University Hospital Southampton
NHS Foundation Trust

Antenatal and Postnatal Management of Women with Red Cell Antibodies, version 1.1

Description	Department/Division specific clinical guideline
Target audience	Obstetricians Midwives Neonatologists Nursery nurses
Related documents / policies (do not include those listed as appendices)	Antenatal and postnatal administration of anti-D for the prevention of RhD alloimmunisation Deferred cord clamping guideline Neonatal jaundice guideline Newborn examination guideline Postnatal Ward Clinical Aids: Maternal problems affecting the infant
Author(s) (names and job titles)	Helen Perry Sanjibani Shrestha Lisa Smith
Policy sponsor	Freya Pearson – Divisional Clinical Director
Is there any non-compliance with NICE guidance?	No
First Consultation **21/11/22**	W&N Anaesthetic Guideline Consultation Group W&N Gynaecology Guideline Consultation Group W&N Midwifery Guideline Consultation Group W&N Neonatal Guideline Consultation Group W&N Obstetric Guideline Consultation Group
Second Consultation **6/12/22**	W&N Anaesthetic Guideline Consultation Group W&N Gynaecology Guideline Consultation Group W&N Midwifery Guideline Consultation Group W&N Neonatal Guideline Consultation Group W&N Obstetric Guideline Consultation Group

Approval committee	Approval date
Women and Newborn Governance Steering Group	03/03/2023 v1.0 05/05/2023 v1.1

UHS reference	Version	Publication date	Next review due
N/A	1.1	May 2023	31/03/2026

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1 Version control

Date	Consultation / Comments	Version created	Page	Key changes
December 2022	KD, SH, GV, KA, NR	1.0		New guideline
April 2023	HP/LS/SS	1.1	4	Flow chart amended to align with regional guidance

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2 Executive Summary: Antenatal Management of Women with Red Cell Antibodies

Any Red Cell Antibodies detected at booking or at 28 weeks on routine screening – follow lab instructions on Charts

Midwife or Obstetrician to make ongoing plan for pregnancy and birth

Measure antibody titres every 4 weeks until 28 weeks and then every 2 weeks until birth for **Anti-D, Anti-c and Anti-K antibodies and other antibodies where there is a history of HDFN.**

Increase frequency of testing to every 2 weeks if D or c level >2iu/ml

Measure titres at detection and again at 28 weeks for all other antibodies that may cause fetal anaemia **(E, Fy^{a} and ^{b}, JK^{a}, C, CE ,U, M,N, H (Bombay), k, S,s)**

Refer to Fetal Medicine if:

Anti-D: titre >4iu/ml
Anti-c: titre >7.5iu/ml or as soon as detected if co-existent Anti-E antibodies
Anti-K: as soon as detected
Others: titre >32iu/ml
Or
History of:
previous intrauterine blood transfusion
or severe neonatal jaundice or anaemia requiring exchange or blood transfusion (even if no antibodies detected or low titres current pregnancy).

During pregnancy:

Refer to Charts lab comments regarding timeframe for obtaining blood products in relation to presence of particular antibodies. Discuss with transfusion if unclear.

Birth at PAH recommended. Finalise and document plan around cross match in labour/for IOL/CS. Blood can take >6hrs to cross-match and this needs to be considered.

Ensure timely treatment of antenatal anaemia to minimise the need for blood transfusion.

Consider weekly X-match in women at high risk of needing a blood transfusion (e.g. placenta praevia)

Anti-D prophylaxis:

RhD negative women with other red cell antibodies should still be given prophylactic Anti-D unless the fetus is shown to be RhD negative on cffDNA testing or if fetal RhD group not determined by cffDNA testing.

RhD negative women with **immune** anti-D antibodies (i.e. not passive antibodies due to prophylactic anti-D), should not be given prophylactic Anti-D.

Timing and mode of birth

For women with antibodies that can cause fetal anaemia that have remained stable during pregnancy, birth is recommended between 37 and 38 weeks gestation. There is no contraindication to vaginal birth. CTG monitoring in labour is recommended.

