

Immunisation Update

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www.immunisation.ie



Learning Objectives

- Principles of immunisation
- Childhood immunisation schedule in Ireland
- Some Individual Vaccines
- Uptake Rates
- NEW Schedule
- Resources



Why Immunise?

- Immunisation is one of the most effective and safest of all health interventions
- Immunisation has saved more lives than any other public health intervention apart from the provision of clean water



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What is Immunisation?

- The process of artificially inducing immunity or protection from disease
- **Active**
 - Administration of a vaccine or toxoid in order to stimulate antibody production or other immune responses e.g. Inactivated (Hib), Attenuated live (MMR, BCG) or toxoid (Tetanus, Diphtheria)
- **Passive**
 - The administration of preformed antibodies in order to provide temporary immunity e.g. HNIG or specific immunoglobulins



Aim of Immunisation

- To reduce the incidence of or to eliminate a particular disease
- **Direct and indirect effect**
 - “Herd Immunity”-indirect effect-reduction in the incidence of disease in population
 - Consider individual risk of vaccine versus society benefit of herd immunity



Live vaccines

- Attenuated (weakened) viruses /bacteria
- Produces long lasting immune response after one or two doses

e.g. BCG/ MMR/ Varicella/ Yellow fever



Inactivated (killed) vaccines and toxoids

- Cannot cause disease they are designed to protect against
- Two or more doses plus booster doses usually required

e.g. Influenza/Diphtheria/Tetanus/
Hepatitis B



General Contraindications to Immunisation

- Anaphylaxis to a previous dose of any vaccine or one of its constituents or a constituent of the syringe, syringe cap or vial (e.g. latex anaphylaxis)
- Live vaccines and immunosuppression e.g. MMR, BCG
- Live vaccines and pregnancy

- Postpone immunisation if acute severe febrile illness



Conditions which are not Contraindications

- FHx of adverse reactions
- Minor infections
- FHx of convulsions
- Hx of pertussis, measles, rubella or mumps in the absence of proof of immunity
- Prematurity or LBW
- Stable neurological conditions e.g. CP
- Contact with an infectious disease
- Asthma, eczema, hayfever, migraine, food allergy
- Therapy with antibiotics
- Child's mother pregnant
- Child's being breastfed
- Hx neonatal jaundice
- Child over recommended age
- Low dose methotrexate, azathioprine or 6-mercaptopurine
- Recent/imminent surgery
- Corticosteroid therapy
- Non anaphylactic allergy



Precautions

- **All vaccines** → Moderate/severe illness-defer until recovery unless the benefits outweigh the risks
- Stop topical immunomodulators 28 days before live vaccines and do not restart for 28 days.
No issue with inactivated vaccines
- Live viral vaccines and immunoglobulins - Immune response inhibited. Leave interval



Immunisation Successes

- Meningococcal C Campaign (Reduced incidence of cases by 90% since October 2000)
- Eradication of smallpox
- ? Near eradication of poliomyelitis
- Control of others, e.g. Hib, diphtheria, pertussis??

- Successful immunisation - more attention to vaccine related illness



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Current Primary Childhood Immunisation Schedule

- **Birth-1month** BCG
- **2 months** 6 in 1 + PCV
- **4 months** 6 in 1 + Men C
- **6 months** 6 in 1 + Men C + PCV
- **12 months** MMR + PCV
- **13 Months** Hib + Men C

PCV 7 introduced in September 2008

PCV13 introduced in December 2010

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Poliomyelitis



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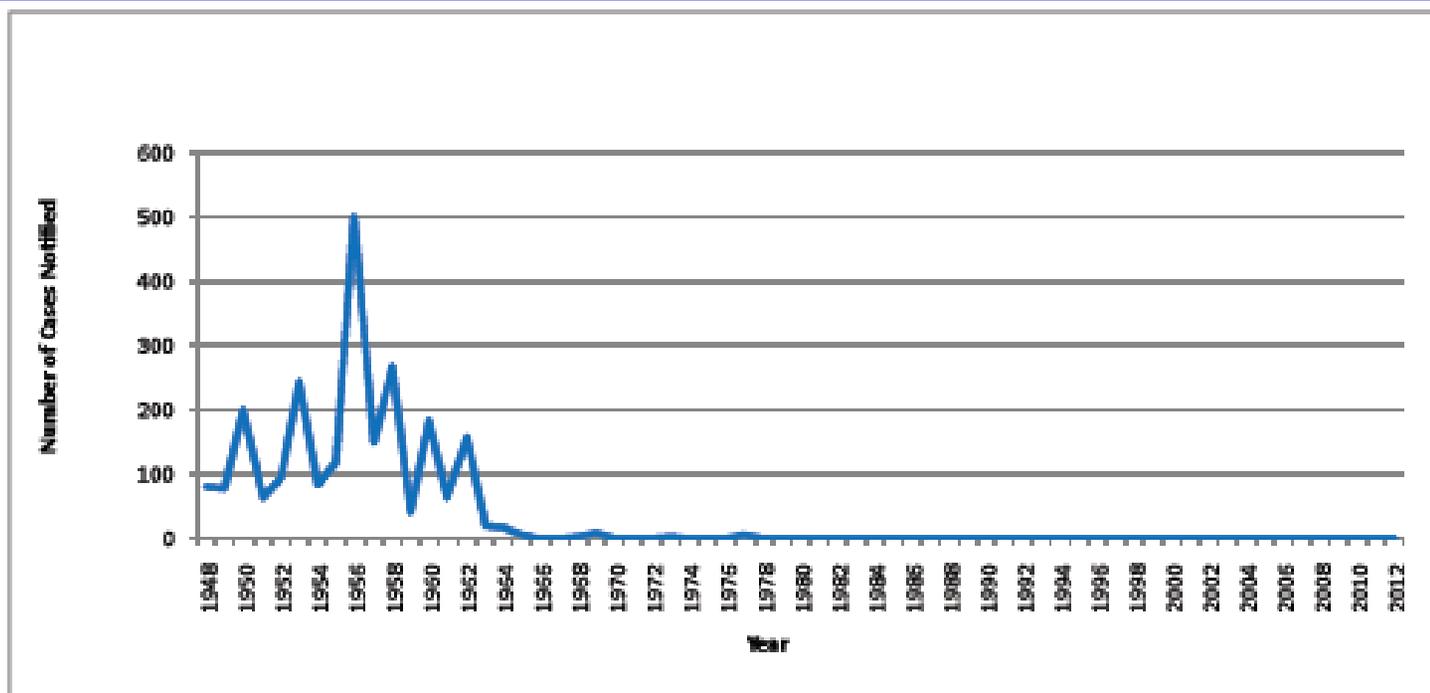
Poliomyelitis

- Caused by polio virus
- Incubation period – 3-21 days
- Mode of Transmission – Oro-faecal
- Clinical Description
 - Acute illness
 - Invades nervous tissues – paralysis
 - Highly infectious
- Mainly affects children under 5



