 2017	Sentinel	27	12	44.4	0	12	0	12	0
	Non-sentinel	332	32	9.6	0	31	0	31	1
	Total	**359**	**44**	**12.3**	**0**	**43**	**0**	**43**	**1**
2016/2017	Sentinel	794	385	48.5	0	380	4	384	1
	Non-sentinel	7284	1088	14.9	1	1026	52	1079	9
	Total	**8078**	**1473**	**18.2**	**1**	**1406**	**56**	**1463**	**10**

Table 2: Number of sentinel and non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 5 2017 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
5 2017	Sentinel	27	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Non-sentinel	332	14	4.2	5	1.5	0	0.0	2	0.6	4	1.2	2	0.6	10	3.0
	Total	**359**	**14**	**3.9**	**5**	**1.4**	**0**	**0.0**	**2**	**0.6**	**4**	**1.1**	**2**	**0.6**	**10**	**2.8**
2016/2017	Sentinel	794	40	5.0	10	1.3	0	0.0	3	0.4	5	0.6	4	0.5	24	3.0
	Non-sentinel	7284	1159	15.9	100	1.4	1	0.0	19	0.3	70	1.0	62	0.9	181	2.5
	Total	**8078**	**1199**	**14.8**	**110**	**1.4**	**1**	**0.0**	**22**	**0.3**	**75**	**0.9**	**66**	**0.8**	**205**	**2.5**

[†] 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 week 5 2017 is shown in figure 6. Localised influenza activity was reported in HSE-East and sporadic influenza activity was reported in all other areas during week 5 2017 (figure 6).

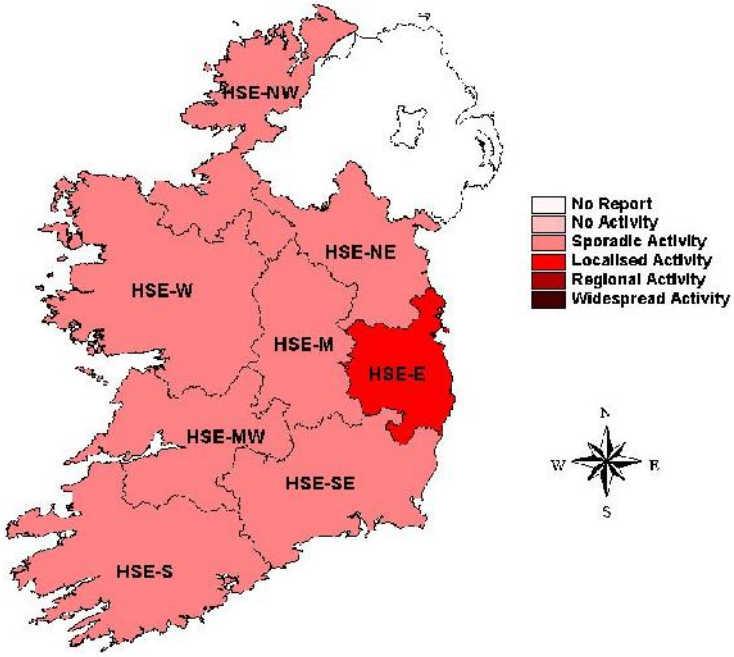

Figure 6: Map of provisional influenza activity by HSE-Area during week 5 2017

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. 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 336 during week 5 2017, a slight increase compared to week 3 (n=308) and week 4 (n=329), however a significant decrease from peak admissions reported during week 52 2016 (n=571) (figure 7).

