

# Annual Epidemiological Report

October 2019

## Immunisation uptake at 12 and 24 months of age, 2018

### Key Facts

- In the national primary immunisation programme the HSE provides children with vaccines to prevent 13 infectious diseases. These vaccines protect children against common infectious that can cause illness, hospitalisation and for some infections, death. This chapter presents data on uptake these vaccines among children at 12 and 24 months of age
- Among children at 12 months of age in 2018\*:
  - 89% of children had received the recommended three doses of DTaP/Hib/IPV/HepB vaccines, two doses of PCV and Rota vaccines, and one dose of MenC vaccine; 92% had received two doses of MenB vaccine
  - Compared with 2017, the uptake rates in 2018 for three doses of DTaP/Hib/IPV/HepB vaccines and two doses of PCV vaccine declined by 1% and MenC vaccine uptake declined by 4%.
    - Annual uptake rates of these vaccines were previously 89% in 2010.
    - The decline in uptake of these vaccines was first observed in Quarter 3 and Quarter 4 2017. The Quarter 4 2017 cohort was the first 12 month cohort recommended the new immunisation schedule for children born or after October 1<sup>st</sup> 2016. The new schedule included introduction of MenB and Rota vaccines, a change in timing of MenC and PCV and introduction of a combined Hib/MenC vaccine at 13 months.
- Among children at 24 months of age in 2018\* uptake of:
  - three doses of DTaP/Hib/IPV/HepB vaccine was 94%
  - MMR<sub>1</sub> was 92%
  - PCV<sub>b</sub> was 91%
  - Hib<sub>b</sub> and PCV<sub>3</sub> was 90%
  - MenC<sub>b</sub>\* was 88%
  - MenC<sub>2</sub>\* was 87%
  - The Quarter 4 2018 24 month cohort was the first 24 month cohort recommended the new immunisation schedule for children born or after October 1<sup>st</sup> 2016. The new schedule introduced MenB and Rota vaccines
    - In Quarter 4 2018\*
      - MenB<sub>complete</sub> was 92% based on data from 21 LHOs in Quarter 4 only
      - MenB<sub>3</sub> and Rota<sub>2</sub> was 90% based on data from 28 LHOs in Quarter 4 only
      - Hib<sub>4</sub> was also requested in Quarter 4 2018 and was 85% based on data from 15 LHOs in Quarter 4 only
  - Compared to 2017\* uptake of three doses of DTaP/Hib/IPV/HepB vaccine, PCV<sub>3</sub> and PCV<sub>b</sub> declined by 1% while the remainder were unchanged.
    - This is the first time since 2010 that uptake of three doses of DTaP/Hib/IPV vaccine at 24 months were less than the 95% target.
    - In Quarter 4 2018 compared to Quarter 3 2018 PCV<sub>3</sub> declined by 2% and PCV<sub>b</sub> declined by 3%. Both PCV<sub>3</sub> and PCV<sub>b</sub> had also declined by 1% in Quarter 3 2018 compared to Quarter 2 2018. The Quarter 4 2018 cohort was the first 24 month cohort recommended the new immunisation schedule.

\*Please see the Caveats to Data section of this report for further information on data availability and in particular caveats in relation to Hib<sub>b</sub>, MenC<sub>b</sub> and MenC<sub>2</sub> uptake rates.

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## Introduction

In 2018, the Community Healthcare Organisations (CHOs) provided HPSC with quarterly immunisation uptake data for each of the Local Health Offices (LHOs). HPSC collated these data and quarterly reports were produced which are available on the HPSC website. The annual immunisation uptake rates presented here are the collation of the 2018 quarterly data. The proportion of children who completed the recommended primary childhood immunisation schedule by 12 months (born between 01/01/2017 and 31/12/2017), and 24 months (born between 01/01/2016 and 31/12/2016), of age in 2018 are requested. The former HSE-SE and HSE-S provide uptake on those at 12 and 24 months of age, while the remaining areas provided uptake in the birth cohorts (01/01/2017 -31/12/2017 and 01/01/2016-31/12/2016) at the time the local report is run.

The immunisation schedule and recent changes in the schedule are shown in Table 1. The immunisation schedule changed in 2016 for children born on or after October 1st 2016 after the National Immunisation Advisory Committee (NIAC) recommended that meningococcal group B (MenB) and rotavirus (Rota) vaccines be introduced into the national schedule. There was also a change in timing of meningococcal serogroup C conjugate (MenC) vaccine administration, moving from administration at 4 and 13 months of age to 6 and 13 months of age in the new schedule. A combined Hib/MenC dose is now recommended at 13 months and the recommended timing of the third dose of pneumococcal conjugate vaccine (PCV) dose is now 13 months (a change from the previous recommendation for administration at 12 months of age).

For children at 12 and 24 months of age in 2018, immunisation uptake rates of 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>) and hepatitis B (HepB<sub>3</sub>) are reported. The vaccines against these six diseases are all included in the vaccine referred to as the “6in1” vaccine.

For children at 12 months of age in 2018 uptake rates of two doses of the following vaccines; pneumococcal conjugate vaccine (PCV<sub>2</sub>), meningococcal serogroup B vaccine (MenB<sub>2</sub>), rotavirus vaccine (Rota<sub>2</sub>\*); one dose of meningococcal serogroup C conjugate vaccine (MenC<sub>1</sub>) and one dose of BCG vaccine are reported. The BCG vaccine stock in all areas expired at the end of April 2015 so BCG vaccination clinics in HSE Clinics and Maternity hospitals have been postponed until new stock arrives. The licensed vaccine manufacturer has informed the HSE that BCG vaccine will not be delivered into Ireland until further notice and no alternative licensed supplier has been found. Please see <https://www.hse.ie/eng/health/immunisation/news/bcg17.html> for further information.

