

# 8. Immunisation Uptake

## Summary

Among children 12 months of age in 2011 uptake of:

D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub>, MenC<sub>2</sub> and PCV<sub>2</sub> was 90%

Among children 24 months of age in 2011 uptake of:

D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub> reached the target of 95% for the first time

MMR<sub>1</sub> was 92%

PCV<sub>3</sub> was 90%

Hib<sub>b</sub> was 88%

MenC<sub>3</sub> was 84%

MenC<sub>3</sub> and Hib<sub>b</sub> uptake are considerably lower than the uptake of the other recommended vaccines, both of which should be given to children at 13 months of age, suggesting that children are less likely to get the necessary vaccines at this age.

In 2011, the HSE Areas provided HPSC with quarterly immunisation uptake data for their Area and for each of the Local Health Offices (LHOs) in their Area. HPSC collated these data and quarterly reports were produced which are available on the HPSC website. The annual immunisation uptake rates presented here represent the collation of the 2011 quarterly data. The proportion of children who completed the recommended childhood immunisation schedule by 12 months (born between 01/01/2010 and 31/12/2010) and 24 months (born between 01/01/2009 and 31/12/2009) of age in 2011 are reported.

Since September 1st 2008 the new primary childhood immunisation schedule has been implemented for children born on or after July 1st 2008 (table 1). These children should receive one dose of vaccine against tuberculosis (BCG vaccine) at birth or by one month of age; three doses of vaccines against diphtheria (D<sub>3</sub>), tetanus (T<sub>3</sub>), pertussis (P<sub>3</sub>), *Haemophilus influenzae* type b (Hib<sub>3</sub>), polio (Polio<sub>3</sub>) and Hepatitis B (HepB<sub>3</sub>) with one dose of each given at two, four and six months of age; three doses of pneumococcal conjugate vaccine (PCV<sub>3</sub>)

given at two, six and 12 months of age and three doses of meningococcal group C (MenC<sub>3</sub>) vaccine given at four, six and 13 months of age. Also at 12 months of age a dose of MMR (MMR<sub>1</sub>) is recommended and at 13 months a booster dose of Hib (Hib<sub>b</sub>) is recommended. Further vaccinations are recommended for older children and adults; please see [www.immunisation.ie](http://www.immunisation.ie) for complete information on the Irish immunisation schedule.

In children who reached 12 months of age in 2011 (born between 01/01/2010 and 31/12/2010) uptake of BCG, D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub> and two doses of PCV (PCV<sub>2</sub>) and MenC (MenC<sub>2</sub>) were measured. In children who reached 24 months of age in 2011 (born between 01/01/2009 and 31/12/2009) uptake of D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub>, MenC<sub>3</sub>, PCV<sub>3</sub>, MMR<sub>1</sub> and Hib<sub>b</sub> were measured.

The immunisation uptake rates are reported here by HSE Area and LHO. While there are 32 LHOs the immunisation uptake rates for the LHOs of North Lee and South Lee are reported as a combined figure.

### Caveats to 2010 and 2011 data

Not all HSE Areas were able to provide data during 2010 and 2011.

- BCG uptake data were available for the HSE-MW, HSE-NW and HSE-SE Areas in Quarters 1-4 2010 and 2011, for the HSE-M in Quarters 3 and 4 2010 and Quarters 1-4 2011, for the HSE-S in Quarter 4 2010 and in Quarters 1-4 2011 and the HSE-W in Quarters 3-4 2011. In Quarters 3 and 4 2011 the HSE-W reported BCG uptake data (4%), for children at 12 months of age for the first time, resulting in a low national uptake rate (85%) compared to previous years. This is not a true decline as uptake rates are based on available data and the HSE-W BCG data were not available previously. Traditionally BCG was given at age 10 - 12 years in the HSE-W. HSE-W BCG data were not available by LHO. The available national BCG cohort data may be around 31% of the national birth cohort in 2010 and 48% of the national birth cohort in 2011 (these figures are estimates only).

