

Influenza Surveillance in Ireland – Weekly Report

Influenza Week 2 2011 (10th – 16th January 2011)



Summary

- During week 2 2011, influenza activity remained at a high level across Ireland.
- A slight decrease in influenza activity was observed during week 2 2011; however it is too early to predict whether or not the peak of influenza activity has been reached.
- It is likely that elevated influenza activity will continue for the coming weeks.
- The sentinel GP influenza-like illness (ILI) consultation rate was 173.0 per 100,000 population in week 2 2011, a decrease from the updated rate of 200.8 per 100,000 reported during week 1 2011.
 - ILI rates increased significantly in younger age groups (0-4 and 5-14 year olds)
 - ILI rates remain above baselines levels
- Influenza A (H1N1 2009) is the predominant influenza virus circulating in Ireland.
 - Accounting for 79.9% of all influenza positive specimens this season.
- Influenza B viruses are also circulating in Ireland.
 - 172 positive influenza A (H1N1 2009) specimens were detected by the NVRL in week 2 2011.
 - 45 influenza B, 6 influenza A (H3) and 4 influenza A (unsubtyped) specimens were also detected by the NVRL in week 2 2011.
- The number of hospitalised cases of influenza has continued to increase, with 573 cases hospitalised to date this season (as of January 19th 2011) and reports of 90 cases admitted to ICU.
- The proportion of influenza-related calls to GP Out-of-Hours services decreased in week 2 2011, coinciding with the decrease in sentinel GP ILI consultation rates.
- As of January 19th 2011, ten influenza/ILI outbreaks have been reported to HPSC to date this season.
- Respiratory syncytial virus (RSV) positive detections have decreased in week 2 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 2 2011, 55 of 60 (91.7%) sentinel general practices provided data, with 53 practices (96.4%) reporting 421 influenza-like illness (ILI) cases. This corresponds to an ILI consultation rate of 173.0 per 100,000 population, a slight decrease compared to the updated rate of 200.8 per 100,000 reported during week 1 2011. The ILI rates for week 2 2011 are above the Irish baseline threshold (17.8 per 100,000 population). Two (3.6%) sentinel practices reported no ILI cases during week 2 2011. Figure 1 shows the ILI consultation rates, the baseline threshold rate and the number of positive specimens detected by the NVRL.

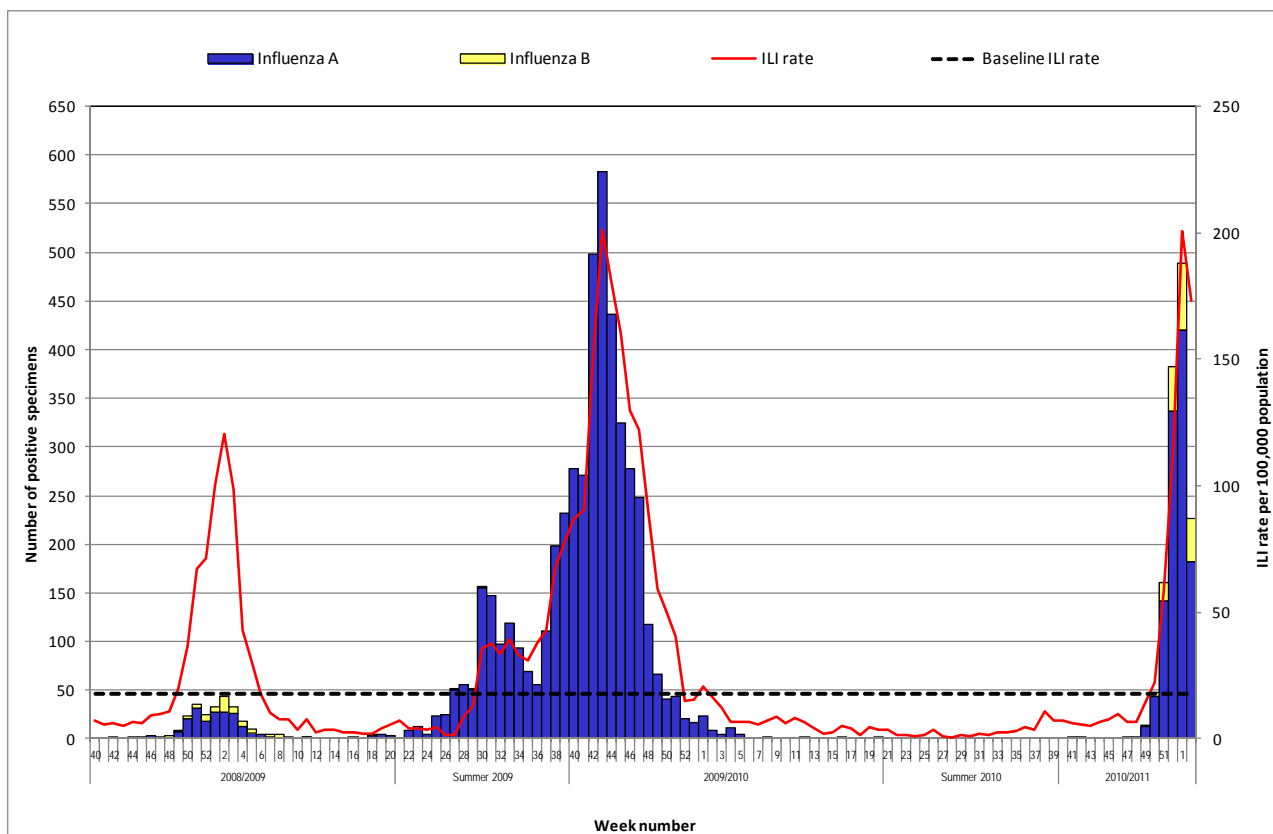


Figure 1. ILI GP consultation rates per 100,000 population, baseline ILI threshold rate, and number of positive influenza A and B specimens, by influenza week and season.

