Anti-D guidelines (GL786)

Approval and Authorisation

<table>
<thead>
<tr>
<th>Approved by</th>
<th>Job Title or Chair of Committee</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity &amp; Children's Services Clinical Governance Committee</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>6th July 2018</td>
</tr>
</tbody>
</table>

Change History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>Sept 2014</td>
<td>L Rough, Matron for Hospital &amp; Outpatient services</td>
<td>Reviewed</td>
</tr>
<tr>
<td>6.0</td>
<td>Aug 2016</td>
<td>C Harding (Consult MW), T Hawkins (BT nurse specialist)</td>
<td>Reviewed and information updated to correct terminology and practice throughout.</td>
</tr>
<tr>
<td>6.1</td>
<td>March 2017</td>
<td>C Harding (Consultant MW)</td>
<td>Pg 4 – Women delivering at another hospital changes</td>
</tr>
<tr>
<td>7.0</td>
<td>May 2018</td>
<td>T Hawkins (Transfusion Practitioner), C Harding (Consultant MW)</td>
<td>Reviewed – major re-write and addition of Fetal DNA Rh D testing</td>
</tr>
</tbody>
</table>

This version also replaces GL906 Rhesus disease guideline, last published February 2016
Contents

1.0 Introduction ........................................................................................................................................3

2.0 Prevention of Haemolytic disease of the fetus & newborn ...............................................................3

2.1 Inconclusive results ............................................................................................................................4

3.0 Antenatal Management ......................................................................................................................4

3.1 Booking appointment ........................................................................................................................4

3.2 Antenatal visit: (usually 16/40) .........................................................................................................4

3.3 Fetal RhD testing sample and request form .......................................................................................5

3.4 Managing sensitising events that occur before Fetal RhD test result ..............................................5

3.5 Fetal RhD result ..................................................................................................................................5

3.6 Multiple births: ...................................................................................................................................5

3.7 Antenatal management .......................................................................................................................6

3.8 Operational Process RBH ..................................................................................................................7

3.9 Women Transferring in Mid-pregnancy & late bookers .................................................................7

4.0 Administration Anti-D Process ........................................................................................................8

5.0 Women Who Decline Anti-D ........................................................................................................9

6.0 Postnatal management .......................................................................................................................11

7.0 Management of a large fetomaternal haemorrhage where baby RhD positive ..............................11

Table 2: Postnatal Management ........................................................................................................13

8.0 Management of missed or late Anti-D ............................................................................................14

9.0 Risks of Anti-D ..................................................................................................................................14

10.0 Management of women who have a Positive antibody screen .................................................15

11.0 References ......................................................................................................................................17

Appendix 1: Midwifery flow chart for fetal RhD testing [NB: if mother has positive antibody screen for Rh D see 10.0] .................................................................................................................18

Appendix 2: Transfusion Plan for Delivery: Risk of Haemolytic Disease of Fetus and Newborn ..............................................................................................................................................2
1.0 Introduction

This guideline covers fetal RhD testing, Anti-D prophylaxis for prevention of haemolytic disease of the fetus and newborn, and management of maternal antibodies. Prevention of haemolytic disease of the fetus and newborn is primarily through non-invasive pre-natal testing of RhD negative pregnant women’s blood, to detect cell free fetal DNA which determines whether the fetus is RhD negative or RhD positive. A regime of prophylactic Anti-D is then given if the fetus is RhD positive or RhD inconclusive/unknown. Management of pregnant women with D and other red cell antibodies is essential to ensure the best outcome for both baby and mother, this is covered in 10.0.

2.0 Prevention of Haemolytic disease of the fetus & newborn

When an RhD negative woman becomes pregnant, there is a 60% chance that the fetus will be RhD positive. If any RhD positive fetal blood goes into the maternal circulation (feto-maternal haemorrhage – FMH) there is a risk that the woman will create D antibodies (immune Anti-D) against the RhD positive fetal blood. There are many events that may cause fetal blood to go across the placenta into the maternal circulation (see Table 1). The first pregnancy where this occurs does not generally cause any problems for that fetus; however in future pregnancies, if the fetus is RhD positive, the maternal D antibodies will attack the fetal red cells which can lead to fetal anaemia, jaundice and even death.

Anti-D prophylaxis only works in women who have not already been sensitised to the D antigen; see 10.0 for management of patients with positive antibody screens to both D and other red cell antibodies.

