Neonatal Immunisations - Paediatric Full Clinical Guideline – Joint Guideline for Derby and Burton

Reference no.: NIC IN 11/ Apr 2023/v005

Purpose

To immunise all the babies according to the national immunisation schedule. Healthy children should receive vaccines to prevent disease according to the ages recommended by the Childhood Immunisation Programme.

Aim and scope

To identify the babies who are eligible for vaccination, at risk, and to identify the contra indications. To ensure valid consent is obtained prior to vaccination.

Implementing the guideline

The normal practice is to offer routine immunisation to all babies in the neonatal unit according to the national programme.

Consent

Written consent must be obtained prior to prescribing the vaccine and should be sought from the parent or the legal guardian (the mother if the parents are not married).

The documentation should be in the appropriate page in the baby's parent health record book (also known as the red book).
It is important to document that the baby received the vaccine, the site as well as the batch number, in the red book.

Preterm babies

Pre-term babies are immunised according to their actual age rather than their corrected age. Preterm babies (born < 28 weeks GA), should have respiratory monitoring for 48 – 72 hours, when given their first vaccination. If the baby has apnoea, desaturation and bradycardia after first immunisation, the second immunisation should also be given in the hospital with respiratory monitoring.

Contra indications

- Known or suspected hypersensitivity to any component of the vaccine
- Acute illness, evolving neurological problems and babies receiving steroids. (Replacement steroids is not a contraindication)
- Live vaccines (OPV, BCG, Rotarix and MMR) should not be given for at least 3 months after stopping a course of high dose steroids. I.e. 300micrograms/kg dose of Dexamethasone for more than one week or 150 micrograms/kg/day of Dexamethasone for more than one month. Low dose steroids for less than 2 weeks or babies on alternate day regimes may be given live viral vaccination.
- Live vaccines (OPV, BCG, Rotarix and MMR) should not be given for at least 6 months after birth for infants whose mothers received infliximab during pregnancy.
- Impaired immunity

Paracetamol with Immunisations

In light of concerns raised that an increase in fever may have a detrimental impact on the uptake of future immunisations, the Joint Committee on Vaccination and Immunisation recommend the use of prophylactic paracetamol at the time of immunisation with Bexsero®.
In clinical vaccine trials, the most common adverse reaction observed in infants under two years of age was a high rate of fever (>38o C) when Bexsero® was administered with the other routine childhood vaccines. The fever tends to peak around six hours after vaccination and is nearly always gone completely within two days. To help prevent this it is recommended that babies are given three doses of infant paracetamol after their MenB vaccine (Bexsero®) at 8 weeks and 16 weeks of age. Paracetamol is not routinely needed after the Men B booster vaccine given at 12 months of age as by this time the baby's risk of fever is the same as after other vaccines.

For dosing information, see 'Paeds/NICU: Paracetamol for Immunisation' monograph on the trust intranet.

Prescribing

Queens Hospital Burton
Prescribe any immunisations using the Electronic Prescribing MA (EPMA) system. There are three pre-populated order sets on EPMA covering routine immunisations for age 2,3 and 4 months of age, which should be utilised when prescribing immunisations.

Royal Derby Hospital
Prescribe immunisations on neonatal paper prescription charts for inpatients on the NICU. For babies having immunisations on the post natal wards, prescribe immunisations using EPMA.

Both Sites
Consider planning immunisations in advance, for example in a pre-term who requires closer monitoring during their immunisations and a period of time after, consider whether it would be more appropriate to administer these early-mid week rather than over a weekend. Additionally, consider discharge timings when planning immunisations, so that there is a period of time where babies can be monitored following immunisation, but so as to not delay discharge where possible.

Ordering

Please highlight any due immunisations to pharmacy as whilst we generally have a supply of the routine immunisations in stock, new supplies can take a week or longer to arrive - we can only order immunisations on a Wednesday.

Vaccine	Kept as Stock on NICU/NNU	
	RDH	QHB
Infanrix hexa	✓	Order through Pharmacy (EMPA)
Men B (Bexsero®)	✓	
Rotavirus (Rotarix®)	✓	
PCV (Prevenar 13)	✓	
Hepatitis B Vaccine (Energix B®)	✘ - order through pharmacy	

Immunisation Schedule

The below schedule was recommended from February 2022 and was in place at time of writing (April 1022). Please use this guideline in accordance with the green book chapter 11 - the UK immunisation schedule 'UK immunisation schedule: the green book, chapter 11 - GOV.UK (www.gov.uk)'

At 8 weeks (Day 56)

