Influenza Surveillance in Ireland – Weekly Report

Influenza Week 3 2011 (17th – 23rd January 2011)

Intensive Care Society of Ireland

Summary

- During week 3 2011, all indicators of influenza activity decreased across Ireland.
- It appears that influenza activity has peaked for the 2010/2011 influenza season and is now declining.
- The sentinel GP influenza-like illness (ILI) consultation rate was 110.4 per 100,000 population in week 3 2011, a decrease from the updated rate of 171.4 per 100,000 reported during week 2 2011.
    - ILI rates decreased in all age groups, with the exception of 5-14 year olds.
    - ILI rates remain above baseline levels.
- Influenza A (H1N1 2009) remains the predominant circulating influenza type/subtype in Ireland, accounting for 59.2% of all positive influenza specimens detected by the NVRL in week 3 2011.
- The proportion of influenza B circulating has also increased in week 3, accounting for 36.6% of all positive influenza specimens detected by the NVRL.
    - 84 influenza A (H1N1 2009), 52 influenza B, 5 influenza A (H3) and 1 influenza A (unsubtyped) positive specimens were detected by the NVRL in week 3 2011.
- The number of hospitalised cases of influenza decreased in week 3 2011.
- To date (January 26th 2011) this season, 749 confirmed influenza cases have been hospitalised, 98 cases have been admitted to ICU and 12 deaths have been reported to HPSC.
- The proportion of influenza–related calls to GP Out-of-Hours services decreased in week 3 2011, coinciding with the decrease in sentinel GP ILI consultation rates.
- As of January 26th 2011, ten influenza/ILI outbreaks have been reported to HPSC this season.
- Respiratory syncytial virus (RSV) positive detections have decreased in week 3 2011.

Surveillance Systems

In order to monitor influenza activity in Ireland a number of surveillance systems are currently in place:

1. Irish College of General Practitioners (ICGP) GP sentinel surveillance system
2. Virological data from the National Virus Reference Laboratory (NVRL)
3. GP Out-of-Hours surveillance system
4. Influenza notifications reported on the Computerised Infectious Disease Reporting system (CIDR)
5. Enhanced surveillance of all hospitalised confirmed influenza cases aged 0-14 years
6. Intensive Care Society of Ireland (ICSI) enhanced surveillance of all critical care patients with confirmed influenza A (H1N1 2009)
7. Outbreak reporting on CIDR
8. Network of sentinel schools reporting absenteeism and sentinel hospitals reporting admission data

1. GP sentinel surveillance system

Clinical Data

During week 3 2011, 53 of 60 (88.3%) sentinel general practices provided data, with 49 practices (92.5%) reporting 250 influenza-like illness (ILI) cases. This corresponds to an ILI consultation rate of 110.4 per 100,000 population, a decrease compared to the updated rate of 171.4 per 100,000 reported during week 2 2011. The ILI rate for week 3 2011 is above the Irish baseline threshold (17.8 per 100,000 population). Four (7.5%) sentinel practices reported no ILI cases during week 3 2011. Figure 1 shows the ILI consultation rates, the baseline threshold rate and the number of positive specimens detected by the NVRL.

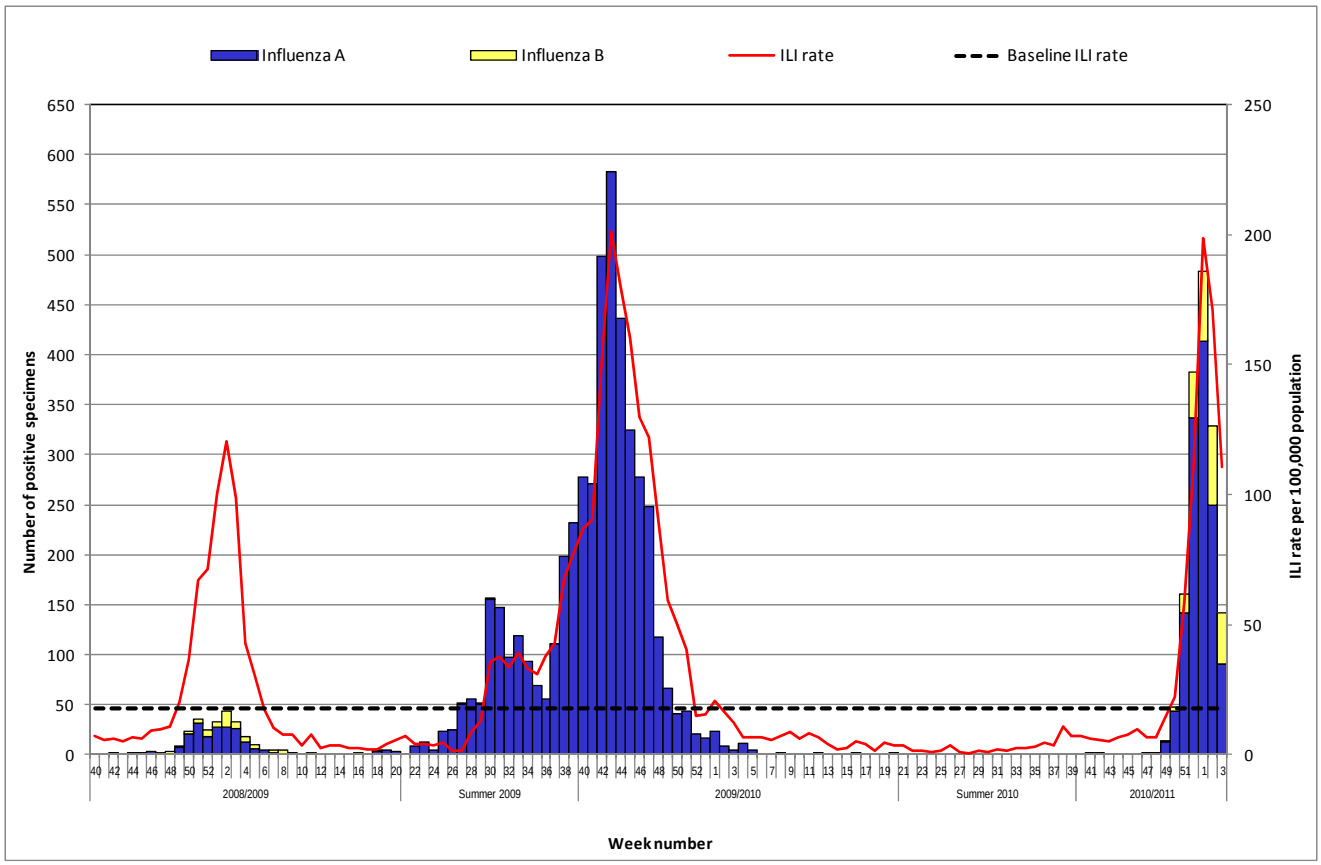

Figure 1. ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold rate, and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.
Source: Clinical ILI data from ICGP and virological data from the NVRL[1][2]

ILI age specific rates were highest in the 5-14 year age group during week 3 2011. ILI rates increased in this age group and decreased in all other age groups, compared to the previous week. During week 3 2011, 23 ILI cases were reported in the 0-4 year age group (142.5 per 100,000), 64 cases were reported in the 5-14 year age group (213.2 per 100,000), 156 in the 15-64 year age group (100.5 per 100,000) and 7 ILI cases in those aged 65 years or older (28.0 per 100,000). Age specific ILI rates in the 0-4 and 5-14 year olds remain at a

[1] Please note that in addition to the NVRL, Cork University Hospital (CUH) and Galway University Hospital(s) (GUH) also tested for influenza A (H1N1 2009) during the pandemic period.

