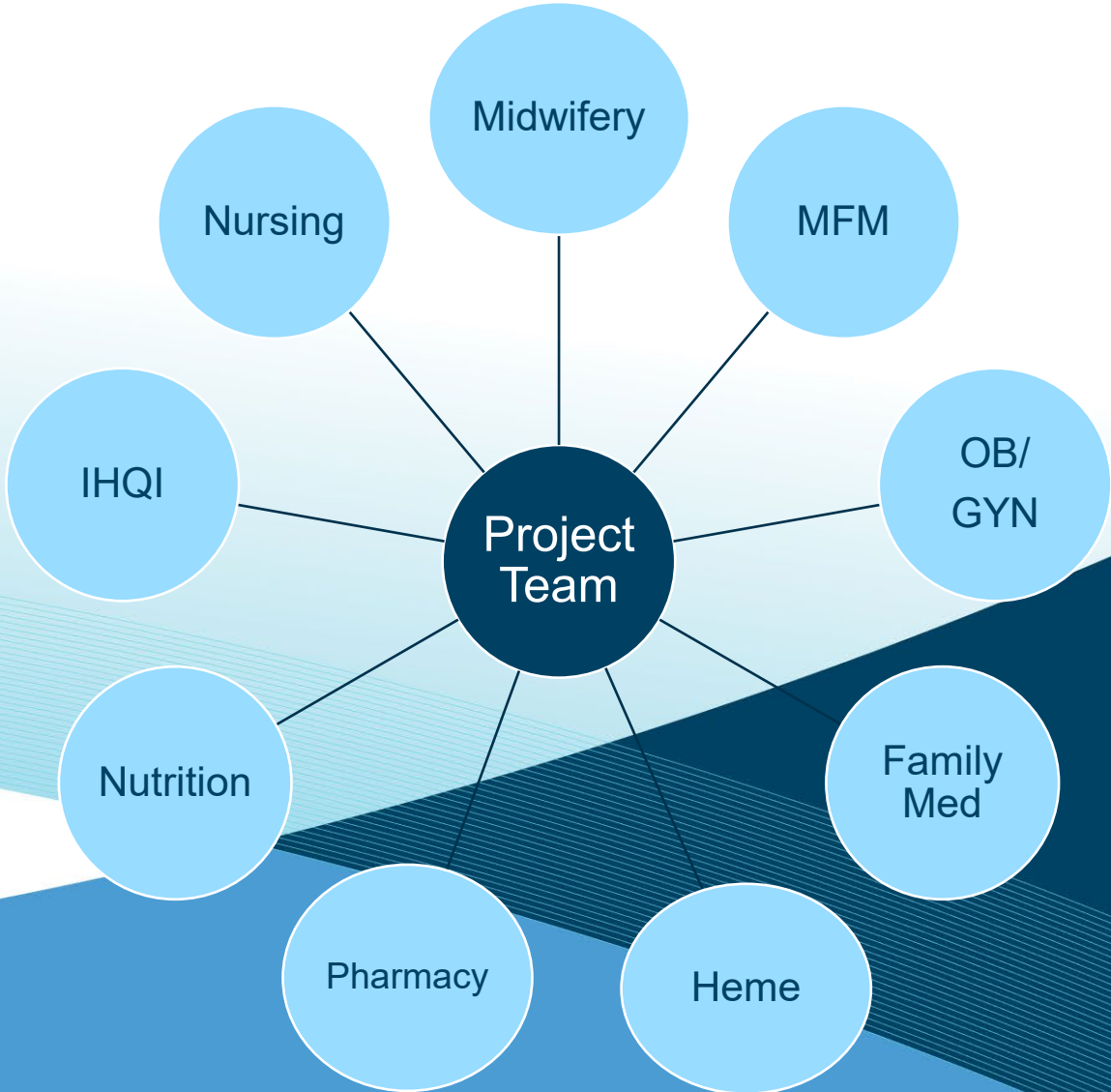




Anemia in Pregnancy

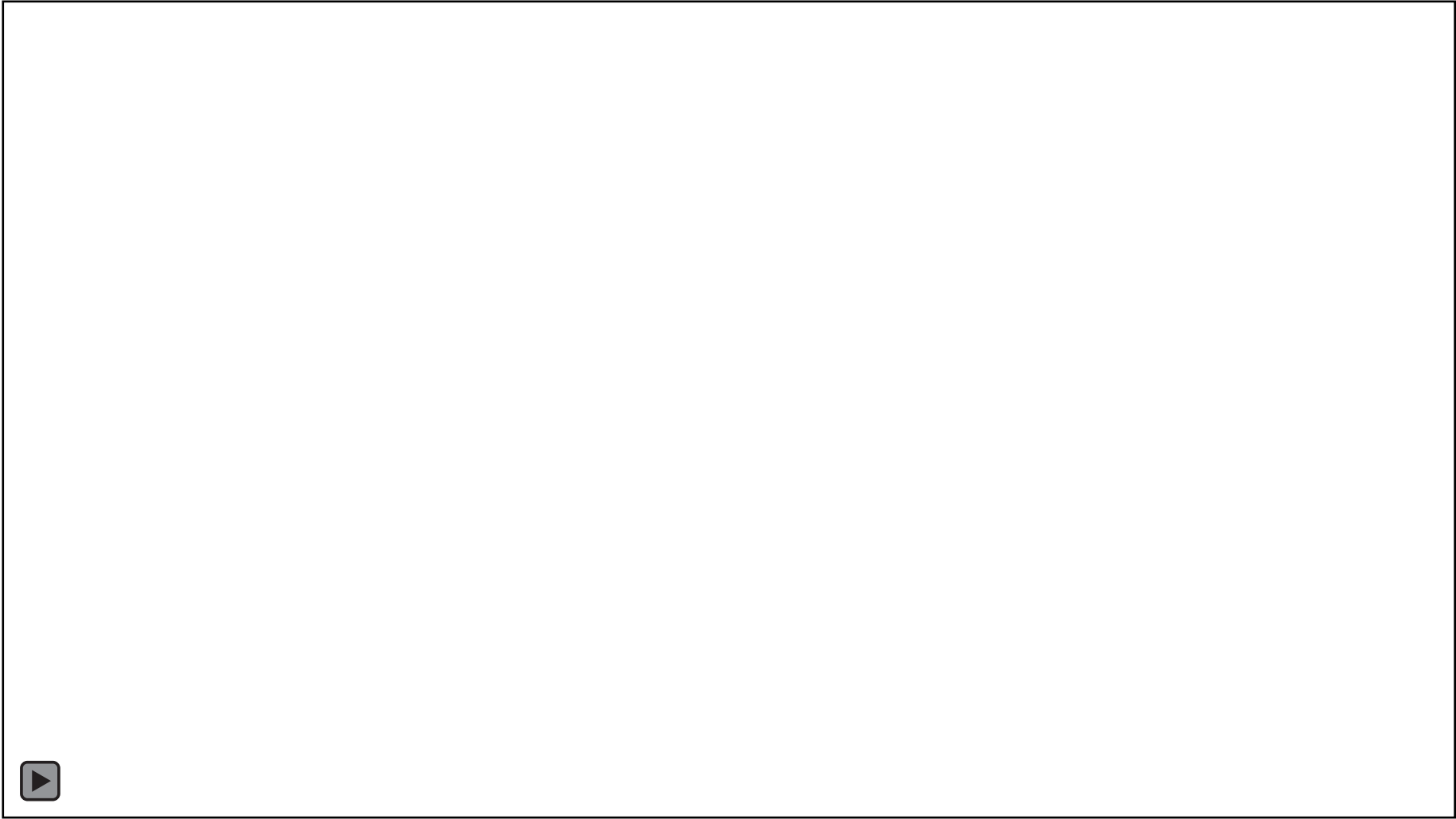
Project Leads: Kate Zahn, Erin Huprich

Project Sponsor: Liz Coviello





Patient Story






Importance: Anemia is a Common Obstetric Problem



 = Pregnant Patients in U.S.

 = Pregnant Patients in U.S. w/IDA

 +  = Pregnant Patients at UNC w/IDA

Importance: Associated with adverse maternal and neonatal outcomes



C-section



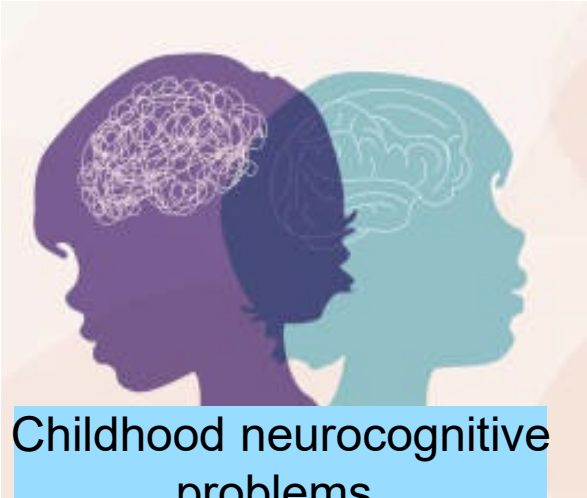
Intrapartum or postpartum blood transfusion



Breastfeeding and bonding difficulties