www.immunisation.ie

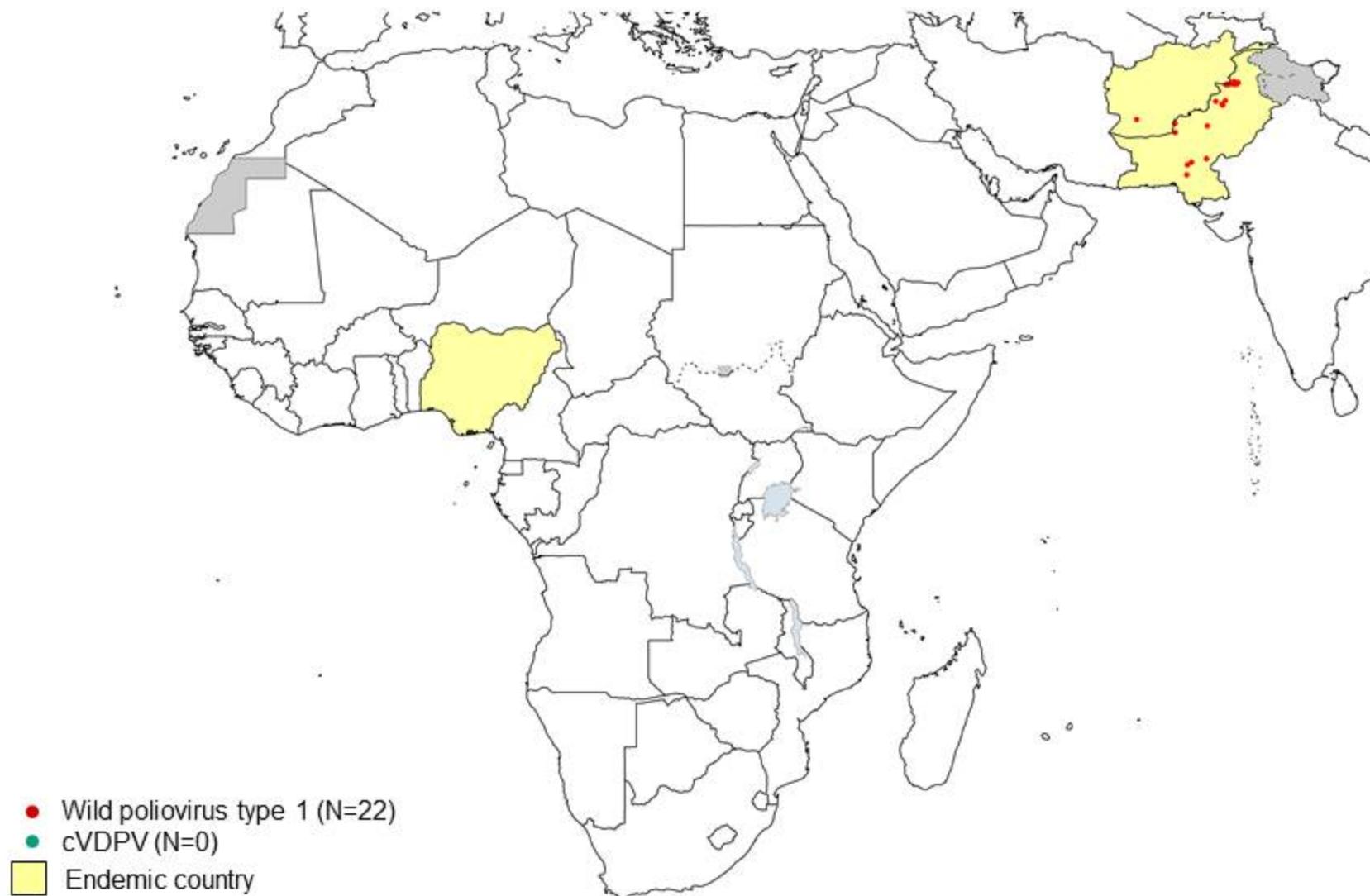
Polio cases notified 1948-2014



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Wild Poliovirus & cVDPV¹ Cases², 2015 01 January – 21 April



¹cVDPV is associated with ≥ 2 AFP cases or non-household contacts. VDPV2 cases with ≥ 6 (≥ 10 for type1) nucleotides difference from Sabin in VP1 are reported here. ²Excludes viruses detected from environmental surveillance.

Data in WHO HQ as of 21 April 2015

Poliomyelitis vaccines

- 2 months 6 in 1 + PCV
 - 4 months 6 in 1 + Men C
 - 6 months 6 in 1 + Men C + PCV
 - 4-5 years DTaP/IPV
-
- ***Fully immunised persons at increased risk of exposure***

Fully vaccinated persons aged 10 years and over at increased risk of exposure to wild poliovirus should be given a single dose of Tdap/IPV



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Vaccination

- **Contraindications**
 - Anaphylaxis to any of the vaccine components
- **Precautions**
 - Acute febrile illness – defer
 - Arthrus-type reaction. Should not receive further routine or emergency booster doses more frequently than every 10 years
- **Adverse reactions**
 - Local reactions
 - General

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Pertussis



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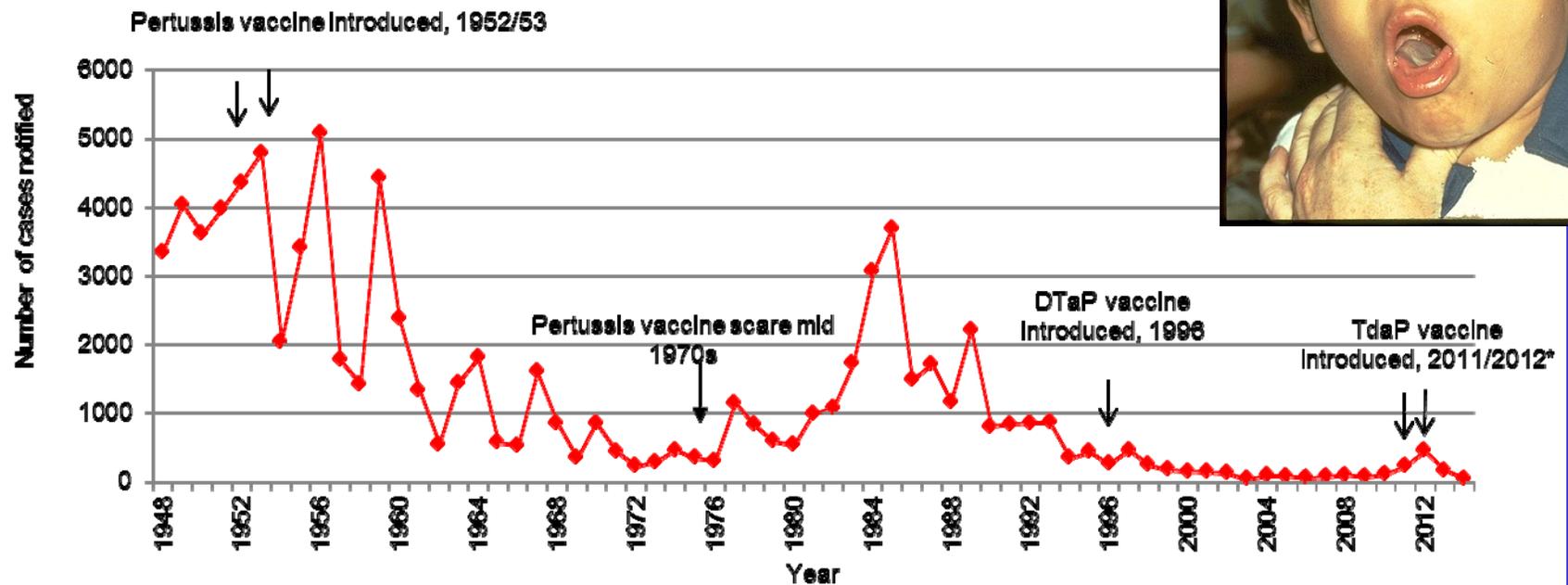
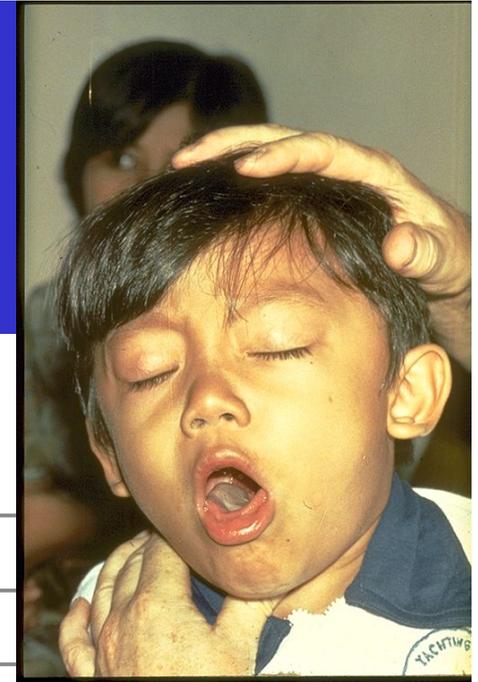


Pertussis (Whooping Cough)

- Caused by Bordetella Pertussis
- Incubation period 6-20 days (typically 5-10 days)
- Mode of Transmission
 - Respiratory Droplets
- Clinical description
 - Cough
- Most dangerous in children <1
- Infectious – baby
- Can last for months



Pertussis



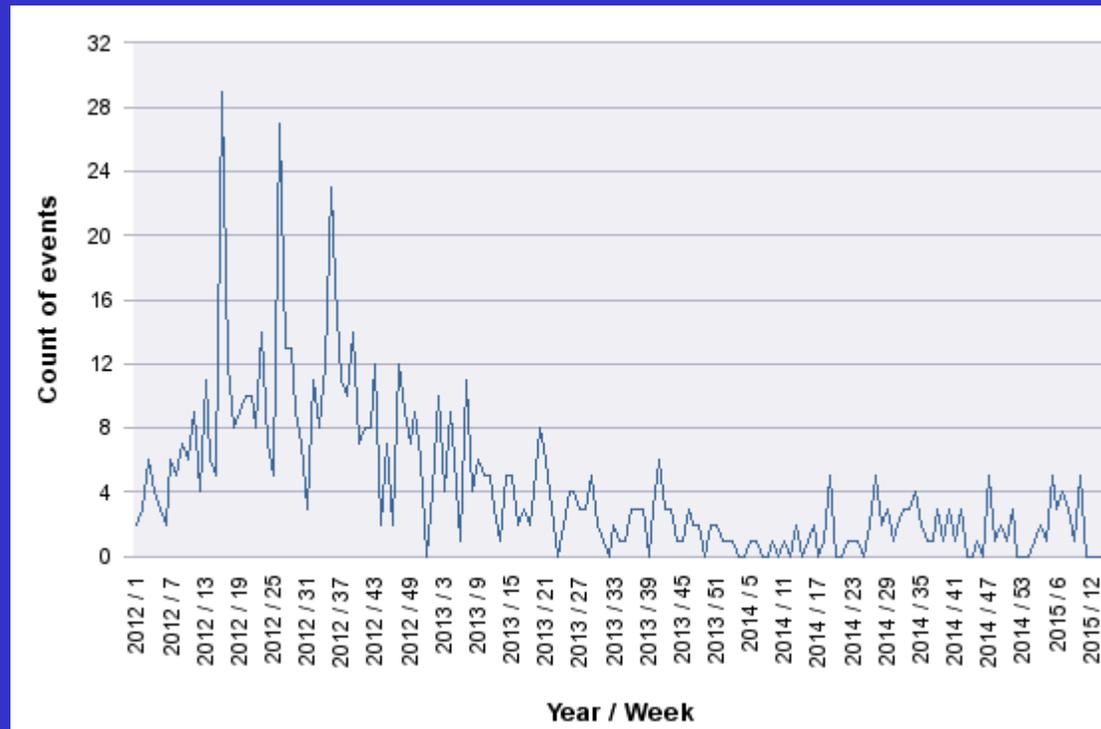
*An adolescent pertussis booster was introduced into the school programme (in 19 LHOs) in 2011 and to all schools in 2012. In August 2012, an additional pertussis booster was recommended for health care workers and pregnant women. Data were extracted from CIDR 11/09/2014. 2014 data are incomplete and provisional.