Prophylactic Anti-D can prevent the creation of maternal D antibodies (sensitisation) which then prevents haemolytic disease of the fetus/new-born. All RhD negative pregnant women were previously given Anti-D at various intervals/events to prevent this, despite the fact that approximately 40% will be carrying an RhD negative fetus. This was because it wasn’t possible to detect whether the fetus was RhD negative or positive.

It is now possible to detect the RhD status of the fetus by taking a maternal blood sample from 11+2/40. NICE released a Diagnostic Guidance (DG25 2016) recommending this test as a cost effective option to guide antenatal prophylaxis; advising that it will reduce unnecessary use of a blood product in pregnant women, and conserve Anti-D supplies which are becoming scarce.

This test is >99.9% accurate at predicting RhD negative status, so there is <0.1% risk of a false negative. To mitigate against this risk, cord grouping at delivery will continue for baby’s predicted to be RhD negative. As delivery is the primary sensitising event this reduces the risk significantly. If the cord/baby result is RhD
positive the woman will be offered Anti-D. Soothill et al (2015) estimates there would be 13 extra sensitisations per 100,000 women if cord typing is not done; if cord typing is done he estimates there will only be 3 extra sensitisations per 100,000 women (the previous regime where all RhD negative women were given Anti-D resulted in 281 sensitisations per annum).

There is a 2% chance that a baby predicted to be RhD positive will be RhD negative. This does not pose any greater risk than the previous regime where all women with an RhD negative fetus had Anti-D during pregnancy.

Benefits for women with RhD positive fetus; the woman will know that she requires Anti-D for routine prophylaxis at 28-30/40, for any sensitising events, and she will have Anti-D as soon as possible after delivery, eliminating the wait for cord testing.

Benefits for women with RhD negative fetus; the woman will not receive unnecessary Anti-D.

2.1 Inconclusive results

- There will be a small number of women whose result is inconclusive
- These women will be treated as if the fetus was RhD positive during pregnancy
- At birth they will require a cord sample to conclusively determine the RhD status, and will need further Anti-D if the baby is RhD positive

3.0 Antenatal Management

3.1 Booking appointment

All women will require a blood group and antibody screen to determine RhD status (pink top EDTA) which must be sent to the blood transfusion laboratory (see Blood Transfusion in Adults Policy).

A request form must be completed and must contain all four points of identification, either printed, hand written, or the patient’s addressograph label affixed to the request form. The request form must be signed and dated by the healthcare professional ordering the tests.

3.2 Antenatal visit: (usually 16/40)

If the woman is RhD negative, and has a negative antibody screen to RhD, the midwife should;

- Explain the implications of RhD type and the fetal RhD test
- Supply the woman with the NHSBT patient information leaflet ‘Mother’s blood test to check her unborn baby’s blood group’.
- If the woman wishes to have the fetal RhD test follow section 3.3
3.3 Fetal RhD testing sample and request form

- A 6ml EDTA maternal sample (minimum requirement 4mls) in a single pink top bottle must be taken. It must be labelled by hand, at the patients side (see Blood Transfusion in Adults Policy).
- An expected date of delivery (EDD) by scan must be entered in the ‘address’ section of the sample bottle. This ensures positive identification of the fetus being tested in case of miscarriage and subsequent pregnancy.
- Use the ‘Request for cell free fetal DNA (cffDNA) Screen RhD Fetal Genotyping Service’ NHSBT form, or ICE where in use. The EDD by scan box on the request form must be completed. Enter RHW01 in “Hospital Laboratory Use” box
- Send sample and request form to the Transfusion Laboratory as for all other samples. The Transfusion Laboratory will send it to NHSBT at Filton

3.4 Managing sensitising events that occur before Fetal RhD test result

If any RhD negative woman has a sensitising event before the result of the Fetal RhD test is known, the woman should be treated as if the fetus was RhD positive. Please follow Table 1 ‘Anti-D sensitising event prophylaxis flow chart’.

3.5 Fetal RhD result

- The result will take approximately 14 days
- The Transfusion Laboratory will copy the result (from NHSBT Sp-ICE database) onto the Laboratory Information Management System (Lab Centre); this will be checked and verified by another member of staff
- The result will read:
  - ‘The fetus with an EDD of xx/xx/xx is predicted to be RhD negative / positive / inconclusive’
- The information on the LIMs will be available on EPR under Results review – pathology: Fetal Genotyping Report
- If the Fetal Genotyping has not been done due to mislabelling of blood sample, a repeat fetal Rh D sample should be taken before 26 week gestation.

