

**South West Regional Transfusion Committee** 

# SW RTC Meeting

26<sup>TH</sup> MAY 2021 (VIA MICROSOFT TEAMS)

# Royal Cornwall Hospital Anaemia in Obstetrics 2021

Dr Katharine Sprigge May 2021

# Introduction

- Current haemoglobin targets for managing anaemia in pregnancy are outdated
- Iron deficiency may be present before anaemia is clinically detectable, this carries it's own symptom burden and association with adverse outcomes
- What is our current baseline? Data from caesarean section population and whole obstetric population
- Recommendations for change

#### Current WHO criteria

	Non-anaemic (g/L)	Mild (g/L)	Moderate (g/L)	Severe (g/L)
Men aged ≥15 years	>130	110-129	80-109	<80
Women aged ≥15 years	>120	110-119	80-109	<80
Pregnant women	>110*	100-109	70-99	<70
Children aged 6-59 months	>110	100–109	70-99	<70†
Children aged 5-11 years	>115	110-114	80-109	<80
Children aged 12–14 years	>120	110-119	80-109	<80

\*Threshold is greater than 105 g/L in the second trimester. †Generally, in settings with high malaria transmission, a haemoglobin concentration of 40 g/L or less is an indication for blood transfusion, regardless of the clinical condition of the child; in settings with low malaria transmission, a threshold of 70 g/L is recommended for blood transfusion.

Table: WHO recommendations for haemoglobin thresholds to define severity of anaemia



Figure 2: Global distributions of haemoglobin concentration for pregnant and non-pregnant women in 2011

Anaesthesia 2019, 74, 237-245

doi:10.1111/anae.14468

**Review Article** 

#### Defining peri-operative anaemia in pregnant women – challenging the status quo\*

M. T. Ferguson<sup>1</sup> and A. T. Dennis<sup>2,3</sup>

- Recommends reference ranges be redefined based on healthy women without haematinic deficiency
- Establish normal reference ranges for pregnancy based on iron replete women
- Importance of iron stores as well as haemoglobin





**Review Article** 

# The effect of iron deficiency and anaemia on women's health

C. S. Benson,<sup>1</sup> (DA. Shah,<sup>2,3</sup> (DS. J. Stanworth,<sup>4,5</sup> C. J. Frise,<sup>6,7</sup> (DH. Spiby,<sup>8</sup> S. J. Lax,<sup>9</sup> J. Murray<sup>9</sup> and A. A. Klein<sup>10</sup> (D

#### Obstetrics

- Globally maternal anaemia associated with increased mortality
- Depression, fatigue
- Poor cognition
- Difficulties breast feeding
- Risk factor for preterm labour and SGA babies
- Risk factor for neonatal mortality

#### General

- Women less likely to be investigated and treated for anaemia
- More likely to be anaemic
- Lower circulating volume: blood loss more significant
- More at risk of receiving blood transfusion
- Argues >130g/L for all

# BSH suggestions for empirical treatment

- Previous anaemia
- Multiparity
- Twins
- <1 year between pregnancies</li>
- Vegetarian/Vegan
- Adolescent pregnancies
- Women declining blood products

Table I. Indications for empirical iron supplementation and/or serum ferritin.

Anaemic women where testing serum ferritin is necessary prior to iron supplementation: Known haemoglobinopathy Prior to parenteral iron replacement Non-anaemic women with high risk of iron depletion for empirical iron treatment with/without serum ferritin testing: Previous anaemia Multiparity ≥P3 Twin or higher order multiple pregnancy Interpregnancy interval <1 year Women who have poor dietary habits Those following a vegetarian/vegan diet Pregnant teenagers Recent history of clinically significant bleeding Non-anaemic women where serum ferritin may be necessary: High risk of bleeding during pregnancy or at birth Women declining blood products, such as Jehovah's Witnesses Women for whom providing compatible blood is challenging



#### **SW ICS: Maternal anaemia**

#### **RCHT** Guidelines









## Maternal Anaemia Trainee Audits RCHT

- 2018 Jen Moran Dec 2017-May 2018 elective C-sections at 28 weeks
  - Oral iron advice improved
- Libby Fontaine 2019 (100 elective caesarean sections)
  - Ferrinject dose maximised, treatment flow charts simplified
- James Beresford Davies 2020 (135 elective caesarean sections)
  - Time for a third edition?