- Data in 2011 are compared here to data in 2010. As a new childhood immunisation schedule was introduced in 2008, for those born on or after July 1<sup>st</sup> 2008, the 2010 HepB<sub>3</sub> and PCV<sub>3</sub> data at 24 months are for those born between July 1<sup>st</sup> and December 31<sup>st</sup> 2008 (i.e. Quarters 3 and 4 2010 data) only. As not all HSE Areas were able to provide data for each quarter in 2010 a number of figures in 2010 are incomplete, this is detailed in the 2010 annual report. For both these reasons some figures for 2010 may reflect data from less than four quarters and in some cases reflect data from one quarter only. The available 2010 national 12 month D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub> and PCV<sub>2</sub> cohort data may be around 87% (this figure is an estimate only) of the 2010 national birth cohort and the available MenC<sub>2</sub> cohort may be around 85% (this figure is an estimate only) of the 2010 national birth cohort. The available 2010 national 24 month cohort data may be around 89-90% (this figure is an estimate only) of the 2010 national birth cohort.

### Immunisation uptake rates at 12 months

National immunisation uptake rates, in children 12 months of age in 2011, were 90% for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub>, MenC<sub>2</sub> and PCV<sub>2</sub> and 85% (based on available data) for BCG (table 2). Compared with 2010, the uptake rates for 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>2</sub> and PCV<sub>2</sub> increased by one percent in 2011. In Quarters 3 and 4 2011, the HSE-W reported BCG uptake data (4%) for the first time, resulting in a low national uptake rate (85%) compared to the national uptake in 2010 (95%). This is not a true decline as national uptake rates are based on available data and the HSE-W BCG data were not available previously.

Among the HSE Areas, uptake rates for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub> ranged from 89% to 95%, MenC<sub>2</sub> ranged from 86% to 94% and PCV<sub>2</sub> ranged from

85% to 94% (table 2). The target uptake of 95% was reached during 2011 in the HSE-M for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub>. This is the first time a HSE Area has reached the target of 95% for these vaccines in children at 12 months of age. Among the LHOs, uptake rates for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub> and MenC<sub>2</sub> ranged from 81% to 96% and PCV<sub>2</sub> ranged from 81% to 97% (appendix 2.1). The target uptake of 95% was reached or exceeded in Longford/Westmeath and Roscommon for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub>, MenC<sub>2</sub> and PCV<sub>2</sub> and reached in Sligo/Leitrim for PCV<sub>2</sub> (appendix 2.1). The target uptake of 95% was reached or exceeded for BCG in ten LHOs reporting data (appendix 2.1).

### Immunisation uptake rates at 24 months

National immunisation uptake rates, in children 24 months of age in 2011, reached the target of 95% for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub> for the first time and were 92% for MMR<sub>1</sub>, 90% for PCV<sub>3</sub>, 88% for Hib<sub>b</sub> and 84% for MenC<sub>3</sub> (table 2). Compared with 2010, the uptake rates for MenC<sub>3</sub> declined by two percent, Hib<sub>b</sub> increased by three percent, MMR<sub>1</sub> and PCV<sub>3</sub> increased by two percent and D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub> increased by one percent (figure 1).

Since September 1<sup>st</sup> 2008 the new primary childhood immunisation schedule has been implemented for children born on or after July 1<sup>st</sup> 2008 (table 1); children who were 24 months of age in Quarter 3 2010 were born between July 1<sup>st</sup> and September 31<sup>st</sup> 2008 and were the first children recommended the new immunisation schedule. Under the new immunisation schedule children are now recommended HepB vaccine and PCV. In addition, there is a change in timing of the MenC and Hib<sub>b</sub> vaccines (table 1). The changes to the schedule mean that three injections (6 in 1, PCV and MenC vaccines) are now recommended at six months of age and two GP visits are required on or after 12

Table 1. Change in primary childhood immunisation schedule (introduced on September 1<sup>st</sup> 2008)

Age	Children born before 01/07/2008	Children born on or after 01/07/2008
Birth	BCG	BCG
2 months	DTaP/Hib/IPV (5 in 1) + MenC	DTaP/Hib/IPV/HepB (6 in 1) + PCV
4 months	DTaP/Hib/IPV (5 in 1) + MenC	DTaP/Hib/IPV/HepB (6 in 1) + MenC
6 months	DTaP/Hib/IPV (5 in 1) + MenC	DTaP/Hib/IPV/HepB (6 in 1) + PCV + MenC
12 months	MMR + Hib	MMR + PCV
13 months	-	MenC + Hib

Please see [www.immunisation.ie](http://www.immunisation.ie) for complete information on the Irish childhood immunisation schedule including vaccinations for older children and adults