For children at 24 months of age in 2018, immunisation uptake rates of three doses of vaccines against pneumococcal conjugate vaccine (PCV<sub>3</sub>\*), two doses of vaccine against meningococcal group C (MenC<sub>2</sub>\*), and one dose of vaccine against measles, mumps and rubella (MMR<sub>1</sub>\*) are reported. Uptake rates of the booster doses (one dose given on or

after 12 months of age) the following vaccines *Haemophilus influenzae* type b vaccine (Hib<sub>b</sub>) meningococcal group C vaccine (MenC<sub>b</sub>), and pneumococcal conjugate vaccine (PCV<sub>b</sub>) are also reported.

For children at 24 months of age in Quarter 4 2018, immunisation uptake rates of three doses of vaccines against meningococcal group B (MenB<sub>3</sub>\*), two doses of vaccine against rotavirus (Rota<sub>2</sub>\*), and four doses of vaccines against *Haemophilus influenzae* type b (Hib<sub>4</sub>\*), were measured. MenB<sub>complete</sub> (defined as those children who are considered to have been completely vaccinated with MenB and includes both children with three doses and some with two doses who initiated MenB vaccination late, 10 months to <2 years, when only two doses are then recommended) data were also requested but not all areas were able to report these data.

\*For a more detailed description of the measures of vaccine coverage requested please see Appendix 1.

The uptake statistics are also presented in this report by CHO and Local Health Office (LHO). While there are 32 LHOs the immunisation uptake data for North Lee and South Lee are reported as a combined figure.

Further vaccinations are recommended for older children and adults. Please see the HSE-National Immunisation Office website at [www.immunisation.ie](http://www.immunisation.ie) for current and detailed information on the Irish primary childhood immunisation schedule and also recommended vaccinations for older children and adults.

**Table 1. Irish primary childhood immunisation schedules for children born from 01/07/2008 to 31/12/2016**

Age	Children born 01/07/2008 to 30/06/2015	Children born 01/07/2015 to 30/09/2016	Children born from 01/10/2016
Birth	BCG	BCG	BCG
2 months	DTaP/Hib/IPV/HepB (6 in 1) + PCV	DTaP/Hib/IPV/HepB (6 in 1) + PCV	DTaP/Hib/IPV/HepB (6 in 1) + PCV+ <b>MenB+ Rota</b>
4 months	DTaP/Hib/IPV/HepB (6 in 1) + MenC	DTaP/Hib/IPV/HepB (6 in 1) + MenC	DTaP/Hib/IPV/HepB (6 in 1) + <b>MenB+ Rota</b>
6 months	DTaP/Hib/IPV/HepB (6 in 1) + PCV + MenC	DTaP/Hib/IPV/HepB (6 in 1) + PCV	DTaP/Hib/IPV/HepB (6 in 1) + PCV+ MenC
12 months	MMR + PCV*	MMR + PCV	MMR + <b>MenB</b>
13 months	MenC + Hib	MenC + Hib	Hib/MenC+ PCV

Please see the HSE-National Immunisation Office (NIO) website at [www.immunisation.ie](http://www.immunisation.ie) for current and detailed information on the Irish primary childhood immunisation schedule, also recommended vaccinations for older children and adults and previous immunisation schedules.

BCG	Bacille Calmette Guerin vaccine
DTaP	Diphtheria, Tetanus and acellular Pertussis vaccine
HepB	Hepatitis B vaccine
Hib	<i>Haemophilus influenzae</i> type b vaccine
IPV	Inactivated Polio Virus vaccine
MenB	Meningococcal group B vaccine
MenC	Meningococcal group C vaccine
MMR	Measles, Mumps and Rubella vaccine
PCV*	Pneumococcal Conjugate Vaccine (13 valent vaccine recommended for babies born since 01/10/2010; and 7 valent vaccine prior to this)
Rota	Rotavirus oral vaccine

## Caveats to data

The uptake rates are presented to zero decimal places.

All of the uptake rates presented are based on available data. Caveats to the 2017 and 2018 data are outlined here.

The national and CHO1 and CHO8 data are incomplete due to a large backlog of returns which were not entered at the time of data extraction for the quarterly reports of LHOs Cavan/Monaghan (in CHO1), Louth and Meath (in CHO8). Therefore accurate 12 and 24 month data for 2018 were not available and so were not included in the dataset. The Quarter 4 2017 Cavan/Monaghan, Louth and Meath data were also considered inaccurate at the time of data extraction for the quarterly report but were included in the 2017 dataset.

Due to changes in the Irish primary childhood immunisation schedule (table 1) the 2018 24 months MenB<sub>3</sub>, Rota<sub>2</sub> and MenB<sub>complete</sub> data are for Quarter 4 2018 only. Not all CHOs were in a position to provide MenB<sub>complete</sub> data as it was not previously flagged with the areas to be provided (available for 21 LHOs only). Hib<sub>4</sub> was requested for the first time in Quarter 4 2018. Hib<sub>4</sub> was available for 15 LHOs only.

For children born on or after October 1<sup>st</sup> 2016 (Quarter 4 2018 24 month cohort) the combined Hib/MenC vaccine was introduced and recommended at 13 months of age. However, the combined Hib/MenC vaccine was given to some children in earlier cohorts but the databases/reports were not always configured to report on the combined Hib/MenC for these cohorts. Some of the databases/reports were subsequently configured/amended to include these but not all. The 2% decline in MenC<sub>2</sub> seen in Quarter 2 2018 may be wholly, or in part, due to children receiving the combined Hib/MenC booster not being counted in the uptake data. Although attempts were made to include these children in the Quarter 3 2018 data extracts not all data relating to MenC<sub>2</sub>, Hib<sub>b</sub> and MenC<sub>b</sub> doses were available. Hib<sub>b</sub>, MenC<sub>2</sub>, MenC<sub>b</sub>, PCV<sub>3</sub> and PCV<sub>b</sub> declined by 1% in Quarter 3 2018 so some of the Hib<sub>b</sub>, MenC<sub>2</sub> and MenC<sub>b</sub> decline might be a data issue, however, PCV<sub>3</sub> and PCV<sub>b</sub> also declined in Quarter 3 2018. A dose of PCV was recommended at 12 months so three of the four vaccines recommended, in the previous schedule, at 12 and 13 months of age declined by 1% in Quarter 3 2018 compared to Quarter 2 2018. In Quarter 4 2018 not all areas were in a position to provide MenC<sub>2</sub> data as not all databases/reports were configured to count the combined Hib/MenC vaccine where it is the second dose of MenC. MenC<sub>2</sub> was only available for seven LHOs in Quarter 4 2018.

