

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

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Introduction

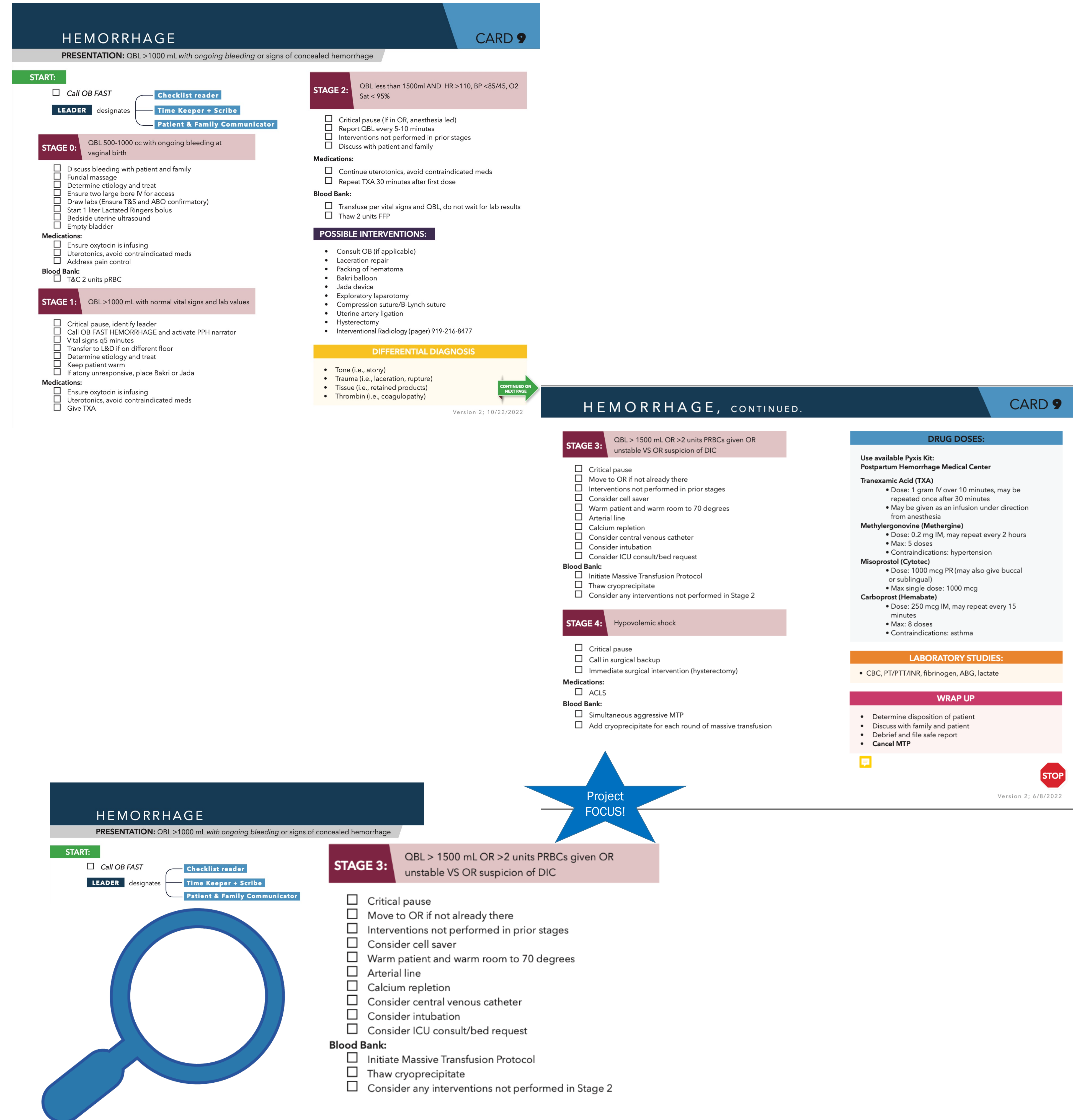
The implementation of a checklist-based management protocol has shown a promising trend in improving maternal morbidity, team communication, and patient outcomes during post-partum hemorrhage (PPH) ¹ .