Perinatal depression



Childhood neurocognitive problems



Preterm birth
Low birth weight

Importance: Anemia is preventable, modifiable, and contributes to disparities



OBSTETRICS: ORIGINAL RESEARCH

Racial and Ethnic Disparities in Anemia and Severe Maternal Morbidity

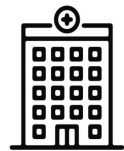
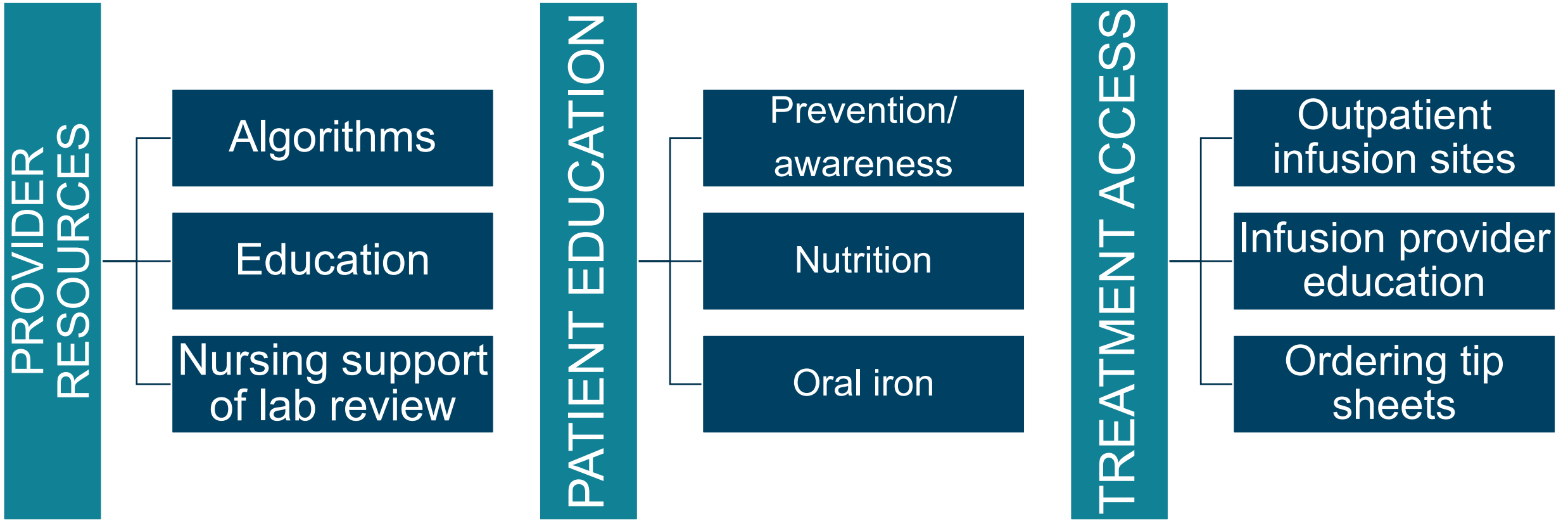
1 in 5 SMM in Black patients is attributable to antepartum anemia

Igbinosa, et al. Racial and Ethnic Disparities in Anemia and Severe Maternal Morbidity. *Obstetrics & Gynecology* 142(4):p 845-854, October 2023.

