Anti-D Administration

Unique Identifier	NMP200/SSM/095 - v06.00
Document Type	Clinical Guideline
Risk of non-compliance	may result in significant harm to the patient/Health NZ
Function	Clinical Practice, Patient Care
User Group(s)	Te Toka Tumai Auckland only
• Organisation(s)	Health New Zealand | Te Toka Tumai Auckland
• Directorate(s)	Women's Health
• Department(s)	Maternity
• Used for which patients?	Maternity patients, especially Rhesus negative women.
• Used by which staff?	All clinicians in Maternity
• Excluded	
Keywords	Anti-D, RhD negative, Kleihauer test
Author	Maternity Quality and Safety Leader
Authorisation	
• Owner	Service Clinical Director - Secondary Maternity Services
• Delegate / Issuer	Service Clinical Director - Secondary Maternity Services
Edited by	Document Control
First issued	December 1998
This version issued	13 September 2024 - updated
Review frequency	3 yearly

Contents

1. Purpose of guideline

This guideline establishes the expected process for the administration of Anti-D immunoglobulin or its equivalent during the antenatal and postnatal period including routine prophylactic Anti-D at 28 and 34 weeks and postnatal period, in order to minimise Rhesus iso-immunisation and haemolytic disease of the newborn (HDN) or fetus within Health NZ | Te Toka Tumai Auckland.

It serves as an educational resource and guide for staff that enables whānau to be well supported in their decision-making about Anti-D.

The guideline acknowledges the commitment of Te Toka Tumai to the preamble and articles of Te Tiriti o Waitangi and the Memorandum of Understanding with Te Runanga o Ngati Whatua as manawhenua partners with Te Toka Tumai at governance and operational levels (see Associated documents):

- Kawanatanga (Governance): Working with whānau through the processes of gaining informed consent and safe administration of Anti-D.
- Tino Rangatiratanga (Self-determination): Ensuring that whānau are involved and included in the decision-making, planning and safe administration of Anti-D.
- Oritetanga (Equity): Recognising that tangata whenua have a right to choose if, when and how Anti-D is administered, taking into consideration Cold Chain Management and the gold-standard timing of administration that is required for Anti-D to be effective.
- Te Ritenga (Rights to beliefs and values): Safeguarding the Māori worldview and other cultural beliefs regarding the use of blood products by providing full information and gaining written consent for the administration of Anti-D.

The guideline supports planning by whānau and healthcare workers and provides guidance on seeking expert advice on the safe administration of Anti-D.

2. Background

The development of Anti-D antibodies usually occurs because of a fetomaternal haemorrhage (FMH) at birth in a rhesus D (RhD) negative mother carrying an RhD positive fetus.