[2] Sentinel GP consultations and virological data are updated on an ongoing basis, ILI rates and virological data are adjusted accordingly.

significantly lower level than those reported during the pandemic period in 2009/2010. During the pandemic period, ILI rates in 0-4 year olds peaked at 387.3 per 100,000 population and at 772.0 per 100,000 population in 5-14 year olds.

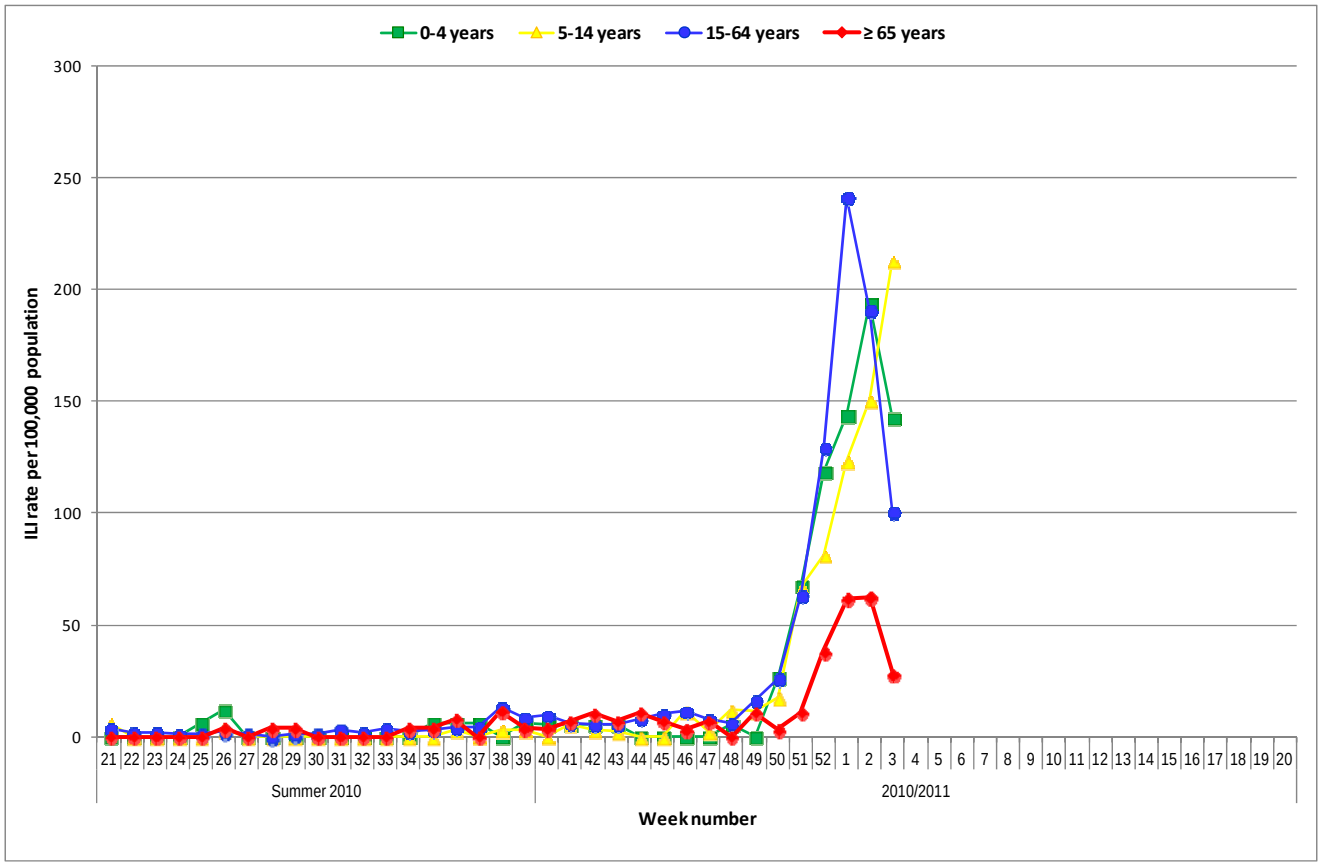

Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2010 and the 2010/2011 influenza season to date
Source: ICGP ILI clinical data

2. Virological Data from the National Virus Reference Laboratory (NVRL)[‡]

The data reported in this section for the 2010/2011 influenza season refers to specimens tested by the National Virus Reference Laboratory (NVRL). A total of 583 specimens (92 sentinel and 491 non-sentinel specimens) were tested by the NVRL during week 3 2011. One hundred and forty-two (24.4%) specimens were positive for influenza: 84 (59.2%) influenza A (H1N1 2009), five (3.5%) influenza A (H3), one (0.7%) influenza A (unsubtyped) and 52 (36.6%) influenza B.

Of the 92 GP sentinel specimens taken during week 3 2011, 33 (35.9%) were positive for influenza: 13 (39.4%) influenza A (H1N1 2009) and 20 (60.6%) influenza B. Of the 491 non-sentinel specimens taken during week 3 2011, 109 (22.2%) were positive for influenza: 71 (65.1%) A (H1N1 2009), 5 (4.6%) A (H3), 1 (0.9%) A (unsubtyped) and 32 (29.4%) B.

To date this season, 4851 sentinel and non-sentinel specimens were tested by the NVRL, 1564 (32.2%) specimens tested positive for influenza: 1248 influenza A (H1N1 2009), 29 influenza A (H3), 16 influenza A (unsubtyped) and 271 influenza B. Of the 1564 positive influenza specimens, 1293 (82.7%) were influenza A and 271 (17.3%) were influenza B. Of the 1248 influenza A (H1N1 2009) specimens detected, 239 were sentinel specimens and 1009 were from non-sentinel sources (figures 3 & 4).