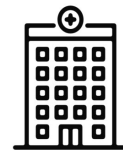
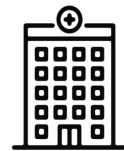
Global aim: To reduce pregnancy-associated morbidity and mortality

Project aim: Reduce percentage of pregnant patients with moderate or severe maternal anemia on day of delivery from **8% to 5%** by September 30, 2023.

CHANGE IDEAS



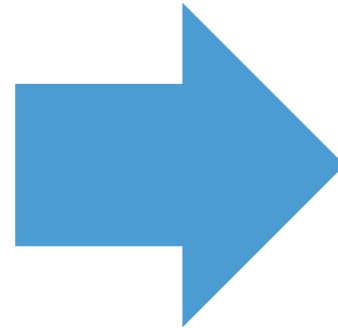
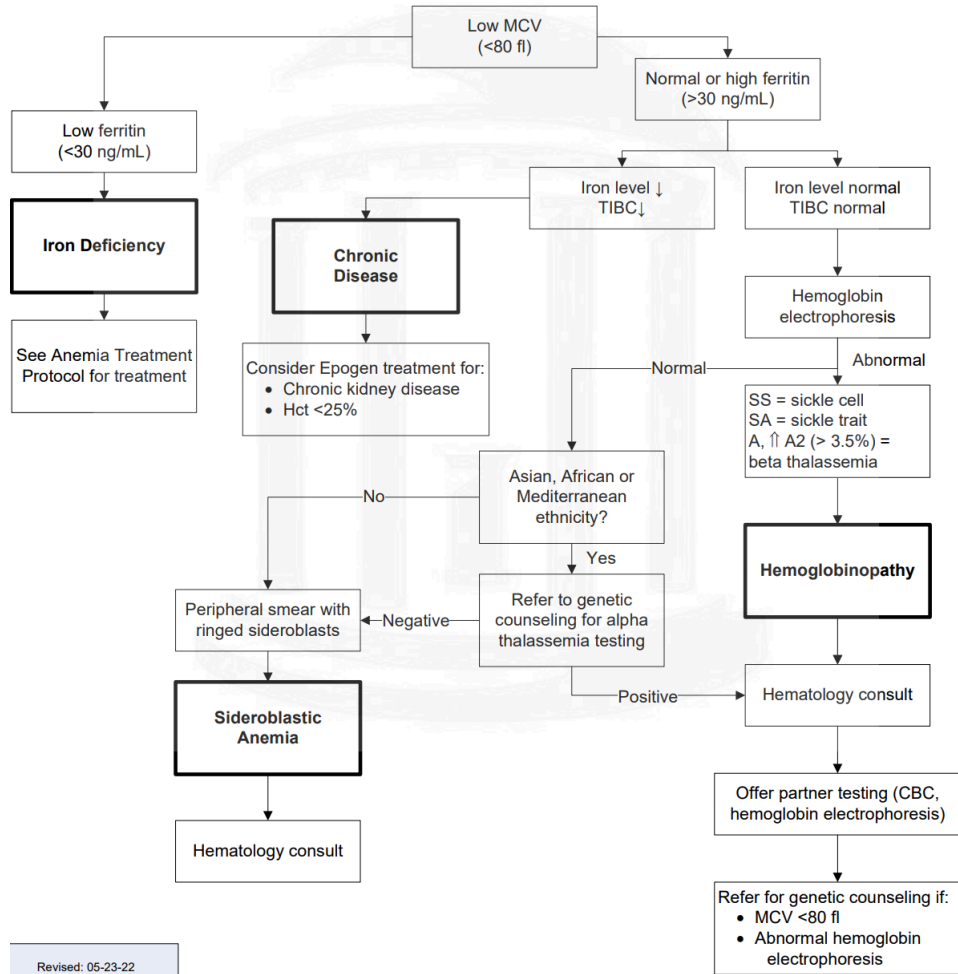
Clinic Roll Out



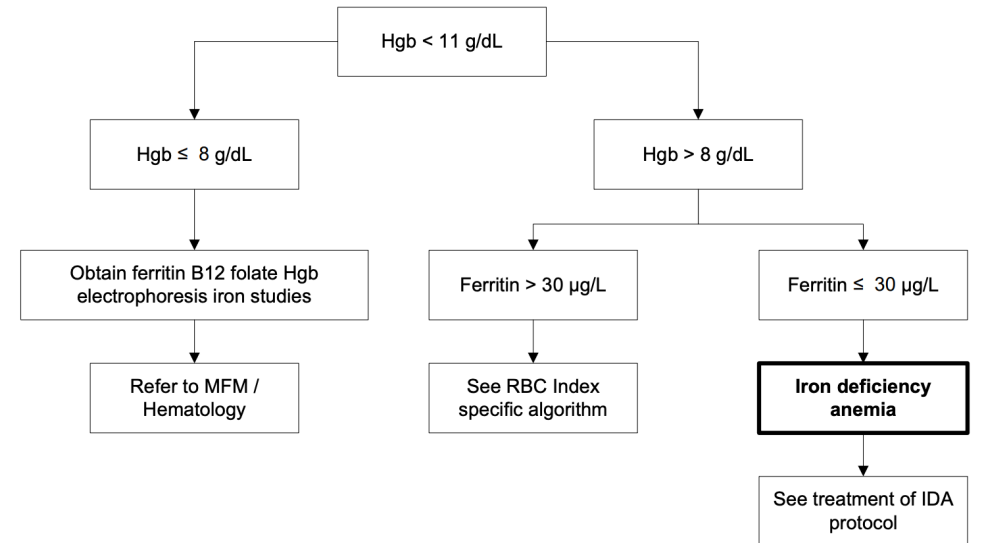
Changes

PROVIDER RESOURCES

Old Algorithm







New Algorithm



Changes: PATIENT RESOURCES

Tips:

<p>Vegetables can be fresh, frozen, or canned.</p>	
<p>Vitamin C will help you absorb iron. Eat foods with iron and foods with vitamin C together.</p>	
<p>Keep taking a prenatal vitamin that contains 27 mg of iron.</p>	
<p>Cooking with a cast iron pan can increase the iron in the food.</p>	

