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## Regional analysis of the 2009 Pandemic Influenza A (H1N1) in the South East of Ireland.

### Introduction

On Friday 24th April 2009 a public health alert was received from the World Health Organisation indicating that human cases of influenza like illness (ILI) due to a novel influenza type A (H1N1) virus, had been identified in California and Texas in the United States and in four districts in Mexico. On Thursday 11 June the World Health Organisation declared an influenza pandemic following widespread reports of cases of ILI due to infection with this novel influenza A (H1N1) virus worldwide.

Pandemic influenza differs from seasonal influenza in a number of key ways. Seasonal influenza occurs every winter. The population has some immunity either from past infection or immunisation. The influenza vaccine available in any season is based on influenza strains known to be circulating. In a pandemic the population has little or no past exposure to the new strain of flu and either all or the majority are non-immune; in addition an effective vaccine is not available in the early stages.

### H1N1 – clinical notes

Every year a national seasonal influenza surveillance programme is run from the beginning of October until the end of May with some additional surveillance during the summer. This programme monitors influenza activity throughout Ireland. In the South East, GP sentinel practices report the number of patients who consulted with influenza like illness (ILI) and send a combined nasopharyngeal and throat swab on one patient with ILI per week to the National Virus Reference Laboratory (NVRL). Also on a weekly basis absentee rates in sentinel schools and data on sentinel hospital respiratory admissions are also recorded and analysed. Using ILI rates, school absenteeism and hospital respiratory admissions, influenza activity is calculated each week and reported to the Health Protection Surveillance Centre (HPSC). The activity index used to measure influenza activity (i.e. no report, no activity, sporadic, localised, regional or widespread activity) is analogous to that used by the WHO global influenza surveillance system and the European Surveillance Scheme (EISS) 1,2.

In early May 2009, the existing influenza surveillance system was augmented in Ireland to detect, monitor and control the spread of the 2009 influenza A(H1N1) virus. The aim of the augmented surveillance programme was to ensure:

- Early identification and tracking of cases
- Timely reporting of cases under investigation
- Identification, evaluation and monitoring of contacts of cases

Enhanced surveillance information was collected on all influenza A(H1N1) cases under investigation and their contacts. This continued until July 16th when Ireland moved from the containment phase to the mitigation phase. During the containment phase viral swabs were taken on all cases under investigation; during the mitigation phase swabs were taken on cases under investigation if they were identified in any of the following ways:

- Hospitalised
- Institutional outbreak
- GP surveillance programme

## Results

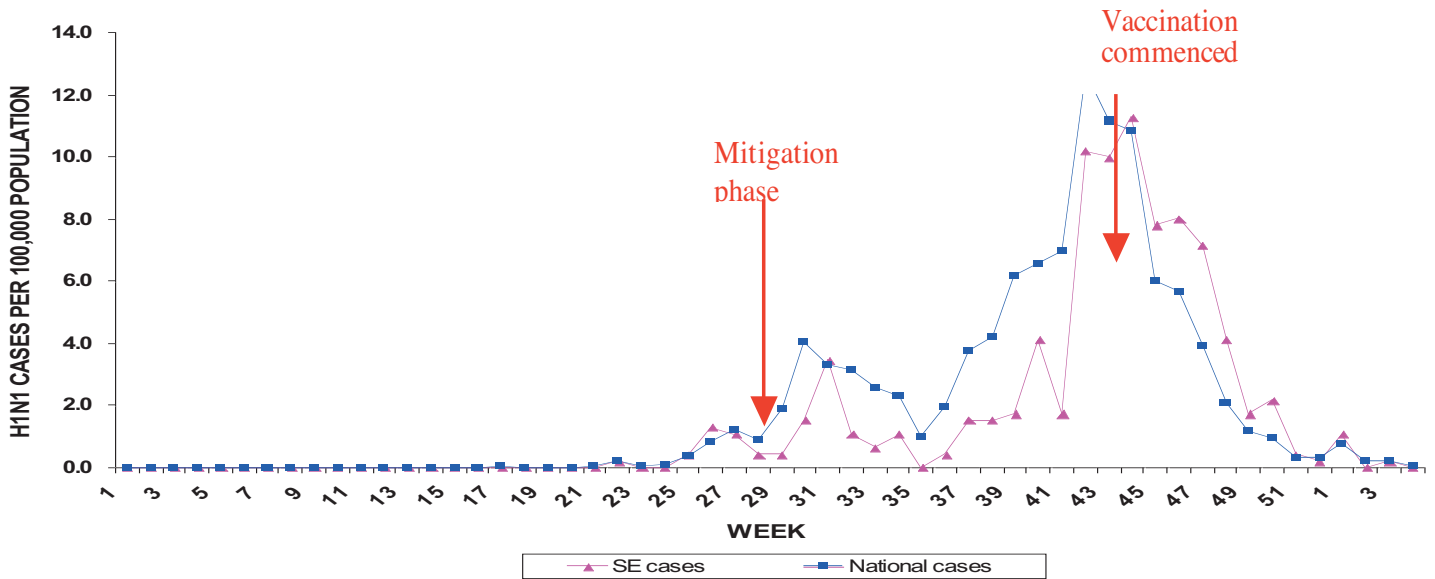
The first laboratory confirmed case of influenza A(H1N1) was reported in the South East on 2nd June 2009. Table 1 shows the number of confirmed cases reported in the South East by Community Care area between June 2009 and 31st January 2010. A total of 402 confirmed influenza A(H1N1) cases were notified to Public Health in this period.

**Table 1: South East H1N1 cases**

CCA	Confirmed cases
Carlow/Kilkenny	93
Tipperary South	134
Waterford	61
Wexford	114
<b>Total</b>	<b>402</b>

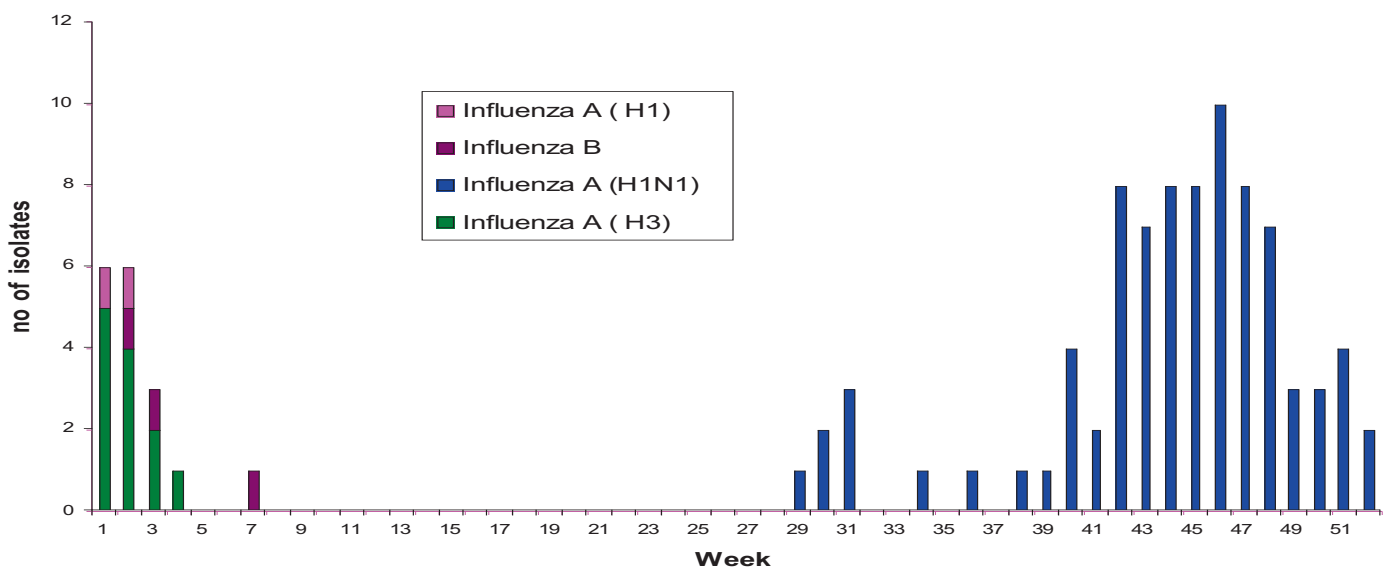
Cases peaked in week 42 nationally and in week 44 in the South East. Figure 1 compares the incidence rate of confirmed cases nationally against the incidence rates in the South East.

