RhD Negative Blood Group: Management

This document should be read in conjunction with the Disclaimer

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Aims

- To determine the woman’s ABO and Rh(D) blood group and to detect the presence of atypical red cell antibodies, the primary aim of which is to:
  - identify women who are alloimmunised so they may undergo close serological follow up and fetal assessment,
  - identify Rh(D) negative women who may require the administration of prophylactic Anti Rh D immunoglobulin (RhD-Ig),
  - identify antibodies with potential to cause haemolytic disease of newborn (HDN)
  - provide compatible blood for fetal and maternal transfusion when required.

- To administer RhD-Ig to non-sensitised Rh(D) negative women in a timely manner such that the risk of maternal sensitisation to fetal Rh(D) positive red blood cells is reduced.

- To guide staff on the procedure for administration of RhD-Ig (Anti D) prophylaxis, given to prevent RhD isoimmunisation in non-sensitised RhD negative women antenatally, postnatally and with pregnancy loss.

Background

Rh(D) blood group incompatibility between Rh(D) negative woman and Rh(D) positive infant may cause alloimmunisation against the Rh(D) antigen.\(^1\) A sensitised woman may develop immune anti–D, which crosses the placenta binding to, and destroying, fetal Rh(D) positive blood cells.\(^1\) This can result in anaemia and fetal hydrops.\(^1\) Severe HDN can result in oedema, hepatosplenomegaly, severe anaemia, jaundice and / or death. Prophylactic RhD-Ig is a commercial preparation of human anti–D.\(^1\)\(^1\) The administration of RhD-Ig as soon as possible and within 72 hours of a fetomaternal haemorrhage (FMH) can remove fetal Rh(D) positive cells from the maternal circulation so that sensitisation does not occur.\(^1\)\(^1\) If RhD-Ig is not administered within 72 hours, a dose offered up to 9-10 days might still provide some protection.

The administration of RhD-Ig to a Rh (D) negative woman within 72 hours of the birth of a Rh(D) positive infant reduces the incidence of Rh isoimmunisation from about 13% to 1-2%. A small number of Rh(D) negative women (1.5-1.8%) are still immunised by their Rh(D) positive fetus despite administration of RhD-Ig post-partum. Studies have shown that this can be reduced to <0.2% if RhD-Ig is also given antepartum at 28 weeks and 34 weeks gestation\(^1\).

The Kleihauer Test is used to identify women with a large fetomaternal haemorrhage (> 6 mL of packed fetal red cells) who may need additional doses of RhD-Ig to ensure clearance of all fetal red cells. A negative Kleihauer Test indicates that one dose of RhD-Ig is sufficient.

A standard CSL 625 IU dose of RhD-Ig is sufficient to destroy 240 fetal red cells / 50 low power fields (LPF), which is equivalent to a 6 mL bleed of packed fetal red cells. For Kleihauer counts > 240 fetal cells/50 LPF a repeat Kleihauer Test is required 48 hours after administration of RhD-Ig to ensure effective prophylaxis.

For antepartum Kleihauer Tests, the result may stay positive in cases where the fetus is Rh(D) negative even though one or more doses of RhD-Ig have been given. In these cases, Transfusion Medicine (TM) will liaise with the physician.
Blood Group & Antibody Screening in Pregnancy

Antenatal testing protocols

Table 1- Antepartum blood grouping & antibody screening at KEMH

<table>
<thead>
<tr>
<th>Gestation</th>
<th>1st visit 19-20 Weeks</th>
<th>28-30 Weeks</th>
<th>36 weeks</th>
<th>On admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rh(D) Positive</td>
<td>ANC women</td>
<td>G&amp;S (if no current results)</td>
<td>G&amp;S (if no current results)</td>
<td>RhD-Ig</td>
</tr>
<tr>
<td></td>
<td>Shared care women</td>
<td>G&amp;S (if no current results)</td>
<td>G&amp;S (if no current results)</td>
<td>RhD-Ig</td>
</tr>
<tr>
<td>Rh(D) Negative</td>
<td>ANC women</td>
<td>G&amp;S</td>
<td>Prophylactic RhD-Ig</td>
<td>Prophylactic RhD-Ig</td>
</tr>
<tr>
<td></td>
<td>Shared care women</td>
<td>G&amp;S (if no current results)</td>
<td>G&amp;S (if no current results)</td>
<td>Prophylactic RhD-Ig</td>
</tr>
</tbody>
</table>

