Rh D Immunoglobulin Administration
(formerly Anti D)

SCOPE (Area): Acute
SCOPE (Staff): Midwifery, Medical and Nursing

BACKGROUND/RATIONALE

Rh D blood group incompatibility between an Rh D negative woman and her Rh D positive infant may cause alloimmunisation against the Rh D antigen. A sensitised woman may develop immune anti-D, which binds to foetal Rh D positive blood cells and destroys them which can result in haemolytic disease of the newborn (HDN). HDN can have devastating effects for the fetus and the newborn baby in addition to implications for subsequent pregnancies leading to further morbidity and mortality.

EXPECTED OUTCOME

- To administer Rh D immunoglobulin (RhD-Ig) to non sensitized Rh D negative women in a timely manner so the risk of maternal sensitization to fetal Rh D positive red blood cells is reduced.

DEFINITIONS

Rh D: Along with four main blood groups (A, B, AB, & O), there are also Rhesus (Rh) antigen groups. The three main groups are D, C/c, and E/e. When a person has the Rh D then they are classified as Rh positive. Eighty-five percent of the populations are Rh positive and the other fifteen percent do not have Rh D and are Rh negative. When an Rh negative women has a partner who is Rh positive there is a good chance that their baby will be Rh positive. If an event occurs which causes foetal blood to mix with maternal blood the mother may develop antibodies against the baby’s blood. These antibodies cross the placenta and may damage the fetus’ red blood cells. This may lead to the development of haemolytic disease in the fetus / newborn. Women who are Rh negative and have a partner who is Rh negative or women who are Rh positive are not at risk of developing these antibodies.

Anti D: acts by suppressing the immune response in Rh negative individuals who are exposed to Rh D positive red cells, thus preventing the development of antibodies to Rh D.

Alloimmunisation: development of antibodies by an individual in response to a component of the tissues of another individual of the same species.

Haemolytic Disease: occurs when the baby’s red blood cells are destroyed more rapidly than normal. When Rh D alloimmunisation occurs, the antibodies produced by the mother target and destroy ‘foreign’ red blood cells from an Rh D positive baby. Haemolytic disease can lead to anaemia, jaundice, kernicterus and death.

Antibody screen: A blood test that detects antibodies in the blood. Also known as an indirect antiglobulin test (IAT) or an Indirect Coombes.

Kleihauer Test: A blood test which detects the presence and amount of foetal cells in the maternal blood.

Fetomaternal haemorrhage (FMH): Where transplacental passage of foetal blood into the circulation of the mother occurs.
INDICATIONS FOR THE USE OF Rh D IMMUNOGLOBULIN

ANTEPARTUM (Sensitising Events)

First Trimester Indications (prior to and including 12 weeks gestation)
- Threatened, incomplete/complete and missed abortion.
- Termination of pregnancy.
- Ectopic pregnancy.
- Chorionic villus sampling (CVS)

Administration
- One mini dose of 250 International Units (IU) RhD-Ig is sufficient to cover a foetal maternal haemorrhage (FMH) of 2.5 mL of foetal red blood cells. To ensure adequate protection against immunisation this dose should be offered to all Rh D negative women who have indications for RhD-Ig and have no pre-existing immune anti D.
- For recurrent bleeds in an ongoing pregnancy, this dose will be effective for a period of 6 weeks up to and including 12 weeks gestation.
- A subsequent miscarriage or a procedure requiring instrumentation of the uterus requires an additional dose of RhD-Ig irrespective of when the first dose was given.
- A Kleihauer test is not required in the first trimester as one 250 IU Mini-dose RhD-Ig will be sufficient for single pregnancies (as the total blood volume of the fetus is <2.5mL).
- For multiple pregnancy 625 IU RhD-Ig should be given.