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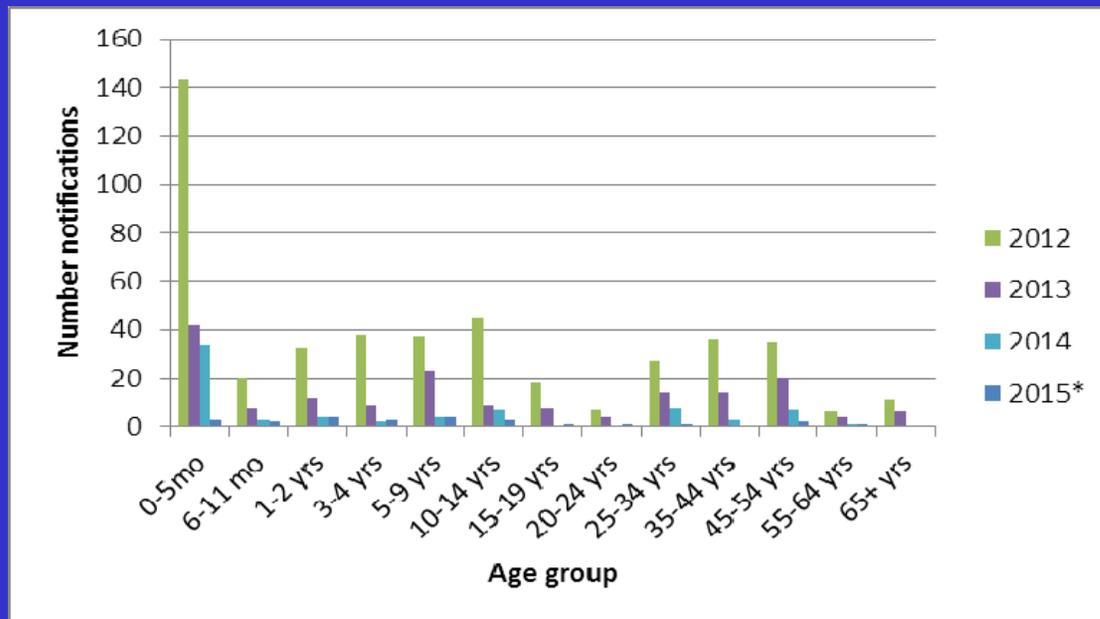
Pertussis Notifications 2012-2015



Courtesy of HPSC



Pertussis notifications by age group and year 2012-2015



Courtesy of HPSC



Pertussis Vaccines

- Primary – as part of 6 in 1 at 2,4,6, months
- Booster aged 4-5 -as part of a 4 in 1 vaccine (DTaP/IPV)
- Booster aged 11-14 years as part of a Tdap vaccine

- HCW – additional booster doses recommended for those in contact with young children (neonatal, paediatrics, delivery), antenatal and postnatal pregnant women, and immunocompromised (oncology, haematology), renal dialysis and ICU staff, general practice staff

- Pregnant Women – 27-36 weeks gestation – each pregnancy

- Adults – every 10 years if they want to protect themselves and young children



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Pertussis Vaccine

- Acellular vaccine less adverse reactions than whole cell vaccine
- **Contra-indication**
 - Anaphylaxis to any of the vaccine components
- **Precautions**
 - Acute severe febrile illness; defer until recovery



MMR



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Why is MMR so Important?

Protects children against contracting measles, mumps and rubella

- Individual protection
- Population protection
- Potential eradication of the diseases

Two doses of MMR

- Immunity against measles in 99% of vaccinees
- Immunity against mumps in 88% of vaccinees
- Immunity against rubella in 95% of vaccinees



Measles USA

Measles Cases and Outbreaks

January 1 to April 3, 2015*

159

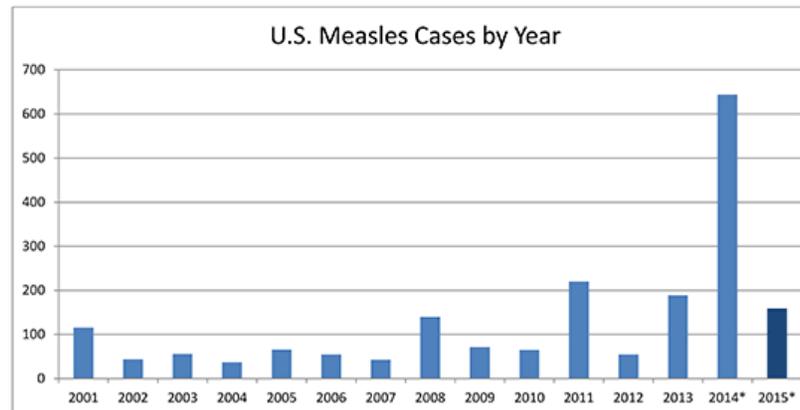
Cases

reported in 18 states and the District of Columbia: Arizona, California, Colorado, Delaware, Georgia, Illinois, Michigan, Minnesota, Nebraska, New Jersey, New York, Nevada, Oklahoma, Pennsylvania, South Dakota, Texas, Utah, Washington

4

Outbreaks

representing 91% of reported cases this year



*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases

Majority unvaccinated and many imported



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Measles USA 2015

117 cases linked to measles outbreak

74% of all cases reported in 2015

Index case

- unvaccinated 11 year old
- rash onset December 2014

24 million visitors annually



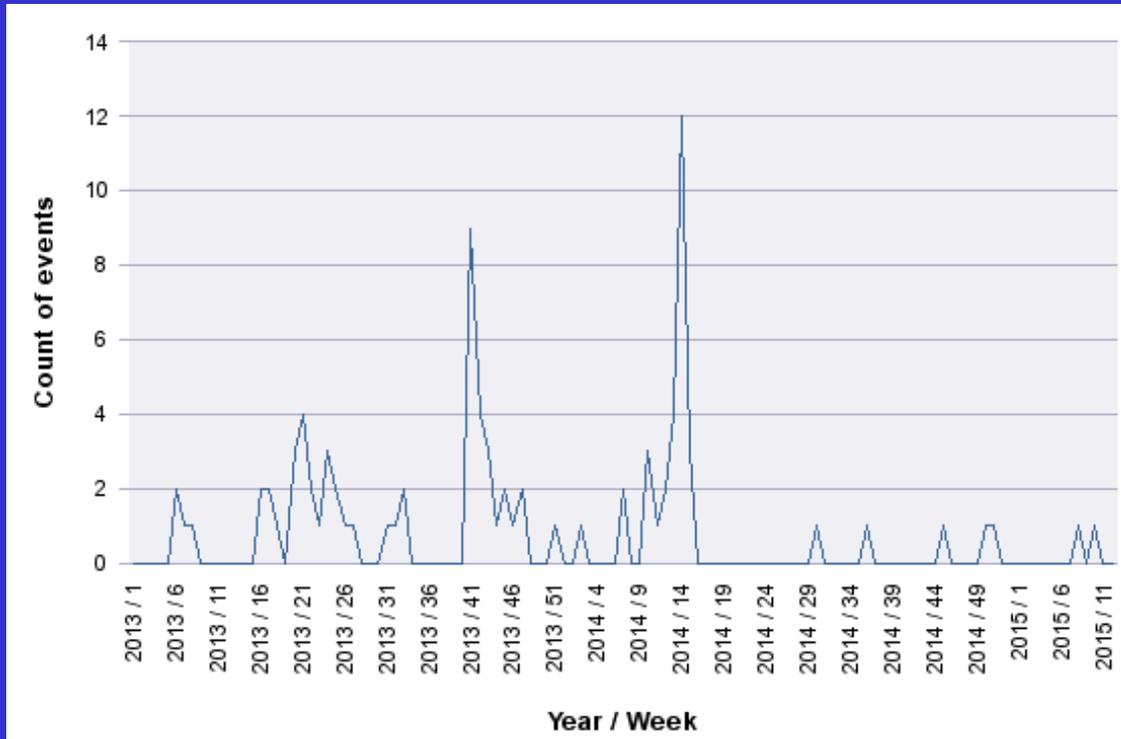
Measles EU

March 2014 –February 2015

- 3760 cases reported
- 30 countries
- Italy, Germany and France
- Majority of cases not vaccinated (75%)
- 6 cases of encephalitis



