Use of Anti-D Immunoglobulin for Rh Prophylaxis

<table>
<thead>
<tr>
<th>Policy Number</th>
<th>EHT/ RM0014/ 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratifying Committee</td>
<td>Hospital Transfusion Committee; Clinical Effectiveness Group; Ealing Nursing and Midwifery Advisory Forum</td>
</tr>
<tr>
<td>Date Ratified</td>
<td>09/2011</td>
</tr>
<tr>
<td>Next Review Date</td>
<td>August 2013</td>
</tr>
<tr>
<td>Accountable Director</td>
<td>Cathy Garlick, Assistant Director of Operations Women and Children</td>
</tr>
<tr>
<td>Policy Author</td>
<td>Denis Sellu, Transfusion Practitioner Anne Thysse, Matron, Community Midwives, Antenatal Clinic, Day Assessment Unit and Specialist Midwives Helen Suarez, Labour Ward Manager Supervisor of Midwives</td>
</tr>
<tr>
<td>Policy Application</td>
<td>Trust-wide</td>
</tr>
<tr>
<td>Related Policies</td>
<td>Blood Transfusion Policy; Management of Patients Who Declines Blood Components Policy; Patient Identification Policy</td>
</tr>
<tr>
<td>List of Staff for Circulation</td>
<td>Trust-wide</td>
</tr>
<tr>
<td>Equality Impact Assessment (EIA)</td>
<td>August 2011</td>
</tr>
</tbody>
</table>
Data Protection Act 1998
Data Protection issues have been considered with regards to this policy. Adherence to this policy will therefore ensure compliance with the Data Protection Act 1998 and internal Data Protection Policies.

Diversity & Equality Policies
Equality issues have been considered with regards to this policy. Adherence to this policy will therefore ensure compliance with Equal Opportunity legislation and internal Equal Opportunity policies.

Freedom of Information Act 2000
Freedom of Information issues have been considered with regards to this policy. Adherence to this policy will therefore ensure compliance with the Freedom of Information Act 2000 legislation and internal Freedom of Information policies.

Health and Safety Act 1974
Health and Safety issues have been considered with regards to this policy. Adherence to this policy will therefore ensure compliance with Health and Safety legislation and internal Health and Safety policies.

Human Rights Act 1998
The Human Rights Act 1998 has been considered with regards to this policy. Proportionally has been identified as the key to Human Rights compliance. This means striking a fair balance between the rights of the individuals and those of the rest of the community. There must be a reasonable relationship between the aim to be achieved and the means used.

Race Relations Amendment Act 2000
The Race Relations Amendment Act 2000 has been considered with regards to this policy. Adherence to this policy means that the Trust will eliminate discrimination on the grounds of race and will promote race equality and good race relations.

The Mental Capacity Act 2005
The Mental Capacity Act 2005 has been considered when developing this policy/these guidelines to ensure the guiding principles of the act are adhered to with reference to testing and assessment of capacity, consulting others and protecting the best interests of the patient. The Mental Capacity Act provides a statutory framework to empower and protect vulnerable people who are not able to make their own decisions. It makes it clear who can take decisions, in which situations, and how they should go about this. It enables people to plan ahead for a time when they may lose capacity.
1.0 INTRODUCTION

1.1 Policy Statement

This policy was developed to provide clear up-to-date guidelines on the prophylactic use of anti-D immunoglobulin to prevent Rh isoimmunisation.

1.2 Policy Objectives

To provide a rational and practical framework on which to base prophylactic anti-D administration decisions.

1.3 Definitions

- **Non-sensitised**: No previous production of immune anti-D antibodies

- **Sensitised Rh-D Negative Women**: If an Rh-D negative individual is exposed to the Rh-D antigen either by transfusion or leakage of foetal cells into the maternal circulation, their immune defence system will recognise the Rh-D antigens on the surface of the Rh-D positive red blood cells as foreign and produce anti-D. This antibody attaches to specific binding sites on the Rh-D antigens and then activates other constituents of the immune defence system. This results in the destruction of the Rh-D positive red blood cells. Women who have already produced immune anti-D are not suitable candidates for prophylactic anti-D exposure to the Rh (D) antigen resulting in the formation of Immune anti-D antibodies.