* A pre-delivery G&S sample should be collected on admission to the Labour and Birth Suite or Family Birth Centre (or the Preadmission clinic if an elective Caesarean section birth is planned) if:
  - atypical red cell antibodies are present,
  - the woman’s serological history is unknown,
  - prophylactic RhD-Ig has been given,
  - there is increased risk of requiring a blood transfusion.

Note: If blood for G&S is collected at an ‘outside’ Pathwest collection centre, the pathology request form must request the sample be sent to KEMH.

Initial visit

At the first visit, current group and antibody screen (G&S) results are required on ALL pregnant women, regardless of blood type. If a copy of this report does not accompany the woman to her first antenatal visit, a blood sample should be taken for this purpose before she leaves the clinic.
Subsequent visits
1. Refer to Clinical Significance of Antibodies (in this guideline) if clinically significant antibodies are detected.

2. Rh(D) negative women should attend KEMH’s antenatal clinic at 28-30 weeks gestation for administration of RhD-Ig unless administration is arranged by their GP. Shared care women who have had a Group and Screen performed outside KEMH at 28 weeks, should have a copy of the report sent to Transfusion Medicine Unit (TMU). Provided the outside G&S is current (within two weeks of the request for RhD-Ig) TMU will then issue RhD-Ig for administration in the clinic. If the woman’s results are unavailable, a G&S should be sent to TMU where, upon receipt of the sample, RhD-Ig will be issued.

3. All Rh(D) negative pregnant women attending KEMH at 34-36 weeks gestation will be offered RhD-Ig. This will be issued by TMU. A G&S request is only required if the patient has not had previous testing performed during the current pregnancy (see section on RhD Immunoglobulin).

4. It is essential that all relevant information is provided on the request form accompanying blood samples to TMU, including:
   - Previous history of transfusion or pregnancy
   - Previous history of antibodies, especially if reported at an outside facility
   - Gestation
   - Dates of any prophylactic RhD-Ig administered in the last 3 months, especially if given at an outside facility.

Clinical significance of antibodies

Haemolytic Disease of the Newborn
Antibodies that cause haemolytic disease of the newborn (HDN) are reactive by the Indirect Antiglobulin Test and are IgG. They can be grouped according to their likelihood of causing HDN as follows:

1. Antibodies most commonly associated with some degree of HDN:
   - Anti-D, -c, -E, -e, -C, -K, -k and -Fy\textsuperscript{a} antibodies. Anti-D, anti-c and anti-K antibodies are most often associated with moderate to severe HDN.

2. Antibodies not usually associated with HDN, but occasionally can be implicated when the IgG component is of sufficiently high titre:
   - Anti-C\textsuperscript{w}, -Fy\textsuperscript{b}, -Jk\textsuperscript{a}, -Jk\textsuperscript{b}, -Lu\textsuperscript{a}, -Lu\textsuperscript{b}, -S, -s, -M antibodies.

3. Antibodies not associated with HDN:
   - Anti-P\textsubscript{1}, -N, -HI, -Le\textsuperscript{a}, -Le\textsuperscript{b}, -Le\textsuperscript{a+b}, -Sd\textsuperscript{a}, -Bg\textsuperscript{a}, -Bg\textsuperscript{b}, and other HLA antibodies.

