Reference Number: UHBOBS010 **Version Number: 7**	**Date of Next Review: 20/10/2026** **Previous Trust/LHB Reference Number:**

Anti D Prophylaxis for Women who are Rhesus D (RhD) Negative

Introduction and Aim

Human red blood cells carry many antigens on their surfaces. The most important of these antigens belong to the ABO system and the rhesus (Rh) system. The D antigen is the most important antigen of the rhesus system.

People with the rhesus D (RhD) antigen are referred to as RhD positive, and those without it as RhD negative. During pregnancy small amounts of Fetal blood can enter the maternal circulation (an event called feto–maternal Haemorrhage (FMH)). The presence of Fetal RhD-positive cells in her circulation can cause a mother who is RhD negative to mount an immune response, producing a template for the production of antibodies as well as small amounts of antibodies against the RhD antigen (anti-D antibodies). This process is called sensitisation or alloimmunisation (NICE 2008).

Objectives

To ensure all staff working with pregnant women the Health Board give appropriate care and advice to women who are RhD Negative.

Scope

All staff working in maternity services, or areas where pregnant women may be assessed, e.g., Emergency Department

Equality Health Impact Assessment	*An Equality Health Impact Assessment (EHIA) has not been completed.*
Documents to read alongside this Procedure	*Antenatal Care, Postnatal Care*
Approved by	*Maternity Professional Forum, O&G Quality and Safety Forum*

Accountable Executive or Clinical Board Director	*Jason Roberts, Executive Director of Nursing , Women and Children's*
Author(s)	*Sian Jones, Clinical Supervisor for Midwives* *Samantha McWilliam, Transfusion Practitioner*

Summary of reviews/amendments

Version Number	Date of Review Approved	Date Published	Summary of Amendments
1	July 2006		
2	June 2009	July 2012	L Stephenson
3	Jan 2011	Jan 2011	S Jose
4	Dec 2013	Feb 2014	S Macrury, S Jose, P Amin
5	June 2017	15/01/2018	Rhiannon Lewis, Annie Burrin
6	September 2019	September 2019	Amended by Rachel Crooks, Midwife Louise Protheroe-Davies, Clinical Supervisor for Midwives Annie Burrin, Clinical Supervisor for Midwives
7	October 2023	January 2024	Sian Jones

1 Table of Contents

Contents

’ The words woman and women have been used throughout this document as this is the way that the majority of those who are pregnant and having a baby will identify. For the purpose of this document, this term includes girls. It also includes people whose gender identity does not correspond with their birth sex or who may have a non-binary identity’.

2 Introduction

Antenatal screening for blood group and antibodies should be offered to all pregnant women at Booking appointment, irrespective of previous screening results as an integrated part of their antenatal care.

All women who are Rh D negative should receive verbal and written information about antenatal and postnatal anti-D prophylaxis and have theopportunity to discuss this treatment with a midwife in the antenatal period.(ASW 2010).

The risk of sensitisation can be reduced by administering anti-D Immunoglobulin to women in situations in which Fetal Maternal Haemorrhage (FMH) is likely. Routine antenatal anti-D prophylaxis (RAADP) is recommended as a treatment optionfor all pregnant women who are rhesus D (Rh D) negative and who are not known to be sensitised to the Rh D antigen (NICE 2008). In the postnatal period Anti-D immunoglobulin should be offered to every non-sensitised Rh D negative woman within 72 hours following the delivery of a Rh D positive baby (NICE 2008). If this timeline is not met, some protection may be offered if given up to 10 days after sensitising event. (British Committee for Standards in Haematology, 2014).

Intramuscular anti D Ig should be administered into the deltoid muscle as an injection.

