

Influenza Surveillance in Ireland - Weekly Update

Influenza Week 16 2010 (19th to 25th April 2010)



Summary

- All indicators of influenza activity in Ireland remained at low levels during week 16 2010:
 - ♦ The sentinel GP influenza-like illness (ILI) consultation rate was 5.4 per 100,000 population during week 16, a slight increase compared to the updated rate of 2.7 per 100,000 reported during week 15*. This rate is well below the Irish baseline threshold of 17.8 per 100,000 population.
 - ♦ ILI consultation rates were at low levels in all age groups.
 - ♦ One pandemic (H1N1) 2009 positive specimen was reported.
 - ♦ No cases of confirmed pandemic (H1N1) 2009 were admitted to hospital or ICU.
 - ♦ No pandemic (H1N1) 2009, influenza or ILI outbreaks were reported.
 - ♦ No respiratory syncytial virus (RSV) positive detections were reported.
- Based on surveillance of laboratory confirmed cases of pandemic (H1N1) 2009 since the beginning of the pandemic:
 - ♦ 4,585 confirmed cases were notified in Ireland, as of 24th April 2010
 - ♦ Children and young adults were the most affected groups; 80.0% of cases were less than 35 years of age.
- Twenty-six deaths in confirmed cases of pandemic (H1N1) 2009 have been reported to date (28th April 2010).

Introduction

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

1. Irish College of General Practitioners (ICGP) sentinel surveillance system
2. GP out-of-hours system
3. Virological data from the National Virus Reference Laboratory (NVRL), Cork University Hospital (CUH) and Galway University Hospitals (GUH).[†]
4. Enhanced surveillance system for pandemic (H1N1) 2009 using the Computerised Infectious Disease Reporting system (CIDR)
5. Outbreak reporting (CIDR)
6. Pandemic (H1N1) ICU enhanced surveillance system

Details of these surveillance systems are provided in Appendix A at the back of this report.

* Since the last report, extra information on the number of ILI consultations and positive influenza specimens was provided by sentinel GPs and the NVRL and rates were adjusted accordingly.

† Galway University Hospitals (GUH) include University Hospital Galway and Merlin Park University Hospital Galway.

1. GP sentinel surveillance system

Clinical Data

During week 16 2010, 54 of 60 (90.0%) ICGP sentinel general practices provided data, with 10 practices (16.7%) reporting influenza-like illness (ILI) cases and 50 (83.3%) practices reporting no ILI cases. Twelve ILI cases were reported during week 16 2010, corresponding to an ILI consultation rate of 5.4 per 100,000 population, which is a slight increase compared to the updated rate of 2.7 per 100,000 population reported during week 15 2010 and is well below the Irish baseline threshold[‡].

Figure 1 shows the ILI consultation rates, the baseline threshold rate and the number of positive specimens detected by the National Virus Reference Laboratory (NVRL), Cork University Hospital (CUH) and Galway University Hospitals, (GUH). CUH and GUH have reported influenza non-sentinel data since weeks 31 and 36, 2009, respectively and these are included in figure 1. Influenza A untyped isolates (probable pandemic (H1N1) 2009) are specimens that are awaiting laboratory confirmation as pandemic (H1N1) 2009.

