Brighton and Sussex University Hospitals NHS Trust

Anti-D and Rhesus Negative Women

Maternity Protocol: MP010

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Contents

Key Principles

A protocol is a set of measurable, objective standards to determine a course of action. Professional judgement may be used in the application of a protocol.

Scope

This protocol applies to:

- All pregnant women

Responsibilities

Midwives & Obstetricians:

- To access, read, understand and follow this guidance
- To use their professional judgement in application of this protocol

Management:

- To ensure the protocol is reviewed as required in line with Trust and National recommendations
- To ensure the protocol is accessible to all relevant staff

1 Aim

To prevent haemolytic disease of the newborn (HDN) in Rhesus (D) negative pregnant women by offering anti-D immunoglobulin:

1.1 Following a potentially sensitising event in pregnancy

1.2 Antenatally at 28 weeks gestation

1.3 Postnatally to those who have given birth to a Rhesus (D) positive baby

2 Rationale

Postnatal immunoprophylaxis using anti-D began in the UK in 1969. In addition anti-D has been given to Rhesus negative mothers prophylactically at 28 weeks gestation and after a potentially sensitising event, since 2002 which has further reduced the incidence of HDN. Routine antenatal anti-D prophylaxis (RAADP) has significantly reduced cases of fetal anaemia which can lead to prolonged inpatient stays, medications, minor or major developmental problems and more severely fetal or neonatal death. RAADP is recommended as a treatment option for all pregnant women who are rhesus D (RhD) negative and who are not known to be sensitised to the RhD antigen (NICE guidance 2008).

3 Antenatal Administration of Anti-D Immunologlobulin

3.1 **Contraindications**

3.1.1 Previous allergy to anti-D. Caution should also be exercised in women who have had severe allergic reactions to any other blood products.

3.1.2 Women who are already sensitised to the D antigen. Anti-D should only be given to non-sensitised women i.e. women with no antibodies to the D Antigen. Women with other RBC antibodies should still be offered anti D. (If it is detected that a woman is already sensitised to the D antigen, a consultant appointment should be made for the woman. It may be that additional scans/ blood tests are needed.

3.1.3 Caution should be exercised in women suffering from severe thrombocytopenia or any major inherited bleeding disorder that would contraindicate intramuscular injections. Intramuscular injection can be given if the woman is having treatment for the bleeding disorders - discuss on a case by case basis.

3.1.4 Women who are Rh D positive.

3.2 **Women who decline blood products**

All women should be informed that Anti D is a blood product. Women have a right to make an informed choice to have or decline Anti D. If a woman declines having Anti-D, this must be clearly documented and a consultant appointment offered to discuss further. Non-invasive cell free fetal DNA (cffDNA) testing should be offered via transfusion to determine whether Anti-D is necessary and the woman counselled appropriately in order to make an informed choice about whether to have treatment with anti‑D immunoglobulin.

'Non‑invasive prenatal testing (NIPT) for fetal RHD genotype involves analysing cell-free fetal DNA in maternal blood and is intended for use in pregnant women who are D negative and are not sensitised to D antigen'. (NICE, 2016).

Also see *Maternity Protocol: MP053 Obstetric Haemorrhage* on details of care for women who decline blood products

4 Procedure for Administration of Prophylactic Anti-D

4.1 All Rh D negative women will be directed to an information leaflet (appendix A) after their booking bloods have been processed and will have the opportunity to discuss this with her community midwife. An appointment will be made to have Anti-D Ig at 28/40. Women at RSCH will be verbally informed of this appointment and women at PRH will have a letter sent to them. (See Appendix B)

4.2 **28 week visit:**

4.2.1 Blood will be taken for antibody testing prior to administration of anti-D Ig.

4.2.2 Discuss reason for requiring Anti-D with the woman and gain informed consent for the procedure. Ensure verbal consent is obtained and documented in the maternal notes.