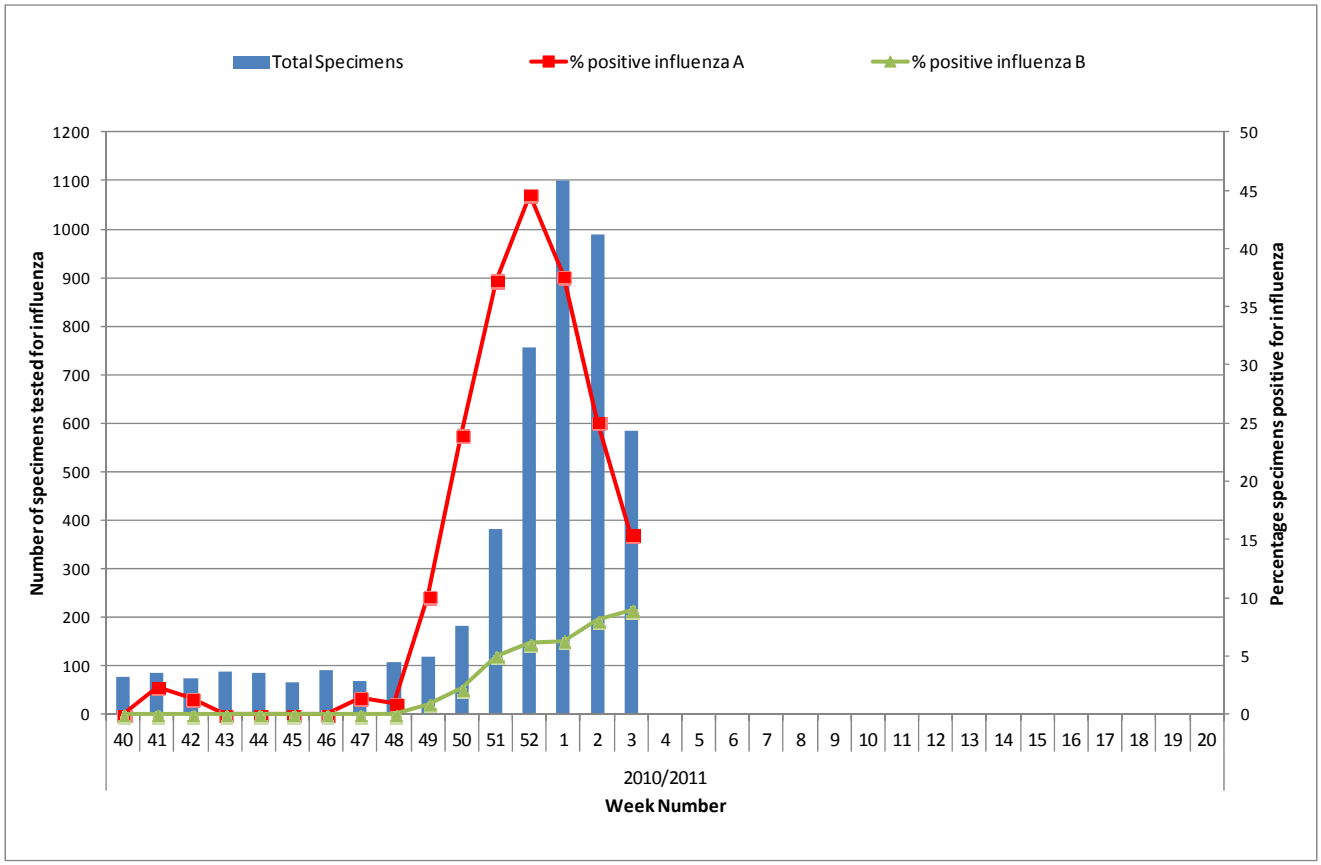

Figure 3: Number of sentinel and non-sentinel specimens tested for influenza and percentage influenza positive by week for the 2010/2011 influenza season. *Source: NVRL*[§]

[‡] It should be noted that virological data refer to weekly data received from the NVRL on Tuesday of each week.

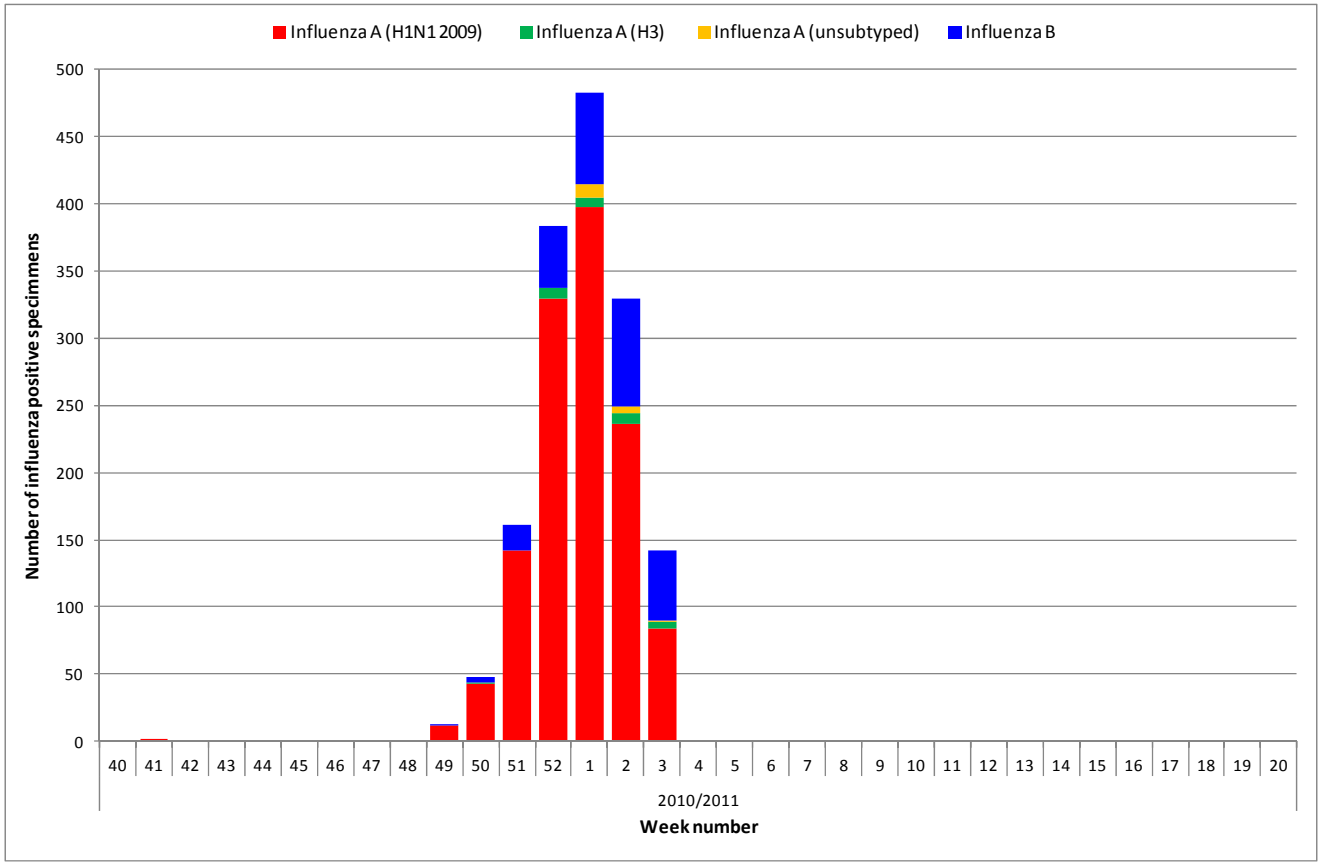

Figure 4: Number of sentinel and non-sentinel specimens positive for influenza by type/subtype and week for the 2010/2011 influenza season. *Source: NVRL*[**]

Of the 491 non-sentinel specimens tested during week 3 2011, 3.5% (n=17) were positive for RSV, remaining stable compared to the updated proportion, 3.5%, for week 2 2011 (Tables 1 & 2). The current proportion of RSV positive detections remains at low levels, compared to average proportions for the same period over the last 10 years. It should be noted that RSV data only include specimens referred to the NVRL for RSV testing. Not all hospitals refer respiratory specimens for RSV testing to the NVRL. Figure 5 shows the number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2010/2011 and 2009/2010 seasons.[††]

The NVRL detected two positive adenovirus and one positive parainfluenza virus type 3 specimens during week 3 2011. To date this season, there have been sporadic detections of adenovirus and parainfluenza virus (PIV) types -1, -2 and -3.