Back to Contents

3 Prophylaxis following sensitising events in the antenatal period

Anti-D should be offered to all non-sensitised Rh D negative women after the following potentially sensitising events during pregnancy:

- Invasive prenatal procedures (amniocentesis, chorion villus sampling, fatal blood sampling, insertion of shunts, embryo reduction).
- Antepartum haemorrhage / PV bleed
- Abdominal trauma – blunt or sharp, regardless of whether trauma visible on abdomen or not
- Miscarriage / medical termination of pregnancy. Further guidance if gestation < 17 weeks refer to - wisdom.nhs.wales/health-board-guidelines/c-vgguidelinefile/rhesus-prophylaxis-less-20-week-gestation-cvg-guideline-2020-pdf/
- External cephalic version of the fetus
- Intrauterine death (gestation >20 weeks)
- Stillbirth
- Cell salvage used during operative procedure
- Ectopic pregnancy or molar pregnancy

(Serious Hazards of Transfusion (SHOT), 2023)

Back to Contents

4 Management of sensitising events

Following a potential sensitising event, 500IU anti-D prophylaxis should be offered

Before 20 weeks gestation a Kleihauer sample to measure potential Fatal Maternal Haemorrhage (FMH) is not required. Before 20 weeks gestation there are not enough fetal blood cells in circulation to warrant measuring and 500IU will be sufficient.

If Anti-D is accepted it should be administered within 72 hours of incident (ASW 2010, RCOG 2002b). The Anti-D traceability label should be returned to Blood Bank as soon as possible – **the legal requirement is within 48 hours** - to allow full traceability of the product (through POD transport system or internal post) and should be documented in the patients' medical notes with the Batch No and on the electronic maternity record.

All women who contact a health professional to report a potential sensitising event should be directed to the Obstetric Assessment Unit for assessment and management of care.

Back to Contents

5 User guidelines for the management of potential sensitising events

- Assess the wellbeing of woman and fetus.
- Confirm woman is RhD Negative from hard copy of result in maternity record, Welsh Clinical Portal, Welsh Blood Service or take blood test for Kleihauer and send to blood bank. If evidence of Rh-Negative status available from earlier admission or previous pregnancy but not current pregnancy, contact Blood Bank, as if evidence available, Anti-D will be issued.
- The Kleihauer screening blood test should be offered and taken after 20 weeks gestation. Additional doses of Anti-D prophylaxis may be required, as advised by the laboratory, following Kleihauer screening (ASW 2010).
- Midwife to ensure that anaphylaxis treatment box with adrenaline 0.5 mgs of 1:1000 solution is available in the room where the Anti-D is administered for treatment of anaphylactic reaction as per Resuscitation Council UK Guidance

See - Anaphylaxis algorithm 2021.pdf (resus.org.uk)

Back to Contents

6 Routine antenatal anti-D prophylaxis (RAADP)

Routine antenatal anti-D prophylaxis (RAADP) is recommended as a treatment option for all pregnant women who are rhesus D (RhD) negativeand who are not known to be sensitised to the RhD antigen (NICE 2008).

Without any prophylactic treatment, alloimmunisation happens in 10% and 15% of rhesus negative women due to pregnancy. The current risk of alloimmunisation in the UK is about 1:21,000 births. In England and Wales about 500 fetuses develop Haemolytic Disease of the Fetus and Newborn each year; 20-30 die from HDFN each year

Once sensitisation has occurred, this is irreversible and can have a detrimental effect on current or any future pregnancies (and can create delays if a blood transfusion is ever required (ASW 2007)

Identification of women who are Rhesus negative following booking appointment should be prompt. At the 16 week community midwife appointment verbal information to inform the woman of the implications of being rhesus negative should be provided and the patient information leaflet – 'Antenatal Prophylaxis with Anti-D'. The Community midwife should document the woman's blood groupin the All Wales Maternity Record and ensure the woman is aware and has been offered an appointment for Prophylactic Anti-D.

Back to Contents

7 User guidelines for the management of the prophylactic Anti D clinic

Following identification of woman who has rhesus negative blood group

No direct comparative data available to allow an evaluation of the efficiency of a single large dose (1500ius) or 2 smaller doses (500ius) of Anti D. NICE (2008) recommends the preparation which is locally most cost effective. A single dose can be seen to be more effective for cost, compliance and logistics (NICE, 2008).

- Appointment made for Anti-D clinic between 28 and 32 weeks gestation.
- Written information ("You, your Baby & the RhD Factor" (BPL)) should be sent by post with the appointment letter.

