Childhood Immunisation Update Training

Aug 2017

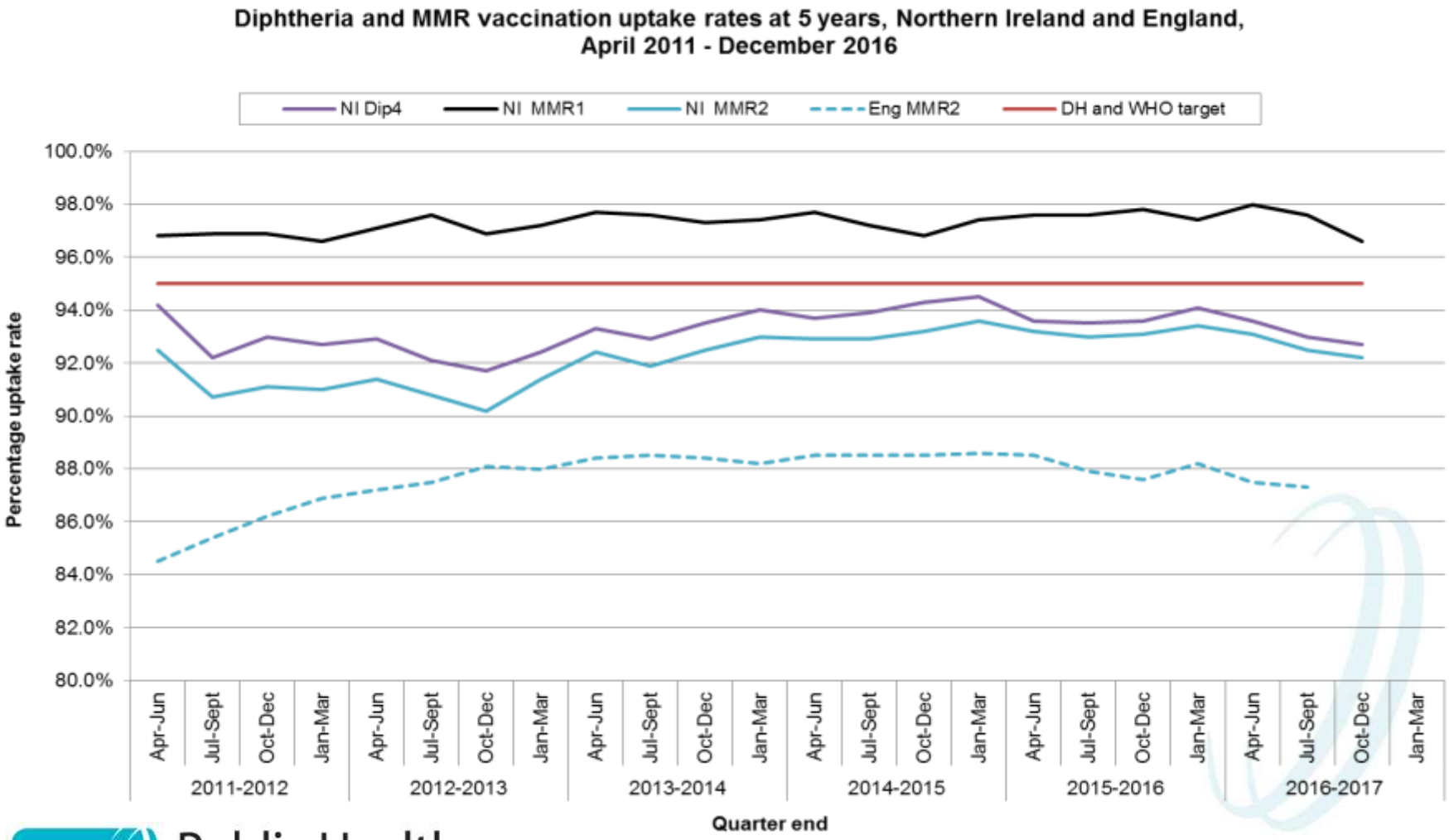
HSC Public Health Agency

Improving Your Health and Wellbeing

What we will cover

- Improving uptake and the CHS system
- Rotavirus vaccine
- Men ACWY current programme
- The new hexavalent vaccine introduction

NI imms update good, but decreasing



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Child Health Information System

Vital resource to assist with call-recall system for imms appointments

BUT:

It is only a computer

Only as good as the information that practices feed into it

How to get the best out of CHS

Record correctly whether a DNA is a 2 (didn't attend- reason given) or 3 (didn't attend- no reason)

If someone is a 2 or 3 twice, make contact with them to explore why they haven't come. Repeated appointments unlikely to help

Check address of child CHS have is correct

Send lists back to CHS at the end of each clinic- V. short turn around to send the 2,3, 4 month appointments out

Waiting lists/Queues

These are children due to be immunised but no slots are available at the practice to put them into.

List length and names of children sent on clinic lists

Practice should review slots available and ensure there are enough for registered children

Check waiting list- is address correct, have they received immunisation- inform CHIS of updates

Then CHIS can schedule one off clinics to catch-up on children waiting.