3. Practice points for administration of Anti-D immunoglobulin

	Practice point
1.	Before Anti-D immunoglobulin can be administered, the woman must: • Receive a full explanation. • Be given the written information 'Anti-D injections for women with a negative blood type' available in all Te Toka Tumai Auckland maternity areas and on the New Zealand Blood Service website. (See Associated documents) • Sign an Agreement to Treatment form (CR0119).
2.	Te Toka Tumai Auckland staff must: • Follow the 'Blood Components and Blood Products Administration' clinical guideline (see Associated documents). • Use the Blood Products Administration Checklist (CR9043) whenever Anti-D immunoglobulin is administered. • Check that there is a written prescription for the Anti-D immunoglobulin and that the blood product supplied matches the prescription.
3.	At least 625 International Unit of Anti-D immunoglobulin should be given to every non-sensitised RhD-negative woman who gives birth to an RhD-positive infant, an infant with indeterminate blood group, or in the case of a stillbirth where the blood group cannot be ascertained, even when the Kleihauer test is negative.
4.	Anti-D immunoglobulin should be administered as soon as possible after the birth and within 72 hours, regardless of prior anti- D immunoglobulin for routine prophylaxis or for a sensitising event.
5.	Where delays occur with cord blood analysis (e.g., a clotted specimen or no specimen sent), perform the Kleihauer screening test within two hours if not already done, and retest the baby by microcollect at the earliest opportunity. Aim to administer the correct dose of Anti-D within 72 hours.
6.	Intramuscular Anti-D immunoglobulin is best given into the deltoid muscle (upper arm) to avoid slow absorption through subcutaneous tissues, that can occur when using the gluteal muscle, especially in women with a high Body Mass Index.
7.	Women with severe thrombocytopenia and women who will require multiple ampoules of Anti-D immunoglobulin for a very large fetomaternal bleed should receive the intravenous form of Anti-D immunoglobulin.
8.	Transfer to Birthcare Auckland should not be delayed by this process; ensure both verbal and written handover includes the requirement for administration of Anti-D immunoglobulin. The LMC is responsible for following up results and prescribing Anti-D where needed.
9.	Where a dose of greater than 1250 International Unit of Anti-D immunoglobulin (two vials) is indicated by a Kleihauer result, consult with a transfusion medicine specialist – phone Blood Bank ext. 24015 or 09-3072834 and ask to speak to the on-call transfusion medicine specialist.
10.	Women who are reported as having 'Indeterminate blood group' should be treated as RhD-negative, and babies who are reported as having 'Indeterminate blood group' should be treated as RhD-positive to ensure that Anti-D immunoglobulin is administered to reduce any risk of antibodies forming.

4. Antenatal

Lead Maternity Carer's (LMC) antenatal responsibilities:

- To ensure that the woman's rhesus status is clearly documented on the antenatal booking form (Smart Booking Antenatal Assessment) in BadgerNet.

- To ensure the Blood Bank report of the woman's blood group and Rh factor is available via the Regional Clinical Portal or 3M.
- To ensure that the woman with a RhD-negative blood type is aware of the possible requirements of Anti-D during the antenatal and postnatal periods, and the process involved for administration.
- To discuss and offer routine prophylactic Anti-D at 28 and 34 weeks gestation.
- To provide the woman with a copy of the New Zealand Blood Service (NZBS) 'Anti-D injections for women with a negative blood type' pamphlet (see Associated documents).
- To inform other health professionals of the woman's blood-group status when referring or transferring care to another LMC or maternity provider.

All RhD-negative women (who have not actively formed their own Anti-D) should be offered Anti-D Immunoglobulin in the following clinical situations:

First trimester (before 12 weeks):
250 International Unit (50 microgram) dose of Anti-D Immunoglobulin, in the case of:
- Abortion of pregnancy (medical or surgical) from 10-12 weeks of gestation
- Spontaneous miscarriage
- Ectopic pregnancy
- Chorionic villus sampling
- Molar pregnancy (complete mole does not have fetal cells)
- Uterine bleeding where this is repeated, heavy, or associated with abdominal pain

For multiple pregnancies, a 625 International Unit dose should be administered.

Note – Anti-D is not indicated in first trimester abortion (medical or surgical) prior to 10 weeks gestation.

Second and third trimester (12 weeks onwards):
625 International Unit (125 microgram) dose of Anti-D immunoglobulin, in the case of:
- Miscarriage or threatened miscarriage
- Antepartum haemorrhage
- Intrauterine death or stillbirth
- External cephalic version
- Chorionic villus sampling
- Ectopic pregnancy
- Molar pregnancy
- Abortion (either medical or surgical)
- Abdominal trauma sufficient to cause FMH
- Amniocentesis, chorionic villus sampling, and intrauterine fetal blood sampling
- In utero therapeutic procedures (transfusion, surgery, insertion of shunts, laser)

After 20 weeks gestation:
All women who experience a potentially sensitising event after 20 weeks gestation should have a Kleihauer test to assess the magnitude of the FMH and whether further Anti-D immunoglobulin is required.
- Where the mother's weight exceeds 100 kg, an additional dose may be appropriate.
- Where a dose of greater than 1250 International Unit Anti-D immunoglobulin (two vials) is indicated by a Kleihauer result, a consultation with a transfusion medicine specialist is recommended. Phone Blood Bank, 09-3072834, ext. 24015.