4. Fetal and neonatal disease caused by maternal anti-K antibodies:
   - This is atypical in that:
     - previous obstetric history is not predictive of disease severity,
     - there is poor correlation between antibody titre and outcome,
• spectrophotometric estimation of bilirubin concentration underestimates the severity of the disease and
• hyperbilirubinaemia is not a feature of the disease in affected neonates.

It is hypothesised that erythroid suppression rather than haemolysis is the predominant mechanism causing anaemia.

**Anti-K antibodies:**

The following is recommended for monitoring women with anti-K antibodies:

- Check the paternal K antigen status (if K negative, treat as for a normal pregnancy)
- If the paternal phenotype is K positive, refer to the Maternal Fetal Medicine Service.
- If the fetus is K negative the woman will be treated as for an unaffected pregnancy.
- If the fetus is K positive and fetal anaemia is present, an intrauterine transfusion protocol may be proposed.

**Principles of management of isoimmunisation**

1. If clinically significant antibodies are detected at the first antepartum visit, these antibodies will be identified and a titration performed. Thereafter antibody investigation and titration should be repeated **every 4 weeks until 36 weeks gestation and then every 2 weeks until delivery.** In addition, the Transfusion Medicine Unit will refer anti-D and anti-c antibodies to ARCBS for antibody quantitation.

2. A clinically significant rise in the antibody titre (or quantitation) will assist the clinician in determining when to initiate fetal monitoring, such as Doppler ultrasound and cordocentesis. Once fetal monitoring has been initiated the specialist will determine the frequency of further serological testing.

3. The Maternal Fetal Medicine (MFM) Specialists should perform an antepartum assessment of the severity of the haemolytic disease of the fetus and newborn (HDFN). The following are indications for referral to a MFM specialist:
   - An antibody that may cause haemolytic disease of the newborn with the titre reaching or exceeding 1:16 or increasing by two dilutions.
   - Anti-K at any titre when the paternal phenotype is K positive.
   - **All women who have had an infant previously affected by HDN. These women should be referred to a specialist as soon as possible and preferably before 20 weeks gestation irrespective of antibody level.** The partner's blood group and genotype should be obtained as early as possible in the pregnancy.
The Kleihauer test

Indications for performing the kleihauer test

Routine Kleihauer testing
All non-urgent Kleihauer Tests are batched and processed once per day. Kleihauer Tests are routinely indicated for:

- For Rh(D) negative women, following a potentially sensitising event (e.g. birth of a Rh(D) positive baby, amniocentesis, antepartum haemorrhage, successful or unsuccessful ECV) to ascertain whether additional doses of RhD-Ig are required.
- Following an unexpected/unexplained stillbirth, prior to the commencement of induction procedure.

Urgent kleihauer testing
The Blood Bank routinely run a batch of Kleihauer tests once per day. The indications for an urgent Kleihauer test are rare. Such requests MUST be accompanied by a phone call from the ordering clinician to Transfusion Medicine (or Haematology).

An urgent Kleihauer test should be ordered ONLY in the following situations:

- **Significant** maternal abdominal trauma, when the CTG is not reassuring and/or the fetus is inactive on ultrasound.
- Non immune fetal hydrops in association with an abnormally raised MCA PSV.
- Sinusoidal fetal heart trace in a non-immunised woman.
- Decreased fetal movements after two consecutive non-reactive CTGs and an inactive fetus on ultrasound. **Note:** If the first CTG shows a sinusoidal pattern a Kleihauer test can be requested immediately.

A kleihauer test should not be requested in the setting of an antepartum haemorrhage in order to diagnose abruption. This is an inappropriate use of the test.

