



TRANSFUSION MEDICINE PROTOCOLS

Rh D Negative Women: The Kleihauer Test & Feto-Maternal Haemorrhage

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Aim

To describe the indication, ordering, and interpretation of the Kleihauer test which is used to screen for fetal – maternal haemorrhage (FMH).

Description

The Kleihauer Test is performed on a maternal sample. It is used to assess the volume of a feto-maternal haemorrhage and therefore determine if **additional** doses of prophylactic Rh D Immunoglobulin are required.

It is important to identify women with a feto-maternal haemorrhage of greater than 6 mL of packed fetal red cells as they will require additional doses of RhD Immunoglobulin (RhD-Ig) to ensure clearance of all fetal red cells.

A standard CSL 625 IU dose of RhD-Ig is sufficient to clear the equivalent of a 6 mL bleed of packed fetal red cells.

Indication

Kleihauer tests are NOT required in the first trimester as one 250 IU ‘minidose’ of RhD-Ig will be sufficient to cover all events.

Kleihauer Tests ARE routinely indicated for:

- Rh D Negative women, following a potentially sensitising event (e.g. miscarriage, Fetal death in utero (FDIU), trauma, antepartum haemorrhage, cordocentesis, birth of a Rh D Positive baby etc.) to ascertain whether **additional** doses of RhD-Ig are required.
- Investigation of an unexpected/unexplained stillbirth, prior to the commencement of induction procedure.

Timing of Sample Collection

- Kleihauer samples must be taken, **prior** to administration of RhD-Ig, to assess the volume of feto-maternal haemorrhage. The maternal sample for Kleihauer needs to be collected when sufficient time has elapsed following a sensitizing event, to allow fetal cells to be distributed within the maternal circulation, i.e. a minimum of 15 minutes.
- Post-delivery the optimal time to collect is between 15 minutes – 2 hours following placental separation.
- To be valid, maternal specimens for Kleihauer testing must be collected within 72 hours of a potential sensitising event or delivery.
- A standard full dose of Rh D Immunoglobulin (625 IU) is sufficient to destroy up to 6mL of packed fetal red cells. Therefore for a feto-maternal haemorrhage in excess of 6mL a repeat Kleihauer Test is required 48 hours after administration of Rh D Immunoglobulin to ensure effective prophylaxis and clearance of fetal red cells.

The Kleihauer test is a time consuming, labour intensive test and routine requests are batched and processed every afternoon.

Urgent Kleihauer Tests

The Blood Bank Scientist performs a batch of Kleihauer tests each afternoon. The indications for an urgent Kleihauer test are rare. Such requests **MUST** be accompanied by a phone call from the ordering clinician to the Haematology/Transfusion Medicine laboratory.

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 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.

References




- National Blood Authority Guidelines on the prophylactic use of Anti D (Rh D Immunoglobulin) in Obstetrics <http://www.nba.gov.au/pubs/pdf/glines-anti-d.pdf>
- Royal Australian & New Zealand College of Obstetrician & Gynaecologists Ante Natal Screening Tests 2006 www.ranzcog.edu.au/publications/statements/C-obs3.pdf
- ANZSBT Guidelines for Pretransfusion Testing, 4th Edition, ANZSBT, 2007 <http://www.anzsbt.org.au/publications/index.cfm#societyg>
- ANZSBT Guidelines for Pre-transfusion Testing, 4th Edition, ANZSBT, 2007 <http://www.anzsbt.org.au/publications/index.cfm#societyg>

Related policies

- National Safety and Quality Health Service Standards, October 2012. [Standard 7: Blood and Blood Products](#)

Related WNHS policies, procedures and guidelines

- KEMH Transfusion Medicine Protocols – [Rh D Negative Women: Rh D Immunoglobulin and applications.](#)
- KEMH Clinical Practice Manual [Rh D Negative Blood Group Management](#)

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