3.6 Multiple births:

A positive result means that at least one of the babies is RhD positive, a negative result means that all of the babies are RhD negative. Follow the ‘Midwifery flowchart for fetal RhD testing’.
3.7  **Antenatal management**

For an overview see Midwifery flow chart for fetal RhD testing (Appendix 1).

3.7.1 Women with fetus predicted RhD positive

- These women will require both:
  - Routine antenatal Anti-D prophylaxis: 1500IU Anti-D at 30/40
  - Sensitising event prophylaxis

3.7.2 Women with fetus predicted RhD negative

- These women will not require any Anti-D during pregnancy.

3.7.3 Women with inconclusive / unknown result

- These women will require both:
  - Routine antenatal Anti-D prophylaxis: 1500IU Anti-D between at 30/40
  - Sensitising event prophylaxis

3.7.4 Sensitising events: For RhD negative women with RhD positive fetus or where result is inconclusive or unknown.

These are events that have the potential to cause a feto-maternal haemorrhage (FMH) which can lead to sensitisation; see Table 1 with the following additional requirements

- Establish the details of the sensitising event including when it occurred, and whether there was any obvious cause, especially for vaginal bleeding
- Ensure Anti-D is prescribed by Medical staff following a sensitising event (outside of midwifery exemptions)
- See also section 7.0 for management of a large fetomaternal haemorrhage

3.7.5 Routine antenatal Anti-D prophylaxis: For RhD negative women with RhD positive fetus or where result is inconclusive or unknown

Anti-D 1500IU should be given at 30 weeks & should not be given before 28/40

Anti-D 1500IU must be given regardless of when, or if, any sensitising doses of Anti-D have been given

- Request the Anti-D as soon as possible, including the date of the appointment at which the Anti-D will be required.
- Document any recent patient name changes on the request form
• Use of the NHS number is preferred
• No sample is required with this request
• Late or missed doses of Anti-D must be reported to the Transfusion Practitioner who must report them to SHOT. See also section 8.0 for management of late/missed doses.

3.8 Operational Process RBH

• Anti-D clinics are held daily in antenatal clinic Tuesday – Friday 8.30-9.00. Except the Tuesday after a Bank Holiday Monday.
• All routine Anti-D prophylaxis is given in the Anti-D clinics.
• At the women’s routine 28-week antenatal appointment, the midwife reviews the Fetal Genotyping result and arranges the woman’s Anti-D appointment if necessary. This is arranged for 30 weeks gestation
• This is booked by telephoning 0118 322 7295.
• The midwife records the appointment in the woman’s hand held notes.
• Antenatal clinic requests Anti-D from Transfusion Laboratory via fax for named patients one week prior to their appointment in the Anti-D clinic.
• If the woman does not attend her Anti-D appointment, contact her and rearrange appointment as soon as possible.
• If the woman is booked to deliver at a hospital other than the Royal Berkshire hospital then an Anti D appointment should be made at the unit the woman intends to deliver.
• At the woman’s 28 week routine appointment take blood for Group and Antibody screen. If the 28 blood test has not been taken when woman attends Anti-D clinic, then a sample should be taken before the Anti-D is administered.

3.8.1 Operational Process West Berks Community Hospital

• There is only one Anti-D clinic per week. It is held on a Friday.
• The midwife books the appointment telephone 0118322 7295, requesting a WBCH Anti-D clinic appointment.
• An appointed person faxes the request for the named Anti-D to Transfusion Laboratory one week prior to the clinic.

3.9 Women Transferring in Mid-pregnancy & late bookers
- The woman should be assessed according to standard booking procedure, including routine booking bloods.
- The Fetal RhD test will be offered up 26/40 to allow for results and Anti-D ordering for RAADP
- If already known to be RhD negative, it must be clearly established and documented whether she has received any doses of Anti-D. Inform Transfusion Laboratory of the date and dose of Anti-D received.
- If she has received 500IU Anti-D at 28/40 weeks elsewhere, a second dose of 500IU should be given at 34/40
- If she is already greater than 28/40 gestation, has not received any prophylaxis and no antibodies to RhD have been detected, she should be recalled as soon as possible for her routine dose of 1500IU Anti-D.