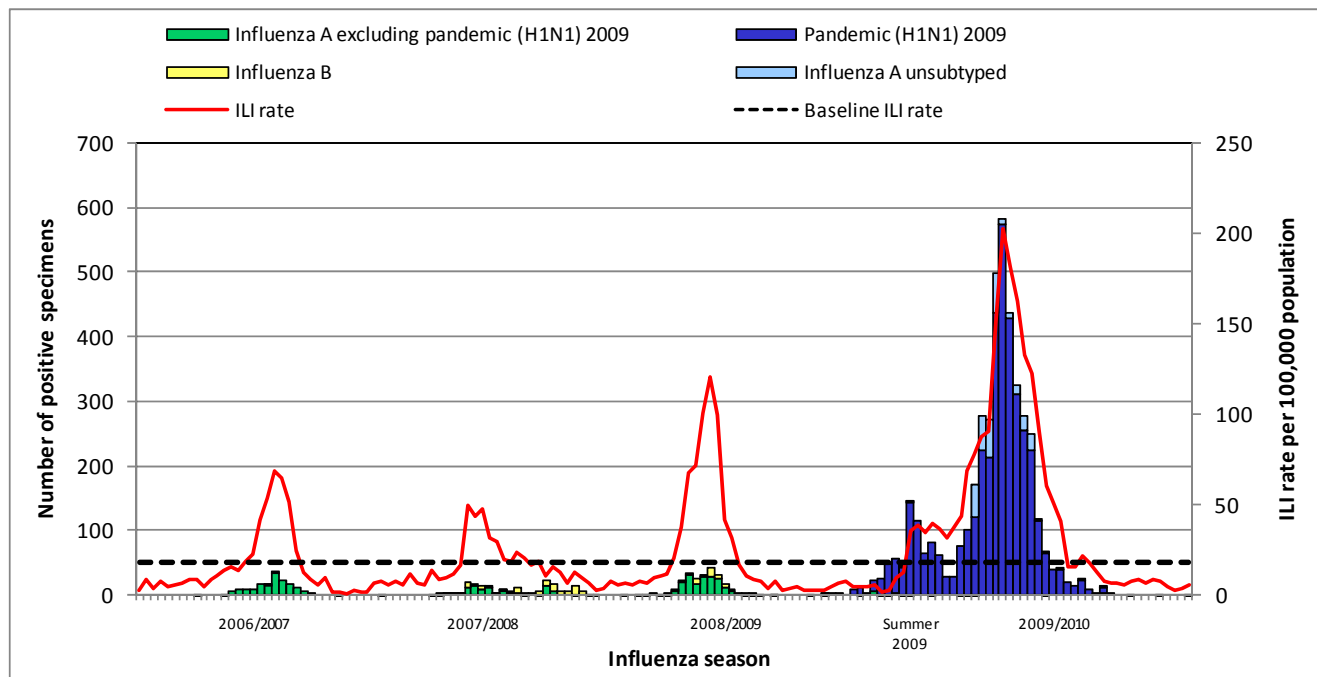


Figure 1: ILI GP consultation rates per 100,000 population, baseline ILI threshold rate, and number of positive influenza specimens, by influenza week and season[§]

Source: NVRL, CUH and GUH laboratory data and ICGP clinical ILI data

During week 16 2010, sentinel GPs reported no ILI cases in the 0-4, 5-14 and 65+ year age groups. Twelve ILI cases were reported in the 15-64 year age group (7.9 per 100,000 population) as shown in figure 2.

[‡] Since the last report, extra information on the number of ILI consultations and positive influenza specimens was provided by sentinel GPs and the NVRL and rates were adjusted accordingly

[§] Please note that virological data for NVRL is for all seasons, for CUH is from week 31 2009 and for GUH is from week 36 2009.

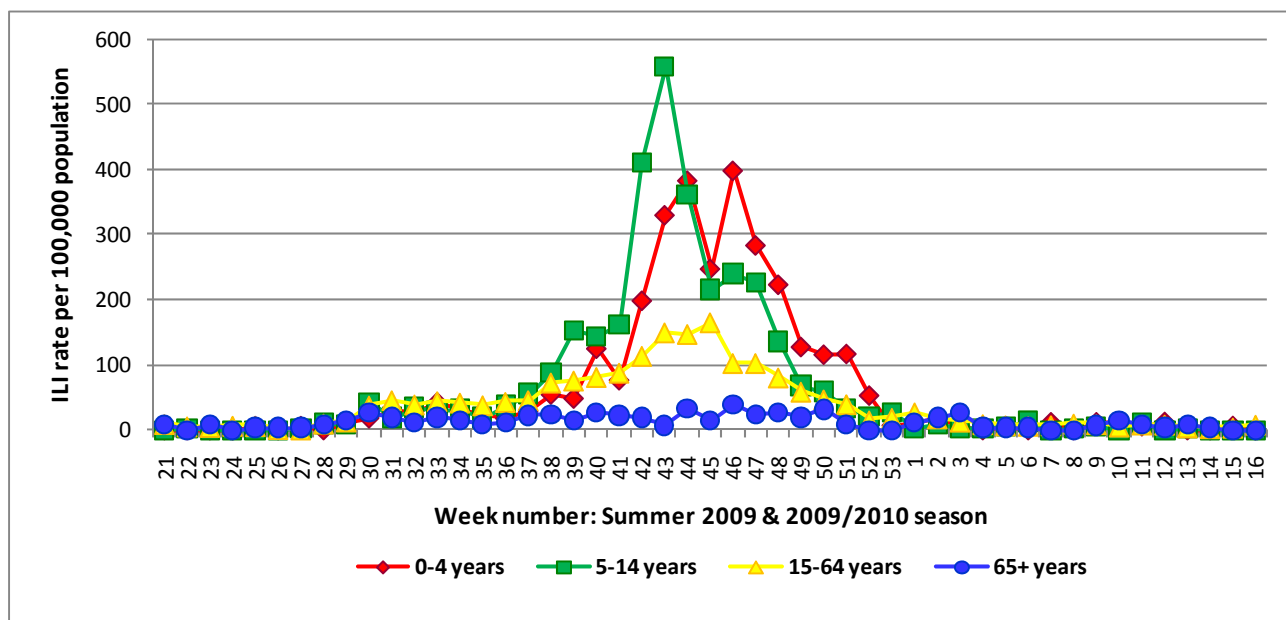


Figure 2: Age specific sentinel GP consultation rate for ILI per 100,000 population by week during the Summer 2009 and 2009/2010 influenza season

Source: ICGP ILI clinical data

Regional Influenza Activity by HSE-Area

Influenza activity is reported on a weekly basis from the Departments of Public Health in each HSE area. Influenza activity is based on sentinel GP ILI consultation rates, laboratory confirmed influenza cases and ILI/influenza outbreaks. During week 16 2010, sporadic influenza activity (due to isolated cases of ILI and/or isolated laboratory confirmed cases of influenza) was reported by HSE-E, -MW, -SE and -S and no influenza activity was reported by HSE-M, -NE, -NW and -W (figure 3).