**Fig 1: SE Influenza type A (H1N1) cases /100,000 population 2009**



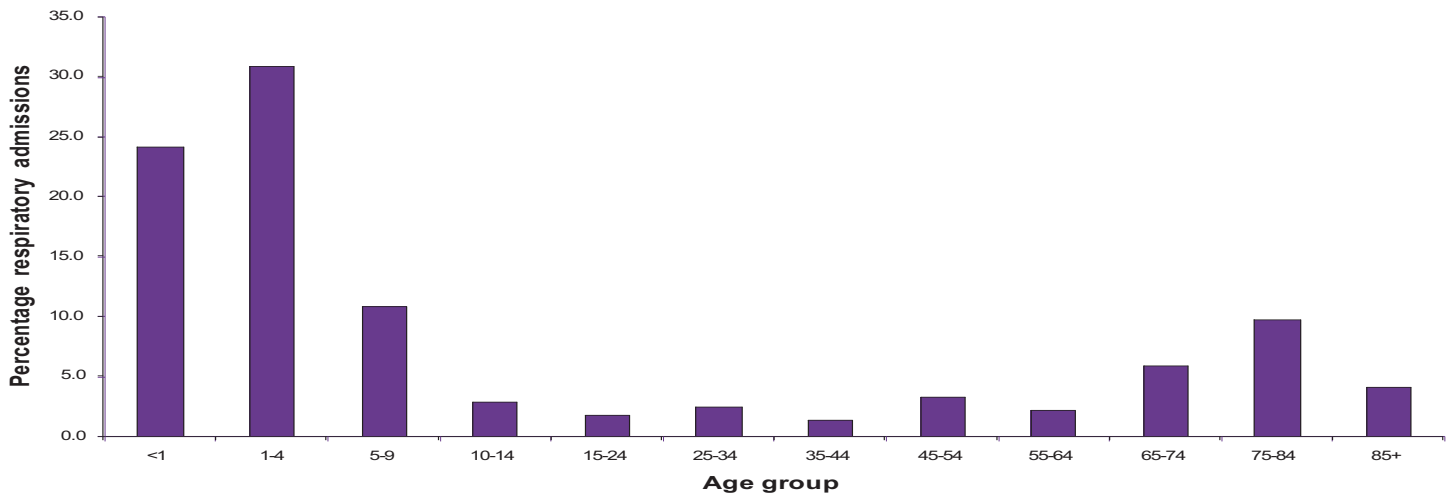
Currently, there are eight sentinel practices in HSE-SE with 24 practitioners and a total patient population (GMS and estimated private patient list) of 51,738. On a weekly basis these sentinel practices return swabs on patients presenting with influenza like illness (ILI) to the National Virus Reference laboratory (NVRL). Data on the isolates from sentinel practices for 2009 are detailed in Figure 2. At the beginning of 2009 Influenza A (H1) and (H3) and influenza B were identified from swabs sent from sentinel GPs in the South East. Influenza A(H1N1) was the only influenza strain identified from week 28 onwards from sentinel swabs.

**Fig 2: Influenza Isolates from SE Sentinel GP surveillance Jan -Dec 2009**



Data on hospital respiratory admissions from the South East sentinel hospital was received in a very timely manner throughout the pandemic. There was no significant increase in respiratory hospital admissions compared to the same time period in 2008. The majority of hospital respiratory admissions were in the 0-4 age group (figure 3).