Source: Clinical ILI data from ICGP and virological data from the NVRL¹²

ILI rates increased in the 0-4 and 5-14 year age groups during week 2 2011, with the highest rates reported in the 0-4 year age group. Thirty-seven ILI cases were reported in the 0-4 year age group (213.2 per 100,000), 49 cases were reported in the 5-14 year age group (151.8 per 100,000), 318 in the 15-64 year age group (190.5 per 100,000) and 17 ILI cases in those aged 65 years or older (63.3 per 100,000). ILI age specific rates in 0-4

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.

and 5-14 year olds remain at a 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.

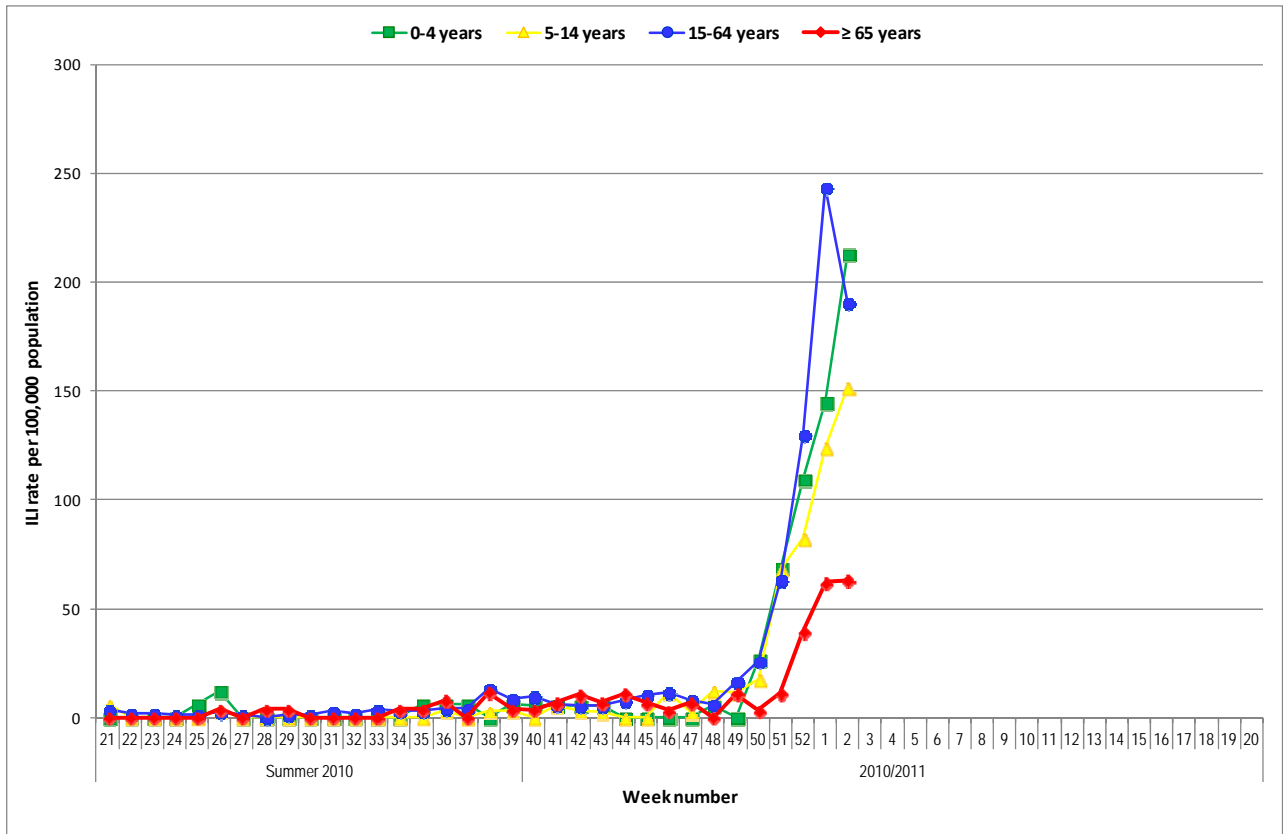


Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2010 and the 2010/2011 influenza season to date
 Source: ICGP ILI clinical data

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 896 specimens (120 sentinel and 776 non-sentinel specimens) were tested by the NVRL during week 2 2011. Two hundred and twenty-seven (25.3%) specimens were positive for influenza: 172 influenza A (H1N1 2009), six influenza A (H3), 4 influenza A (unsubtyped) and 45 influenza B. Of the 120 sentinel specimens taken during week 2 2011, 25 (20.8%) were positive for influenza: 13 influenza A (H1N1 2009), 2 A (H3) and 10 influenza B. Of the 776 non-sentinel specimens taken during week 2 2011, 202 (26.0%) were positive for influenza: 159 A (H1N1 2009), 4 A (H3), 4 A (unsubtyped), and 35 B.