Examples of meals that include iron + vitamin C, which helps increase the amount of iron that is absorbed by your body:

 <p>Eggs with choroizo (sausage), 1 corn tortilla, small glass of orange juice</p>	 <p>Oatmeal with berries*</p>	 <p>Stir fried shrimp with bell peppers and bok choy</p>
 <p>Tacos with meat and beans. Top with tomato salsa and lime juice.</p>	 <p>Beef burger, salad with tomatoes</p>	 <p>Chana dal. Chickpeas with tomatoes.*</p>
 <p>Grits with beans, eggs, and salsa *</p>	 <p>Black eyed peas, collard greens, cornbread*</p>	 <p>Veggie burger, salad with tomatoes*</p>

*Vegetarian

Resources are available in multiple ways:





- Physical handouts
- QR code



- Website:
https://www.med.unc.edu/obgyn/patient_care/prenatal-resources/



Changes: PATIENT RESOURCES

Oral iron preparations	Dosage	Elemental Iron Amount	How to take
Spring Valley® 	1 tablet	65 mg elemental iron	Daily or every other day
Nature Made® 	1 tablet	65 mg elemental iron	Daily or every other day
Slow Fe® 	1 tablet	45 mg elemental iron	Daily or every other day *While slow-release products may reduce the side effects of oral iron, these formulations may not be absorbed as well.
Floridex® 	10 milliliters	10 mg elemental iron	Requires multiple doses per day, but liquid

Frequently Asked Questions	
How should I take an oral iron supplement?	<ul style="list-style-type: none"> • Best absorbed when taken on an empty stomach. • However, okay to take with a small amount of food if improves compliance • Try to avoid taking with foods that are calcium-rich, such as dairy products and leafy greens, as they may decrease the amount of iron that your body absorbs.
Is it okay to take my iron with a daily multivitamin?	<ul style="list-style-type: none"> • The amount of calcium contained in multivitamins or prenatal vitamins is likely not enough to greatly reduce the amount of iron your body absorbs.
Should I take my iron supplement with a source of vitamin C?	<ul style="list-style-type: none"> • Not necessary to take oral iron with vitamin C to improve its absorption. • Newer data has shown that vitamin C is not essential to enhance oral iron absorption.
How do I manage the adverse effects of taking an oral iron supplement?	<ul style="list-style-type: none"> • Constipation: Stool softeners like Colace® and gentle laxatives like Miralax® can help alleviate symptoms of constipation. • Nausea and indigestion: Take with a small amount of food • Newer data has shown that taking an oral iron supplement every other day instead of daily or multiple times a day may improve absorption and reduce side effects.

Changes

ACCESS TO TREATMENT

- Transitioning from inpatient to outpatient IV Iron
- Updated anemia treatment algorithm to facilitate outpatient treatment
- Developed EPIC tip sheet and video for ordering therapy plan
- In-clinic patient interviews regarding diagnosis and treatment of anemia and treatment access



IV Iron:

Troubleshooting Common OB IV Iron Questions



Throughout 2022-23 the UNC OB clinics have worked hard to identify, medically correct, and organizationally improve prenatal anemia resulting in a reduction of moderate to severe anemia at time of delivery. Below are the most frequent questions to help providers navigate some common questions asked about IV iron.

	?	📍	📞
	FAQs	Locations	Contact
< 32 Weeks Gestation	<p>Q: My patient is less than 32 weeks gestation, can they get more than 1 infusion?</p> <p>A: Yes! We would recommend a non-Infed formulation</p>	<p>UNC Eastowne (Epic Dept- UNCH THERAPEUTIC INFUSION CTR EASTOWNE) and Pittsboro Infusion (Epic Dept- UNCH THERAPEUTIC INFUSION CENTER PITTSBORO)</p> <ul style="list-style-type: none"> • Easy parking • Extended hours • Non-Infed Formulations 	<ul style="list-style-type: none"> • Place therapy plan in Epic** • Send Infusion location Epic in basket message
Self Pay	<p>Q: What if the patient is self pay?</p> <p>A: Faraheme and Ferrlecit are the recommended infusion given they have a manufacture discount program</p>	<ul style="list-style-type: none"> • Eastowne (Epic Dept- UNCH THERAPEUTIC INFUSION CTR EASTOWNE) • UNC Medical Center (Epic Dept-UNC ONCOLOGY INFUSION CHAPEL HILL), • UNC Rex Day Infusion Center (Epic Dept-REXH DAY INFUSION RALEIGH) 	<ul style="list-style-type: none"> • Place therapy plan in Epic** • Send Infusion location Epic in basket message
Urgent	<p>Q: What if the infusion is needed ASAP due to gestational age?</p> <p>A: L&D triage or 3 Women's may be an options, but still put the outpatient therapy plan as a back up</p>	<p>UNC Rex Day Infusion Center (Epic Dept-REXH DAY INFUSION RALEIGH)</p> <ul style="list-style-type: none"> • Faster schedule rate • Can now infuse Infed 	<ul style="list-style-type: none"> • In basket message Patrice Baker to see if the 1 triage bed is available for that week • In basket message Amy Watkins for 3 Women's availability



How will we know a change is an improvement?