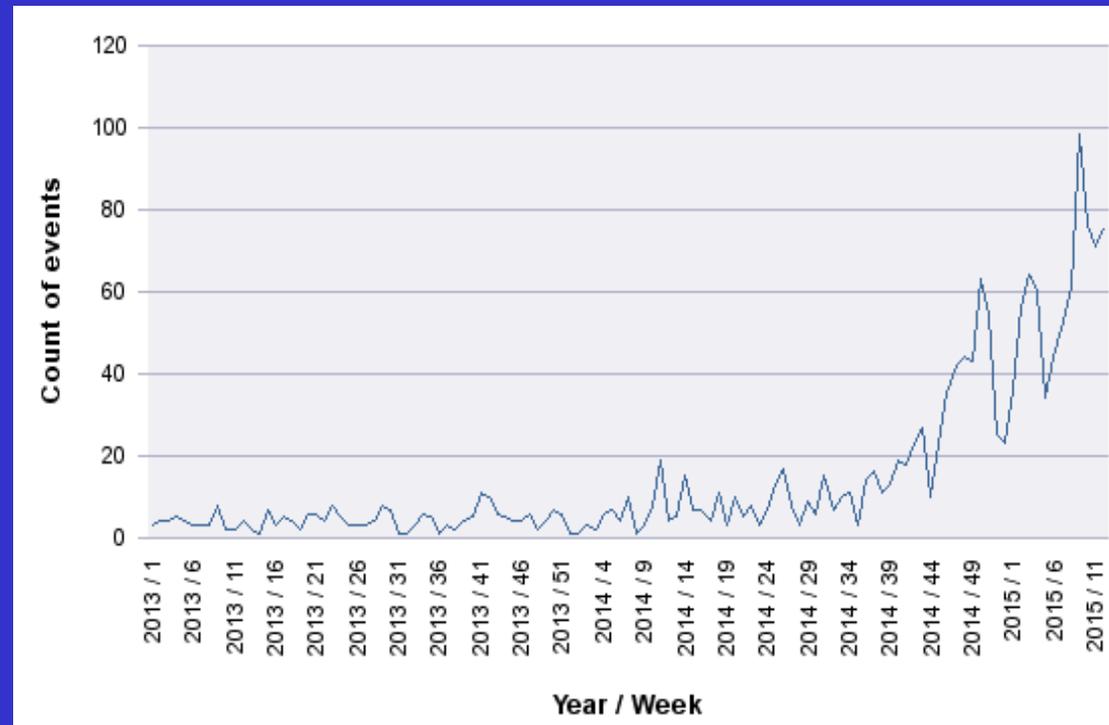
Measles Events Ireland 2013 -2015



Courtesy of HPSC



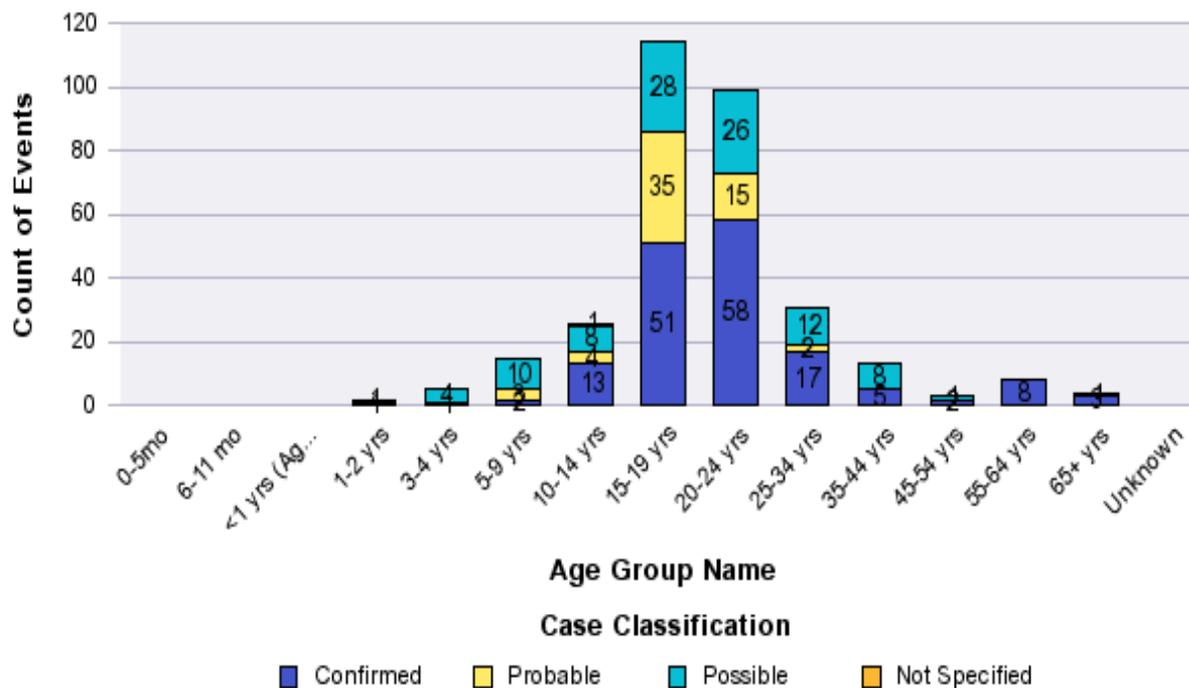
Mumps Events Ireland 2013-2015



Courtesy of HPSC



Mumps Events by Age Group and Case Classification



Courtesy of HPSC



Schedule for MMR

- First Dose → 12 months, given with PCV
- Second Dose → 4-5 years as part of school entry vaccination
- Live virus vaccine with immunity to
 - Measles → 6-11 days
 - Rubella → 10-15 days
 - Mumps → 15-21 days



Measles/Mumps/Rubella

- Live vaccine-safe and effective
- In outbreak situation-MMR can be given to children at 6 months of age
- No evidence to support any link between MMR vaccine and the subsequent development of either inflammatory bowel disease or autism
- Egg allergy even anaphylaxis **IS NOT** a contraindication to MMR Vaccine.



Measles/Mumps/Rubella

- **Contraindications include:**
 - Hx of anaphylaxis to a previous dose of MMR or one of its constituents e.g Neomycin and Gelatin
 - Significantly immunocompromised persons - Untreated malignant disease and immunodeficiency states other than HIV, and those receiving immunosuppressive therapy, high dose x-ray therapy and current high-dose steroids
 - Pregnancy. Furthermore, pregnancy should be avoided for one month after MMR immunisation



Measles/Mumps/Rubella

Precautions

- Moderate/serious illness. Postpone until recovered
- Injection with other live vaccine within previous 4 weeks
- Injection of immunoglobulin, whole blood or any antibody-containing blood product within the previous 3-11 months
- Topical Tacrolimus and other immunomodulators should be deferred for 28 days before and after the administration of MMR vaccine
- Patients who develop thrombocytopenia within six weeks of 1st dose of MMR should undergo serological testing to decide whether 2nd dose is necessary. 2nd dose recommended if not fully immune