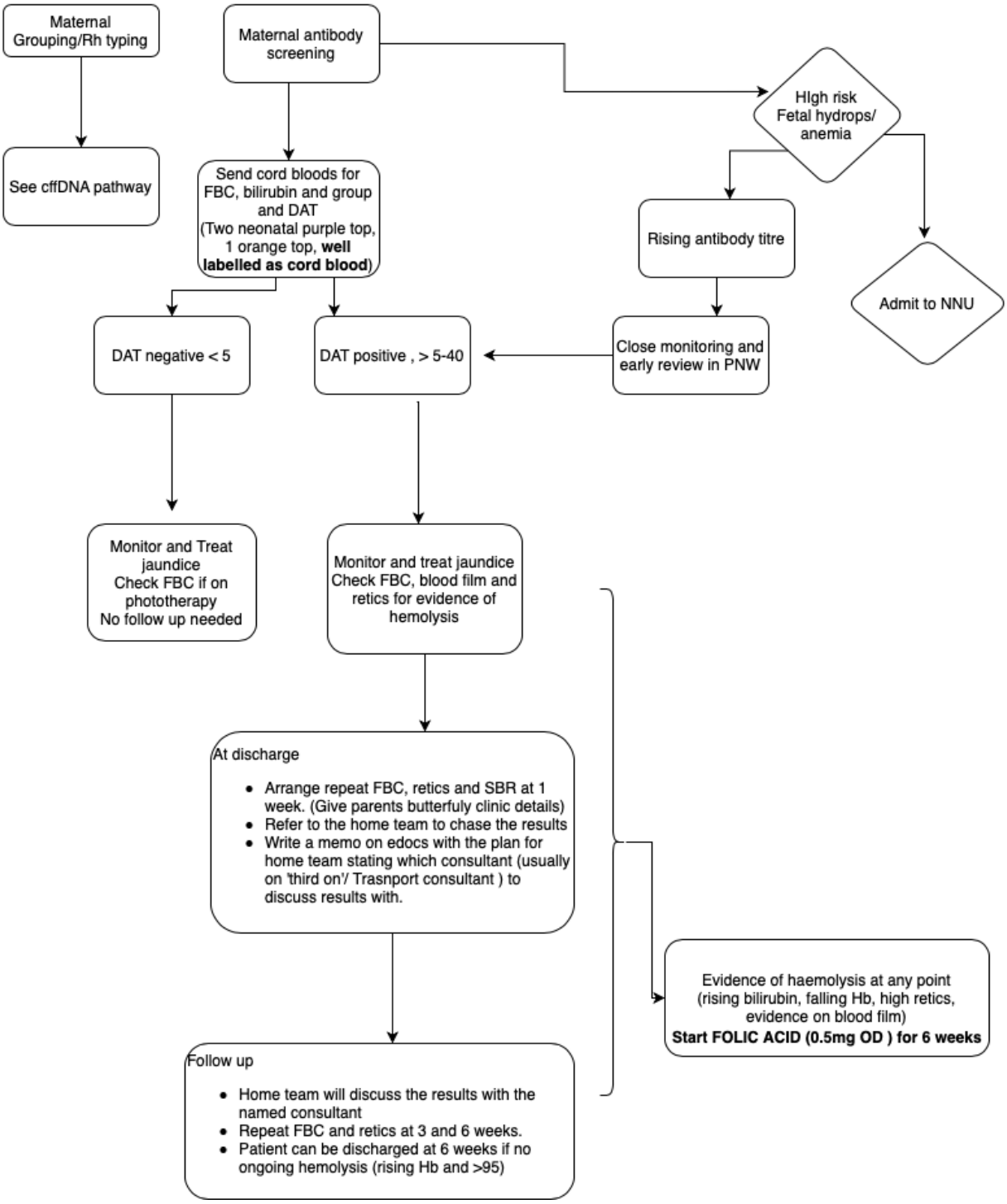
For women who have been monitored/treated in Fetal Medicine, an individualised birth plan will be made by the Fetal Medicine Team.

For women with red cell antibodies that do not cause fetal anaemia, decisions regarding birth timing and mode should be made on usual obstetric indications. Birth at PAH recommended. Refer to lab comments regarding cross-match in labour/for IOL/CS. Can birth on Broadlands if no obstetric or fetal concerns.

Take cord blood samples for Group & DAT, haemoglobin and bilirubin for all women with red cell antibodies

Take samples after 1-2 mins DCC (two neonatal purple top, one neonatal orange top). State on request that test is for maternal antibodies.

3 Executive summary: Postnatal management of baby with maternal red cell antibody



4 Scope and purpose

This guideline applies to all women and babies cared for by UHS Maternity and Neonatal services.