Sentinel hospitals and schools

The Departments of Public Health have established at least one sentinel hospital in each HSE area (n=8), 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 area, in close proximity to the sentinel GPs, to report absenteeism data on a weekly basis. Data were received from four HSE areas during week 16 2010. No significant increases in the proportion of respiratory admissions were reported by sentinel hospitals during week 16 2010. Sentinel schools did not report any significant increases in absenteeism during this period.

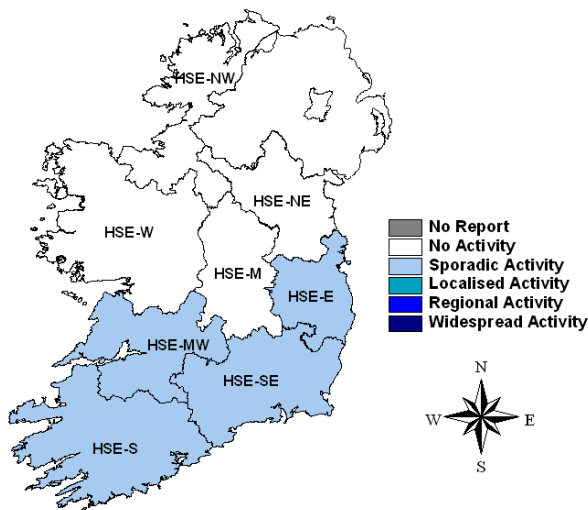


Figure 3: Map of provisional influenza activity by HSE area during influenza week 16 2010

2. GP Out-Of-Hours services surveillance

The Department of Public Health in the 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 percentage of flu-related calls was 0.6% during week 16, which remains stable compared to the proportion (1.1%) reported during week 15 (figure 4).

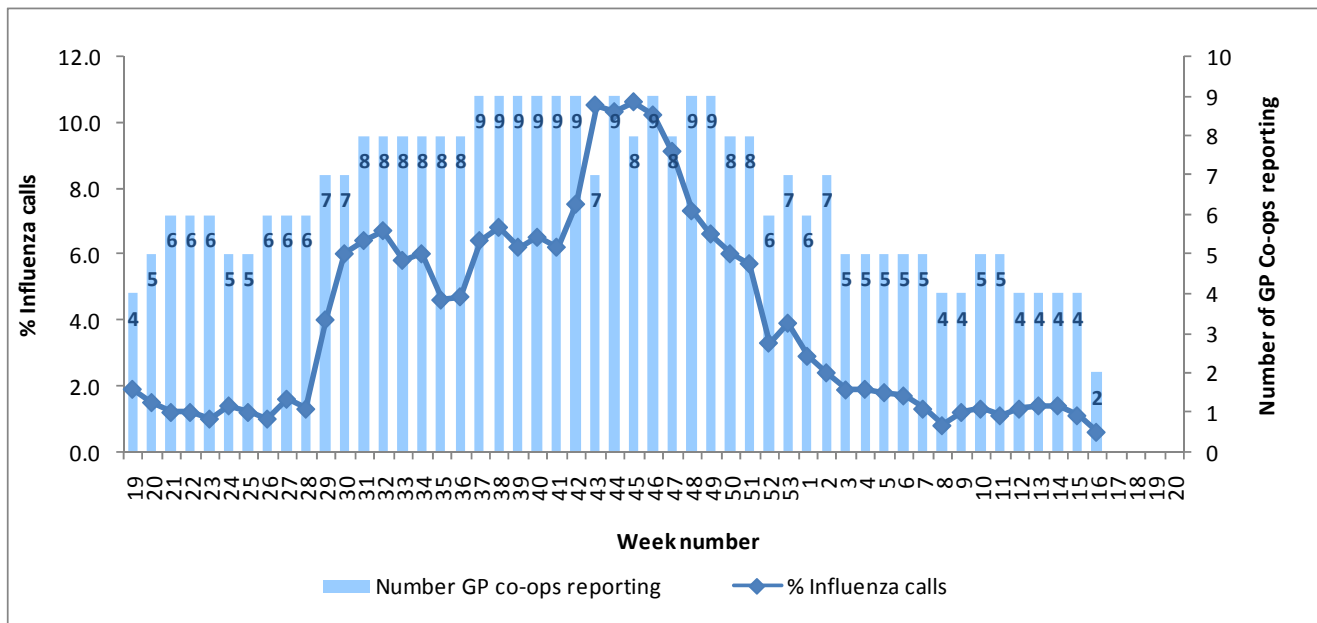


Figure 4: Flu-related calls as a proportion of total calls to out-of-hours GP Co-ops by week Source: HSE-NE.

3. Virological Data from the National Virus Reference Laboratory (NVRL), Cork University Hospital (CUH) and Galway University Hospitals (GUH)

During week 16 2010, one specimen tested positive for pandemic (H1N1) 2009, this was a non-sentinel specimen tested by the National Virus Reference Laboratory (NVRL).