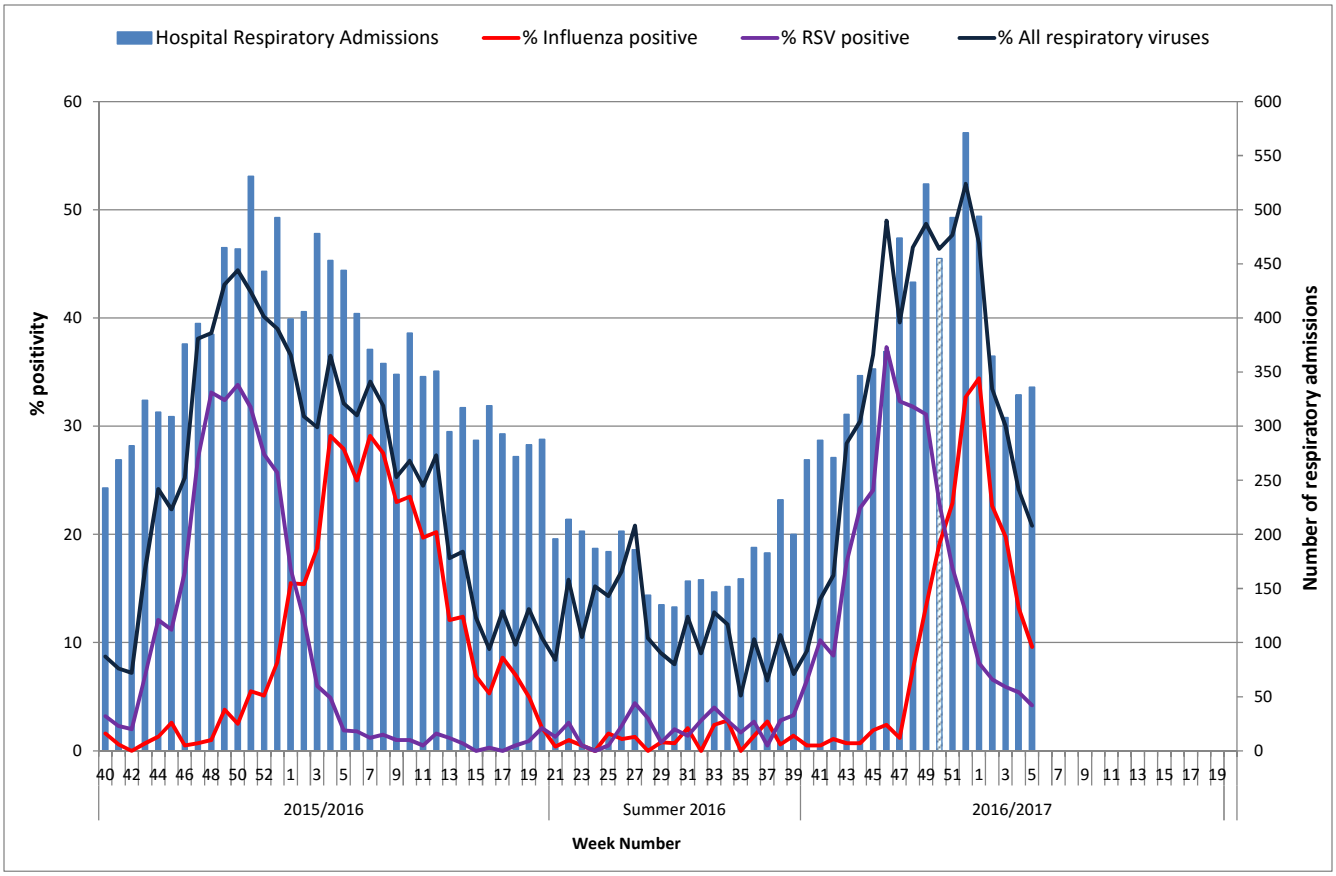

Figure 7: Number of respiratory admissions reported from sentinel hospitals and % positivity for influenza, RSV and all seasonal respiratory viruses tested* by the NVRL by week and season. *Source: Departments of Public Health - Sentinel Hospitals & NVRL. *All seasonal respiratory viruses tested refer 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 50 2016; this week is 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 decreased slightly during week 5 2017 to 2.2%, compared to 2.9% during week 4 2017. The proportion of influenza related calls reported peaked during week 1 2017 at 7.7%, which was the highest level reported since the 2010/2011 season (figure 8).