To date this season, 4174 sentinel and non-sentinel specimens were tested by the NVRL, 1326 (31.8%) specimens tested positive for influenza: 1059 influenza A (H1N1 2009), 22 influenza A (H3), 61 influenza A (unsubtyped) and 184 influenza B. Of the 1326 positive influenza specimens, 1142 (86.1%) were influenza A and 184 (13.9%) were influenza B. Of the 1059 influenza A (H1N1 2009) specimens detected, 195 were sentinel specimens and 864 were from non-sentinel sources (figures 3 & 4).

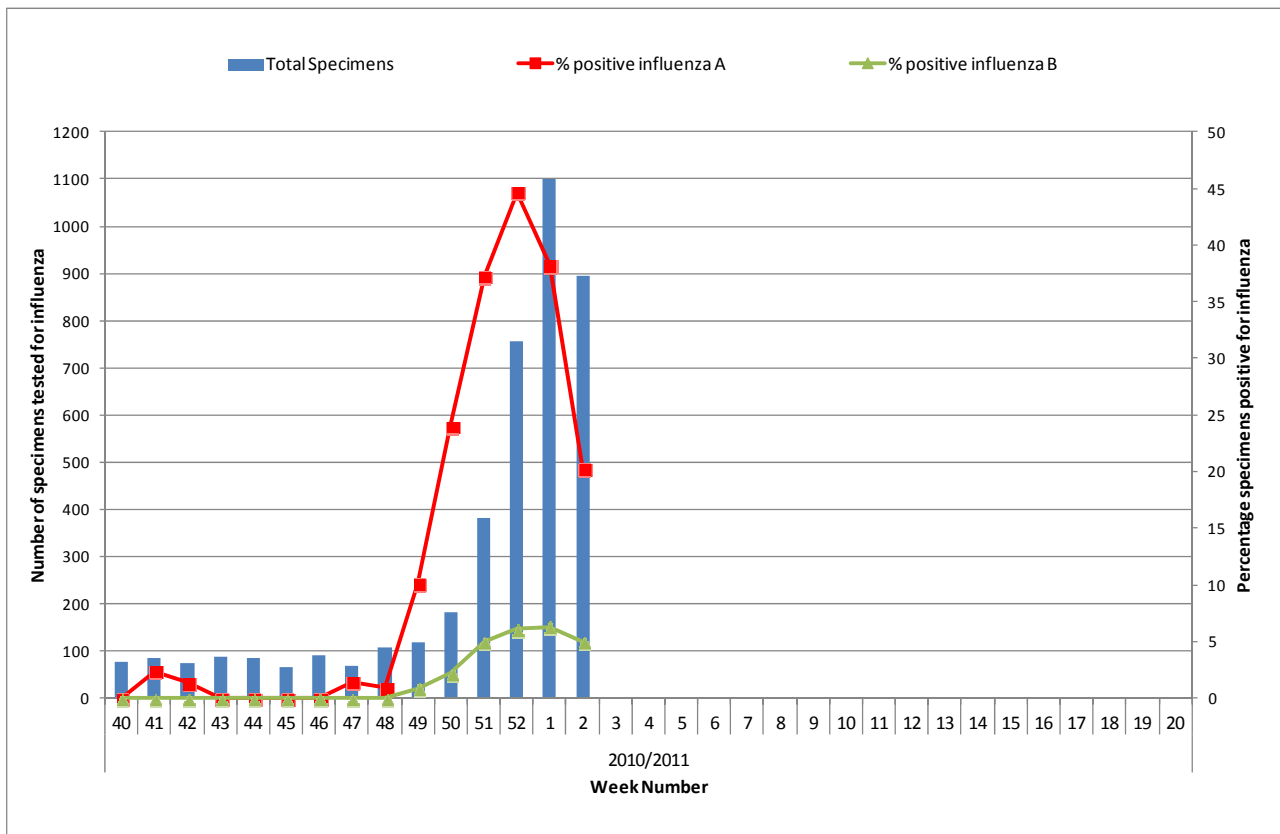


Figure 3: Number of sentinel and non-sentinel specimens tested for influenza and percentage influenza positive by week for the 2010/2011 influenza season. Source: NVRL[§]

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

[§] 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.