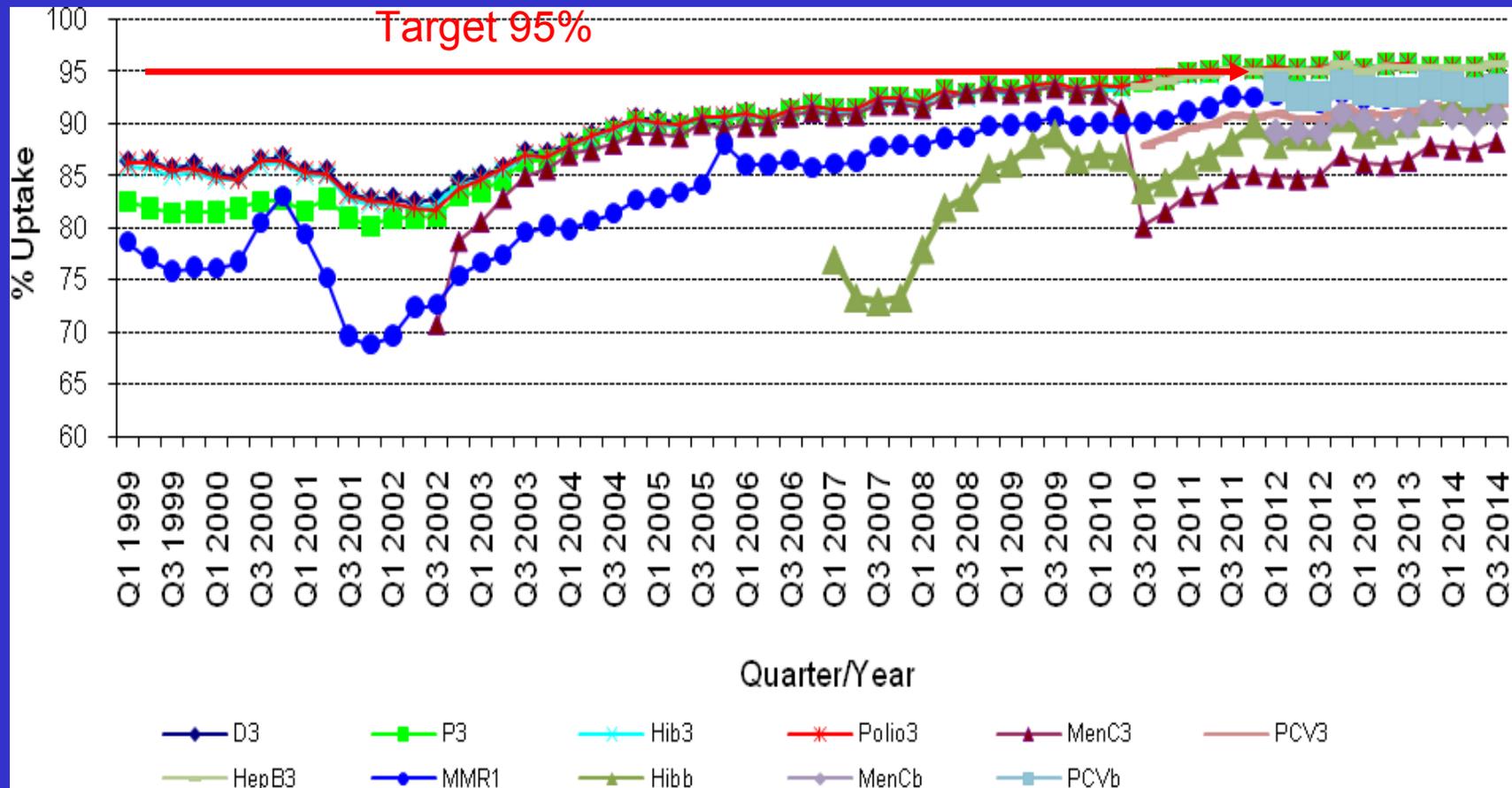


Primary Immunisation Uptake Rates



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Vaccine uptake rate at 24 months 1999-2014

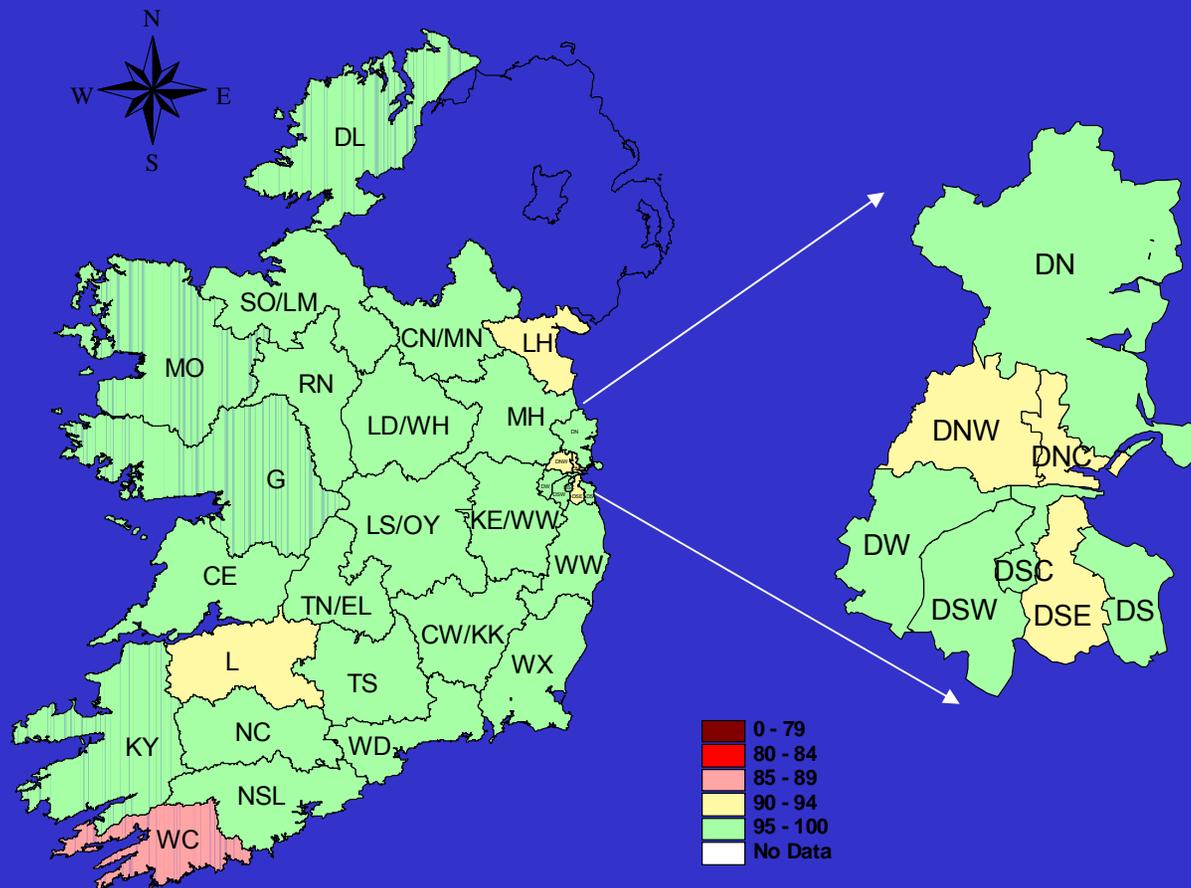


Source: HPSC

www.immunisation.ie



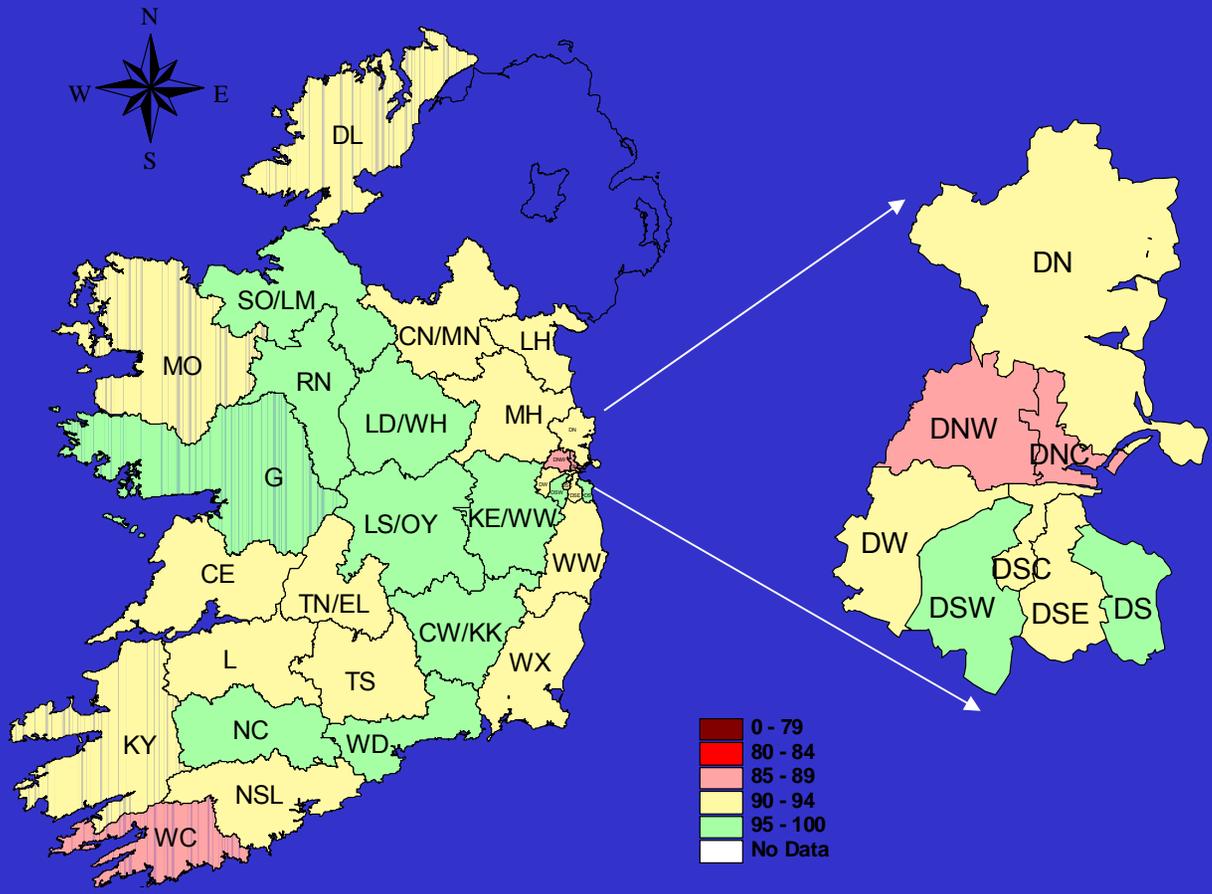
Quarter 3 2014 D3 immunisation uptake rates (%) by LHO, in those 24 months of age in Ireland and Dublin (source HPSC)



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Quarter 3 2014 MMR immunisation uptake rates (%) by LHO, in those 24 months of age in Ireland and Dublin (source HPSC)