Refer to Transfusion Medicine: [Kleihauer and the Feto Maternal Haemorrhage](#)

Birth / postpartum kleihauer testing

Maternal sample

- A pre-delivery Group & Hold sample (a kleihauer is not performed on this sample) should be collected and sent to haematology for testing on admission to the Maternal Fetal Assessment Unit/ Labour and Birth Suite (or the Pre-Admission Clinic if an elective Caesarean section birth is planned) if:
• atypical red cell antibodies are present,
• the woman’s serological history is unknown,
• prophylactic RhD-Ig has been given in the previous 3 months,
• there is an increased risk of requiring a blood transfusion.

- In order to determine the extent of the fetomaternal haemorrhage (FMH) and therefore the appropriate dose of RhD-Ig, a maternal Kleihauer sample must be taken from all Rh(D) negative women who have given birth to a Rh(D) positive infant and who do not have pre-formed immune anti-D antibodies.

- Ideally, the sample should be routinely collected a **minimum of 15 minutes** after placental separation and **preferably within 2 hours** to allow sufficient time for any fetal red cells to be dispersed in the maternal circulation.

- In exceptional circumstances, Kleihauer Tests may be collected up to 72 hours after the event but this increases the risk that any additional doses of RhD-Ig needed for large FMH will not be administered within the required 72 hours.

- If the FMH is greater than 6mL of Rh(D) positive packed fetal red cells, TM will contact the ward and supply additional doses of RhD-Ig as required. A negative Kleihauer Test indicates that one dose of RhD-Ig is sufficient.

**Cord sample**

A cord blood sample is collected from all babies born at KEMH and sent to TM.

A request for blood group and a Direct Antiglobulin Test (DAT) should be made for all neonates born to a mother who:

- is Rh(D) negative or,
- has known clinically significant antibodies or,
- has unknown maternal blood group and antibody status.

Where the cord sample is Rh(D) positive and the mother is Rh(D) negative, RhD-Ig will be supplied by TM for administration to the mother without delay.

A request for a blood group and DAT should be made for all infants with unexplained neonatal jaundice and, where the DAT is positive, a bilirubin estimation should be performed on the cord blood. In addition, a haemoglobin level should be determined on a peripheral blood sample taken from the infant.

**Note:** When a Rh(D) negative mother receives RhD-Ig during pregnancy, especially as routine prophylaxis at 28-30 and 34-36 weeks gestation:

- the Rh(D) positive infant may be born with a positive DAT but have no evidence of haemolysis and
- the maternal sample will often show anti-D reactivity, as the half-life of passive RhD-Ig in the absence of significant FMH, is approximately 21 days.
Rh (D) Immunoglobulin (formerly anti-D)

Administration of Rh(D) immunoglobulin

- It should be administered by deep intramuscular injection (IMI). It should not be given subcutaneously.
- The deltoid muscle or anterolateral thigh is the preferred site. The buttocks should be avoided.
- For women with a Body Mass Index (BMI) of 30 or more, particular consideration should be given to factors which may impact on the adequacy of the injection, including the site of administration and the length of needle used.

Indications for the use of Rh(D) immunoglobulin (see also table 1)

- The Transfusion Medicine laboratory will issue RhD-Ig when required.
- It is indicated for non-sensitised Rh(D) negative women in the following circumstances

Antepartum

The routine prophylactic doses of Anti-D at 28 and 34 weeks are standing orders, therefore a prescription from a Medical Officer is not required.

For any other doses, including sensitizing events, the Medical Officer should prescribe the Anti D on the medication chart.

First Trimester Indications

- Threatened, incomplete/complete and missed miscarriage
- Termination of pregnancy
- Ectopic pregnancy
- Chorionic villus sampling

First trimester administration of Rh-D-Ig- . First trimester encompasses women up to and including their 12th week of pregnancy.

