Gloucestershire Safety and Quality Improvement Academy 2025

Babies with positive Direct antiglobulin test (DAT): Care pathway

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Neonatal Team

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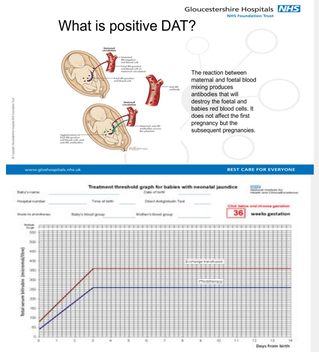
WHAT IS IT?

Direct Antiglobulin Test (DAT) is done routinely on cord blood following birth to test for immune-mediated haemolysis. Common indications for this test in newborns are (a)Haemolytic disease of the foetus and newborn (HDFN) (b) Autoimmune haemolytic anaemia and (c) investigation of anaemia or jaundice of unknown causes. Interpretation must consider clinical context and follow up testing.

PROBLEM

- **DATIX reports** : Baby was prescribed folic acid 500mcg/kg (considered to be high dose for a weak positive)
- **Adverse Events**: x1 severe anaemia presented in PAU requiring blood transfusion – was discharged on 50mcg dose OD at birth (Low dose for a strong positive and high risk HDFD). Some delays in follow up.
- **Incidental findings** of infants going home with positive DAT and not prescribed folic acid; varying doses of folic acid prescribed.
- **Staff and patient experience:** parents reported confusing information; variation in clinic appointment time scale/ number of appointments required. Several blood letting episodes due to unsatisfactory samples.
- **Patient safety/satisfaction:** Delay in checking cord bloods → delay in checking SBR → Exchange transfusion threshold →Multiple blood transfusions . No patient information leaflet for parent adding to confusion with folic acid dose and frequency of test.



STAKEHOLDERS AND TEAM

- Outpatient Organisers
- Doctors/ANNPS/Clinic Lead
- Pathology/Transfusion Practitioners
- Booking office OPD
- Parents

Parents at the centre. Real time feedback

- Haematologist Lead- Dr Kus
- Junior Doctors/ANNPS
- Clinical Lead- Dr Bhakthavalsala
- Clinic Lead
- Midwives, NNU Nurses
- Transfusion Specialist
- Parents

- GP
- Health visitors
- Digital/Communication Team/PIL
- Guideline Teams
- Antenatal Screening Team
- Library Team

- Parents
- Nursing and Midwifery Staff
- Secretaries
- OPD Nursing assistance
- Outreach team
- Pharmacist

Neonatal & paediatric Team

Michellee Grant: Consultant Neonatal Nurse/ANNP
Dr Harriet Croft: Neonatal Doctor- Registrar
Dr Shyam Bhakthalvalsala: Consultant Paediatrician

Specialist Consults

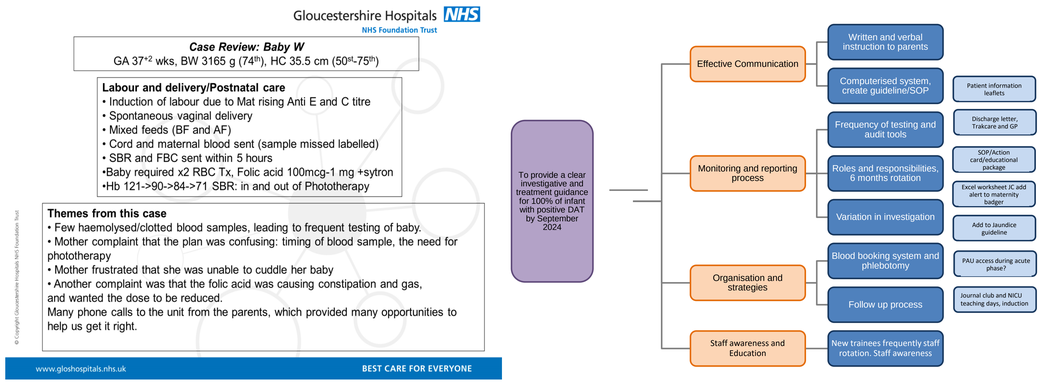
Dr Thomas Kus: Consultant Paediatric Haemotologist)
Stuart Lord: Lead Transfusion Practitioner
Tracey Clarke: Blood Transfusion Laboratory Manager
Mira Vujasin: Lead Pharmacist

Special Thanks

Parents of baby W: Mother thanked the team for responding to her concerns and listening to her.
We thank her for: her patience and providing us with valuable feedback.

AIM

By September 2024, 100% of babies delivered at Gloucester Hospital/community with the risk of developing Haemolytic Disease of Foetus and Newborn (HDFN) will follow a new clear and simplistic pathway in monitoring and managing their care.