BCG	Bacille Calmette Guerin vaccine
DTaP	Diphtheria, Tetanus and acellular Pertussis vaccine
Hib	<i>Haemophilus influenzae</i> type b vaccine
IPV	Inactivated Polio Virus vaccine
MenC	Meningococcal group C vaccine
HepB	Hepatitis B vaccine
PCV	Pneumococcal Conjugate Vaccine
MMR	Measles, Mumps and Rubella vaccine

months; the first dose of MMR and the third dose of PCV should be given at 12 months of age and at 13 months of age the third dose of MenC vaccine and Hib<sub>3</sub> should be given (table 1). MenC<sub>3</sub> uptake was 93% in Quarter 1 2010 but declined to 80% in Quarter 3 2010 and was 82% in Quarter 4 2010 (figure 2). During 2011,

MenC<sub>3</sub> increased from 83% in Quarters 1 and 2 to 85% in Quarters 3 and 4. Hib<sub>3</sub> was 87% in Quarters 1 and 2 2010 but declined to 84% in Quarters 3 and 4 2010 (figure 2). During 2011 Hib<sub>3</sub> uptake increased from 86% in Quarter 1 to 90% in Quarter 4. There was also low uptake of PCV<sub>3</sub> in 2010 (combined Quarters 3 and 4

Table 2. Annual immunisation uptake rates (based on available data) by HSE Area for children 12 and 24 months of age in 2011

	% Uptake at 12 months Cohort born 01/01/2010 - 31/12/2010					% Uptake at 24 months Cohort born 01/01/2009 - 31/12/2009					
	D <sub>3</sub>	HepB <sub>3</sub>	MenC <sub>2</sub>	PCV <sub>2</sub>	BCG	D <sub>3</sub>	Hib <sub>3</sub>	HepB <sub>3</sub>	MenC <sub>3</sub>	PCV <sub>3</sub>	MMR <sub>1</sub>
HSE-E	89	89	89	89	na	94	87	94	82	89	90
HSE-M	95	95	94	94	94	97	95	97	89	94	96
HSE-MW	92	92	92	93	97	96	89	96	86	92	93
HSE-NE	90	90	89	89	na	96	88	96	85	92	92
HSE-NW	94	93	93	94	95	97	93	96	86	90	94
HSE-SE	92	92	92	92	96	95	94	95	86	91	93
HSE-S	89	89	86	85	90	96	82	95	84	91	93
HSE-W	91	91	91	91	4	94	81	94	81	89	90
Ireland	90	90	90	90	85	95	88	95	84	90	92

na=not available

Since T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub> and Polio<sub>3</sub> uptake identical to D<sub>3</sub> uptake only D<sub>3</sub> uptake figures presented