Obstetric events requiring a further dose of Anti-D immunoglobulin

- Intermittent bleeding that continues after 12 weeks gestation: Anti-D immunoglobulin should be administered at two-week intervals.
- If a subsequent risk event for immunisation occurs: a further dose of Anti-D immunoglobulin should be offered if previous dose given two weeks or more ago.

Where the previous dose was administered less than two weeks previously, a further dose of Anti-D immunoglobulin should be offered if the pregnancy is more than 20 weeks gestation and the size of the fetomaternal bleed is likely to be greater than 12 mL blood (6 mL red cells) in total.

5. Routine antenatal prophylactic Anti-D immunoglobulin

- All RhD-negative women (who have not actively formed their own Anti-D) should be offered two prophylactic doses of Anti-D Immunoglobulin (625 IU) during pregnancy; one at approximately 28 weeks and another at 34 weeks gestation.
- Blood should be taken for a red cell antibody screen and, if appropriate, a RhD antibody titre prior to administering Anti-D Immunoglobulin in order to detect those who have already become immunised.
- If circumstances do not permit a delay after collecting the test sample, administer Anti-D Immunoglobulin and await the test result.
- The blood test may be omitted at 34 weeks gestation if prophylactic Anti-D Immunoglobulin was given at 28 weeks gestation.
- Routine antenatal prophylactic Anti-D immunoglobulin does not replace the need for a Kleihauer test and the administration of Anti-D immunoglobulin for sensitising events. Conversely, routine antenatal prophylactic Anti-D immunoglobulin should not be withheld if Anti-D has previously been given for a sensitising event.
- Anti-D Immunoglobulin should not be given to any woman with existing Anti-D antibodies except where the existing Anti-D is due to the antenatal administration of Anti-D Immunoglobulin.
- If there is uncertainty whether the Anti-D detected in the woman's blood is passive or formed, her clinical notes should be checked to confirm whether Anti-D Immunoglobulin was administered in the last six weeks. If there is any doubt, Anti-D Immunoglobulin should be administered.
- There will be circumstances where the woman has not received the first routine antenatal prophylactic Anti-D at 28 weeks gestation. It should be administered as soon as possible (see Appendix 2: Antenatal Prophylactic Anti D pathway for women > 28 weeks gestation at first contact).
- Where a woman who is RhD negative is not willing or able to return for a second dose of Anti-D immunoglobulin at 34 weeks, the LMC can prescribe one dose of 1250 IU Anti-D immunoglobulin at 30 weeks, with the woman's informed consent. For this reason, stock doses of Anti-D immunoglobulin will be kept at the maternity outpatient clinics, Greenlane Clinical Centre (GCC). LMCs may contact a senior medical officer obstetrician for advice.

See Appendix 1: Routine Antenatal Prophylactic Anti D pathway for arranging and administration of routine antenatal prophylactic Anti-D.

6. Intrauterine fetal death

- In the case of an intra-uterine fetal death (IUFD) in an RhD-negative woman, the IUFD itself is regarded as a sensitising event. Therefore, a Kleihauer test should be performed at the time of diagnosis of IUFD, rather than at the time of delivery.

- Anti-D immunoglobulin, 625 IU should be administered within 72 hours of the diagnosis of IUFD.
- **If the Kleihauer result is > 6 mL at the time of diagnosis of IUFD, consult the obstetric Senior Medical Officer (SMO) on call via the hospital switchboard and a transfusion medicine specialist from Blood Bank.**
- An additional Kleihauer should be performed following birth of the placenta.
- Blood group identification and RhD typing should be performed on the cord or placental vessel blood where possible.
- If the baby is confirmed to be RhD-positive and/or the post-placental Kleihauer result is > 6 mL, consult the obstetric SMO on call via the hospital switchboard and a transfusion medicine specialist from New Zealand Blood Service, as additional Anti-D immunoglobulin may be required.

7. Following the birth for women with RhD negative blood type

With parental consent, a cord blood sample (6 mL pink Vacutainer® tube) should be sent to the laboratory or Blood Bank to identify the Rh antigen status of the newborn.