[§] 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.

[††] 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.

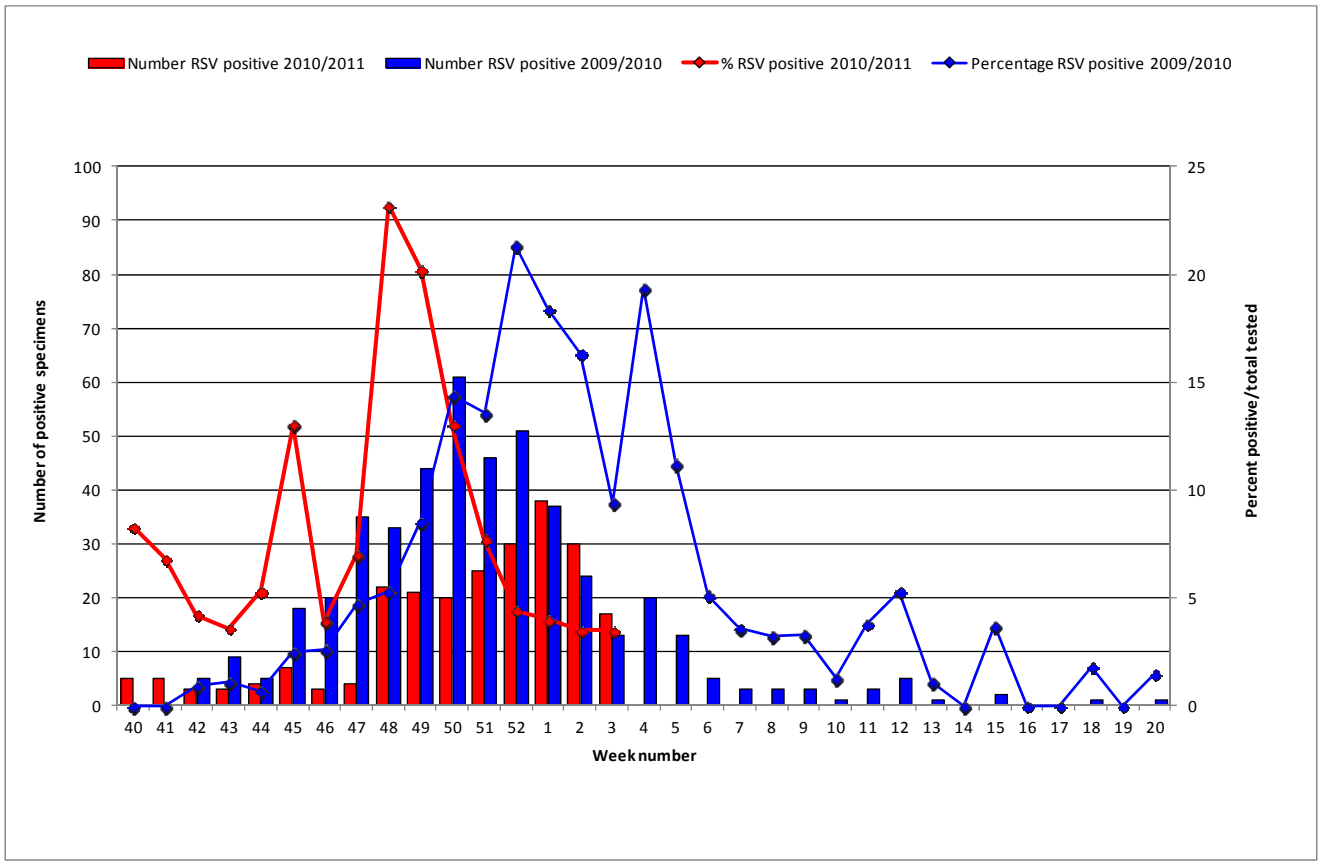

Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2010/2011 season, compared to the 2009/2010 season. *Source: NVRL*

Table 1: Number of sentinel and non-sentinel[⌗⌗] respiratory specimens tested by the NVRL and positive influenza results, for week 3 2011 and the season to date *Source: NVRL*

Week number	Specimen type	Total specimens tested	Number influenza positive	% Influenza positive	Influenza A					Influenza B
					Total influenza A	A (H1N1 2009)	A (H3)	A (H1)	A (unsubtyped)	
3 2011	Sentinel	92	33	35.9	13	13	0	0	0	20
	Non-sentinel	491	109	22.2	77	71	5	0	1	32
	Total	**583**	**142**	**24.4**	**90**	**84**	**5**	**0**	**1**	**52**
2010/2011 season	Sentinel	652	330	50.6	245	239	4	0	2	85
	Non-sentinel	4199	1234	29.4	1048	1009	25	0	14	186
	Total	**4851**	**1564**	**32.2**	**1293**	**1248**	**29**	**0**	**16**	**271**

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 3 2011 and the season to date *Source: NVRL*

Week number	Total specimens tested	RSV	% RSV Positive	Adenovirus	% Adenovirus positive	Parainfluenza virus type 1	% Parainfluenza virus type 1	Parainfluenza virus type 2	% Parainfluenza virus type 2	Parainfluenza virus type 3	% Parainfluenza virus type 3
3 2011	491	17	3.5	2	0.4	0	0.0	0	0.0	1	0.2
2010/2011 season	4199	237	5.6	12	0.3	6	0.1	2	0.1	4	0.1

[⌗⌗] 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 reported on a weekly basis for each HSE area. Influenza activity is based on sentinel GP ILI consultation rates, laboratory confirmed influenza cases and ILI/influenza outbreaks.

During week 3 2011, widespread influenza activity was reported from three HSE-Areas (HSE-E, -NE and –MW), regional influenza activity from HSE-M, -SE and –W, localised activity was reported from HSE-S and sporadic activity in HSE-NW (figure 6).

