

Influenza Surveillance in Ireland – Weekly Report

Influenza Week 9 2013 (25th February – 3rd March 2013)



Feilimeannacht na Seibhise Sláinte
Health Service Executive



 **Intensive Care Society of Ireland**

Summary

- **Influenza activity in Ireland remained stable during week 9 2013, with influenza-associated hospitalisations and outbreaks continuing to be reported.**
- Overall, there are some indications of declining influenza transmission; however localised activity particularly in the Eastern region remained high.
- The sentinel GP influenza-like illness (ILI) consultation rate was 44.6 per 100,000 population in week 9 2013, a slight increase compared to the updated rate of 39.9 per 100,000 during week 8 2013.
 - ♦ ILI rates have now remained above the Irish baseline threshold (21.0 per 100,000 population) for 12 weeks this season.
 - ♦ ILI age specific rates were highest in the 5-14 year age group during week 9 2013.
- The proportion of influenza-related calls to GP Out-of-Hours services decreased slightly during week 9 2013, for the third consecutive week.
- Influenza positivity decreased during week 9 2013 to 22.9%, compared to 30.1% during the previous week. Twenty-five influenza A(H3), 7 influenza A(H1)pdm09, 6 A (unsubtyped) and 26 influenza B positive specimens were reported from the NVRL for week 9 2013.
 - The percentage positivity for influenza A (59.4%) was higher than for influenza B (40.6%).
- Respiratory syncytial virus (RSV) positivity remained at low levels during week 9 2013.
- Positivity levels for adenovirus, parainfluenza viruses and human metapneumovirus have remained at low levels this season.
- During week 9 2013, 34 confirmed influenza cases were reported as hospitalised, 16 associated with influenza A and 18 with influenza B. To date this season, 239 confirmed influenza cases were reported as hospitalised, 69.5% were associated with influenza B.
- Ten adult and four paediatric confirmed influenza cases have been admitted to critical care to date this season. Of these 14 cases, 10 were associated with influenza B, one with influenza A (H1)pdm09 and three with influenza A (unsubtyped). Thirty-two RSV* paediatric cases were also admitted to critical care this season.
- To date this season, two confirmed influenza B-associated deaths were reported to HPSC.
- Two acute respiratory outbreaks in residential care facilities were reported to HPSC during week 9 2013.
- Influenza activity remained substantial in week 8 2013 across Europe; however an increasing number of countries reported declining transmission.

*The majority of these RSV admissions to critical care were admitted during November and December 2012.

1. GP sentinel surveillance system

Clinical Data

During week 9 2013, 95 influenza-like illness (ILI) cases were reported from sentinel GPs, corresponding to an ILI consultation rate of 44.6 per 100,000 population, a slight increase compared to the updated rate of 39.9 per 100,000 in week 8 2013. Fifty of 60 (83.3%) sentinel general practices provided data during week 9 2013, with 31 practices (62.0%) reporting ILI cases. The ILI consultation rates have now remained above the Irish baseline threshold (21.0 per 100,000 population)[†] for 12 weeks. Figure 1 shows the ILI consultation rates, the baseline threshold rate and the number of positive specimens detected by the NVRL.