MEASURES

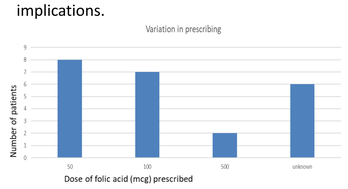
OUTCOME
- Improve communication between healthcare professionals and parents to ensure reduction in patient complaints.
- Ensure zero adverse events (preventable causes)
- Reduction in the number of patients' visits to the neonatal clinic (Evidence based testing)
- Ensure patients' outcomes are met, completed and documented on the appropriate system
- Ensure consistency of medication prescribing.

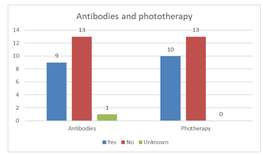
PROCESS
- A retrospective study of all babies attending the Neonatal clinic with positive DAT, over a one year period (January 2022-January 2023)
- A pathology sample audit: January 2023-March 2023 with the percentage of rejected samples
- Review of the clinic data base, DATIX system, case reports and Trakcare.
- Proportion of babies who got adequate dose of medication

BALANCING
- Experience of the staff leading the clinic
- Follow up instructions

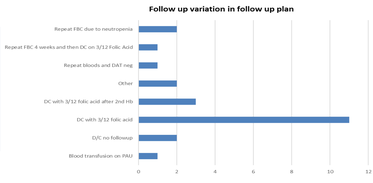
DATA

Evidence-based testing information obtained from a retrospective review. Over 1 year period January 2022-January 2023, there were a total of 27 babies seen in the Jaundice clinic with positive DAT. A smaller, 3 month data of samples rejected by pathology were also audited which has cost implications.



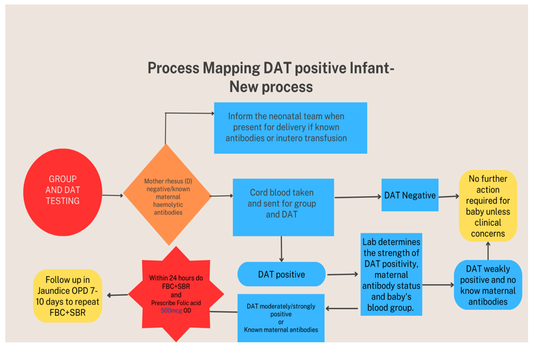


Pathology sample audit
- Collected between January 2023 and March 2023 (3 months)
- 162 requested cord bloods (mother Rh-ve)
- 152 requested baby DAT (jaundice clinic)
- 26 investigations r.e +ve DAT
- 27 rejected cord blood samples during this time



OLD SYSTEM
- All DAT positive patients received Folic acid 50 micrograms (very small dose) for varying durations
- All were followed up, leading to over-use of resources
- No differentiation between significant and non significant 'incidental' DAT positive results
- No clear follow up pathways.

NEW SYSTEM
- Positive DAT reports include strength of the reaction helping to identify clinical significance
- Guide for clinicians with treatment and follow up algorithms. Folic acid dose from 100mcg-1mg.
- Patient information leaflets available



OUTCOMES
- Cost saving: fewer unnecessary tests and treatments
- Enhanced communication with/within the clinical team and parents
- Better patient care: avoids overtreatment. No adverse events or patient complaints were reported after change implementation

BARRIERS AND CHALLENGES
- Multidisciplinary approach in coordination and collaboration
- Cultural changes: historic way of prescribing or doing things
- Limited evidence for neonatal management. Most focus is on antenatal screening
- Limited clinic spaces and booking facilities for follow up
- No designated clinic lead

NEXT STEPS

A new guideline to reflect these changes is being peer reviewed and go through the approval process.
Link to patient information leaflet: ***GHPI1858_08_24***

REFERENCES

1. deWinter, D.P; Kaminski, A.;Tjoa ML.; Oepkes, D and Lopriore, E (2023) *Hemolytic disease of the fetus and newborn:rapid review of postnatal care and outcomes.* BMC Pregnancy and Childbirth 23(738).
2. NICE guidelines for management of neonatal jaundice 31 October 2023: Jaundice in newborn babies under 28 days. Available at: https://www.nice.org.uk/guidance/cg98/evidence/full-guideline-245411821 (Access on 23/11/2023)
3. Shahulhameed SP; Kumar S and Dharmadas (2018): *Neonatal Outcome of Rh-D Alloimmunisation in Antenatal Women Attending a Tertiar Care Hospital.* Indian Journal of Neonatal Medicine and Research; 6 (2) pg 024-028.
4. Suresh, K; Deepthi, A; Yashovardhan, R; Arun, K; Sreedhar Badu, KV; Jothibai, DS and Bhavani, V. (2014): *Case Report: Haemolytic disease of the newborn due to multiple maternal antibodies.* Journal of Clinical and scientific research: 3 pg198-201.
5. White, J; Qureshi, H; Needs, E; et al : (2016) *Blood Grouping and Antibody Testing in Pregnancy* . BSH. https://onlinelibrary.wiley.com/doi/epdf/10.1111/tme.12299 26, pg 246-263
6. Picture credit (What is positive DAT): Foetal diagnosis & treatment centre: Michigan university