

Background

Alloimmunisation (Development of maternal red cell antibodies) can lead to Haemolytic Disease of the Foetus and Newborn (HDFN). Anti-D, anti-c, and anti-Kell carry the highest risk of foetal anaemia.^{1,2} Early identification and monitoring allow for timely intervention by ultrasonography of middle cerebral artery peak systolic velocity Dopplers (MCA PSV), invasive blood tests and intra-uterine/neonatal transfusions to treat anaemia if indicated. This intervention has meant that overall perinatal survival stands at 84% and this audit aims to review our surveillance and management of women at risk of HDFN.¹

A previous audit was conducted between January 2018 and January 2019. This reaudit assesses any change since the previous audit.

Aim

To assess the prevalence, management and outcomes of pregnancies affected by red cell antibodies at University Hospital North Midlands NHS Trust and compare the findings with the previous audit.

Methods

A retrospective audit was conducted for 12 months from July 2022 to July 2023. The data was collected from the electronic maternity system (K2, I-portal) and neonatal information system (Badger).

The pregnancies with red cell antibodies based on blood bank screening were identified and used for the data collection. The collected data was analysed using Microsoft Excel and compared with national and local standards.

The data obtained was compared with findings from the previous audit conducted between January 2018 and 2019.

Demographics

- 53 patients were included in the current audit compared to 25 patients in the previous audit.
- The mean age was 31.6 years in the current audit compared to 32.5 years in the initial audit.