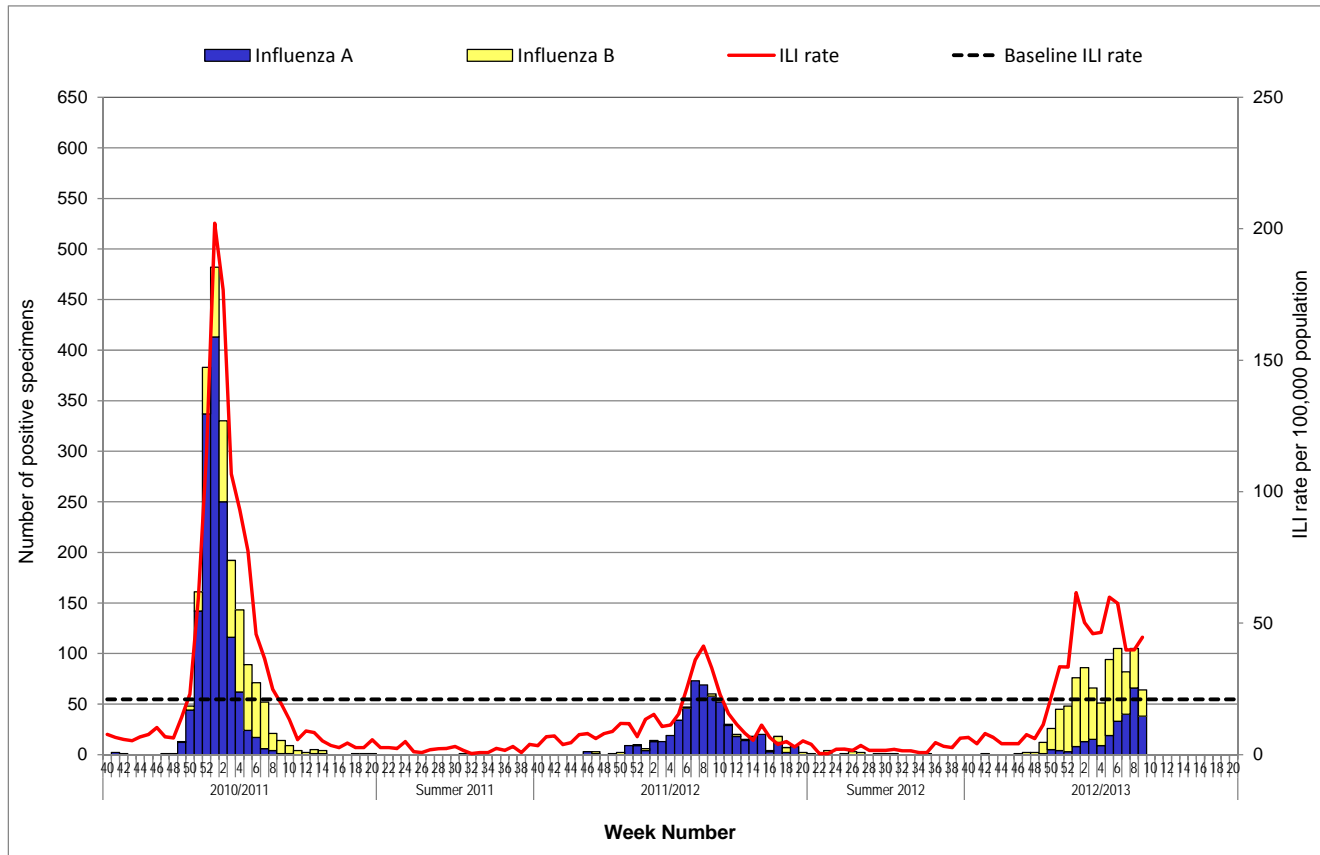


Figure 1. ILI sentinel GP consultation rates per 100,000 population, baseline ILI threshold rate, and number of positive influenza A and B specimens tested by the NVRL, by influenza week and season.

Source: Clinical ILI data from ICGP and virological data from the NVRL[‡]

ILI age specific rates were highest in the 5-14 year age group during week 9 2013. During week 9 2013, two ILI cases were reported in the 0-4 year age group (12.2 per 100,000), 18 ILI cases were reported in the 5-14 year age group (62.7 per 100,000), 71 cases in the 15-64 year age group (50.2 per 100,000) and 4 ILI cases were reported in those aged 65 years and older (16.2 per 100,000) (figure 2).

[†] HPSC in consultation with the European Centre for Disease Prevention and Control (ECDC) have revised the Irish baseline threshold for the 2012/2013 influenza season to 21.0 per 100,000 population.

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

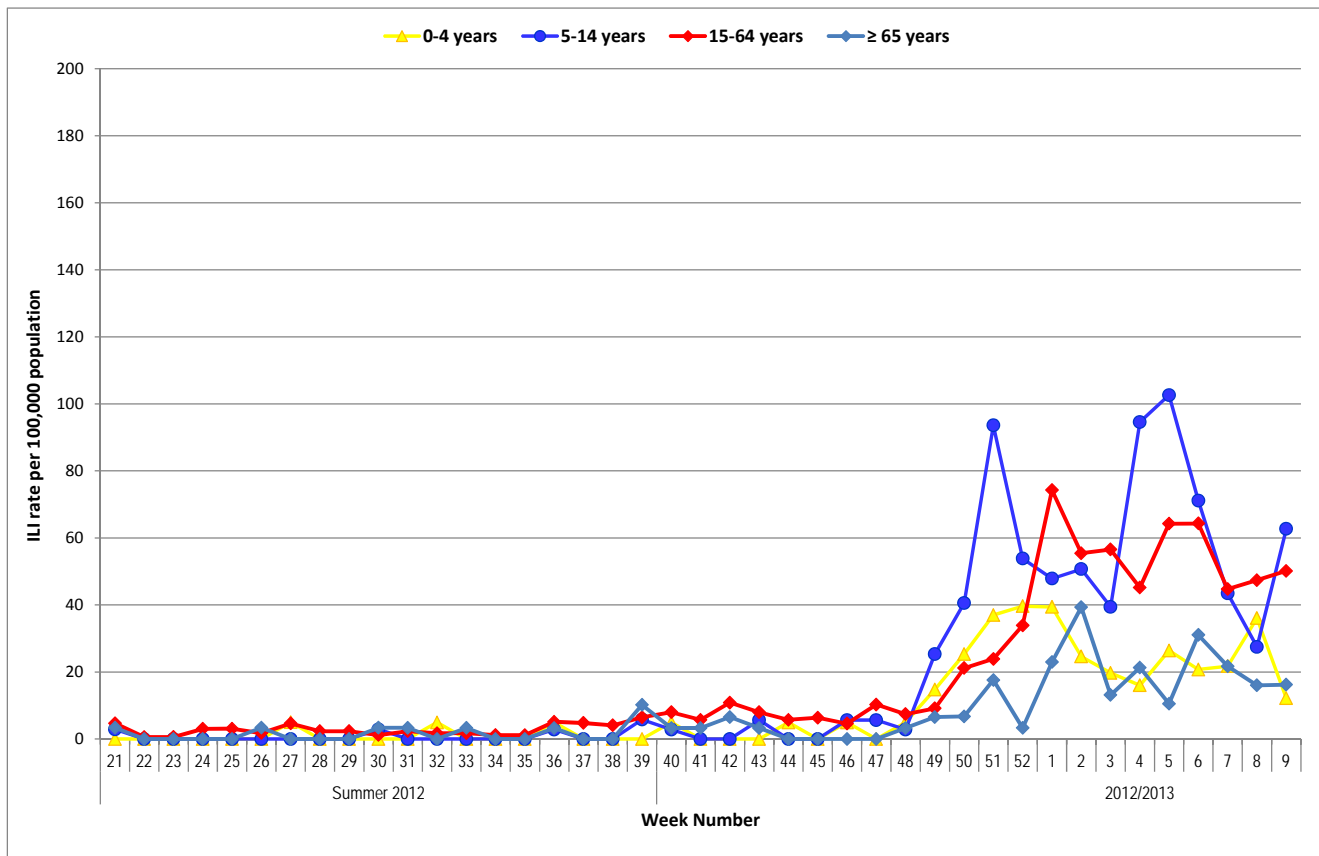


Figure 2: Age specific sentinel GP ILI consultation rate per 100,000 population by week during the summer of 2012 and the 2012/2013 influenza season to date. Source: ICGP ILI clinical data

2. Influenza and Other Respiratory Virus Detections - National Virus Reference Laboratory

The data reported in this section for the 2012/2013 influenza season refers to specimens tested by the National Virus Reference Laboratory (NVRL). The NVRL are now testing all sentinel and non-sentinel specimens for a panel of respiratory viruses: influenza A and B, respiratory syncytial virus (RSV), adenovirus, parainfluenza viruses types 1, 2, and 3 (PIV-1, -2 & -3) and human metapneumovirus.