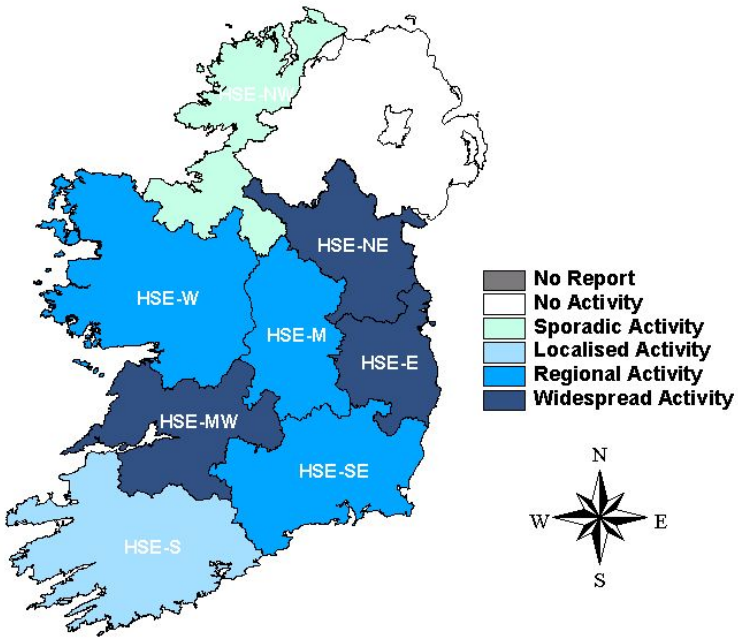

Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 3 2011

Sentinel hospitals and schools

The Departments of Public Health have established at least one sentinel hospital in each HSE-Area, to report data on total hospital admissions, total emergency admissions and total respiratory admissions by age group on a weekly basis. Sentinel primary and secondary schools were also established in each HSE-Area, in close proximity to the sentinel GPs, to report absenteeism data on a weekly basis. Hospital admissions and school absenteeism data act as a crude indicator for influenza activity.

There were no reports of increased respiratory admissions in sentinel hospitals during week 3 2011. The proportion of respiratory admissions from reporting sentinel hospitals in HSE-E, -S, -SE and -W appears to have peaked during weeks 51 and 52 2010. Six sentinel primary schools reported influenza/ILI symptoms and

increased absenteeism amongst pupils during weeks 2 and 3 2011, one school was in HSE-SE (week 2 2011) and five schools were in HSE-NW (weeks 2 and 3 2011).

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. Clinical details from all calls are recorded. 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 further during week 3 2011, reaching 6.2%, compared to 9.3% in week 2 2011. Seven GP Out-of-Hours services reported during week 3 2011 (figure 7).

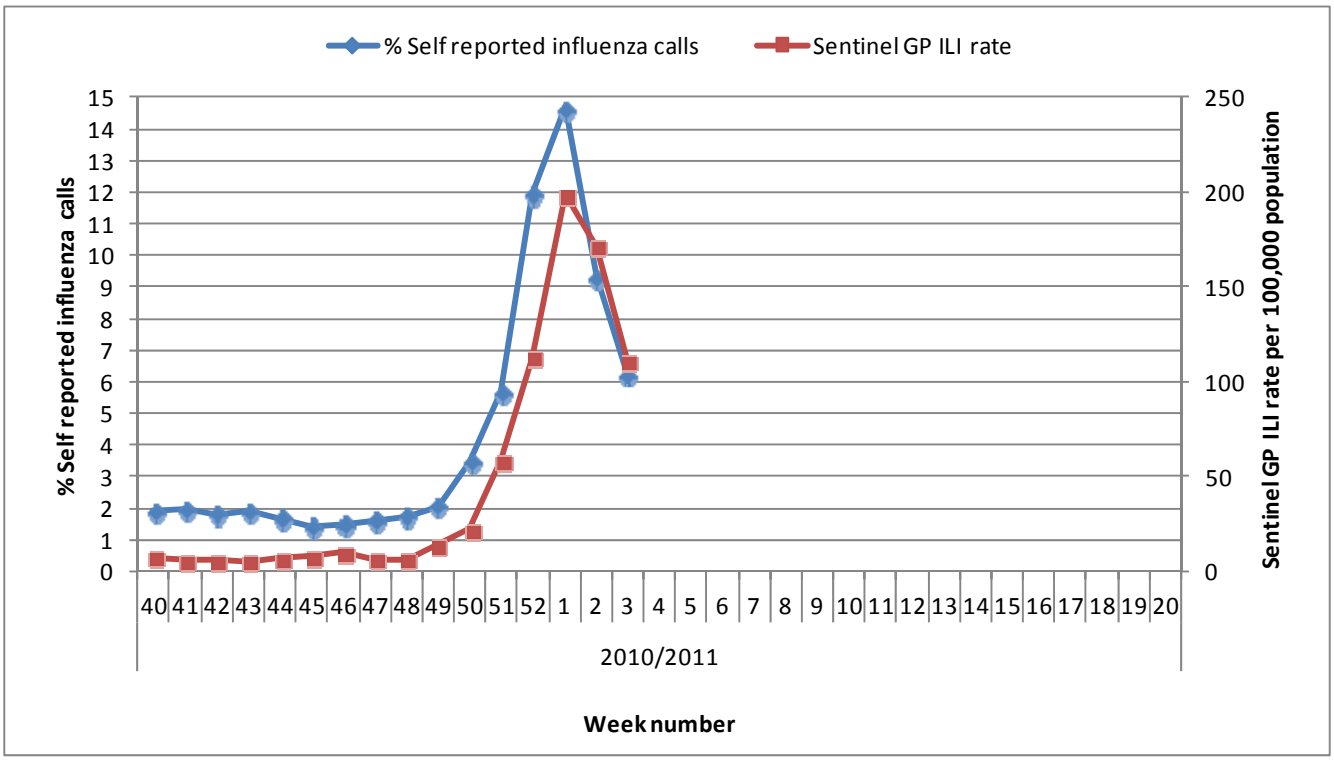

Figure 7: Self reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and national sentinel GP ILI consultation rate per 100,000 population by week for the 2010/2011 season
Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.

5. Influenza notifications (CIDR)

As of 26th January 2011 (09:00), 1677 confirmed influenza cases were notified on CIDR for the 2010/2011 influenza season. Laboratory confirmed influenza cases notified on CIDR include all positive influenza specimens reported from all laboratories testing for influenza and reporting to CIDR. Currently, the NVRL is the only laboratory subtyping positive influenza A specimens for *all* influenza A subtypes. Of the 1677 confirmed influenza cases, 72.1% (n=1209) were confirmed influenza A (H1N1 2009), 16 (1.0%) were influenza A (H3), 165 (9.8%) were influenza A (unsubtyped), 286 (17.1%) were influenza B cases and one case was reported as influenza (type unknown). It should be noted that data for week 4 2011 are incomplete and only include notified cases as of Wednesday 26th January 2011 (09:00).