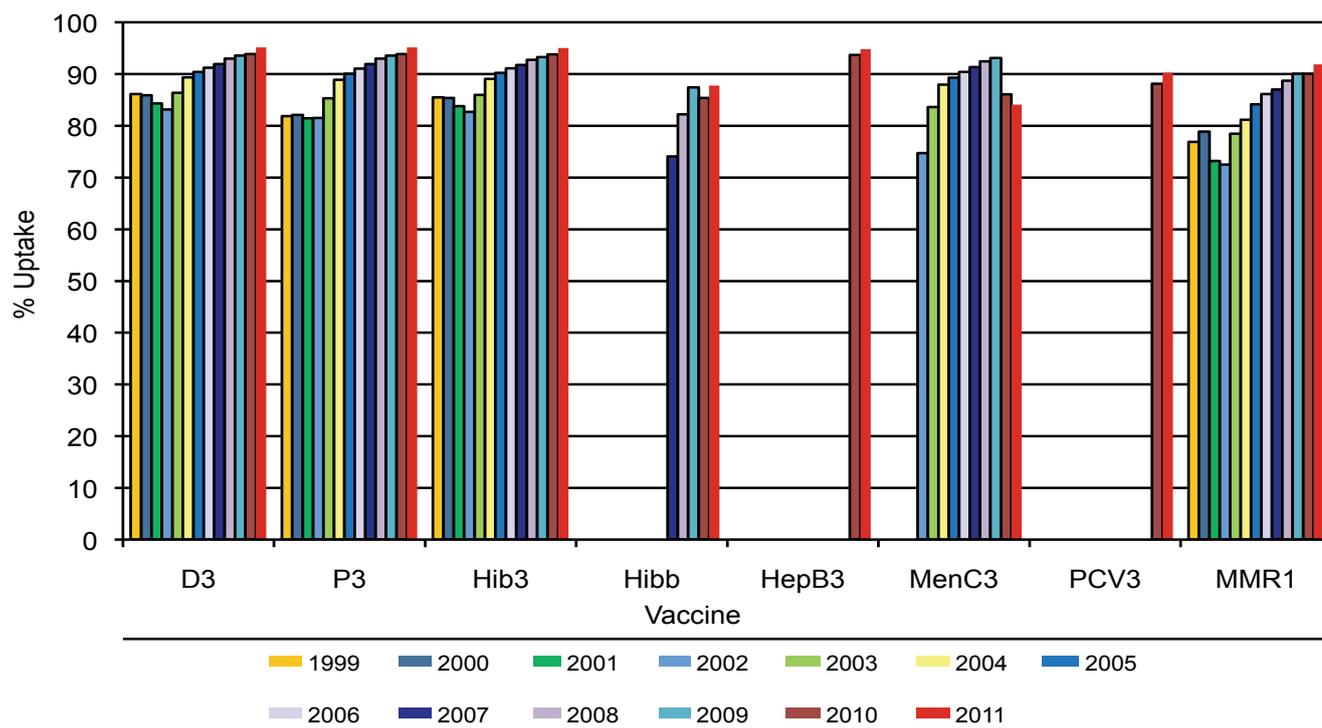


Figure 1. National annual immunisation uptake rates (based on available data) at 24 months, 1999-2011

Since T<sub>3</sub> and Polio<sub>3</sub> uptake identical to D<sub>3</sub> uptake only D<sub>3</sub> uptake figures presented.

P<sub>3</sub> uptake could not be calculated accurately during 1999-2001 as DTaP/DT uptake was reported as a combined value for the HSE-NE during 1999, Quarters 3 and 4 2000 and Quarter 1 2001 and the HSE-NW in 2000 and 2001. The 2002 MenC<sub>3</sub> figure is based on uptake rates for Quarter 3 and Quarter 4 2002 only. The 2005 MMR<sub>1</sub> uptake figure is incomplete as the HSE-E was unable to provide MMR data for Quarter-4 2005, due to technical problems with extraction of MMR<sub>1</sub> data from the HSE-E database. The 2006 MMR<sub>1</sub> figure includes the Quarter-1 2006 HSE-E figure, which is an estimate only due to technical problems with extraction of MMR<sub>1</sub> data from the HSE-E database. The 2007 national Hib<sub>3</sub> figure is incomplete, as the HSE-W data for Quarter 1 2007 and the HSE-NW data for Quarter 3 2007 were not available. The 2007 national Hib<sub>3</sub> figure also includes the HSE-SE data which are an underestimate due to data extraction methods. The 2008 Hib<sub>3</sub> figure is incomplete as the HSE-SE data for Q2 2008 and the HSE-MW data for Quarter 3 2008 were not available. The 2008 national MenC<sub>3</sub> figure is incomplete as the HSE-E and HSE-MW MenC<sub>3</sub> data for Quarter 3 2008 were not available. The 2009 data are incomplete as the following were unavailable: the Quarter 1 2009 HSE-E D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub> and Polio<sub>3</sub> data for those born on the 31/03/2007; the Quarter 2 2009 HSE-E Dublin North Hib<sub>3</sub> uptake data and; the Quarter 4 2009 HSE-MW data, HSE-E Dublin North Hib<sub>3</sub> data and HSE-SE Hib<sub>3</sub> data for those given a Hib dose as part of the five in one or six in one vaccine after 12 months of age. The 2010 data are incomplete as the following were unavailable: the Quarter 1 2010 HSE-M and HSE-S data and the HSE-E Dublin North Hib<sub>3</sub> data; the Quarter 2 2010 HSE-M data and; the Quarter 4 2010 HSE-NE data. As a new childhood immunisation schedule was introduced in 2008, for those born on or after July 1st 2008, the 2010 HepB<sub>3</sub> and PCV<sub>3</sub> data at 24 months are for those born between July 1st and December 31st 2008 (i.e. Quarters 3 and 4 2010 data) only.

data was 88%). During 2011, PCV<sub>3</sub> increased from 90% during Quarters 1 and 2 to 91% during Quarters 3 and 4.