Second and Third Trimester Indications (13 weeks or greater gestation)
- Amniocentesis and cordocentesis.
- Ectopic pregnancy.
- Foetal death.
- Threatened, incomplete or spontaneous abortion or termination of pregnancy.
- Abdominal trauma considered sufficient to cause fetomaternal haemorrhage (FMH) (e.g. motor vehicle accident).
- Antepartum haemorrhage (revealed or concealed)
- External cephalic version (successful or unsuccessful)

Administration
- A Kleihauer test should be performed after each sensitising event so that pathology can determine the dose of RhD-Ig required. The sample should be collected 30 min after the event, procedure or birth of the infant and before one hour.
- Kleihauer tests may be collected up to 72 hours after the event but increases the risk that additional doses of RhD-Ig needed for large FMH will not be administered within the required 72 hours.
- 625 IU RhD-Ig is required as soon as possible after a sensitising event whilst awaiting the impending Kleihauer result. The Kleihauer result will determine if an additional RhD-Ig dose is required.
ANTEPARTUM (Prophylaxis)

28 and 34-36 Weeks Gestation
- All Rh D negative females should have an antibody screen at 28 weeks gestation prior to RhD-Ig prophylaxis. Antibody screening may be performed at 34-36 weeks but not essential prior to routine administration.
- All relevant information should be provided on the request form including previous history of transfusion of pregnancy, previous history of antibodies and gestation, dates of any prophylactic RhD-Ig administered in the last 3 months.
- It is acceptable for RhD-Ig to be given immediately after the blood sample has been taken before the results are available as a majority of Rh D negative females will not be sensitised.
- If an antenatal prophylactic dose is missed it should be given as soon as possible. The second dose should then be delayed until six weeks after the initial dose.

Administration
One dose of 625 IU RhD-Ig is administered at the 28 and 34 week antenatal clinic visits

POSTPARTUM

Maternal Sample
- All Rh D negative women with an Rh D positive infant should have a Kleihauer test (an estimate of feto-maternal haemorrhage) to determine the need for additional doses of RhD-Ig.
- The presence of residual RhD-Ig from antepartum administration of RhD-Ig does not indicate on-going protection.

Cord Sample
- A cord blood sample should be taken from all babies of Rh D negative women, women with known antibodies and in cases where there is insufficient documentation of maternal blood group or antibody status.
- The cord sample should be tested for blood group and direct antiglobulin test (DAT also known as Coombs test). If DAT positive haemoglobin and bilirubin estimation should also be performed.
- The cord blood sample should be labelled as “baby of” mother’s name with the infants date and time of birth and gender. The infants UR number should be added if available. (Do not use a bradma with the mother’s details on the pathology request form). As with all blood bank samples, sign the tube and the request form to indicate positive identification of the sample and baby.

Administration
- All Rh D negative women who have an Rh D positive infant should have 625 IU RhD-Ig within 72 hours of birth.
- Increased dosing will be determined by the haematologist depending on the Kleihauer result.

ISSUES TO CONSIDER

Precautions
- Women with an IgA deficiency
- Women with a blood disorder or bleeding problems.
- Women who have had a vaccination in the last two weeks.
- Women with allergies to any medications.
Dosing
- If a dosage greater than 5mL is required it is recommended that a divided dose be given at different sites.
- For large bleeds it is recommended that antibody screening and Kleihauer be performed on a sample of maternal blood collected at 48 hours following RhD-Ig administration. This will determine if further dosing is required. Supplemental RhD-Ig should be given if the Kleihauer is positive and no antibodies are detected.
- A single dose of RhD-Ig should not be withheld based upon pending results of the Kleihauer.
- RhD-Ig should not be given to women with preformed antibodies except when due to antenatal administration of Rh D-Ig.

Half Life
- The half life of Rh D immunoglobulin is approximately 3-4 weeks. It can be detected in a patient’s serum up to six weeks after administration. This time span would be shortened with ongoing bleeds.

RhD-Ig and Vaccinations
- Administration of RhD-Ig and MMR/Rubella vaccine (or any other live attenuated vaccine) may be compromised if;
  - RhD-Ig is given within 2 weeks after MMR/Rubella vaccine.
  - RhD-Ig and MMR/Rubella vaccine are given at same time (in different sites).
  - MMR/Rubella vaccine is given within 3 months of RhD-Ig administration.
- It is recommended that the patient’s GP is alerted, to test for seroconversion for MMR/Rubella two months after vaccination and revaccinate the patient if necessary.