4.0 Administration Anti-D Process

- Before administering Anti-D, the midwife must review the woman’s blood group Anti-D and antibody results, and the fetal RhD result.
- If there is only 1 blood group on file, another pink EDTA specimen for blood group and antibody screen must be taken and sent with the request form to the Transfusion laboratory before giving Anti-D (see Blood Transfusion in Adults Policy).
- Remove Anti-D from storage (9.0).
- Check patients identity and confirm against the compatibility label on the box containing the Anti-D (see Blood Transfusion in Adults Policy).
- Check that the patient’s blood type is the same in her hand held notes and on the compatibility label. The woman must be Rh-D negative and the Fetal RhD result must be RhD positive or inconclusive/unknown.
- If the patient has a positive antibody screen please see 10.0.
- Do not administer Anti-D if there is any discrepancy with patient demographics or the product.
- Administer one dose of Anti-D Anti-D(one vial of 1500IU) into the deltoid muscle. Women who have a bleeding disorder should receive the Anti-D via the subcutaneous route.
- The woman should wait for at least 20 minutes after administration before leaving the clinic/surgery to detect cases of allergy/anaphylaxis.
• Place sticker from compatibility label in handhelds note and return completed detachable section of compatibility label to the Transfusion Laboratory.

• Any unused Anti D must be returned as soon as possible to the Transfusion Laboratory.

5.0 Women Who Decline Anti-D

• A woman may choose to decline Anti-D; this decision must be respected by the obstetrician /midwife. However the healthcare professional must clearly document in the woman’s hand held notes her reasons for declining. The healthcare professional must be fully satisfied that the woman understands the implications of this decision. The Transfusion Laboratory must be informed so they can record this in the LIMS.
Table 1: Anti-D sensitising event (excluding delivery) prophylaxis flow chart

<table>
<thead>
<tr>
<th>Potentially sensitising events during pregnancy flowchart</th>
</tr>
</thead>
<tbody>
<tr>
<td>For RhD negative women with an RhD positive fetus OR fetal RhD status unknown</td>
</tr>
<tr>
<td>- Who do not have immune Anti-D (negative antibody screen to D)</td>
</tr>
<tr>
<td>- Regardless of whether they have had any previous doses of Anti-D</td>
</tr>
</tbody>
</table>

### Indications – regardless of gestation

<table>
<thead>
<tr>
<th>Event</th>
<th>Prophylaxis Flowchart</th>
</tr>
</thead>
</table>
| Ectopic pregnancy                          | 1. Take sample for Group & Screen  
2. Request 500IU Anti-D  
3. Confirm product / dose / expiry and patient Identification pre administration  
4. Administer Anti-D within 72 hours of presentation (give regardless of whether has had routine prophylaxis).  
5. If gestation greater than 20/40 request a Kleihauer to estimate feto-maternal haemorrhage. Do not wait for the Kleihauer result before giving 500IU of Anti-D. A negative Kleihauer means no further Anti-D is required.  
6. Check Kleihauer result and administer any further Anti-D as advised by Transfusion Laboratory |
| Molar pregnancy                            |                                                                                      |
| Termination – medical or surgical          |                                                                                      |
| Surgical management of pregnancy /        |                                                                                      |
| Evacuation retained products of conception |                                                                                      |
| Chorionic villus sampling                  |                                                                                      |
| Cordocentesis                              |                                                                                      |
| Amniocentesis                              |                                                                                      |
| External cephalic version                  |                                                                                      |
| in-utero intervention                      |                                                                                      |
| Fall / abdominal trauma                     |                                                                                      |
| Intra Uterine Death (at both diagnosis & delivery) |                                                                                      |

### PV bleeding less than 12/40 gestation

<table>
<thead>
<tr>
<th>Indication</th>
<th>Prophylaxis Flowchart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy bleeding and pain</td>
<td>Follow steps 1 - 4 above</td>
</tr>
<tr>
<td>Spontaneous complete miscarriage without surgical management OR minor, painless bleeding with viable pregnancy</td>
<td>Anti-D not required</td>
</tr>
</tbody>
</table>

### PV bleeding indications after 12/40 gestation

<table>
<thead>
<tr>
<th>Indication</th>
<th>Prophylaxis Flowchart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any PV bleeding or Miscarriage</td>
<td>12 - 20/40: Follow steps 1 - 4 above</td>
</tr>
<tr>
<td>Continuous PV bleeding: Where it is clinically judged to be the same sensitising event with no features suggestive of a new presentation or a significant change in the pattern or severity of bleeding, such as the presence of abdominal pain.</td>
<td>&gt; 20/40: Follow steps 1 - 6 above</td>
</tr>
</tbody>
</table>

### Anti D prophylaxis following Intrauterine Death (IUD)

In addition to anti-D Ig prophylaxis administered at diagnosis of an IUD, a further dose of anti-D Ig should be administered after delivery, as there could be variable and significant delay between the diagnosis of IUD and subsequent delivery.
6.0 Postnatal management
Delivery is a sensitising event; see Table 2 for management overview

6.1 Delivery of baby predicted to be RhD positive
There is a 2% chance that a baby predicted to be RhD positive will be RhD negative. This does not pose any greater risk than the previous regime where all women with an RhD negative fetus had Anti-D during pregnancy; therefore a cord sample is not required. A maternal sample is required.