- One mini-dose of CSL 250 International Units (IU) Rh-D-Ig is sufficient to cover a fetal maternal haemorrhage (FMH) of 2.5mL of packed fetal red blood cells. To ensure adequate protection against immunisation this dose should be offered to every Rh(D) negative woman who has an indication for RhD–Ig and who has 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. However a subsequent miscarriage or a procedure requiring instrumentation of the uterus requires an additional dose of Rh-D-Ig irrespective of when the first dose was given.
- For a multiple pregnancy, a CSL 625IU dose of RhD-Ig should be given.
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- A Kleihauer test is NOT required in the first trimester as one CSL 250 IU Minidose RhD-Ig will be sufficient for single pregnancies (as the total blood volume of the fetus is less than 2.5mL).

Second and Third Trimester Indications - Second and third trimester encompasses women 13 weeks or greater gestation.

- Amniocentesis and cordocentesis
- Ectopic pregnancy
- Fetal death
- Threatened, incomplete or spontaneous miscarriage or termination of pregnancy
- Abdominal trauma considered sufficient to cause fetomaternal haemorrhage (FMH) eg a motor vehicle accident
- Antepartum haemorrhage (revealed or concealed)
- External cephalic version (successful or unsuccessful).

Second and Third Trimester Administration of RhD-Ig.

- A Kleihauer test should be performed after each sensitising event so that Transfusion Medicine can determine the dose of RhD-Ig required. Ideally the sample should be collected a **minimum of 15 minutes** after the event, obstetric procedure or birth of the infant and **within 2 hours** to allow sufficient time for any fetal red cells to be dispersed in the maternal circulation.

- In exceptional circumstances, Kleihauer tests may be collected up to 72 hours after the event, but this increases the risk that any additional doses of RhD-Ig needed for large fetomaternal haemorrhage will not be administered within the required 72 hours.

- A negative Kleihauer test indicates that one dose (625IU) of RhD-Ig is sufficient.

- There are currently no guidelines on the timing of RhD-Ig administration if antepartum bleeding episode continue. However the KEMH Transfusion Medicine policy states that a dose of RhD-Ig remains effective for two weeks provided the Kleihauer test remains negative.

Postpartum

- One dose of CSL 625IU RhD-Ig should be offered to Rh(D) negative women with no pre-existing immune anti-D antibodies following the birth of a Rh(D) positive infant.

- A Kleihauer test performed following the birth will determine if additional Rh D Ig is required.

- The RhD-Ig shall be prescribed on the woman’s medication chart by the medical officer.
Note: The presence of residual RhD-Ig from antepartum administration of RhD-Ig does not indicate ongoing protection.

**Table 1**

**Summary of Rh(D) immunoglobulin indications**

<table>
<thead>
<tr>
<th>Event</th>
<th>RhD-Ig Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST trimester sensitising events</td>
<td>CSL Minidose 250 IU (CSL 625 IU in multiple pregnancy)</td>
</tr>
<tr>
<td>Second and third trimester sensitising events</td>
<td>CSL 625 IU</td>
</tr>
<tr>
<td>Routine prophylaxis at 28-30 and 34-36 weeks</td>
<td>CSL 625 IU</td>
</tr>
<tr>
<td>Postpartum</td>
<td>CSL 625 IU</td>
</tr>
<tr>
<td>Rh(D) positive platelets</td>
<td>CSL Minidose 250 IU</td>
</tr>
</tbody>
</table>
Rh (D) Immunoglobulin at 28 and 34 weeks in antenatal clinics: Prophylactic administration