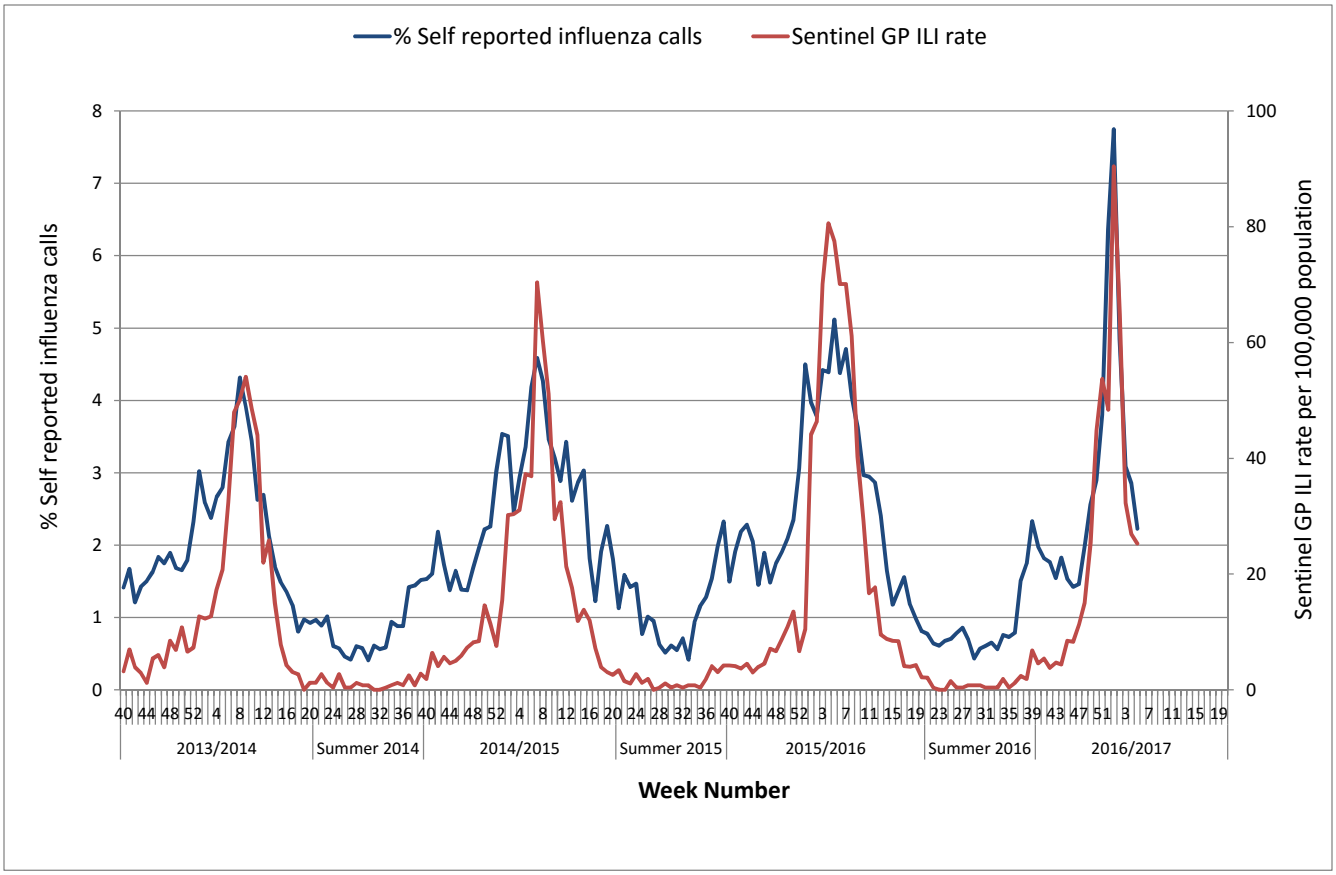

Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and sentinel GP ILI consultation rate per 100,000 population by week and season. *Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.*

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 decreased significantly during week 5 2017, with 149 confirmed influenza cases notified, compared to 265 in week 4 2017. Of the confirmed influenza cases notified during week 5 2017, 65 were associated with influenza A(H3), one influenza A(H1)pdm09, 80 with influenza A (not subtyped), and three with influenza B. Influenza notifications peaked during week 2 2017 at 801. RSV notifications remained stable in week 5 2017 at 75, compared to 73 during week 4 2017. RSV notifications peaked at 359 during week 50 2016.

6. Influenza Hospitalisations

Forty-seven confirmed influenza hospitalised cases were notified to HPSC during week 5 2017: 18 associated with influenza A(H3), 27 associated with influenza A (not subtyped) and two influenza B. To date this season (up to the week ending February 5, 2017), 1162 confirmed influenza hospitalised cases have been notified to HPSC: 450 associated with influenza A(H3), 2 with influenza A(H1)pdm09, 703 with influenza A (not subtyped), 7 with influenza B. The highest age specific rates in confirmed influenza hospitalised cases were in those aged 65 years and older and those aged less than one year of age (table 3). Seventy-six percent of hospitalised cases, this season to date, were reported by HSE-East, -Midwest, -Southeast and -South.

