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Enhancing Multi-disciplinary Readiness for Perinatal Haemorrhage in a Unique Case involving Ultra-rare Anti-GIL Antibodies.

INTRODUCTION:

- GIL is an antigen carried on the aquaporin 3 (AQP3) water and glycerol channel and is the single member of the Gill blood group system introduced by ISBT (2002).
- AQP3 is a ubiquitous protein present in various tissues including red blood cells (RBCs) and population studies report an incidence of >99% for the GIL-positive (GIL+) phenotype.
- Mutations of AQP3 yield an ultra-rare GIL_{null} phenotype (GIL-), carriers of which are at risk of sensitisation events when exposed to GIL+ tissues and consequent formation of anti-GIL IgG antibodies.
- Sensitised GIL- individuals are thus at risk of acute haemolytic transfusion reactions (AHTRs) on exposure to GIL+ donor blood products.
- Given the frequencies of GIL+ vs GIL- phenotypes, no compatible transfusion donors exist worldwide for sensitised GIL- individuals.

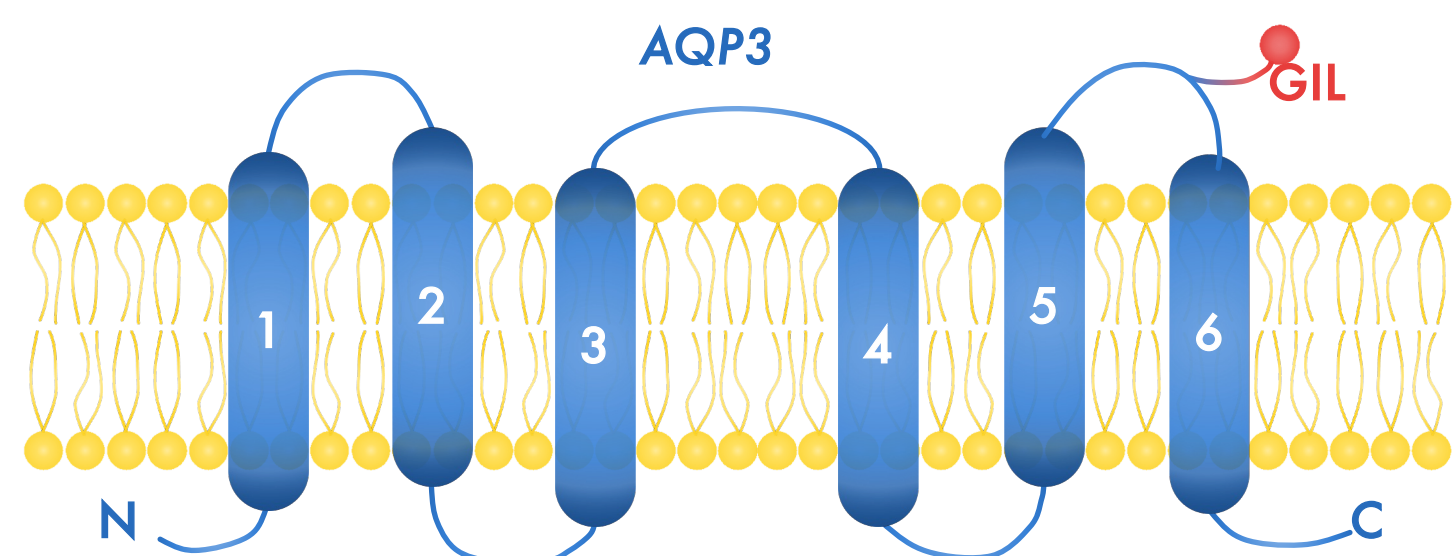
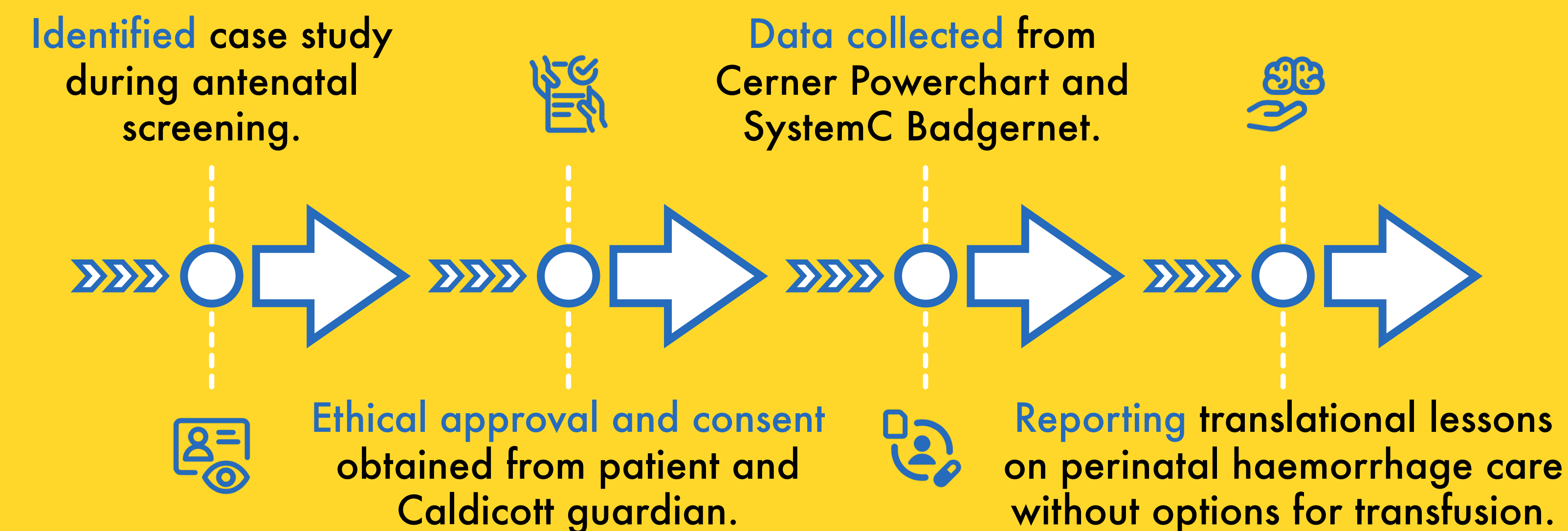