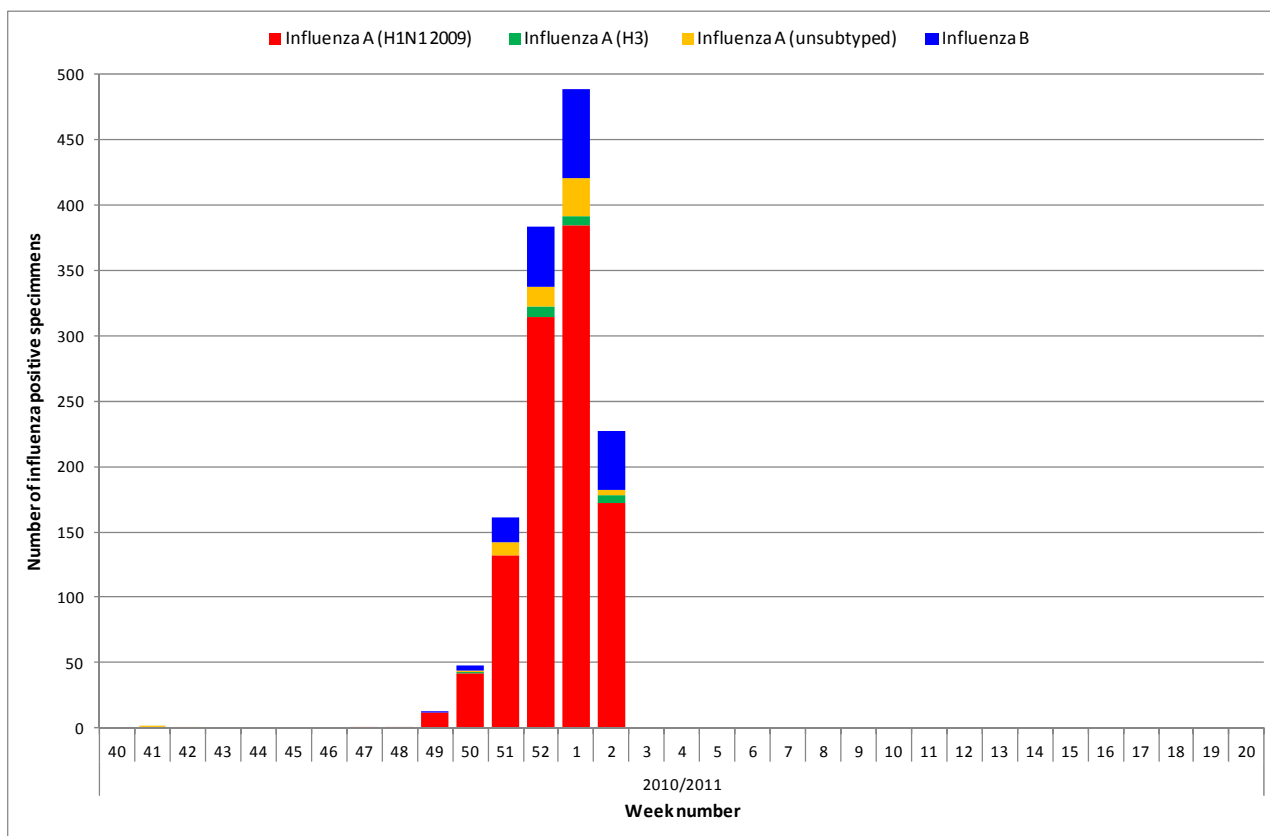


Figure 4: Number of sentinel and non-sentinel specimens positive for influenza by type/subtype and week for the 2010/2011 influenza season. Source: NVRL**

Of the 776 non-sentinel specimens tested during week 2 2011, 3.5% (n=27) were positive for RSV, a decrease compared to the updated proportion, 4.0%, for week 1 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 one positive adenovirus and one positive parainfluenza virus type 3 during week 2 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.