A maternal blood sample (purple-topped EDTA tube) for a Kleihauer screening test should be performed within two hours of delivery of the placenta.

The Kleihauer test identifies women with a large FMH who may require additional Anti-D immunoglobulin.

Within 72 hours of birth

- The LMC is responsible for reviewing blood results for both mother and baby. Both the mother and baby's blood result must be reviewed together, to ensure that the correct dose of Anti-D immunoglobulin is prescribed and administered.
- If the baby's blood group is RhD negative, regardless of Kleihauer result, no action is required for the mother. (If Kleihauer is >6 mL, consider discussing baby with paediatrician).
- If baby is RhD **positive** and Kleihauer result is **negative or < = 6 mL**, administer 625 IU of Anti-D immunoglobulin.
- If baby is RhD **positive** and Kleihauer result is **> 6 mL**, consult senior obstetric staff member and a transfusion medicine specialist from New Zealand Blood Service.
- For multiple births where one or more babies are RhD **positive**, administer at least 625 IU of Anti-D immunoglobulin. Further Anti-D immunoglobulin may be required according to the Kleihauer result.
- For manual removal of placenta, administer at least 625 International Unit of Anti-D immunoglobulin. Further Anti-D immunoglobulin may be required according to the Kleihauer result. The Kleihauer should be done after the manual removal procedure. If Kleihauer result **> 6 mL**, consult senior obstetric staff member and a transfusion medicine specialist from New Zealand Blood Service.

If a woman with an RhD positive baby is not given Anti-D immunoglobulin within 72 hours of birth, the dose must still be given as soon as possible, up to 10 days after birth.

8. Women who decline Anti-D immunoglobulin

A woman may choose to decline Anti-D immunoglobulin; this decision must be respected by all health professionals involved. The woman's reasons for declining must be clearly documented as well as the information provided to the woman regarding the need for, and the possible consequences of not receiving, Anti-D immunoglobulin.

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9. Intra-operative cell salvage (ICS) and Kleihauer testing

When the ICS is used during a caesarean section on RhD-negative women and that blood is re-infused, the Kleihauer test *must be taken after the reinfusion has been completed*. If the Kleihauer test has been taken prior to re-infusing the blood, a repeat Kleihauer test *must be taken after the reinfusion has been completed.*

10. Management of missed, late or inadequate dose of Anti-D immunoglobulin

Late Anti-D immunoglobulin is classified as being given more than 72 hours after a sensitising event. Inadequate dose is classified as where further doses of Anti-D immunoglobulin were required and not administered. These events must be reported using the Te Toka Tumai Auckland Datix system.

11. Cell-free Deoxyribonucleic acid (DNA) assessment of fetal RhD genotype

Women who have been shown to be carrying an RhD negative fetus do not require Anti-D prophylaxis either as routine or for potentially sensitising events.

12. Supporting evidence

- Hutt Valley DHB. (2016). Anti-D Administration Policy, Lower Hutt: Hutt Valley DHB.
- Royal Berkshire NHS Foundation Trust. (2018). Anti-D guidelines (GL786). Reading: Royal Berkshire NHS Foundation Trust.
- Royal College of Obstetrics and Gynaecologists. (2011). The use of Anti D Immunoglobulin for Rhesus D Prophylaxis. Retrieved from: https://www.rcog.org.uk/
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- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. (2019), Guidelines for the use of Rh(D) Immunoglobulin (Anti-D) in obstetrics. Retrieved from: https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Use-of-Rh(D)-Isoimmunisation-(C-Obs-6).pdf?ext=.pdf.
- Canterbury District health Board. (2020). Use of Rh(D) immunoglobulin in unsensitised rhesus negative women for the prevention of Haemolytic disease of the new born. Retrieved from: https://edu.cdhb.health.nz/Hospitals-Services/Health-Professionals/maternity-care-guidelines/Documents/GLM0047-Use-of-Anti-D-Immunoglobulin.pdf.
- Clinical Guidelines for Abortion Care: An evidence-based guideline on abortion care in Australia and Aotearoa New Zealand (2023). RANZCOG, Melbourne, Australia.