Fig. 1: Schematic of AQP3 multipass transmembrane channel in an RBC phospholipid bilayer with GIL antigen.

METHOD:



OBJECTIVE:

To identify the antenatal and intrapartum interventions needed to optimally prepare for and manage perinatal haemorrhage in a patient for whom there are no compatible transfusions available worldwide.

CASE SUMMARY:

31-year-old woman (gravida 3, para 1+1) was admitted at 38+2 weeks for an ELSCS.

Previous Medical History:

- Miscarriage.
- Sub-umbilical laparotomy for ovarian cystectomy with a transfusion in Pakistan.
- ELSCS at 39+0 weeks for concern over unidentifiable atypical antibodies.

Antenatal Screening:

- RCI tests at 12 and 28 weeks showed anti-GIL antibodies and a lack of compatible transfusions worldwide.

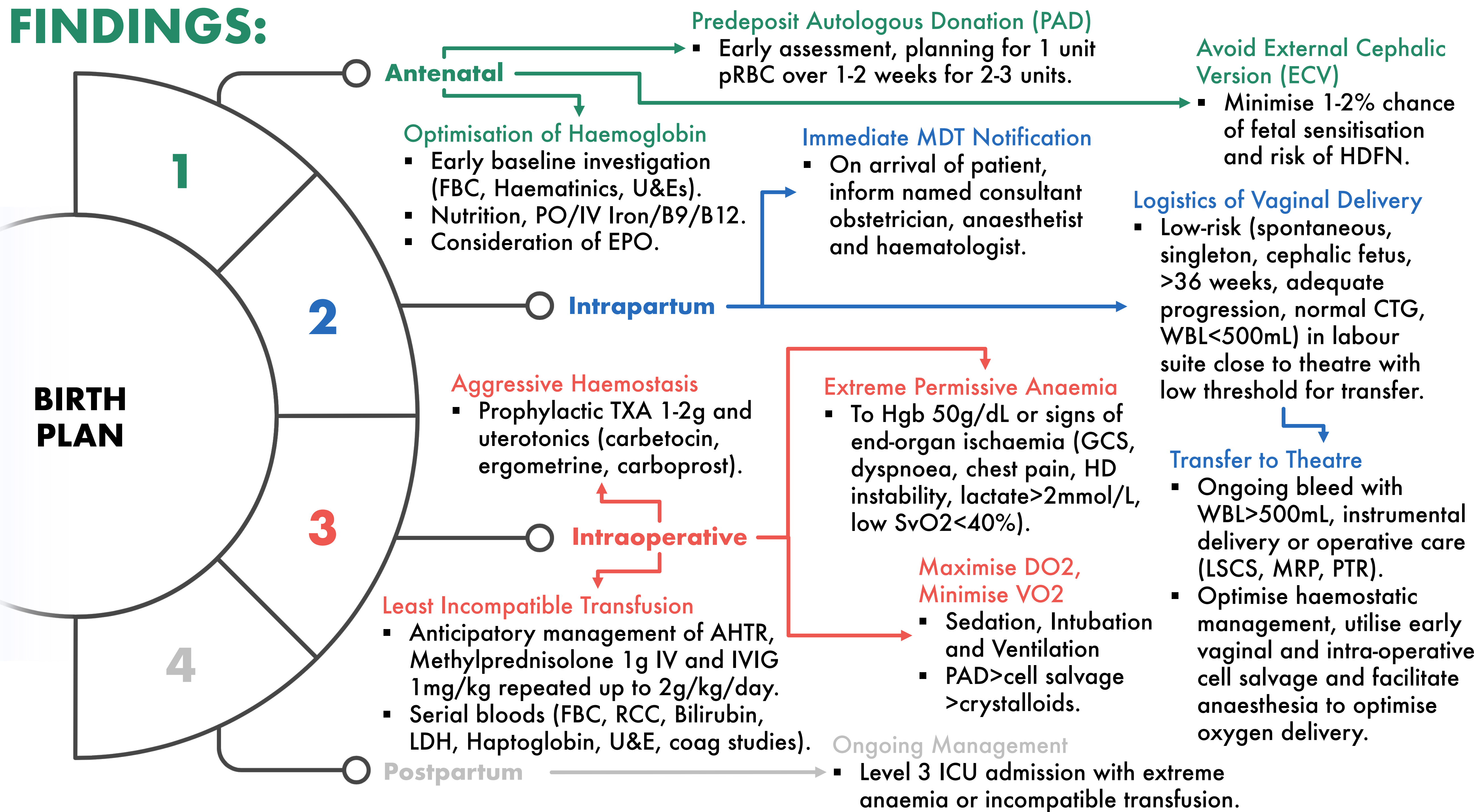
Antenatal Counselling and MDT:

- MDT examined surgical and transfusion risks linked to life-threatening bleeding.
- Extensive patient-centred counselling on VBAC vs. ELSCS.
- Patient optimised and birth plan revised by MDT with cross-disciplinary care plan for all eventualities.

Outcome:

- Uncomplicated ELSCS and SA, managed with TXA and carbetocin, yielding a WBL 481mL.

FINDINGS:



CONCLUSION:

This case was fortunately unremarkable. Our approach helped create a template for the optimisation and management of cases with massive haemorrhage risk in the absence of compatible blood transfusions. It is a culmination of the literature on pre-operative anaemia management, publications on outcomes of extreme permissive anaemia and the NHSBT's guidance on the use of incompatible blood transfusions.



Haemoglobin
Optimisation



Early Theatre
Approach



Permissive
Anaemia



Oxygenation
Optimisation



Immunomodulation
with Transfusion

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