During week 9 2013, a total of 280 specimens (38 sentinel and 242 non-sentinel[§] specimens) were tested by the NVRL. Sixty-four (64/280; 22.9%) sentinel and non-sentinel specimens tested positive for influenza virus during week 9 2013: 25 A(H3), 7 A(H1)pdm09, 6 A (unsubtyped) and 26 B. Twenty-one (21/38; 55.3%) sentinel specimens tested positive for influenza virus during week 9 2013: 5 A(H3), 1 A(H1)pdm09 and 15 B. Forty-three (43/242; 17.8%) non-sentinel specimens tested positive for influenza virus during week 9 2013: 20 A(H3), 6 A(H1)pdm09, 6 A (unsubtyped) and 11 B (tables 1 & 2). During week 9 2013, influenza A positivity (59.4%) from sentinel and non-sentinel specimens positive for influenza was higher than influenza B (40.6%) (figures 3 & 4).

[§]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.

Influenza Virus Characterisation

Influenza B viruses have dominated the 2012/2013 influenza season in Ireland, although influenza A(H3N2) and influenza A(H1N1)pdm09 viruses have also been circulating. The National Virus Reference Laboratory (NVRL) has genetically characterised 32 influenza viruses this season. Of twenty-four influenza B viruses analysed, twenty-one (87.5%) belong to the B/Yamagata lineage (which is included in the 2012/2013 influenza vaccine) and three (12.5%) belong to the B/Victoria lineage. Seven influenza A(H3N2) viruses were genetically characterised and were similar to the vaccine strain A/Victoria/361/2011. Sequence analysis of one influenza A(H1N1)pdm09 virus identified it was related to the vaccine strain A/California/07/2009. As part of the WHO Global influenza surveillance programme, a proportion of influenza viruses are submitted to the WHO Collaborating Centre for Reference and Research on Influenza (Mill Hill, London) for characterisation of influenza strains. These viruses have been submitted for further antigenic characterisation and confirmatory testing.

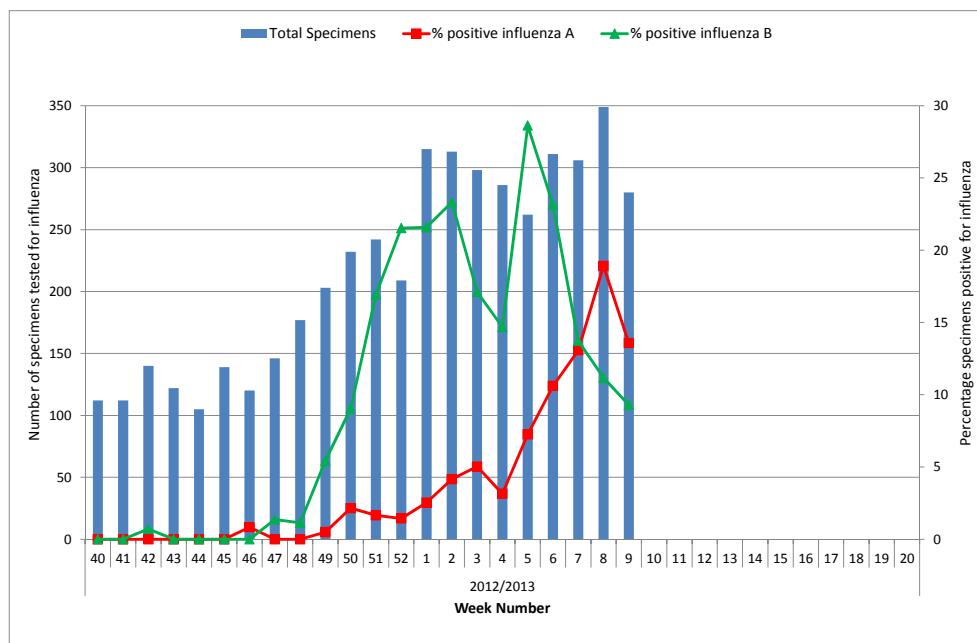


Figure 3: Number of sentinel and non-sentinel specimens tested for influenza and percentage influenza positive by week for the 2012/2013 influenza season. Source: NVRL

