



# IMPLEMENTATION OF QUANTIFIED BLOOD LOSS FOR EARLY DETECTION OF POSTPARTUM HEMORRHAGE IN L & D: A NURSE-DRIVEN INITIATIVE TO IMPROVE MATERNAL SAFETY

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## Background

A labor and delivery unit has an average of 3000 deliveries yearly. In this unit, it is a common practice to use visual estimation in blood loss (EBL) void of objectivity by the delivery provider. Visual EBL commonly results in errors of underestimation (Al Kadri, Anazi, & Tamim, 2011). Inaccurate EBL contributes to delays in recognizing and responding to postpartum hemorrhage (Hancock, Weeks, & Lavender, 2015).

The nurses played a pivotal role to improve practice by adopting the use of quantified blood loss (QBL) replacing visual estimation of blood loss (EBL) as a quality improvement project. It entailed development, implementation and training of nurses to standardize the QBL process for blood loss identification. The change aligns with recommendations from the American College of Obstetricians and Gynecologists (ACOG, 2019) and the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN, 2021), emphasizing QBL's accuracy and potential for early hemorrhage detection. The Joint Commission in 2020 also released a new requirements within the Provision of Care, Treatment, and Services (PC) chapter PC.06.01.01 designed to improve the quality and safety of care provided to women during all stages of pregnancy and postpartum by prevention, early recognition and timely treatment of maternal hemorrhage using QBL.

## Aim of the Project

The initiative aimed to enhance maternal safety by adopting QBL for accurate blood loss measurement to facilitate early hemorrhage detection to prevent postpartum hemorrhage. It fosters timely intervention through strengthened nurse-physician collaboration and adheres to regulatory compliance.

## Description of the Intervention

A plan-do-study-act (PDSA) was developed to transition from EBL to QBL. It involves multi-level stakeholder engagement, physician education, competency-based training for nurses, and pilot testing. QBL to be implemented as a nurse-driven initiative on November 1, 2022, with ongoing monthly audits to monitor compliance until October 31, 2023 and direct observation during the first three months of implementation.

**Plan:** To achieve at least 90% QBL compliance through multi-level information dissemination during staff and OB meetings. To create a competency worksheet based on the JHM's Postpartum Hemorrhage Policy Appendix C (2020) to be used for the QBL skills days in July and August.2022. To observe 50 deliveries during pilot testing and the first three months after implementation.

**DO:** QBL skills day for nurses included a pretest about QBL, work process change presentation, and documentation practice using EPIC play based on case scenarios and a post test at the end. Physicians were not required to attend skills days. A pilot study was done from September 5, 2022 to October 5, 2022.

**Study:** 53 RNs took the QBL pretest with an average of 78.25%. Scores significantly improved after education and training on the posttest at 95% reflective of better understanding of the QBL process. . Fifty-five percent of the providers followed QBL process based on direct observation of 50 deliveries. Discovered there were multiple dry item discrepancies in EPIC leading to reweighing of items and finding-in-house substitutes with comparable weights

**Act:** QBL as a nurse-driven initiative went live on November 1, 2022. To help the staff, a colored guideline sheet was created with the highlighted dry weights of commonly used items in vaginal delivery. These sheets were laminated and placed strategically in each of the patient's rooms. Due to the influx of new physicians and nurses, a QBL station was made for educational purposes.

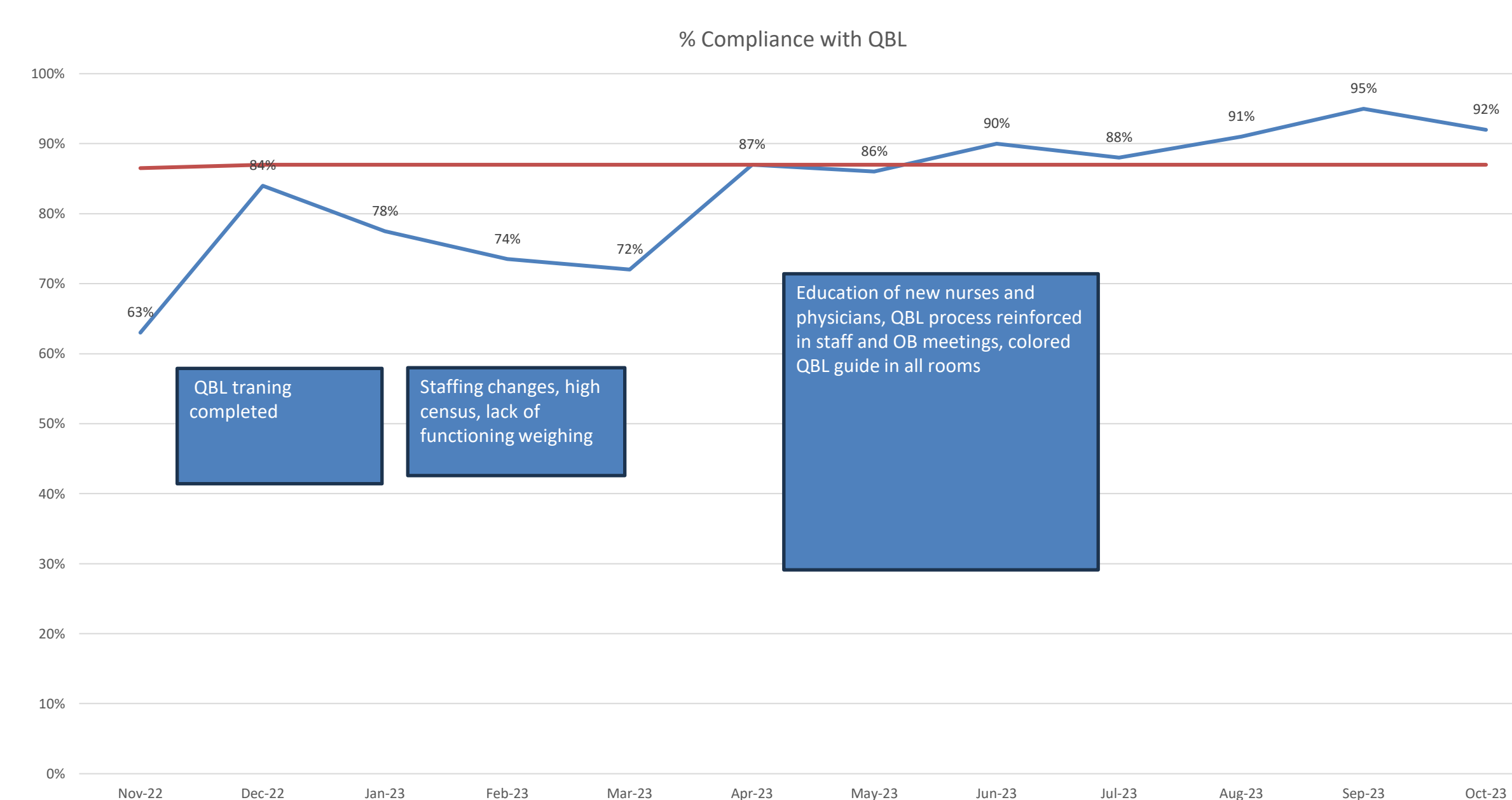
## Description of Data Collection and Analysis