Three specimens taken by sentinel GPs during week 16 2010 were tested by the NVRL, all of which were negative for influenza.

The NVRL tested 39 non-sentinel specimens taken during week 16, one of which was positive for pandemic (H1N1) 2009. No non-sentinel specimens tested by the NVRL were positive for respiratory syncytial virus (RSV) during week 16 2010. Four (10.3%) non-sentinel specimens were positive for parainfluenza virus (PIV) type 3. No specimens were positive for adenovirus or PIV-1 or -2 (tables 1 and 3) during this period. Figure 5 shows the number and percentage of non-sentinel RSV positive specimens detected by the NVRL during the 2009/2010 influenza season compared to the 2008/2009 influenza season. **

CUH tested three non-sentinel specimens and GUH also tested three non-sentinel specimens taken during week 16 2010, all of which were negative for influenza (table 2).

During the 2009/2010 influenza season, pandemic (H1N1) 2009 has been the sole influenza virus circulating. Figure 6 shows the number of sentinel specimens tested by the NVRL for influenza and non-sentinel specimens tested by the NVRL, CUH and GUH for influenza and the percentage of specimens positive for influenza by week number for Summer 2009 and the 2009/2010 influenza season.

To date, the NVRL has performed neuraminidase sequencing on 23 non-sentinel pandemic (H1N1) 2009 isolates. Oseltamivir susceptibility results are available for 23 isolates, of which all were susceptible to oseltamivir. Zanamivir susceptibility results are available for 17 isolates, of which all were susceptible to zanamivir.

** Please note that non-sentinel specimens (i.e. specimens other than sentinel specimens) from the NVRL may include more than one specimen from each case

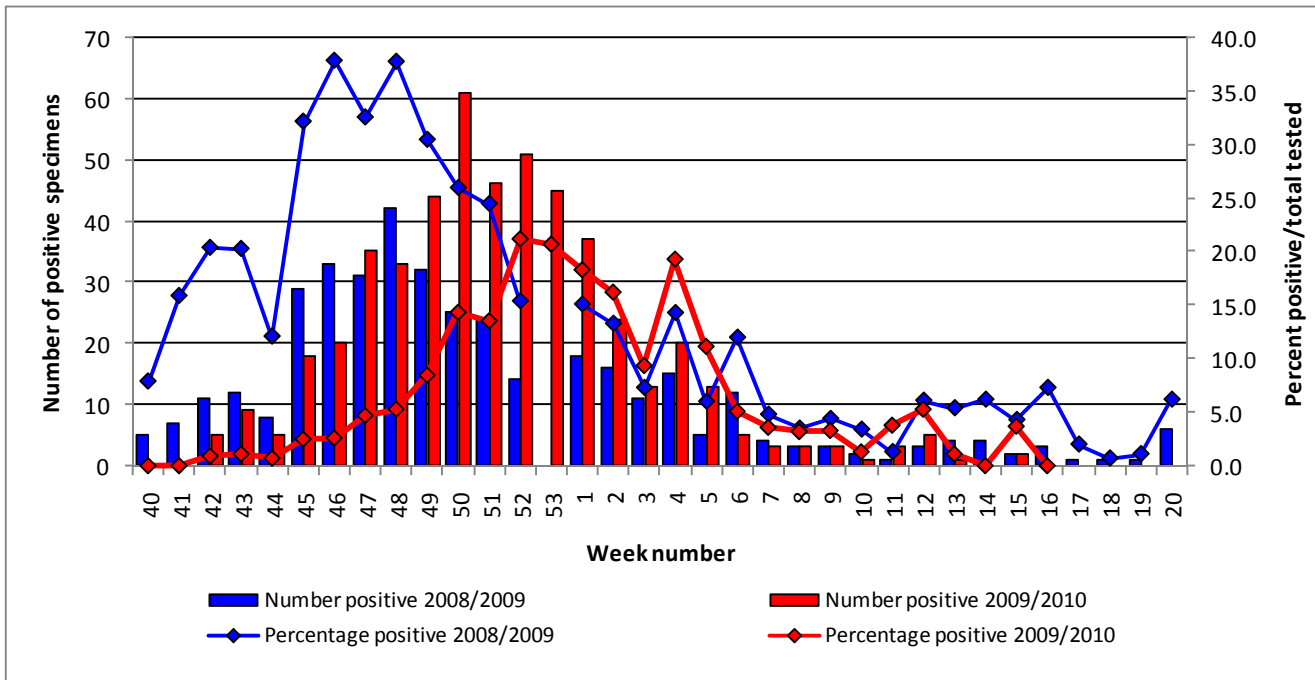


Figure 5: NVRL non-sentinel RSV activity for influenza season 2009/2010 compared to influenza season 2008/2009^{††}
 Source: NVRL