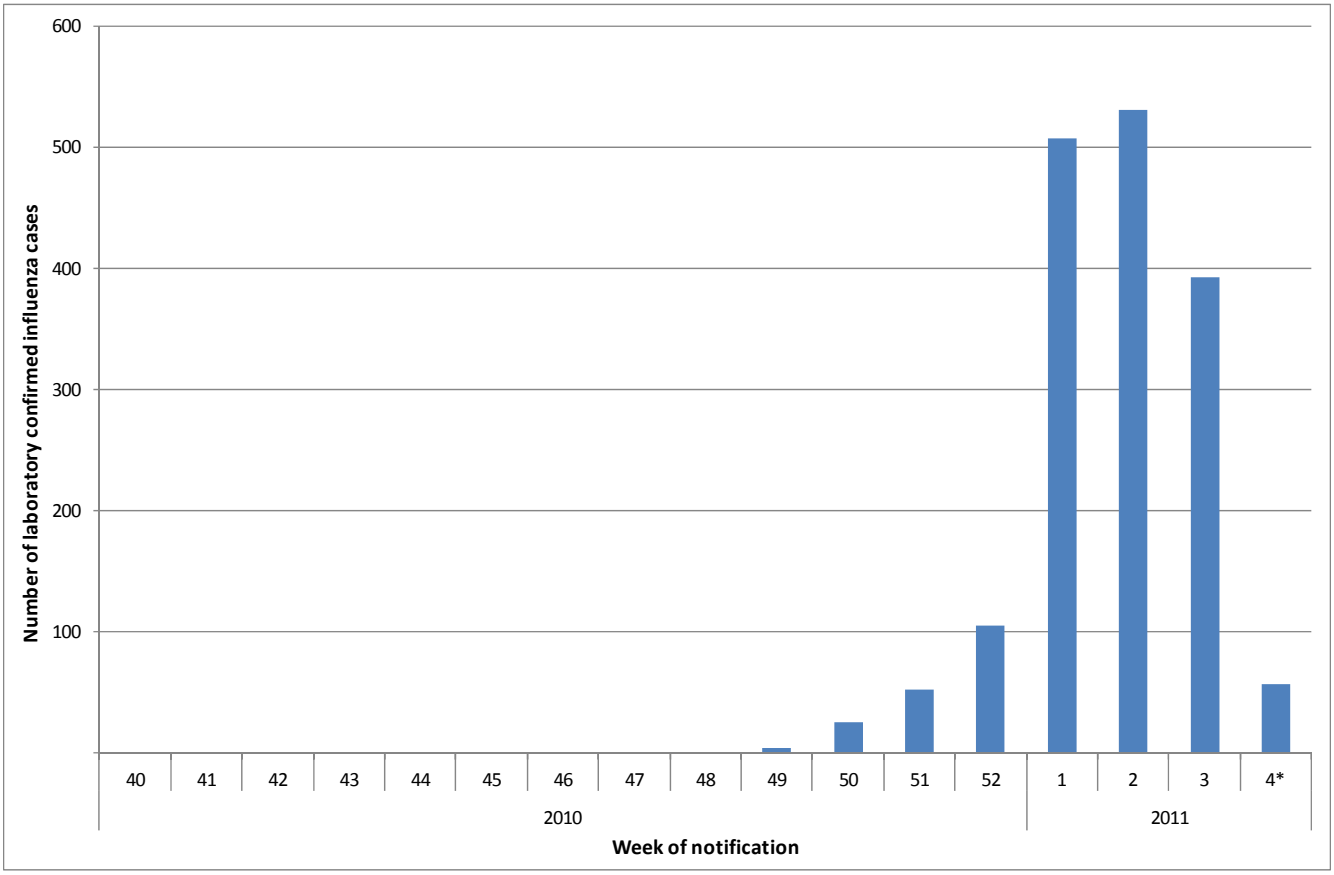

Figure 8: Number of laboratory confirmed influenza cases by week of notification on CIDR for the 2010/2011 influenza season. ***It should be noted that data for week 4 2011 are incomplete and only include notified cases as of 26th January 2011 (09:00). Source: CIDR 26/01/2011 09:00***

Seven hundred and forty-nine (44.7%) of the 1677 confirmed influenza cases notified were hospitalised (i.e. these cases were recorded on CIDR as hospital inpatients) (figure 9). Of the 749 hospitalised cases, 546 (72.9%) were influenza A (H1N1 2009) cases, 5 (0.7%) were influenza A (H3) cases, 94 (12.6%) were influenza A (unsubtyped) and 104 (13.9%) were influenza B cases. The proportion of hospitalised influenza B cases increased to 17.2% during week 3 2011, compared to 11.5% during the previous week.

The highest cumulative age specific rate for influenza confirmed hospitalised cases for the 2010/2011 influenza season to date is currently in the 0-4 year age group (45.7 per 100,000 population), followed by the 55-64 year

age group (21.6 per 100,000 population) (table 3). It should be noted that age was unknown for one hospitalised case.

To date this season, 68 (4.1%) of the 1677 laboratory confirmed influenza cases were reported as pregnant. Forty-one (60.3%) of these cases were reported as hospitalised: 38 influenza A (H1N1 2009) cases and 3 influenza B cases.[§§]

	Hospitalised		Admitted to ICU	
Age (years)	Number	Age specific rate per 100,000 population	Number	Age specific rate per 100,000 population
0-4	138	45.7	9	3.0
5-14	58	10.3	2	0.4
15-24	72	11.4	2	0.3
25-34	144	19.9	18	2.5
35-44	85	13.6	17	2.7
45-54	80	15.3	17	3.3
55-64	88	21.6	20	4.9
65+	83	17.7	13	2.8

Table 3: Age specific rate per 100,000 population by age group (years) for all influenza confirmed hospitalised cases and cases admitted to ICU for the 2010/2011 influenza season to date. *Source: CIDR and ICU enhanced surveillance system 26/01/2011 09:00*

6. Intensive Care Society of Ireland (ICSI) enhanced surveillance of all critical care patients with confirmed influenza

The Intensive Care Society of Ireland (ICSI) are continuing with the enhanced surveillance system, set up during the 2009 pandemic, on all critical care patients with confirmed influenza, and notify any cases to HPSC, who process and report on this information on behalf of the regional Director of Public Health/Medical Officer of Health.

As of 26th January 2011 (09:00), HPSC has been notified of 98 hospitalised patients with confirmed influenza admitted to critical care units. Enhanced surveillance information is available for all 98 cases, 87 of whom are adults and 11 are paediatric cases. Forty-three (43.9%) of the 98 cases are currently in ICU[***]. Sixty-nine of the 98 (70.4%) cases have underlying medical conditions, 62 adults and seven paediatric cases. The underlying medical conditions include: chronic respiratory disease, chronic heart disease, immunosuppression, pregnancy, metabolic disorders and morbid obesity.

The age specific rates for all cases admitted to ICU are detailed in table 3 above. The number of confirmed influenza hospitalised cases by ICU status and by week of notification on CIDR for the 2010/2011 influenza season is detailed in figures 9. The number of adult and paediatric ICU admissions for confirmed influenza cases by date of ICU admission is detailed in figure 10.