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Vaccination of individuals with uncertain or incomplete immunisation status

For online Green Book, see www.gov.uk/government/organisations/public-health-england/series/immunisation-against-infectious-disease-the-green-book • For other countries' schedules, see http://apps.who.int/immunization_monitoring/globalsummary/

Infants from two months of age up to first birthday

DTaP/IPV/Hib* + PCV** + MenB**
+ rotavirus***
Four week gap
DTaP/IPV/Hib + rotavirus***
Four week gap
DTaP/IPV/Hib + PCV** + MenB**

* When **Hib** has not been given as part of a **primary** course give *either*
- Three doses of DTaP/IPV/Hib vaccine at monthly intervals if D, T, aP or IPV also required *or*
- Three doses of Hib/ MenC combined vaccine if no other components required

** Doses of PCV and MenB should ideally be given two months apart but can be given one month apart if necessary to ensure the immunisation schedule is completed (i.e. if schedule started at 10 months of age)

*** **Vaccination with rotavirus should not be started for infants aged 15 weeks or older**
- First dose to be given **only** if infant is more than **6** weeks and under **15** weeks
- Second dose to be given **only** if infant is less than **24** weeks old

Boosters + subsequent vaccination

As per UK schedule ensuring at least a one month interval between DTaP/IPV/Hib and Hib/MenC doses and a two month interval between PCV and MenB doses (ie if primary course commenced close to first birthday)

Children from first up to second birthday

DTaP/IPV/Hib† + PCV† + Hib/Men C†
+ MenB†† + MMR
Four week gap
DTaP/IPV/Hib†
Four week gap
DTaP/IPV/Hib + MenB††

† DTaP/IPV can be given if DTaP/IPV/Hib not available.
All un- or incompletely immunised children require one dose of **Hib**, **Men C** and **PCV** over the age of one year (until teenage booster). It does not matter if two Hib-containing vaccines are given at the first appointment or if the child receives additional Hib at subsequent appointments if DTaP/IPV/Hib vaccine is given

†† Only children born on or after 1/5/15 should be offered MenB. Children born on or after 1/7/15 who received less than 2 doses of MenB in the first year of life should receive two doses of MenB at least two months apart before their second birthday.

Boosters + subsequent vaccination

As per UK schedule

Children from second up to tenth birthday

DTaP/IPV/Hib^ + Hib/Men C^ + MMR
Four week gap
DTaP/IPV/Hib^ + MMR
Four week gap
DTaP/IPV/Hib^

^ DTaP/IPV can be given if DTaP/IPV/Hib not available.
All un- or incompletely immunised children require one dose of **Hib** and **Men C** over the age of one year. It does not matter if two Hib-containing vaccines are given at the first appointment or if the child receives additional Hib at subsequent appointments if DTaP/IPV/Hib vaccine is given.

Boosters + subsequent vaccination

First booster of DTaP/IPV or dTaP/IPV can be given as early as one year following completion of primary course to re-establish on routine schedule. Additional doses of DTaP/IPV/Hib-containing vaccines given under three years of age in some other countries do not count as a booster to the primary course and should be discounted
Second booster – as per UK schedule

From tenth birthday onwards

Td/IPV + MenACWY‡ + MMR
Four week gap
Td/IPV + MMR
Four week gap
Td/IPV

‡ • Those aged from 10 years up to 25 years who have never received a MenC-containing vaccine should be offered MenACWY
- Those aged 10 years or over who have previously received a MenC vaccine may be eligible or may shortly become eligible for MenACWY. Refer to MenACWY national programme information for further information on eligibility

Boosters + subsequent vaccination

First Td/IPV
Preferably five years following completion of primary course

Second Td/IPV
Ideally ten years (minimum five years) following first booster

HPV vaccine for girls from twelfth up to eighteenth birthday

- Girls commencing HPV vaccine course:
  - before age 15 yrs should follow 2 dose 0, 6-24 months schedule
  - at age 15 yrs and above should follow 3 dose 0, 1, 4-6 months schedule
- If interrupted, course should be resumed but not repeated, ideally allowing appropriate intervals between remaining doses
- For two dose course, give second dose even if more than 24 months have elapsed since first dose or girl is then aged 15 yrs or more
- Three dose courses started but not completed before eighteenth birthday should be completed ideally allowing 3 months between second and third doses (minimum one month interval if otherwise unlikely to complete course)
- If girl commenced three dose course under 15yrs prior to September 2014, and has:
  - only received one dose, give a second dose 6-24m later to complete a two dose course
  - received two doses less than six months apart, give a third dose at least three months after second dose

MMR – from first birthday onwards

- Doses of **MMR/measles** vaccine given prior to 12 months of age should not be counted
- For individuals **<18** months of age a minimum interval of three months should be left between first and second doses
- For individuals **>18** months of age a minimum of one month should be left between first and second doses
- Two doses of **MMR** should be given irrespective of history of measles, mumps or rubella infection and/or age

Flu vaccine (during flu season)

- Those aged 65yrs and older (including those becoming age 65 years by 31/3/17)
- Children aged 2, 3 or 4yrs on/before 31/8/16 (DOB on/after 1/9/11 and on/before 31/8/14)
- Children of school years 1 (5-6yrs), 2 (6-7yrs) and 3 (7-8yrs) (given in school or primary care according to local arrangements)
- Those aged 6 months and older in the defined clinical risk groups (see Green Book Influenza chapter)

Pneumococcal polysaccharide vaccine (PPV)

- Those aged 65yrs and older
- Those aged 2yrs and older in the defined clinical risk groups (see Green Book Pneumococcal chapter)

