

Implementing a Standardized Screening and Treatment Algorithm for Anemia in Pregnancy

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Our mission

Above all else, we are committed to the care and improvement of human life.



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Agenda

- Problem
- Literature Review
- Root Cause Analysis
- Process Map & Approach
- Results
- Next Steps

Problem Statement

- Anemia in pregnancy is a global health problem
- The American College of Obstetricians (ACOG) and Gynecologists and the Centers for Disease Control and Prevention (CDC) recommend screening for anemia at the initial prenatal visit and again between 24-28 weeks gestation¹
- There are no standardized evidenced based algorithms for treating anemia in the antenatal period

Background

- Anemia in pregnancy is defined as Hemoglobin/Hematocrit of less than 11/33 in the 1st and 3rd trimesters and 10.5/32 in 2nd trimester¹
- Anemia is associated with significant maternal and fetal complications¹
- An estimated >40% of pregnancies are complicated by anemia globally²
- Iron deficiency anemia accounts for 75% of anemia in pregnancy³
- Prevalence of iron deficiency anemia in pregnancy is disproportionally high amongst African Americans¹
- The rate of postpartum blood transfusions in the US is 3%⁴

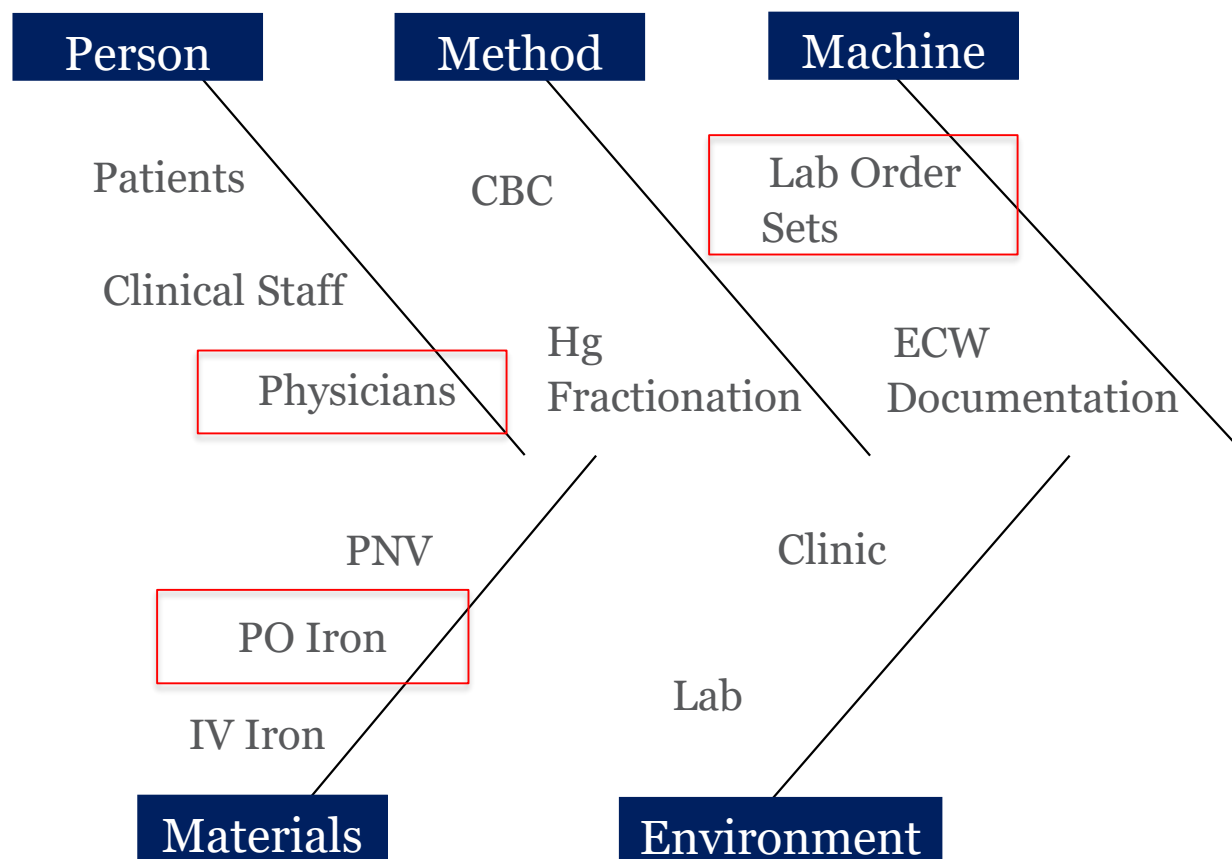
Complications of Anemia in Pregnancy

- **Fetal**
 - Low birth weight
 - Preterm delivery
- **Maternal**
 - Postpartum hemorrhage
 - Morbidity
- **Healthcare system**
 - ICU admissions
 - Transfusions

Project Charter

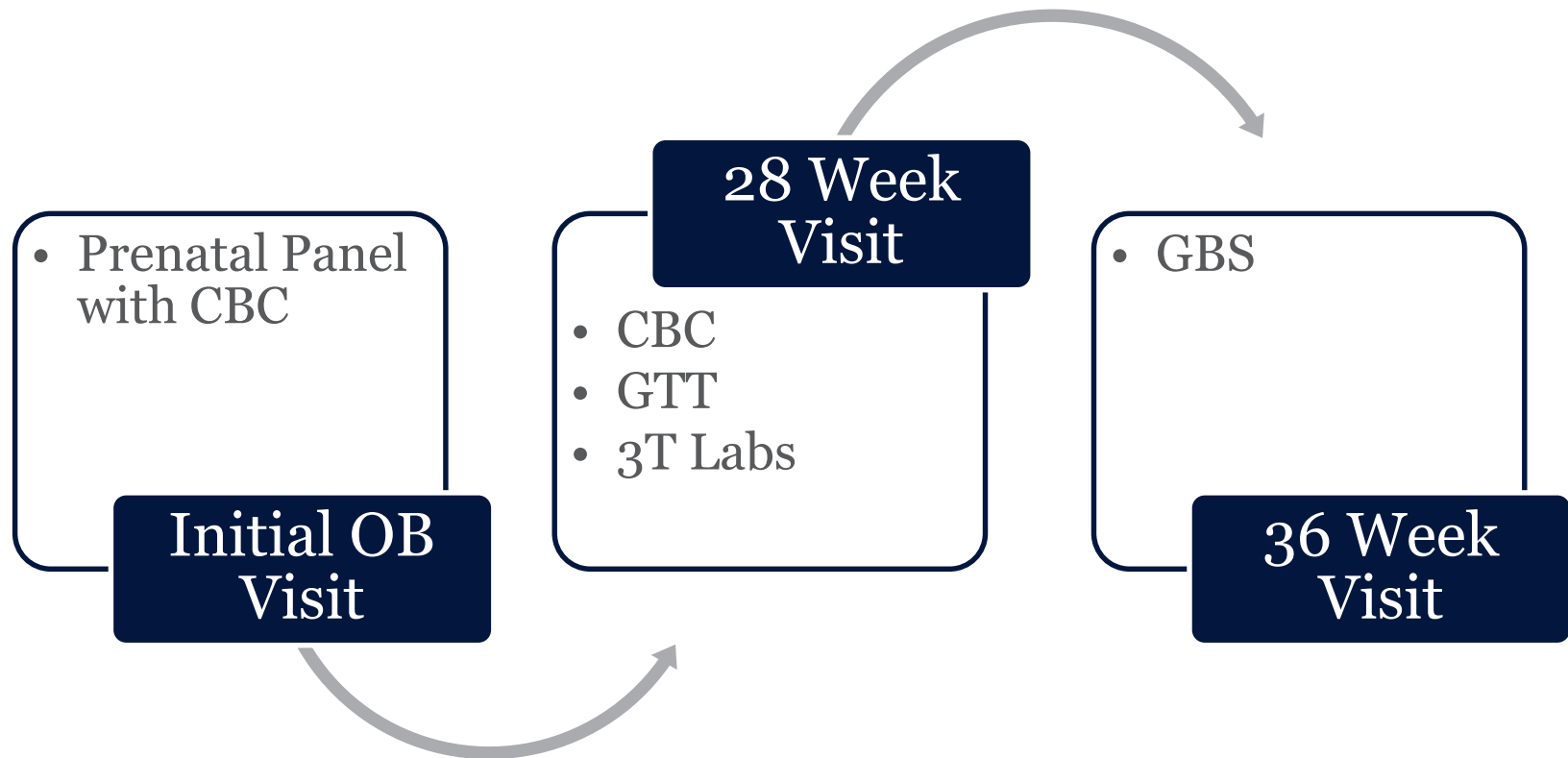
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Root Cause Analysis