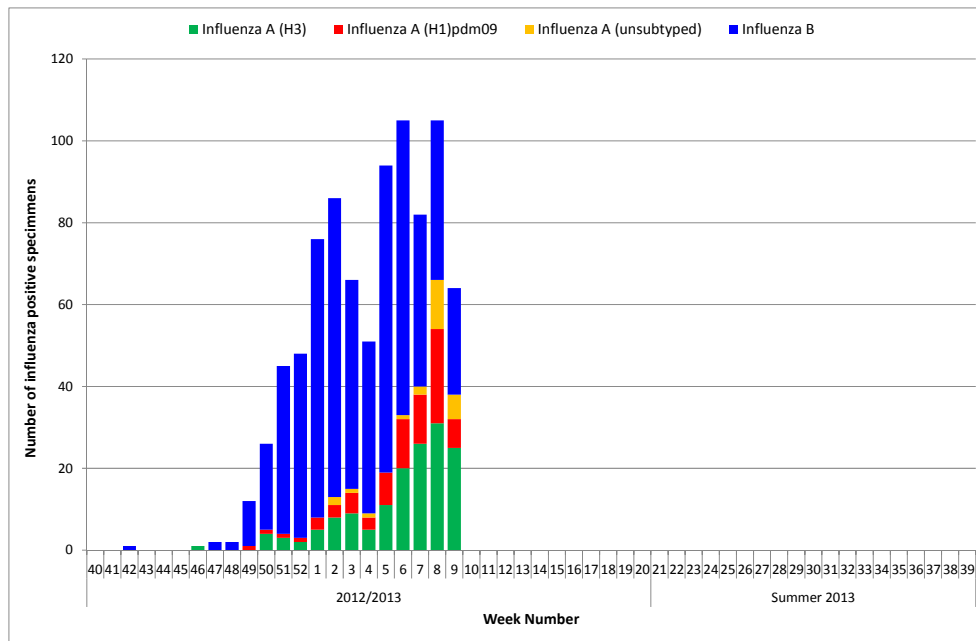


Figure 4: Number of positive influenza specimens by influenza type/subtype from sentinel and non-sentinel sources tested by the NVRL, by week for the 2012/2013 influenza season. Source: NVRL

Respiratory Syncytial Virus (RSV)

Respiratory syncytial virus (RSV) positivity reported from the NVRL (non-sentinel sources) decreased to 1.7% (4/242) during week 9 2013, compared to 2.7% during week 8 2013. RSV positivity peaked at 36.7% during week 51 2012 (figure 5). Sporadic cases of RSV have been detected this season from sentinel GP sources (table 2).

RSV was made notifiable in Ireland on 1st January 2012. During week 9 2013, 21 laboratory notifications of RSV were reported on Ireland’s Computerised Infectious Disease Reporting System (CIDR). Laboratory notifications of RSV are reported in more detail in the [Weekly Infectious Disease Report for Ireland](#).

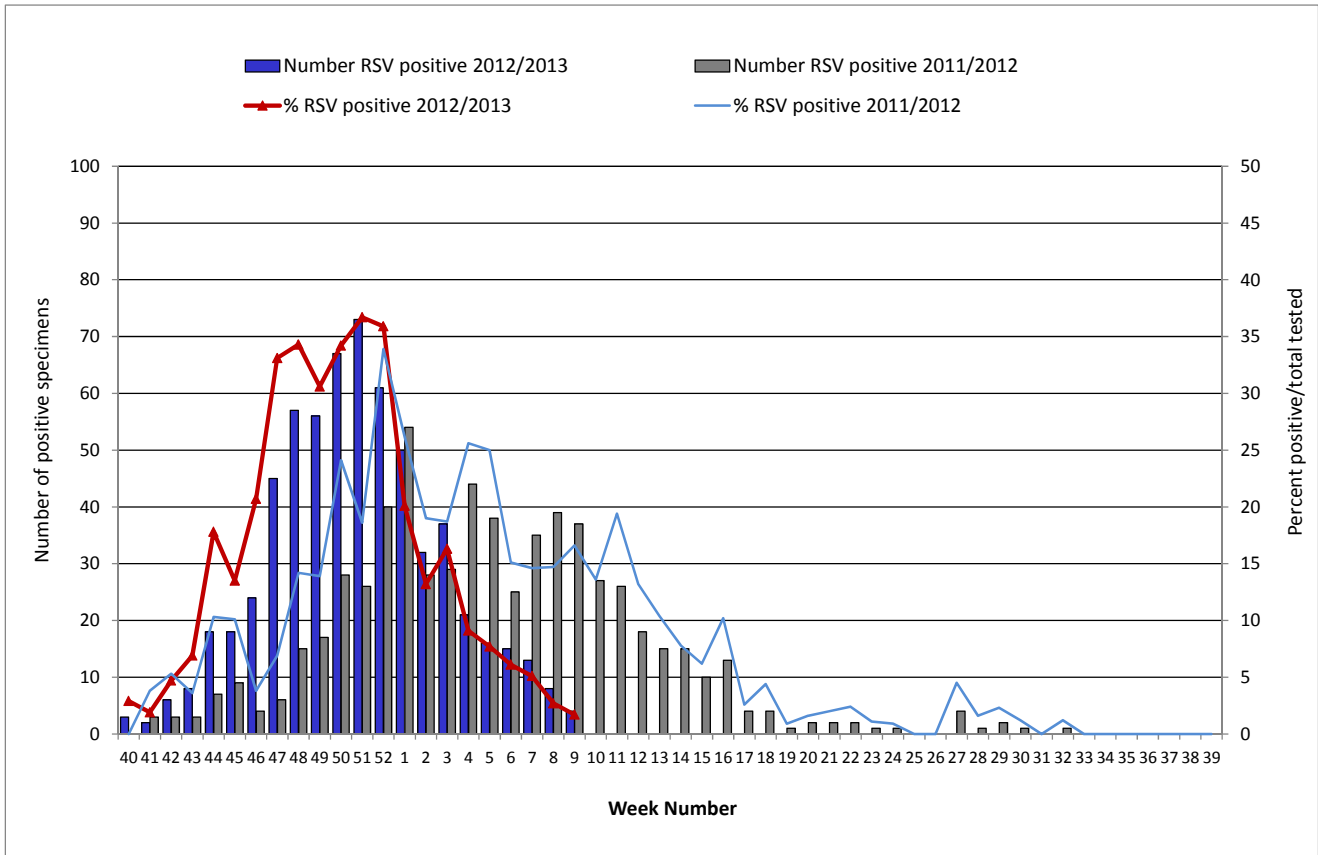


Figure 5: Number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2012/2013 season, compared to the 2011/2012 season. Source: NVRL

Other Respiratory Viruses

Two adenovirus, three parainfluenza virus (PIV) type 3 and one human metapneumovirus positive specimens from non-sentinel sources and one adenovirus from sentinel sources were reported from the NVRL during week 9 2013. No parainfluenza viruses or hMPV positive detections were reported from the NVRL from sentinel GP sources during week 9 2013 (table 2). Positivity levels for adenovirus, hMPV and parainfluenza viruses have remained at low levels this season.