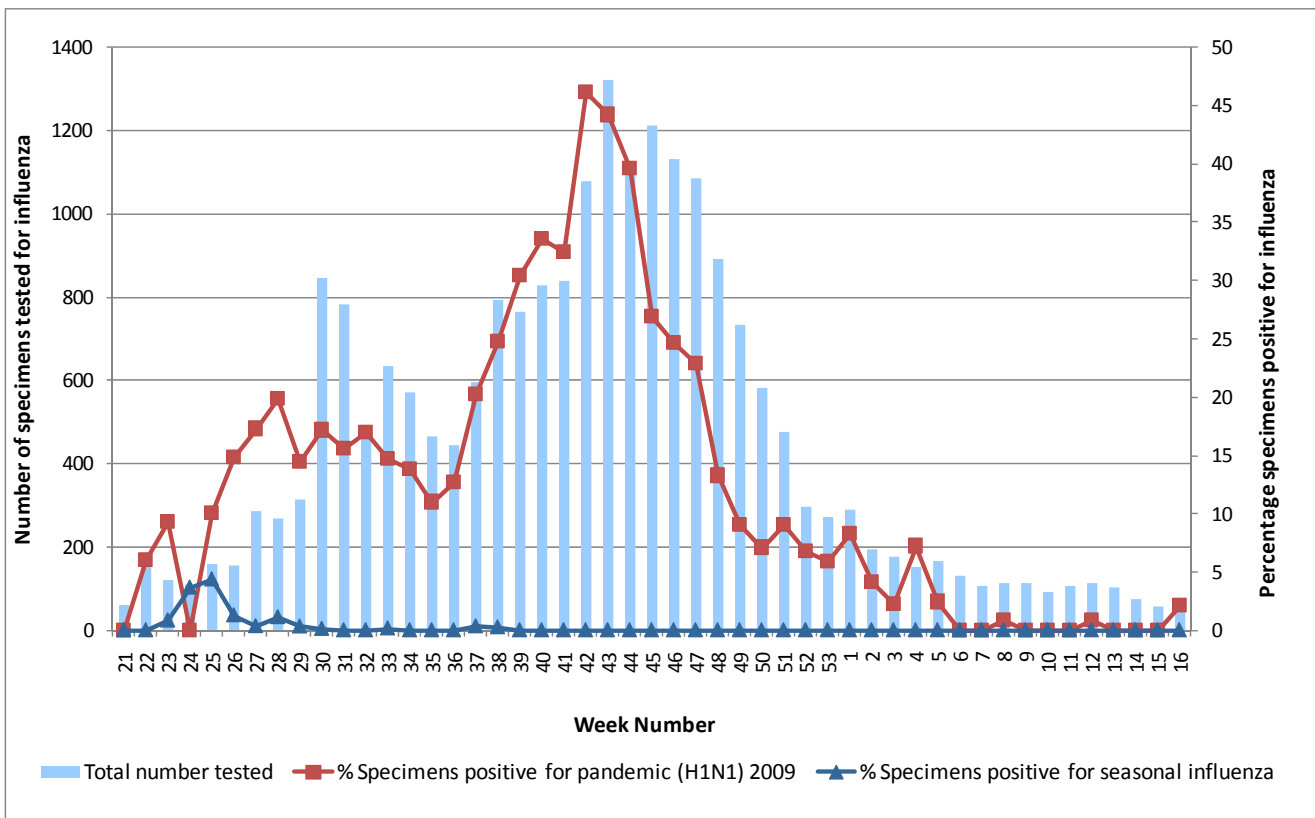


Figure 6: Number of sentinel and non-sentinel specimens tested for influenza and percentage influenza positive^{††}
 Source: NVRL, CUH & GUH

^{††} Please note there was no week 53 in 2008.

^{††} Virological data for NVRL is from week 21 2009, for CUH is from week 31 2009 and for GUH is from week 36 2009.

Table 1: Number of sentinel and non-sentinel respiratory specimens tested and positive results, influenza week 16 2010 and Summer 2009 & 2009/2010 season to date^{§§} *Source: NVRL, CUH and GUH*

Week number	Specimen type	Total Specimens tested for influenza	Number Influenza Positive	% Influenza Positive	Confirmed Pandemic (H1N1) 2009	Probable Pandemic (H1N1) 2009	Influenza A(H3)	Influenza A(H1)	Influenza A (unsubtyped)	Influenza B	% Pandemic (H1N1) 2009
16 2010	Sentinel	3	0	0.0	0	0	0	0	0	0	0.0
	Non-sentinel	45	1	2.2	1	0	0	0	0	0	100.0
	Total	48	1	2.1	1	0	0	0	0	0	100.0
Summer 2009 & 2009/2010 season to date	Sentinel	2258	773	34.2	770	0	3	0	0	0	99.6
	Non-sentinel	19580	3908	20.0	3583	300	0	0	22	3	99.4
	Total	21838	4681	21.4	4353	300	3	0	22	3	99.4

Table 2: Number of non-sentinel respiratory specimens tested and positive results by laboratory, influenza week 16 2010 and Summer 2009 & 2009/2010 season to date^{§§} *Source: NVRL, CUH and GUH*