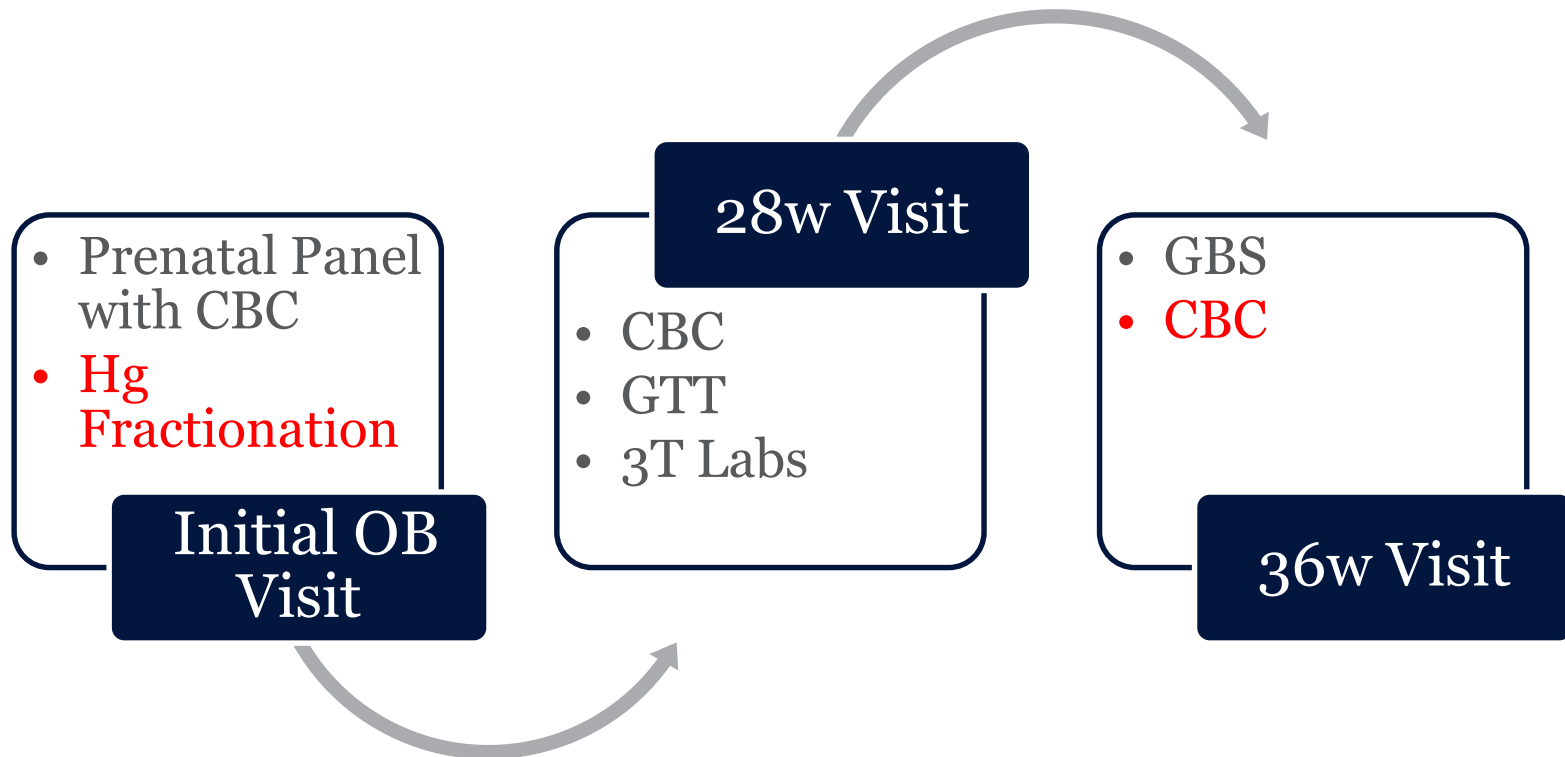


**Lack of
standardization
of anemia
screening and
treatment
during
pregnancy**

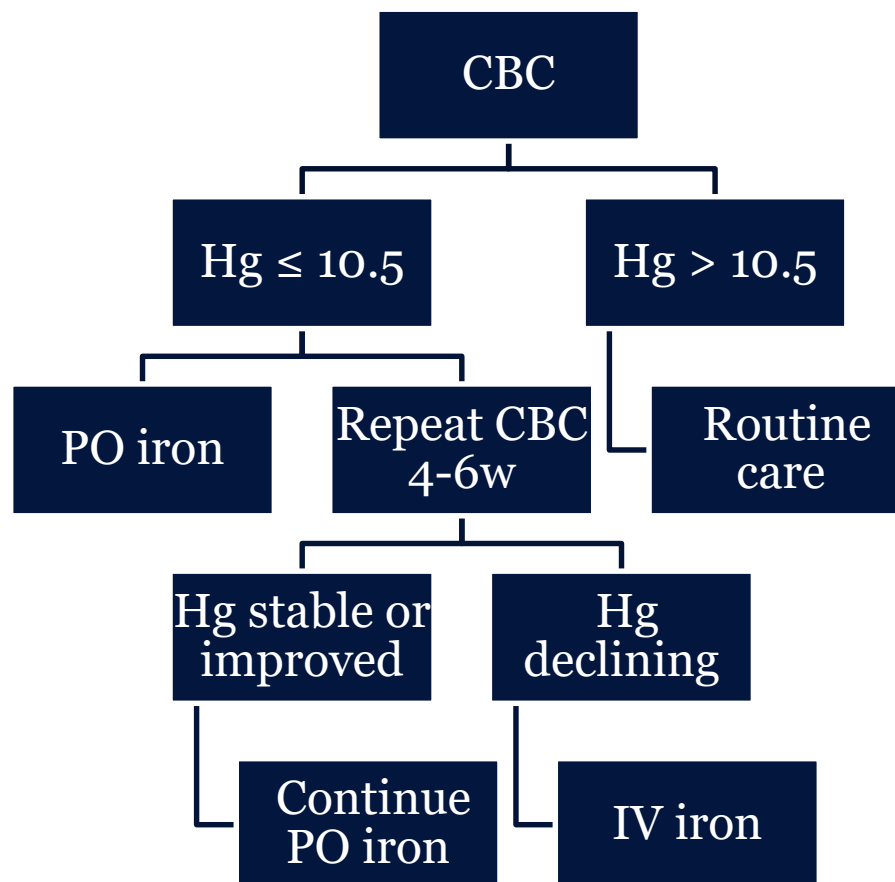
Process Mapping: **Current**



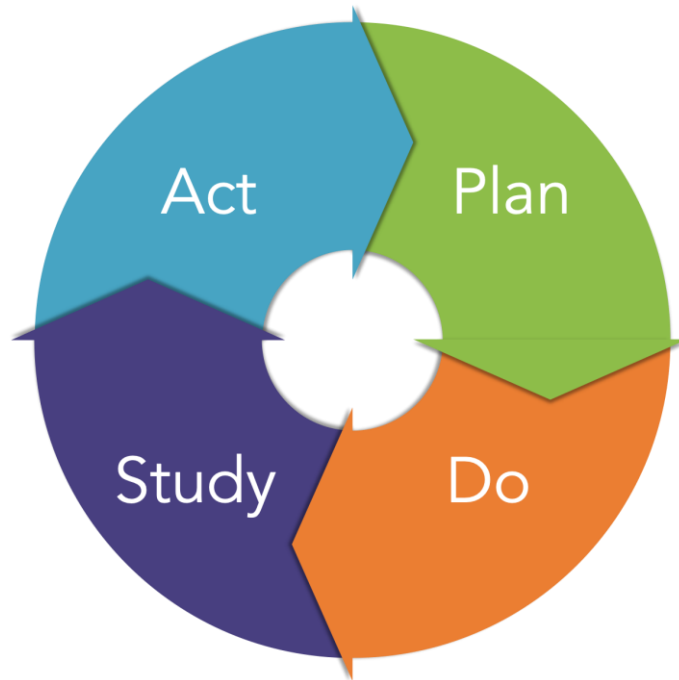
Process Mapping: **Proposed**



Treatment Algorithm



Methods



- **Plan:** improve detection and management of anemia in pregnancy
- **Predictions:** decrease incidence of anemia upon admission for labor and delivery and postpartum transfusion rates
- **Goal:** Create a standardized screening and treatment algorithm for antenatal anemia detection and management
- **Criteria:** New obstetrical patients at Medical City Womens Care who established care prior to 20 weeks gestation after July 1, 2023

Results Table

	Total (n)	Hg Fraction (%)	28w CBC (%)	Anemic (%)	PO Iron (%)	Repeat CBC (%)
Pre (7/22- 6/23)	101	24.8	92.1	35.6	63.9	47.2
Post (12/23- 4/24)	71	73.2	91.5	29.6	52.4	57.1