These women can have Anti-D requested and given without delay (must be given within 72 hours of delivery). Check the Kleihauer result and administer any further Anti-D as advised by Transfusion Laboratory.

6.2 Delivery of baby predicted to be RhD negative
There is < 0.1% risk of a false negative; to detect false negatives a cord sample will be taken at delivery and tested. A maternal sample is also required.

If the cord/baby result is RhD negative no further action is required.

If a cord sample was not taken, no further action is required. The baby does NOT need to be bled to confirm blood group.

If the cord/baby result is RhD positive the woman will be offered Anti-D. The result discrepancy will need to be carefully explained to the woman and an incident form completed. Please involve the Transfusion Practitioner.

6.3 Delivery of baby with inconclusive / unknown result
A cord sample is required to determine the baby RhD result. A maternal sample is also required.

If the cord/baby result is RhD negative no further action is required.

If a cord sample was not taken. Either the baby should be bled to establish blood group or woman should have 500 IU Anti-D.

If the cord/baby result is RhD positive the woman will be offered Anti-D (must be given within 72 hours of delivery). Check the Kleihauer result and administer any further Anti-D as advised by Transfusion Laboratory.

7.0 Management of a large fetomaternal haemorrhage where baby RhD positive
Fetomaternal haemorrhage (FMH) is where fetal blood crosses the placenta into the maternal circulation, either antenatally from a sensitizing event, or at delivery. The Kleihauer test on maternal blood determines the size of the FMH and determines how much Anti-D is required.

If the kliehauer result is <4 mls, it is reported as negative. This means that the 500IU Anti-D is enough to cover any fetomaternal haemorrhage.
If the Kleihauer result is >4 mls, it is reported as positive and additional Anti-D will be required:

- The additional dose of Anti-D will be calculated by Transfusion Laboratory.
- If a large dose is required intravenous Anti-D may be suggested on the advice of clinical Haematologist; this will be a different preparation to the IM Anti-D usually supplied.
- Follow up maternal samples will be required at 48 hours if given IV, and 72 hours if given IM; this will be tested to assess the clearance of fetal cells following an FMH of >4ml.
- More Anti-D, and therefore more follow up Kleihauer requests, may be necessary if fetal cells remain (BCSH 2014). A clinical decision may need to be made in determining the dose and frequency of more injections dependent upon the volume of residual fetal cells detected 72 hours after the original injection (48 hours if Anti-D was administered intravenously).
- It is the responsibility of the clinical service that patients return for these follow-up services.
### Table 2: Postnatal Management

<table>
<thead>
<tr>
<th>All RhD negative women at delivery including IUD/stillbirth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Take a maternal sample for transfusion (G&amp;S and Kleihauer)</td>
</tr>
<tr>
<td>2. Request 500IU(^1) Anti-D</td>
</tr>
<tr>
<td>3. Confirm product / dose / expiry and patient ID pre administration</td>
</tr>
<tr>
<td>4. Administer Anti-D within 72 hours of delivery (give regardless of any other Anti-D prophylaxis). For patients with IUD/stillbirth give 500IU Anti-D within 72 hours of presentation and another 500IU Anti-D within 72 hours of delivery if there is more than 72 hours between the 2 events</td>
</tr>
<tr>
<td>5. If gestation greater than 20/40 request a Kleihauer(^2) to estimate feto-maternal haemorrhage. Do not wait for the Kleihauer result before giving 500IU of Anti-D. A negative Kleihauer means no further Anti-D is required.</td>
</tr>
<tr>
<td>6. Check Kleihauer result(^3) and administer any further Anti-D as advised by Transfusion Laboratory</td>
</tr>
</tbody>
</table>

#### Fetal RhD result

**RhD positive**

- Take a maternal sample for transfusion (G&S and Kleihauer)
- Request 500IU\(^1\) Anti-D
- Confirm product / dose / expiry and patient ID pre administration
- Administer Anti-D within 72 hours of delivery (give regardless of any other Anti-D prophylaxis). For patients with IUD/stillbirth give 500IU Anti-D within 72 hours of presentation and another 500IU Anti-D within 72 hours of delivery if there is more than 72 hours between the 2 events
- If gestation greater than 20/40 request a Kleihauer\(^2\) to estimate feto-maternal haemorrhage. Do not wait for the Kleihauer result before giving 500IU of Anti-D. A negative Kleihauer means no further Anti-D is required.
- Check Kleihauer result\(^3\) and administer any further Anti-D as advised by Transfusion Laboratory