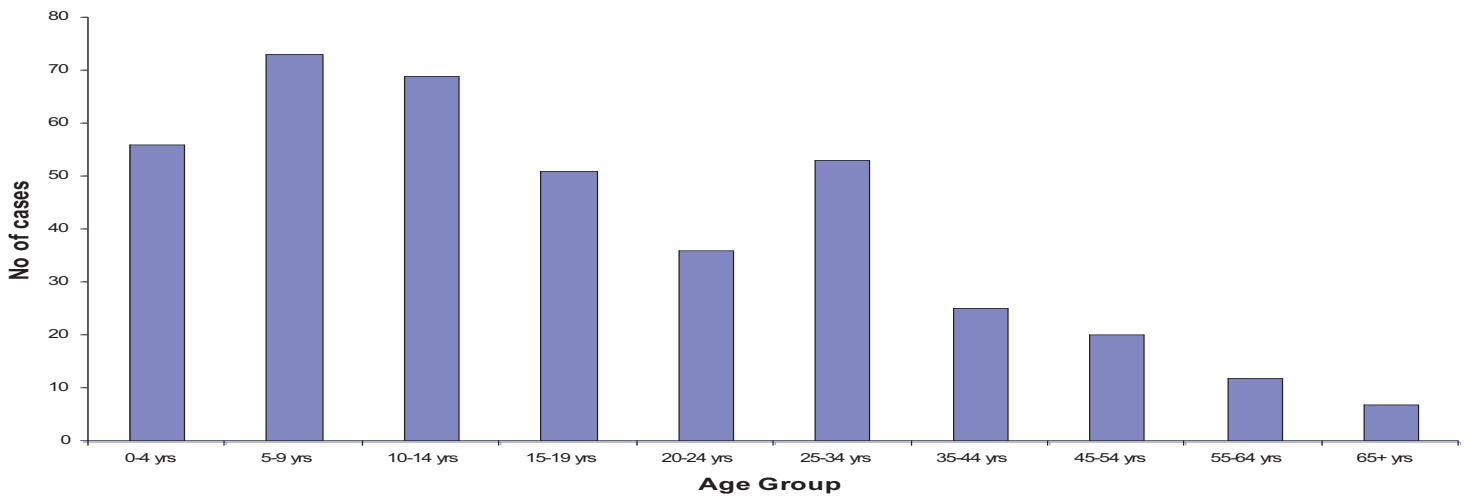
**Fig 3: Age specific sentinel hospital admissions (%) due to respiratory symptoms**



Absenteeism data on sentinel schools involved in the annual influenza surveillance programme in the South East was also received very timely on a weekly basis during the pandemic. School absenteeism data during 2009 was similar to the absenteeism data for 2008. There were a small number of outbreaks of influenza A(H1N1) reported in schools in the South East from September 2009 onwards and there were two outbreaks in residential settings.

Eighty four percent of confirmed influenza A(H1N1) cases occurred in the 0-34 year age group and Figure 4 illustrates the incident rates by age group showing the highest number of cases in the 5-9 and 10-14 age groups and the lowest number of cases notified in the 65+ age group.

**Fig 4: SE Influenza A(H1N1) all cases by age group**



### Risk Factors

A total of 41 cases had at least one or more risk factors. (Table 2).

**Table 2: Risk Factors associated with influenza A(H1N1) cases**

Risk Factor	Cases (%)
Asthma	10 (2.5%)
Chronic Respiratory Disease	8 (2.0%)
Pregnancy	8 (2.0%)
Chronic Heart Disease	7 (1.7%)
Other	7 (1.7%)
Diabetes	6 (1.5%)
Immunosuppression	4 (1.0%)
Obesity	2 (0.5%)
Chronic Neurological Disease	2 (0.5%)
Chronic Liver Disease	1 (0.25%)
Haemoglobinopathies	1 (0.25%)
Chronic Renal Disease	1 (0.25%)