Uptake rates among the HSE Areas, for children at 24 months of age in 2011, for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub> ranged from 94% to 97%, MMR<sub>1</sub> ranged from 90% to 96%, PCV<sub>3</sub> ranged from 89% to 94%, Hib<sub>b</sub> ranged from 81-95% and MenC<sub>3</sub> ranged from 81% to 89% (table 2). The target uptake of 95% was reached or exceeded during 2011 in the HSE-M for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub>, HepB<sub>3</sub>, Hib<sub>b</sub> and MMR<sub>1</sub> and in the HSE-MW, HSE-NE, HSE-NW, HSE-SE and HSE-S for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, Polio<sub>3</sub> and HepB<sub>3</sub> (table 2).

D<sub>3</sub>, Hib<sub>b</sub>, MenC<sub>3</sub> and MMR<sub>1</sub> uptake rates are mapped by LHO in figure 3. Among the LHOs the uptake rates ranged from 90% to 98% for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub> and Polio<sub>3</sub>, 89% to 98% for Hib<sub>3</sub> and HepB<sub>3</sub>, 85% to 97% for MMR<sub>1</sub>, 83% to 98% for PCV<sub>3</sub>, 76% to 96% for MenC<sub>3</sub> and 75% to 97% for Hib<sub>b</sub> (appendix 2.2). The target uptake of 95% was reached or exceeded in 22 LHOs for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub> and Polio<sub>3</sub>, in 21 LHOs for Hib<sub>3</sub>, in 19 LHOs for HepB<sub>3</sub>, in six LHOs for MMR<sub>1</sub>, in four LHOs for Hib<sub>b</sub> and in one LHO for MenC<sub>3</sub> and PCV<sub>3</sub> (appendix 2.2). Roscommon was the only LHO to reach and exceed the target of 95% for all vaccines at 24 months.

There was a large decline in MenC<sub>3</sub> and a decline in Hib<sub>b</sub> uptake at 24 months in Quarters 3 and 4 2010

i.e. children who were born between July 1<sup>st</sup> and December 31<sup>st</sup> 2008 and were the first recommended the new immunisation schedule. There is a change in timing of the MenC and Hib<sub>b</sub> vaccines under the new immunisation schedule (table 1). During 2011 a joint study was carried out in four of the HSE Areas to identify reasons for the apparent decline in uptake. As part of the study work was done to determine if the local immunisation databases accurately reflected immunisation uptake for the group of children who were 24 months of age in Quarter 3 2010 as well as to identify possible reasons for children missing the recommended vaccines.<sup>1</sup> A key finding of this study was that most parents did not know their children were incompletely vaccinated and were unaware of the need for their child to visit the GP at 13 months for the MenC and Hib<sub>b</sub> vaccination. The findings were used to inform communication to GPs and practice nurses as well as the development of new information materials by the National Immunisation Office for parents.<sup>2</sup> The information campaign highlighted the importance of completing five GP visits to ensure children are fully vaccinated. While the quarterly uptake of these vaccines increased in 2011 compared to 2010 MenC<sub>3</sub> and Hib<sub>b</sub> uptake are still considerably lower than the uptake of the other recommended vaccines, both of which should be given at 13 months of age suggesting that children are less likely to get the necessary vaccines at this age. In addition, MMR<sub>1</sub> (92%) and PCV<sub>3</sub> (90%) uptake are lower than the target uptake of 95%.