#### Fetal RhD result

**RhD negative, inconclusive or unknown**

- Take a maternal sample for transfusion (G&S and Kleihauer)
- Take cord sample\(^4\) to confirm baby’s RhD status
- Follow section i and ii below once result is confirmed
- If no cord sample either obtain specimen from baby or follow 2-6 above

**i) Baby result RhD positive** follow steps 2-6 above

- Datix any false negatives (fetus predicted RhD negative but is actually RhD positive) under ‘Blood Transfusion’ category

**ii) Baby result RhD negative**: no further action

### NOTES

1. Where intraoperative cell salvage (ICS) is used during caesarean section on RhD negative women, *and that blood is reinfused*, 1500IU (instead of 500IU) Anti-D must be given if the baby is RhD positive. Informing Transfusion Laboratory of the use of ICS and the need for 1500IU Anti-D is essential. A Kleihauer should be taken between 30-45 minutes after reinfusion to determine whether further Anti-D is required.

2. If a Kleihauer is not available it is recommended that 1500IU units is given instead of 500IU

3. See also management of a large FMH section 1.3.2

4. Take cord blood for group (pink EDTA), hand label at bedside, according to local policy.

### NB

If the woman decides to leave hospital post delivery, before the laboratory results are available:

- The onus is on the midwife to ensure that Anti-D is given within 72 hours of delivery; either the woman will need to return to hospital to be given it or the community midwife must give it
- If the woman requests to be given Anti-D before she leaves, it may be given prior to confirmation of the baby’s blood group. The midwife must ensure, and clearly document, that the woman is aware that it might not be required and she is willing to accept a blood product under these circumstances.
- Anti-D may be given in the woman’s home as long as the midwife carries an anaphylaxis kit with them and also stays with the woman for at least 20 minutes following administration.
8.0 Management of missed or late Anti-D
Late Anti-D is classified as being given more than 72 hours after a sensitising event, or for the routine antenatal Anti-D dose it was given outside of the 28-32/40 time frame. These events have to be reported both at Trust level using Datix, and by the Transfusion Practitioner team to the Serious Hazard of Transfusion (SHOT) scheme.

8.1 Ante-natal Patients
- Routine dose: if the dose has not been given by 32/40 gestation it should be given as soon as possible.

8.2 Sensitising doses: if it is detected that a woman required Anti-D but did not have it within 72 hours, it should still be given within 10 days from the sensitising event. The midwife must make every effort to contact the patient and arrange to administer the Anti-D as soon as possible. The midwife must document in the patients’ antenatal notes the reason for the late/missed administration of Anti-D. The patient may need extra information/support (contact the Transfusion Practitioner if needed).

8.3 Post-natal Patients
If a patient with an RhD positive baby is not given Anti-D within 72 hours of delivery, the dose must still be given as soon as possible, up to ten days after delivery.

8.4 Follow Up
Patients should be informed that they did not receive the correct Anti-D prophylaxis (for whatever reason i.e. could be due to patients non-compliance or failure of internal processes).

Patients who have missed a dose antenatally (whether routine or for a sensitising event), had a subsequent Group & Save which is negative, and from then on have had correct prophylaxis do not require follow up.

Most patients will have a positive antibody screen as they will have had Anti-D at some point. The TP team will then instigate a letter from the Consultant Haematologist to the Consultant Obstetrician detailing the incident and the follow up required.

9.0 Risks of Anti-D
Anti-D is a blood product and as such all aspects of sampling, request, administration and traceability are as outlined in the Blood Transfusion Policy for Adult Patients.
Anti-D is produced from plasma collected from donors across a number of sites in the USA, all of which comply with US Food and Drug Administration standards. The production process includes steps to minimize the risk of viral contamination.