Background

- Postpartum hemorrhage accounts for 25% of maternal deaths
- Results in significant short- or long-term consequences to a woman's health
- PPH events can coalesce to create high-stress scenarios for the medical team
- Poorly managed PPH leads to higher rates of burnout.

Background

- Checklists have been shown to improve team communication.
- Checklist-based management has shown trends in improving maternal morbidity.
- WHO recommends that each hospital has and utilizes an institution-specific postpartum hemorrhage checklist.



AIM Statements

- 1) 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
- 2) 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

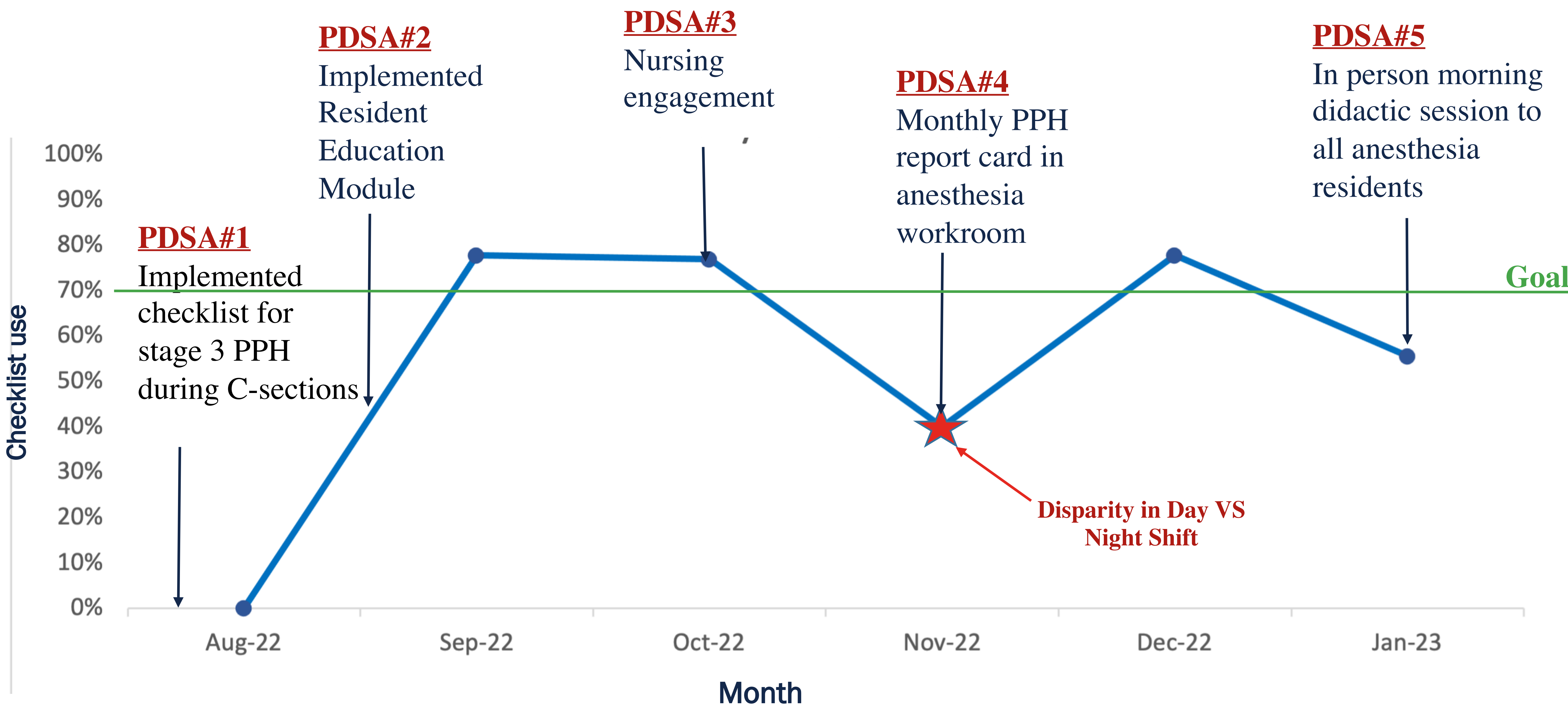
This quality improvement initiative utilized the Model for Improvement framework. Initial interventions included making the checklist available in all labor and delivery operating rooms, a mandatory educational video for new anesthesia residents, and nursing communication through a group huddle format. 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.

