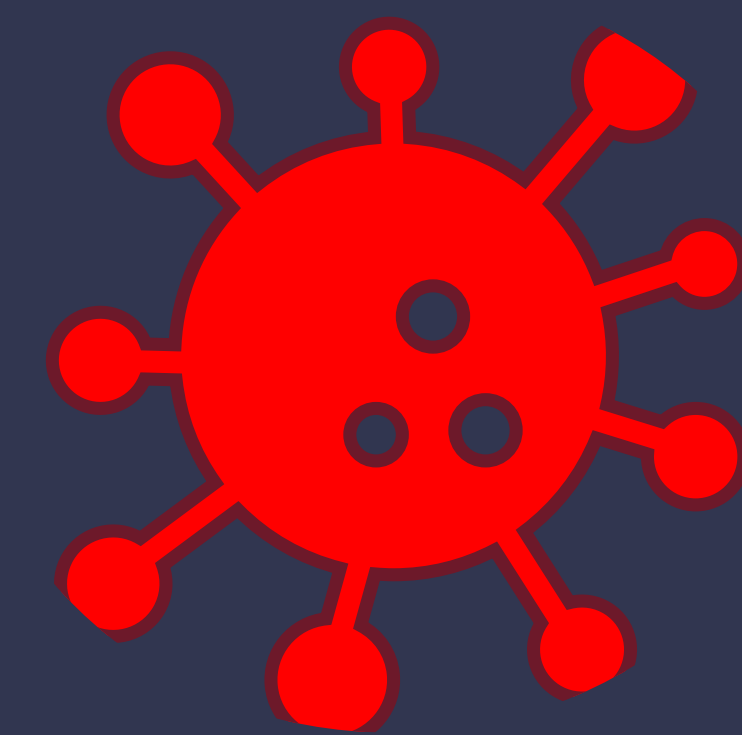


An audit of single unit blood transfusions in the management of postpartum haemorrhage: can they be avoided?

M Bone, A Banks, K Element, R Miller

Department of Anaesthesia, Nottingham University Hospitals, Nottingham, UK



BACKGROUND

Green top guidelines from the Royal College of Obstetricians and Gynaecologists on ‘prevention and management of postpartum haemorrhage’ and ‘blood transfusions in obstetrics’ are unable to provide specific criteria for administration of red cell transfusions, but **suggest an individualised approach based on clinical and haematological assessments**, aiming to maintain **haemoglobin (Hb) >80g/L¹**, whilst defining post-partum anaemia as Hb<100g/L².

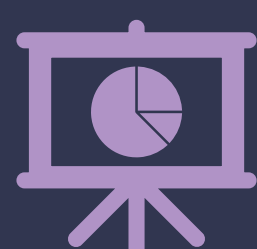
Our literature review revealed concerns regarding RBC- **alloimmunisation** (risking Haemolytic Disease of the Foetus and Newborn in future pregnancies) and other risks associated with blood transfusions in women of childbearing age^{3,4}. Our aim was to review and minimise our departments use of single unit transfusions to reduce such risks.

- Other risks associated with transfusions⁴:
- Febrile Reaction
 - Allergic Reaction
 - TACO/TRALI
 - Haemolytic Transfusion Reaction
 - Haemolysis
 - ABO-incompatibility
 - Post-Transfusion Purpura