One week prior to Anti-D clinic

- Patient Management System (PMS) list for the Anti-D clinic for the following week to be reviewed to identify women who may have a prior appointment in the antenatal clinic. Meaning Anti D can be offered at this appointment and avoid unnecessary hospital visits for Rh Negative women.

- Complete the Anti-D issue and return list (appendix 1) for all women with appointment.
- Print out blood group and rhesus antibody result from Welsh Blood Service (WBS) website for all women with appointment.
- Ensure most recent Antibody Screen is negative for Anti-D

All of the above need to be checked by a midwife and taken to blood bank.

On the day of the clinic

- A member of staff to telephone the Blood Transfusion Laboratory from 0845 to ensure Anti-D is ready for collection.

- Collect required Anti-D at 0900hrs for a morning clinic 1300hrs for afternoon clinic from blood bank. The staff collecting Anti-D should take the clinic cards with them so that an addressograph is available tosign out the Anti-D.

- Prepare room for the clinic ensuring that trays are prepared with the following items: - sterile wipes, cotton wool and micropore. A sharps box should be placed in the room.

- Midwife to ensure that anaphylaxis treatment box is available in the room, and is checked daily

- It should be checked with the woman and in the maternity record if the 28 week blood group and Full Blood Count sample hasbeen taken. If not, these samples should be taken **before** the administration of Anti-D prophylaxis.

- With appropriate informed consent and correct positive patient identification, administer 1500IU Anti-D intra-muscularly into the Deltoid muscle (outer, upper arm)

- The management, administration and batch number of Anti-D given for routine prophylaxis should be documented in the All Wales maternity notes and added to the electronic maternity record.

- The Anti-D traceability label should be returned to Blood Bank within 48 hours as is the legal requirement

- Complete Anti-D issue and Return List (Appendix 9.1), return to Blood Bank to confirm and counter-sign

Back to Contents

8 Postnatal prophylaxis

9 User guidelines for the management of postnatal prophylactic Anti D (See Appendix 2 and 3)

- Complete blood bank form for the cord / baby blood (including baby details and hospital number) requesting Group and stating mother post-delivery and Rh D negative. Collect 5mls cord blood in a pink topbottle. Cord blood is preferable to a baby blood sample taken later as it tends to be a larger amount, easier to analyse and results can be more immediate. ***Make sure that you hand write the bottle label with baby's details and hospital number.*** *Printed stickers with patient details will not be accepted.*

- Baby details will need to be entered into the electronic maternity record to generate a baby number to complete labelling. The Hospital Number (CRN) generated later when baby is registered by a receptionist, which has a letter at the end, is most ideal, however as this can delay sending sample, Electronic maternity record hospital number is acceptable.

- Complete blood bank form for maternal samples. Collect 2 x 5mls maternal blood in two pink top bottles. ***Hand write both blood bottle labels.***

- Maternal blood samples should not be taken earlier than 30 -45 minutes following delivery of placenta and best practice is within 2 hours post delivery

- Blood bottle labels to be handwritten, the sample forms can have addressograph labels on them.

- The first line of patient's address is no longer a labelling requirement as of 1st August 2023

- An addressograph with mother's details should be added to the back of the blood form containing the cord blood or mother's hospital number written in as additional information to ensure samples stay connected. If possible, samples should be sent together in envelope for the same reason.

- Where woman has antibodies (Rhesus, D, c or KELL) send cord blood for Coombs, ABO &Rh, Hb and serum bilirubin. Inform Paediatrician of delivery.

- Document that the blood has been taken in the Postnatal Care Pathway and Maternal notes

- Inform postnatal ward midwife on transfer that woman is Rh D negative on handover of care.

- Postnatal midwife to check baby's blood group on reporting system or by calling blood bank. If baby Rh D Positive, 500IU Anti-D will be issued by blood bank for administration to the woman. The Anti-D traceability label should be returned to Blood Bank within 48 hours.

- If the FMH is >4mls potentially a larger Anti-D will be needed, in this case, Blood Bank will note on the initial result that additional Anti-D may be required and this will be reported later in the day

- Administration date and Batch number needs to be documented in The Postnatal Pathway and electronic maternity record so that the Community Midwife is aware and for traceability.