13. Associated documents

- Te Tiriti o Waitangi Policy
- Blood Components and Blood Products Administration
- Intrapartum Care - Physiological Labour and Birth

Forms
- CR0119: Agreement to Treatment
- CR9043: Blood Products Administration Checklist
- CR7029: Blood Bank Issue Sheet

Other
- Anti-D injections for women with a negative blood type https://www.nzblood.co.nz/assets/Transfusion-Medicine/PDFs/111I004.pdf
- NZ Blood Clinical Information available at: https://www.nzblood.co.nz/clinical-information/transfusion-medicine/information-for-health-professionals/clinical-guidelines-and-policies/

Patient information
- National Day Stay Prescription Sheet
- Your guide to blood transfusion - Anti-D Immunoglobulin

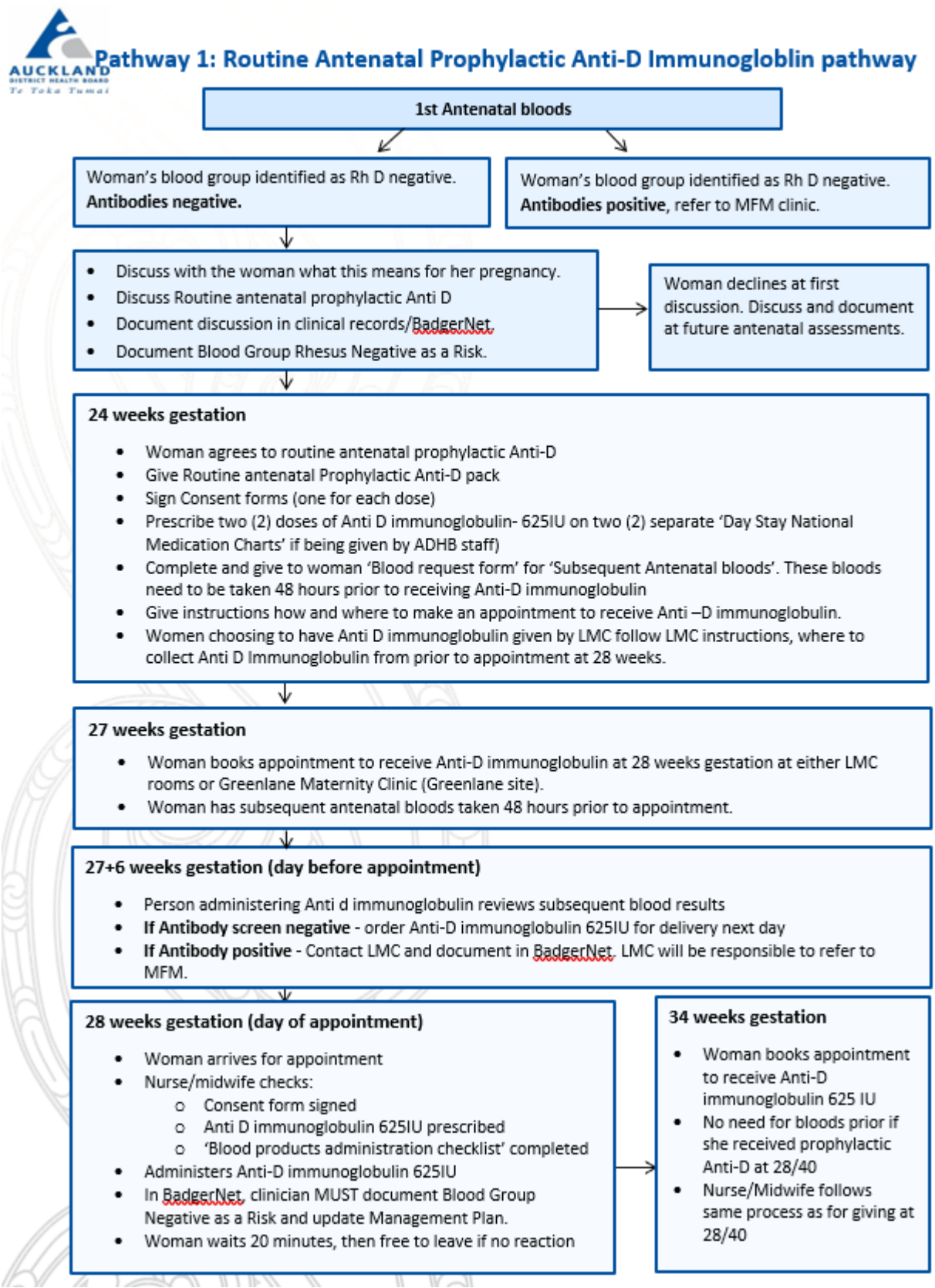
14. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Te Toka Tumai Auckland guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

15. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed ***before*** the scheduled date, they should contact the owner or Document Control without delay.

Appendix 1: Routine Antenatal prophylactic Anti-D pathway 1



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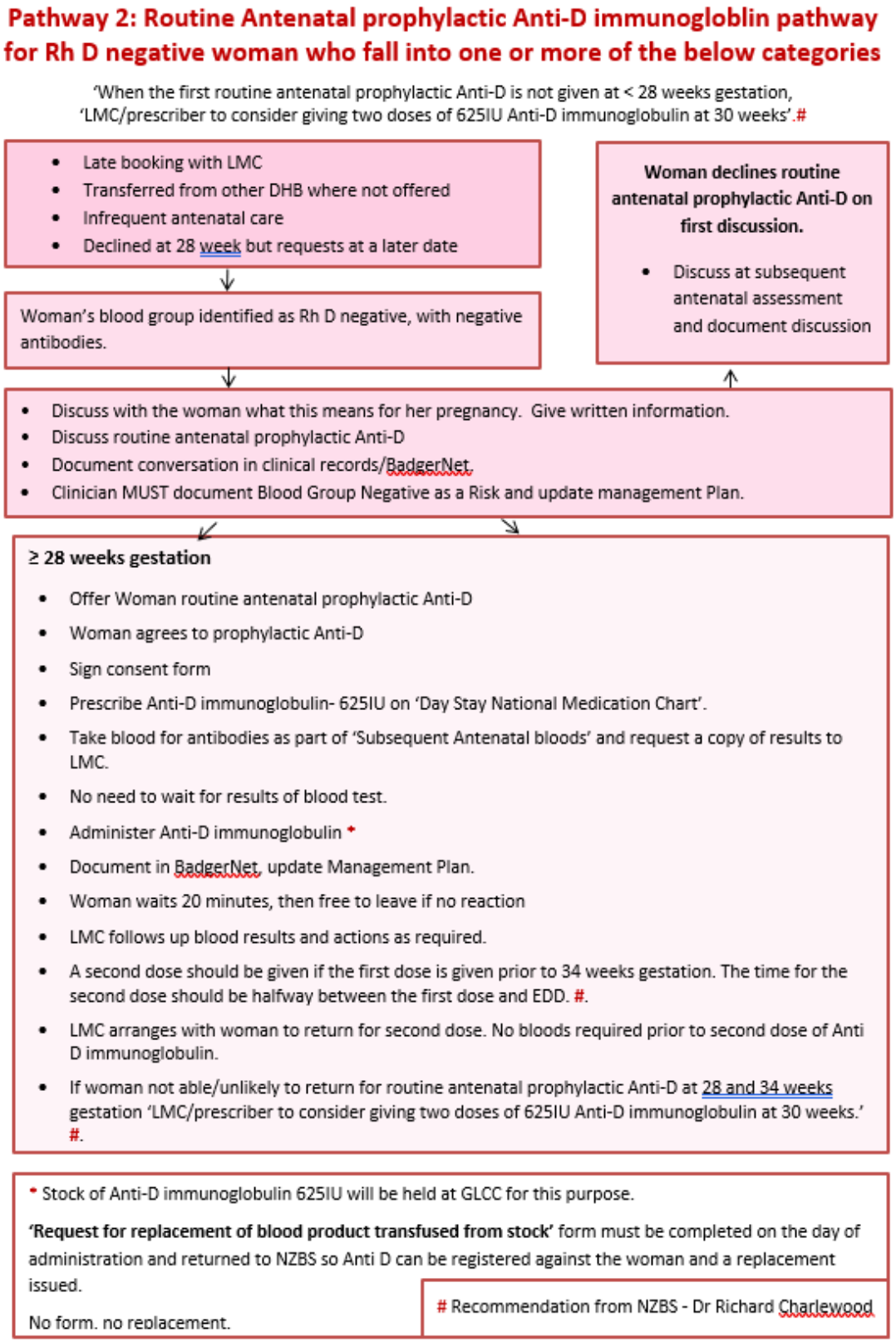
Appendix 2: Antenatal prophylactic Anti-D immunoglobulin pathway 2 for RhD-negative woman