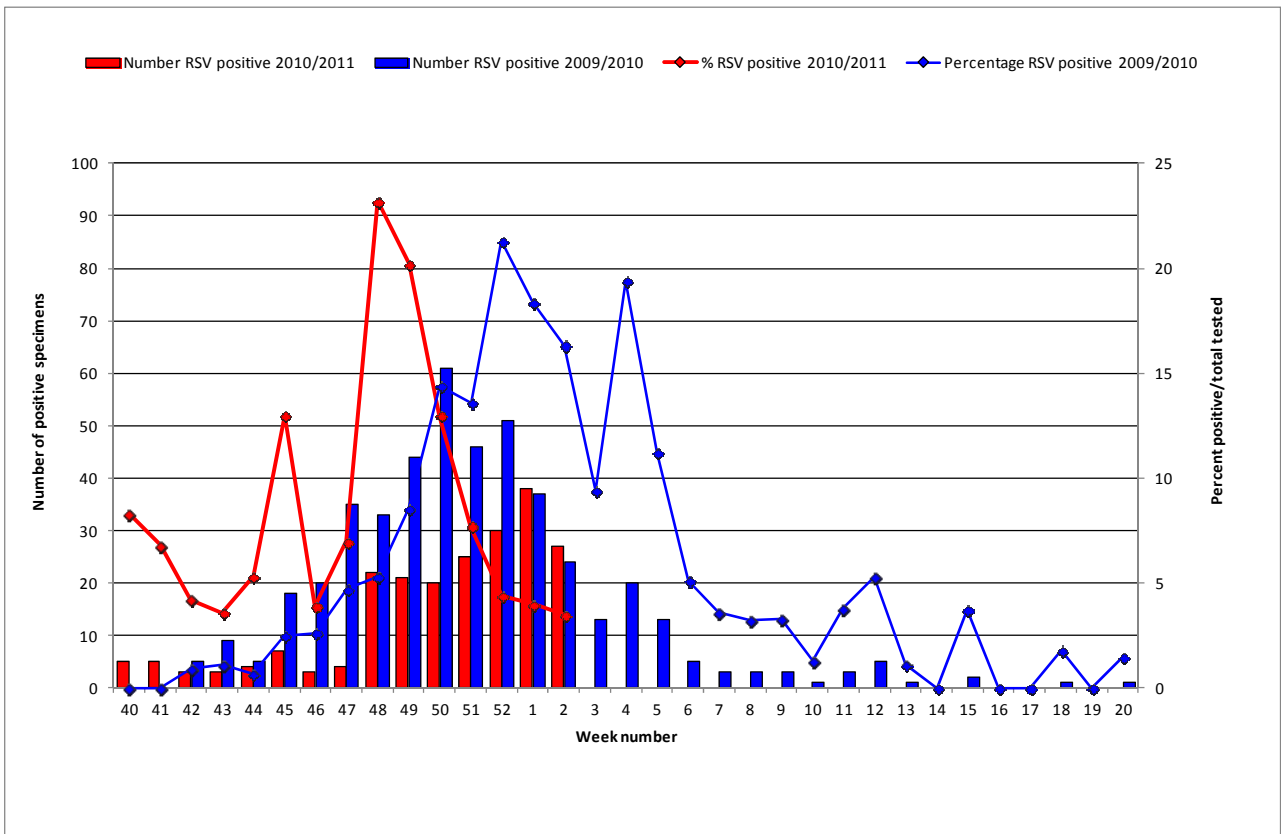


Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2010/2011 season, compared to the 2009/2010 season. *Source: NVRL*

Table 1: Number of sentinel and non-sentinel^{††} respiratory specimens tested by the NVRL and positive influenza results, for week 2 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)	
2 2011	Sentinel	120	25	20.8	15	13	2	0	0	10
	Non-sentinel	776	202	26.0	167	159	4	0	4	35
	Total	896	227	25.3	182	172	6	0	4	45
2010/2011 season	Sentinel	537	248	46.2	201	195	4	0	2	47
	Non-sentinel	3637	1078	29.6	941	864	18	0	59	137
	Total	4174	1326	31.8	1142	1059	22	0	61	184

Table 2: Number of non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 2 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
2 2011	776	27	3.5	1	0.1	0	0.0	0	0.0	1	0.1
2010/2011 season	3637	217	6.0	10	0.3	6	0.2	2	0.1	3	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

Regional 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 2 2011, widespread influenza activity was reported from six HSE-Areas (HSE-E, -M, -MW, -NE, -SE and -W) and regional influenza activity was reported from two HSE-Areas (HSE-NW and -S) (figure 6).

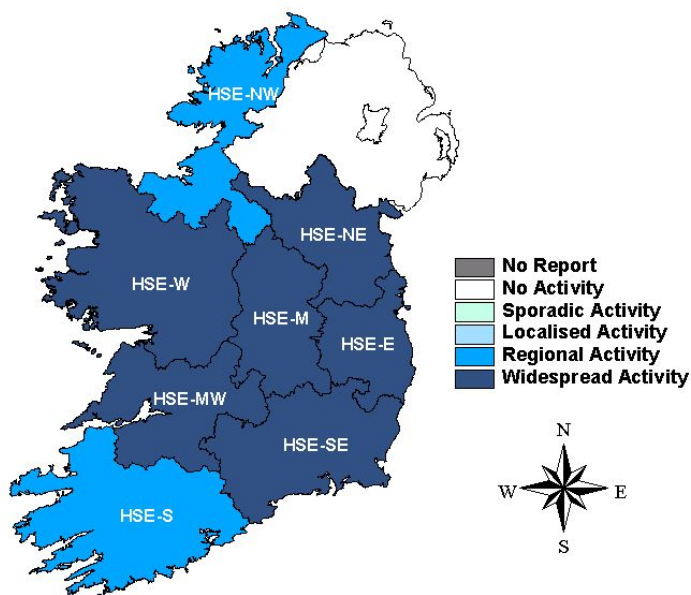


Figure 6: Map of provisional influenza activity by HSE-Area during influenza week 2 2011

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.

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. Three sentinel primary schools reported influenza/ILI symptoms and increased absenteeism amongst pupils during week 2 2011, one school was in HSE-SE and two schools were in HSE-NW.

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 during week 2 2011, reaching 9.3%, compared to 14.7% in week 1 2011. Seven GP Out-of-Hours services reported during week 2 2011 (figure 7).