Table 1: Number of sentinel and non-sentinel respiratory specimens tested by the NVRL and positive influenza results, for week 9 2013 and the 2012/2013 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 (unsubtyped)	Total influenza A	
9 2013	Sentinel	38	21	55.3	1	5	0	6	15
	Non-sentinel	242	43	17.8	6	20	6	32	11
	Total	280	64	22.9	7	25	6	38	26
2012/2013	Sentinel	726	409	56.3	30	44	1	75	334
	Non-sentinel	4053	457	11.3	50	106	24	180	277
	Total	4779	866	18.1	80	150	25	255	611

Table 2: Number of sentinel and non-sentinel specimens tested by the NVRL for other respiratory viruses and positive results, for week 9 2013 and the 2012/2013 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	hMPV	% hMPV
9 2013	Sentinel	38	0	0.0	1	2.6	0	0.0	0	0.0	0	0.0	0	0.0
	Non-sentinel	242	4	1.7	2	0.8	0	0.0	0	0.0	3	1.2	1	0.4
	Total	280	4	1.4	3	1.1	0	0.0	0	0.0	3	1.1	1	0.4
2012/2013	Sentinel	726	13	1.8	20	2.8	1	0.1	0	0.0	1	0.1	7	1.0
	Non-sentinel	4053	634	15.6	61	1.5	2	0.0	3	0.1	48	1.2	67	1.7
	Total	4779	647	13.5	81	1.7	3	0.1	3	0.1	49	1.0	74	1.5

** 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

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.

Regional influenza activity was reported from HSE-E, localised influenza activity was reported from HSE-MW, -NE, -NW, -SE, -S and -W and sporadic influenza activity was reported from HSE-M during week 9 2013 (figure 6).

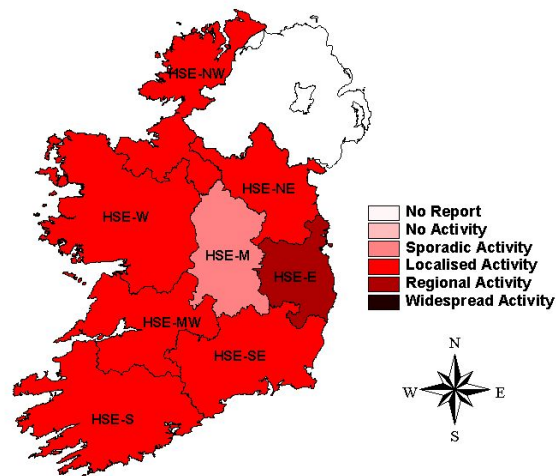


Figure 6: Map of provisional influenza activity by HSE-Area during week 9 2013

Sentinel hospitals

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. Hospital admissions data act as a crude indicator for influenza activity.

Overall, the total number of respiratory admissions reported from sentinel hospitals was 266 during week 9 2013, an increase compared to 246 during week 8 2013. To date this season, hospital respiratory admissions peaked at 413 during week 50 2012 (figure 7).