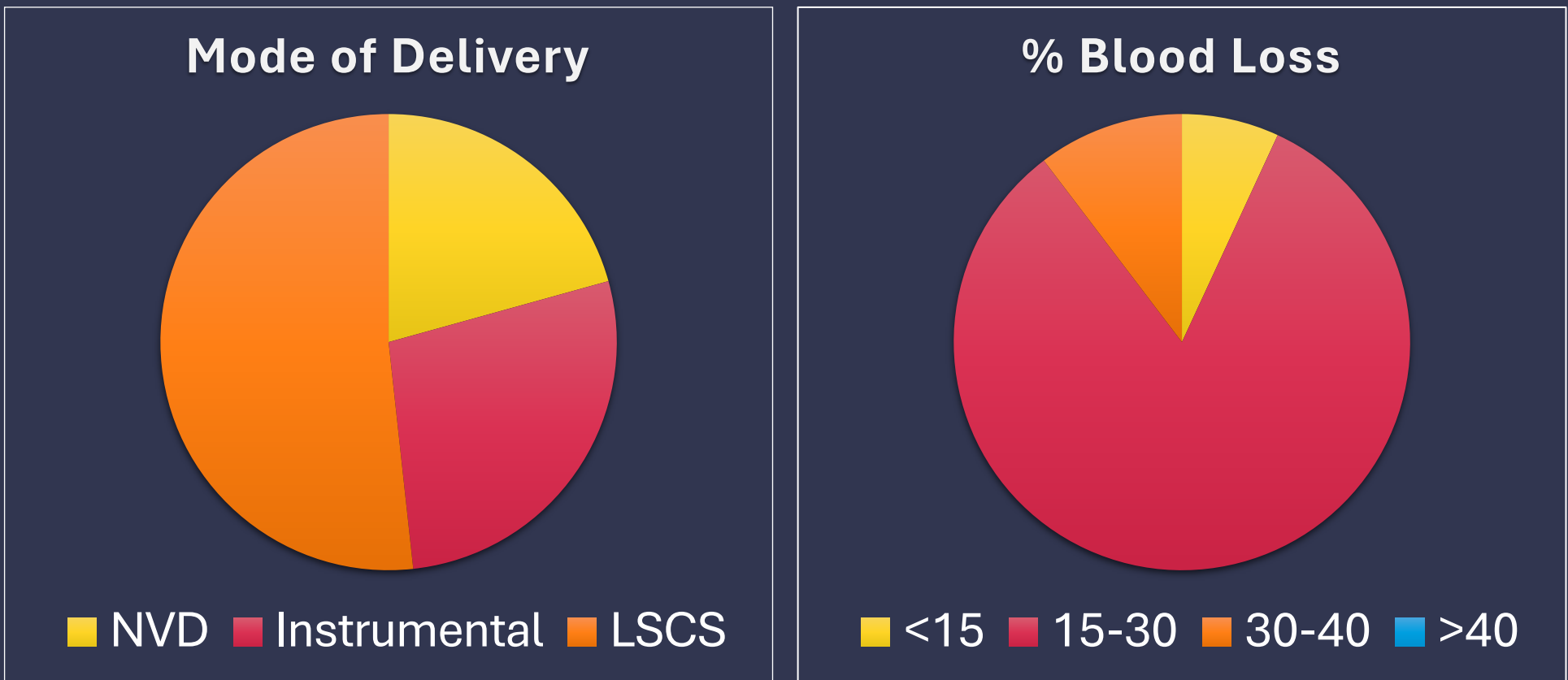
METHODS

- **Retrospective** Analysis
- Inclusion criteria:
 - Date of Delivery: **Jan-Dec 2024**
 - **PPH >1500ml**
 - **Received Single Unit RBC Transfusion**
- Systems used:
 - BadgerNet
 - DHR
 - Nervecentre
- Data collected:
 - Date/Time/Type of Delivery
 - **EBL (ml) and % blood loss**
 - **Haemoglobin Trends**
 - Pre-delivery
 - Lowest pre-transfusion
 - Post-transfusion
 - **Volume IV fluid administered**
 - Grade of Anaesthetist present (most senior)
 - MOH activation
 - **Haemodynamics**
 - Lowest recorded BP
 - Heart rate range
 - Location of Transfusion
 - **Point-of-Care testing**
 - VBG
 - HemoCue/TEG

