2.1 Influenza

Summary

The 2009 influenza A (H1N1) pandemic summary:

Peak influenza-like illness rate: 201.3 /100,000 population (week 43 2009)

Total confirmed pandemic cases hospitalised: 1059

Total confirmed pandemic cases admitted to ICU: 100

Total deaths associated with pandemic: 27

European data available at:

http://ecdc.europa.eu/en/Activities/Surveillance/EISN/

On 25th April 2009, a public health emergency of international concern was declared by the World Health Organization (WHO) due to an outbreak of 2009 pandemic influenza A (H1N1) infection in Mexico and the USA. On 11th June 2009, WHO raised the pandemic alert level to phase six, announcing the first influenza pandemic of the 21st century. WHO classified the severity of the disease as "moderate" based on scientific evidence available to them as well as the impact of the pandemic on member states' health systems and social and economic functioning. On July 16th 2009, the Department of Health and Children announced that Ireland would change the national approach to managing the pandemic from one of containment (or limiting the entrance and initial spread of the pandemic virus into the country) to one of mitigation (or minimising the impact of the pandemic virus as its circulation increased).

The vaccination campaign against 2009 pandemic influenza A (H1N1) started on 2nd November 2009. Individuals at highest risk of influenza disease and its complications were provided with the vaccine in the early stages, with those at less risk of severe disease vaccinated later on. The mass vaccine programme concluded on 31st March 2010 as the numbers contracting pandemic influenza declined significantly. However, pandemic vaccine continued to be provided over the summer to those individuals at highest risk of influenza complications.

On 10th August 2010, the WHO declared the end of the 2009 influenza A (H1N1) pandemic.

Since 2000, HPSC has worked in collaboration with the National Virus Reference Laboratory (NVRL), the Irish College of General Practitioners (ICGP) and the Departments of Public Health on the influenza sentinel surveillance project. During the pandemic period, 60 practices (located in all HSE-Areas) were recruited to report electronically, on a weekly basis, the number of patients who consulted with influenza-like illness (ILI). Sentinel GPs were requested to send a combined nasal and throat swab to the NVRL on at least five ILI patients per week. Other indicators of influenza activity included a network of sentinel hospitals reporting admission levels and sentinel schools reporting absenteeism.

Once the public health emergency was declared, routine seasonal influenza surveillance was augmented as follows:

- Two additional regional laboratories, Cork University Hospital (CUH) and Galway University Hospitals (GUH), started testing for 2009 pandemic influenza A (H1N1), in addition to the NVRL.
- Enhanced surveillance of the first 200 laboratory confirmed 2009 pandemic influenza A (H1N1) cases was implemented, thereafter enhanced surveillance data were collated on hospitalised cases only.
- Critical care/ICU surveillance of probable and confirmed adult and paediatric pandemic influenza A (H1N1) cases commenced in October 2009.
- Data on all calls to GP out-of-hours centres were monitored for self reported influenza by HSE-NE.
- Additional surveillance projects included monitoring mortality data from the General Register Office and an influenza vaccine effectiveness study (IMOVE project).

Data in this report covers the entire pandemic period from April 2009 (week 17 2009) to August 2010 (week 32 2010). During the 2009 pandemic, ILI activity peaked during week 43 2009, at 201.3 per 100,000 population (figure 1). This is the highest rate recorded since sentinel influenza surveillance commenced in 2000. The previous highest peaks occurred in week 2 2009 (120.6 per 100,000 population) and week 8 2001 (122.9 per 100,000 population). In mid-July 2009 (week 30), the ILI rate was above the baseline threshold of 17.8 per 100,000. This level of influenza activity during the inter-seasonal period had never been experienced

in Ireland. The peak age specific ILI rates during the pandemic were in 5-14 year olds, followed by 0-4 year olds. ILI rates in the 0-4, 5-14 and 15-64 year olds were the highest age specific rates recorded since sentinel influenza surveillance began. ILI rates in those aged 65 years or older were lower than the 2008/2009 season and were comparable to other seasons.

The percentage of influenza-related calls to GP out-of-hours services in Ireland, peaked during week 45 2009 at 10.6%. During the peak of the pandemic, the highest number of calls relating to influenza received by each service was on average three per hour.