9.1 Safety
The patient information leaflet currently states that ‘The possibility of infection from using medicines made from human blood plasma cannot be totally ruled out. This includes known, unknown and new viruses and some other germs. Several different steps have been taken to make this possibility very unlikely. These include the careful selection of donors and the careful testing of the plasma they provide. The current procedure (including solvent/detergent treatment) applied in the manufacture of medicinal products derived from human blood or plasma are effective against enveloped viruses such as HIV, hepatitis B and hepatitis C viruses, but are of limited value against non-enveloped viruses such as hepatitis A virus or parvovirus B19.’ (BPL Patient Information Leaflet http://www.medicines.org.uk/emc/medicine/14629/PIL/D-GAM%20Human%20Anti-D%20Immunoglobulin)

9.2 Storage
Anti-D is usually kept in a refrigerator at 2-8°C until ready for use, but is stable at room temperature for up to seven days. It is the responsibility of the GP surgery or ward to ensure that the Anti-D is correctly stored as soon as it is received. The drug fridge should be correctly maintained and monitored as appropriate for a drug fridge. In the event that an alternative product is supplied please check the product insert for storage times.

9.3 Contingency plan for management of Anti-D stock crises
Supplier stock crises have necessitated the creation of a contingency plan in case of failure of stock. In the event of a failure of stock the Transfusion Laboratory will supply an alternative. The alternatives will usually be a 1500IU ampoule, all of which should be given even if 500IU is the usual dose. The Head of Midwifery will be consulted and advised of the option that will be used and will be responsible for ensuring staff are aware of this change. The TP team will support the midwifery department with this temporary change in practice.

10.0 Management of women who have a Positive antibody screen

10.1 Positive antibody screen showing D antibodies:
Women may present with existing D antibodies at booking, or develop them during pregnancy. If a woman develops D antibodies after they have had a fetal RhD negative result, this could indicate that the result was a false negative.
10.2 **D antibodies detected BEFORE screening for fetal RhD group:**
If a woman has a positive antibody screen showing D antibodies before screening for fetal RhD group:

- The woman has either had Anti-D immunisation recently in this pregnancy OR the woman has developed antibodies to the D antigen (has been sensitised)
- When the Transfusion Laboratory detects D antibodies they will check to see if there is any record of Anti-D being given at RBH. If Anti-D has been given within the last 6 weeks a comment will be added “Anti-D detected of probable prophylactic origin”.
- If the Transfusion Laboratory cannot find evidence of Anti-D being given at RBH, they will contact the clinical area to establish if Anti-D has been given in another Trust. If this is confirmed the comment “Anti-D detected of probable prophylactic origin” will be added.
- If no Anti-D has been given within the last 6 weeks, the transfusion sample will be sent to NHSBT at Filton for quantification to establish if the Anti-D is immune (woman has been sensitised) or passive (from anti D injection)
- Anti-D should be given as required (routine or sensitising) whilst investigating whether the antibodies are passive (from injected Anti-D) or immune (patient has sensitised).
- If the woman is confirmed as having developed immune Anti-D she should be referred to a Consultant Obstetrician. No further doses of prophylactic Anti-D should be administered. The fetus may be tested for RhD status to inform further management.
- The Transfusion Practitioner is available for advice/support.

10.3 **D antibodies detected AFTER screening for fetal RhD group:**
If a woman has a Positive antibody screen showing D antibodies AFTER screening for fetal RhD group:

- This could indicate that the result was a false negative
- Investigate whether the woman has had Anti-D, at another site or in error, prior to this result
- Liaise with the Transfusion Practitioner; this will need to be incident reported and will require further investigation and follow up of the woman and baby

10.4 **Transfusion implications for all antibodies**
Red cell antibodies have implications for the woman and for the fetus/new born.

10.5 **Implications for the fetus/new born**
The most significant antibodies for haemolytic disease of the fetus/new-born are Anti-D, K and c. If detected in pregnancy regular sampling will take place throughout, the patient must be under the care of a Consultant Obstetrician, and may need referral to a specialist unit. It may be necessary to have blood available for the baby at delivery if there is known fetal anaemia. The blood must be irradiated if intrauterine transfusions have taken place. Any neonatal blood requirements must be communicated in advance to the Transfusion laboratory.
10.6 **Implications for the woman with red cell antibodies**

It may take much longer to get blood for women with Anti-e, Jka, Jkb, M, S, s, Fya and Fyb antibodies. Specific blood may need to be pre-ordered from NHS Blood & Transplant at either Oxford or Tooting. It is therefore essential to inform the Transfusion laboratory, and to send an urgent crossmatch for a minimum of 2 red cells (rather than a G&S), in advance of delivery to allow time to order red cell units in case they are required.

10.7 **Management**

When any clinically significant maternal antibodies are detected the screening midwife is informed through NHSBT reports. The Transfusion Laboratory, screening midwife and Consultant Obstetrician have monthly antibody meetings to discuss the ongoing care of these women.