Possible side effects
Maternal
- Local tenderness, erythema, or stiffness at site of injection, should resolve in a few hours.
- Occasional temperature, malaise, drowsiness, urticaria or hives (rare).
- A rare but possible risk of transmission of blood borne disease. (Anti-D has been used in Australia for 30 years with no reports of transmission of infection via this route).
- Remote chance of idiosyncratic or anaphylactoid reaction.
- For further information please refer to product statements.

Foetal/Neonatal
- No evidence of any harm to baby.
- It is considered safe to breastfeed following administration of RhD-Ig.

EQUIPMENT
- Medication order for Rh D
- Immunoglobulin written on Rh D
- Immunoglobulin Patient Consent and Administration Form MR 056.1(Appendix 1)
- Dose of Rh D immunoglobulin ordered
- 23 & 19g needle
- Alcohol swab
- Sharps container
- 3ml syringe
- Gloves

PROCEDURE
1. Order for Rh D-Ig to be written on the Rh D Immunoglobulin Patient Consent and Administration Form MR 056.1.
2. Ensure written consent is obtained prior to administration of Rh D-Ig. An explanation of the risks and benefits of receiving the product and why it is required must be given. If the consent form has previously been signed confirm the consent verbally with the patient.
4. Obtain RhD-Ig from postnatal drug room fridge if for use in the Maternity Unit or from Pharmacy for other departments.
5. Complete documentation in RhD-Ig register located near the postnatal drug fridge (Maternity only).
6. Ensure two Registered Nurses/Midwives check order, blood group results, medication and mother’s details prior to administration.
7. Prepare and administer intramuscular injection into the deltoid or the anterolateral thigh.

RELATED DOCUMENTS

Internal
Consumer Information - CSL Bioplasma (2006) You & Your Baby – Important information for Rh (D) Negative Women

APPENDIX

Appendix 1: Consent & Administration – Rh D Immunoglobulin – MR/056.1

REFERENCES

Australian Red Cross Blood Service. Frequently asked questions about the use of Rh D immunoglobulin and WinRho SDF. Downloaded 09/12/05: http://www.transfuse.com.au/RhD/FAQ.asp


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<td>Original Author: Maternity Unit Project Officer (2006) Updated by: Maternity Unit Project Officer/Transfusion Nurse (2010)</td>
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Appendix 1

Rh D Immunoglobulin Patient Consent and Administration

U.R. Number __________________________
Surname __________________________
Given Names __________________________
D.O.B. / / Sex __________________________

I, __________________________
(patient name in full)

or __________________________
(address in full)

Understand that:

a) My medical practitioner / midwife / nurse has recommended me to have an injection(s) of Anti-D Immunoglobulin.

b) The Anti-D Immunoglobulin [Rh (D) Immunoglobulin] has been prepared from voluntary donors.

c) As with all medications, the benefits of Rh D Immunoglobulin treatment must be balanced against the possible risks of using it.

d) If Rh D Immunoglobulin were not used at all, babies of Rh negative mothers may be affected by serious complications of Haemolytic Disease of the Newborn (e.g. severe anaemia, brain damage and even death of the baby in some cases).

e) For medical products made from human blood [e.g. Rh D Immunoglobulin] it is not possible to completely eliminate the risk that they may carry infections (e.g. HIV / HBV / HCV / HTLV-1 / Syphilis, unknown other) despite stringent screening and strict controls on blood donors.

I have read the above and ACCEPT or DECLINE the treatment. (Please circle)

I have been given written information ☐ Yes ☐ No

Signature of Patient / Guardian __________________________ Date / / 

Signature of Doctor / Midwife / Nurse discussing with patient __________________________ Date / / 

This consent form is for all doses administered during the same pregnancy and should not be used for subsequent pregnancies.
### Rh D IMMUNOGLOBULIN ADMINISTRATION

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<thead>
<tr>
<th>Sensitising Events</th>
<th>Single Pregnancy</th>
<th>Multiple Pregnancy</th>
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<td>First trimester</td>
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<td>Second and third trimester</td>
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#### 1. Routine Prophylaxis Antenatal

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<th>Maternal Antibodies</th>
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**Authorising Doctor’s Signature** ........................................... **Print Name** ........................................... **Date** ......./...../.......

#### 2. Routine Prophylaxis Postpartum

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#### 3. Sensitising Events

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