- **Immune anti-D antibodies**: antibodies that have developed following an encounter with Rh D antigen positive red cells (i.e. through transfusion or previous pregnancies)

- **Passive anti-D antibodies**: the presence of anti-D antibodies due to the administration of anti-D immunoglobulin
2.0 GUIDELINES

In non sensitised Rh-D negative women the Midwife responsible for the prenatal/postnatal care prescribe and administer Anti-D under the umbrella of the Midwifery standing order and complete appropriate documentation as specified below. In sensitised Rh-D cases it is the Doctors (Obstetrician) responsibility to ascertain and prescribe the correct dose with guidance of the Haematology department.

Anti-D is requested and issued from the lab on named patient basis.

2.1 Documentation

The Obstetrician or the Midwife, responsible for the prenatal/postnatal care of non-sensitised Rh D negative women should:

- Discuss anti-D prophylaxis fully so patient can make informed decision. Anti-D IgG is a blood product fractionated from donor plasma; risks and benefits should be fully explained to the patient. Patient information leaflet available in the antenatal clinic, on maternity wards or from the Transfusion Practitioner
- Obtain patient’s informed consent and record it in the maternal and hospital case notes
- Record details of the administration of anti-D in the antenatal record
- Send completed anti-D administration form back to the laboratory

2.2 Routine Antenatal Anti-D Prophylaxis (RAADP) for Rh D Negative Women

Prior to 1970 haemolytic disease of the newborn (HDN) due to anti-D was a significant cause of morbidity and mortality. By 1990, a reduction in mortality from 1.2 per 1000 births to 0.02 per 1000 births had been achieved in response to the introduction of immunoprophylaxis with anti-D immunoglobulin. These findings contributed to the National Institute for Clinical Excellence (NICE) recommendation that all D-negative pregnant women who do not have anti-D should be offered anti-D immunoglobulin routinely during the third trimester of pregnancy (NICE, 2002)

Ealing Hospital has recently moved from a two-dose to a single (1500 iu) dose RAADP regimen (please see appendix 1 for details of two-dose regimen should the need to revert arise)
2.2.1 At booking appointment

Obtain blood sample for group and antibody screen to determine Rh (D) status of mother

NOTE: If antibodies detected previously, please send blood sample for NHSBT referral for antibody quantitation (2 pink top ETDA tubes)

2.2.2 At 28 weeks appointment

RAADP should be offered to all Rh (D) negative non-sensitised pregnant women at 28 weeks by i.m. administration of 1500 iu anti-D immunoglobulin.

NOTE:

- The 28-week antibody screening sample must be taken prior to the routine prophylactic injection being given
- No further RAADP should be administered before delivery and no additional anti-D is required unless the patient experiences a sensitising event
- Anti-D should be given by deep intramuscular injection, preferably into the deltoid muscle (absorption may be delayed in gluteal region)
- Send completed anti-D administration form back to transfusion lab
- Do NOT give anti-D Ig to women who are already sensitised. Please check patient notes carefully. If in doubt, discuss with consultant haematologist.

2.2.3 Postnatal Prophylaxis for Rh D Negative Women

☐ Collect and send cord blood sample to transfusion lab for baby’s blood grouping
☐ Send blood sample from mother for group & antibody screen and Kleihauer testing

NOTE: The Kleihauer test is used only to determine if the patient will require additional anti-D Ig and has no bearing on the initial dose that should always be given if the foetal blood group is Rh D Positive. Do not await the result of the Kleihauer test before administering anti-D Ig
☐ Administer 500 iu anti-D IgG to all non-sensitised Rh (D) negative mothers (in whom no immune anti-D antibody is detectable) giving birth to an Rh (D) positive child
☐ Do not give anti-D Ig to women who are already sensitised (i.e. have immune anti-D antibodies). Please check patient’s notes carefully. If in doubt, discuss with consultant haematologist
☐ Administer dose as soon as possible after delivery and always within 72 hours. If not, every effort should still be made to ensure that it is given as anti-D Ig given as late as 9-10 days after sensitisation may still offer some protection.
Send completed anti-D administration form back to transfusion lab for traceability record