For women at risk of having a newborn affected by the antibodies a Transfusion Plan for Delivery: Risk of Haemolytic Disease of Fetus and Newborn (see Appendix 2) is completed and shared with transfusion laboratory, midwifery team, Consultant Obstetrician and Consultant Neonatologist.

Follow local guidelines for management of women with red cell antibodies during pregnancy where they exist.


11.0 **References**


11.2 National Institute for Health & Care Excellence Routine antenatal Anti-D prophylaxis for women who are rhesus D Negative [TA156] 2008 [https://www.nice.org.uk/guidance/ta156 accessed 29.05.18](https://www.nice.org.uk/guidance/ta156).
Appendix 1: Midwifery flow chart for fetal RhD testing [NB: if mother has positive antibody screen for Rh D see 10.0]

16/40 appointment: woman identified as RhD negative with negative antibody screen from booking bloods

Offer Fetal RhD test: explain benefits & risks. Give leaflet. If woman agrees: take sample, complete form & send to Transfusion Laboratory as for all other samples

Result 10-14 days – check Lab centre

**Fetus RhD negative**

- **Sensitising events:** Anti-D not required
- **Routine 30/40:** Anti-D not required

**Delivery:** Take maternal & cord sample

**Cord result**

- **RhD Negative:** No further action
- **RhD Positive:** Request anti-D, explain to woman, & give at least 500IU anti-D within 72 hours delivery

**Fetus RhD positive**

- **Sensitising events:** Anti-D required as per anti-D flow chart
- **Routine 30/40:** 1500IU anti-D required

**Delivery:** Take maternal sample – Cord sample NOT required.

**Cord result**

- **RhD Positive:** Give more anti-D as advised by Transfusion Laboratory dependent on kleihauer result on maternal sample
- **RhD Negative:** No further action

**Fetus RhD inconclusive/unknown**

- **Sensitising events:** Anti-D required as per anti-D flow chart
- **Routine 30/40:** 1500IU anti-D required

**Delivery:** Take maternal and cord sample

**Cord result**

- **RhD Positive:** No further action
- **RhD Negative:** No further action

Report result discrepancy via Datix
### Appendix 2: Transfusion Plan for Delivery: Risk of Haemolytic Disease of Fetus and Newborn

#### Obstetric Transfusion Plan

<table>
<thead>
<tr>
<th>Clinical Actions</th>
<th>Laboratory Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inform transfusion laboratory when admitted for induction (planned for xx/xx/xx)</td>
<td>On receipt of maternal samples crossmatch 2 units for Mum</td>
</tr>
<tr>
<td>Take 2 transfusion samples on admission with 1 EPR request. Request must be “Order Red Cells” for 2 units. Add “Patient has had IUT” in comments</td>
<td>Send 2 crossmatched units to maternity fridge on day of induction</td>
</tr>
</tbody>
</table>

#### Laboratory Actions

<table>
<thead>
<tr>
<th>Paediatric Transfusion Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order 2 / 3 paediatric irradiated red cell units from NHSBT to arrive day before induction (xx/xx/xx)</td>
</tr>
<tr>
<td>Request an exchange pack that is antigen negative (this will always be irradiated) on standby from NHSBT for xx/xx/xx</td>
</tr>
<tr>
<td>On receipt of Maternal samples. Use 1 sample to crossmatch paediatric red cell units</td>
</tr>
</tbody>
</table>
| Label 2 of the paediatric red cell units using Trace Safe emergency labels as follows  
Surname:   
Forename: Baby |
| Send 2 paediatric red cell units to maternity fridge on xx/xx/xx |
| Leave 3rd paediatric red cells unit in Holding fridge with the crossmatch sheet |
| Freeze the 2nd maternal sample for further paediatric transfusions |
| Leave 2 paediatric red cells units in Maternity fridge for 3 days post delivery |
| Inform NHSBT if exchange packs are still required on standby |
| Add VIP message to baby’s file when DCT is received. Stating that it needs irradiated components for a year and state the mothers details |

#### Clinical Actions

<table>
<thead>
<tr>
<th>Paediatric Transfusion Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take cord sample for DCT after delivery and label with baby’s name, DOB and NHS number. Also state maternal details on request</td>
</tr>
<tr>
<td>Inform transfusion laboratory if bilirubin level is reaching exchange transfusion threshold</td>
</tr>
</tbody>
</table>

#### Patient Details

<table>
<thead>
<tr>
<th>Surname</th>
<th>First name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOB</th>
<th>NHS number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consultant</th>
<th>EDD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maternal Antibodies</th>
<th>Intra uterine transfusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial /</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>