Infanrix hexa®
(DTaP/IPV/Hib/HepB) *(Combined Haemophilus influenzae B, diphtheria tetanus, Pertussis and inactivated polio) and Hepatitis B*

- First dose
- Administer 0.5 ml intramuscular into thigh
- Document site and the batch number in red book and on prescription chart (RDH)/EPMA (QHB)

Men B (Bexsero®) *(Meningococcal group B)*

- First dose
- Administer 0.5mls intramuscular into left thigh
- Should be given in a separate site to other immunisations.
- Document the site and the batch no in red book and on prescription chart (RDH)/EPMA (QHB)

Rotavirus (Rotarix®) *(Rotavirus gastroenteritis)*

- First dose
- Give 1.5 ml orally
- Document site and the batch number in red book and on prescription chart (RDH)/EPMA (QHB)

At 12 weeks (Day 84)

Infanrix hexa®
(DTaP/IPV/Hib/HepB) *(Combined Haemophilus influenza B, Diphtheria, Tetanus, Pertussis and inactivated Polio) and Hepatitis B*

- Second dose
- Administer 0.5 ml intramuscular into thigh
- Document site and the batch number in red book

PCV (Prevenar 13®) *(Pneumococcal Polysaccharide Conjugate vaccine, adsorbed)*

- Administer 0.5ml intramuscular
- Should be given in a separate site.
- Document the site and the batch no in red book and on prescription chart (RDH)/EPMA (QHB)

Rotavirus (Rotarix®) *(Rotavirus gastroenteritis)*

- Second dose
- Give 1.5 ml orally
- Document site and the batch number in red book and on prescription chart (RDH)/EPMA (QHB)

At 16 weeks (Day 112)

Infanrix hexa®
(DTaP/IPV/Hib/HepB) *(Combined Haemophilus influenza B, Diphtheria, Tetanus, Pertussis and inactivated Polio) and Hepatitis B*

- Third dose
- Administer 0.5 ml intramuscular into thigh
- Document site and the batch number in red book and on prescription chart (RDH)/EPMA (QHB)

Men B (Bexsero®) *(Meningococcal group B)*

- Second dose
- Administer 0.5mls intramuscular into left thigh
- Should be given in a separate site to other immunisations.
- Document the site and the batch no in red book and on prescription chart (RDH)/EPMA (QHB)

Summary information

Parent information leaflet can accessed via link A quick guide to childhood immunisations for the parents of premature babies (publishing.service.gov.uk)

1 Where two or more injections are required at the same time, these should ideally be given in different limbs. Where this is not possible, injections in the same limb should be given at least 2.5cm apart.
2 Where injections can only be given in two limbs, it is recommended that the MMR, as the vaccine least likely to cause local reactions, is given in the same limb as the MenB with the PCV13 and Hib/MenC doses given into the other limb.

Neonates at risk only

BCG Vaccination Schedule

BCG Vaccine: This is to be organised through TB nurses as outpatient. Please contact them on 01332 787995/787996 (RDH) or 01283 566333 (switch board QHB) followed by extension 5050.

Indications:
1) Family history of TB
2) Parents /grandparents who are from a high-risk area. (Indian subcontinent, Africa, South America, Far East)

Bacillus calmette guérin (BCG) vaccine
Dose: Administer 0.05 mL **intradermal** – usually left arm over the deltoid

Parents should be advised of normal reaction to injection and care of vaccination site. The expected reaction, seen in 90 – 95% of recipients, is induration at the injection site followed by formation of papule 2 or more weeks after vaccination. It may ulcerate and heal slowly over weeks / months leaving a small flat scar.

BCG may be given concurrently with other live vaccine. No further immunisation should be given for at least 3 months in the arm used for BCG vaccination because of the risk of regional lymphadenitis.

Selective Neonatal Hepatitis B vaccination schedule and *HBIG

Hepatitis B infection can be transmitted from infected mothers to their babies at or around the time of birth (perinatal transmission). Babies acquiring infection at this time have a high risk of becoming chronically infected with the virus. The development of the chronic infection after perinatal transmission can be prevented in over 90% of cases by appropriate vaccination, starting immediately at birth.

Women with hepatitis B in pregnancy should have care provided by a multidisciplinary team to ensure all aspects are reviewed and managed. An appropriate care plan and neonatal alert should be put in place for the birth of their baby.

Babies born to mothers infected with hepatitis B need to be given a dose of the hepatitis B vaccine within 24 hours of their birth, followed by further doses at 4, 8, 12 and 16 weeks of age, plus a final dose at 12 months.