Results

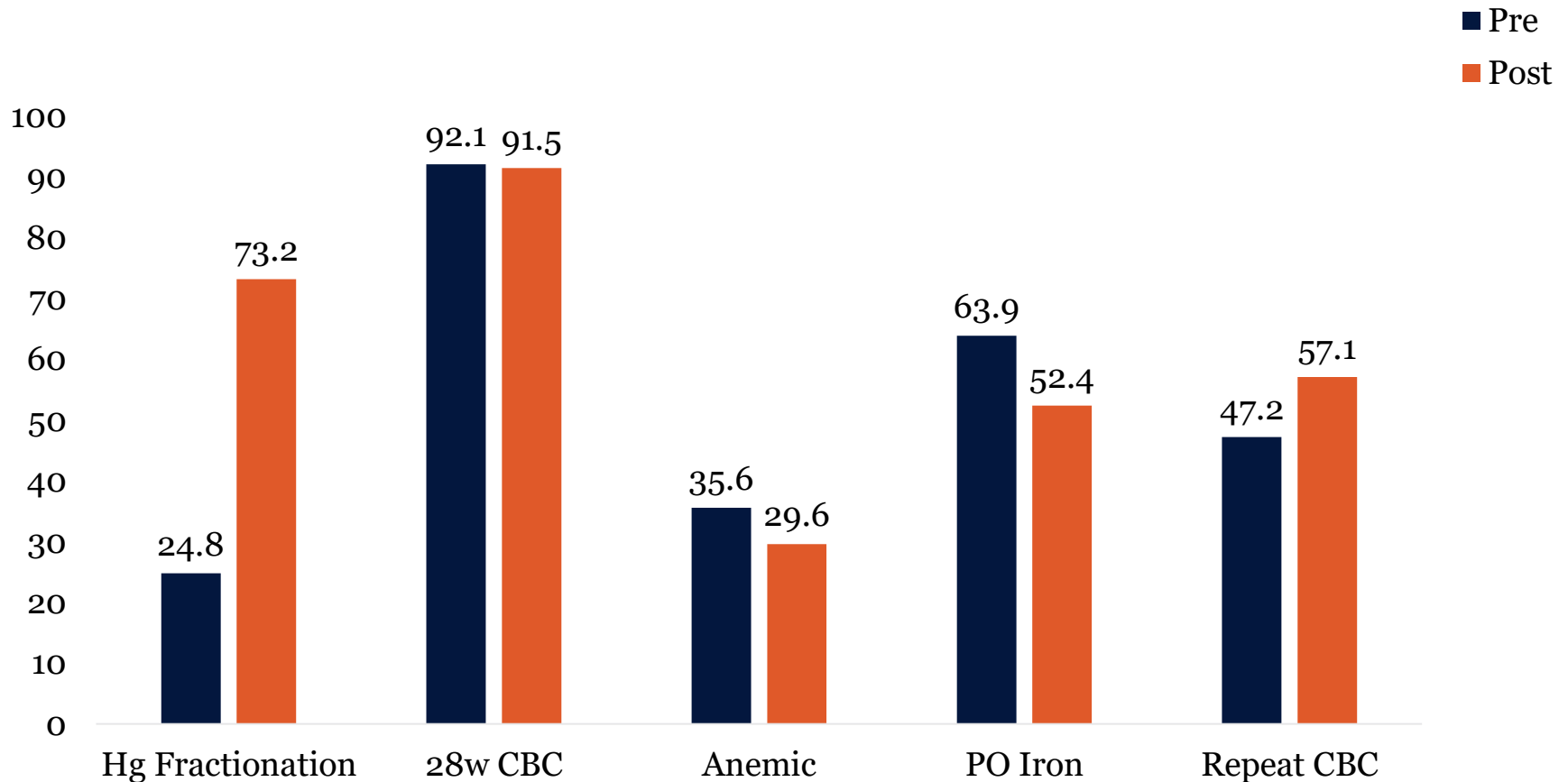


Figure 1. Comparison of rates of compliance for hemoglobin fractionation, 24-28w CBC, initiation of PO iron if patient was found to be anemic, and follow-up CBC in the third trimester if patient was diagnosed with anemia.

Results

- Compliance for obtaining initial CBC was 100% both pre- and post-implementation
- Screening for underlying hemoglobinopathies increased from 24.8% to 73.2%
- Compliance rates for 28-week CBC were similar at 92.1% and 91.5%, respectively
- Overall incidence of antenatal anemia decreased from 35.6% to 29.6%
 - Unknown why overall incidence of anemia decreased, however may in part be due to decreased incidence of late to care or late transfer obstetric patients
- Management of anemia once diagnosed continues to be an area of improvement, as rates of PO iron implementation decreased from 63.9% to 52.4%
- Surveillance of anemia and trending response to treatment did improve as indicated by increased rates of repeat CBC from 47.2% to 57.1%. Nevertheless, this also provides an area where further improvements can be made

Conclusion

- **Limitations**

- Small sample size
- Increased turnover of office staff
- Multiple physicians in the practice and new residents
- Lack of patient education resources

- **Goals**

- Decrease incidence of anemia upon admission for delivery
- Decreased need for postpartum transfusions

- **Next Steps**

- Additional cycles planned through July 2024
- Standardized orders and documentation for antenatal screening recommendations
- Continue to improve compliance rates for management of antenatal anemia
- Transition to original research comparing rates of anemia upon admission and postpartum transfusions

References



1. Anemia in Pregnancy. ACOG Practice Bulletin No. 233. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2021; 138:e55-64.
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3. Agarwal A, Rets A. Laboratory approach to investigation of anemia in pregnancy. *Int J Lab Hematol*. 2021; 43:65-70
4. Blood transfusion importance during pregnancy and birth. *Am Red Cross*. <https://www.redcrossblood.org/local-homepage/news/article/blood-transfusions-childbirth-pregnancyrchs.html#:~:text=But%2C%20for%20some%2C%20the%20parenting,parents%20receive%20blood%20transfusions%20postpartum.>

Questions & Discussion