

Improving Cesarean Hemorrhage Through the Use of a Protocolized Checklist; a Quality Improvement Initiative

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Introduction

The implementation of a checklist-based management protocol has shown a promising trend in improving maternal morbidity, team communication, and patient outcomes during post-partum hemorrhage (PPH) ¹.

AIM Statements

- To increase emergency checklist utilization from 0% to 70% for Stage 3 PPH (>1500 ml) during cesarean delivery (CD) at a single academic institution by February 2023
- To increase emergency checklist utilization to 90% for Stage 3 PPH (>1500 ml) during cesarean delivery (CD) at a single academic institution by August 2023

Methods

This quality improvement initiative utilized the Model for Improvement framework. Initial interventions included making the checklist available in all labor and delivery operating rooms, a mandatory educational video for new anesthesia residents, and nursing communication through a group huddle format. Checklist utilization was measured through survey responses by staff involved in the case. Quality improvement methodology was utilized to encourage PPH checklist utilization. Our team used this survey data to produce further PDSA cycles aimed at improving communication between OR staff, resident education, and checklist accessibility issues.

Results

After five months of data collection, overall PPH checklist utilization went from 0% to 68.9%, with a 93% survey completion rate. The provider reported benefits of the PPH checklist included verifying medication doses (35%) and team organization and efficiency (31%). The most common barrier noted for not using the checklist included: no one thought it was a hemorrhage until the QBL was calculated (30%), we felt comfortable enough that a checklist was not needed (30%), and the checklist was not immediately accessible (20%).

Tables and Figures

Figure 1: Postpartum Hemorrhage at Cesarean Delivery Checklist Use by Month

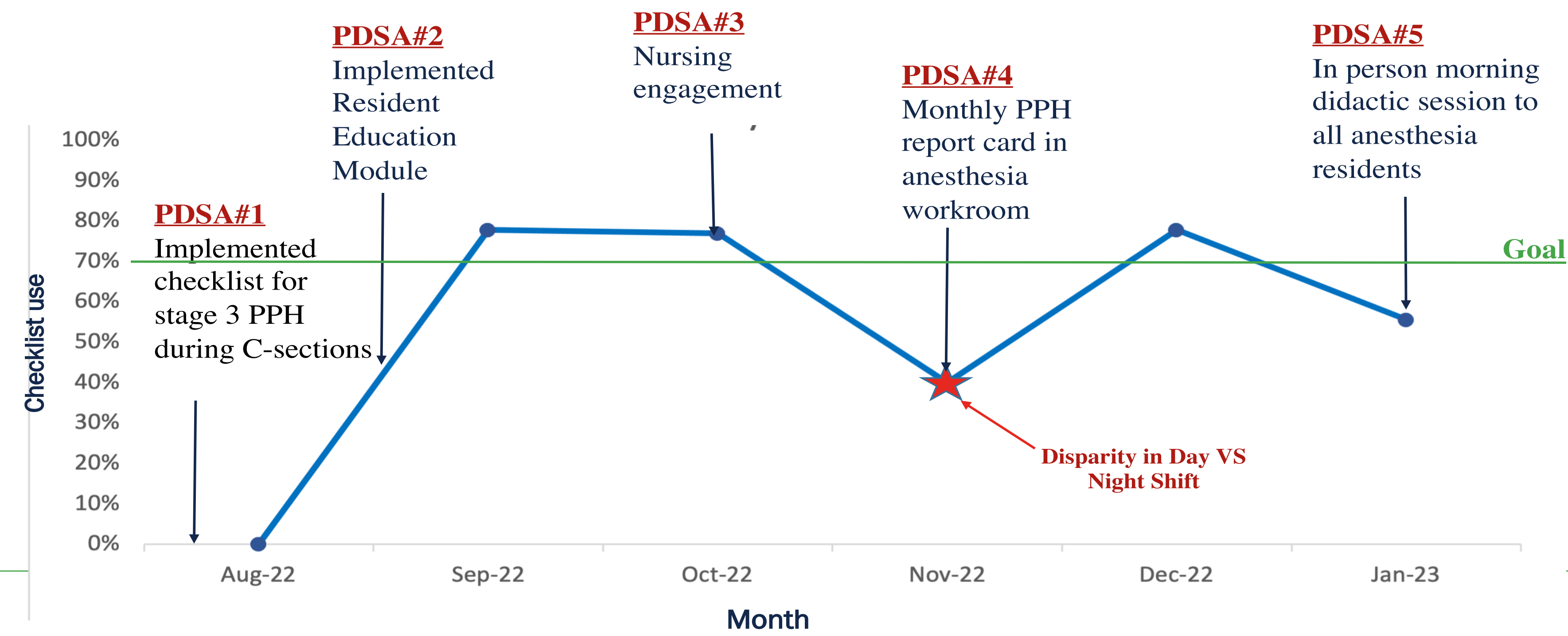
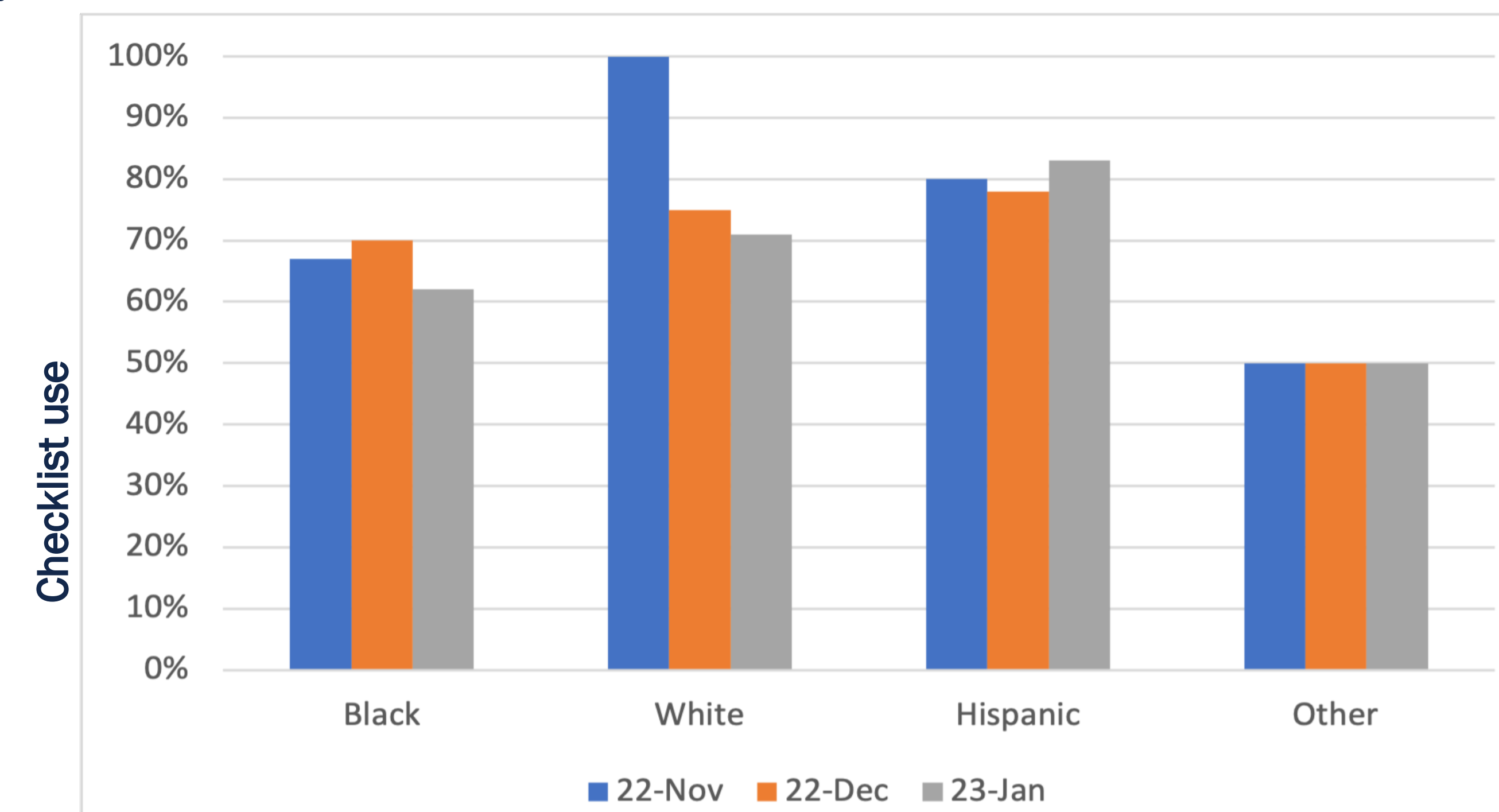


