



# A review of Obstetric blood transfusion in Far North Queensland

Dr. Susanna Hoffmann Adv. DRANZCOG MBBS

Dr. Skanda Jayaratnum FRANZCOG MBBS

Cindy Woods

Affiliation: James Cook University



Correspondence: susannarhoffmann@gmail.com

## Introduction

The rates of obstetric blood transfusion are dependent on risk factors for postpartum haemorrhage, the mode of delivery, patient symptoms related to anaemia and differing thresholds for provision among clinicians. Understanding the utilisation and threshold for obstetric blood transfusions at Cairns Hospital will allow an evidence-based approach to the provision of obstetric blood transfusions in Far North Queensland(FNQ) and similar regional Australian areas.

## Objectives

1. To determine the rates of blood transfusion among an obstetric cohort in Far North Queensland.
2. To compare the incidence rates of blood transfusions according to mode of delivery.

## Results

- Of the 10,080 women included, 174 had blood transfusions during their admission.
- Risk of blood transfusion was significantly increased in emergency caesarean section (RR 1.7 p-value 0.003, 95% CI 1.19-2.41) and forceps delivery (RR 5.57 p-value <0.001 95% CI 3.35-9.19).
- There was no significant difference between blood transfusion rates in women having a SVD and elective CS (p -value 0.939 95% CI 0.58-1.64).

## Methods

- 4-year retrospective cohort study of obstetric blood transfusions at Cairns Hospital between October 2013 and 31<sup>st</sup> December 2017.
- 10,080 women included
- A descriptive analysis of demographic variables, pre-transfusion haemoglobin, timing of transfusion was undertaken.
- Relative Risk was calculated exploring the association between the risks of blood transfusion according to mode of delivery,
- Identifiable risk factors including multiple pregnancy, placenta praevia, placenta accreta, antepartum haemorrhage (APH) and anaemia in third trimester were reviewed to stratify elective caesarean section in to high and low risk groups

Ethics approval was obtained from the Far North Queensland Human Research Ethics Committee HREC reference number HREC/18/QCH/55-1220 QA

**Table 1:** Comparison of mode of delivery among women with and without blood transfusion

SVD vs Emergency C/S: z = 2.965

SVD vs instrumental (forceps) delivery: z = 6.66

High risk: multiple pregnancy, placenta praevia, accrete, anaemia and antepartum haemorrhage

	BLOOD TRANSFUSION	NON-BLOOD TRANSFUSION	TOTAL	PERCENT	RELATIVE RISK	95% CI	P VALUE
VAGINAL BIRTHS	82	5837	5919	1.38	1		
ELECTIVE CAESAREAN SECTIONS	17						
• LOW RISK	6	1235	1252	1.36	0.98	0.58-1.64	0.939
• HIGH RISK	11						
EMERGENCY CAESAREANS	49	2033	2082	2.35	1.7	1.19-2.41	0.003
INSTRUMENTAL DELIVERIES							
• VACUUM	9	597	606	1.49	1.08	0.54-2.12	0.842
• FORCEPS	17	204	221	7.69	5.57	3.35-9.19	<0.001

## Discussion

1. This study showed there was **no significant difference** in the risk of blood transfusion for women delivering by elective CS compared to women delivering by vaginal delivery in this regional centre
2. The earliest low risk elective CS blood transfusion was given **3.5 hours after delivery** suggesting there would be adequate time to undertake a group and hold on a needs-basis.
3. A blood transfusion was **5.5 times more likely to occur following forceps** than a vaginal delivery in our cohort(RR 5.5 95% CI 3.35-9.19). This increased risk is well described internationally(1,2,3). A routine group and save during a forceps delivery is not yet a recommendation in Australian or United Kingdom operative delivery guidelines(4,5)
4. The majority of transfusion occurred with a documented **Hb above 70g/L** despite this **not being associated with a reduction in mortality**(4,5,6). Of our cohort, 56% of patients received a blood transfusion with a Hb >70g/L with 69% receiving blood transfusions after 24 hours post-delivery.
5. Iron infusion may be a cheaper and lower risk alternative to blood transfusions with no difference in hospital stay, symptoms of anaemia or haemoglobin levels after 6 weeks and is likely **underutilized** in our cohort(7,8)

## Conclusion

In conclusion this study is the first study to review blood transfusion among obstetric patients in Far North Queensland. Our review reassuringly showed no increased risk of a blood transfusion in elective CS in comparison to SVB. This finding advocates for maintenance of low risk elective caesarean services in more rural and remote units and suggests a policy of selective pre-operative group and holds prior to an elective CS may be more appropriate. This study also identifies forceps delivery as a significant risk factor for blood transfusion in comparison to other groups reinforcing the need for caution in undertaking more complex instrumental deliveries in more rural and remote obstetric units.

## References

1. Patterson J, Roberts C. Blood transfusion during pregnancy, birth and the post-natal period. *Obstet Gynecol* 2014; 123(1) 126-133. Available from: doi: 10.1097/AOG.0000000000000054
2. Liu X, Landon M, Cheng W, Chen Y. A comparison of maternal and neonatal outcomes with forceps delivery vs. caesarean delivery. *J Maternal-Fetal and Neonatal Medicine*. 2018. Available from: <https://www.tandfonline.com/doi/abs/10.1080/14767058.2018.1490720>
3. Muraca G, Skill A, Sabr Y. Perinatal and maternal morbidity and mortality among term singletons following midcavity operative vaginal delivery versus caesarean delivery. *BJOG* 2017; 125(6). Available from: <https://obgyn.onlinelibrary.wiley.com/doi/10.1111/1471-0528.14820>
4. The Royal Australia and New Zealand College of Obstetricians and Gynecologists. Instrumental vaginal birth. 2015. C-obs 16. Available from URL: [https://www.ranzcog.edu.au/RANZCOG\\_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Instrumental-Vaginal-Birth-\(C-Obs-16\)-Review-March-2016.pdf?ext=.pdf](https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Instrumental-Vaginal-Birth-(C-Obs-16)-Review-March-2016.pdf?ext=.pdf)
5. Royal College of Obstetrics and Gynecology. Operative vaginal delivery. 2011. Green-top guideline No.26 Available from URL: <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg26/>
6. National Blood Authority(NBA). Patient blood management guidelines: module 5- Obstetrics and Maternity. 2015. NBA, Canberra, Australia. Available from: [https://www.ranzcog.edu.au/RANZCOG\\_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/pbm-module-5-maternity.pdf?ext=.pdf](https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/pbm-module-5-maternity.pdf?ext=.pdf)
7. Broche D, Gay C, Armand-Branger S, Grangeasse L, Terzibachian J, Severe anaemia in the immediate post-partum period. *Clinical practice and value of intravenous iron*. *European Journal of Obstetrics and Gynecology and reproductive biology*. 2005;123(2) S21-S27. Available from: <https://www.sciencedirect.com/science/article/pii/S0301211505804038>
8. Markova V, Norgaard A, Jorgensen K. Treatment for women with postpartum iron deficiency anaemia. 13 Aug 2015. *Cochrane database of systematic reviews* 2015;8. Art. No.: CD010861. DOI: 10.1002/14651858.CD010861.pub2