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.

No new confirmed influenza cases were admitted to critical care units in Ireland and reported to HPSC during week 5 2017. Thirty-eight confirmed influenza cases (18 associated with influenza A(H3), 19 with influenza A (not subtyped) and one with 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, with a median age of 70 years. Six 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	57	78.7	1	1.4
1-4	84	29.6	0	0.0
5-14	59	9.5	5	0.8
15-24	44	7.6	0	0.0
25-34	82	10.9	1	0.1
35-44	61	8.1	1	0.1
45-54	76	13.1	0	0.0
55-64	106	22.9	4	0.9
≥65	591	110.4	26	4.9
Unknown	2	-	0	-
Total	**1162**	**25.3**	**38**	**0.8**

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, 57 notified influenza cases died and were reported to HPSC. The majority of deaths were in cases aged 65 years and older. The median age of cases who died during the 2016/2017 influenza season to date is 78 years. Twenty-nine cases were associated with influenza A(H3), 23 with influenza A (not subtyped), one with influenza B and four clinical influenza cases with no pathogen identified.
- Excess all-cause mortality in those aged 65 years and older was reported in Ireland over seven consecutive weeks, between weeks 49 2016 and 3 2017, after correcting GRO data for reporting delays with the standardised EuroMOMO algorithm. These excess deaths were most likely associated with influenza A(H3N2). However, these data should be interpreted with caution, due to delays in reporting.
- Excess all-cause mortality has been reported among the elderly in Europe this season, most likely due to the high levels of influenza A(H3N2) circulating and also associated with severe weather conditions in some countries. However, the observed increase in excess mortality is prone to uncertainty due to delay adjustment and should be interpreted with caution. http://www.euromomo.eu/

9. Outbreak Surveillance

Five influenza outbreaks were reported to HPSC during week 5 2017, three in residential care facilities and two in acute hospital settings. To date this season (up to the week ending February 5, 2017), 98 ARI and influenza outbreaks were reported to HPSC, 57 of which were associated with influenza A, 23 associated with influenza (type & subtype not reported), three associated with RSV, two with human metapneumovirus (hMPV), one with parainfluenza virus and 12 ARI outbreaks with no pathogens identified. The majority of influenza outbreaks reported to date this season were in residential care facilities/community hospitals, mainly associated with influenza A(H3) and affecting those aged 65 years and older. Eleven confirmed influenza outbreaks were reported in acute hospital settings this season to date (up to the week ending February 5, 2017), five in HSE-East, two each in HSE-Midwest and West and one each in HSE-Southeast and -South. To date this season, the majority of ARI and influenza outbreaks were reported from HSE-East and -South: 28 in the East, 4 in Midlands, 9 in Midwest, 7 in Northeast, 11 in Northwest, 7 in Southeast, 27 in South and 5 in the West. *Family outbreaks are not included in this report. All outbreaks notified to HPSC are reported in the HPSC Outbreak Weekly Report.*

10. International Summary

Influenza activity in the temperate zone of the northern hemisphere continued to increase, with many countries especially in East Asia and Europe having passed their seasonal threshold early in comparison with previous years. In the European region, influenza activity remained elevated and widespread and has already peaked in many countries. Influenza A(H3) continues to predominate, with those aged 65 years and older most severely affected. Excess all-cause mortality has been reported among the elderly in the European region this season, most likely due to high levels of influenza A(H3N2) circulating and also associated with severe weather conditions in some countries. To date this season, the majority of circulating influenza A(H3N2) viruses in Europe were reported as antigenically similar to the 2016/2017 A(H3N2) vaccine strain. While about two-thirds of the A(H3N2) viruses characterised belong to a new genetic subclade (3C.2a1), these viruses are reported as antigenically similar to the vaccine strain (clade 3C.2a). All tested viruses collected recently for antiviral sensitivity were susceptible to the neuraminidase inhibitor antiviral medications.

See ECDC and WHO influenza surveillance reports for further information. The latest ECDC risk assessment (RA) on seasonal influenza in EU/EEA countries for the 2016/2017 season was published on the 25th January 2017 on the ECDC website.

- 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

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