When the first routine antenatal prophylactic Anti-D is not given at < 28 weeks gestation, 'LMC/prescriber to consider giving two doses of 625IU Anti-D immunoglobulin at 30 weeks' #



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Appendix 3: Operational process

The following processes are to be followed:

- Routine prophylactic Anti-D can be administered at the maternity clinic, Greenlane Clinical Centre (GCC), or at the LMC's rooms.
- At the maternity clinic, the vaccination nurses will administer the Anti-D.
- Women will be given a pack by their LMC with the necessary information and forms required to make an appointment to receive her routine antenatal prophylactic Anti-D.
- It will be the responsibility of the LMC to ensure that they and the woman have signed the two consent forms and two doses of Anti-D immunoglobulin 625 International Unit are prescribed, one on each of the National day stay prescription charts in the packs. The LMC is also responsible to give the woman a form to have her subsequent antenatal bloods taken prior to her appointment.
- The woman is required to have her subsequent blood test at least 48 hours prior to her appointment.
- On the day prior to the woman's appointment the person administering the Anti-D will check the blood results.
- At the maternity clinic, the nurse will order the Anti-D 625 International Unit for next day delivery using the Blood Bank Issue Sheet (CR7029). The form will include the dose required, woman's gestation and the 'Prophylactic Anti D' stamp.
    - The Anti-D immunoglobulin will be delivered to NZBS approved fridge in Greenlane Surgical unit (GSU) and moved to the NZBS approved fridge in the maternity clinic by one of the vaccination nurses on the day of the woman's appointment.
- If a woman does not attend her appointment, she should be contacted, and another appointment arranged as soon as possible.
- If the woman does not wish to arrange another appointment, document this in BadgerNet and notify her LMC.
- If the woman arrives and has not had her subsequent bloods, take the blood test and administer the Anti-D immunoglobulin. No need to wait for the results if the woman consents to proceed.
- If the woman arrives for her appointment and has forgotten or miss laid her consent forms and or National Day Stay Prescription sheet:
    - At the maternity clinic, the vaccination nurse will ask for assistance from the community midwives in the maternity walk in centre to re-consent the woman and prescribe the Anti-D immunoglobulin.
    - At Day Assessment Unit (DAU) the midwife on shift, can re-consent the woman and prescribe the Anti-D immunoglobulin.
- Anti-D is administered according to Te Toka Tumai Auckland guideline: 'Blood Components and Blood Products Administration'.
  Expected Documentation in BadgerNet MCIS is as follow:
    - Clinician **MUST** document Blood Group Rhesus Negative as a Risk and update Management Plan (including administration details of Anti D) as woman progresses through the pregnancy journey.
    - Optional: A clinician may document administration of Anti D using a clinical note or in a free text box within a form or note in BadgerNet e.g., LMC rooms, however core mandatory documentation of Blood and Blood Products remain on paper forms as described above.
- A process will be developed between NZBS and the Maternity clinic, GCC that covers the stock levels, correct ordering process, storage and return of Anti-D immunoglobulin.
- An audit of this process will occur six months after implementation.