The caveats by CHO are outlined below.

CHO1- Cavan/Monaghan data were not available in 2018. For Donegal/Sligo/Leitrim the combined Hib/MenC vaccine data was included in Hib<sub>b</sub> and MenC<sub>b</sub> data but was not included in MenC<sub>2</sub> data prior to Quarter 3 2018.

CHO2- Hib/MenC combined vaccine data was not included in the Galway, Mayo and Roscommon Hib<sub>b</sub>, MenC<sub>b</sub> and MenC<sub>2</sub> data prior to Quarter 3 2018. MenB<sub>complete</sub> data were not previously flagged with the CHOs to be provided and so CHO2 were not in a position to provide it.

CHO3- Hib/MenC combined vaccine was included in the 2018 Hib<sub>b</sub> and MenC<sub>b</sub> figures but not in the MenC<sub>2</sub> figures and MenC<sub>2</sub> data was not available in Quarter 4 2018. Hib<sub>4</sub> data was not available.

CHO4- Hib/MenC combined vaccine was included in Hib<sub>b</sub>, MenC<sub>b</sub> and MenC<sub>2</sub> data except in MenC<sub>2</sub> in Quarter 4 2018. MenC<sub>2</sub> was reported as 8% in Quarter 4 2018, while this figure was reported in the Quarter 4 2018 report it was excluded from the Quarter 4 2018 national figure and is excluded from the 2018 CHO4 and national figures.

CHO5- MenC<sub>2</sub> data was not available in Quarter 4 2018. Hib/MenC combined vaccine was not included in MenC<sub>2</sub> prior to Quarter 3 2018 but was included in the MenC<sub>b</sub> and Hib<sub>b</sub> data. MenB<sub>complete</sub> data were not previously flagged with the CHOs to be provided and so CHO5 were not in a position to provide it.

CHO6/7/9- Hib/MenC combined vaccine was not included in Hib<sub>b</sub>, MenC<sub>b</sub> or MenC<sub>2</sub> data prior to Quarter 4 2018. MenC<sub>2</sub> was not available in Quarter 4 2018. Hib<sub>4</sub> data was not available.

CHO8- Louth and Meath data were not available in 2018. Hib/MenC combined vaccine was included in the Laois/Offaly/Longford/Westmeath Hib<sub>b</sub>, MenC<sub>b</sub> and MenC<sub>2</sub> Quarter 3 and Quarter 4 2018 data but was not included prior to Quarter 3 2018.

BCG vaccine stock in all areas expired at the end of April 2015. For further information please see <http://www.hse.ie/eng/health/Immunisation/news/BCG17.html>

The MenC<sub>b</sub> and PCV<sub>b</sub> data were available for only eight CHOs in Quarter 1 2017 and for all CHOs reporting data since Quarter 2 2017.

Due to changes in the Irish primary childhood immunisation schedule (table 1) the 2017 MenB<sub>2</sub> and Rota<sub>2</sub> 12 months data are for Quarter 4 2017 only, the 2017 MenC<sub>3</sub> 24 months data are for Quarters 1 and 2 only and the 2017 MenC<sub>2</sub> 24 months data are for Quarters 3 and 4 only.

CHO3 Hib<sub>b</sub> Quarter 1 2017 data were extracted at a different time to the remaining Quarter 1 2017 CHO3 data and CHO3 Hib<sub>b</sub> data were unavailable in Quarter 2 2017.

## Uptake rates

### Immunisation uptake rates at 12 months

Eighty-nine per cent of children, at 12 months of age in 2018, received 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>1</sub>, PCV<sub>2</sub> and Rota<sub>2</sub> and 92% received MenB<sub>2</sub> (table 2).

Compared with 2017, the 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 PCV<sub>2</sub> declined by 1% in 2018 (to 89%) while MenC<sub>1</sub> declined by 4% (to 89%). Annual uptakes of the 12 month vaccine were previously 89% in 2010.

The decline in uptake of these vaccines was first observed in Quarter 3 and Quarter 4 2017; with uptake rates in Quarter 3 2017 declining by 1% (except for MenC<sub>1</sub>) and uptake rates in Quarter 4 2017 declining by 6% for MenC<sub>1</sub>, 2% for PCV<sub>2</sub> and 1% 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>. Uptake rates in Quarter 1 and 2 2017 were 94-95% for MenC<sub>1</sub> and 91% 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 PCV<sub>2</sub> but were 88-90% for these vaccines during Quarters 4 2017 to Quarter 4 2018. The Quarter 4 2017 cohort was the first 12 month cohort recommended the new immunisation schedule for children born or after October 1<sup>st</sup> 2016.

MenB and Rota vaccines were introduced for children born on or after October 1<sup>st</sup> 2016. In Quarter 4 2017 (children born 01/10/2016-31/12/2016) uptake of MenB<sub>2</sub> was 91% and uptake of Rota<sub>2</sub> was 89%. In 2018, compared to Quarter 4 2017, MenB<sub>2</sub> improved by 1% and Rota<sub>2</sub> was unchanged.

Among the CHOs, uptake rates in 2018 for MenB<sub>2</sub> ranged from 89% to 95%, MenC<sub>1</sub>, 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> ranged from 87% to 94% and rates for Rota<sub>2</sub> ranged from 84% to 93% (table 2).