Shingles vaccine One dose for

- Those aged 70 and 78
- In addition, individuals who have been or have become eligible since the start of the shingles programme in September 2013 remain eligible until their 80th birthday (see eligibility chart on PHE website)

General principles

- Unless there is a reliable vaccine history, individuals should be assumed to be **unimmunised** and a full course of immunisations planned
- Individuals coming to UK part way through their immunisation schedule should be transferred onto the UK schedule and immunised as appropriate for age
- If the primary course has been started but not completed, continue where left off – **no need to repeat doses or restart course**
- Plan catch-up immunisation schedule with minimum number of visits and within a minimum possible timescale – aim to protect individual in shortest time possible

IMW186.04 Effective from July 2016 Authorised by: Laura Craig
Review date: July 2017

Note: BCG and Hepatitis B vaccines should be given to those at risk as per Green Book recommendations and have therefore not been included in this algorithm

Rotavirus vaccine

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Vaccination against rotavirus – use of Rotarix®

- Prefilled oral tube
- Oral suspension
- Each dose contains
- 1.5ml of clear colourless liquid

Changing to this in Oct

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Vaccination against rotavirus – Rotarix® dosage and schedule

2 dose schedule

- First dose of 1.5ml at 8 weeks (two months) of age
- Second dose of 1.5ml at least four weeks after the first (i.e. 12 week appointment)

  - If interrupted resume course and no need to repeat first dose

Vaccination against rotavirus – Rotarix® dosage and schedule

Both doses ideally by 15 weeks (i.e.14 weeks and 6 days) and no later than 24 weeks of age (i.e. 23 weeks and 6 days)

- The first dose must be given before 15 weeks of age. If infant does not have first dose before 15 weeks then do not give Rotarix®
- If infant spits out/regurgitates most of dose, one replacement dose may be given at same visit

Men ACWY

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Current Men ACWY Programme

School nurses will still offer Men ACWY to year 11's with further offer in yr 12.

Still in GP contract that anyone with DOB 2/7/96-1/7/01 may REQUEST vaccine from GP and GP will be paid to give it.

First time uni students up to age 25 year who have not had a dose of conjugated Men ACWY vaccine over age 10 yrs can also request from GP.

Routine childhood immunisations from October 2017

When to immunise	Diseases protected against	Vaccine given	Immunisation site*
Two months old	Diphtheria, tetanus, pertussis, polio, Haemophilus influenzae type b (Hib) and hepatitis B (6 in 1)	DTaP/IPV/Hib/HepB (Infanrix hexa)*t	Thigh
	Pneumococcal disease	PCV (Prevenar 13)	Thigh
	Rotavirus	Rotavirus (Rotarix)	By mouth
	Meningococcal group B disease (MenB)	MenB (Bexsero)	Left thigh
Three months old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B (6 in 1)	DTaP/IPV/Hib/HepB (Infanrix hexa)*	Thigh
	Rotavirus	Rotavirus (Rotarix)	By mouth
Four months old	Diphtheria, tetanus, pertussis, polio, Hib and hepatitis B (6 in 1)	DTaP/IPV/Hib/HepB (Infanrix hexa)*	Thigh
	Pneumococcal disease	PCV (Prevenar 13)	Thigh
	Meningococcal group B disease (MenB)	MenB (Bexsero)	Left thigh
Between 12 and 13 months old – within a month of the first birth-day	Measles, mumps and rubella (German measles)	MMR (Priorix or MMR VaxPRO)[1]	Upper arm/thigh
	Pneumococcal disease	PCV (Prevenar 13)	Upper arm/thigh
	Hib/MenC	Hib/MenC (Menitorix)	Upper arm/thigh
	Meningococcal group B disease (MenB)	MenB (Bexsero)	Left thigh
Every year from 2 years old up to P7	Influenza (from September)	Flu nasal spray (Fluenz Tetra) (annual). (If Fluenz unsuitable, use inactivated flu vaccine)	Nostrils (or upper arm)
Three years four months old or soon after	Diphtheria, tetanus, pertussis and polio	dTaP/IPV (Repevax) or DTaP/IPV (Infanrix IPV)[1]	Upper arm
	Measles, mumps and rubella	MMR (Priorix or MMR VaxPRO)[1] (check first dose has been given)	Upper arm
Girls aged 12 to 13 years	Cervical cancer caused by human papillomavirus types 16 and 18 (and genital warts caused by types 6 and 11)	HPV (Gardasil)	Upper arm
Around 14 years old	Tetanus, diphtheria and polio	Td/IPV (Revaxis), and check MMR status	Upper arm
	Meningococcal groups ACWY disease (MenACWY)	MenACWY(Nimenrix or Menveo)	Upper arm

* Only babies born from 1 August 2017 are eligible to receive Infanrix Hexa. Babies born before this date should complete their immunisation course with Pediacel or Infanrix IPV Hib where this is still available.

New Hexavalent vaccine

- From autumn 2017, <u>all babies born on or after 1 August 2017</u> will receive a hexavalent (6 in 1) vaccine called Infanrix hexa® for their primary immunisations at 8, 12 and 16 weeks
- This hexavalent vaccine includes hepatitis B (HepB)
- It also protects against diphtheria, tetanus, pertussis, poliomyelitis and disease caused by *Haemophilus influenzae* type b (Hib)
- Infanrix hexa® will replace the pentavalent (5 in 1) infant vaccines Infanrix®-IPV+Hib and Pediacel®

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Why is a hepatitis B-containing vaccine being offered to all infants?