- If baby is Rh D Negative, no Anti-D will be required and again this documented clearly in Maternal notes and Postnatal Pathway

- If Kleihauer result measuring Fetal Maternal Haemorrhage (FMH) is not available prior to discharge home, check to see if the baby group is available and phone Blood Bank. Baby's sample may have been processed but not yet connected to mother's sample. It is the responsibility of the discharging midwife to ensure that the community electronic diary and Postnatal Pathway isupdated with this information in case Community Midwife needs to follow up Kleihauer result in case further Anti-D is required.

Studies have shown that 99.2% or 99.3% of women have a FMH <4 ml at delivery. Up to 50% of larger FMH's occur after normal deliveries. However, the following clinical circumstances are more likely to be associated with large FMH and therefore additional anti-D may be required

- Traumatic deliveries including caesarean section.
- Manual removal of the placenta.
- Stillbirths and intrauterine deaths (See Section 6)
- Abdominal trauma during the third trimester
- Twin pregnancies at delivery.
- Unexplained hydrops fetalis.
- Women receiving cell salvaged blood (See Section 7)
  (BCSH, 2014)

10 Intrauterine Deaths

All Rh-Negative women within 72 hours of IUD diagnosis should have 500ius Anti D prophylactically as this is a sensitising event.

A Kleihauer sample to measure FMH should be taken for ALL women diagnosed with an IUD regardless of Rhesus status to detect possible FMH

11 Intra Operative Cell Salvage (ICS)

- Where ICS is used during Caesarean Section in Rh D negative women with no previous sensitising events and where cord blood group is Rh positive or unknown, a minimum dose of 1500IU of Anti-D should be administered following the re-infusion of salvaged red cells.
- A maternal Kleihauer sample should be taken 30-45 minutes after re-infusion in case more Anti-D is indicated.
- **It is important clinicians inform Blood Bank if ICS has been used to ensure the correct dose of Anti-D immunoglobulin is issued.**

11 References:

British Committee for Standards in Haematology (2014) Guideline for the use of Anti -D immunoglobulin for the prevention of haemolytic disease of the fetus and newborn

National Institute for Health and Clinical Excellence (NICE) (2008) Routine antenatal Routine antenatal anti-D prophylaxis (RAADP) for women who are rhesus D negative

National Institute for Health and Clinical Excellence (NICE) (2006)Routine postnatal care of women and their babies

Serious Hazard of Transfusion (SHOT) (2023) Anti-D Immunoglobulin (Ig) administration to avoid sensitisation in pregnancy - An Aide Memoir