The NVRL, CUH and GUH tested a total of 23,142 specimens for influenza virus during the pandemic period. Twenty one percent (n=4797; 20.7%) were positive for influenza virus. Over 99% (n=4759; 99.2%) of positive influenza specimens were confirmed (n=4464) or probable (n=295) 2009 pandemic influenza A (H1N1). Thirty-eight (0.8%) specimens were positive for seasonal influenza: 1 influenza A (unsubtyped), 5 A (H1), 27 A (H3) and 5 B. The NVRL performed neuraminidase sequencing on 36 non-sentinel 2009 pandemic influenza A (H1N1) isolates, all of which were susceptible to oseltamivir and zanamivir. The NVRL also sequenced and phylogenetically characterised the haemagglutinin gene from 18 2009 pandemic influenza A (H1N1) isolates, all of which form a monophyletic group with A/California/07/2009, demonstrating a very good match between the circulating and vaccine strains.

A total of 1,059 confirmed cases of 2009 pandemic influenza A (H1N1) were admitted to hospital. Of these, 100 (9.4%) were admitted to ICU (76 adults and 24 paediatric cases). For hospitalised and ICU patients, the highest age-specific rates were in the 0-4 year age group. Of the 1,059 confirmed cases hospitalised, 507 (47.9%) had pre-existing clinical conditions.[1] The most frequently reported underlying medical conditions included: asthma (n=127, 12.0%), chronic respiratory disease[2] (n=114, 10.8%), immunosuppression (n=79, 7.5%) and chronic heart disease (n=62, 5.9%). Seventy-three (6.9%) of all hospitalised confirmed cases were in pregnant women, eight of whom were admitted to ICU.

Twenty-seven patients with confirmed 2009 pandemic influenza A (H1N1) died (pandemic (H1N1) 2009 was a contributing cause on the death certificate); 12 males and 15 females. Twenty (74.1%) deaths occurred in adults 35 years of age and older. The age range was 8-83 years, with a median age of 52 years. Underlying medical conditions[1] (including pregnancy) were reported for 25 of the 27 deaths (92.6%), with two deaths having no reported underlying medical conditions. Underlying conditions included chronic respiratory disease [2] (n=11), chronic neurological disease (n=9), immunosuppression (n=7), chronic heart disease (n=3), chronic liver disease (n=2), asthma (n=2), chronic renal disease (n=1) and severe obesity i.e. BMI ≥40 (n=1). One death (3.7%) occurred in a pregnant woman. Twenty five of the deaths (92.6%) occurred in hospitalised cases and 15 (55.6%) deaths were in cases admitted to ICU. A summary of pandemic severity indicators is shown in table 1.