- Since 1992, the World Health Assembly has recommended every country should have a universal hepatitis B immunisation programme
- However, as UK low prevalence and low incidence country for hepatitis B, introducing a universal hepatitis B programme using a monovalent hepatitis B vaccine would not have been cost-effective
- Recently, infant combination hepatitis B vaccines (which also protect against diphtheria, tetanus, polio, pertussis, and Hib) have become available in the UK
- In 2014, the Joint Committee of Vaccination and Immunisation (JCVI) re-evaluated the benefits and cost-effectiveness of a universal hepatitis B infant immunisation programme in the UK
- They subsequently recommended the use of the hexavalent DTaP/IPV/Hib/HepB combination vaccine for all infants

What is hepatitis B

Hepatitis B is a viral infection that attacks the liver and can cause both acute and chronic disease.

The virus is transmitted through contact with the blood or other body fluids of an infected person.

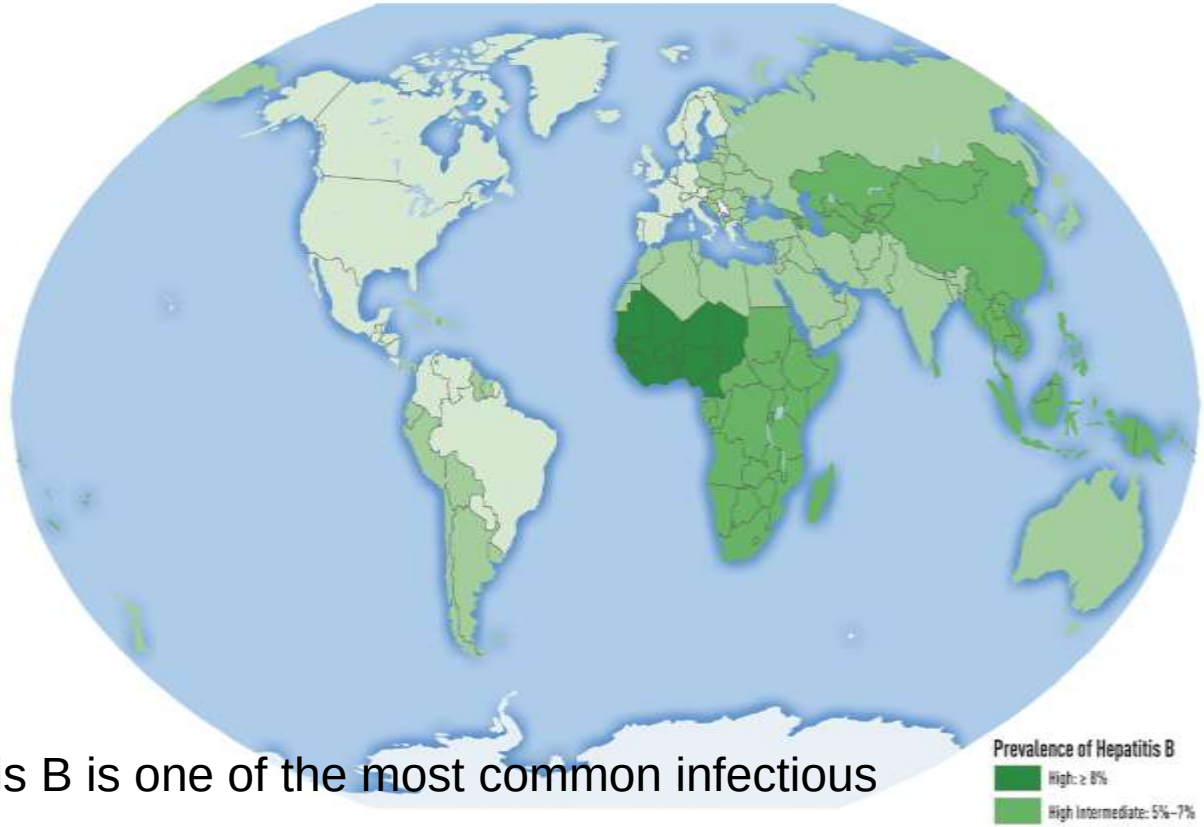
Two billion people worldwide have been infected with the virus, more than 240 million have chronic (long-term) liver infections, and about 600 000 people die every year due to the consequences of hepatitis B.

The hepatitis B virus is 50 to 100 times more infectious than HIV.

Hepatitis B is an important occupational hazard for health workers.