Back to Contents

12 Appendices

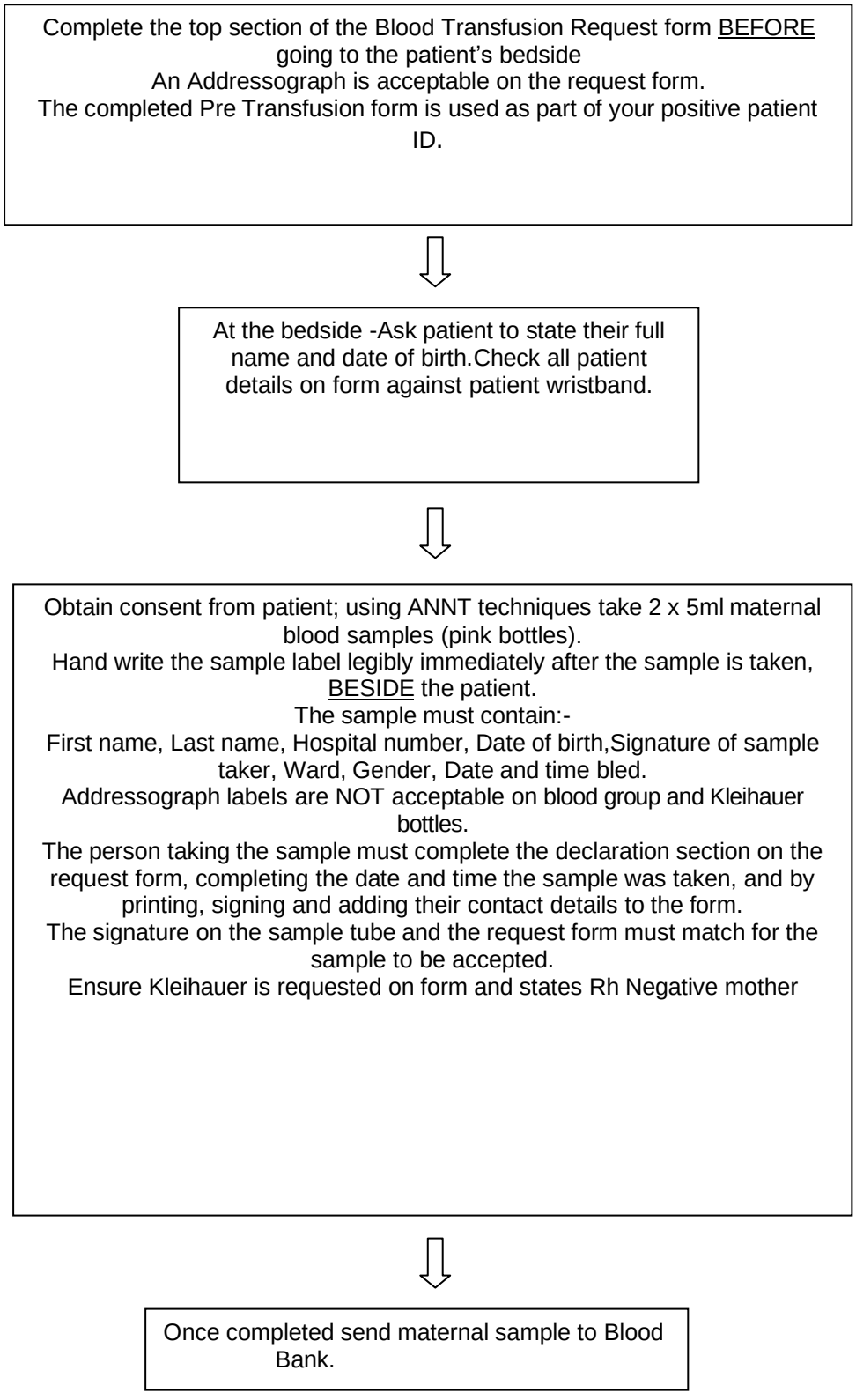
12.1 Appendix 1

ANTI-D ISSUE AND RETURN LIST Date:			
ADDRESSOGRAPH	**EDD**	**Lab use**	**Reason for Non-Administration**
Signature of Midwife	**Print Name**		**Consultant**

ANTI-D ISSUE AND RETURN LIST Date:			
ADDRESSOGRAPH	**EDD**	**Lab use**	**Reason for Non-Administration**
Signature of Midwife	**Print Name**		**Consultant**

THIS SHEET <u>MUST</u> BE RETURNED TO BLOOD BANK FOLLOWING ADMINISTRATION / NON-ADMINISTRATION

12.2 Appendix 2: Taking blood for Kleihauer from Rh D Negative patients



12.3 Appendix 3: Cord Blood from Infants of Rh D Negative Women

Baby is born to mother who is RhD negative

As soon as possible – midwife to obtain 5mls cord blood sample (pink bottle). Handwrite label including baby's hospital number generated by Euroking.

Blood Bank will accept handwritten blood forms for baby if no addressographs have yet been issued

Note on form – Infant of Rh negative mother, neonatal blood and attach maternal addressograph on the back of form

(For women who have antibodies also request Coombs, ABO & Rh, Hb and bilirubin)

If possible, to keep mother and baby samples connected, the two samples should be sent together

Postnatal care pathway, notes and Euroking must show clearly that Kleihauer bloods have been sent and need following up.