Week number	Laboratory	Total Specimens tested for influenza	Number Influenza Positive	% Influenza Positive	Confirmed Pandemic (H1N1) 2009	Probable Pandemic (H1N1) 2009	% Pandemic (H1N1) 2009	Influenza A (unsubtyped)	Influenza B
16 2010	NVRL	39	1	2.6	1	0	100.0	0	0
	CUH	3	0	0.0	0	0	0.0	0	0
	GUH	3	0	0.0	0	0	0.0	0	0
	Total	45	1	2.2	1	0	100.0	0	0
Summer 2009 & 2009/2010 season to date	NVRL	15252	2592	17.0	2563	5	99.1	21	3
	CUH	3038	833	27.4	538	295	100.0	0	0
	GUH	1290	483	37.4	482	0	99.8	1	0
	Total	19580	3908	20.0	3583	300	99.4	22	3

Table 3: Number of non-sentinel specimens tested by the NVRL for other respiratory pathogens and positive results, influenza week 16 2010 and Summer 2009 & 2009/2010 season to date. *Source: NVRL*

Week number	Total specimens	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
16 2010	39	0	0.0	0	0.0	0	0.0	0	0.0	4	10.3
Summer 2009	6093	21	0.3	4	0.1	4	0.1	0	0.0	6	0.1
2009/2010 season to date	9159	505	5.5	8	0.1	8	0.1	3	0.03	16	0.2

§§ Please note that virological data for NVRL is from week 21 2009, for CUH is from week 31 2009 and for GUH is from week 36 2009.

4. Laboratory confirmed cases of pandemic (H1N1) 2009 (CIDR)

During the current pandemic phase, testing is focused on cases hospitalised for influenza, cases with severe clinical illness and in other situations such as clusters of ILI in institutions or unusual clusters of serious illness. As of 24th April 2010, a total of 4,585 confirmed cases of pandemic (H1N1) 2009 have been reported since the beginning of the pandemic. Figure 7 shows the number of confirmed pandemic (H1N1) 2009 cases by week of notification and hospitalisation status.

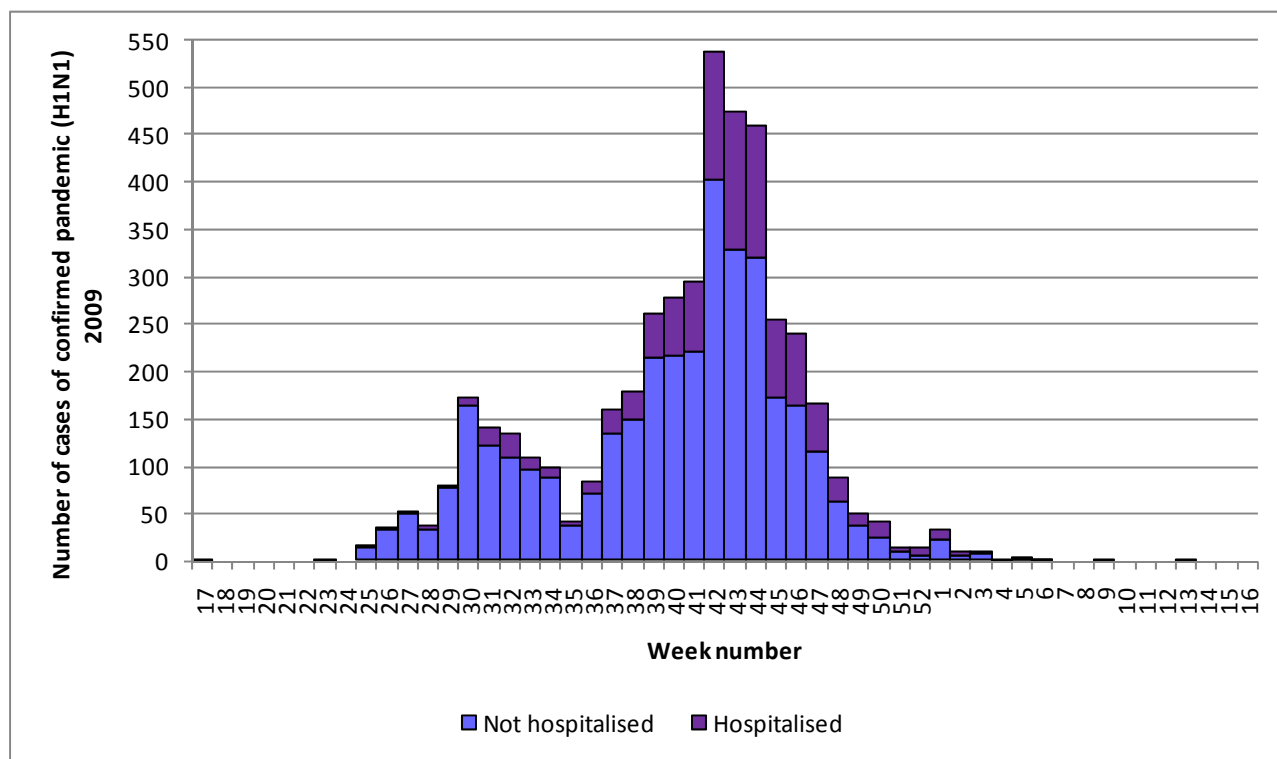


Figure 7: Number of confirmed cases of pandemic (H1N1) 2009 by week of notification and hospitalisation status ^{***}
 Source: CIDR

Age and Sex

Of the 4,585 confirmed pandemic (H1N1) 2009 cases reported (as of 24th April 2010), 2,440 were female (53.2%), 2,122 were male (46.3%) and sex was not reported for 23 cases (0.5%). The median age of cases was 18 years (range: 0-84 years) and 80.0% were less than 35 years of age.