- 500 iu of anti-D Ig suppresses sensitisation by up to 4ml of foetal red cells. If the Kleihauer test results suggest an FMH (foetal maternal haemorrhage) greater than 4 ml, additional anti-D Ig dose of 125 iu per additional ml should be administered

2.3 Potentially Sensitising Events

The following episodes may be associated with significant FMH (Foetal maternal haemorrhage):

- Delivery of an Rh (D)-positive infant (see above)
- Invasive prenatal diagnosis:
  - Amniocentesis
  - Chorionic villus sampling
  - Foetal blood sampling
- Other intrauterine procedures
  - Insertion of shunts
  - Embryo reduction
- Antepartum haemorrhage
- External version of the foetus
- Closed abdominal injury
- Intrauterine death
- Stillbirth
- Ectopic pregnancy
- Spontaneous, complete or incomplete abortion (termination of pregnancy, see below)

2.3.1 Prophylaxis Following Potentially Sensitising Events

**Note:** Anti-D Ig should be given as soon as possible after a sensitising episode but always within 72 hours. If not, every effort should still be made to ensure that it is given as anti-D given as late as 9-10 days after sensitisation may still confer some protection.

2.3.2 Before 12 weeks gestation

Confirmed by scan, in uncomplicated miscarriage where uterus is not instrumented, or mild painless vaginal bleeding, prophylactic anti-D Ig is not necessary because the risk of FMH is negligible. However, **250 iu** prophylactic
anti-D Ig should be given in cases of therapeutic termination of pregnancy, whether by surgical or medical methods, to confirmed D negative non-sensitised women.

2.3.3 Between 12 and 20 weeks gestation
For any potentially sensitising event listed in 2.3, blood sample should be tested to ensure the woman is D negative and that she is not already sensitised with anti-D. Anti-D Ig, 250 iu, should be administered.

2.3.4 After 20 weeks gestation
There is an additional requirement to assess the volume of FMH by the Kleihauer test or flow cytometry. At least 500 iu anti-D Ig should be administered intramuscularly (i.m) and additional anti-D given if the FMH is confirmed to be >4ml.

Note:
- A sample must be sent from each episode for FMH estimation

2.4 Prevention of Anti-D Formation in the Event of Recurrent Uterine Bleeding in Rh D Negative Women during Pregnancy

2.4.1 Recurrent uterine bleeding before 12 weeks gestation
Evidence that women are sensitised after uterine bleeding in the first 12 weeks of pregnancy where the foetus is viable and the pregnancy continues is scant. Therefore anti-D Ig is not necessary in women with threatened miscarriage with a viable foetus where bleeding completely stops before 12 weeks gestation. However, it may be prudent to administer 250 iu anti-D Ig to a Rh (D) negative mother where bleeding is heavy or repeated or where there is associated abdominal pain, particularly if these events occur as gestation approaches 12 weeks. The period of gestation should be confirmed by ultrasound.

2.4.2 Recurrent uterine bleeding between 12 and 20 weeks gestation
Rh D-negative women with recurrent PV bleeding between 12 and 20 weeks gestation should be given 250 iu anti-D Ig at a minimum of 6 weekly intervals.

2.4.3 Recurrent uterine bleeding after 20 weeks gestation
Anti-D Ig 500 iu should be given at a minimum of 6 weekly intervals. Estimation of FMH by Kleihauer test should be carried out at 2 weekly intervals. If the 2
weekly FMH is positive, additional dose of anti-D immunoglobulin (500 iu minimum, more if FMH exceeds 4ml) should be offered regardless of the presence or absence of passive anti-D in maternal plasma, and FMH should be retested after 48 hours.