Verbal handover to ward should include this also

Midwife can check results within a couple of hours to ascertain baby's blood group. Baby's blood group may be available before mother's. Blood Bank can be phoned on ext.42157

If baby is RhD positive, blood bank will issue 500 unit Anti D for mother

If baby is Rh D negative, woman does not need Anti D

Ward staff collect Anti D from Blood Bank and administer to woman

Correct identification verbally and wristband check.

Obtain verbal informed consent

Clear documentation and recording of administration and Batch number
Traceability label to be returned to Blood Bank within 48 hours

Woman can be discharged prior to Kleihauer result becoming available. In this case the Community Midwives Team diary should be updated to inform that this needs checking. Ensure baby's results are checked as this result is likely to be available more immediately than Kleihauer and 500ius Anti D can be issued. In this case, there needs to be additional follow up of Kleihauer result in case an FMH of >4mls is identified and further Anti-D is required.

A Kleihauer result needs to be checked and actioned by 72 hours

12.4 Appendix 4:

Anti-D Immunoglobulin (Ig) Administration in Pregnancy- an aide memoire

SHOT Serious Hazards of Transfusion

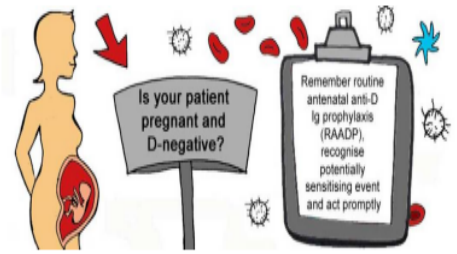
Key points to note:

- Women who are confirmed to have immune (allo) anti-D do not need (or should not receive) anti-D Ig
- Where the results of the cell free fetal DNA (cffDNA) screening test are available and show that the fetus/baby is D-negative, anti-D Ig does not need to be given
- Confirm that the cffDNA result relates to the current pregnancy
- Person administering anti-D Ig should confirm the woman's identity, discuss risk/benefits, gain informed consent and record in patient's notes. Confirm product dose and expiry date
- Following potentially sensitising events (*PSE- see appendix 1)*, anti-D Ig should be administered as soon as possible and always within 72 hours of the event. If, exceptionally, this deadline has not been met some protection may be offered if anti-D Ig is given up to 10 days after the sensitising event
- Each new sensitising event should be managed with a dose of anti-D Ig independent of previous or subsequent planned doses (including RAADP)
- In the event of continual uterine bleeding which is clinically judged to represent the same sensitising event, with no features suggestive of a new presentation or a significant change in pattern or severity of bleeding, a minimum dose of 500 IU anti-D Ig should be given at 6 weekly intervals. Feto-maternal haemorrhage (FMH) screening should be performed every 2 weeks from 20 weeks onwards
- Appropriate tests for FMH should be carried out for all D-negative, pregnant women who have had a PSE after 20 weeks of gestation and additional dose(s) of anti-D Ig should be administered as indicated. Tests for FMH are also indicated if cell salvage has been used as top up doses (>1500 IU recommended) may be needed
- Routine Antenatal Anti-D Ig Prophylaxis (RAADP) is a separate entity for unidentified events through to delivery, and should always be given at the appropriate time in the second trimester, even if the woman has already received one or more doses of anti-D Ig for PSE
- A minimum dose of 1500 IU should be given where autologous cell salvage products have been reinfused

Potentially sensitising events (PSEs) during pregnancy *(see Appendix 1 on next page)*	
Gestation LESS than 12 weeks	
All surgically managed abortions, ectopic/molar pregnancies and miscarriages	Administer at least **500 IU*** anti-D Ig within 72 hours of event. Confirm product / dose / expiry and patient ID pre-administration Test for FMH (screening and confirmatory) are not required
Medical abortions beyond 10 weeks	
Gestation 12 to 20 weeks	
For any potentially sensitising event (PSE) including medical and surgical miscarriages, abortions and ectopic/molar pregnancies	
For continuous uterine bleeding (see key points above)	

**Please note that while the BSH guidance regarding the amount of anti-D Ig to be given for <12 weeks and 12-20 weeks remains as 250 IU, no 250 IU vials are currently available. To avoid/prevent underdosing or errors with administration, the dose included here is '500 IU' which is the lowest dose of anti-D Ig preparation that is available.*