Among the LHOs in 2018, uptake rates for MenB<sub>2</sub> ranged from 84% to 97% and the rest ranged from 82% to 95% (table 2).

No LHO reached the target of 95% for all vaccines. The target uptake of 95% was reached in 2018 in Roscommon for all vaccines except MenC<sub>1</sub>, in Longford/Westmeath for all vaccines except Rota<sub>2</sub>, in Mayo for MenB<sub>2</sub> and Rota<sub>2</sub>, and in Galway, Tipperary South and Laois/Offaly for MenB<sub>2</sub>.

Compared to 2017, the uptake rates in 2018 declined by 4-7% in Donegal and declined by up to 10% in Wicklow. The annual LHO (and CHO and national) data by year are available on the HPSC website in a MS Excel file labelled '*Annual vaccine uptakes at 12 months*'.

**Table 2. Immunisation uptake (%) at 12 months of age in 2018, cohort born 01/01/2017-31/12/2017, by LHO and CHO in Ireland**

Community Healthcare Organisation (CHO)	Local Health Office*/CHO	Number in cohort for D <sub>3</sub> T <sub>3</sub> <sup>†</sup>	Immunisation Uptake (%)						
			BCG <sup>‡</sup>	D <sub>3</sub> <sup>§</sup>	HepB <sub>3</sub>	MenB <sub>2</sub>	MenC <sub>1</sub>	PCV <sub>2</sub>	Rota <sub>2</sub>
CHO1	Cavan/Monaghan	na	na	na	na	Na	na	na	na
	Donegal	1961	0	87	86	89	86	86	82
	Sligo/Leitrim	1182	0	93	93	92	93	93	88
	<b>CHO1 Total</b>	<b>3143</b>	<b>0</b>	<b>89</b>	<b>89</b>	<b>90</b>	<b>88</b>	<b>89</b>	<b>84</b>
CHO2	Galway	3342	0	92	92	95	92	92	92
	Mayo	1542	0	93	93	96	94	94	95
	Roscommon	819	0	95	95	97	94	95	95
	<b>CHO2 Total</b>	<b>5703</b>	<b>0</b>	<b>93</b>	<b>93</b>	<b>95</b>	<b>93</b>	<b>93</b>	<b>93</b>
CHO3	Clare	1478	0	91	91	94	91	91	90
	Limerick	1783	0	89	89	93	89	89	89
	Tipperary NR/East Limerick	1759	0	90	90	94	90	90	89
	<b>CHO3 Total</b>	<b>5020</b>	<b>0</b>	<b>90</b>	<b>90</b>	<b>94</b>	<b>90</b>	<b>90</b>	<b>89</b>
CHO4	North Cork	1228	0	88	88	92	88	87	88
	North South Lee	5046	0	89	89	94	89	88	90
	West Cork	694	0	84	84	89	85	83	84
	Kerry	1687	0	88	88	91	89	85	86
	<b>CHO4 Total</b>	<b>8655</b>	<b>0</b>	<b>88</b>	<b>88</b>	<b>93</b>	<b>88</b>	<b>87</b>	<b>89</b>
CHO5	Carlow/Kilkenny	1708	0.1	87	87	92	88	87	87
	South Tipperary	1181	0.6	93	93	96	93	92	93
	Waterford	1590	0.1	88	88	91	89	87	86
	Wexford	1921	0.5	92	92	94	92	91	91
	<b>CHO5 Total</b>	<b>6400</b>	<b>0.3</b>	<b>90</b>	<b>90</b>	<b>93</b>	<b>90</b>	<b>89</b>	<b>89</b>
CHO6	Dublin South	1601	0	90	90	92	90	90	89
	Dublin South East	1557	0	90	90	92	90	90	90
	Wicklow	1775	0	82	82	84	82	82	82
	<b>CHO6 Total</b>	<b>4933</b>	<b>0</b>	<b>87</b>	<b>87</b>	<b>89</b>	<b>87</b>	<b>87</b>	<b>87</b>
CHO7	Dublin South City	1617	0	88	88	91	88	88	89
	Dublin South West	2312	0	87	87	91	87	87	89
	Dublin West	2286	0	86	86	90	85	86	88
	Kildare/West Wicklow	3473	0	90	90	93	90	90	90
	<b>CHO7 Total</b>	<b>9688</b>	<b>0</b>	<b>88</b>	<b>88</b>	<b>91</b>	<b>88</b>	<b>88</b>	<b>89</b>
CHO8	Laois/Offaly	2350	0	94	94	95	94	94	92
	Longford/Westmeath	1847	0	95	95	95	95	95	91
	Louth	na	na	na	na	Na	na	na	na
	Meath	na	na	na	na	Na	na	na	na
	<b>CHO8 Total</b>	<b>4197</b>	<b>0</b>	<b>94</b>	<b>94</b>	<b>95</b>	<b>94</b>	<b>94</b>	<b>91</b>
CHO9	Dublin North West	3080	0	89	89	91	89	89	88
	Dublin North Central	1699	0	88	88	90	88	88	88
	Dublin North	3719	0	86	86	90	86	86	87
	<b>CHO9 Total</b>	<b>8498</b>	<b>0</b>	<b>87</b>	<b>87</b>	<b>90</b>	<b>87</b>	<b>87</b>	<b>88</b>
<b>Ireland</b>		<b>56237</b>	<b>0.03</b>	<b>89</b>	<b>89</b>	<b>92</b>	<b>89</b>	<b>89</b>	<b>89</b>

\*Cavan/Monaghan, Louth and Meath accurate data were not available at the time of data extraction

While North Lee and South Lee are two separate LHOs their combined immunisation uptake data are reported here.

†The denominator/number in cohort varied slightly according to vaccine. D<sub>3</sub>T<sub>3</sub> cohort is shown here.