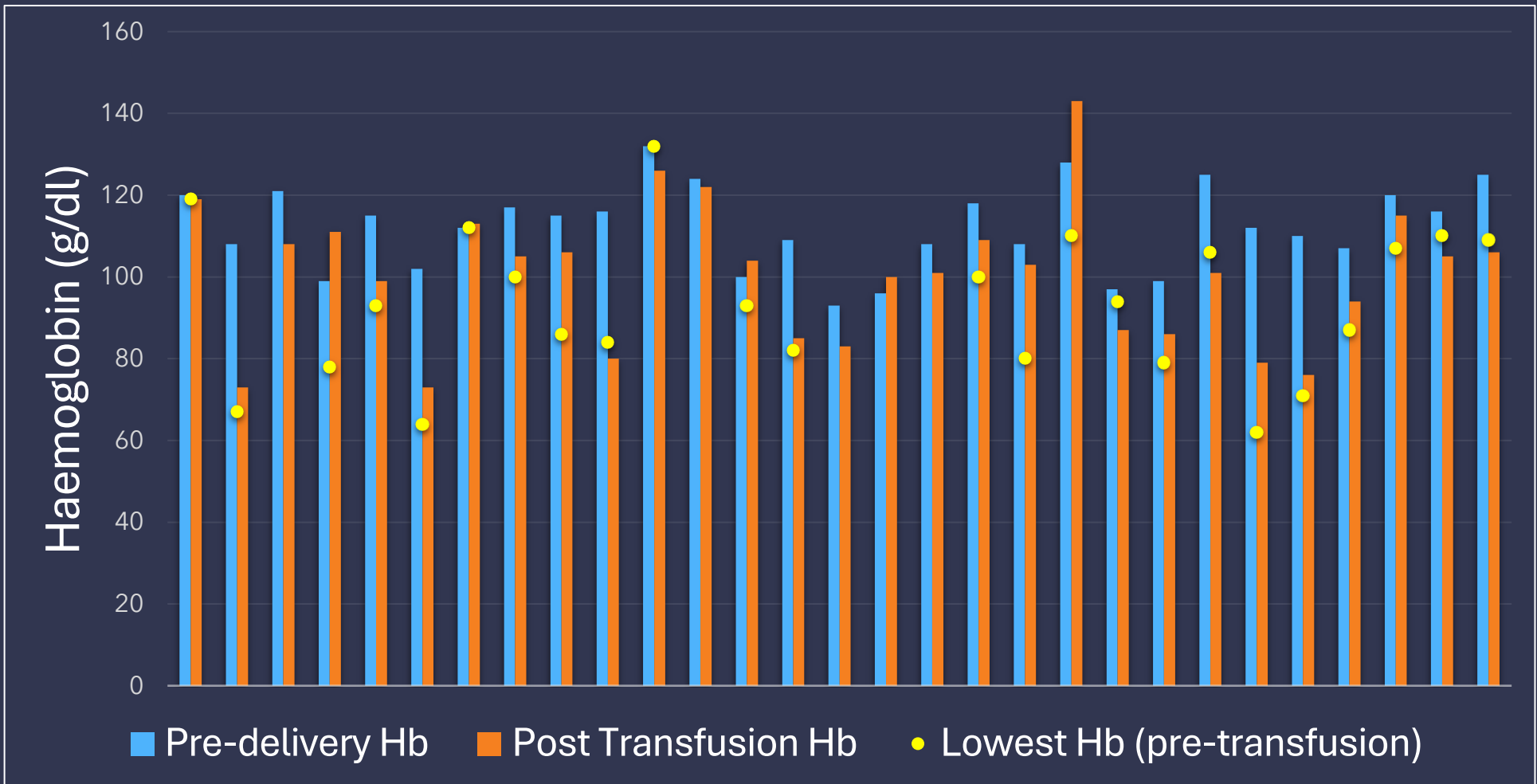


RESULTS

- 29 cases identified
- Mean blood loss: 2006ml
- MOH activated in 48.3% of cases



- 20.7% had Hb<105g/L pre-delivery (defined anaemia)



- Pre-transfusion POC testing:
 - 62.1% VBG
 - 6.9% HemoCue
- From delivery to transfusion, Hb<80g/L in only 6 cases (20.7%)
 - Of these, four had Hb<80g/L after single unit RBC transfusion
 - Hb not measured pre-transfusion on 5 occasions
- 20.7% received <2000ml balanced crystalloid



CONCLUSIONS

In the context of our findings and the knowledge that a single unit red cell transfusion carries maternal and future foetal/neonatal risk, we believe there is scope to significantly reduce (and potentially nullify) their occurrence in the management of PPH.

We suggest further education and established written aids for clinicians involved in the management of PPH to minimise the use of single unit red cell transfusion - and thus reduce the associated risks – by improving identification of suitable cases for blood transfusion and optimising alternative treatments (e.g. IV fluid resuscitation or iron supplementation) where appropriate.

Our thoughts, recommendations and proposed next steps:

- Areas for improvement include optimisation of: pre-delivery haemoglobin (>105g/L), balanced crystalloid use during PPH/MOH (minimum 2L), documentation of clinical decision-making regarding transfusion, POC testing
- **‘GIVING ONE? CONSIDER NONE’**
- Plan for distribution of information to Anaesthetists, Obstetricians and Midwives on the additional risks with transfusion in women of childbearing age (namely alloimmunisation leading to Haemolytic Disease of the Foetus and Newborn)
 - *Induction presentation/information sheets*
 - *Presentation or training package as part of local Divi Day, including pre- and post- knowledge surveys*
 - *Inclusion on PPH proforma +/- Obstetric Blood Transfusion documents*



REFERENCES

1. Mavrides E, Allard S, Chandrachan E, et al (on behalf of the royal college of obstetricians and gynaecologists). Prevention and management of postpartum haemorrhage. BJOG 2016; 124: e106–e149.
2. Royal college of obstetricians and gynaecologists. Blood transfusion in obstetrics. Green-top guideline No. 47. London: RCOG; 2015.
3. Adani S, Mohd Ashari N, Johan M, et al. Red blood cell alloimmunization in pregnancy: A review of the pathophysiology, prevalence, and risk factors. Cureus 2024; 16(5): e60158.
4. SHOT: transfusion safety and risks in the UK, 2025
<https://www.shotuk.org/wp-content/uploads/2025/07/shot-transfusion-risk-communication-v4-all-content.pdf>