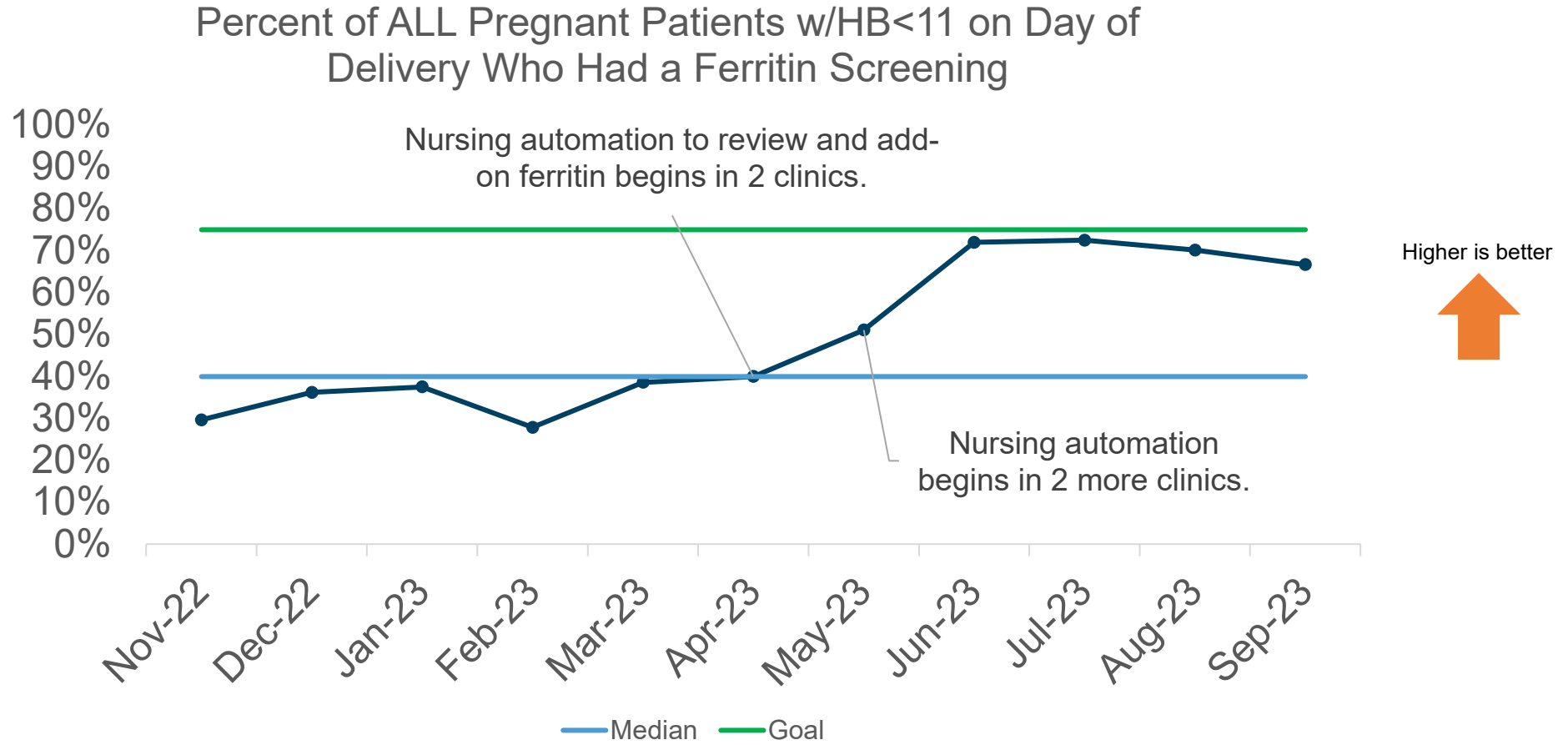
Process measures:

- Increased identification of iron deficiency anemia
- Increase utilization of outpatient IV iron

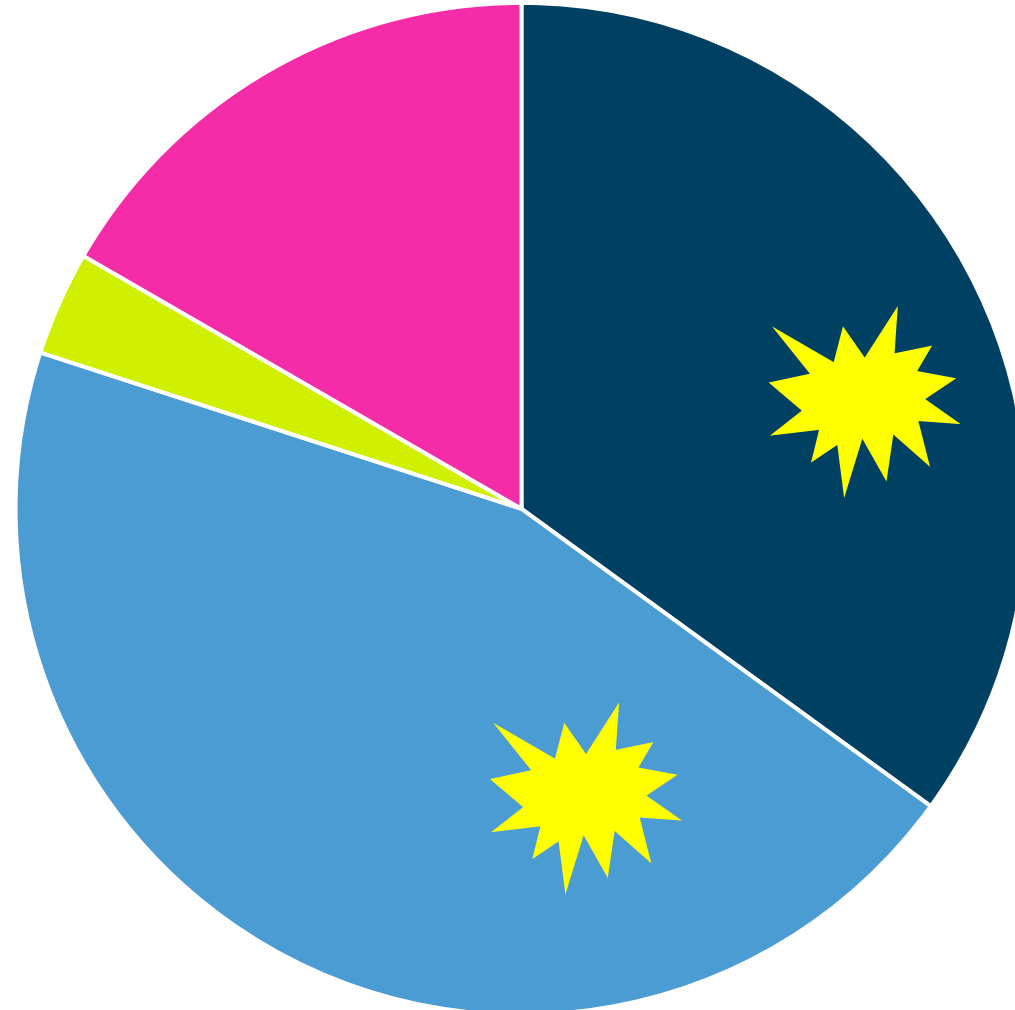
Balancing measure:

- Provider survey: How is this impacting provider workflow and EMR fatigue

Process Measure: Increase serum ferritin screening from 35% to 75%



Process Measure: Increase outpatient IV iron utilization for eligible patients from 0 to 25%



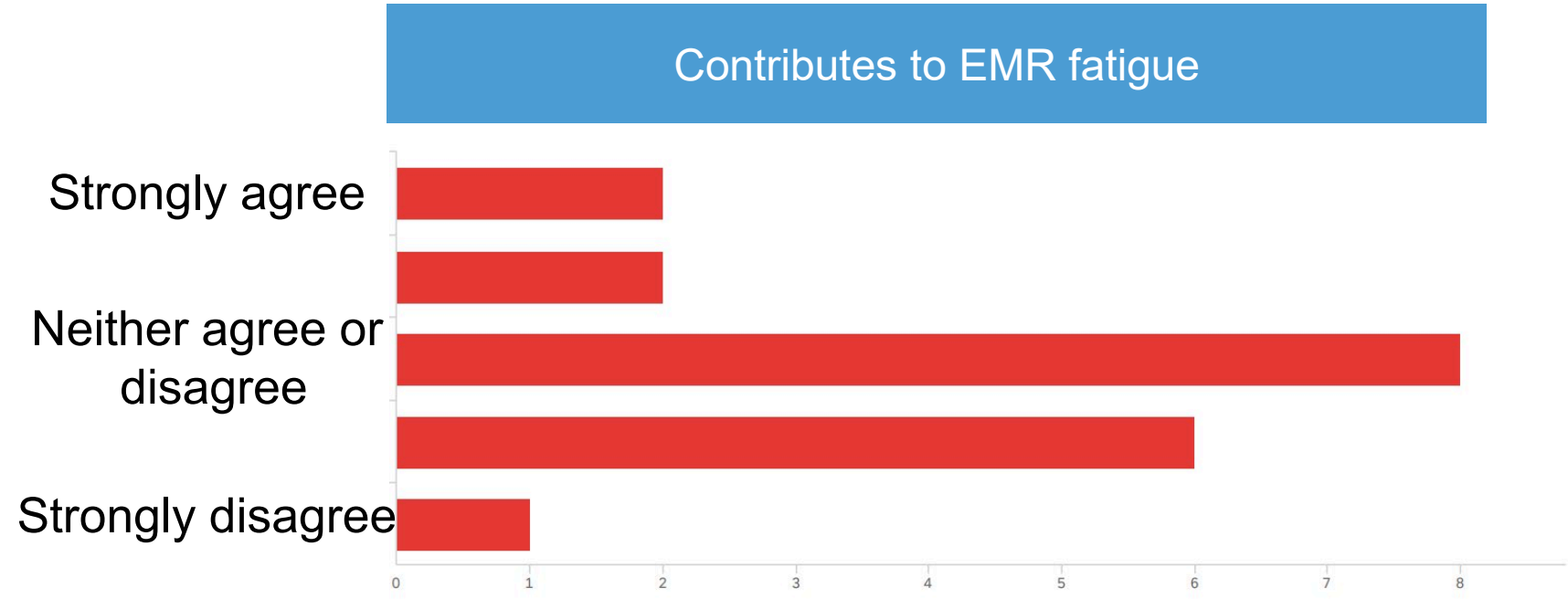
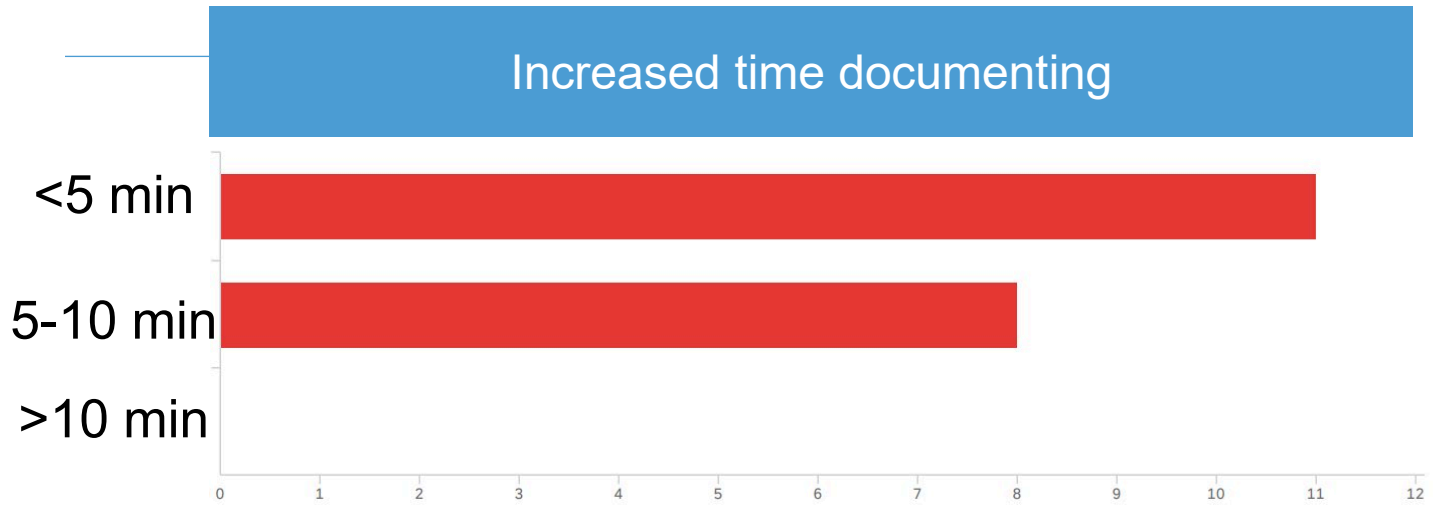
May 1, 2023-July 31, 2023