‡BCG vaccine stock in all areas expired at the end of April 2015. For further information please see

<http://www.hse.ie/eng/health/immunisation/news/BCG17.html>

§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 are presented

na=not available

## Immunisation uptake rates at 24 months

All of the uptake rates presented are based on available data. Please see the Caveats to Data section and in particular the caveats in relation to MenC<sub>2</sub>, MenC<sub>b</sub>, Hib<sub>b</sub>, MenB<sub>complete</sub> and Hib<sub>4</sub> data.

National annual immunisation uptake rates, in children at 24 months of age in 2018, were 94% 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>, 92% for MMR<sub>1</sub>, 91% for PCV<sub>b</sub>, 90% for Hib<sub>b</sub> and PCV<sub>3</sub>, 88% for MenC<sub>b</sub> and 87% for MenC<sub>2</sub> (table 3).

MenB and Rota vaccines were introduced into the immunisation schedule for babies born on or after October 1<sup>st</sup> 2016 and so the Quarter 4 2018 24 month cohort was the first 24 month cohort recommended these vaccines. The Quarter 4 2018 uptake rates were 92% for MenB<sub>complete</sub> and 90% for MenB<sub>3</sub> and Rota<sub>2</sub> (table 3).

In addition, Hib<sub>4</sub> was requested in Quarter 4 2018. The Quarter 4 2018 uptake rate was 85% for Hib<sub>4</sub> (table 3).

Compared with 2017, the uptake rates in 2018 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>, PCV<sub>3</sub> and PCV<sub>b</sub> declined by 1% while Hib<sub>b</sub>, MenC<sub>2</sub>, MenC<sub>b</sub>, MMR<sub>1</sub> were unchanged (figure 1). This is the first year since 2010 national annual uptake rates did not reach the target of 95% for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, and Polio<sub>3</sub>.

In Quarter 4 2018 compared to Quarter 3 2018 PCV<sub>3</sub> declined by 2% and PCV<sub>b</sub> declined by 3%. Both PCV<sub>3</sub> and PCV<sub>b</sub> had also declined by 1% in Quarter 3 2018 compared to Quarter 2 2018. The Quarter 4 2018 cohort was the first 24 month cohort recommended the new immunisation schedule for children born or after October 1<sup>st</sup> 2016.

The target uptake of 95% was reached in five CHOs during 2018 for D<sub>3</sub>, T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub>, and Polio<sub>3</sub>, four for HepB<sub>3</sub>, in one CHO for Hib<sub>b</sub>, PCV<sub>3</sub>, and MMR<sub>1</sub>, and in none for MenC<sub>2</sub>, MenC<sub>b</sub> or PCV<sub>b</sub> (table 3). In Quarter 4 2018, the target uptake of 95% was reached in one CHO for MenB<sub>3</sub>, MenB<sub>complete</sub> and Rota<sub>2</sub>, and in none for Hib<sub>4</sub> (table 3).

The target uptake of 95% was reached in 14 LHOs 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>, in eight LHOs for MMR<sub>1</sub>, in three for PCV<sub>3</sub> and Rota<sub>2</sub> (Q4 only), in two for Hib<sub>b</sub>, PCV<sub>b</sub>, MenB<sub>3</sub> (Q4 only), and MenB<sub>complete</sub> (Q4 only), in one for MenC<sub>2</sub> and Hib<sub>4</sub> (Q4 only) and in none for MenC<sub>b</sub>.

No LHO reached the target of 95% for all vaccines, however, Roscommon reached the target of 95% for all vaccines except Hib<sub>b</sub> and MenC<sub>b</sub> (no data for MenB<sub>complete</sub>) (table 3). D<sub>3</sub>, Hib<sub>b</sub>, PCV<sub>3</sub> and MMR<sub>1</sub> uptake rates are mapped by LHO in figure 2.

Compared to 2017, the uptake rates in 2018 for Dublin North West and Dublin North Central improved by 3-7%. The annual LHO (and CHO and national) data by year are

available on the HPSC website in a MS Excel file labelled '*Annual vaccine uptakes at 24 months*'.

**Table 3. Immunisation uptake (%) at 24 months of age in 2018, cohort born 01/01/2016-31/12/2016, by LHO and CHO in Ireland**

Please see the Caveats to Data section for information on data completeness, caveats and changes to the immunisation schedule