5 Definitions

DCC	Deferred cord clamping
Immune anti-D	Maternal antibodies generated following exposure to RhD positive fetal cells
Passive anti-D	Prophylactic anti-D

6 Details of policy/procedure to be followed

6.1 Background

The presence of red cell antibodies during pregnancy has the potential to cause complications for both mother (difficulty in obtaining appropriate blood products) and baby (Haemolytic disease of the Fetus and Neonate (HDFN)). This guideline outlines the recommendations for screening for, and management of red cell antibodies. It does not cover the management of anti-platelet antibodies, which should be discussed with the Fetal Medicine Team.

6.2 Antenatal Detection of Red Cell Antibodies

Red Cell Antibodies can occur naturally, but most develop secondary to a blood transfusion or following sensitisation in a previous pregnancy. Screening for Red Cell Antibodies should be undertaken for all women at booking and repeated at 28 weeks gestation. Attention should be paid to the 'Comments' section of the Group and Save result which will specify if a 10 minute cross-match is not available.

Women who have Red Cell Antibodies identified either at booking; 28 weeks; or at another time during pregnancy; require their midwife or area consultant to confirm a plan for the pregnancy. This will depend on the specific antibody detected. Women with a history of HDFN or a baby that required intrauterine or postnatal blood transfusion or exchange transfusion should be referred to Fetal Medicine from their booking appointment.

6.3 Antenatal Care

The mainstay of antenatal management is:

1. Monitoring levels of antibodies that can cause fetal anaemia and referring to Fetal Medicine when indicated.
2. Making a birth plan that specifies details around crossmatching and confirms the recommended timing and mode of birth. The presence of antibodies means a cross-match can take between 2-6 hours. Some rarer antibodies can take longer to cross-match and in these cases the transfusion team will liaise with the clinician to make a plan in conjunction with NHSBT. The birth plan should be clearly documented on the woman's Badgernet record.

3. Ensuring timely treatment of antenatal anaemia to reduce the likelihood of requiring transfusion.

Details of antibodies that require titre monitoring are outlined in the flowchart of section 2.

6.4 Historic Antibodies

Historic antibodies are those that may have been identified previously but are now undetectable by the screening tests employed for Group and Save (G&S) requests. Although antibody levels may be very low there is still immunological memory and if the patient is exposed to the specific antigen, then antibody production will occur rapidly, and a delayed transfusion reaction may occur.

Women with historical antibodies cannot be issued type-specific blood and require a full crossmatch before blood can be issued. The blood transfusion service will highlight such women on their G&S result by writing in the comments section and adding a N10 (not suitable for 10-minute X-match) alert on the report.

The presence of historic antibodies should be documented clearly in the woman's Badgernet records as a Critical Alert. A X-match should be requested at presentation in labour or ahead of a planned birth or intervention.

6.5 Other risk factors to consider

Previous history of HDFN or severe jaundice in a sibling should prompt consideration of the presence of maternal antibodies. Refer to Fetal Medicine.

6.6 Intrapartum Care

Women with Red Cell Antibodies should birth at PAH. Steps should be taken to minimise the risk of PPH (and therefore requirement of a blood transfusion). This should include recommending an active 3rd stage, avoiding prolonged labour and consideration of cell salvage during an operative birth.

Women with Red Cell Antibodies that can cause fetal anaemia are advised to have continuous CTG monitoring in labour. See appendix 1.

Cross-matched blood should be requested at the earliest point during spontaneous labour or prior to an elective Caesarean or induction of labour. Discussion with transfusion services may be required to confirm the timeframe for providing blood products. In most cases, blood is reserved for 24 hours once requested. Close liaison with transfusion is required to confirm whether cross-match is still required (E.g. PPH who may require further transfusion).

6.7 Cord bloods

Refer to executive summary: postnatal management of baby with maternal red cell antibody.

Cord blood samples should be taken and sent for Group & DAT, haemoglobin and bilirubin in all women with red cell antibodies using neonatal bottles (two neonatal purple top, one neonatal

orange top). Ensure the request states it is due to maternal antibodies otherwise the sample may not be tested if the baby is predicted to be RhD positive.

6.8 Postnatal care

The neonatal team should be informed of the presence of maternal red cell antibodies so that they can make a plan to monitor the baby accordingly.

RhD negative women with other red cell antibodies should still be given prophylactic Anti-D unless the baby is shown to be RhD negative on cffDNA testing or cord blood testing.

RhD negative women with **immune** anti-D antibodies (i.e. not passive), should not be given prophylactic Anti-D. Refer to Antenatal and postnatal administration of anti-D for the prevention of RhD alloimmunisation.