1. 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

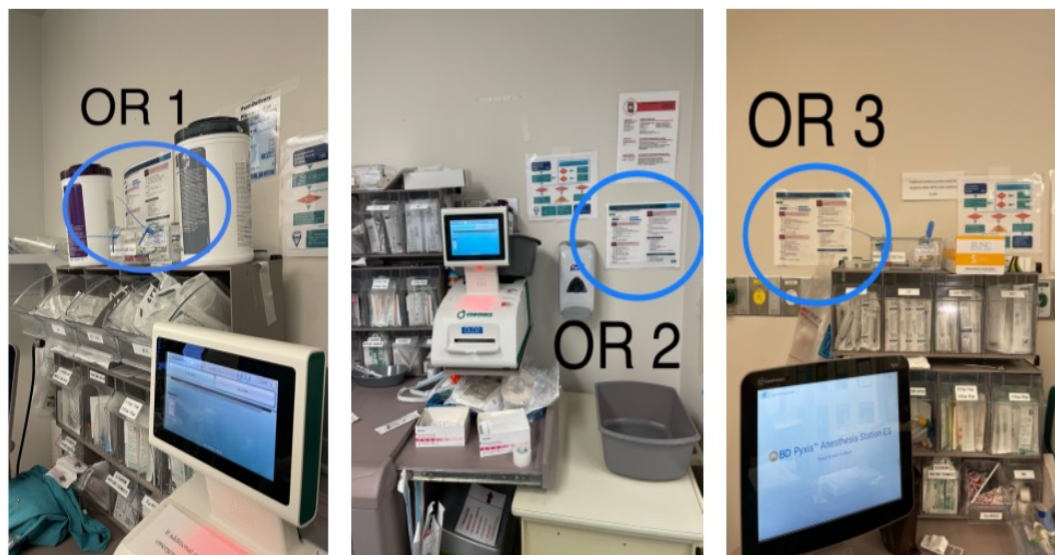
PDSAs and Results

PDSAs

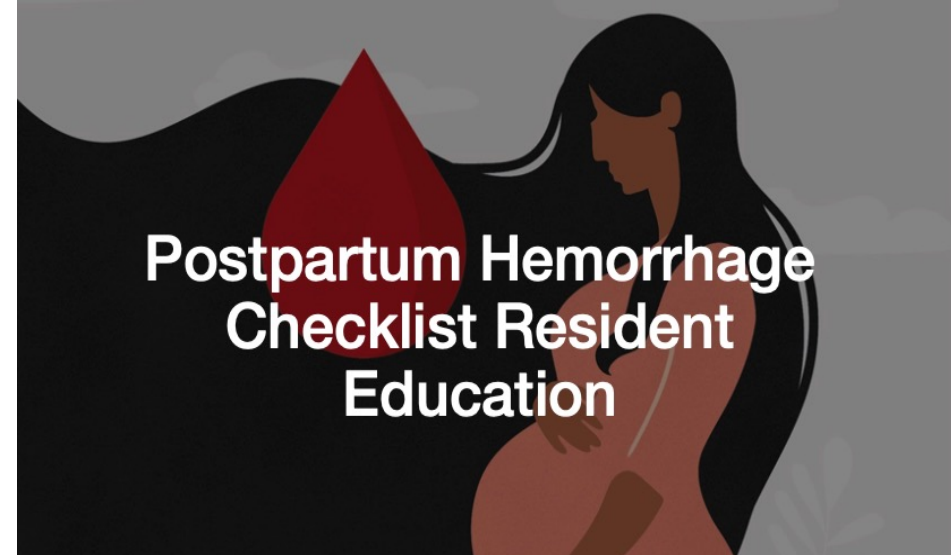
Figure 1: Postpartum Hemorrhage at Cesarean Delivery Checklist Use by Month