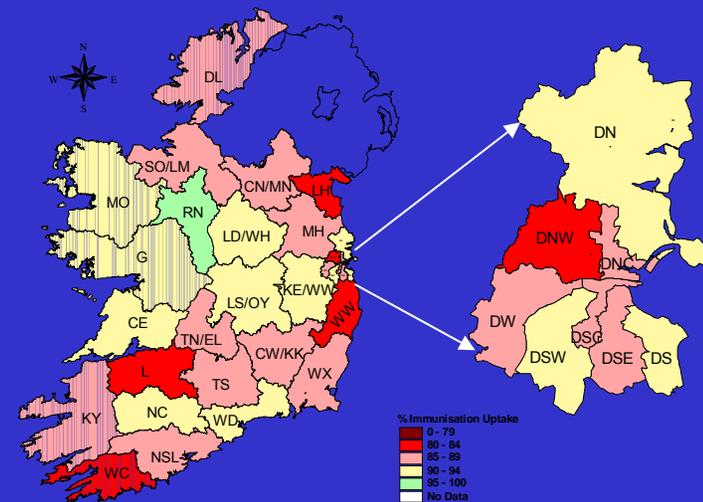
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Decline in vaccine uptakes

Quarter 3 2014 Men C₃ immunisation uptake rates (%) by LHO, in those 24 months of age in Ireland and Dublin (source HPSC)

	Q1 2010	Q3 2010	Q3 2014
Men C ₃	93%	80%	88%
PCV ₃	-	88%	92%
Hib _b (booster dose)	89%	84%	92%



Decline in vaccine uptakes

Actions

- Highlight 5 visits at every opportunity
- Give an appointment for next visit
- Send a text reminder before appointment
- Follow up defaulters as soon as possible
- Send vaccine returns on time
- Defaulters need appropriate vaccines even if they are over the recommended age

What common reactions can my child get after being vaccinated and what should I do?

Primary Childhood Immunisation Schedule

AGE	WHERE	VACCINATION
At Birth	Hospital or HSE Clinic	BCG
2 Months	GP	6 in 1 + PCV
4 Months	GP	6 in 1 + Men C
	GP	6 in 1 + PCV + Men C
	GP	MMR + PCV
	GP	Men C + Hib

appointment for your child's next visit?

Next appointment

Remember, it takes **5 GP visits** to fully vaccinate your baby.



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New Primary Childhood Immunisation Schedule for Babies born on or after 1st July 2015

Age	Immunisations	Comment
Birth	BCG	1 injection
2 months	6 in 1 + PCV	2 injections
4 months	6 in 1 + MenC	2 injections
6 months	6 in 1 + PCV	2 injections
12 months	MMR + PCV	2 injections
13 months	MenC + Hib	2 injections



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New PCI schedule

July 1st 2015

NEW

- Guidelines for Vaccinations in General Practice
- Frequently asked questions
- Information booklet – Your Child's Immunisation
- Passports
- Posters
- Fridge magnets

To be delivered to all GPs in June 2015



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NIAC recommendations

	Recommendation	Implementation
MenC* (Aug 2014)	Schedule change from 4,6 and 13 months to 4,13 months	July 1 st 2015
	Introduction of adolescent dose at 12- 13 years	2014/2015
Rotavirus (2013)	Oral vaccine recommended 2 -3 doses at 2, 4 and 6 months	??
MenB (Jan 2015)	Introduction to PCI schedule	??

* MenC

- Evidence 1 dose is sufficient in infants
- Same schedule introduced in the UK in 2013

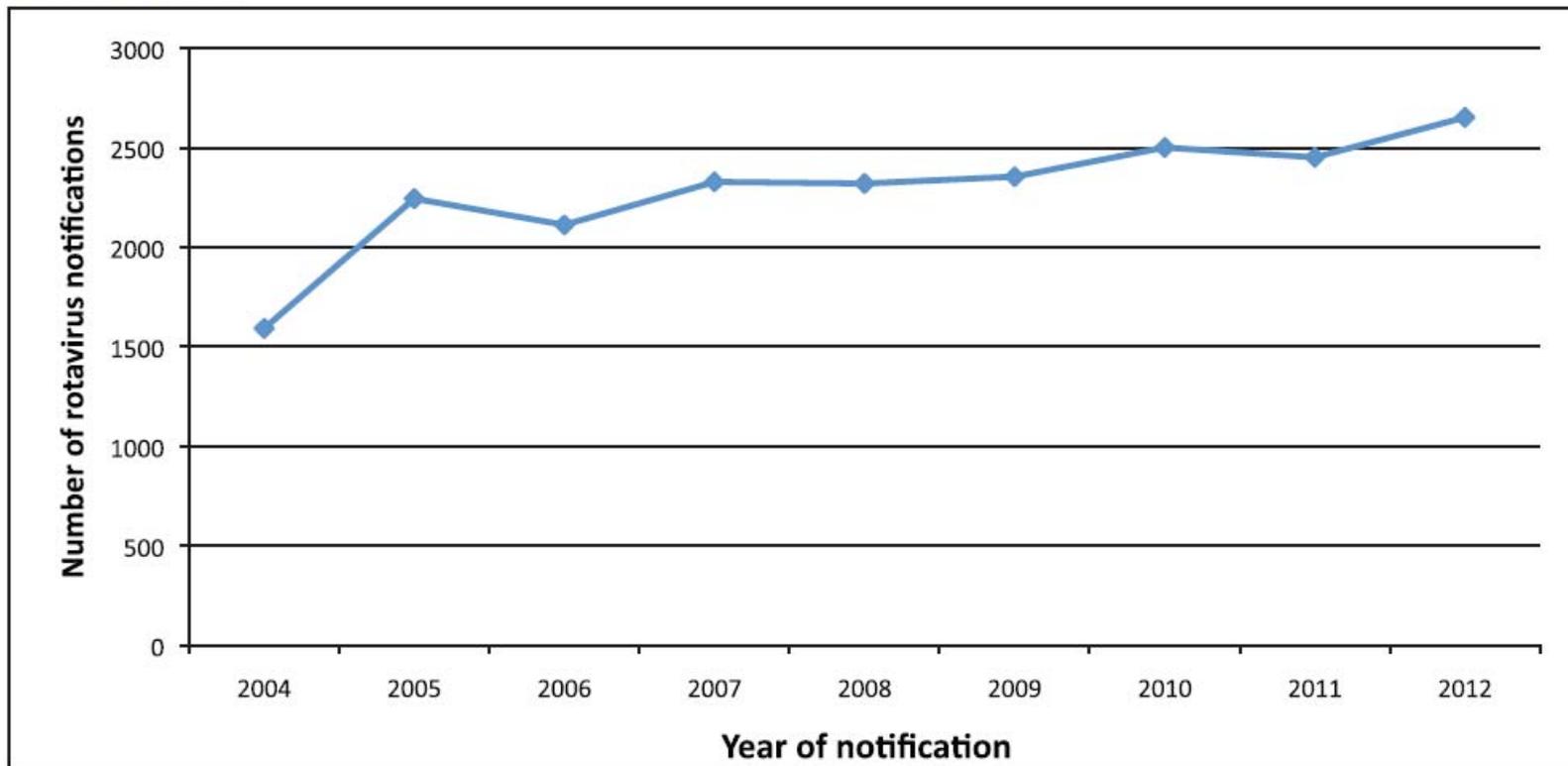
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Rotavirus - Ireland

Figure 19.1. Number of cases of rotavirus by year, 2004 to 2012

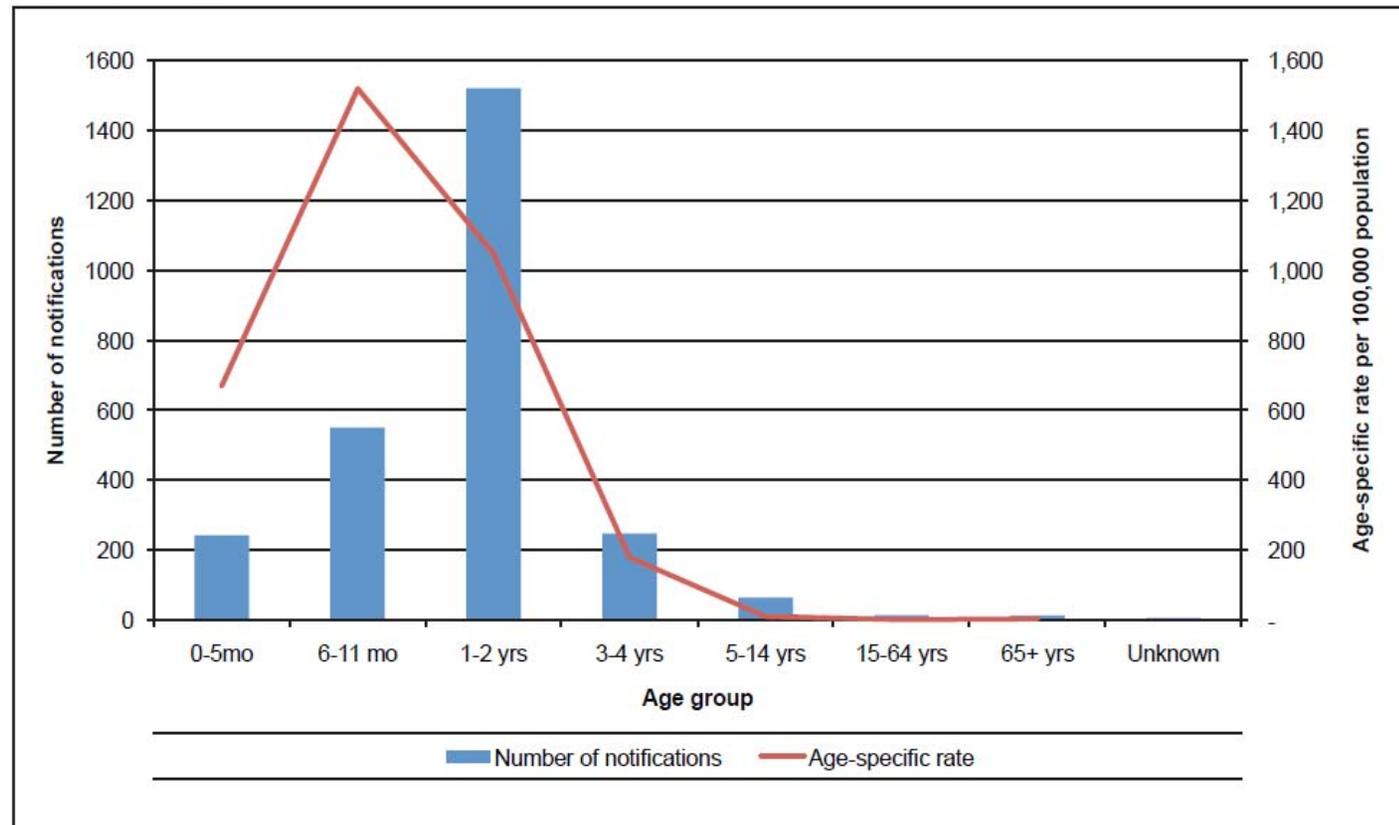
(Source:HPSC)