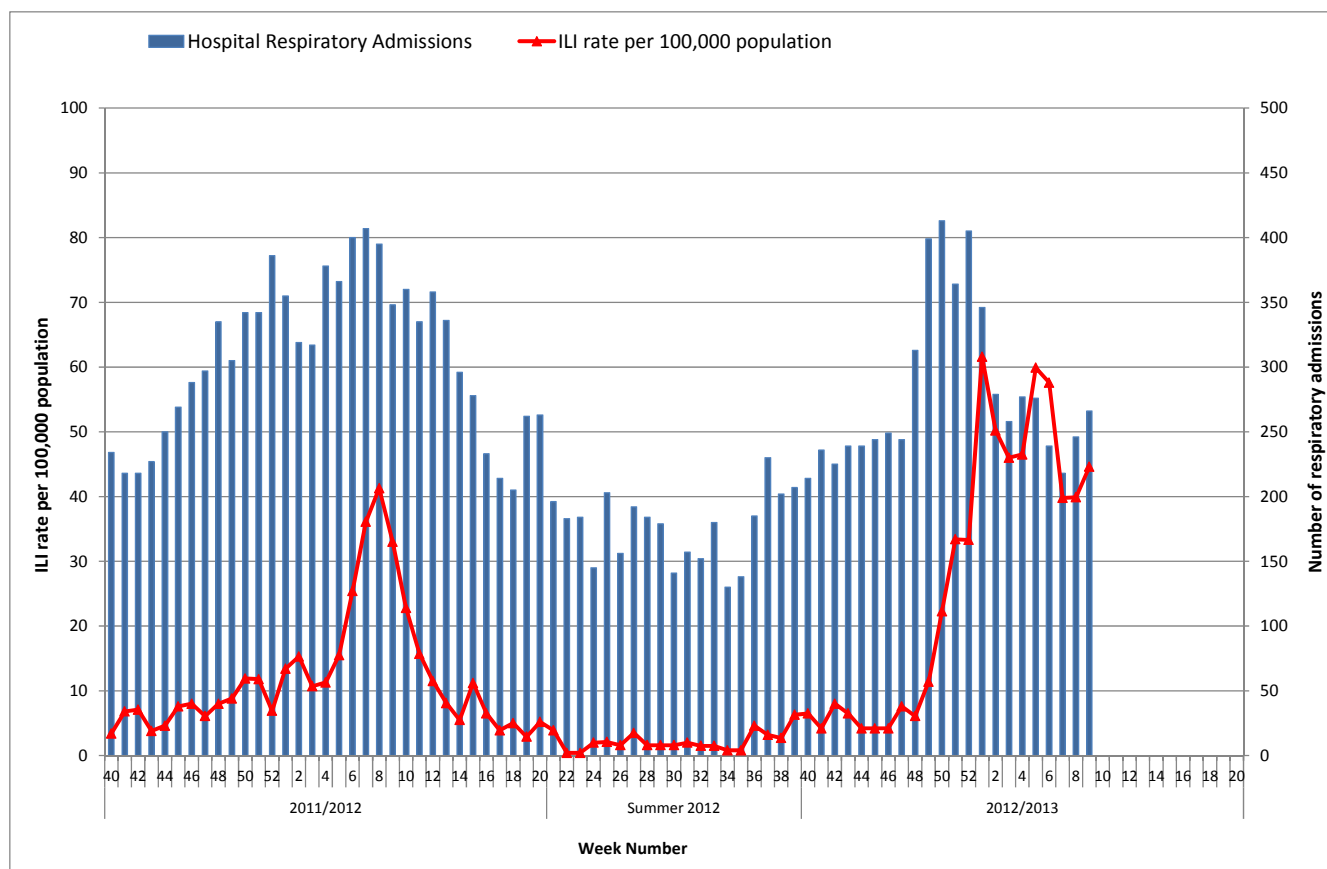


Figure 7: Number of respiratory admissions reported from sentinel hospitals and national sentinel GP ILI consultation rate per 100,000 population by week for the 2011/2012 season, summer 2012 and the 2012/2013 season to date.
 Source: Departments of Public Health - Sentinel Hospitals & ICGP.

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 during week 9 2013 decreased slightly to 3.0%, compared to the updated proportion of 3.1% in the previous week. Six GP Out-of-Hours services reported during week 9 2013. To date this season, the proportion of influenza-related calls to GP Out-of-Hours services peaked at 6.0% during week 1 2013 (figure 8).

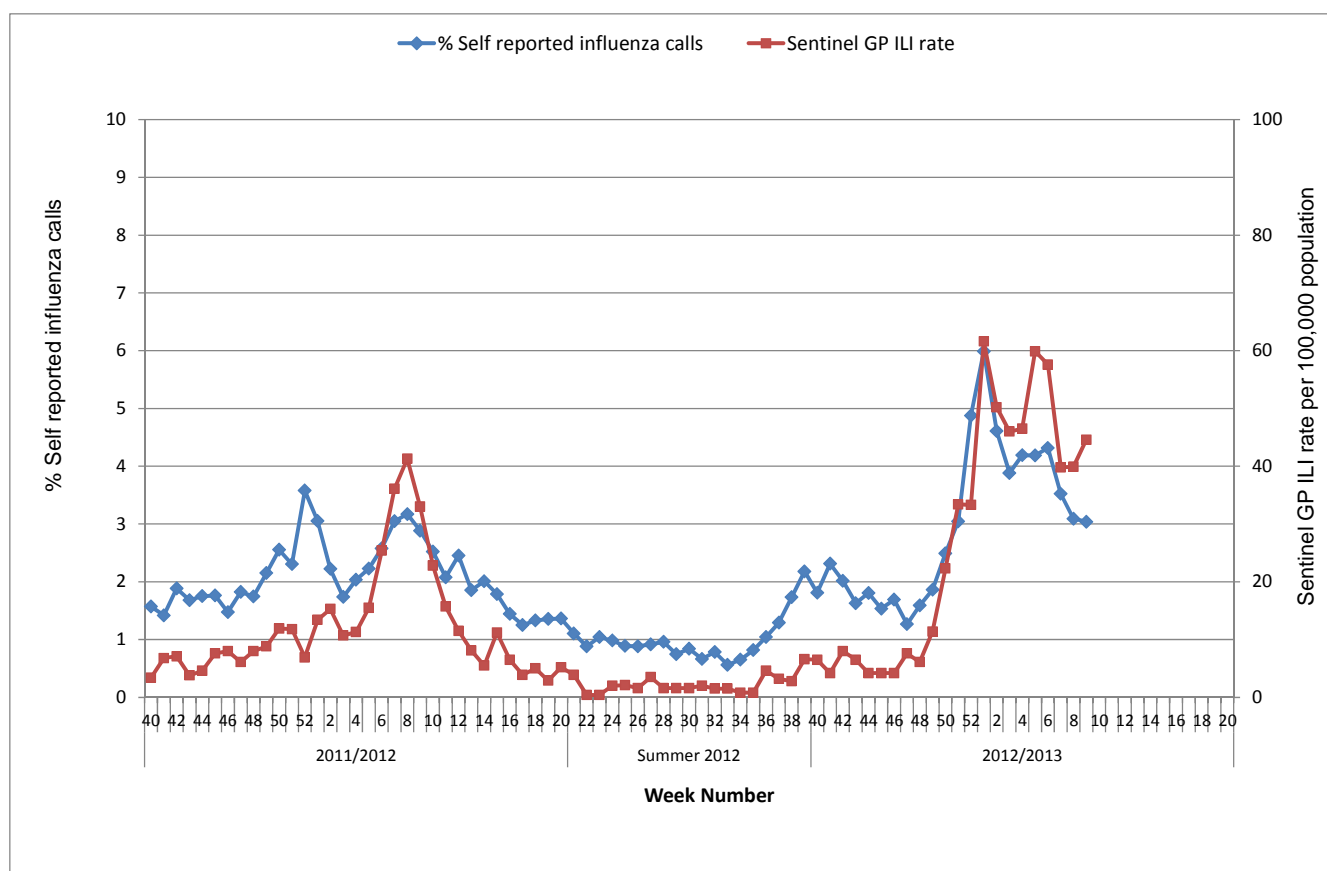


Figure 8: Self-reported influenza-related calls as a proportion of total calls to Out-of-Hours GP Co-ops and national sentinel GP ILI consultation rate per 100,000 population by week for the 2011/2012 and 2012/2013 seasons

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

5. Influenza notifications and hospitalisation status

Laboratory confirmed influenza cases notified on Ireland’s Computerised Infectious Disease Reporting System (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.