4.2.3 Check that the woman meets the criteria for administration of Anti-D. (See section 2.1 for contraindications).

4.2.4 Check the details with either a second health professional or the woman herself. Ensure Anti-D prescription form has been filled out including consent of reverse.

4.2.5 Administer Anti-D 1500 international units. Anti-D should be given intramuscularly into the deltoid or other large muscle – NEVER INTRAVENOUSLY.

4.2.6 Following administration the following details should be recorded in the woman's notes:

- Name/DOB
- Hospital ID number
- Time and date of administration
- Batch number
- Name and signature of the midwife giving the Anti-D

4.2.7 The woman should be advised to remain in the department for 20 minutes following administration of Anti-D, due to the risk of anaphylaxis.

4.2.8 Details of administration should be recorded on the Anti-D prescription form (see Appendix C) and then filed in brown notes. Ensure Anti-D prophylaxis section of the pregnancy notes (page 13) is completed including a transfusion sticker if available.

4.2.9 Send paperwork back to transfusion

Ensure an anaphylaxis box is available when giving Anti-D, in case of anaphylactic shock.

5 Potentially Sensitising Events that Require Anti-D

5.1 Anti-D should be given to all non-sensitised D negative women after the following sensitising events:

5.1.1 Invasive pre-natal diagnosis (Amnio/CVS)

5.1.2 Other in-utero therapeutic intervention/surgery (e.g. intrauterine transfusion, shunting).

5.1.3 Antepartum haemorrhage

5.1.4 External cephalic version

5.1.5 Abdominal injury e.g. Fall, RTA, especially seatbelt injury

5.1.6 Intrauterine death (Anti-D to be given within 72 hours of diagnosis, not delivery). (BSCH, 2014)

5.1.7 Ectopic pregnancy

5.1.8 Delivery

5.1.9 With spontaneous miscarriage above 12 weeks gestation or following surgical or medical management at any gestation. Termination of pregnancy

Anti-D should be given within 72 hours of these potentially sensitising events or exceptionally within 10 days (as this may still provide some protection). (BCSH, 2014). Always take advice from transfusion.

5.2 A kleihauer to determine the degree, if any, of feto-maternal haemorrhage (FMH), should be sent for all sensitising events after 20 weeks. The kleihauer test determines whether the appropriate dose of anti-D has been given; it detects the amount of FMH and if this is > 4mls additional Anti-D may be required until there are no more fetal cells detected in the maternal blood. Anti D is ordered via the transfusion department who will advise on this amount. If the FMH is > 4mls, a follow up blood sample should be taken at 72 hours to check for clearance of fetal cells. (BCSH, 2014). Women do not need to wait for kleihauer results to have Anti-D however the midwife should make them aware that if the titre is >4mls they may have to return for an additional dose.

5.3 **Spontaneous miscarriage**

- 250 INTERNATIONAL UNITS Anti D should be given between 12-20 weeks gestation
- 500 INTERNATIONAL UNITS Anti D should be recommended after ERPC

- 500 INTERNATIONAL UNITS Anti-D should be given after 20 weeks gestation.

5.4 **Threatened Miscarriage:**

5.4.1 Where bleeding continues intermittently Anti-D should be given at 6 week intervals. The amount recommended is:

- 250 INTERNATIONAL UNITS between 12-20 weeks gestation
- 500 INTERNATIONAL UNITS after 20 weeks gestation.

5.4.2 Before 12 weeks gestation, where an episode of vaginal bleeding has occurred, is heavy or repeated and is associated with abdominal pain, and the pregnancy remains viable, it may be prudent to administer anti-D particularly if these events occur as gestation approaches 12 weeks. Seek advice from transfusion.

6 Postnatal Administration of Anti-D Immunologlogulin At delivery (20 weeks gestation onwards):

6.1 **Cord Blood sample**

Following delivery **all Rhesus negative women** should have a cord blood sample sent for urgent infant blood group and DAT by the midwife providing care. Mothers/parents should be informed that this has been done by the midwife and given an indication of when the results will be available and expected subsequent events.