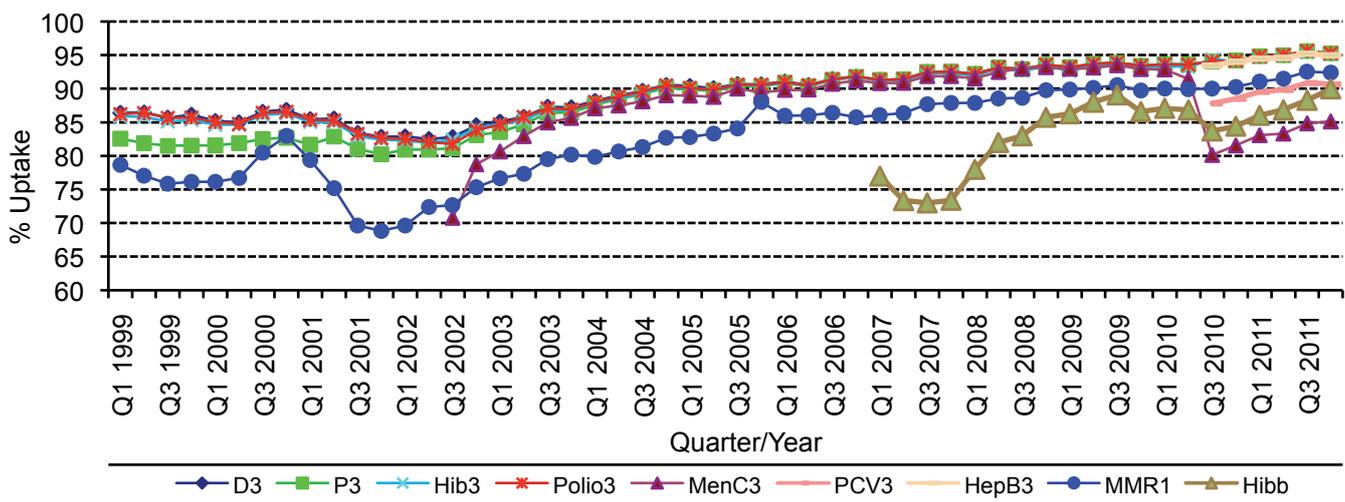


Figure 2. National quarterly immunisation uptake rates at 24 months

Note scale ranges from 60-100%

P<sub>3</sub> uptake could not be calculated accurately during 1999-2001 as DTaP/DT uptake was reported as a combined value for the HSE-NE during 1999, Quarters 3 and 4 2000 and Quarter 1 2001 and the HSE-NW in 2000 and 2001. The Q4-2005 MMR<sub>1</sub> figure is based on data from seven of the eight HSE-Areas. The Q1-2006 MMR<sub>1</sub> figure includes the HSE-E figure that is an estimate only. The Q1-2007, Q3-2007, Q2-2008 and Q3-2008 Hib<sub>b</sub> figures are based on data from seven of the eight HSE Areas. In Q1-2008 the HSE-SE changed their Hib<sub>b</sub> data extraction method compared to previous quarters; in Q1-2008 the uptake of Hib<sub>b</sub> in the HSE-SE was 83% compared to 53% in Q4-2007. The Q3-2008 MenC<sub>3</sub> figure is based on data from six of the eight HSE Areas. The Q1-2009 HSE-E D<sub>3</sub>, P<sub>3</sub>, T<sub>3</sub>, Polio<sub>3</sub> and MMR<sub>1</sub> uptake figures exclude those born on the 31/03/2007. The Q2-2009 HSE-E Hib<sub>b</sub> uptake figures exclude uptake figures from Dublin North. The Q4-2009 figures are based on data from seven of the eight HSE Areas. The Q4-2009 Hib<sub>b</sub> figures also exclude uptake figures from Dublin North and HSE-SE Hib<sub>b</sub> data for those given a Hib dose as part of the five in one or six in one vaccine after 12 months of age. The Q1-2010 figures are based on data from six of the eight HSE Areas. The Q1-2010 Hib<sub>b</sub> figures also exclude uptake figures from HSE-E Dublin North. The Q2-2010 and Q4-2010 figures are based on data from seven of the eight HSE Areas.

In contrast in 2011, national uptake rates at 24 months for  $D_3$ ,  $T_3$ ,  $P_3$ ,  $Hib_3$ ,  $Polio_3$  and  $HepB_3$  reached the target rate of 95% for the first time. Among the HSE Areas the target uptake of 95% was reached or exceeded for those at 24 months during 2011 in the HSE-M for  $D_3$ ,  $T_3$ ,  $P_3$ ,  $Hib_3$ ,  $Hib_b$ ,  $Polio_3$ ,  $HepB_3$  and  $MMR_1$  and in the HSE-MW, HSE-NE, HSE-NW, HSE-SE and HSE-S for  $D_3$ ,  $T_3$ ,  $P_3$ ,  $Hib_3$ ,  $Polio_3$  and  $HepB_3$ . Roscommon exceeded the target of 95% for all vaccines at 24 months.

The 2011 immunisation uptake rates for each LHO are presented in appendix 2. The immunisation reports for Quarters 1 to 4 2011 are available on the HPSC website in *Topics A-Z* under the heading *vaccination*.