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Criteria</th>
<th>Role of the Midwife</th>
</tr>
</thead>
</table>
| Midwives working in the Antenatal clinics at KEMH may administer prophylactic Rh D-Ig to Rh (D) negative women at: | All Rh negative women booked at KEMH who have had a current group and screen performed at KEMH, or has had a group and screen performed by an external laboratory within 2 weeks of the request for Rh D-Ig and the results are available. | 1. Identify that the woman has a negative blood group.  
2. Confirm the blood group with the **hard copy** of the results from pathology. Verbal confirmation by the woman or the blood group documented in the MPower is **not** appropriate. If a hard copy report is unavailable as the patient has only had a blood group and antibody screen performed on that visit, the results may be cross checked against the ICM computer report or verified with the Transfusion Scientist in TMU. This should be clearly documented in the Medical Record.  
3. If there are no blood group results available or the results are from an external laboratory and they were processed more than 2 weeks prior to the request for Rh (D) Ig, complete a pathology form. Information that must be provided includes:  
   - The maternal blood group (if known)  
   - Any administration of Rh D-Ig earlier during the pregnancy  
   - A request for blood group and antibody screening  
4. If the maternal blood group is available and current, telephone the Blood Bank, provide the woman’s details and request Rh(D)–Ig.  
5. The Blood Bank will dispatch the solution via the electronic shute.  
6. On arrival obtain informed consent; provide the woman with the brochure “Anti D. You and Your Baby”. Confirm patient identity with label on Rh D-Ig vial. Ask the woman to state her name & date of birth & cross check details against ID band (if inpatient) as per Blood product checking procedure Haematology TMU Protocols  
7. Complete the MR007 RhD (Anti D) Immunoglobulin Record.  
8. The RhD-Ig should be administered as per Guideline Pharmacy- Medication Safety: Administration & Checking Procedures by Nurse/Midwifery/Medical Staff & Students  
9. The Rh (D) Ig must be given within 30 minutes of arrival at the clinic. If this does not occur, it must be returned immediately to the Blood bank.  
10. Rh (D) Ig must not be stored in unit / department vaccine or medication fridges. |
Rh (D) Immunoglobulin: Administration

**Note:** This guideline should be read in conjunction with the above guidelines, particularly RhD Immunoglobulin (contains background, indications, dosages, antenatal and postnatal information), and relevant Haematology Transfusion Medicine Protocols.

**Key points**

1. The administration of RhD-Ig to Rh(D) negative women with no immune Anti-D antibodies, results in a significant reduction in the incidence of RhD isoimmunisation.¹⁻⁵

2. In general, a 250IU dose is used <13 weeks gestation and a 625IU dose is used ≥13 weeks gestation. The 250IU dose is increased to 625IU under the following conditions:
   - Uncertain gestational age with a possibility of being ≥13 weeks gestation.²
   - Twin/ multiple pregnancy.²

   For all dosages, see previous section: RhD Immunoglobulin.

3. A test for fetomaternal haemorrhage (Kleihauer test) is not required in the first trimester.⁵ The woman’s blood group and antibody screen should be performed to confirm her RhD group and check for immune Anti-D.⁵

4. All women with second and third trimester sensitising events ≥13 weeks gestation (e.g. miscarriage, ectopic pregnancy, termination of pregnancy, chorionic villus sampling, amniocentesis, cordocentesis, abdominal trauma considered enough to cause feto-maternal haemorrhage, antepartum haemorrhage, external cephalic version) or postpartum indications for RhD-Ig should have the magnitude of the fetal maternal haemorrhage assessed²,³,⁵ via Kleihauer Test estimation. This will determine if additional doses of RhD-Ig are required.¹,⁵ A 625IU dose is sufficient to remove up to 6ml of fetal RhD positive red blood cells.²

5. It is essential that a Blood Group and Antibody Screen is performed before the first dose of RhD-Ig is administered (within 14 days prior to injection). This will identify women who have already been sensitised³ and at risk of haemolytic disease of the fetus and newborn. Following injection, prophylactic Anti-D is detectable in the maternal circulation in serological tests for up to 10 weeks and is indistinguishable from immune Anti-D. Testing can be omitted at 34 weeks gestation if prophylactic Anti-D was given at 28 weeks³.

6. RhD-Ig is supplied by the Transfusion Medicine Unit.

7. If a woman refuses RhD-Ig this must be documented in the medical notes and the Medical Officer and Transfusion Medicine notified. See also Clinical Guidelines O&M: Complications of Pregnancy: Refusal of Blood Transfusion and Blood Products: Management and Transfusion Medicine Protocols: Blood Product Prescription Consent & Refusal.