If the midwife is unable to obtain a cord blood sample nursery nurses and special care staff will need to obtain a sample from the baby.

If the baby was taken to TMBU/SCBU and no cord sample was obtainable, special care staff will need to be alerted and take a sample from baby.

6.2 **Maternal blood sample**

Maternal blood for kleihauer should be taken approximately 45 minutes – 2 hours post delivery by the midwife providing care.

6.3 High risk rhesus negative women

In Rhesus negative women who *ALSO* have one or more of the following risk factors bilirubin and FBC from a venous or capillary blood sample in the newborn should be measured in addition to above mentioned cord blood sample:

6.3.1 Unusual antibodies in the maternal blood

6.3.2 Suspected ABO incompatibility

6.3.3 Previous babies with early onset jaundice

6.3.4 Twins (monochorionic)

6.3.5 Plethoric babies at birth

6.3.6 Traumatic instrumental birth (i.e. bruising/lacerations)

7 Documentation

The Midwife who takes the cord and maternal blood is responsible for labelling and sending the samples to the pathology laboratory and documenting that they have done so in the maternal notes.

7.1 Results

Cord blood results should be checked the day after delivery by the midwife providing postnatal care to the mother and baby. Results of the baby's blood group should be documented in the baby notes along with the print out form.

The result of the baby's blood group and kleihauer test should be determined before the woman is discharged from hospital or with 24 hours of a homebith

7.2 Giving Anti-D

If the baby is D positive, 500 INTERNATIONAL UNITS anti-D will be issued by transfusion and should be given to the mother within 72 hours of delivery. Rarely a repeat kleihauer and subsequent dose may be required and would be requested via transfusion. All women who have given birth at home that require Anti D must come in to the hospital for this to be administered.

7.3 **Intraoperative Cell salvage (ICS)**

Where intraoperative cell salvage (ICS) is used during caesarean section in Rh D negative women, and where cord blood group is confirmed as Rh D positive (or unknown), a minimum dose of 1500 INTERNATIONAL UNITS Anti-D Ig should be administered following the re-infusion of salvaged red cells. A kleihauer test should be taken 30-45 minutes after re-infusion in case additional Anti-D is required. The transfusion department should be informed if ICS has been used to ensure the correct dose of Anti-D Ig is issued.

7.4 **In the event of a stillbirth or intrauterine death**

If the blood group of the baby cannot be determined, as is often the case, rhesus negative mothers should always have a kleihauer taken and be given anti-D.

7.5 **Women with Haemorrhagic Disease**

In the case of haemorrhagic disorders, where intramuscular injections are contra-indicated, Anti-D immunoglobulin may be administered subcutaneously. Careful manual pressure with a compress should be applied to the site after injection.

8 Summary

GESTATION	Antibody Testing	ANTI D	Kleihauer Test
Booking	Yes	No	No
28 weeks	Yes	1500 INTERNATIONAL UNITS	No
Other A/N sensitising event <20 weeks	Yes	250 INTERNATIONAL UNITS	No
Other A/N sensitising event >20 weeks	Yes	500 INTERNATIONAL UNITS	Yes
Delivery	Yes	500 INTERNATIONAL UNITS + additional Anti-D if titre >4ml (transfusion to advise)	Yes
After Intraoperative Cell Salvage	Yes	1500 INTERNATIONAL UNITS	Yes

9 References

National Institute for Clinical Excellence (2016) High-throughput non-invasive prenatal testing for fetal RHD genotype Diagnostics guidance [DG25].

Royal College of Obstetricians and Gynaecologists (2011) The Use of Anti-D Immunoglobulin for Rhesus D prophylaxis. Greentop Guideline No. 22.

Qureshi et al. (Jan 2014) British Committee for Standards in Haematology guideline for the use of Anti-D immunoglobulin for the prevention of haemolytic disease of the fetus and newborn.