Hepatitis B is preventable with the currently available safe and effective vaccine

Global prevalence of chronic hepatitis B



Globally, hepatitis B is one of the most common infectious diseases

WHO estimates around 250 million people worldwide are chronically infected

Modes of transmission

The virus is transmitted by exposure to infected blood or body fluids

Transmission most commonly occurs:

- **Perinatal transmission:** mother to child
- **Early childhood**
- **Parenteral transmission:** exposure to blood/other infective fluids
- **Sexual transmission:** unprotected contact with an infected person

Hepatitis B Infection

Acute infection:

•Many new infections are subclinical or have flu like illness

•Anorexia, nausea, ache in the right upper abdomen, mild fever, malaise, disinclination to smoke or drink

•Jaundice occurs in 10% of younger children and 30-50% of adults

Chronic HBV infection develops in 90% of those infected as infants and approx 10% infected as adults

•Chronic HBV infection can result in progressive liver disease

•This can lead to cirrhosis (development of scar tissue) and an increased risk of developing liver cancer

Treatment and prevention

- No specific treatment is available for acute hepatitis B
- Supportive treatment may be indicated for people with severe clinical manifestations e.g. replacement of fluids lost from vomiting and diarrhoea.
- Chronic hepatitis B infection can be treated but not cleared with oral antivirals which can slow the progression of cirrhosis, reduce incidence of liver cancer and improve long term survival
- The hepatitis B vaccine is the most effective prevention
- A completed course of vaccine induces protective antibody levels in more than 95% of infants, children and young adults.
- Protection lasts at least 20 to 30 years
- The vaccine has an excellent record of safety and effectiveness
- As of 2008, 177 countries had incorporated hepatitis B vaccine in their national infant immunisation programmes including Ireland

UK hepatitis B epidemiology

UK is a very low-prevalence country for HepB:

0.3-0.4% UK population infected

Prevalence of HepB infection varies across the country

e.g. prevalence rates in antenatal women vary from 0.05 to 0.08% in some rural areas but rise to 1% or more in certain inner city areas

Higher prevalence in those born in high-endemicity countries, many of whom will have acquired infection at birth or in early childhood

Incidence of acute infection is low, but higher among those with certain behavioural or occupational risk factors

Northern Ireland data

Figure 1: New Laboratory-confirmed cases of hepatitis B in Northern Ireland, 2006- 2016

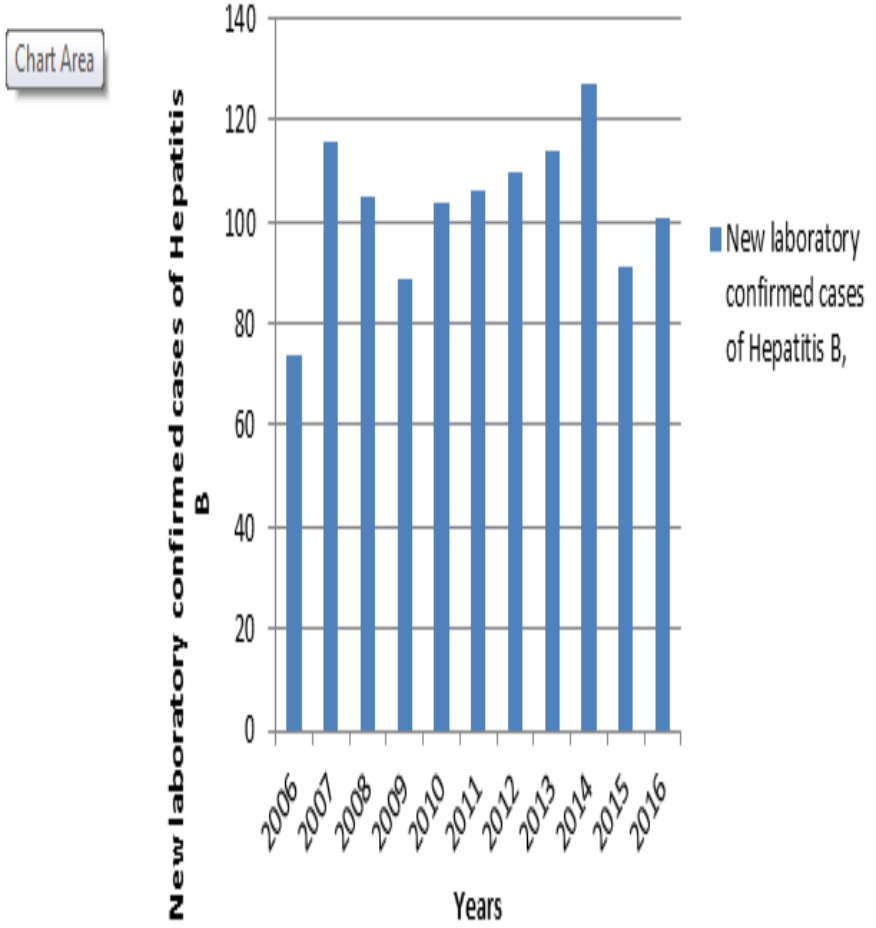
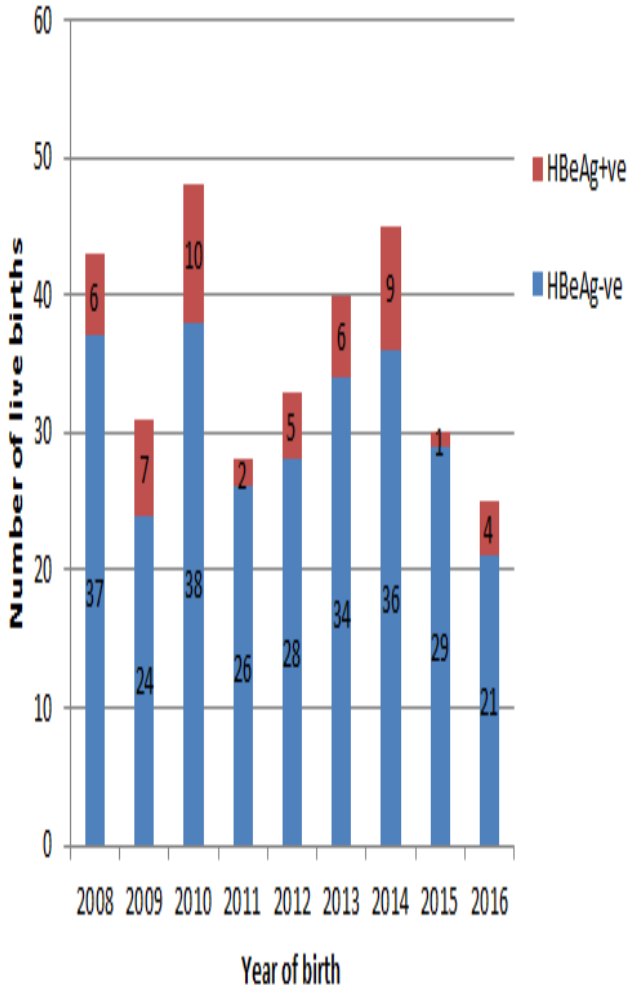