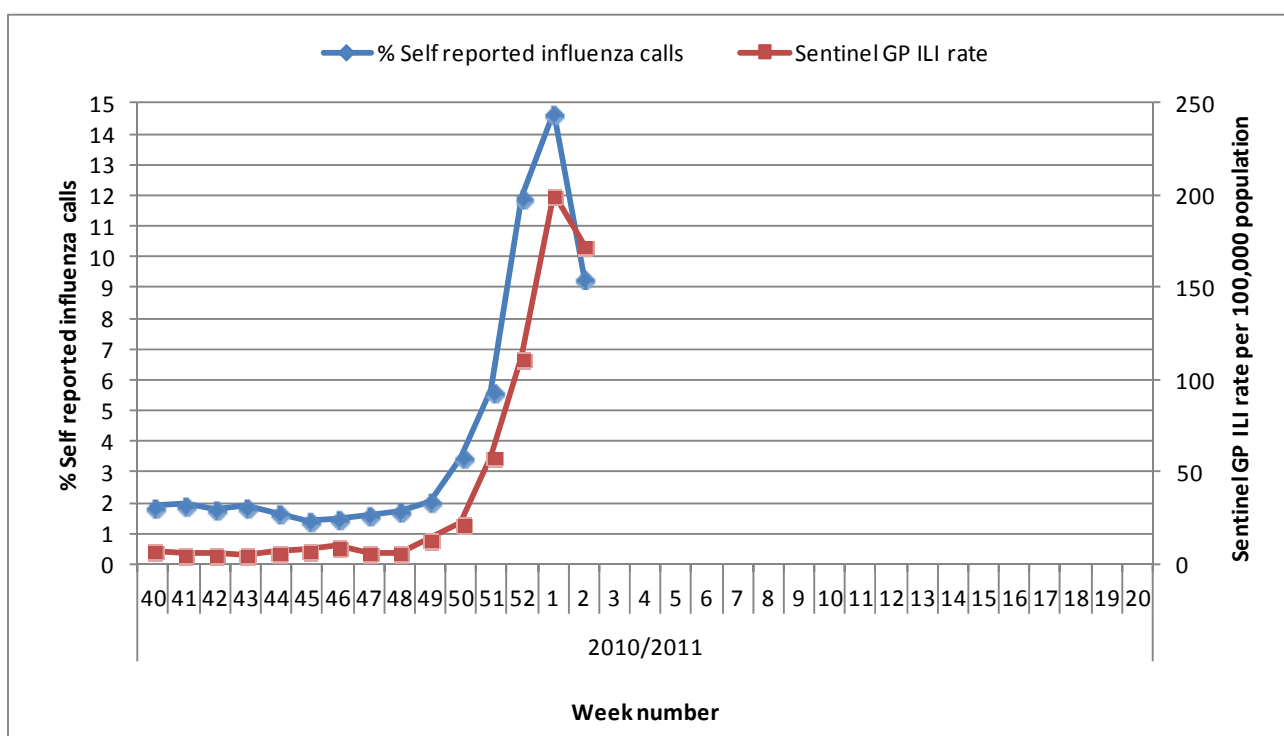


Figure 7: Self reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and national sentinel GP ILI consultation rate per 100,000 population by week for the 2010/2011 season

Source: GP Out-Of-Hours services in Ireland (collated by HSE-NE) & ICGP.

5. Influenza notifications (CIDR)

As of 19th January 2011 (09:00), 1386 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 are the only laboratory subtyping influenza A positive specimens. Of the 1386 confirmed influenza cases, 74.6% (n=1034) were confirmed influenza A (H1N1 2009), 11 (0.8%) were influenza A (H3), 140 (10.1%) were influenza A (unsubtyped) and 201 (14.5%) were influenza B cases. It should be noted that data for week 3 2011 are incomplete and only include notified cases as of Wednesday 19th January 2011 (09:00).