Community Healthcare Organisation (CHO)	Local Health Office/CHO	No. in cohort for D <sub>3</sub> <sup>†</sup>	Immunisation Uptake (%)*											
			D <sub>3</sub> <sup>‡</sup>	HepB <sub>3</sub>	Hib <sub>4</sub> <sup>§</sup>	Hib <sub>b</sub>	MenB <sub>3</sub> <sup>§</sup>	MenB <sub>complete</sub> <sup>§</sup>	MenC <sub>2</sub>	MenC <sub>b</sub>	PCV <sub>3</sub>	PCV <sub>b</sub>	Rota <sub>2</sub> <sup>§</sup>	MMR <sub>1</sub>
CHO1	Cavan/Monaghan	na	na	na	na	na	na	na	na	na	na	na	na	na
	Donegal	2054	94	93	81	87	87	93	82	85	84	88	87	89
	Sligo/Leitrim	1249	96	96	87	94	90	94	89	94	88	94	91	95
	<b>CHO1 Total</b>	<b>3303</b>	<b>95</b>	<b>94</b>	<b>83</b>	<b>90</b>	<b>88</b>	<b>94</b>	<b>85</b>	<b>88</b>	<b>85</b>	<b>90</b>	<b>88</b>	<b>91</b>
CHO2	Galway	3445	96	96	85	93	92	-	93	90	97	93	95	94
	Mayo	1600	96	96	80	94	91	-	93	89	97	94	96	92
	Roscommon	830	97	97	98	94	97	-	96	94	97	96	97	97
	<b>CHO2 Total</b>	<b>5875</b>	<b>96</b>	<b>96</b>	<b>85</b>	<b>94</b>	<b>93</b>	<b>-</b>	<b>93</b>	<b>90</b>	<b>97</b>	<b>94</b>	<b>96</b>	<b>94</b>
CHO3	Clare	1547	96	95	-	92	91	94	84	90	91	93	91	94
	Limerick	1797	94	94	-	91	91	93	82	89	90	90	91	92
	Tipperary	1702	95	95	-	92	92	94	84	90	92	92	92	95
	NR/ELimerick	<b>5046</b>	<b>95</b>	<b>95</b>	<b>-</b>	<b>92</b>	<b>91</b>	<b>94</b>	<b>83</b>	<b>90</b>	<b>91</b>	<b>92</b>	<b>91</b>	<b>94</b>
CHO4	North Cork	1283	96	96	84	92	92	93	91	90	91	93	91	94
	North South Lee	5187	95	95	84	91	92	93	88	89	90	92	89	93
	West Cork	680	92	92	84	90	91	92	84	86	87	90	88	90
	Kerry	1782	94	94	82	90	88	89	86	87	88	91	86	91
<b>CHO4 Total</b>	<b>8932</b>	<b>95</b>	<b>95</b>	<b>84</b>	<b>91</b>	<b>91</b>	<b>92</b>	<b>88</b>	<b>88</b>	<b>90</b>	<b>92</b>	<b>89</b>	<b>92</b>	
CHO5	Carlow/Kilkenny	1771	94	93	80	88	88	-	85	86	87	90	89	91
	South Tipperary	1233	97	97	87	92	91	-	88	90	92	95	89	94
	Waterford	1697	92	92	80	89	86	-	86	87	88	91	84	91
	Wexford	1941	94	93	84	89	88	-	87	88	90	92	89	92
<b>CHO5 Total</b>	<b>6642</b>	<b>94</b>	<b>94</b>	<b>82</b>	<b>89</b>	<b>88</b>	<b>-</b>	<b>86</b>	<b>88</b>	<b>89</b>	<b>92</b>	<b>88</b>	<b>92</b>	
CHO6	Dublin South	1601	94	94	-	86	90	91	83	85	90	91	88	92
	Dublin South East	1666	94	94	-	88	93	94	84	87	91	92	94	93
	Wicklow	1813	87	87	-	79	84	84	75	78	82	84	87	85
	<b>CHO6 Total</b>	<b>5080</b>	<b>91</b>	<b>91</b>	<b>-</b>	<b>84</b>	<b>88</b>	<b>89</b>	<b>81</b>	<b>83</b>	<b>88</b>	<b>89</b>	<b>90</b>	<b>90</b>
CHO7	Dublin South City	1568	93	93	-	85	88	89	83	84	87	89	91	90
	Dublin South West	2290	96	96	-	92	91	93	90	91	91	94	90	95
	Dublin West	2377	92	92	-	83	88	89	79	81	84	87	89	88
	Kildare/West	3627	94	94	-	88	91	92	86	87	89	91	91	92
<b>CHO7 Total</b>	<b>9862</b>	<b>94</b>	<b>94</b>	<b>-</b>	<b>87</b>	<b>90</b>	<b>91</b>	<b>85</b>	<b>86</b>	<b>88</b>	<b>90</b>	<b>90</b>	<b>91</b>	
CHO8	Laois/Offaly	2236	96	96	93	96	95	96	91	92	92	94	93	95
	Longford/Westmeath	1898	96	96	94	96	94	96	92	93	93	94	91	95
	Louth	na	na	na	na	na	na	na	na	na	na	na	na	na
	Meath	na	na	na	na	na	na	na	na	na	na	na	na	na
<b>CHO8 Total</b>	<b>4134</b>	<b>96</b>	<b>96</b>	<b>93</b>	<b>96</b>	<b>95</b>	<b>96</b>	<b>91</b>	<b>93</b>	<b>92</b>	<b>94</b>	<b>92</b>	<b>95</b>	
CHO9	Dublin North West	3109	97	97	-	92	92	94	90	91	91	94	93	95
	Dublin North Central	1658	97	97	-	93	91	93	90	92	91	94	91	95
	Dublin North	3867	92	92	-	84	87	89	81	82	87	88	89	89
	<b>CHO9 Total</b>	<b>8634</b>	<b>94</b>	<b>94</b>	<b>-</b>	<b>89</b>	<b>90</b>	<b>92</b>	<b>86</b>	<b>87</b>	<b>89</b>	<b>91</b>	<b>91</b>	<b>92</b>
<b>Ireland</b>	<b>57508</b>	<b>94</b>	<b>94</b>	<b>85</b>	<b>90</b>	<b>90</b>	<b>92</b>	<b>87</b>	<b>88</b>	<b>90</b>	<b>91</b>	<b>90</b>	<b>92</b>	

\*Please see the Caveats to Data section for information on data completeness, caveats and changes to the immunisation schedule