Figure 4: Number of live births to Hepatitis B positive Mothers (DOB 2008 - 2016), Northern Irel



The Infanrix hexa® vaccine programme

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The recommended vaccine

- **Brand name**: Infanrix hexa®
- Multi-component **inactivated vaccine** marketed by GlaxoSmithKline
- **Licensed** for use from six weeks of age
- Routinely **recommended** for infants as part of the primary immunisation schedule at 8,12 and 16 weeks
- Infanrix hexa® can also be used for catch-up immunisation for children up to their 10th birthday where these children have missed out on doses of primary immunisations

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Who is eligible to receive Infanrix hexa® vaccine?

- All babies born **on or after** 1st August 2017 will become eligible for the vaccine eight weeks after their birth
- Infanrix hexa® vaccine is expected to be made available to order from September 2017
- Infants born **before** 1st August 2017 should complete the course with pentavalent vaccine (Pediacel® or Infanrix-IPV+Hib®).
- **Infanrix hexa® should only be given to babies born before 1st August if there is no locally held vaccine stock and no further Pediacel® or Infanrix-IPV+Hib® can be ordered**

Is Infanrix Hexa a new vaccine?

- Infanrix hexa® is not a new vaccine
- First licensed for use in Europe in October 2000
- Licensed for use in 97 other countries including Canada, Australia and New Zealand
- Approximately 150 million doses have been given to infants in Europe and across the world

- Infanrix hexa® protects against the same five diseases (tetanus, diphtheria, whooping cough, polio and Hib) as the ‘5 in 1’ vaccines Infanrix®-IPV+Hib and Pediacel®
- The main difference is that Infanrix hexa® also offers protection against hepatitis B

Is Infanrix Hexa safe and effective?

- The safety profile of Infanrix hexa® is excellent
- Any adverse events experienced are mild to moderate
  - Same as those experienced following administration of the Pediacel® and Infanrix®-IPV+Hib vaccines
  - Include redness, swelling and tenderness at the injection site, fever, irritability, loss of appetite, diarrhoea and vomiting
- Multiple studies have shown Infanrix hexa® to be safe and highly immunogenic for all its component toxoids/antigens

Dhilllon S. DTPa-HBV-IPV/Hib vaccine (Infanrix hexa™) A Review of its Use as a Primary and Booster Vaccination. Drugs 2010: 70(8): 1021-1058 Available at: https://www.ncbi.nlm.nih.gov/pubmed/20481658

Vaccine scheduling

- The infant immunisation schedule remains unchanged at eight, twelve and sixteen weeks of age
- The first dose of Infanrix hexa® can be given from six weeks (if required in exceptional circumstances e.g. travel to an endemic country) but not before
- The minimum interval between subsequent doses of Infanrix hexa® is four weeks
- Infanrix hexa® can be administered at the same time as or at any time before or after any other vaccine
- If the primary course is interrupted it should be resumed but not repeated, allowing an interval of one month between the remaining doses
- As with the pentavalent vaccines, Infanrix hexa® should be given to premature infants at the appropriate chronological age, according to the schedule
- Booster doses will not usually be required for children vaccinated according to the routine childhood schedule

Contraindications

There are very few individuals who cannot receive the Infanrix hexa® vaccine.

Where there is doubt, instead of withholding immunisation, appropriate advice should be sought from a consultant with immunisation expertise or from the PHA duty room

Infanrix hexa® should not be administered to those who have had:

1. A confirmed anaphylaxis to a previous dose of the vaccine OR
2. A confirmed anaphylaxis to any constituent or excipient of the vaccine (this includes formaldehyde, neomycin and polymyxin).

Precautions

- As for pentavalent vaccine, there are very few occasions when deferral of immunisation with Infanrix hexa® is required
- If infant has a minor illness without fever or systemic upset, immunisations can still be given
- If infant is acutely unwell (e.g fever above 38.5^{0}C), immunisation may be postponed until they have fully recovered
- This is to avoid wrongly attributing any new symptom or the progression of symptoms to the vaccine
- The presence of a neurological condition is not a contraindication to immunisation but if there is evidence of current neurological deterioration, deferral of vaccination may be considered to avoid incorrect attribution of any change in the underlying condition
- The risk of deferral should be balanced against the risk of the infection and vaccination should be given promptly once the diagnosis and/or the expected course of the condition becomes clear.