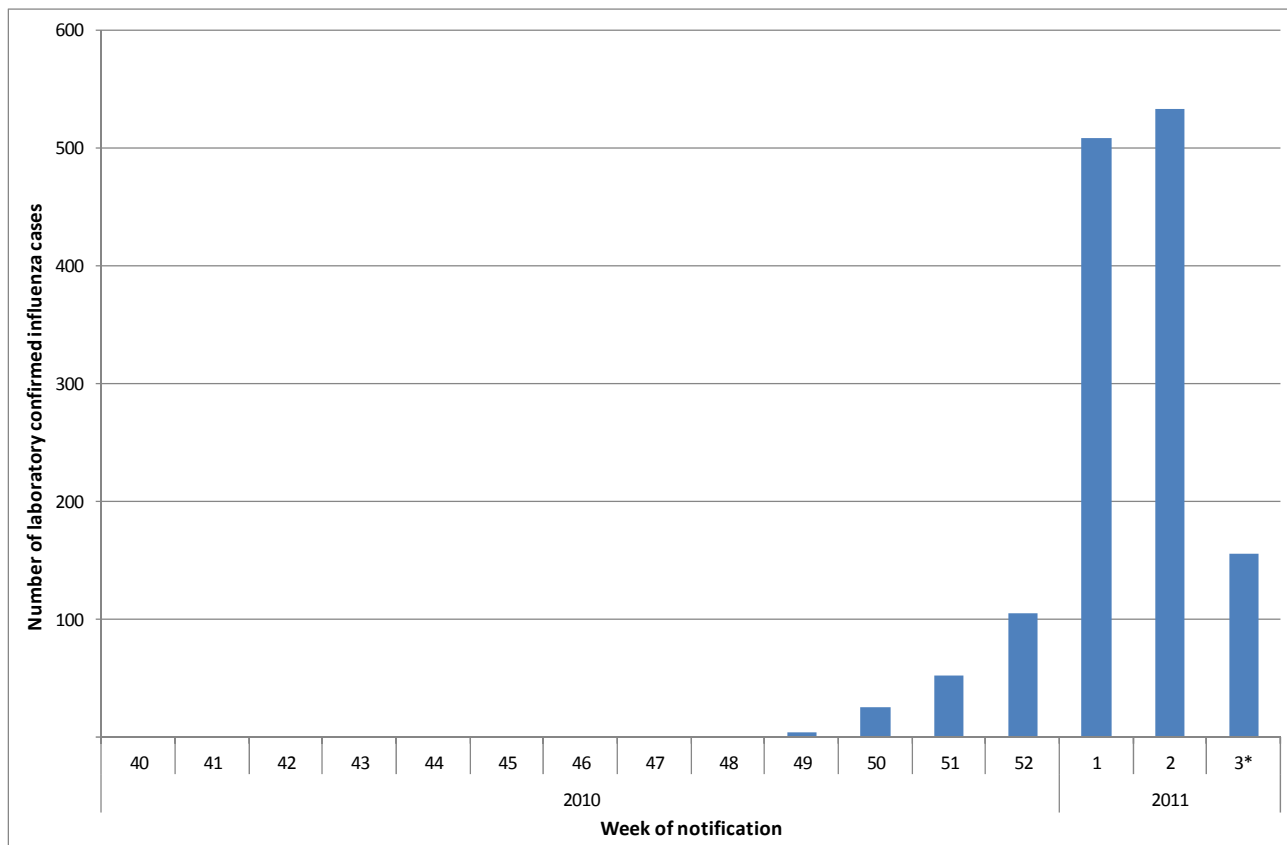


Figure 8: Number of laboratory confirmed influenza cases by week of notification on CIDR for the 2010/2011 influenza season. It should be noted that data for week 3 2011 are incomplete and only include notified cases as of 19th January 2011 (09:00). Source: CIDR 19/01/2011 09:00

Five hundred and seventy-three (41.3%) of the 1386 confirmed influenza cases notified were hospitalised (i.e. these cases were recorded on CIDR as hospital inpatients) (figure 9). Of the 573 hospitalised cases, 423 (73.8%) were influenza A (H1N1 2009) cases, 3 (0.5%) were influenza A (H3) cases, 77 (13.4%) were influenza A (unsubtyped) and 70 (12.2%) were influenza B cases.

The highest cumulative age specific rate in influenza confirmed hospitalised cases for the 2010/2011 influenza season to date is currently in the 0-4 year age group (34.1 per 100,000 population), followed by the 25-34 year age group (16.5 per 100,000 population) (table 3). It should be noted that age was unknown for one hospitalised case.

To date this season, 62 (4.5%) of the 1386 laboratory confirmed influenza cases were reported as pregnant. Thirty-six (58.1%) of these cases were reported as hospitalised: 34 influenza A (H1N1 2009) cases and 2 influenza B cases.⁵⁵

Age (years)	Hospitalised		Admitted to ICU	
	Number	Age specific rate per 100,000 population	Number	Age specific rate per 100,000 population
0-4	103	34.1	8	2.6
5-14	31	5.5	1	0.2
15-24	63	10.0	2	0.3
25-34	119	16.5	17	2.4
35-44	73	11.7	14	2.2
45-54	63	12.1	13	2.5
55-64	64	15.7	16	3.9
65+	56	12.0	11	2.4

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 19/01/2011 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 19th January 2011 (09:00), HPSC has been notified of 90 hospitalised patients admitted to critical care units. Enhanced surveillance information is available for 82 cases, 73 of whom are adults and nine are paediatric cases. Fifty-two (63.4%) of the 82 cases are currently in ICU^{***}. The number of confirmed influenza hospitalised cases by ICU status and by week of notification on CIDR for the 2010/2011 influenza season are detailed in figure 9. Sixty of the 82 (73.1%) cases have underlying medical conditions, 54 adults and six 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.

⁵⁵ It should be noted that information on pregnancy is not completed for all cases.

^{***} This information is based on the enhanced surveillance data.