Table 1: Rates of postpartum hemorrhage at cesarean delivery and PPH checklist use by month

	Sept	Oct	Nov	Dec	Jan
Rate of stage 3 hemorrhage n(%)	9(7%)	13(11%)	5(5%)	10(8%)	9(7%)
Rate of checklist use n(%)	7(78%)	10(77%)	2(40%)	7(70%)	5(55.6%)
Survey response rate	100%	100%	80%	100%	78%
Average QBL (mL)	2373	3129	1902	2238	2000
Transfusion rate	7(78%)	9(69%)	2 (40%)	7(70%)	4(44%)

Figure 2: Postpartum hemorrhage checklist use during cesarean delivery by race and ethnicity



Results Cont.

During the monthly assessment of data, trends in racial disparities for PPH checklist use were illuminated. After five months and 45 cases of stage 3 PPH, checklist utilization was 70% for Black patients, 78% for Hispanic patients, 50% for those who identified as other, and 75% for white patients. Though these differences are not statistically significant, this trend is concerning, given the racial disparities of national maternal morbidity and mortality.

Discussion

At our institution, 45 patients experienced a stage 3 PPH during CD, and 68% required transfusion. We effectively increased PPH checklist use from 0% to 70% through QI methodologies. Future data collection will illuminate if checklist use results in a significant reduction in transfusion and improved morbidity. Black patients and patients who were identified as other had the lowest rates of PPH checklist use in the OR for CD, despite the highest rates of red blood cell transfusion and quantitative blood loss compared to White patients. These trends highlight the importance of investigating racial disparities in PPH management and the need for intervention to improve health equity. Future quality improvement directions include using these data to create specific interventions and initiatives to improve patient checklist utilization.

References

Smith RB, Erickson LP, Mercer LT, Hermann CE, Foley MR. Improving obstetric hemorrhage morbidity by a checklist-based management protocol; a quality improvement initiative. Eur J Obstet Gynecol Reprod Biol. 2019 May;236:166-172. doi: 10.1016/j.ejogrb.2019.02.026. Epub 2019 Mar 26. PMID: 30939360.