[§§] It should be noted that information on pregnancy is not completed for all cases.
[***] This information is based on the enhanced surveillance data.

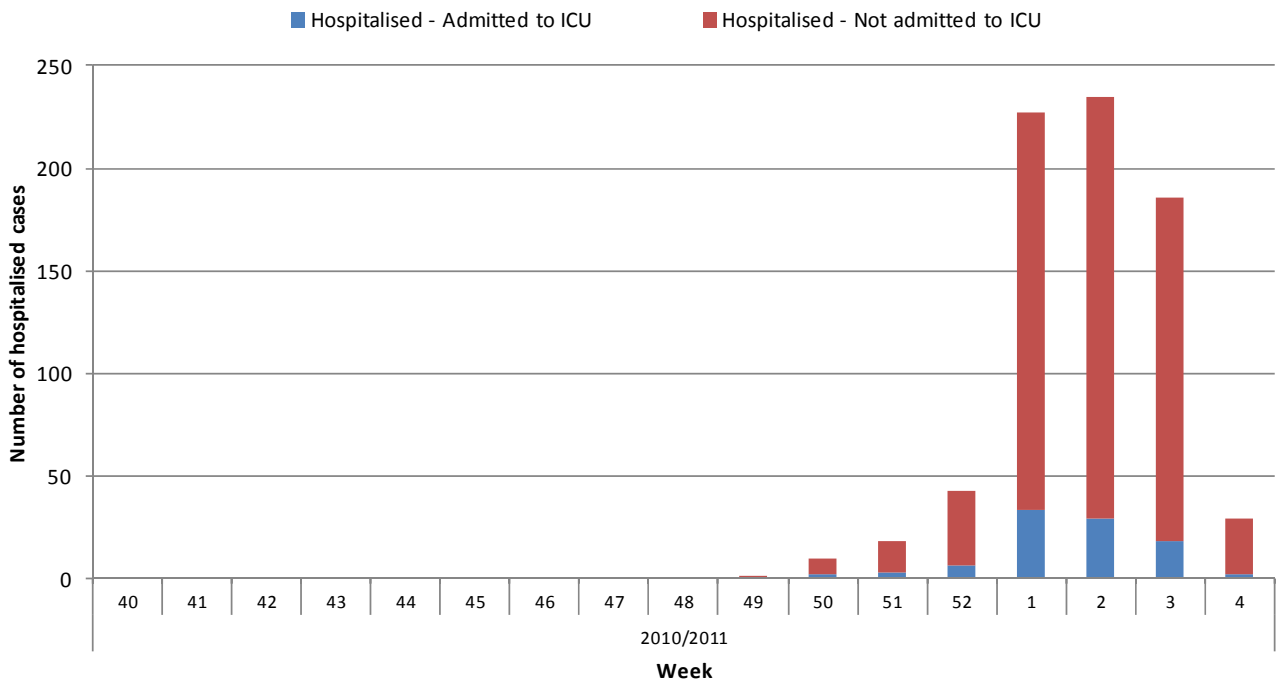

Figure 9: Number of confirmed influenza hospitalised cases by ICU status by week of notification on CIDR for the 2010/2011 influenza season. *It should be noted that data for week 4 2011 are incomplete and only include notified cases as of 26th January 2011 (09:00). Source: CIDR and ICU enhanced surveillance system 26/01/2011 09:00*[†††]

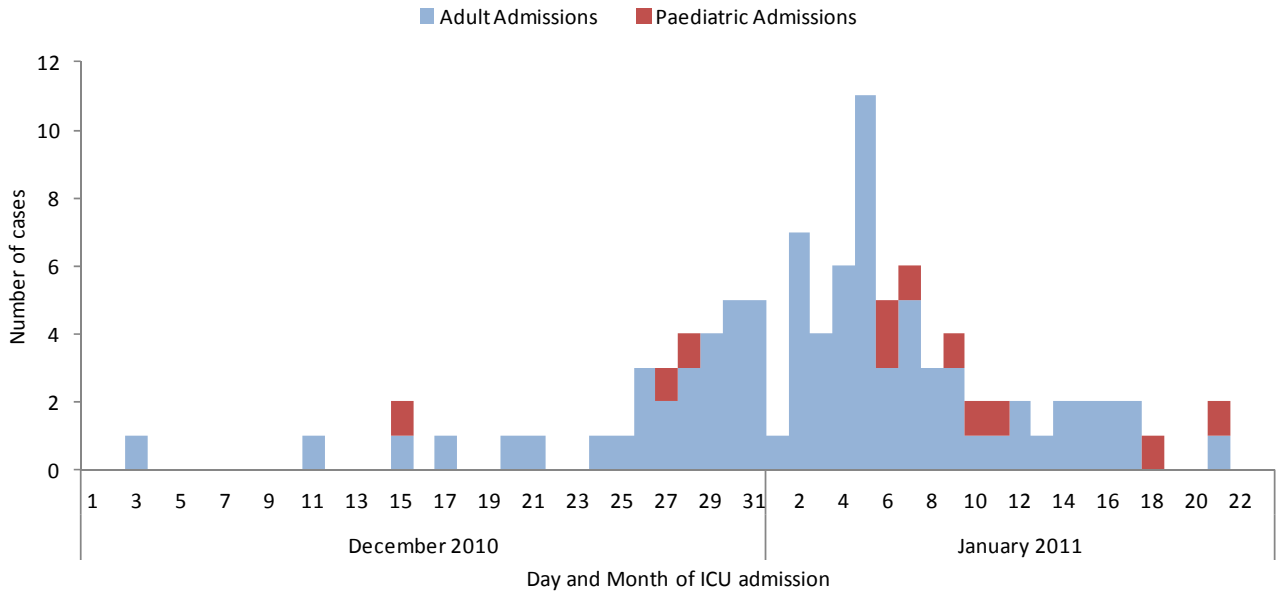

Figure 10: Number of confirmed influenza hospitalised adult and paediatric cases admitted to ICU by date of ICU admission, for December 2010 and January 2011 to date (n=98). *Source: ICU enhanced surveillance system 26/01/2011 09:00*

[†††] It should be noted that dates of hospitalisation/ICU admission have to be verified for 5 of 98 ICU cases on whom enhanced information is currently available. These five cases are not included in figure 9.

7. Mortality surveillance

HPSC has been informed of 12 influenza associated deaths to date this season (as of 26/01/2011), 10 influenza A (H1N1 2009) and two influenza B. One death was in a patient in the 0-4 year age group, seven patients were in the 15-64 year age group and four patients were aged 65 years and older. Eleven deaths occurred in patients with underlying medical conditions. One death occurred in week 52 2010, one in week 1 2011, four in week 2 2011, five in week 3 2011 and one in week 4 2011.