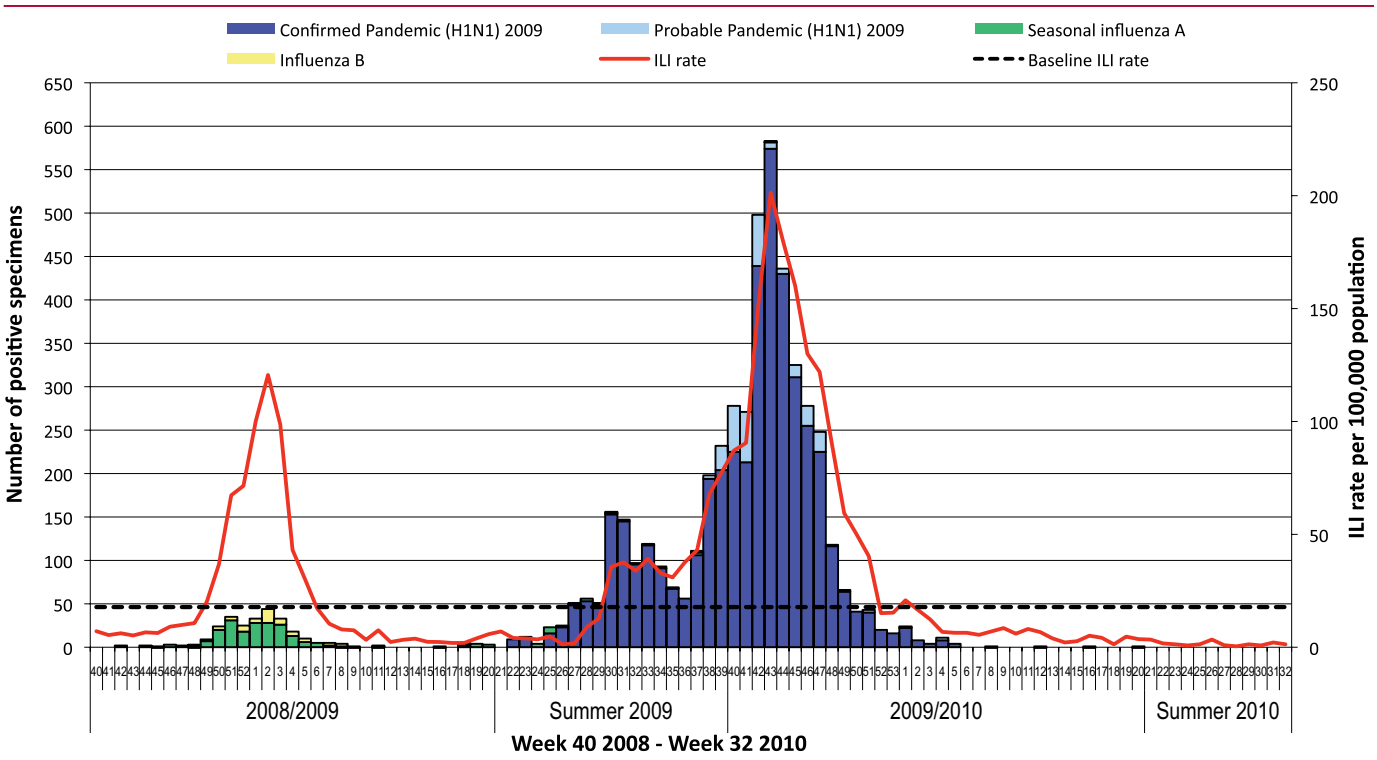

Figure 1: GP ILI consultation rate per 100,000 population, baseline ILI threshold rate, and number of positive influenza specimens, by influenza week and season, week 40 2008-week 32 2010. Source: ICGP clinical ILI data and NVRL, CUH and GUH laboratory data. Virological data for the NVRL includes sentinel and non-sentinel data for all weeks. Virological data from GUH and CUH includes non-sentinel data from weeks 29 and 31 2009, respectively.

1. Some cases had more than one underlying medical condition.
2. It cannot be established if chronic respiratory disease was in addition to, or included asthma.

One hundred and nine general outbreaks of ILI and 2009 pandemic influenza were reported in Ireland during the pandemic period. These outbreaks involved 2,578 people in total, of which 204 (7.9%) were reported as laboratory confirmed cases of 2009 pandemic influenza. Regional variation in ILI/pandemic activity was observed during the pandemic period. The majority of outbreaks were reported from HSE-E (n=29; 26.6%) and HSE-S (n=27; 24.8%). With the exception of HSE-M, all HSE-Areas reported general outbreaks of 2009 pandemic influenza and ILI during the pandemic period.

A total of 955,118 individuals were recorded as vaccinated with the pandemic vaccine, representing 23% of the population of Ireland eligible for vaccination. It should be noted that pandemic vaccination data are provisional.

In the post-pandemic period, based on knowledge about past pandemics the 2009 pandemic influenza virus is expected to continue to circulate as seasonal virus for some years to come. Therefore, cases and local outbreaks due to 2009 pandemic influenza will continue to occur and such outbreaks could have a substantial impact on communities. WHO advises that national health authorities remain vigilant in the immediate post-pandemic period as the behaviour of the virus as a seasonal virus cannot be reliably predicted.

In addition, it is most likely that, compared with seasonal influenza, younger age groups will continue to be affected disproportionately by the virus. Groups identified during the pandemic as being at higher risk of severe or fatal disease will remain at increased risk though the number of such cases should diminish.

In August 2010, WHO issued guidance on recommended activities during the post-pandemic period including advice on epidemiological and virological surveillance, vaccination and the clinical management of cases. WHO recommends: (1) the monitoring of clusters of severe respiratory illness or death; (2) investigation of severe or unusual cases clusters or outbreaks to facilitate rapid identification of important changes in the epidemiology and severity of influenza; and (3) maintaining routine ILI surveillance and surveillance of severe cases of influenza and respiratory illness.

For the 2010/2011 influenza season, existing surveillance systems have been strengthened and maintained. Data from these surveillance systems will assist in guiding the prevention, control and management of ILI/influenza.

Further information on influenza is available on the HPSC website www.hpsc.ie

Table 1: Summary table of severity indicators for laboratory confirmed 2009 pandemic influenza A (H1N1) cases - hospitalised cases, ICU cases and deaths.

	Hospitalised confirmed 2009 pandemic influenza A (H1N1) cases	ICU confirmed 2009 pandemic influenza A (H1N1) cases	Deaths in confirmed 2009 pandemic influenza A (H1N1) cases
Total cases	1059	100	27
Crude rate per 100,000 population	25.0	2.4	0.6
Age range (years)	0-84	0-79	8-83
Median age (years)	17	34	52
Females	533	50	15
	50.3%	50.0%	55.6%
Cases with risk factor[1]	507	81	25
	47.9%	81.0%	92.6%

1. Some cases had more than one underlying medical condition.