#### References

1. Rebolledo J, Cotter S, Gee S, Corcoran B (on behalf of the HSE MenC<sub>3</sub> decline investigation team). Study examines decline in MenC<sub>3</sub> and Hib booster vaccination uptake. *Epi-Insight* 2011; 12(10). Available on-line: <http://ndsc.newsweaver.ie/epiinsight/1vgnwz0l64n1cyivlh5r33?a=1&p=17742945&t=17517774>
2. HSE National Immunisation Office <http://www.immunisation.ie/>

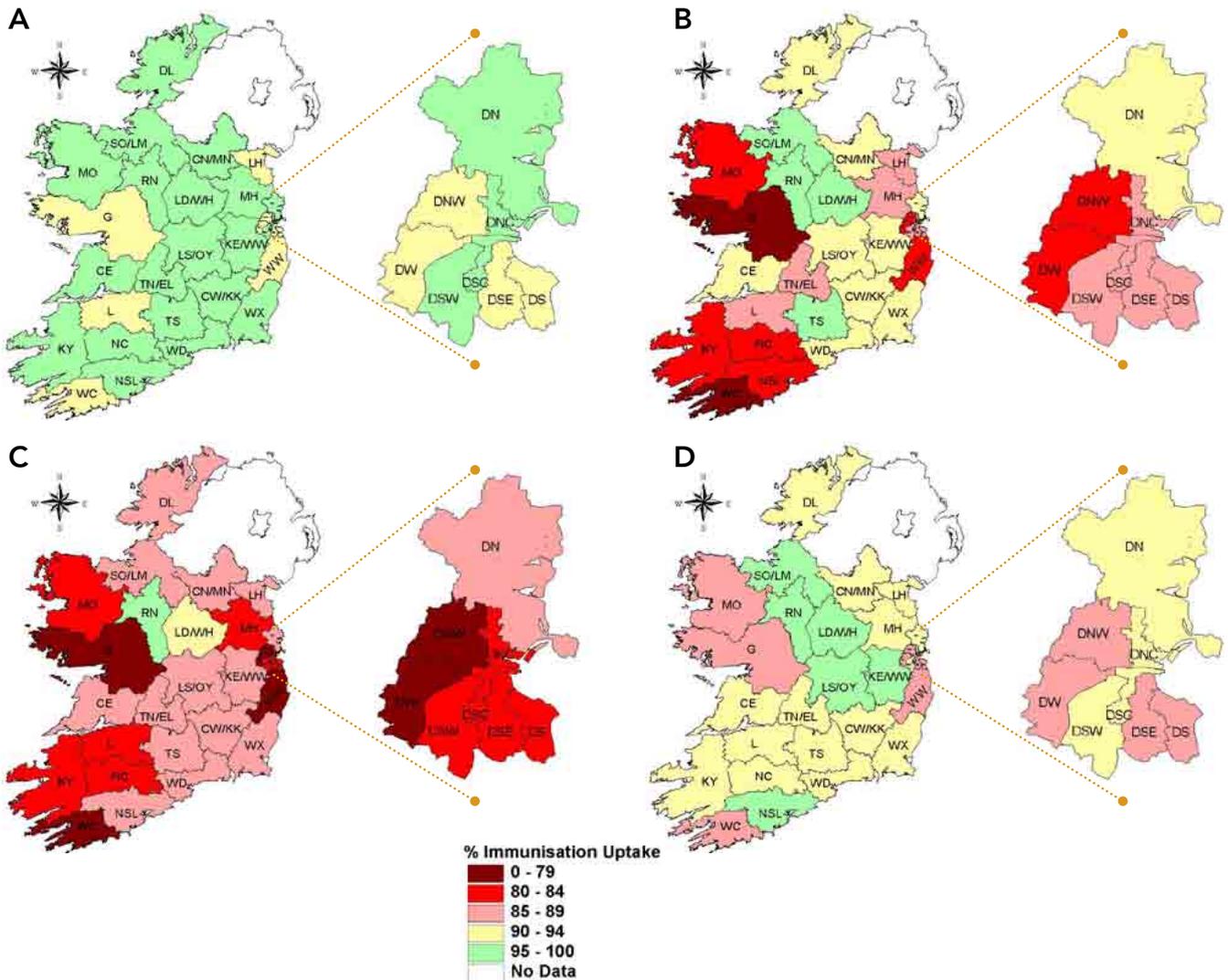


Figure 3.  $D_3$  (A),  $Hib_b$  (B),  $MenC_3$  (C) and  $MMR_1$  (D) immunisation uptake rates (%) in those 24 months of age in 2011 by Local Health Office (LHO)

LHOs in Dublin are highlighted separately for ease of viewing

North Lee and South Lee are separate LHOs, however, their combined (labelled NSL on the map) immunisation uptake rate is reported here  
Please see appendix 2.3 to translate LHO codes