Severity of illness

No pandemic (H1N1) 2009 associated deaths were reported to HPSC during week 16 2010. To date, 26 patients with confirmed pandemic (H1N1) 2009 have died, 11 males and 15 females. Nineteen (73.1%) deaths were in adults 35 years of age and older (Table 4). Underlying medical conditions (including pregnancy) were reported for 24 of the 26 deaths (92.3%) and two deaths had no reported underlying conditions. Some cases had more than one underlying condition. Underlying conditions included chronic respiratory disease (n=11), chronic neurological disease (n=9), immunosuppression (n=5), chronic heart disease (n=3), chronic liver disease (n=2), asthma (n=2), chronic renal disease (n=1), pregnancy (n=1) and severe obesity i.e. BMI ≥40 (n=1).

^{***} Week number on figure 7 is based on infectious disease notification week number, which was one week behind the international influenza week number during 2009. Therefore weeks 17-52 above are equivalent to weeks 18-53 on the influenza system. Epidemiological and influenza week numbering systems are the same for 2010.

Table 4: Number of deaths in confirmed cases of pandemic (H1N1) 2009 by age group

Age group (years)	Total Number	Percentage of Total
0-4	0	0.0
5-14	3	11.5
15-24	2	7.7
25-34	2	7.7
35-44	5	19.2
45-54	3	11.5
55-64	6	23.1
65+	5	19.2
Unknown	0	0.0
All ages	26	100.0

Hospitalised cases

No laboratory confirmed cases of pandemic (H1N1) 2009 were admitted to hospital or ICU during week 16 2010. Of the 4,585 confirmed cases reported since the beginning of the pandemic, 1,069 (23.3%) were admitted to hospital. Of these, 100 (9.4%) were admitted to ICU. For hospitalised patients, the highest age-specific rates were in the 0-4 year age group. Of the 1,069 confirmed cases hospitalised, 465 (43.5%) had pre-existing clinical conditions.

5. Outbreak surveillance (CIDR)

No new outbreaks of pandemic (H1N1) 2009, influenza or ILI were reported during week 16 2010. As of 24th April 2010, 109 general outbreaks of pandemic (H1N1) 2009 and ILI have been reported in Ireland since week 23 2009. These outbreaks involved 2,578 people in total, of which 204 (7.9%) were laboratory confirmed cases of pandemic (H1N1) 2009. The number ill per outbreak has ranged between two and 150 people.

6. International summary

United Kingdom

During week 15 2010, overall pandemic influenza activity was very low and stable across the UK. GP ILI consultation rates increased slightly in England, Wales and Northern Ireland and decreased in Scotland. Of the twenty specimens collected through English GP sentinel systems in weeks 14 and 15, three (15%) tested positive for influenza (two pandemic (H1N1) 2009 and one influenza B). Very few pandemic influenza cases have been reported as admitted to hospital in the last two weeks. Forty of 6,160 pandemic viruses tested have been confirmed to carry a mutation which confers resistance to the antiviral drug oseltamivir; 15 are phenotypically resistant to the drug but retain sensitivity to zanamivir. Since the beginning of the pandemic, there have been 474 deaths reported due to pandemic (H1N1) 2009 in the UK.

http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1243928258754

Europe

During week 15 2010, all reporting countries experienced low intensity of influenza activity for the seventh consecutive week and reported sporadic activity at most. Few sentinel specimens (15 of 160, 9.4%) tested positive for influenza virus. Influenza B viruses predominated, accounting for 32 of 49 (65%) influenza viruses detected in sentinel and non-sentinel specimens. Influenza activity caused by the 2009 pandemic influenza

A(H1N1) virus is well past its winter peak in EU/EEA countries. However, transmission associated with sporadic cases continues to occur whilst most cases of ILI in EU/EEA countries are not due to influenza virus infection.

<http://ecdc.europa.eu/en/publications/Pages/Publications.aspx>

USA

During week 15 2010, influenza activity decreased in the U.S. The proportion of outpatient visits for ILI was below the national baseline. During week 15 2010, 2.1% of specimens tested positive for influenza. All 20 subtyped influenza A viruses were 2009 influenza A (H1N1). The proportion of deaths attributed to pneumonia and influenza was at the epidemic threshold. No influenza-associated pediatric deaths were reported.