8. RhD-Ig can interfere with the response to live attenuated vaccines, therefore postnatal administration of such vaccines including poliomyelitis and measles
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(contraindicated or not recommended in pregnancy)⁶ should occur at least 3 months after any RhD-Ig administration.²

**Contraindications**

Rh(D) immunoglobulin-VF should not be given to women who:

- Are Rh(D) positive or “weak” D (formerly D⁶) positive²
- Have already been sensitised to the Rh(D) antigen² and have an immune Anti D.

**Warning:** Following injection, prophylactic Anti-D is detectable in the maternal circulation for up to 10 weeks and is indistinguishable from immune Anti-D. If there is any doubt about whether the Anti-D is immune or prophylactic, consult with the obstetric team³. If continuing doubt, RhD-Ig should be given³ and antibody levels monitored every 2-4 weeks until the nature of the Anti-D can be determined. Prophylactic Anti-D generally decreases in strength and usually disappears within 10 weeks of injection. **Note:** Although there is no benefit giving RhD-Ig to an already sensitised woman, there is no more risk than when given to a non-sensitised woman².

- Have isolated Immunoglobulin A (IgA) deficiency, unless these women have had testing that shows they do not have circulating Anti-IgA antibodies.²
- Have severe thrombocytopenia or any coagulation disorder that contraindicates IMI.²

**Precautions²**

Rh(D) immunoglobulin-VF:

- Must not be given intravenously (IV) due to potential anaphylactic reactions. See **Administration** (point 11) below for the Anti-D option available for IV use.
- Caution advised if the woman has a history of prior systemic allergic reactions after administration of human immunoglobulin preparations.
- Must not be given to the RhD positive postpartum infant.
- If the woman’s Body Mass Index (BMI) is ≥30, product information recommends to confirm clearance of fetal cells and the presence of RhD antibody post administration.² However, a consensus position statement recommends routine post-administration testing may not be required unless there has been a large fetomaternal haemorrhage⁷ >6mLs.

**Adverse effects²**

- Local tenderness, erythema and stiffness may occur at the site for several hours, as with any intramuscular injection.
- Occasional: Mild pyrexia, malaise, drowsiness and urticaria may occur after immunoglobulins.
- Rarely: Skin lesions, headache, dizziness, nausea, generalised hypersensitivity reactions and convulsions.²

**Administration of RhD immunoglobulin**

1. Ensure the woman’s blood group is Rh (D) Negative and that she does not have confirmed immune Anti-D (already sensitised).¹ ³
2. If the woman is postpartum, check infant is Rh(D) positive, that she does require RhD-Ig and that RhD-Ig and dose is prescribed on the woman’s medication chart.

3. When a Kleihauer Test is indicated, check the sample has been collected prior to RhD-Ig injection. This test is used to determine if additional doses of RhD-Ig are required. A negative Kleihauer Test (reported as <1mL fetal red cells) indicates that one dose of RhD-Ig is sufficient. It does NOT mean that RhD-Ig is unnecessary.

4. Ensure the woman is informed and appropriately counselled as to the reasons for requiring RhD-Ig. Inform the woman that RhD-Ig is a blood product and provide an Anti-D patient information leaflet. Anti D leaflets ‘You & Your Baby’ (for antenatal and post natal use) and ‘Important Information for Rh(D) Negative Women’ (for early pregnancy loss) may be ordered from Transfusion Medicine. Complete and sign the verbal consent section on the RhD Immunoglobulin (Anti D) Record form (MR007).

5. Check the product as per Clinical Guideline Pharmacy: Medication Safety: Administration & Checking Procedure by Nursing/Midwifery/Medical Staff and Students. Confirm the patient’s identity with the label on the Rh D-Ig vial. Ask the woman to state her name and date of birth and also cross check the details against the ID band (if inpatient) as per blood product checking procedure, Haematology Transfusion Medicine Protocols.

