



A Quality Improvement Initiative to Reduce Unnecessary Laboratory Testing in Laboring Patients with Preeclampsia

Steven Parra, MD MPH¹, Alex Greico, MD¹, Gregory Palleschi, MD¹, Linda Shore-Lesserson, MD¹, Joseph Pena, MD¹

¹Department of Anesthesiology, Northwell Health/Zucker School of Medicine at Hofstra, New Hyde Park, NY



Introduction

Neuraxial anesthesia (epidural, spinal, combined-spinal epidural) is the gold standard for labor analgesia and is used as a primary anesthetic for obstetric patients. A spinal epidural hematoma is a rare but devastating complication of neuraxial anesthesia. Coagulopathy and antiplatelet agents increase the risk of spinal epidural hematoma, so neuraxial anesthesia is avoided in these patients. There are several well-known obstetric complications that can lead to thrombocytopenia and/or coagulopathy, most notably preeclampsia and HELLP syndrome.

Current literature supports that a thoughtful approach to phlebotomy helps patients recover from anemia in the post hospitalization period¹, and that over-phlebotomy can be a significant contributor to hospital acquired anemia and overall hospital costs². Where appropriate, efforts should be made to reduce unnecessary clinical laboratory testing to both mitigate iatrogenic anemia and reduce costs.

A retrospective study in 2020 showed that patients with preeclampsia without HELLP syndrome were unlikely to have acute decreases in their platelet counts below the consensus lower limit to receive an epidural³. Based on this study we designed a quality improvement project to reduce the amount of lab draws performed on the obstetric service. The goal of this project was to reduce lab draws in laboring patients through a combination of department policy change, updated order sets, and provider education, while maintaining excellent care.

Methods

We reviewed the anesthesia and obstetric department policies on coagulation testing in preeclamptic patients and obtained baseline data for the 3-year period prior to the start of this quality improvement project. We changed the anesthesia and obstetric department policies from requiring a CBC and coagulation studies every 6 hours from admission to delivery to requiring only a CBC within 24 hours of neuraxial anesthesia placement, to be repeated once every 24 hours.

Both departments were educated on existing literature and these policy changes, and order sets were changed to reflect the new recommendations.

We compared phlebotomy rates in laboring patients admitted with preeclampsia, or thrombocytopenia without preeclampsia during the 3 years prior to the change, with those during the 8 months after the change.

Conclusion

Frequent lab studies are not necessary for parturients with preeclampsia without HELLP syndrome, and neuraxial anesthesia can safely be placed based on a daily CBC alone in otherwise healthy patients.

Results

	Pre-Intervention	Post-Intervention	p-value
	n=3642	n=614	
Average Total Lab Draws (#)	9.76	2.98	< 0.001
Daily Lab Draws (#/Day)	6	1.84	< 0.001
Average Length of Stay (Days)	1.61	1.62	0.975
Incidence of Epidural Hematoma (#)	0	0	

References

1. Warner MA, Johnson ML, Hanson AC, Fortune E, Flaby GW, Schulte PJ, Hazelton VM, Go RS, Beam WB, Charnin JE, Anderson BK, Karon B, Cheville AL, Gajic O, Kor DJ. Practical Anemia Bundle and Hemoglobin Recovery in Critical Illness: A Randomized Clinical Trial. JAMA Netw Open. 2025 Mar 3;8(3):e252353. doi: 10.1001/jamanetworkopen.2025.2353. PMID: 40152861; PMCID: PMC11953759.
2. Matzek LJ, LeMahieu AM, Madde NR, Johanns DP, Karon B, Kor DJ, Warner MA. A Contemporary Analysis of Phlebotomy and Iatrogenic Anemia Development Throughout Hospitalization in Critically Ill Adults. Anesth Analg. 2022 Sep 1;135(3):501-510. doi: 10.1213/ANE.0000000000006127. Epub 2022 Aug 17. PMID: 35977360; PMCID: PMC9395123.
3. Beilin, Yaakov, and Daniel Joshua Katz. "Analgesia Use among 984 Women with Preeclampsia: A Retrospective Observational Single-Center Study." Journal of Clinical Anesthesia, Elsevier, 14 Feb. 2020, www.sciencedirect.com/science/article/pii/S0952818019317167?via%3Dihub.