Rotavirus - Ireland

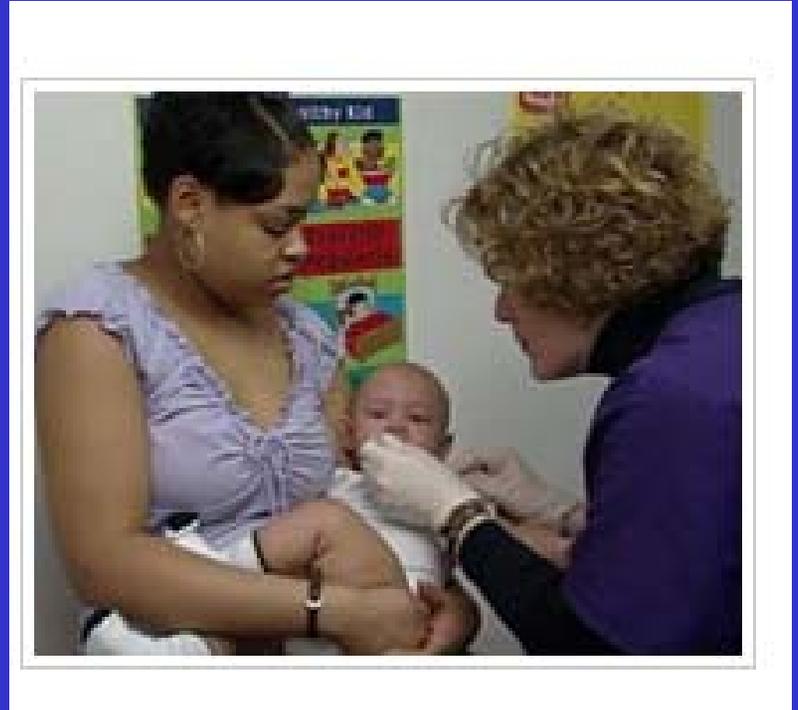
Figure 19.2. Number of Rotavirus Cases and Age specific rate by age group 2012

(Source:HPSC)



Rotavirus vaccine

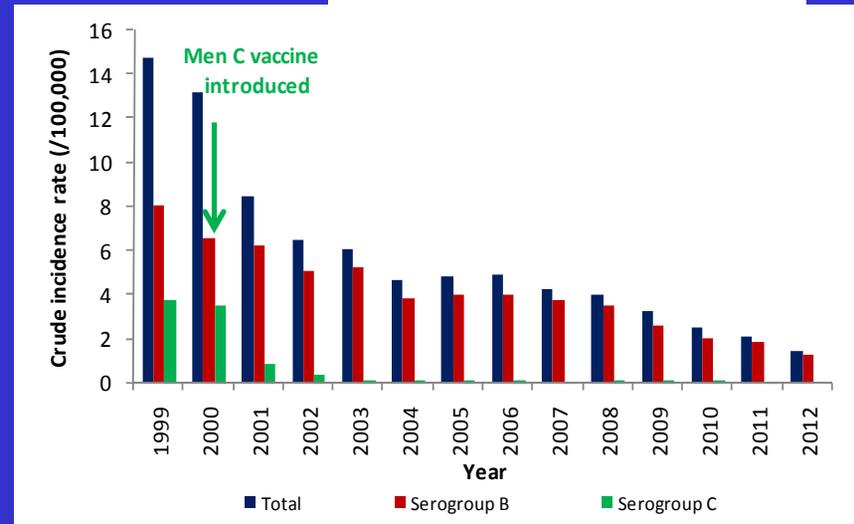
- Recommended by WHO
- Implemented in USA, UK + 8 other EU countries
- Recommended by NIAC
- Live oral vaccine
- 2-3 doses at 2,4 or 2,4, 6 months
- Can be given at same time as other vaccines
- All doses by 8 months of age
- Small increase in intussusception (benefits >>>risks)
- Recent European study
 - vaccine effectiveness 68% to 98%
 - 65% to 84% reduction in rotavirus hospitalisations



New vaccines

TD calls for
brain bug
vaccine deal

- Meningococcal Group B
 - licensed
 - recommended for contacts and at risk groups
 - NIAC recommendation for universal vaccination ?? date for implementation



Call for meningitis vaccine

By **Kevin Keane**

HEALTH campaigners have called on the Department of Health to follow the lead of authorities in Britain and the North by making a new vaccine

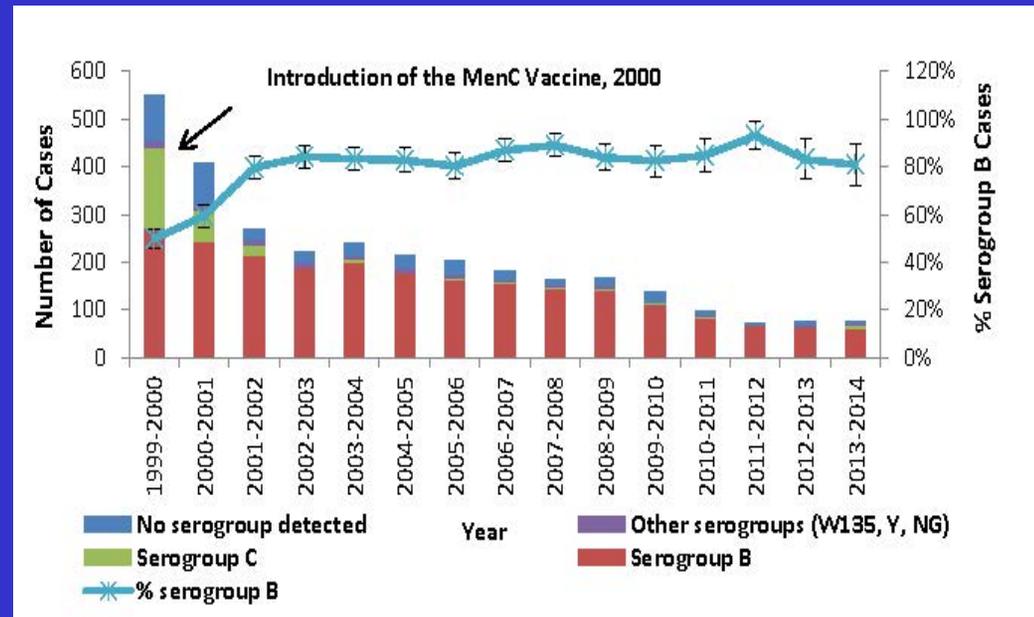
mentation was for the introduction of the vaccine if a cost-effective agreement can be reached with the manufacturer.

Dependent on deal with drug's maker

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No. of IMD cases notified in Ireland by serogroup by year - HPSC



New vaccines

- Meningococcal Group B

- can be given to healthy children
- dosage schedule and further details in Immunisation Guidelines

<http://www.hse.ie/eng/health/immunisation/hcpinfo/guidelines/chapter13.pdf>

- due to an increased risk of fever, local reactions, change in eating habits and irritability when MenB vaccine is given with other vaccines it may be preferable to administer this vaccine with an interval of 1 week before or after other vaccines.
- consider prophylactic paracetamol at the time or shortly after vaccine for children under 2 years
- Vaccine supply and more details from Allphar 01 4688456.