One hundred and four laboratory confirmed influenza cases were notified during week 9 2013, 56 influenza A (22 A(H3), 17 A(H1)pdm09 & 17 A(untsubtyped)) and 48 influenza B. The number of confirmed influenza cases reported as hospitalised during week 9 2013 was 34, compared to 37 during week 8 2013. Of the 34 cases reported as hospitalised during week 9 2013, 16 were associated with influenza A (10 A(H3), 4 A(H1)pdm09 & 2 A(untsubtyped)) and 18 were associated with influenza B. To date this season, 239 confirmed influenza cases (166 influenza B, 28 A (H1)pdm09, 35 influenza A (H3), and 10 influenza A (untsubtyped)) have been reported as hospitalised, 69.5% of these cases were associated with influenza B.

6. Critical care surveillance

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. A study on severe acute respiratory infections (SARI) in critical care at two pilot ICU sites which commenced during the 2011/2012 season will continue during the 2012/2013 season. HPSC process and report on this information on behalf of the regional Directors of Public Health/Medical Officers of Health and ICSI.

To date this season, ten adult and four paediatric confirmed influenza cases have been admitted to critical care and reported to HPSC, ten were associated with influenza B, one with influenza A (H1)pdm09 and three influenza A (unsubtyped). Thirty-two RSV paediatric cases were also admitted to critical care this season. The majority (90.6%) of these reported RSV admissions to critical care were admitted during November and December 2012.

7. Mortality surveillance

To date this season, two confirmed influenza B-associated deaths were reported to HPSC. 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 (Euro MoMo). During week 9 2013, no excess all-cause mortality was reported in Ireland after correcting GRO data for reporting delays with the standardised EuroMOMO algorithm. However, during weeks 51 and 52 2012 and weeks 1 and 4 2013, excess all-cause mortality was reported. These data are provisional due to the time delay in deaths' registration in Ireland. <http://www.euromomo.eu/>

8. Outbreak surveillance

Two acute respiratory outbreaks in residential care facilities were reported to HPSC during week 9 2013, one in HSE-NW associated with influenza B and one in HSE-S associated with influenza A(H3). To date this influenza season, 29 acute respiratory outbreaks have been reported to HPSC, eight associated with influenza B, six influenza A(H3), one influenza A(H1)pdm09, two influenza A (unsubtyped), one RSV, one hMPV and ten associated with unidentified pathogens (four of which were not associated with influenza). The majority of these outbreaks have been associated with residential care facilities/long stay units for the elderly. It should be noted that family outbreaks are not recorded in this report.

9. International summary

United Kingdom

Indicators of influenza activity across England continued to show influenza was circulating during week 8 2013: influenza B positivity was decreasing while influenza A(H3) positivity was increasing. In week 8 2013, overall weekly influenza GP consultations decreased in England (15.3 per 100,000), Northern Ireland (43.7 per 100,000), Scotland (25.2 per 100,000) and Wales (11.2 per 100,000). In week 8 2013, the weekly proportion of NHS Direct calls for colds/influenza and fever (in 5-14 year olds) remained below their respective influenza thresholds of 1.6% and 11.7%. Twenty-six acute respiratory disease outbreaks were reported during week 8 2013: 10 influenza A (unsubtyped), one influenza A(H3), one influenza A(H1N1)pdm09, one rhinovirus and 13 pathogen unknown/not yet detected. 230 influenza positive detections (95 A(H3), 59 B, 52 A subtype not known and 24 A(H1N1)pdm09) were recorded through the DataMart scheme (overall positivity of 22.7% compared to 21.3% the previous week). Eight influenza positive detections were recorded through the two English GP-based sentinel schemes in week 8 (8 B), a positivity of 40.0%. 37 new admissions to ICU/HDU with confirmed influenza (14 A(subtype not known), 11 A(H1N1)pdm09, 7 B, and 5 A(H3N2)) were reported across the UK in week 8 2013. 61 new hospitalised confirmed influenza cases have been reported through the USSS sentinel hospital network across England. In week 8 2013, no overall excess all-cause mortality was reported across the UK through the EuroMOMO algorithm. These data are provisional due to the time delay in death registration.

Europe

Influenza activity remained significant in week 8 2013 across Europe but an increasing number of countries reported declining influenza transmission. Nineteen of 28 countries reporting indicated concomitantly

high/medium-intensity influenza transmission and wide geographic spread. Only six countries reported increasing trends compared to eleven in week 7. Fifteen countries have been reporting decreasing or stable trends for at least two consecutive weeks. The proportion of influenza virus-positive specimens from sentinel sites remained high (50%), but has decreased from the peak (~60%) observed between weeks 5 - 7 2013. Since week 40 2012, an even distribution of influenza virus types has been observed; 50% influenza A and 50% influenza B. After a sustained increase between weeks 2 and 7 2013, 60% of subtyped influenza A viruses were A(H1)pdm09. 111 hospitalised laboratory-confirmed influenza cases were reported by six countries (Belgium, France, Ireland, Romania, Slovakia, and Spain) with an even distribution of influenza A and B viruses. Of the 935 influenza B viruses ascribed to a lineage in Europe, 837 (90%) were B/Yamagata and 98 (10%) were B/Victoria. Of the 1416 antigenic characterisations of influenza A viruses reported for sentinel and non-sentinel specimens since week 40 2012, 1024 (72%) have been characterised as A/Victoria/361/2011(H3N2)-like. Of the 972 antigenic characterisations of influenza B viruses reported, 474 (49%) have been characterised as B/Estonia/55669/2011-like (B/Yamagata/16/88-lineage). ECDC published its [annual risk assessment](#) for seasonal influenza 2012/2013 based on data up to week 3 2013.