Precautions (2)

Premature infants

- Very premature infants (born ≤ 28 weeks of gestation) who are in hospital should have respiratory monitoring for 48-72 hrs when given their first immunisation, particularly those with a previous history of respiratory immaturity
- If the premature infant has apnoea, bradycardia or desaturations after the first immunisation, the second immunisation should also be given in hospital, with respiratory monitoring for 48-72 hrs

Systemic and local reactions following a previous immunisation

Children who have had a systemic or local reaction following a previous immunisation with DTaP/IPV/Hib/HepB or DTaP/IPV/Hib including:

- fever, irrespective of its severity
- hypotonic-hyporesponsive episodes (HHE)
- persistent crying or screaming for more than three hours, or
- severe local reaction, irrespective of extent

can continue to receive subsequent doses of DTaP/IPV/Hib/HepB vaccine

Infanrix hexa® vaccine composition

After reconstitution, 1 dose (0.5 ml) contains:

- Diphtheria toxoid
- Tetanus toxoid
- *Bordetella pertussis* antigens
  - Pertussis toxoid (PT)
  - Filamentous Haemagglutinin (FHA)
  - Pertactin (PRN)
- Hepatitis B surface antigen (HBs)
- Poliovirus (inactivated) (IPV)
  - type 1 (Mahoney strain)
  - type 2 (MEF-1 strain)
  - type 3 (Saukett strain)
- *Haemophilus influenzae* type b polysaccharide (polyribosylribitol phosphate, PRP)
  - conjugated to tetanus toxoid as carrier protein

- Aluminium hydroxide, hydrated (Al(OH)3)
- Aluminium phosphate (AlPO4)

Excipients:

- Lactose anhydrous13
- Sodium chloride (NaCl)
- Medium 199 containing principally amino acids, mineral salts, vitamins
- Water for injections

The vaccine may contain traces of formaldehyde, neomycin and polymyxin which are used during the manufacturing process

Infanrix hexa® does not contain any porcine gelatine or thiomersal

How is Infanrix hexa® vaccine presented?

- The DTaP/IPV/HepB component is presented as a cloudy white suspension in a pre-filled glass syringe. Upon storage, a clear liquid and a white deposit may be observed
- The lyophilised (freeze dried) Hib vaccine is presented as a white powder in a glass vial
- The vaccine is supplied in single dose packs containing the syringe, vial and two needles –Green for reconstitution and Blue one for vaccine administration

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What are the steps involved in preparing Infanrix hexa®?

1. Shake the pre-filled syringe containing the DTaP/IPV/HepB suspension in order to obtain a consistent, cloudy, white suspension
2. Attach the green needle to the pre-filled syringe of DTaP/IPV/HepB and inject the entire contents of the syringe into the Hib vial
3. Shake the Hib vial vigorously until the powder has completely dissolved
4. Withdraw the entire mixture back into the syringe
5. Inspect the vaccine suspension for any foreign particulate matter and/or abnormal physical appearance. If either is observed, discard the vaccine
6. Replace the green needle with the blue needle for injection and administer the vaccine intramuscularly

DO NOT FORGET TO RECONSTITUTE THE HIB COMPONENT

Storage and administration

- Infanrix hexa® should be stored between +2ºC to +8ºC
- It must be stored in its original packaging to:
  - protect it from light
  - ensure the component parts are kept together
  - retain the batch number and expiry date for the entire product which is printed on the outer vaccine carton
- Infanrix hexa® should be administered intramuscularly
- Infants with a bleeding disorder should receive the vaccine by deep subcutaneous injection to reduce the risk of bleeding
- Preferred site of injection for infants under one year of age is the anterolateral aspect of the thigh
- It can be given in the same thigh as the PCV vaccine at the 8 week and 16 week immunisation appointments (minimum of 2.5cm apart)

Post-immunisation care recommendations

- The recommendations following administration of Infanrix hexa® vaccine are the same as with the administration of Pediacel® and Infanrix®-IPV+Hib vaccines
- When infant DTaP-containing combination vaccines are given alongside other infant vaccines such as PCV and MenB, an increased risk of febrile reactions and other related side effects is seen
- It is therefore recommended that **paracetamol** is given when the MenB vaccine is administered with PCV and the hexavalent vaccine at 8 weeks and 16 weeks of age

Administration of Infanrix hexa®

Infanrix hexa® should only be supplied and administered:

- Against a prescription written manually or electronically by a registered medical practitioner or other authorised prescriber
- Against a Patient Specific Direction
- Against a Patient Group Direction

A patient group direction (PGD) for Infanrix hexa® will be available

Possible adverse reactions

Most commonly reported (seen in more than 1 in 10 doses of the vaccine)

- Loss of appetite, fever (>38ºC), fatigue (tiredness), abnormal crying, irritability and restlessness
- Local swelling, pain and redness at the injection site

Suspected adverse reactions should be reported to the MHRA using the yellow card scheme http://mhra.gov.uk/yellowcard

Neonatal selective immunisation programme for babies at risk of hepatitis B

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Implications for babies at high risk of hepatitis B infection

- Babies born to mothers who are chronically infected with hepatitis B virus (HBV) or to mothers who have had acute hepatitis B during pregnancy are at risk of becoming infected with HBV
- The objective of the selective neonatal hepatitis B immunisation programme is to provide post exposure immunisation to infants born to hepatitis B infected mothers to prevent mother to child transmission at or around the time of birth
- With the introduction of hepatitis B vaccine into the routine schedule:

  the maternal hepatitis B screening programme will continue as it remains essential to identify unborn babies at risk of infection

  the selective neonatal immunisation programme will continue so that high risk infants receive a dose of HepB vaccine at birth followed by a dose one month later

Why is the selective neonatal immunisation programme continuing if all infants are going to receive hepatitis B vaccine?