Inform women with Red Cell Antibodies that there are no long-term health implications from having Red Cell Antibodies, but that it is important if they require a blood transfusion in the future and if they have any further pregnancies.

6.9 Use of non-matched blood in an emergency situation

The decision to use ABO-, RhD- and K-compatible blood that is not matched for other antibodies should be made on the balance of risks (severe haemorrhage vs. a haemolytic transfusion reaction). This decision should be made by senior (ST6 and above) obstetric and anaesthetic clinicians with close liaison with transfusion services.

Transfusion should not be delayed in the event of life-threatening haemorrhage.

If non-matched blood is given in the event of life-threatening haemorrhage, consider giving a single dose of IV methylprednisolone 1g. The woman will require close monitoring for signs of transfusion reaction. If a severe transfusion reaction occurs, the woman should be managed according to ALS guidelines.

7 Roles and responsibilities

This guideline applies to all clinical staff employed or contracted by University Hospital Southampton (UHS) Foundation Trust who provide care to women. Staff have a responsibility to ensure that they are aware of this guideline and its contents. They should clearly document their rationale if they have not complied with the recommendations detailed in this guideline. It is the responsibility of department managers, consultants, team leaders and education leaders to ensure staff are aware of this guideline.

8 Communication and training plans

The guideline will be displayed on the Staffnet, and sent to the relevant Care Group clinical teams. The team leaders will be expected to cascade to all relevant staff groups. All medical, nursing and

midwifery staff caring for women and newborns should have support and training in implementing the contents of the guideline. In addition, the guidelines will be included in local induction programmes for all new staff members.

The author is responsible for ensuring the effective dissemination of this guideline.
To ensure dissemination takes place and to avoid duplication of work, do not assume others will do this based on their involvement in guideline consultation process.

Methods of dissemination may include:

- Present the guideline at meetings e.g. ICC, MSG
- Discussion at mQuest
- Email correspondence e.g.
  - midwiferystaff@uhs.nhs.uk,
  - O&Gjuniordoctors@uhs.nhs.uk,
  - consultantobstetricians@uhs.nhs.uk,
  - consultantneonatologists@uhs.nhs.uk, W&Nanaestheticguidelineconsultationgroup@uhs.nhs.uk
- Theme of the Week (bear in mind busy schedule so may need to plan ahead)
- Communication board in birth environments and ward areas for discussion at handover
- Teaching sessions – involve Education team early in guideline consultation process
- Training materials e.g. prompt cards, laminated flowchart
- PGDs – new PGDs need to be read and signed and signature list given to Education team
- Consider how you will audit/measure uptake of new guidance

9 Process for monitoring compliance

The purpose of monitoring is to provide assurance that the agreed approach is being followed. This ensures that we get things right for patients, use resources well and protect our reputation. Our monitoring will therefore be proportionate, achievable and deal with specifics that can be assessed or measured.

Key aspects of this policy will be monitored: (copy this table & insert below if further tables are required)

Element to be monitored	Neonatal unit admissions linked to management of red cell antibodies in pregnancy
Lead (name/job title)	Patient safety and risk co-ordinator / Clinical events review team
Tool	Clinical events review process
Frequency	As required
Reporting arrangements	Share thematic learning as required
Element to be monitored	Transfusion events related to presence of Red Cell Antibodies (e.g. transfusion reaction, delay in obtaining appropriately matched blood)
Lead (name/job title)	Patient safety and risk co-ordinator / Clinical events review team
Tool	Clinical events review process
Frequency	As required
Reporting arrangements	Share thematic learning as required

Where monitoring identifies deficiencies actions plans will be developed to address them.

10 Document review

Guideline to be reviewed after three years or sooner as a result of audit findings or as any changes to practice occurs.

11 References

RCOG (2014) Management of women with red cell antibodies during pregnancy (Green-top guideline No. 65). Available from: https://www.rcog.org.uk/guidance/browse-all-guidance/green-top-guidelines/the-management-of-women-with-red-cell-antibodies-during-pregnancy-green-top-guideline-no-65/

12 Appendix 1: Red Cell Antibodies associated with HDFN where CTG monitoring recommended in labour

Red Cell Antibodies associated with HDFN
D
c
K
c+E
E
C
e
Ce
Fy^a
Jk^a
S
s
U
M
N
H (Bombay)
G
k
KP^a
C^w