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Tackling Antenatal Anaemia: A Quality Improvement Project

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Introduction

Antenatal anaemia contributes to significant perinatal morbidity.[1] In March 2020 a revised antenatal anaemia pathway was implemented in anticipation of reduced blood stocks due to COVID-19. Changes included alternate day oral iron for all patients from booking, measurement of ferritin at booking and 28 weeks and a revised intravenous (IV) iron pathway. Baseline data were compared with re-audit data following pathway adoption to assess the impact on anaemia, ferritin levels and blood transfusion.

Methods

Following local audit approval, anonymous data collection was performed using the electronic maternity database (Euroking), blood bank and electronic patient records. Haemoglobin (Hb) and ferritin results in the month of May (baseline data) and November (Nov, re-audit) were compared, in addition to red blood cell transfusion data. Booking (10-14 weeks' gestation), 28 week (27-30 weeks' gestation) and term bloods (37 weeks' onwards) were collected. Categorical data were analysed using chi-squared test and continuous data compared using students T-test (Microsoft Excel).

Discussion

Mean Hb results are summarised in the Table. Term Hb was recorded in >78% of women in both audits. The number of women with Hb <105g/L at term was 9.1% in May vs 7.1% in Nov (p=0.37), whilst blood transfusion was administered in 3.4% vs 2.6% (p=0.66).

More than 90% of women had a booking ferritin in both audit cycles, with a mean (SD) of 42.4 (34.3) µg/L in May vs 41.8 (31.4) µg/L in Nov (p=0.80). The mean (SD) ferritin at 28 weeks in May vs Nov was 14.4 (11.3) µg/L vs 14.1 (7.4) µg/L, with >96% of women with tests recorded in May but only 20% in Nov.

Table: Haemoglobin results for two audit cycles

	May Hb (g/L)	Nov Hb (g/L)	p value
Booking	130.3 (9.4), 356	129.0 (8.7), 348	0.06
28 weeks	117.9 (9.2), 365	118.1 (8.4), 357	0.74
Term	120.0 (11.3), 331	121.5 (11.4), 339	0.03

Data are mean (standard deviation), and number

Discussion

Following implementation of a new anaemia pathway, a statistically significant increase in the mean Hb at term was observed, with a non significant reduction in the proportion of women with anaemia (Hb<105g/L).

>78% of women had Hb results at term. Our institution has patients under both Consultant and Midwifery led care, but only the former have routine Hb measurements at term, and our data did not separate the two groups.

The baseline 28 week ferritin was low and despite routine oral iron prescription this did not increase in the Nov cohort, although there was a substantial reduction in the number of ferritin results available due to problems with community sampling.

The pathway included several changes to both oral and IV iron prescription. We do not know if seasonal variation may have contributed, given baseline data was from late Spring and the re-audit was performed in Autumn.

There has been a small but statistically significant improvement in Hb at term since implementation of this pathway. Additional qualitative and quantitative data is now required to understand pathway adherence (including patient compliance) and to inform the impact of individual interventions.

References

Allen, LH. Anaemia and iron deficiency: effects on pregnancy outcome. Am J Clinical Nutrition. 2000; V71; 1280s-4s.