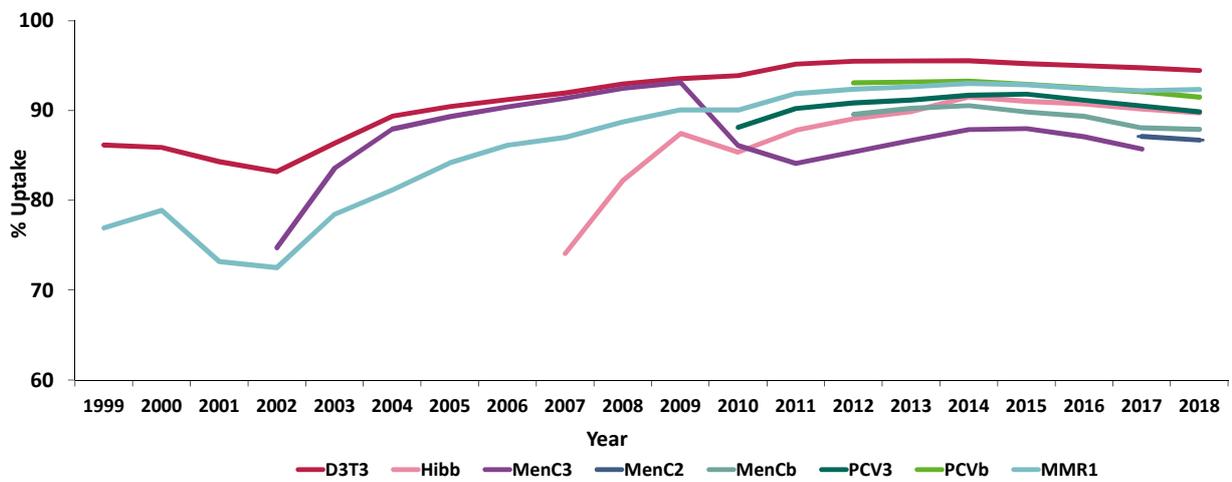
†As the denominator/number in cohort varied slightly according to vaccine the D<sub>3</sub> cohort is shown here

‡ Since T<sub>3</sub>, P<sub>3</sub>, Hib<sub>3</sub> and Polio<sub>3</sub> uptake very similar to D<sub>3</sub> uptake only D<sub>3</sub> uptake figures are presented

§The Hib<sub>4</sub>, MenB<sub>3</sub>, MenB<sub>complete</sub> and Rota<sub>2</sub> data are for Quarter 4 2018 only

While North Lee and South Lee are two separate Local Health Offices their combined immunisation uptake data are reported here

**Figure 1. National annual immunisation uptake rates in Ireland at 24 months, 1999-2018**

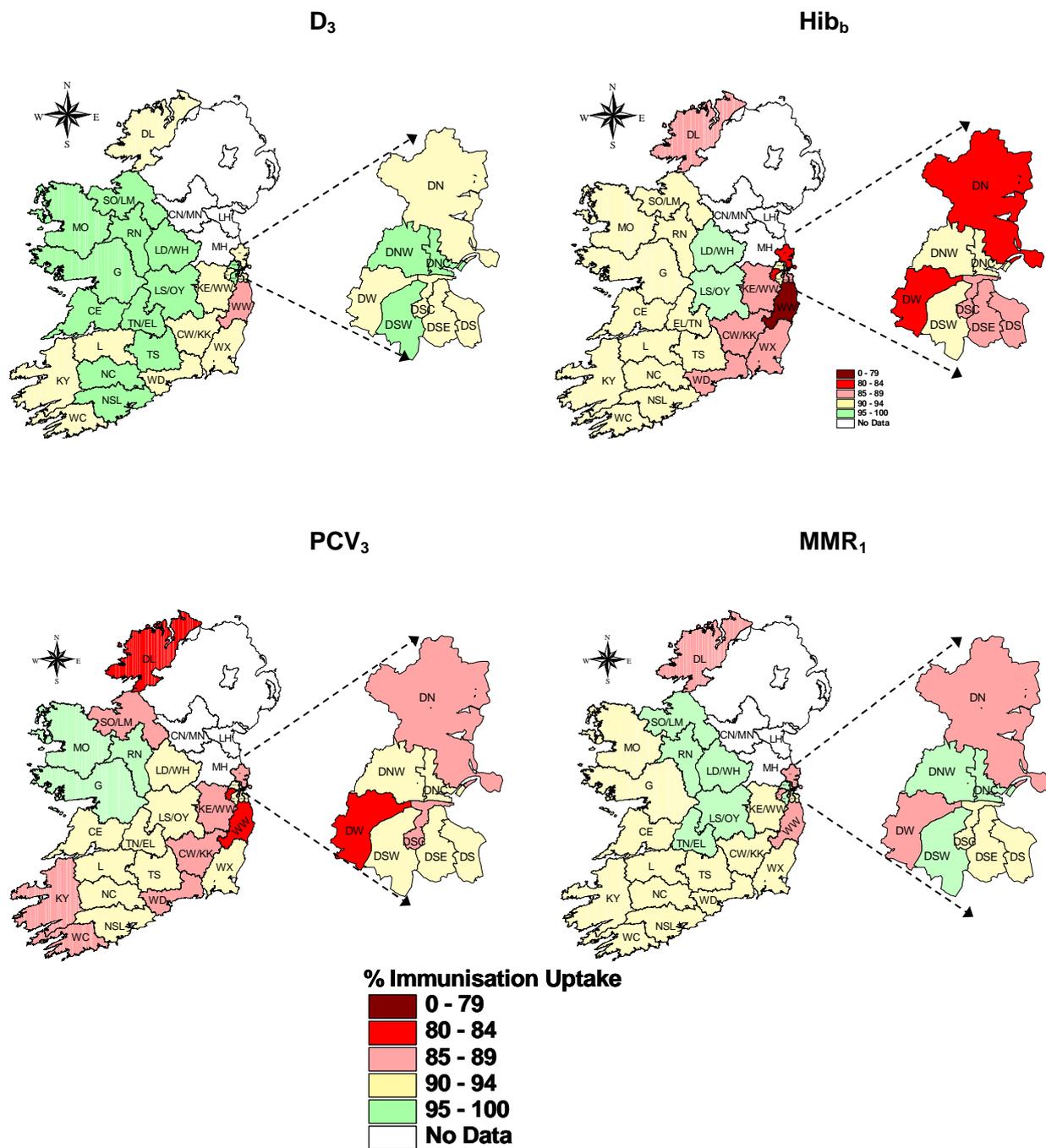


Note x-axis starts at 60%.