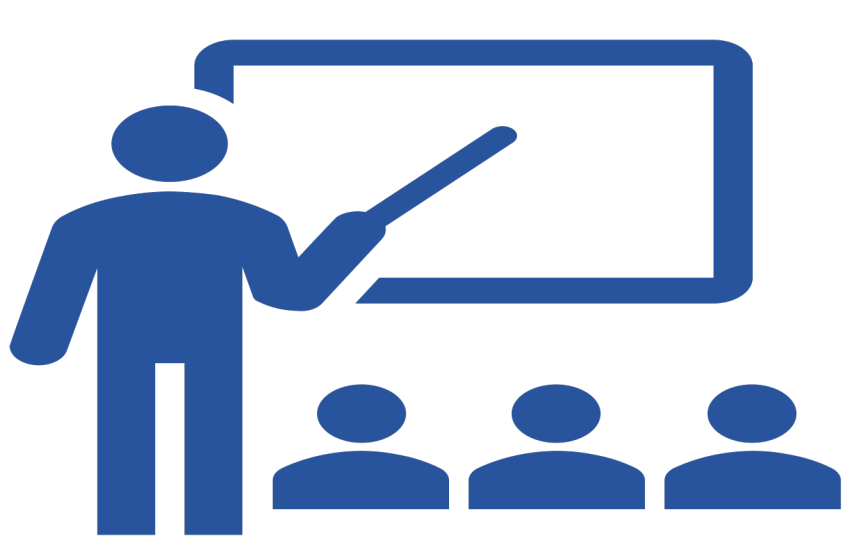
PDSA 1



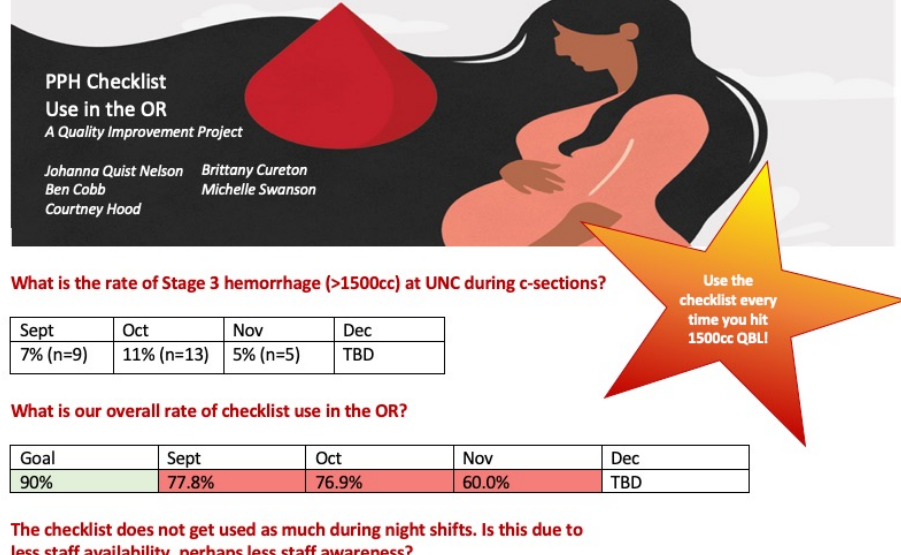
PDSA 2



PDSA 4



PDSA 5



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%).

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%)

Building Bridges and Moving Forward

Key Points

- Checklist-based management protocol has shown a promising trend in improving maternal morbidity, team communication, and patient outcomes during post-partum hemorrhage (PPH)
- At our institution, PPH checklist utilization went from **0% to 68.9%** over five months
- Reported benefits of the PPH checklist included: verification of medication doses and team organization and efficiency

Challenges and Barriers

- Provider awareness of QBL during CS
- Monthly turnover of anesthesia residents
- Provider experience with and without the checklist
- Checklist accessibility during procedures

Next Steps

- Completion of full 12-month analysis of quality improvement intervention
- Future data collection will illuminate if checklist use results in a significant reduction in blood transfusion and improved morbidity
- Upcoming project - To describe the experiences of patients who had a PPH managed with the use of an emergency checklist