3.0 Management of Transfusion of Rh D Positive Blood Components

3.1 Rh D positive platelet transfusion

Whenever possible, Rh D negative platelets should be transfused to Rh D negative pre-menopausal women who need a platelet transfusion. Occasionally, if the appropriate product is unavailable or would cause unacceptable delay, it may be necessary to transfuse Rh D positive platelets. In these circumstances, prophylaxis against possible Rh alloimmunisation by red cells contaminating the platelet product should be given.

A dose of 250 iu anti-D Ig should be sufficient to cover up to five adult therapeutic doses of Rh D positive platelets given within a 6 week period.

In severely thrombocytopenic patients with platelet counts of less than $30 \times 10^9 /L$, anti-D should be given subcutaneously to avoid the risk of haematoma following i.m. injection.

It is not necessary to administer anti-D Ig to Rh D-negative females without childbearing potential, or males who receive Rh D positive platelets

3.2 Inadvertent transfusion of Rh D positive blood to Rh D negative pre-menopausal females

When less than 15 ml have been transfused, the appropriate dose of anti-D Ig should be given. When more than 15ml have been transfused, it is preferable to use the larger anti-D Ig i.m. preparation (2500 iu). The dose should be calculated on the basis that 500 iu of anti-D will suppress sensitisation by 4 ml of D positive red cells.

When two units or more of Rh D-positive blood have been transfused, a red cell exchange transfusion should be considered to reduce the load of Rh D positive red cells in circulation and the dose of anti-D Ig required to suppress immunisation. Discuss urgently with Consultant Haematologist.

Note:

- Intramuscular preparations of anti-D immunoglobulin must not be given intravenously
- An appropriate combined dose of i.v. and i.m. anti-D should be determined in discussion with a specialist in Transfusion Medicine
- The injection of anti-D must comply with the IV Policies of the trust and NICE guidelines (2006) for post natal care of women (2006)
References

Bio Products Laboratory (BPL), January 2001: Haemolytic Disease of the Newborn Past, Present and Future

British Committee for Standards in Haematology (BCSH), July 2006: Guidelines for the use of prophylactic anti-D immunoglobulin


National Institute for Clinical Excellence (NICE), May 2002: Guidance on the use of routine antenatal Anti-D prophylaxis for RhD-negative women

National Institute for Clinical Excellence (NICE),(July 2006) Routine postnatal care of women and their babies accessed on line at : www.nice.nice.org.uk/CG037

National Institute for Health and Clinical Excellence (NICE), August 2008: Review of NICE technology appraisal guidance 41: Routine antenatal anti-D prophylaxis for women who are rhesus D negative

Royal College of Obstetricians and Gynaecologists (RCOG): Clinical Green Top Guidelines, May 2002, Use of Anti-D Immunoglobulin for Rh Prophylaxis (22)
## Appendix I: Doses of anti-D, location, indication for use - Ealing Hospital:

<table>
<thead>
<tr>
<th>Dose of vial</th>
<th>Preparation name</th>
<th>Site where kept</th>
<th>Indication (Prophylaxis)</th>
</tr>
</thead>
</table>
| **250 iu**   | D-Gam®           | Blood Transfusion Laboratory | Intramuscular use for:  
– Potentially sensitising events before 20/40  
– Rh D– pre-menopausal women transfused Rh D+ platelets |
| **500 iu**   | D-Gam®           | Blood Transfusion Laboratory | Intramuscular use for:  
– Potentially sensitising events after 20/40  
– Postnatal prophylaxis  
– Alternative RAADP at 28 & 34 weeks gestation (two dose regimen) |
| **1500 iu**  | Rhophylac®       | Blood Transfusion Laboratory  
– Antenatal Clinic (for ANC use only) | Intramuscular use for:  
– RAADP at 28 weeks gestation (single dose regimen)  
– <15 ml inadvertent RhD+ red cells transfusion to Rh D– patients |
| **2500 iu**  | D-Gam®           | NHS Blood & Transplant for a limited period until current stock expires/exhausted | Intramuscular use for:  
>15 ml inadvertent RhD+ red cells transfusion to Rh D– patients |
## Appendix ii  Equality Impact Assessment Documentation