80% (48/60)
IV iron infusions
occurred
outpatient

■ Rex Day Infusion ■ UNCCMC ■ L&D ■ 3W in WH



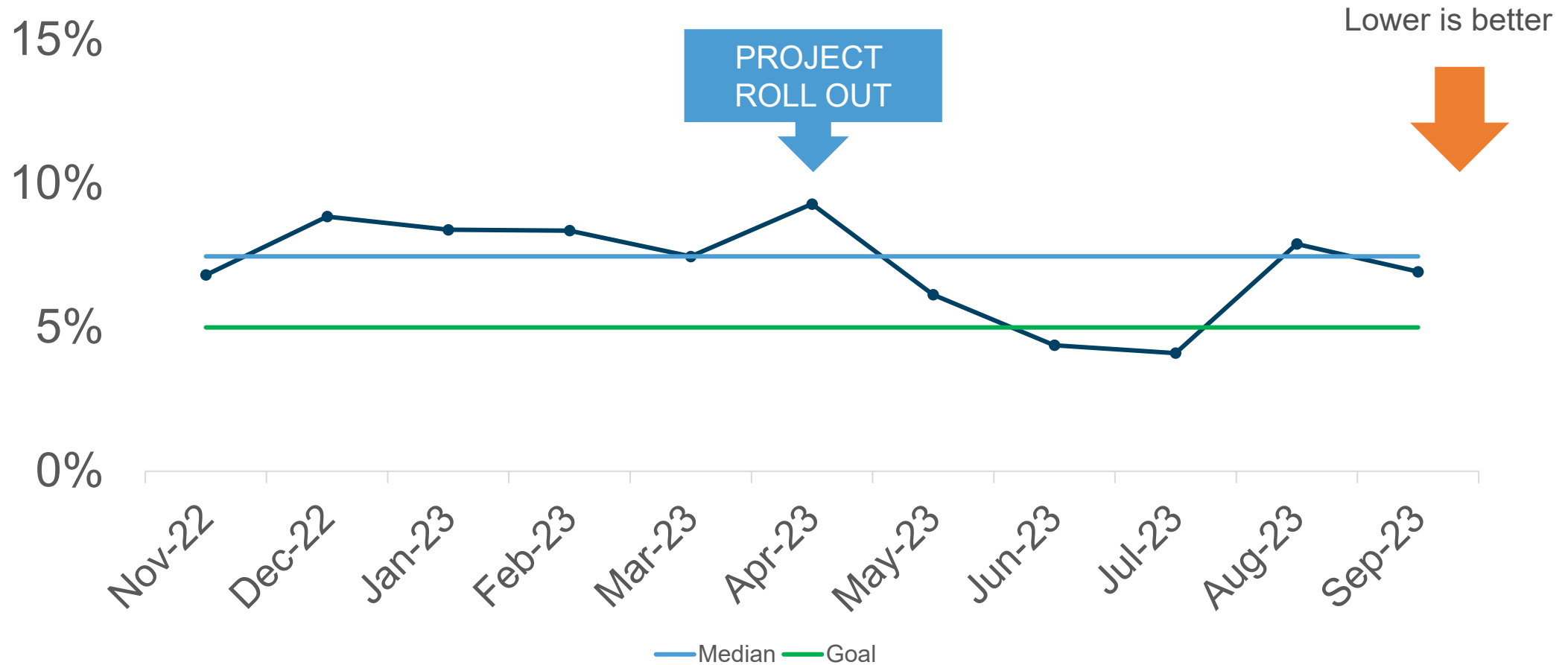
Balancing measure



OUTCOME MEASURE

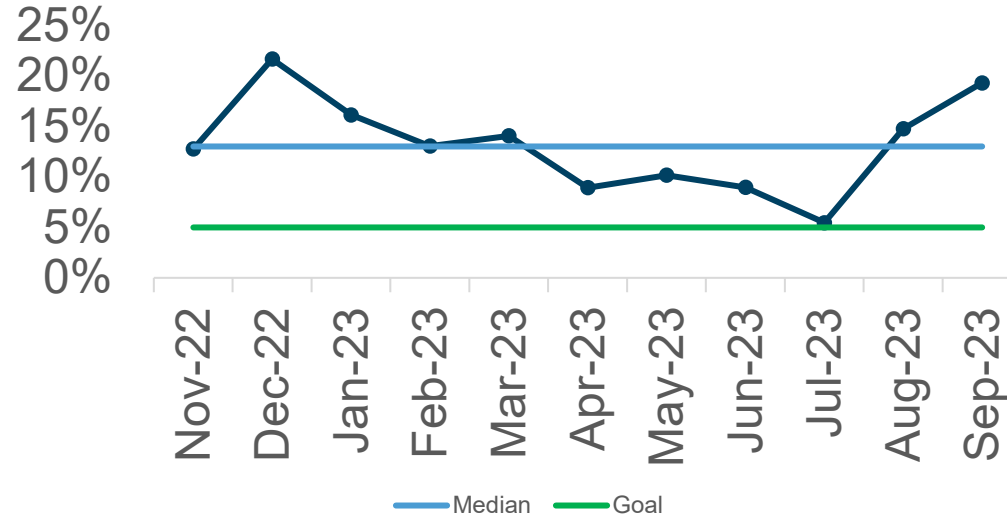
Percent of **ALL Pregnant Patients*** with Moderate or Severe Maternal Anemia on Day of Delivery

*=Patients with 1 or more visit at UNC within 6 weeks of delivery



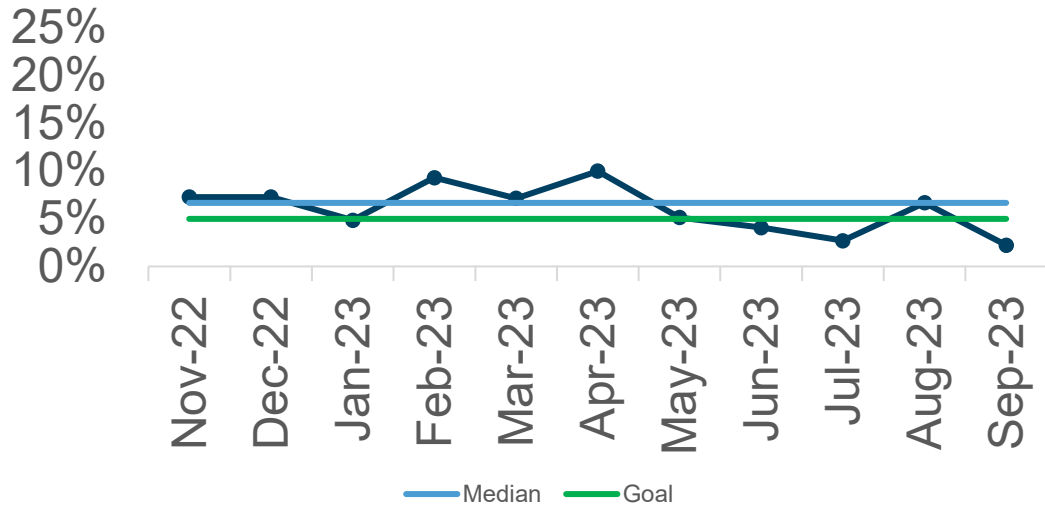
Percent of **Black Pregnant Patients*** with Moderate or Severe Maternal Anemia on Day of Delivery