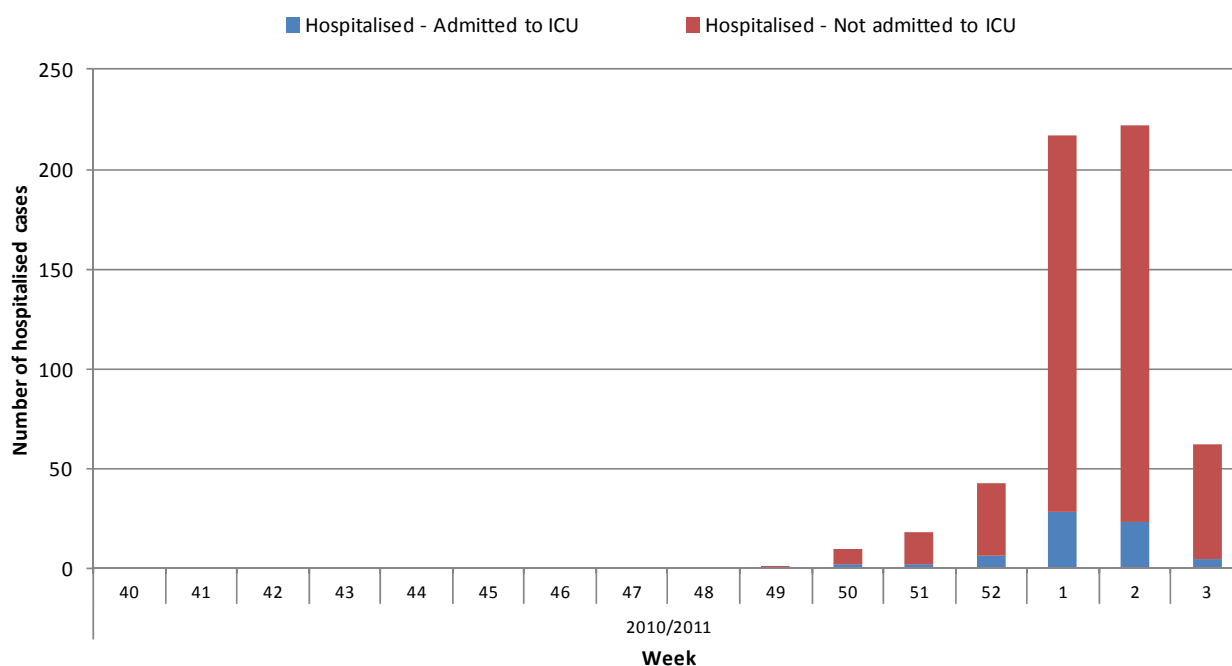


Figure 9: Number of confirmed influenza hospitalised cases by ICU status by week of notification on CIDR for the 2010/2011 influenza season. It should be noted that data for week 3 2011 are incomplete and only include notified cases as of 19th January 2011 (09:00). Source: CIDR and ICU enhanced surveillance system 19/01/2011 09:00^{†††}

7. Mortality surveillance

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

8. Outbreak surveillance

As of 19th January 2011 (09:00), ten general outbreaks of ILI/influenza/influenza A (H1N1 2009) were reported to CIDR for the 2010/2011 influenza season: 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.

^{†††} It should be noted that dates of hospitalisation/ICU admission have to be verified for 16 of 82 ICU cases on whom enhanced information is currently available. These 16 cases are not included in figure 9.

9. International summary

United Kingdom

GP and school closures over the Christmas/New Year period have affected surveillance indicators; therefore all UK data should be interpreted with caution. Indeed, several influenza indicators have apparently plateaued. GP consultation rates remain above baseline levels in all four countries. 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 observed during the pandemic. The virus strains circulating are overall well matched to the current influenza vaccine. In week 1 2011, the weekly influenza/ILI consultation rates increased in England (108.4 per 100,000), Scotland (55.8 per 100,000), Wales (92.8 per 100,000) and Northern Ireland (274.4 per 100,000). The weekly national proportions of NHS Direct calls for cold/flu and fever decreased in week 1. Eleven acute respiratory disease outbreaks were reported in the UK in week 1, bringing the total reported this season to date to 146. Seventy-six of 156 (48.7%) specimens from ILI patients presenting to sentinel GPs in England in week 1, were reported as positive for influenza. The proportion of specimens reported to DataMart (England) as positive for influenza decreased to 27.8% (1,104 of 3,968). The proportion of samples positive for RSV decreased slightly and was low for rhinovirus, parainfluenza, adenovirus and human metapneumovirus. From week 36 2010, 112 deaths associated with influenza infection have been reported.

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 1 2011, most countries reported regional or widespread influenza activity, with medium to 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: 71% were type A, and of the type A viruses subtyped, 97% were A (H1N1 2009). Since week 40 2010, 1148 severe acute respiratory infection (SARI) cases, including 37 fatal cases, have been reported by seven countries. In addition to the UK, other countries are now reporting cases requiring higher level care and deaths in young adults associated with influenza infection. Most are infected with influenza A (H1N1 2009) virus, but some are with B viruses as well. Since week 40 2010, 373 influenza viruses from sentinel and non-sentinel specimens have been characterised antigenically: 161 (43.2%) as A/California/7/2009 (H1N1)-like; 47 (12.6%) as A/Perth/16/2009 (H3N2)-like; 155 (41.5%) as B/Brisbane/60/2008-like (Victoria lineage) and 10 (2.7%) as B/Florida/4/2006-like (Yamagata lineage). In terms of antiviral resistance, since week 40 2010, a total of 185 influenza A (H1N1 2009) viruses and six influenza B viruses have been tested for susceptibility to neuraminidase inhibitors. All but two viruses were sensitive to both oseltamivir and zanamivir. Two influenza A (H1N1 2009) viruses from the UK had the H275Y substitution known to confer resistance to oseltamivir while retaining susceptibility to zanamivir. Both viruses were from patients who had not been treated with oseltamivir.

http://ecdc.europa.eu/en/healthtopics/influenza/epidemiological_data/Pages/Weekly_Influenza_Surveillance_Overview.aspx

USA

During week 1 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 ILI visits was 2.2%, which is below the national baseline of 2.5%. Of the 4,331 specimens tested: 706 (16.3%) were positive for influenza: 40 A (H1N1 2009), 164 A (H3), 317 A (unsubtyped) and 185 B. The proportion of deaths attributed to pneumonia and influenza (P&I) was at the epidemic threshold. Four influenza-associated paediatric deaths were reported. Two of these deaths were associated with influenza A (H3) viruses and two were associated with influenza B

virus infection. 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 B/Yamagata lineage viruses. <http://www.cdc.gov/flu/weekly/>

Canada

During week 1 2011, the number of regions reporting localised influenza activity has increased across Canada. The ILI consultation rate decreased slightly, but remained within the expected range. Although, the percentage of specimens testing positive for influenza increased slightly in week 1 2011, the national rate appears to be approaching the peak. Influenza A (H3N2) was identified in 93% of positive influenza A tests subtyped this season, while influenza A (H1N1 2009) accounted for 7%. Both the number of paediatric and adult hospitalisations with influenza decreased during week 1 2011 compared to the previous week. <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. Currently, 25% of intensive care beds in the UK are occupied by influenza patients. 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
http://www.who.int/csr/disease/influenza/201002_Recommendation.pdf

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