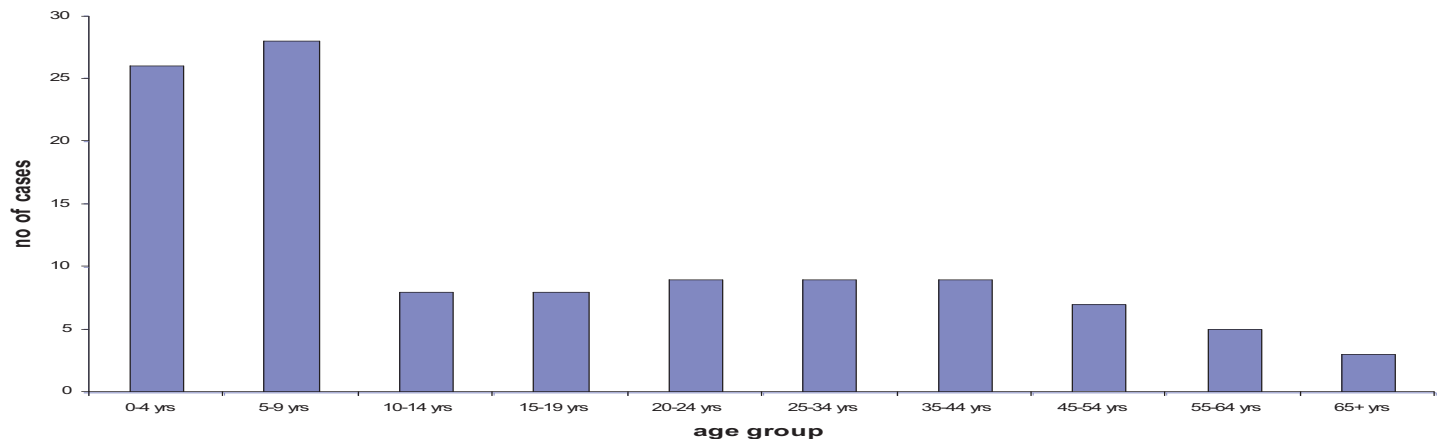
## Hospitalisation

In the South East 112 (28%) influenza A(H1N1) cases were hospitalised and 36 of these cases had at least one or more risk factors. Five cases were admitted to ICU. Details on length of stay in all hospitalised cases are detailed in table 3. The majority of cases admitted to hospital were due to H1N1; there was one documented case of acquiring influenza A(H1N1) in hospital

**Table 3: Influenza A(H1N1) hospitalised cases**

Length of Stay	Hospitalised cases (excluding ICU cases)	ICU cases only
Median (days)	2	35
Mean (days)	3	39.6
Range (days)	0-20	7-63

**Fig 5: SE Influenza A(H1N1) hospitalised cases by age group**



## GP Out-of-hours services surveillance

The Department of Public Health in the HSE North East collated national data on calls to nine of thirteen GP Out of Hours services in Ireland, including Caredoc. Clinical details from all calls were recorded. Records with clinical symptoms reported as flu or influenza were extracted for analysis. The percentage of flu related calls peaked during week 45 with 11.1% of calls relating to flu.

## Immunisations

General Practitioners commenced influenza A(H1N1) vaccinations in the last week in October. Influenza A(H1N1) mass vaccination clinics commenced on 2nd November 2009 in the South East; vaccinations in schools commenced on December 1st and continued until March 31st. A total of 94,425 (20.5% of population in the SE) vaccinations were recorded by the end of March 2010.