The caveats to the 2017 and 2018 data are outlined in this report and are outlined for other years in the individual annual report chapters <https://www.hpsc.ie/about/hpsc/annualreports/>

**Figure 2. D<sub>3</sub>, Hib<sub>b</sub>, PCV<sub>3</sub> and MMR<sub>1</sub> immunisation uptake rates (%) in those 24 months of age in 2018 by Local Health Office (LHO) in Ireland\***

Please see the Caveats to Data section for information on data completeness and caveats



LHOs in Dublin are highlighted separately for ease of viewing  
 Please see table 4 to translate LHO abbreviations  
 Please see Caveats to Data section, in particular caveats for Hib<sub>b</sub> data

## Further information available on HPSC website

On the HPSC website under *Topics A-Z* and under the heading *immunisation uptake statistics* further data are available. Included on the website are the immunisation reports for Quarters 1 to 4 2018 and the annual LHO, CHO and national data by year are in MS Excel files labelled '*Annual vaccine uptakes at 12 months*' and '*Annual vaccine uptakes at 24 months*'.

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## Report prepared by:

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**Table 4. Local Health Office (LHO) abbreviations used in this chapter**

Local Health Office Abbreviations	Local Health Office
CE	Clare
CN/MN	Cavan/Monaghan
CW/KK	Carlow/Kilkenny
DL	Donegal
DN	Dublin North
DNC	Dublin North Central
DNW	Dublin North West
DS	Dublin South
DSC	Dublin South City
DSE	Dublin South East
DSW	Dublin South West
DW	Dublin West
G	Galway
KE/WW	Kildare/West Wicklow
KY	Kerry
L	Limerick
LD/WD	Longford/Westmeath
LH	Louth
LS/OY	Laois/Offaly
MH	Meath
MO	Mayo
NC	North Cork
NSL	North South Lee
RN	Roscommon
SO/LM	Sligo/Leitrim
TN/EL	Tipperary North /East Limerick
TS	South Tipperary
WC	West Cork
WD	Waterford
WX	Wexford
WW	Wicklow

While North Lee and South Lee are two separate LHOs their combined immunisation uptake data are reported here

## Appendix 1. Measures of vaccine coverage requested in 2018

<b>12 MONTHS</b>
BCG- one dose of BCG at birth
D3 - three doses of vaccine against diphtheria before their first birthday
HepB3- three doses of vaccine against hepatitis B before their first birthday
Hib3- three doses of vaccine against <i>Haemophilus influenzae</i> type b before their first birthday
MenC1- one dose of vaccine against meningococcal group C before their first birthday
MenB2- two doses of vaccine against meningococcal group B before their first birthday
P3- three doses of vaccine against pertussis before their first birthday
PCV2- two doses of pneumococcal conjugate vaccine before their first birthday
Polio3- three doses of vaccine against polio before their first birthday
Rota2-two doses of vaccine against rotavirus before 8 months and 0 days
T3- three doses of vaccine against tetanus before their first birthday
No. eligible children = No. children born + No. moved in - (No. deceased + No. moved out)
Number of eligible children is the number of eligible children reaching their 1st birthday during the quarter specified.
% immunised = (No. immunised /No. eligible children) x 100
<b>24 months</b>
D <sub>3</sub> - three doses of vaccine against diphtheria before their 2nd birthday
HepB <sub>3</sub> - three doses of vaccine against hepatitis B before their 2nd birthday
Hib <sub>3</sub> - three doses of vaccine against <i>Haemophilus influenzae</i> type b before their 2nd birthday
Hib <sub>4</sub> - four doses of vaccine against <i>Haemophilus influenzae</i> type b (with the first three doses given before 1 <sup>st</sup> birthday and the 4 <sup>th</sup> dose given on or after first birthday and before 2 <sup>nd</sup> birthday). Requested from Q4 2018
Hib <sub>b</sub> -one booster dose of vaccine against <i>Haemophilus influenzae</i> type b on or after 12 months of age and before their 2nd birthday
MenC <sub>2</sub> - two doses of vaccine against meningococcal group C before their 2nd birthday and MenC <sub>2</sub> at 24 months from Q3 2017 is two doses of MenC with the first dose given before 1 <sup>st</sup> birthday and the 2 <sup>nd</sup> dose given on or after first birthday and before 2 <sup>nd</sup> birthday
MenC <sub>b</sub> -one dose of vaccine against meningococcal group C on or after 12 months of age and before their 2nd birthday
MenB <sub>3</sub> - three doses of vaccine against meningococcal group B (with the first two doses given before 1 <sup>st</sup> birthday and the 3 <sup>rd</sup> dose given on or after first birthday and before 2 <sup>nd</sup> birthday). Requested from Q4 2018
MenB <sub>complete</sub> -those at 24 months of age who have received three doses of vaccine against meningococcal group B as defined above and those who have received two doses of MenB on or after 10 months of age and before 2nd birthday with doses 2 months apart. Requested from Q4 2018
MMR <sub>1</sub> - one dose of MMR on or after 1st birthday (excludes MMR given before 1st birthday) and before their 2nd birthday
P <sub>3</sub> - three doses of vaccine against pertussis before their 2nd birthday
PCV <sub>3</sub> - three doses of pneumococcal conjugate vaccine before their 2nd birthday and since Q4 2018 defined as three doses of PCV with the first two doses given before 1 <sup>st</sup> birthday and the 3 <sup>rd</sup> dose given on or after 1 <sup>st</sup> birthday and before 2 <sup>nd</sup> birthday
PCV <sub>b</sub> -one dose of pneumococcal conjugate vaccine on or after 12 months of age and before their 2nd birthday
Polio <sub>3</sub> - three doses of vaccine against polio before their 2nd birthday
Rota <sub>2</sub> -two doses of vaccine against rotavirus before 8 months and 0 days
T <sub>3</sub> - three doses of vaccine against tetanus before their 2nd birthday
No. eligible children = No. children born + No. moved in - (No. deceased + No. moved out)
Number of eligible children is the number of eligible children reaching their 2nd birthday during the quarter specified.
% immunised = (No. immunised /No. eligible children) x 100