United States of America

During week 8 2013, influenza activity remained elevated in the United States, but decreased in most areas. The proportion of ILI outpatient visits was 2.7%, which was above the national baseline of 2.2%. Of 7609 specimens tested and reported by collaborating laboratories, 1288 (16.9%) were positive for influenza: 244 A(H3), 39 A(H1N1)pdm09, 322 A(unsubtyped) and 683 B. A cumulative rate of 36.7/100,000 laboratory-confirmed influenza-associated hospitalisations for the season was reported. Of reported hospitalisations, over 51% were among adults 65 years and older. The proportion of deaths attributed to pneumonia and influenza was above the epidemic threshold. CDC has antigenically characterised 1340 influenza viruses to date this season: 104 (99.0%) influenza A(H1N1)pdm09 viruses were similar to the vaccine strain A/California/7/2009-like, 823 (99.5%) (H3N2) viruses were similar to the vaccine strain A/Victoria/361/2011-like, 293 (71.8%) influenza B viruses were similar to the vaccine strain B/Wisconsin/1/2010-like and 115 (28.2%) influenza B viruses were similar to the B/Victoria lineage of viruses.

Canada

In week 8 2013, specific indicators of influenza activity continued to decrease, while indicators of the circulation of respiratory viruses such as the ILI consultation rate were similar to recent weeks. The percentage of laboratory detections positive for influenza continues to decrease, while the proportion of positive tests for influenza B has increased in recent weeks. The percentage of laboratory detections positive for RSV and rhinovirus were similar to recent weeks. The number of regions reporting widespread or localised activity was similar in weeks 7 and 8 2013; however, there is an overall decline in influenza/ILI activity from the peak in early January. During the 2012/2013 season, the National Microbiology Laboratory has antigenically characterised 624 influenza viruses. The 425 influenza A(H3N2) viruses were antigenically similar to the vaccine strain A/Victoria/361/2011 and the 86 A(H1N1)pdm09 viruses were antigenically similar to the vaccine strain A/California/07/09. Among the influenza B viruses, 94 were antigenically similar to the vaccine strain B/Wisconsin/01/2010 (Yamagata lineage) and 19 were similar to B/Brisbane/60/2008 (Victoria lineage; component of the 2011/2012 seasonal influenza vaccine).

Worldwide

The WHO Global Influenza Programme monitors influenza activity worldwide and publishes an update every two weeks. The most recent update of 1st March 2013 stated that influenza activity in North America continued to decrease overall, although activity remained high in some areas. The proportion of influenza B increased slightly, however influenza A(H3N2) was still the most commonly detected virus subtype. The season has been more severe than average in the US, with a notably high number of pneumonia and influenza-related hospitalisations among adults aged 65 years and older. Influenza activity in Europe decreased in some northern and western countries but continued to increase in the eastern part of the region. While influenza A(H1N1)pdm09 was the most commonly detected virus overall, notable exceptions included Denmark, Ireland

and the United Kingdom, which were reporting much more influenza A(H3N2) and influenza B than the rest of Europe, and Bulgaria, Italy, and Spain which reported more influenza B than A. Excess mortality for the 14 countries reporting to the European Mortality Monitoring project has been higher than average for individuals over the age of 65 years but not as high as the previous two seasons. Influenza activity throughout the temperate region of Asia decreased except in Mongolia where it appears to have reached a peak. Only low levels of influenza activity were reported across the tropical regions of the world and activity in countries of the southern hemisphere remained at inter-seasonal levels.

Human Avian Influenza and Novel Coronavirus Updates

Human Avian Influenza

WHO report monthly risk assessments on influenza at the human-animal interface (HAI). The latest summary on 15th February 2013, stated that 620 laboratory-confirmed human cases with avian influenza A(H5N1) virus infection have been officially reported to WHO since 2003 from 15 countries, of which 367 died.

Novel Coronavirus

The latest update from WHO on novel coronavirus (NCoV) on 6th March 2013, stated that the Ministry of Health in Saudi Arabia has informed WHO of a new confirmed case of infection with NCoV. The patient, a 69-year-old male, was hospitalised on 10th February 2013 and died on 19th February 2013. To date, WHO has been informed of a global total of 14 confirmed cases of human infection with NCoV, including eight deaths. Of the total number, seven cases, including five deaths, have been reported from Saudi Arabia. ECDC have issued an updated [risk assessment](#). Further information is available on the [WHO website](#) and [ECDC website](#).

2013/2014 seasonal influenza vaccine recommendations – WHO

The WHO Consultation on the Composition of Influenza Virus Vaccines for the Northern Hemisphere 2013/2014 took place on the 21st February 2013. It is recommended that vaccines for use in the 2013/2014 influenza season (northern hemisphere winter) contain the following:

- an A/California/7/2009 (H1N1)pdm09-like virus;
- an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011;
- a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Further details on these recommendations can be found [here](#).

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 and enhanced surveillance of all severe acute respiratory infections (SARI) in two pilot ICU sites.
7. Outbreak reporting on CIDR
8. Network of sentinel hospitals reporting admission data

Further information on influenza in Ireland and internationally

Ireland	www.hpsc.ie
Northern Ireland	http://www.fluawareni.info/
Europe – ECDC	http://ecdc.europa.eu/

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