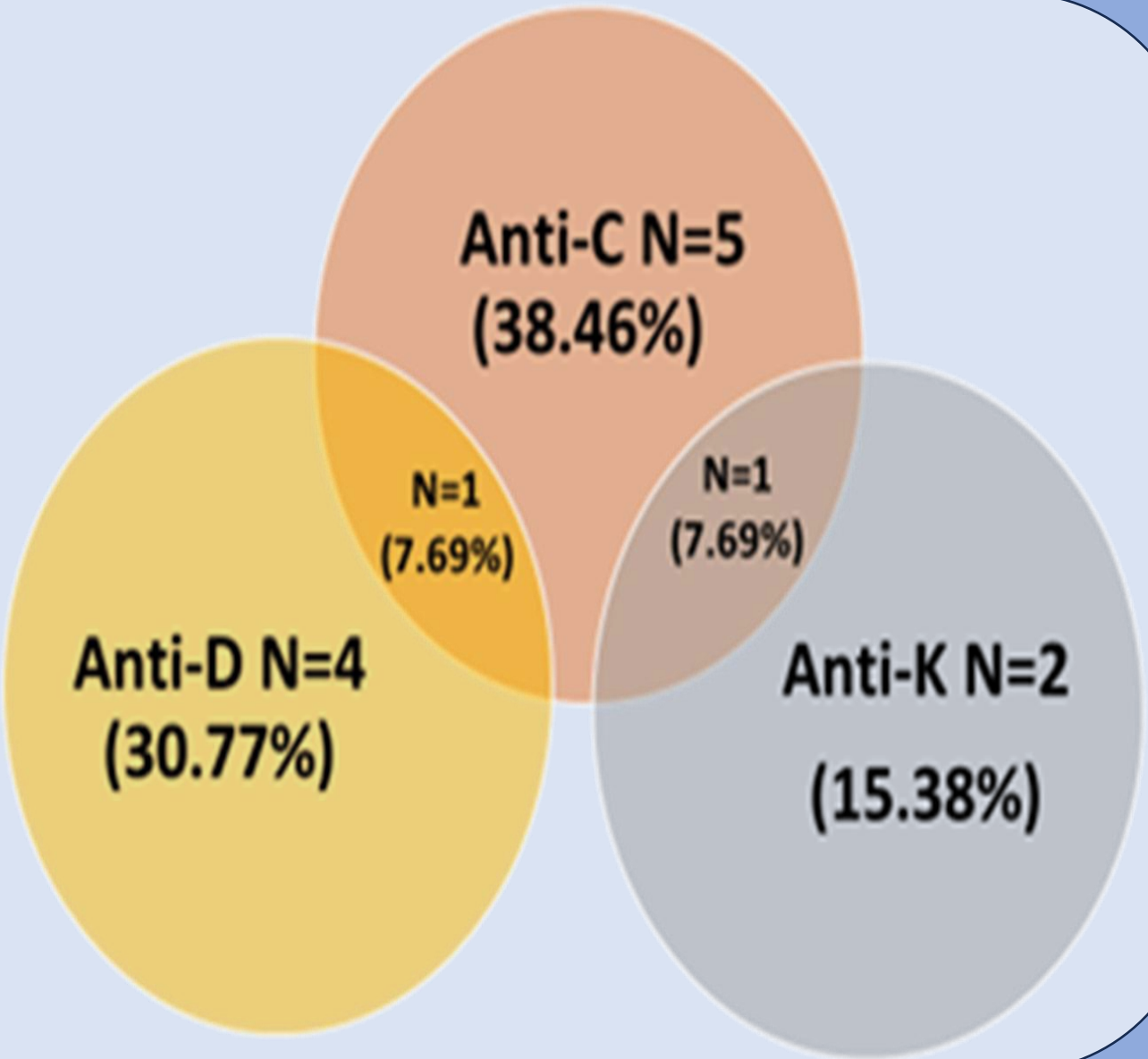
RESULTS

Antibody distribution

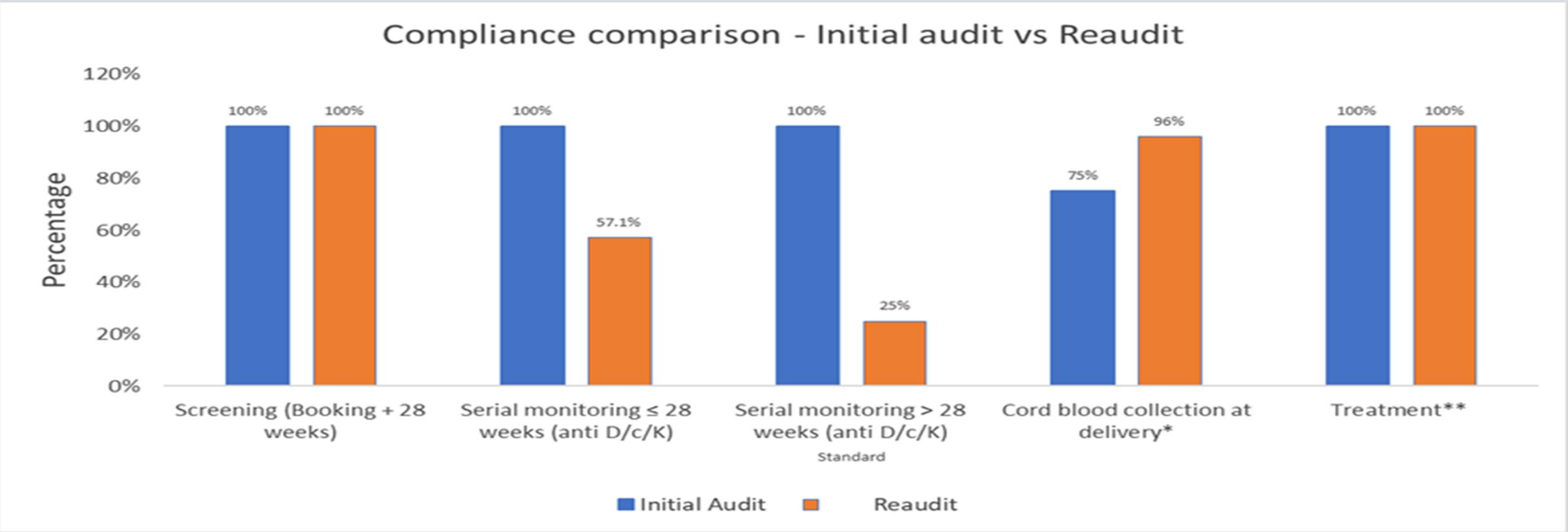
In the reaudit, the distribution of antibodies is as described in the table on the right, which compares the distribution between the two audits. The Venn diagram on the right illustrates the distribution of high-risk antibodies in the reaudit.

	Initial Audit	Reaudit
High risk antibodies	14/25(56%)	13/53(25%)
Other antibodies	11/25(44%)	40/53 (75.5%)

*High-risk antibodies are patients with anti D, anti C and anti K. All others are grouped as others



Compliance with Key Standards



*Direct antiglobulin test/ Haemoglobin/ Bilirubin

**Initial audit - 3 babies needed phototherapy and 1 baby required neonatal transfusion. In the reaudit - 13 babies needed phototherapy and no baby needed neonatal transfusion.

- We have maintained good compliance (100%) with screening bloods at booking and 28 weeks, documentation of management plan and treatment, if required.
- The collection of cord blood at delivery has improved from 75% to 96%.
- However, serial monitoring has reduced from 100% to 57.1% before 28 weeks and from 100% to 25% at more than 28 weeks.

Partner Testing & free foetal DNA (ffDNA) Genotyping

	Initial Audit	Reaudit
Partner antigen testing	10 / 10 (100%)	8 / 16 (50%)
ffDNA genotyping (when applicable)	1 / 1 (100%)	0/0 (0%)

Induction of labour (IOL) rates for high-risk antibodies

	Initial audit	Reaudit
High risk cases	14	13
Excluded cases	5	0
Eligible for review	9	13
IOL indicated due to antibodies	0	3
IOL due to antibodies	0 (0%)	3 (100%)

*In the initial audit, one patient delivered at 32 weeks by LSCS for raised MCA PSV

Conclusion and Recommendations

The audit indicated that we improved in areas of previous concern, such as obtaining cord blood at delivery. However, the reaudit has identified that there has been a drop in serial monitoring and partner testing. The recommendations are as follows:

- Discussion with midwives, obstetric team and screening team about barriers that has caused a reduction in serial monitoring recommended.
- Presented in the local audit meeting to improve the screening and reaudit in 6 months.
- A reminder sent to the team to improve partner testing
- From this study period, ffDNA was not offered to this group. However, currently the trust is looking at implementing this.

References

- The Management of Women with Red Cell Antibodies during Pregnancy (Green-top Guideline No. 65) [Internet]. RCOG. 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/>
- Guideline for the investigation and management of red cell antibodies in pregnancy [Internet]. BSH. 2024. Available from: <https://b-s-h.org.uk/guidelines/guidelines/guideline-for-the-investigation-and-management-of-red-cell-antibodies-in-pregnancy>