### Equality Impact Assessment [EIA]
**Initial Assessment - Stage 1**  
**Full Assessment - Stage 2**

<table>
<thead>
<tr>
<th>Policy or service being assessed:</th>
<th>Use of Anti-D Immunoglobulin for Rh Prophylaxis Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of Policy/ Service:</strong></td>
<td>Provide guidance for staff on the use of anti-D Immunoglobulin for Rh prophylaxis</td>
</tr>
<tr>
<td><strong>Lead Person:</strong></td>
<td>Gail Abrahamson</td>
</tr>
<tr>
<td><strong>Person (s) responsible for carrying out the assessment [if not the lead]:</strong></td>
<td>Denis Sellu</td>
</tr>
<tr>
<td><strong>Date of assessment:</strong></td>
<td>August 2011</td>
</tr>
</tbody>
</table>

### Stage 1

<table>
<thead>
<tr>
<th>Question</th>
<th>Please tick to indicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is this a new or existing policy or service?</td>
<td>New:</td>
</tr>
<tr>
<td>2. What is the expected outcome of the policy/service? [e.g. aims, objectives and purpose of the policy/service]</td>
<td>Staff awareness of the indication and appropriate dose of anti-D and when to administer</td>
</tr>
<tr>
<td>3. Does the Policy/Service link to others? If Yes please state below</td>
<td>Yes ✓</td>
</tr>
<tr>
<td><strong>Policies:</strong></td>
<td>Blood Transfusion; Patient Identification; Venepuncture; Management of Patients Who Declines Blood Components; and IV Drug Administration</td>
</tr>
</tbody>
</table>
| 4. Who is intended to benefit from the Policy/Service and in what way? | Patients – Prevention of Rh sensitisation  
Obstetric/midwives/clinical/nursing staff – appropriate guidance |
| 5. How is the Policy/Service to be put into practice? Who is responsible? | Circulated to responsible consultants for info, comments & dissemination. Review at HTC meeting - supported by audit and training |
| 6. How and where is information about this policy/service published [e.g. through groups, forums, committees/the Trust’s intranet/internet] | Publication on intranet. Hard copy on each ward/clinical area. Group forum: Hospital Transfusion Committee |
| 7. What regular consultation is carried out with different communities and groups regarding the Policy/Service [e.g. groups or forums within the Trusts’ external groups & communities] | Based on periodically reviewed & updated BCSH & NICE Guidelines; other national & local guidelines. Underpinned by National & Regional Transfusion Committees scrutiny |
8. Are there any concerns that this Policy/Service provision could have an impact with regard to equality legislation, that has not been addressed as part of the policy, specifically in relation to:

<table>
<thead>
<tr>
<th>Concern</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Disability</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ethnicity (Race)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sexual orientation</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Religion/Belief</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Dignity and Human Rights</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

9. If YES to one or more of the above please state evidence

This policy does not make reference to Jehovah’s Witness patients or any patient who declines treatment with anti-D. However, management of such patient should be in accordance with the Management of Patients Who Declines Blood Components Policy

10. Do the difference amount to discrimination

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. If YES could it be justifiable e.g. on grounds of promoting equality of opportunity for one group? Indirect discrimination can sometimes be justifiable when it is target at a particular or ‘hard to reach group’</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
</tbody>
</table>

12. If YES please give reasons

13. From the initial EIA at stage 1, should there be a full Equality impact assessment carried out, ensures you addressed those areas identified in question 8? - Please note reasons

No

14. Please indicate who will be responsible for leading on the undertaking of the full EIA being conducted, and the expected date of completion [e.g. action plan, indicated end dates for actions]

N/A

Key Equality Legislation
- Sex Discrimination Act 1975
- Equal Pay Act 1970
- Equalities Act 2006
- Gender Recognition Act 2004
- Race Relations Act 1976
- Race Relations (Amendment) Act 2000
- Disability Discrimination Act 1995 and 2005
- Human Rights Act 1998
Mental Capacity Act 2005