- Hepatitis B infection can be transmitted from infected mothers to their babies at or around the time of birth as infected blood from the mother passes through the placenta to the baby during delivery
- Babies acquiring infection at this time have a high risk of becoming chronically infected with the virus
- Over 90% of chronic infection in infants born to infected mothers after perinatal transmission can be prevented by appropriate post-exposure prophylactic vaccination starting at birth
- Timely vaccination at birth and at one month of age is critical to preventing infection in the infant
- The dose that is given to all babies at eight weeks of age (as part of the universal programme) would be too late to prevent infection in those high risk babies who are exposed at or around birth

What is the vaccine schedule for high risk infants?

Age	Routine childhood		Babies born to hepatitis B infected mothers	
Birth	X		✓	Monovalent HepB (Engerix B or HBvaxPRO Paediatric) (with HBIG if indicated)
4 weeks	X		✓	Monovalent HepB (Engerix B or HBvaxPRO Paediatric)
8 weeks	✓	DTaP/IPV/Hib/HepB (Infanrix hexa)	✓	DTaP/IPV/Hib/HepB (Infanrix hexa)
12 weeks	✓	DTaP/IPV/Hib/HepB (Infanrix hexa)	✓	DTaP/IPV/Hib/HepB (Infanrix hexa)
16 weeks	✓	DTaP/IPV/Hib/HepB (Infanrix hexa)	✓	DTaP/IPV/Hib/HepB (Infanrix hexa)
1 year	X		✓	Monovalent HepB (Engerix B or HBvaxPRO Paediatric) Test for HBsAg

Blood tests for high risk infants

- Although the hepatitis B vaccine is highly effective at preventing infection if given at birth, a few infants may still acquire infection despite vaccination and immunoglobulin
- Testing high risk infants at 12 months of age is important to enable a timely assessment of their infection status
- Finding out if the infant is infected at this point can reduce the risk of long term complications and disease in later life
- The purpose of the 12 month blood test is to check for infection, not to check or measure response to the vaccine
- Numerous studies have already demonstrated that infants make a protective response to a course of hepatitis B given in the first year of life

Booster doses for high risk infants

12 month hepatitis B booster:

A Further dose of monovalent hep B vaccine should be given at 1 year of age, before the test for HBsAg

Testing at 1 year of age is to identify those who have become infected with hepatitis B despite vaccination

Pre-school hepatitis B booster:

- Increasing evidence that protection is long-lasting and benefits of booster doses therefore limited
- A further dose of hepatitis B-containing vaccine at 3 years and 4 months is no longer recommended for those children who have completed their routine primary immunisations with hexavalent DTaP/IPV/Hib/HepB vaccine
- Pre-school booster vaccine appointment provides an opportunity to check child has been appropriately managed, i.e. fully immunised against hepatitis B and tested for infection

Further sources of information

Public Health England. Immunisation against infectious disease (The Green Book) Diphtheria, Tetanus, Pertussis, Polio, Hib and Hepatitis B chapters. Available at: https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book

European Medicines Agency. Summary of the European public assessment report for Infanrix hexa®. Available at: http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/human/medicines/000296/human_med_000833.jsp&mid=WC0b01ac058001d124

Infanrix hexa® Summary of Product Characteristics. Last updated March 2017. Available at: http://www.ema.europa.eu/docs/en_GB/document_library/EPAR_-_Product_Information/human/000296/WC500032505.pdf

http://pha.site/immunisationvaccine-preventable-diseases- PHA immunisation page contains updated leaflets for parents including translations and an FAQ document for health professionals with more details on the programme.

Key points

- Babies born on or after 1st August 2017 will be offered a hexavalent DTaP/IPV/Hib/HepB vaccine (Infanrix hexa®) which will protect against hepatitis B
- Hepatitis B is a viral infection that attacks the liver and can cause hepatic necrosis, cirrhosis and an increased risk of developing hepatocellular carcinoma
- Infanrix hexa® is licensed for use in 97 countries and approximately 150 million doses have been given to infants worldwide
- Multiple studies have shown Infanrix hexa® to be safe and highly immunogenic
- Any adverse events experienced are mild to moderate and are the same as those experienced following administration of the pentavalent vaccines (Pediacel® and Infanrix®-IPV+Hib)
- The infant immunisation schedule remains unchanged (at 8,12,16 weeks)

Questions?

A presentation on updates for the flu immunisation programme for 2017 is also available on the PHA website.

Please see http://pha.site/immunisationvaccine-preventable-diseases- for all current health professional and patient information

If you have questions about details in this presentation, or other non-urgent immunisation queries e.g. about leaflets or vaccine ordering, please email them to: pha.immunisation@hscni.net