## Beyond now: future risk

The European Centre for Disease Prevention and Control (ECDC) published a forward look risk assessment for pandemic 2009 A(H1N1) for Europe in March 2010.<sup>3</sup> The key points in the executive summary, while bearing in mind that influenza viruses are unpredictable, were:

- Currently there is no evidence of a changed pathogenicity in the circulating pandemic virus
- It seems unlikely, though not impossible, that there will be another spring/summer pandemic wave although low level transmission and small outbreaks will occur
- Most likely that 2009 A(H1N1) will be the dominant influenza virus next winter along with Influenza B viruses
- Epidemic transmission of 2009 A(H1N1) is highly likely in the next winter season in young children and susceptible individuals
- The current authorised pandemic vaccines and the new 2010/2011 seasonal influenza vaccines are likely to be effective against the 2009 A(H1N1) strain

## Acknowledgements:

The following groups are thanked for providing data for this report:

Sentinel GPs, ICGP, GP Out-of-hours services, Sentinel schools, Bed Managers Office Sentinel Hospital, Waterford Regional Hospital Microbiology Department, National Virus Reference Laboratory and Health Protection Surveillance Centre.

## References

1. WHO Global Influenza Surveillance Network, available at: <http://www.who.int/csr/disease/influenza/surveillance/en/>
2. European Influenza Surveillance Scheme (EISS) available at: <http://www.eiss.org/>
3. Forward look risk assessment for the 2009 pandemic influenza A(H1N1) and future influenza season European Centre for Disease Prevention and Control (ECDC) available at: ([www.ecdc.europa.eu](http://www.ecdc.europa.eu))

# Statutory Notification of Infectious diseases

The table below shows cases of infectious diseases notified in the HSE/SE area only under Infectious Disease (Amendment No.3) Regulations 2003 (S.I. No. 707 of 2003).

*With the exception of TB, data has been extracted from CIDR (Computerized Infectious Disease Reporting).*

Disease	2008 week 1-13 Cases	2009 week 1-13 Cases	2010 <sup>1</sup> week 1-13 Cases
Acute infectious gastroenteritis <sup>2</sup>	78	278	282
Bacterial meningitis (not otherwise specified)	0	1	3
Brucellosis	0	0	0
Campylobacter infection	28	34	49
Chlamydia trachomatis <sup>3</sup>	NA	138	154
Creutzfeldt Jacob disease	0	0	0
Cryptosporidiosis	10	14	17
Enterohaemorrhagic E. coli	1	1	0
Giardiasis	0	1	0
Gonorrhoea <sup>3</sup>	NA	17	20
Haemophilus influenzae disease (invasive)	2	1	3
Hepatitis A Acute	0	0	0
Hepatitis B Acute	1	3	3
Hepatitis B Chronic	12	13	5
Hepatitis C	10	12	12
Herpes Simplex (genital) <sup>3</sup>	NA	8	7
Influenza (non-A/H1N1)	20	23	0
Influenza (A H1N1) <sup>4</sup>	NA	0	8
Legionellosis	0	0	0
Leptospirosis	1	0	1
Listeriosis	0	1	0
Malaria	1	0	0
Measles	1	1	16
Meningococcal disease	11	8	9
Mumps	2	121	8
Noroviral infection	39	41	98
Paratyphoid	0	2	0
Pertussis	0	0	2
Rubella	0	0	2
Salmonellosis	8	4	7
Shigellosis	1	0	0
Streptococcus group A (invasive)	3	2	1
Streptococcus pneumoniae (invasive)	21	42	33
Syphilis <sup>3</sup>	NA	11	9
Tetanus	0	0	0
Toxoplasmosis	1	0	0
Trichomoniasis <sup>3</sup>	NA	3	3
Tuberculosis	8	9	6
Typhoid	0	1	0
Viral encephalitis	0	1	0
Viral Meningitis	2	1	1
<b>Total</b>	<b>261</b>	<b>792</b>	<b>759</b>

<sup>1</sup> Provisional data

<sup>2</sup> Since May 1st 2008 acute infectious gastroenteritis also now include Clostridium difficile cases

<sup>3</sup> STI data shown is from laboratory only and does not contain data for ano-genital warts or non-specific urethritis. NA= data not available prior to 2009