#### Anaemia 2018 to 2020



Maternal Anaemia 2018-2020

#### OAA Annual Scientific Meeting 2021

#### A00 Managing maternal anaemia at Royal Cornwall Hospital: iterative improvements year on year

<u>J Beresford-Davies</u>, E Fontaine, K Sprigge <u>Anaethetics</u>, Royal Cornwall Hospital, Truro, UK **Introduction**: Maternal anaemia remains common despite associations with adverse maternal and foetal outcomes.<sup>1</sup> Recently conventional definitions of anaemia (<110g/l) have been questioned and a higher haemoglobin threshold (120g/l) suggested.<sup>2</sup>This is likely to benefit a population at risk of significant blood loss.

Method: In 2019 the haemoglobin results of women requiring elective caesarean section were audited during pregnancy and after surgery. Subsequently, changes were made to the Anaemia in Pregnancy Guideline: treatment flow charts were simplified and the Ferrinject dose was maximised to 1000mg. Re-audit took place in 2020.



Figure 1: Anaemia prevalence during pregnancy and after caesarean

Results: Data was collected for 100 women in 2019, and 135 women in 2020. In both years anaemia prevalence at booking was low (2.2% and 0.7% respectively). In 2019, 8 women missed booking blood tests compared to only 3 in 2020; an improvement despite the challenges of Covid-19. All anaemic patients were prescribed oral iron. In both years anaemia prevalence increased at 28 weeks. In 2019 all women were again prescribed oral iron, but only 77.8% were followed up. 3 women remained anaemic despite oral iron therapy, but only 2 were offered Ferrinject 500mg. In 2020 only 2.2% missed followed up. Ferrinject 1000mg was administered to 3 women who did not respond to oral iron, or developed anaemia later in pregnancy. In both years one third of anaemic women developed anaemia in the third trimester despite having appropriate haemoglobin levels at 28 weeks (33% in 2019 and 34% in 2020). Post operatively 16.3% of women were anaemic in 2019 reducing to 11.1% in 2020.

Discussion: Despite improvements between 2019 and 2020, anaemia still persists unacceptably in the elective caesarean section population despite readily available treatment. A third of women developed anaemia later in pregnancy despite following guidelines. This supports targeting a higher haemoglobin (120g/I) throughout pregnancy to mitigate for anaemia worsening towards term.

#### References

- Pavord S, Daru J, Prasannan N, Robinson S, Stanworth S, Girling J. UK guidelines on the management of iron deficiency in pregnancy. Br J Haematol 2020;188:819-830.
- Ferguson MT, Dennis AT. Defining peri-operative anaemia in pregnant women - challenging the status quo. Anaesthesia 2019;74:237-245.

# RCHT January haemoglobin levels



### Hb on Delivery Suite January



available



# February





Not

# February Delivery Suite





#### Postdelivery Haemoglobin February

### March Haemoglobin levels



#### March Haemoglobin Delivery Suite



#### January-March 2021 overall booking



Booking Haemoglobin

#### January-March 2021 overall 28 weeks



28 Week Haemoglobin

### January-March 2021 overall pre-delivery



Predelivery Haemoglobin

### January-March 2021 overall post-delivery



Postdelivery Haemoglobin

#### Trends

- At booking most women have Hb >120g/L
- Drop to 110-119g/l at 28 weeks this is persisting until delivery
- Even though we are fairly compliant with our current guideline, we can still expect to see a drop in Hb postnatally (90-99g/L 18 women predelivery > 63 women post delivery)
- Even if anaemia is not clinically detectable, iron stores likely depleted
- Iron deficiency and iron deficiency anaemia associated with adverse outcomes for mother and baby

### But anaemia in pregnancy is normal......

- Not in Cornwall! (120-139g/L)
- Iron deficiency will be established if anaemia detectable
- Iron deficiency carries a significant symptom burned
- Pain is normal in childbirth we still treat it

Finally, in 1853, before the birth of her eighth child, Prince Leopold, she was allowed to inhale chloroform for 53 minutes from a handkerchief, according to historians, She loved it, describing "blessed chloroform, soothing, quieting and delightful beyond measure." The medical debate over pain control quieted, and the procedure became known as "chloroform à la reine."

## Conclusion

Suggest target Hb >120g/L obstetrics Empirical treatment with iron Consider alternate day treatment FBC at 34 weeks +/- Ferrinject