Age	Routine childhood programme	Babies born to hepatitis B infected mothers
Birth	×†	✓ Monovalent HepB
4 weeks	×	✓ Monovalent HepB
8 weeks	✓ DTaP/IPV/Hib/HepB	✓ DTaP/IPV/Hib/HepB
12 weeks	✓ DTaP/IPV/Hib/HepB	✓ DTaP/IPV/Hib/HepB
16 weeks	✓ DTaP/IPV/Hib/HepB	✓ DTaP/IPV/Hib/HepB

Table 1: Hepatitis B immunisation schedule for routine childhood and selective neonatal immunisation programmes following the introduction of hexavalent hepatitis B-containing vaccine

Vaccine Dose at birth and 4 weeks:
Hepatitis B Vaccine (Energix B® paediatric) *(Hepatitis B virus surface antigen)*
Give 0.5 ml (10micrograms) intramuscular into the anterolateral thigh.

*HBIG

Babies born to highly infectious mothers should receive HBIG as well as active immunisation (see table 2 below). Management of the infant should be based on the results of e-markers and hepatitis B viral load testing of the mother. HBIG should ideally be ordered well in advance of the birth (by the ante-natal screening midwives and women's and children's pharmacist) and given simultaneously with vaccine but at a different site. If this is not possible, HBIG should be ordered from pharmacy to be given **within 24 hours of the birth dose and vaccine.**

Hepatitis B status of mother	Baby should receive	
	Hepatitis B vaccine	HBIG
Mother is HBsAg positive and HBeAg positive	Yes	Yes
Mother is HBsAg positive, HBeAg negative and anti-HBe negative	Yes	Yes
Mother had acute hepatitis B during pregnancy	Yes	Yes
Mother is HBsAg positive and anti-HBe positive	Yes	No
Mother is HBsAg positive and known to have an HBV DNA level equal or above $1x10^6$IUs/ml in any antenatal sample during this pregnancy (regardless of HBeAg and anti-HBe status)	Yes	Yes
Mother is HBsAg positive and baby weighs 1500g or less	Yes	Yes

Table 2: Vaccination of babies according to the hepatitis B status of the mother

Dose of HBIG (Hepatitis B Immunoglobulin): 250 international units of HBIg intra-muscular injection

Vials of HBIG are approximately. 500 international units so HALF of the whole vial should be given. The volume in a vial of HBIG can vary, however it will always contain 500 international units. It is important to refer to the vial itself when calculating the volume of HBIG to draw. See full guideline for babies at high risk of Hepatitis B opac-retrieve-file.pl (koha-ptfs.co.uk).

Palivizumab - see separate guideline.

Rota virus vaccination:

It is important that premature infants have their immunisations at the appropriate chronological age, according to the schedule. As with other vaccinations, the occurrence of apnoea following vaccination is especially increased in infants who were born very prematurely. Very premature infants (born _ 28 weeks of gestation) who are in hospital should have respiratory monitoring for 48-72 hours when given their first immunisations, particularly those with a previous history of respiratory immaturity. If the child has apnoea, bradycardia or desaturations after the first routine immunisation, the second immunisation should also be given in hospital, with respiratory monitoring for 48-72 hours. As the benefit of vaccination is high in this group of infants, vaccination should not be withheld or delayed.

Infants, including those that are born prematurely should be offered rotavirus vaccine at their chronological age, if the infant is clinically stable. Hospitalised pre-term infants are particularly vulnerable to rotavirus infection and its complications and should be vaccinated as per recommendations. Delaying vaccination until discharge from hospital places the infant at a risk of acquiring the infection or receiving the vaccination too late and at a time where the risk of intussusception is greatest.

Rotarix® is a highly attenuated vaccine virus with a very low risk of clinical disease even in vulnerable infants. Infants vaccinated whilst in hospital do not need to be isolated from other infants. Aprons and Gloves should be worn for nappy changes and standard infection control precautions followed at other times to reduce the risk of transmission of the vaccine virus until discharge. JCVI considered that the benefits of vaccination for this at-risk population at the appropriate time on neonatal units far outweighed any potential risk of transmission of this highly attenuated vaccine virus.

References

- Immunisation against infectious disease: the green book, Hepatitis B, February 2022, last accessed 14.04.2022
- Immunisation of individuals with underlying medical conditions: the green book, January 2020, last accessed 14.04.2022
- The UK immunisation schedule: the green book, Hepatitis B, March 2022, last accessed 14.04.2022
- National Immunisation Schedule, born on or after January 2020
- BNF for Children, last access 14.04.2022

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