<sup>4</sup> Influenza A/H1N1 was only notifiable from April 2009



# Immunisation uptake in the HSE-SE and in Ireland

## Immunisation uptake rates for children at 12 months and 24 months of age.

	% Uptake at 12 months of age									
	BCG	D <sub>3</sub>	P <sub>3</sub>	T <sub>3</sub>	Hib <sub>3</sub>	Polio <sub>3</sub>	HepB <sub>3</sub>	MenC <sub>3</sub>	MenC <sub>2</sub>	PCV <sub>2</sub>
<b>HSE SE Q3 2009</b>	<b>95</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>NA</b>	<b>90</b>	<b>90</b>
CW/KK	96	88	88	88	88	88	88	NA	87	87
TS	95	91	91	91	91	91	90	NA	90	90
WD	95	90	90	90	90	90	90	NA	90	90
WX	96	92	92	92	92	92	92	NA	92	92
<b>National Q3 2009</b>	<b>96</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>89</b>		<b>89</b>	<b>89</b>
HSE SE Q3 2008	93	88	88	88	88	88	NA	88	NA	NA

NA Not applicable

	% Uptake at 24 months of age							
	D <sub>3</sub>	P <sub>3</sub>	T <sub>3</sub>	Hib <sub>3</sub>	Hib <sub>b</sub>	Pol <sub>3</sub>	MenC <sub>3</sub>	MMR <sub>1</sub>
<b>HSE SE Q3 2009</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>91</b>	<b>90</b>
CW/KK	91	91	91	91	92	91	91	91
TS	95	95	95	94	89	95	93	91
WD	90	89	90	89	90	89	89	87
WX	93	93	93	93	92	93	93	92
<b>National Q3 2009</b>	<b>94</b>	<b>94</b>	<b>94</b>	<b>94</b>	<b>89</b>	<b>94</b>	<b>93</b>	<b>91</b>
HSE SE Q3 2008	91	91	91	91	87	91	90	88

The new primary immunisation schedule commenced in September 2008 for children born on or after July 1<sup>st</sup>, 2008 (see [www.immunisation.ie](http://www.immunisation.ie) for complete details). The immunisation uptake rates presented in this report for children at 12 months of age in Quarter 3-2009 are children born between 01/07/2008 and 30/09/2008 and who have been immunized according to the new schedule. They have received three doses of vaccines against diphtheria (D<sub>3</sub>), pertussis (P<sub>3</sub>), tetanus (T<sub>3</sub>), Haemophilus influenzae type b (Hib<sub>3</sub>), polio (Polio<sub>3</sub>), hepatitis B (HepB<sub>3</sub>), two doses of meningococcal serogroup C conjugate vaccine (MenC<sub>2</sub>), two doses of pneumococcal conjugate vaccine (PCV<sub>2</sub>) and one dose of BCG vaccine.

Uptake of immunisations in the South East at 12 months of age increased by 2% for Q3 2009 compared with the same period in 2008. For children aged 24 months of age in the South East in Q3-2009, immunisation uptake rates increased by between 1-5% compared with Q3, 2008. The target uptake rate of ≥ 95% was achieved by all LHOs for BCG at 12 months and for D<sub>3</sub>, P<sub>3</sub>, T<sub>3</sub> and Pol<sub>3</sub> in Tipperary South at 24 months in Q3 2009.

### Infectious Disease Notification: contact information

Medical practitioners and Clinical directors of diagnostic laboratories are required to transmit a written or electronic notification of a notifiable infectious disease to a Medical Officer of Health (the Infectious Diseases (Amendment) Regulations, 2000 (S.I. No 151 of 2000)). Printed copies of 'Case Definitions for Notifiable diseases' which include a booklet of standard notification forms are available from regional public health department offices, to which notifications should be returned.

**Notifications can be phoned: 056 7784142, faxed: 056 7784599 or posted to:**

**Public Health Department, HSE South (SE), St Canice's Hospital, Lacken, Dublin Road, Kilkenny**

This report is produced with the data provided by the Senior Medical Officers, Environmental Health Officers, Waterford Regional Hospital Laboratory, Hospital Clinicians, Regional STI Clinics and General Practitioners.

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