*=Patients with 1 or more visit at UNC within 6 weeks of delivery



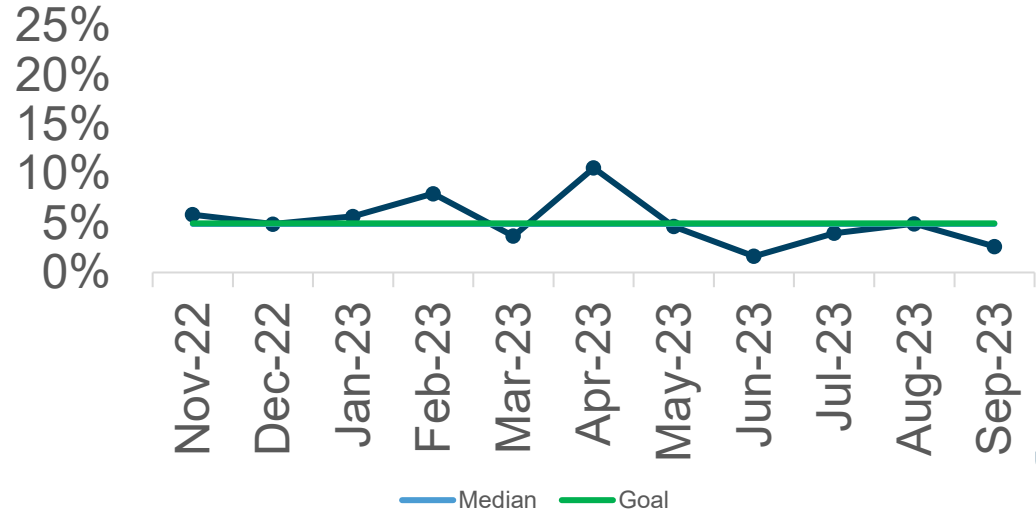
Percent of **Hispanic Pregnant Patients*** with Moderate or Severe Maternal Anemia on Day of Delivery

*=Patients with 1 or more visit at UNC within 6 weeks of delivery



Percent of **White Pregnant Patients*** with Moderate or Severe Maternal Anemia on Day of Delivery

*=Patients with 1 or more visit at UNC within 6 weeks of delivery



Celebrating success!

- Increased awareness around prevalence and treatment
- PROVIDER SURVEY:
 - 78% respondents are using developed anemia resources
 - 89% agree or strongly agree that toolkit improves their ability to provide care
- Engagement with MPH students for project roll out, PDSA cycles



Celebrating success!

- Merging nursing workflow to increase ferritin screening- almost at goal!
- Transitioning to outpatient IV iron and meeting goal for project year!
- Celebrating our stakeholders and sharing data



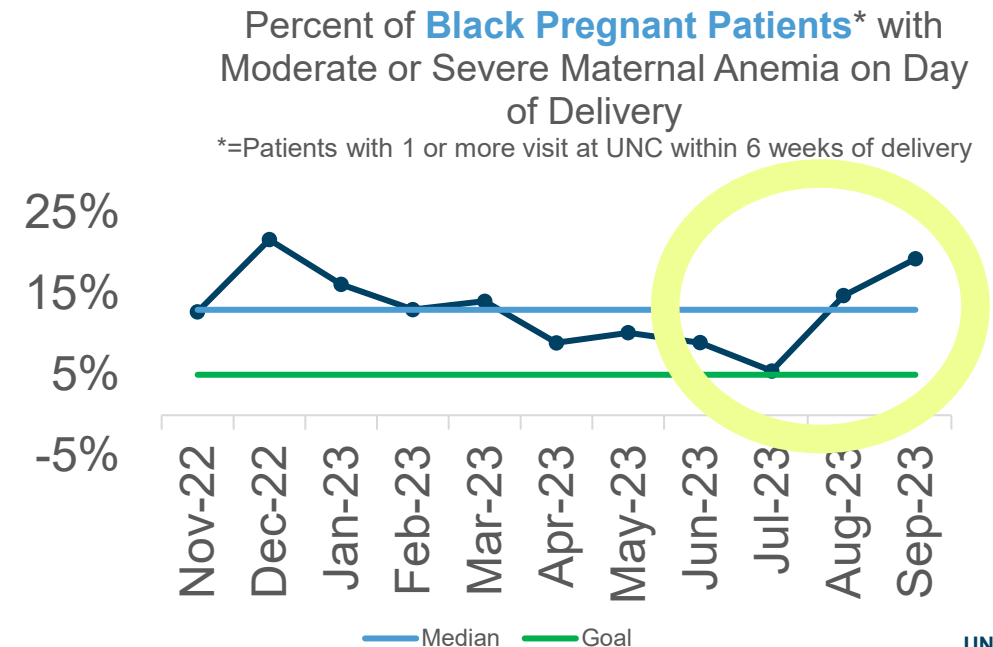
Barriers and challenges



- Multiple stakeholders with different workflows at different locations
- Provider accountability with documentation and follow up
- Medication shortages limiting therapeutic options
- Infusion chair availability and time sensitive nature for IV iron in pregnancy

Sustainability and looking forward

- Identified Chief Quality Nurse for monthly data collection
- Quarterly reports to nursing, infusion, and provider teams
- Engaged Women's Hospital Executive Leadership re: IV iron chair availability and exploring creating a space in WH
- Deep dive into data to understand contributing aspects to disparities



Acknowledgements

Kate Zahn- Co-Lead (GOG)

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Oncology Infusion Center



Thank you!

Questions?

Kate Zahn: katelin_zahn@med.unc.edu

Erin Huprich: erin.huprich@unchealth.unc.edu