8. Outbreak surveillance

No new general outbreaks of ILI/influenza/influenza A (H1N1 2009) have been reported in week 3 2011. To date this season, (as of 26th January 2011 09:00), ten general outbreaks of ILI/influenza/influenza A (H1N1 2009) were reported to CIDR: four ILI outbreaks, five influenza A (H1N1 2009) outbreaks and one outbreak associated with both influenza A (H1N1 2009) and influenza B. One outbreak was reported in week 49 2010, two in week 50 2010, four in week 51 2010 and three in week 2 2011. Five outbreaks were reported from HSE-E, three from HSE-S and two from HSE-W. Two outbreaks were in healthcare settings (one of which was a maternity hospital), four in schools, one in a community setting, one in a residential institution, one in a prison and one outbreak reported as 'Other' setting.

9. International summary

United Kingdom

Influenza activity appears to be declining in the UK. GP consultation rates remain above baseline levels in England, Wales and Northern Ireland. Influenza A (H1N1 2009) and B are the predominant circulating viruses with few, sporadic A (H3N2) viruses detected. The A (H1N1 2009) virus strain is virologically and epidemiologically similar to that seen during the pandemic. The virus strains circulating are overall well matched to the current influenza vaccine. In week 2 2011, the weekly influenza/ILI consultation rates decreased in England (66.5 per 100,000), Scotland (42.9 per 100,000), Wales (51.5 per 100,000) and Northern Ireland (194.0 per 100,000). The weekly national proportions of NHS Direct calls for cold/flu have decreased, although a slight increase in calls for fever in children has been observed. Seven acute respiratory disease outbreaks were reported in the UK in week 2, bringing the total reported this season to date to 153. Seventy-nine of 278 (28.4%) specimens from patients with ILI presenting to sentinel GPs in England in week 2, were reported as positive for influenza. The proportion of specimens reported to DataMart (England) as positive for influenza decreased to 19.7% (584 of 2,961). The proportion of samples positive for RSV was stable and was low for rhinovirus, parainfluenza, adenovirus and human metapneumovirus. Since week 36, 254 UK deaths associated with influenza infection have been reported. Excess all-cause mortality continues to be observed in week 1.

There have been reports of secondary bacterial infections amongst influenza cases in the UK. Analysis of surveillance data has identified increases for a number of invasive bacterial pathogens in December 2010 compared to December 2009. This includes invasive *S. pneumoniae*, Group A Streptococcus and meningococcal disease. Investigations are underway to determine whether influenza may be contributing to these increases. An alert was issued to front-line clinicians by the Chief Medical Officer on 10th January 2011 to raise awareness. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/SeasonalInfluenza/

Europe

During week 2 2011, most countries reported regional or widespread influenza activity, with medium to very high ILI/acute respiratory infection (ARI) consultation rates and increasing trends. This is more prominent in Western European countries. Forty-three per cent of sentinel swabs tested positive for influenza: 74% were type A, and of the type A viruses subtyped, 99% were A (H1N1 2009). To date this season, 1711 severe acute respiratory infection (SARI) cases, including 73 fatal cases, have been reported by eight countries. The number of severe influenza cases in hospital requiring intensive care is now declining in the UK but is increasing in some

other countries. Since week 40 2010, 559 influenza viruses from sentinel and non-sentinel specimens have been characterised antigenically: 320 (57.2%) as A/California/7/2009 (H1N1)-like; 56 (10.0%) as A/Perth/16/2009 (H3N2)-like; 172 (30.8%) as B/Brisbane/60/2008-like (Victoria lineage) and 11 (2.0%) as B/Florida/4/2006-like (Yamagata lineage). In terms of antiviral resistance, since week 40 2010, a total of 681 influenza A (H1N1 2009) viruses and 59 influenza B viruses have been tested for neuraminidase inhibitor susceptibility. Twenty-six (3.8%) influenza A (H1N1 2009) viruses were resistant to oseltamivir but remained sensitive for zanamivir. All the resistant viruses carried the H275Y mutation.
http://ecdc.europa.eu/en/healthtopics/influenza/epidemiological_data/Pages/Weekly_Influenza_Surveillance_Overview.aspx

USA

During week 2 2011, influenza activity in the United States decreased in several indicators, but it is unlikely that influenza activity for this season has peaked. The proportion of outpatient visits for ILI was 2.9%, which is above the national baseline of 2.5%. Of the 4,983 specimens tested, 1288 (25.9%) were positive for influenza: 173 A (H1N1 2009), 487 A (H3), 432 A (unsubtyped) and 196 B. CDC has antigenically characterised 29 A (H1N1 2009) viruses as A/California/7/2009-like, 137 A (H3N2) viruses as A/Perth/16/2009-like, 83 as B/Brisbane/60/2008-like and 8 as B/Yamagata lineage viruses. The proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. Two influenza-associated paediatric deaths were reported. One of these deaths was associated with an influenza A (H3) virus and one was associated with an influenza A virus for which the subtype was not determined. http://www.cdc.gov/flu/weekly/

Canada

During week 2 2011, several indicators of influenza activity have decreased across the country: the number of regions reporting widespread and localised influenza activity, the number of outbreaks, the percentage of specimens testing positive for influenza, the ILI consultation rate and the number of paediatric and adult hospitalisations. Since the beginning of the season, 91.1% of the subtyped positive influenza A specimens were influenza A (H3N2). In week 2 2011, detections of influenza A (H1N1 2009) increased to 15.5% of all subtyped influenza A specimens, compared to 8.5% in week 1.
http://www.phac-aspc.gc.ca/fluwatch/index-eng.php

Worldwide (WHO)

The WHO Global Influenza Programme monitors influenza activity worldwide and publishes an update every two weeks. As of January 14th 2011, North America continued to report increases in influenza activity primarily related to influenza A (H3N2) with lower numbers of influenza B. In the UK, the number of severe and fatal cases increased, associated predominantly with influenza A (H1N1 2009) and less commonly with influenza B. Severe disease associated with influenza A (H1N1 2009) and to a lesser extent with influenza B is also being increasingly reported on the European continent and areas of the Middle East. Tropical areas of the world and the temperate countries of the Southern Hemisphere are currently reporting very little influenza circulation.
http://www.who.int/csr/disease/influenza/en/

8. Northern hemisphere influenza vaccine for the 2010/2011 season:

For the 2010/2011 influenza season in the Northern Hemisphere, the members of the WHO Collaborating Centres on Influenza have recommended that seasonal influenza vaccines contain the following strains:

— an A/California/7/2009 (H1N1)-like virus
— an A/Perth/16/2009 (H3N2)-like virus‡‡‡
— a B/Brisbane/60/2008-like virus

http://www.who.int/csr/disease/influenza/recommendations2010_11north/en/index.html

‡‡‡ A/Wisconsin/15/2009 is an A/Perth/16/2009 (H3N2)-like virus and is a 2010 southern hemisphere vaccine virus.

Further information on influenza in Ireland and internationally can be found on the following websites:

Ireland	www.hpsc.ie
Northern Ireland	http://www.cdscni.org.uk/
Europe – ECDC	http://ecdc.europa.eu/
Europe – EISN	http://ecdc.europa.eu/en/activities/surveillance/EISN/Pages/home.aspx

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