6. Check the vial of RhD-Ig with the naked eye. If it appears turbid or contains sediment it must not be used and should be returned to the Transfusion Medicine Unit.

7. RhD-Ig must be brought up to room temperature before use.

8. Cleanse the skin with alcohol and allow skin to dry.

9. Administer the RhD-Ig slowly by deep intramuscular injection only. The deltoid muscle or anterolateral thigh is the preferred site. The buttocks should be avoided.

See also Clinical Guideline, O&G, Standard Protocols: Intramuscular Injections. For women with a high BMI (e.g. 30 or more), particular consideration should be given to factors which may impact on the adequacy of the injection, including the site of administration, access to underlying muscle and the length of needle used.

10. After administration of RhD-Ig, attach the peel off label to the RhD Immunoglobulin Record form (MR007) and complete all sections of the form in the woman’s medical record. Records should be maintained that assist with Anti-D immunoglobulin traceability.

11. Large doses (> 5mL) should be administered in divided doses at different sites. If a larger dose of RhD-Ig is required to cover a massive feto-maternal haemorrhage, then Rhophylac may be issued from the Transfusion Medicine Unit. See TM Guidelines Rh D Immunoglobulin. Rhophylac can be administered IV.

12. Any adverse events related to RhD-Ig use should be reported to the Transfusion Medicine Unit.
References


Related WNHS policies, procedures and guidelines

KEMH Clinical Guidelines:

- **Haematology Transfusion Medicine Protocols**:
  - Blood Product Prescription & Informed Consent; Blood Product Pre Transfusion Checking Procedure; Refusal of Blood Products
  - Anti D Immunoglobulin; Kleihauer and Feto Maternal Haemorrhage; Rh D Immunoglobulin

- Obstetrics & Gynaecology, Standard Protocols:
  - Pathology & Ultrasound Ordering by Midwife/Nurse: (Kleihauer: Requesting; Kleihauer, Postnatal: Requesting; Cord Blood Group: Requesting)
  - Intramuscular Injections

- Obstetrics & Midwifery:
  - Complications of Pregnancy: Refusal of Blood Components and / or Products: Management

Other related documents

- Australian Red Cross (Rhophylac information; Anti D prophylaxis)
- CSL Human Anti D Rh(D) Immunoglobulin-VF (website): Product Information & Consumer Medicine Information
- NHMRC: Guidelines on the Prophylactic Use of Rh D Immunoglobulin (Anti-D) in Obstetrics
RhD Negative Blood Group: Management

Keywords: blood group and antibody screen, red cell antibodies, RhD Immunoglobulin, Rh(D), antenatal screening, Anti D, rhesus negative, Kleihauer, fetomaternal haemorrhage, Rh(D) negative women, antepartum haemorrhage, Direct Antiglobulin Test, DAT, non-sensitised RhD negative, Rh (D) positive, Rh(D) antigen, anti-D, RhD-Ig, RhD isoimmunisation, Anti-D antibodies, Rh (D) negative, high BMI >30

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<tr>
<th>Document owner:</th>
<th>Obstetrics / TM</th>
</tr>
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<tbody>
<tr>
<td>Author / Reviewer:</td>
<td>Evidence Based Clinical Guidelines</td>
</tr>
<tr>
<td>Date first issued:</td>
<td>September 2002</td>
</tr>
<tr>
<td>Last reviewed:</td>
<td>September 2016 (amalgamated 4 guidelines)</td>
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<tr>
<td>Endorsed by:</td>
<td>Obstetrics, Gynae&amp;Imaging Directorate Management Committee</td>
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<tr>
<td>Standards Applicable:</td>
<td>NSQHS Standards: 1 Health Care is Guided by Current Best Practice; 4 Medication Safety; 5 Patient Identification / Procedure Matching; 7 Blood Products,</td>
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