

Evaluating Hepcidin and sTfR in Pregnancy: Impact of Different Iron Supplementation Regimens

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BACKGROUND

- Anaemia affects 23–30% of pregnancies in the UK¹.
- Iron deficiency is the primary cause².
- The optimal dose and role of prophylactic oral iron in pregnancy remain unclear^{3,4}.
- Hepcidin regulates iron metabolism and absorption.
- Soluble transferrin receptor (sTfR) reflects iron demand for red blood cell production.



AIM

To evaluate whether different prophylactic iron supplementation frequencies (daily, alternate-day, 3x/week) affect iron biomarkers (hepcidin and sTfR) during pregnancy in non-anaemic women.

METHODS

- Study Design**
- A secondary analysis of the PANDA program dose-finding trial of 3 differing regimens of iron supplementation in non-anaemic pregnant women⁵.
 - 135 **non-anaemic pregnant people** randomised.

- Treatment Groups (Ferrous Sulphate 200mg)**
- Daily (n=45)
 - Alternate-day (n=47)
 - 3x weekly (n=43)

- Blood samples collected at:**
- Baseline (9–13 weeks gestation)
 - Follow-up (28–32 weeks gestation)

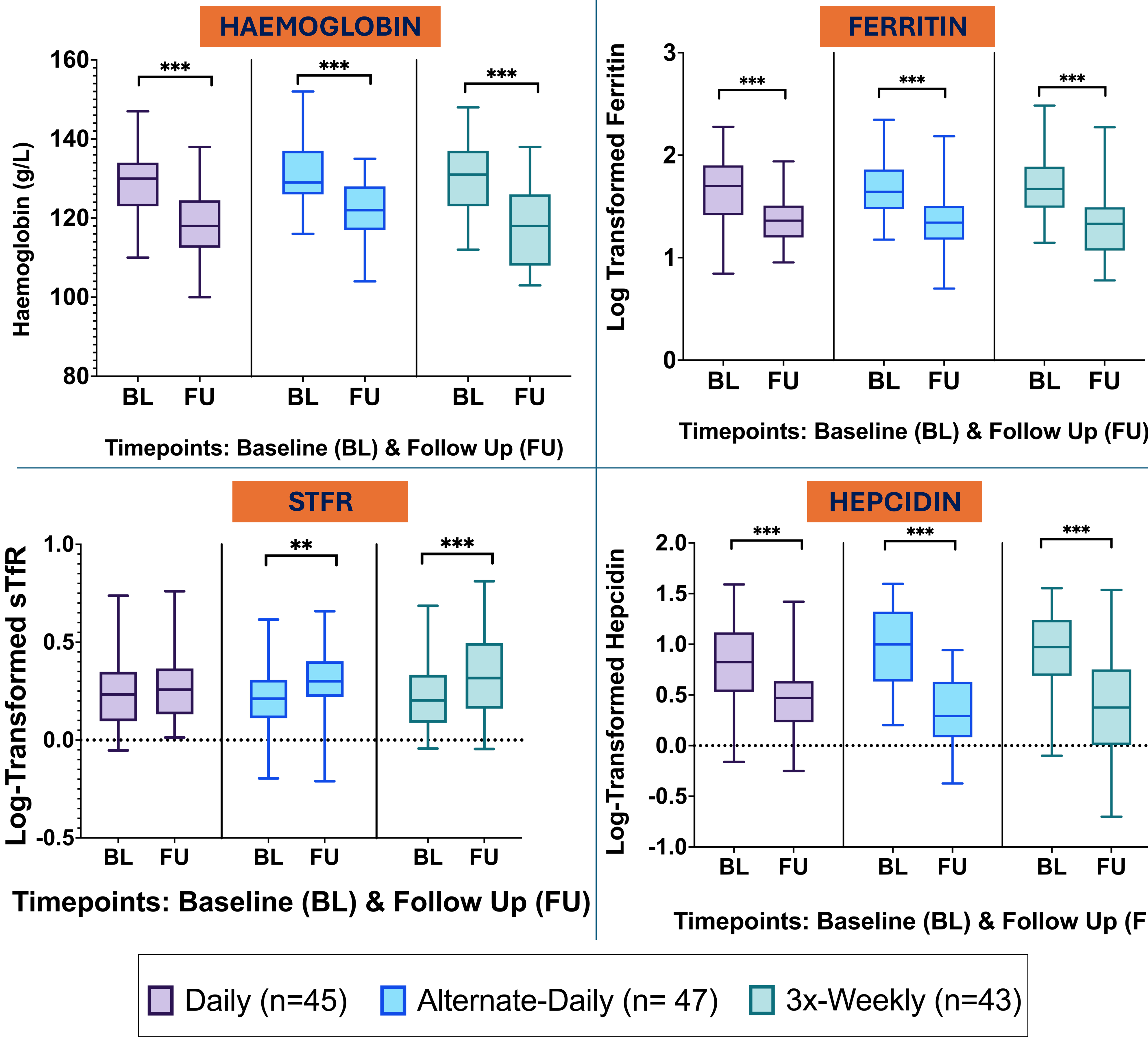
Hepcidin and sTfR Enzyme-Linked Immunosorbent Assays (ELISAs) performed.

Statistical Analysis

- Log-transformation
- Paired t-test (within-group)
- ANOVAs (between-group)



RESULTS



- Haemoglobin & Ferritin**
- Significant ↓ in Hb and ferritin within all groups ($p<0.0001$).
 - No significant difference between groups.
- sTfR**
- ↑ significantly in 3× weekly ($p=0.0003$) and alternate-day ($p=0.0041$).
 - No significant ↑ in daily group ($p=0.1223$).
 - ↑ sTfR = ↑ iron demand.
 - Daily dosing better meets iron demand.

- Hepcidin**
- ↓ significantly in all groups ($p<0.0001$); no group differences ($p=0.318$).
 - Reflects expected suppression in pregnancy.
 - Suppression is consistent across regimens, unlike in non-pregnant populations⁶.

- Limitations**
- Sample Size.
 - Variability in ELISA performance.
 - No CRP levels, unable to control for inflammation.

CONCLUSIONS

- Only the daily group met their iron demands.
- Hepcidin findings challenge the rationale for alternate-day dosing during pregnancy.
- sTfR may be more sensitive than Hb & ferritin in detecting iron status during pregnancy.

FUTURE DIRECTIONS

- CRP Levels to Control for Inflammation.
- Explore Associations Between Biomarkers & Side Effects.
- PANDA Placebo RCT Now Recruiting.

NEWS

England | Local News

Pregnancy trial to prevent anaemia launched

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