HPV 9 vaccine

- 5 additional oncogenic HPV types (31,33,45,52,58)
- 97% effective in preventing high-grade lesions of the cervix, vagina and vulva
- Generally well tolerated
- Expect vaccine to protect against infection and diseases caused by 9 HPV types
(80-90% of the cancers, high grade lesions and genital warts caused by HPV)
- Licensed in US (3 dose schedule)
- Due to be licensed in EU in 2015



Adolescent MenC booster vaccine

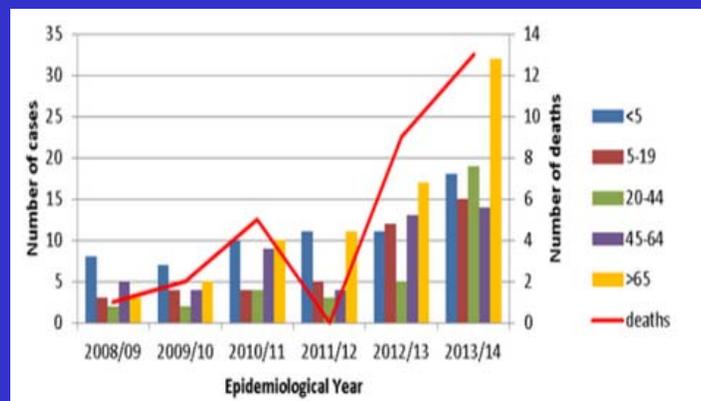
UK

- MenC adolescent booster introduced in 2013
- Cases of Men W increased from 22 cases in 2009 to 117 in 2014
- Not travel related

March 2015

- JCVI recommended Men ACWY for 14-18 year olds (routine + catch up)
- Likely to be introduced in 2015/2016

- No increase in Men W cases in Ireland



Number of laboratory confirmed cases of MenW disease and associated deaths by age group and year of diagnosis over six epidemiological years in England and Wales.

<http://cid.oxfordjournals.org/content/early/2014/1/10/cid.ciu881.abstract>

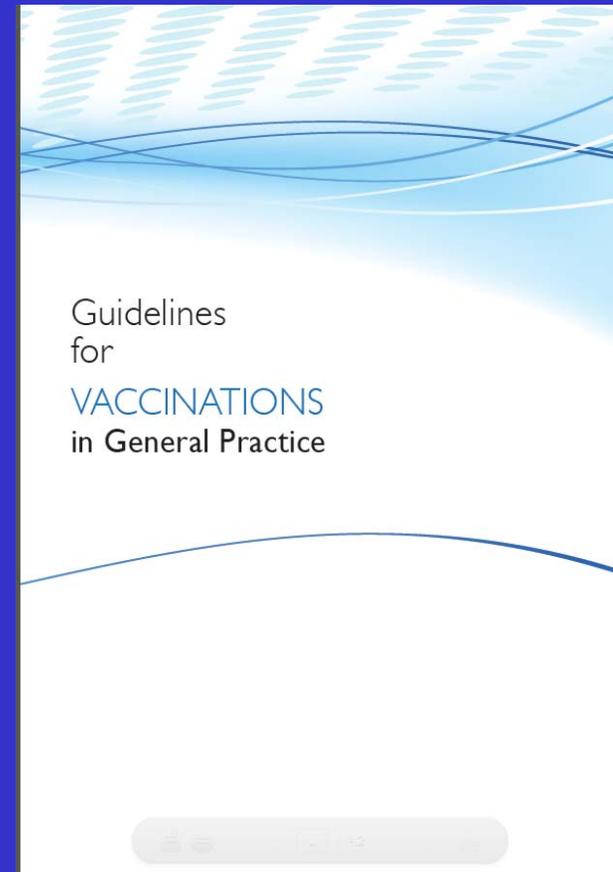


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GP Guidelines

- Roles and responsibilities
- Procedures
- Adverse events
- Common issue
- Cold chain maintenance

- Currently being updated



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More information

The screenshot shows the HSE National Immunisation Office Website. At the top, there is a search bar and navigation tabs for Health Services, Health A-Z, Staff & Careers, and About Us. The main content area features a welcome message, a search bar, and several sections: 'Focus On' with 'Vaccines & Pregnancy', 'How do I?' with 'Check vaccine records', 'Make an appointment', and 'Order information materials'; 'Flu Campaign 2014/2015'; 'School Programme'; 'Baby and Childhood Immunisation'; and 'Immunisation Guidelines'. A large red 'X' is overlaid on the 'Immunisation Guidelines' section.

The image shows the cover of the 'Immunisation Guidelines for Ireland 2013 Edition' published by the National Immunisation Advisory Committee. A large red 'X' is drawn over the cover, and the text 'online only' is written in red across the top. The cover also features the Royal College of Physicians logo.

The image shows the cover of the 'National Immunisation News' newsletter for February 2015. It includes a table of contents, a section on 'Changes to the Primary Childhood Immunisation Programme', and a table comparing the 'Current Schedule' and 'New Schedule' for babies born up to 30 June 2015 versus babies born on or after 1 July 2015. The newsletter is published by the HSE National Immunisation Office.



National Immunisation News

The newsletter of the HSE National Immunisation Office

CONTENTS

- Changes to the PCI programme
- Uptake statistics
- Pneumovax name change
- Flu season
- Common queries
- School Immunisation System
- Ordering online
- Cold chain breach
- Vaccine list
- Preparing vaccines
- Contact information

Changes to the Primary Childhood Immunisation Programme

The National Immunisation Advisory Committee (NIAC) has recommended changing the meningococcal (MenC) immunisation schedule in the primary childhood programme from three doses at 4, 6 and 13 months to two doses at 4 and 13 months because of evidence that a single dose of MenC vaccine provides protection for the first year of life.

This new primary childhood immunisation schedule will be introduced for all babies born on or after July 1st 2015. Further details and new information materials for the Primary Childhood Immunisation Programme are being developed.

Primary Childhood Immunisation Schedule

Date of birth	CURRENT SCHEDULE		NEW SCHEDULE	
	Babies born up to 30 June 2015		Babies born on or after 1 July 2015	
Age	Immunisations	Comment	Immunisations	Comment
2 months	6 in 1 + PCV	2 injections	6 in 1 + PCV	2 injections
4 months	6 in 1 + MenC	2 injections	6 in 1 + MenC	2 injections
6 months	6 in 1 + PCV + MenC	3 injections	6 in 1 + PCV	2 injections
12 months	MMR + PCV	2 injections	MMR + PCV	2 injections
13 months	MenC + Hib	2 injections	MenC + Hib	2 injections



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6 in 1 Diphtheria, Tetanus, Pertussis, Polio, Hepatitis B, Haemophilus influenzae b
 PCV Pneumococcal conjugate vaccine
 MenC Meningococcal vaccine
 MMR Measles, Mumps, Rubella
 Hib Haemophilus influenzae b



Please continue to use the current primary childhood schedule.

<http://www.hse.ie/eng/health/immunisation/hcpinfo/guidelines/immunisationguidelines.html>

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Conditions & Treatments About Health A-Z Baby and Child Health **Immunisation** Your Health and Lifestyle

Home > Immunisation

Immunisation

- Who we are
- Public Information
- Healthcare Worker Information
- Information Materials
- Glossary
- Useful Websites
- What's new
- Contact Us

Welcome to the National Immunisation Office Website Share Print

We provide trusted, up-to-date information about HSE immunisation programmes for children, adults and healthcare professionals in Ireland. Choose a section to visit below and on the left of this page or search below for what you need

Search Site:

Focus On

Flu Campaign 2014/2015
If you are in an at risk group make an appointment today to get this year's flu vaccine



Healthcare Professionals
Resources for those who give vaccines



School Programme
Information about 4 in 1 and MMR, HPV, Tdap and Meas vaccines



Baby and Childhood Immunisation
Immunisation a simple, safe, effective way of protecting babies and children



Adult vaccines
Learn about vaccines for adults including flu vaccine, pneumococcal disease and more



How do I:

- Check vaccine records
- Make an appointment
- Order information materials
- Contact the local office
- Ask a question?

Important News:

- Get the flu vaccine now – it's a lifesaver
- Mumps
- Going to college - are you fully vaccinated?
- Polio Alert
- Updates to our website

Publications:

- Your Child's Immunisation Guide for Parents
- Immunisation Guidelines for Ireland
- Mixing Vaccines
- Guidelines for Vaccination in General Practice
- Late Entrants
- Vaccine History

For more advice, call your GP or Local Health Office

Uptake Statistics
HPSC Reports



Education
Conference Presentations



About Us
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Acknowledgements

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Resources

∞ **National Immunisation Office**

www.immunisation.ie

∞ **Health Protection Surveillance Centre**

www.hpsc.ie

• **Immunisation Guidelines for Ireland. On line only**

<http://www.hse.ie/eng/health/immunisation/hcpinfo/guidelines//>

Immunisation schedules

• **World Health Organisation.**

http://apps.who.int/immunization_monitoring/globalsummary/schedules

• **Europe.** <http://vaccine-schedule.ecdc.europa.eu/Pages/Scheduler.aspx>

• **MMR Series Deer B.** *BMJ 2011; 342:c5347*

www.immunisation.ie



Useful Resources

- Health Products Regulatory Authority www.hpra.ie
- American Academy of Paediatrics. 2012 Report of the Committee on Infectious Diseases – The Red Book.
<http://aapredbook.aappublications.org/>
- Department of Health UK. November 2013. Immunisation against infectious disease.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266583/The_Green_book_front_cover_and_contents_page_December_2013.pdf
- Public Health England – Infectious Diseases
<https://www.gov.uk/health-protection/infectious-diseases>
- World Health Organisation. Adverse events following immunisation
http://www.who.int/immunization_safety/aefi/en/