<http://www.cdc.gov/flu/weekly/>

Canada

Overall influenza activity continued to be low in Canada for at least 17 consecutive weeks. During week 15 2010, only one specimen (of 1,379) tested positive for pandemic H1N1 2009. No new H1N1-related hospitalisations and deaths were reported during week 15 2010. To date, only 14 hospitalisations and two deaths have occurred since the beginning of 2010. <http://www.phac-aspc.gc.ca/fluwatch/index-eng.php>

Worldwide

As of 18th April 2010, worldwide more than 214 countries and overseas territories or communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009, including over 17,853 deaths. Currently, the most active areas of transmission of pandemic influenza are in parts of West and Central Africa but transmission is also still occurring in South East Asia, and Central America. Pandemic influenza activity remains low in much of the temperate zone of both the northern and southern hemispheres. Seasonal influenza type B viruses have been increasingly detected over a larger area and are now the predominant circulating influenza viruses across East Asia, Central Africa and Northern and Eastern Europe. Very small numbers of type B viruses have also recently been detected in Central America. Seasonal influenza H3N2 is still being detected in South and Southeast Asia (mainly Indonesia), as well as sporadically in several countries of West Africa, and Eastern Europe.

The total numbers of confirmed pandemic (H1N1) 2009 deaths reported worldwide by the World Health Organization (WHO) region are shown in table 5.

Table 5: Reported number of confirmed pandemic (H1N1) 2009 deaths by WHO region

Source: WHO <http://www.who.int/csr/disease/swineflu/updates/en/>

WHO Region	Cumulative total as of 18 th April 2010
	Deaths
Africa (AFRO)	168
Americas (AMRO)	At least 8309
Eastern Mediterranean (EMRO)	1019
Europe (EURO)	At least 4783
South-East Asia (SEARO)	1769
Western Pacific (WPRO)	1805
Total	At least 17853

Avian influenza (H5N1):

As of 21st April 2010, 495 confirmed human cases and 292 (58.9%) deaths from avian influenza A (H5N1) have been reported to the WHO from Azerbaijan, Bangladesh, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Lao Peoples Democratic Republic, Myanmar, Nigeria, Pakistan, Thailand, Turkey and Viet Nam. To date in 2010, Egypt, Indonesia and Vietnam have all reported human H5N1 infections.

Further information on avian influenza is available on the following websites:

http://www.who.int/csr/disease/avian_influenza/country/en/
<http://www.hpsc.ie/hpsc/A-Z/Respiratory/Influenza/AvianInfluenza/>
http://ecdc.europa.eu/en/healthtopics/Pages/Avian_Influenza.aspx

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
World Health Organization	http://www.who.int/topics/influenza/en/

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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.

Appendix A

Sentinel surveillance for influenza

This is the tenth season of influenza surveillance using computerised sentinel general practices in Ireland. The Health Protection Surveillance Centre (HPSC) is working in collaboration with the Irish College of General Practitioners (ICGP), the National Virus Reference Laboratory (NVRL) and the Departments of Public Health on this sentinel surveillance project. Sixty sentinel general practices covering 5.6% of the national population have been recruited to report on the number of patients with ILI on a weekly basis.

ILI is defined as the sudden onset of symptoms with a temperature of 38°C or more, with two or more of the following: headache, sore throat, dry cough and myalgia.

Sentinel GPs send a combined nasal and throat swab, to the NVRL, on at least five patients per week where a clinical diagnosis of ILI is made during the influenza season.

Influenza test results from the NVRL are provided on both sentinel and non-sentinel specimens. Influenza test results from Cork University Hospital (CUH) and University College Hospital, Galway (UCHG) are also provided on non-sentinel specimens.

Laboratory confirmed pandemic (H1N1) 2009

Since the end of April 2009, a case-based surveillance system for pandemic (H1N1) 2009 has been in operation in Ireland following the declaration by World Health Organization (WHO) of a public health emergency of international concern due to the virus. Basic demographic data are collected on all laboratory confirmed cases and additional enhanced data are collected on all hospitalised laboratory confirmed cases. Data are collated on the Computerised Infectious Disease Reporting (CIDR) system using information available from the National Virus Reference Laboratory (NVRL), Departments of Public Health, clinicians and a number of other laboratories. Data presented in this report are based on details recorded on the CIDR system.

ICU enhanced surveillance system:

On October 5th 2009, enhanced ICU surveillance system of confirmed cases of pandemic (H1N1) 2009 commenced in Ireland. It is a collaborative project between ICU medical and nursing staff, hospital administrators, departments of public health and the Health Protection Surveillance Centre. Forty hospitals (35 public and 5 private) currently participate in the surveillance scheme.

This system relates to adult, paediatric and neonatal confirmed and probable cases of pandemic (H1N1) 2009 admitted to intensive care units (ICU). The principal aim of the surveillance system is to report on the demographic profile (age, sex,) of all cases of pandemic (H1N1) 2009 admitted to ICU with details of predisposing risk factors, medical interventions and complications and clinical outcome. This information is used in conjunction with surveillance data from a number of other sources as follows: mortality data, data on laboratory confirmed cases, virology data and data on ILI consultation rates from sentinel GP practices.

A more detailed description of this system is available at:

<http://ndsc.newsweaver.ie/newepiinsight/rqng2ayeg0sugy02flxkl0>