Management of babies at risk from haemolysis

This includes guidance for:

- Babies of rhesus negative mothers
- Babies of mothers in whom abnormal antibodies have been detected during pregnancy
- Babies with positive Direct Coombs Test

Known Antenatal Risk of Haemolysis from Rh or other red cell antibody

1. Predicted high risk of haemolysis

Babies born to mothers with high or rising titre of abnormal antibodies (Rh or otherwise), any baby who has required an intrauterine transfusion or in any case where there is thought to be a high risk of isoimmunisation (e.g. fetal hydrops of unknown cause)

- The neonatal unit should be alerted in advance to ensure a bed can be made available for the baby.
- Cord blood should be taken for FBC, bilirubin, blood group and Coombs test.
- If cord bloods are not taken, a Datix form should be completed. The neonatal junior doctor will take blood from baby as soon as possible following delivery. The result of each cord blood should be recorded clearly in baby's notes.
- These babies with a high risk of haemolysis should be admitted to SCBU for prophylactic intensive phototherapy following a brief period with parents. Fluid management may need to be considered during this stabilisation period to ensure maximal exposure to phototherapy until extent of haemolysis is known.
- Further management will occur as per jaundice guidelines.

2. Predicted low risk of haemolysis

a. Rhesus negative mother, no abnormal antibodies found or not considered at high risk of isoimmunisation (e.g. low titres of antibody which had not changed during pregnancy)

b. Abnormal antibodies but with low titres which had not changed during pregnancy

- Cord blood should be taken for blood group ONLY (ie a DCT is not required).
- If cord bloods are not taken, a Datix form should be completed. The neonatal junior doctor will take blood for blood group only from baby.
- The result of each cord blood should be recorded clearly in baby's notes.
- A cord FBC is not required
- These babies should be monitored closely for jaundice during the first week of life by a healthcare professional and investigated and treated accordingly.

3. Positive Direct Coombs test

The direct Coombs test (DCT) detects maternal antibodies on the baby's red blood cells.

a. Positive DCT at birth (cord or baby blood at birth)

The implication of a positive DCT at birth is that isoimmune sensitisation has taken place in utero resulting in haemolysis, anaemia and hyperbilirubinaemia in the first week of life. Haemolysis may continue chronically resulting in a late anaemia between 2 and 6 weeks of age. Usually by 6 weeks of age, maternal antibody in the baby's blood has declined to such a

level that it no longer causes a problem.

However a significant proportion of positive DCT tests are the result of passive antiD acquired following passive immunisation of mothers during pregnancy.

Babies with a positive DCT test must be considered carefully as to their risk of haemolysis. Significant haemolysis might be indicated by a drop in haemoglobin in the first days of life, typical features on the blood film and a bilirubin level which requires treatment with more than single phototherapy or for longer than 48 hours.

- Babies with a high risk of haemolysis should be managed as above and carefully monitored for jaundice and anaemia.
- Babies with a low risk of haemolysis should be observed for jaundice over the first week of life by a healthcare professional. Only babies who become **jaundiced requiring treatment** should return at 4 weeks for a gas Hb to check that there is not chronic haemolysis resulting in anaemia. This follow up should happen in the newborn screening clinic. **Babies who are not jaundiced in the first week should not be routinely followed up**.

    - If Hb is >10g/dl at 4 weeks the baby does not require further follow up.
    - If Hb is ≤10g/dl at 4 weeks, the baby should be discussed with a consultant and a plan made for follow up.
    - Prescription of folic acid or iron is not routine and is a consultant decision.

NB: DCT may be negative at birth in babies who have required in utero transfusion for Rh immunisation, as their blood may be mostly donor. These babies are at high risk of late anaemia.

b. Positive DCT on routine investigation for jaundice after birth

These are most likely to be cases of ABO incompatibility. Haemolysis secondary to ABO incompatibility is often minimal but occasionally can cause a problem and may even need intensive treatment.

- Baby's blood group and DCT result to be documented clearly in baby's notes along with maternal blood group
- DCT positive babies should have a FBC and SBR rechecked within the next 24 hours unless there is a clinical indication to perform it earlier.
- Management of the baby from that point onwards will depend on whether there is evidence of haemolysis, hyperbilirubinaemia or any other neonatal problem.
- All DCT positive babies identified during treatment for jaundice should return for a gas Hb at 4 weeks of age, unless there is evidence that there is significant haemolysis. Significant haemolysis might be indicated by a drop in haemoglobin in the first days of life, typical features on the blood film and a bilirubin level which requires treatment with more than single phototherapy or for longer than 48 hours. This follow up should happen in the newborn screening clinic.
    - If Hb is >10g/dl at 4 weeks the baby does not require further follow up.
    - If Hb is ≤10g/dl at 4 weeks, the baby should be discussed with a consultant and a plan made for follow up.
    - Prescription of folic acid or iron is not routine and is a consultant decision.

NB: DCT may be negative in babies with significant haemolysis from ABO or other blood antigen incompatibility and these babies should also be considered at risk of late anaemia and follow up arranged accordingly.

References

http://www.transfusionguidelines.org.uk/?Publication=HTM&Section=9&pageid=1141
Haemolytic disease of the newborn – UK Blood Transfusion