Appendix A- links to leaflets

Blood Groups and Red Cell Antibodies in Pregnancy
https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/15184/inf166.pdf

Appendix B - PRH letter

Brighton and Sussex University Hospitals NHS Trust

The Princess Royal Hospital
Lewes Road
Haywards Heath
West Sussex
RH16 4EX

Information on 'Anti D'.

You have been identified by our screening team as having a D negative blood group and consequently I would like to offer you an appointment for routine antenatal prophylaxis of '**anti-D'** after your 28th week of pregnancy.

*****You must have your routine 28 week blood tests taken before your *** appointment!**

****

I trust it has been previously explained to you that having prophylactic '**anti-D'** is important in order to stop your body from forming harmful anti-D antibodies. Babies inherit their blood group from both parents and you may form anti-D antibodies *if** your baby has a different blood group to you (i.e. a D positive blood group). Antibodies are your body's natural defence mechanism against infection and foreign substances- in this case your baby's cells.

During pregnancy and especially at birth some of your baby's blood cells may leak into your bloodstream potentially initiating an immune response and the production of anti-D antibodies.

Prophylactic '**anti-D'** is a 'ready-made' antibody derived from carefully screened blood plasma and has been successfully used for decades to remove baby cells from maternal circulation before they can activate the immune system thus reducing risk to future pregnancies.

Further doses of '**anti-D'** will be offered after 12 weeks of pregnancy if you have any bleeding or experience any trauma (falls, accidents). *Please contact the Day Assessment Unit on ext. 5486 (working hours) or Triage on ext. 8176 (24 hours if you are more than 12 weeks pregnant ASAP .*

You will have a final dose of **'anti- D'** postnatally if* your baby is confirmed as having a different blood group to you (we check this via blood samples from the umbilical cord after your placenta is delivered).

**There is a chance your baby shares your blood group in which case the harmless anti-D will be unused and metabolised by your body.*

Further information can be sourced from **nhsbt.nhs.uk** or ask your community midwife for advice

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Appendix C - Prescription for Anti-D, printed on RED paper.

REQUEST for ANTI-D IMMUNOGLOBULIN

EDD: -_____ 28 week appointment date: - _____

MOTHER		**INFANT**	
SURNAME:	**FORENAME:**	**SURNAME:**	**FORENAME:**
UNIT NO:	**D.O.B**	**UNIT NO:**	**D.O.B**
ADDRESS:			
BLOOD GROUP			
ANTIBODY STATUS			

ANTI-D IMMUNOGLOBULIN ISSUED & RECEIVED.

(Please attach transfusion label.) Kleihaur is required after 20/40 prior to administration

Reason for Issue	**Batch No & Dose**	**Date/time Issue**	**Administered by**	**Signed**	**Date**	**Time**	**Checked by**
Antenatal ≤20/40 ***250INTERNATIONAL UNITS*** ≥20/40 ***500INTERNATIONAL UNITS***							
Antenatal ≤20/40 ***250INTERNATIONAL UNITS*** ≥20/40 ***500INTERNATIONAL UNITS***							
28 weeks ***1500 INTERNATIONAL UNITS***							
postnatal							

500 INTERNATIONAL UNITS							

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CONSENT for ADMINISTRATION of ANTI-D IMMUNOGLOBULIN

To be completed by Health Professional

Name of procedure: INTRA-MUSCULAR INJECTION of ANTI-D IMMUNOGLOBULIN

Main risks of procedure: ANAPHYLAXIS (severe allergic reaction)

I …… (print name) **have explained the above procedure / treatment and the reason for administration and options available to the patient, in terms which are suited to their understanding.**

SIGNED: ……DATE: ……

To be completed by the patient

I am the patient …….. (print name)
I understand what has been explained to me by the named clinician on this form and consent to receiving the injection
I consent to having any necessary treatment that may need to be carried out should any complications occur whilst receiving the injection

SIGNED: ……..DATE: ……..