Gestation 20 weeks to term	
For any potentially sensitising event (PSE) (**Irrespective** of whether RAADP has been, or is planned, to be given imminently)	Request a test for FMH (e.g., Kleihauer test) and immediately administer at least **500 IU** anti-D Ig within 72 hours of event
If the test for FMH indicates that further anti-D Ig is required (Fetal bleed volume needs to be ascertained using more sensitive techniques such as flow cytometry)	Administer additional anti-D Ig following discussion with laboratory, adhere to follow up FMH testing requested by laboratory to ensure all fetal cells are cleared

Routine Antenatal Anti-D Prophylaxis (RAADP)	
For Routine Antenatal Anti-D Prophylaxis (**Irrespective** of whether anti-D Ig already given for PSE) 	Take a blood sample to confirm group and antibody screen – do not wait for results before administering anti-D Ig Administer **1500 IU** anti-D Ig at **28 – 30** weeks **OR** Administer at least **500 IU** anti-D Ig at **28** weeks and then administer at least **500 IU** anti-D Ig at **34** weeks
At delivery or intrauterine death (IUD) >20 weeks	
If the baby's group is confirmed as D-positive or baby's group is unknown OR If cord samples are not available following IUD	Request a test for FMH (e.g., Kleihauer test) Administer at least **500 IU** anti-D Ig within 72 hours of delivery
If the test for FMH (e.g., Kleihauer Test) indicates that further anti-D is required	Administer additional anti-D Ig following discussion with laboratory, adhere to follow up FMH testing requested by laboratory to ensure all fetal cells are cleared
Where **intra-operative cell salvage** has been used during Caesarean section in D-negative, previously non-sensitised individuals and where cord blood group is confirmed as D positive (or unknown) Clinicians must inform the transfusion laboratory if intra-operative cell salvage has been used to ensure that correct dose of anti-D Ig is issued. Fetal bleed volume needs to be ascertained by confirmatory methodologies e.g., flow cytometry	Administer at least **1500 IU** anti-D Ig following re-infusion of salvaged red cells Maternal sample should be taken for estimation of FMH (e.g., Kleihauer test) 30–45 min after reinfusion in case more anti-D Ig is indicated FMH testing is repeated 72hours after total dose has been given to ensure all fetal cells are cleared

Safe administration and documentation practice:

1. Confirm patient ID with the prescription/product label
2. Confirm cffDNA result for current pregnancy
3. Confirm the anti-D Ig dose is correct
4. Confirm the anti-D Ig has not expired
5. Take group and screen prior to administration but do not wait for results
6. Record anti-D Ig batch number & administration date in clinical notes

Appendix 1- Potentially sensitising events in pregnancy (From the 'BCSH guideline for the use of anti-D immunoglobulin for the prevention of haemolytic disease of the fetus and newborn 2014 ')

Amniocentesis, chorionic villus biopsy and cordocentesis	*Intrauterine death and stillbirth*
Antepartum haemorrhage/Uterine (PV) bleeding in pregnancy	*In-utero therapeutic interventions (transfusion, surgery, insertion of shunts, laser)*
External cephalic version	*Miscarriage, threatened miscarriage*
Abdominal trauma (sharp/blunt, open/closed)	*Therapeutic termination of pregnancy*
Ectopic pregnancy	*Delivery – normal, instrumental or Caesarean section*
Evacuation of molar pregnancy	*Intra-operative cell salvage*

This aide-memoire is based on BSH Guidelines titled 'BCSH guideline for the use of anti-D immunoglobulin for the prevention of haemolytic disease of the fetus and newborn 2014'.NICE guidance documents can be found at: NG 126 (https://www.nice.org.uk/guidance/ng126/chapter/Recommendations#anti-d-rhesus-prophylaxis) and NG 140 (https://www.nice.org.uk/guidance/ng140/chapter/Recommendations#anti-d-prophylaxis). Please note that this has been reviewed and approved by the BSH Transfusion Taskforce and is only for reference to help draft checklists locally.