To measure compliance, the team used two methods from November 1,2022 to January 31, 2023:

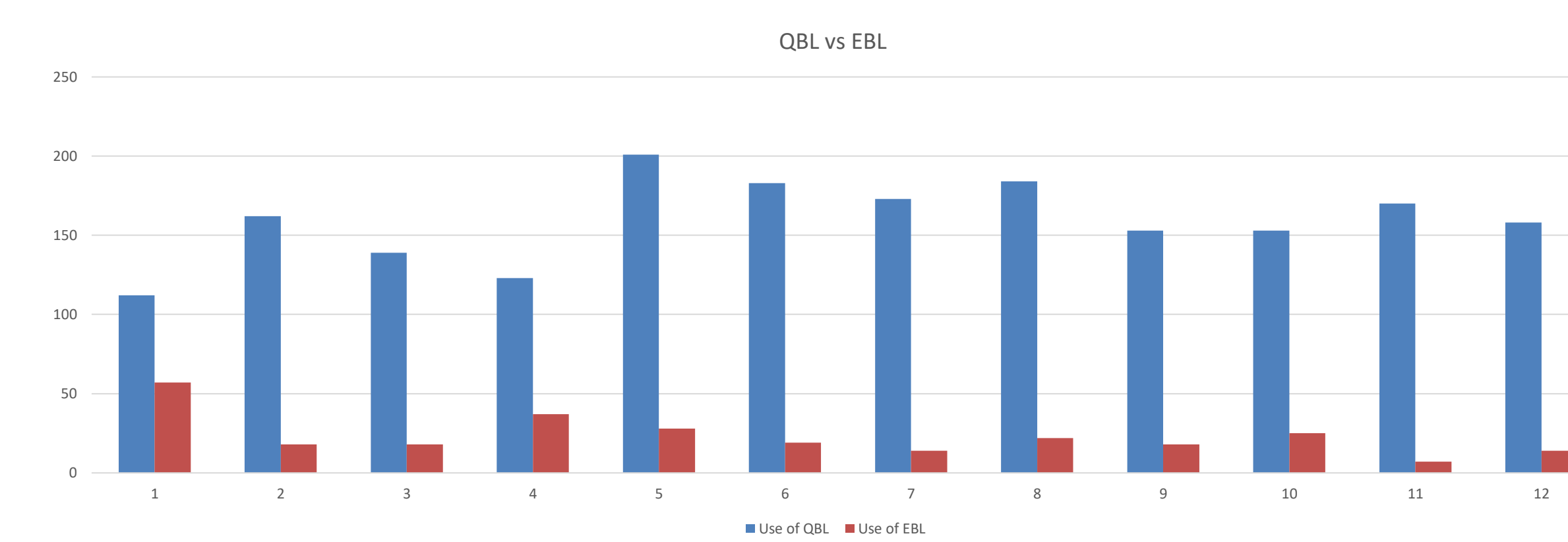
**Direct observation:** 50 direct observations of vaginal deliveries were done by a "secret shopper" or a QBL champion during the first three months. This is 25% of average monthly deliveries. Audits marked compliant followed all the steps in the established QBL process. Deliveries deemed QBL compliant were divided by 50 and multiplied by 100%.

**Chart reviews:** monthly EPIC audits of all vaginal deliveries tracked compliance based on documentation of tracking the use of one or two under-buttock-drape with the physician's name, delivery date/time, RN's name, and values of QBL, EBL, and recovery QBL Talled metrics were divided by the number of deliveries, then multiplied by 100% to calculate compliance. The review continued until October 31, 2023.

## Outcomes Measures or Results

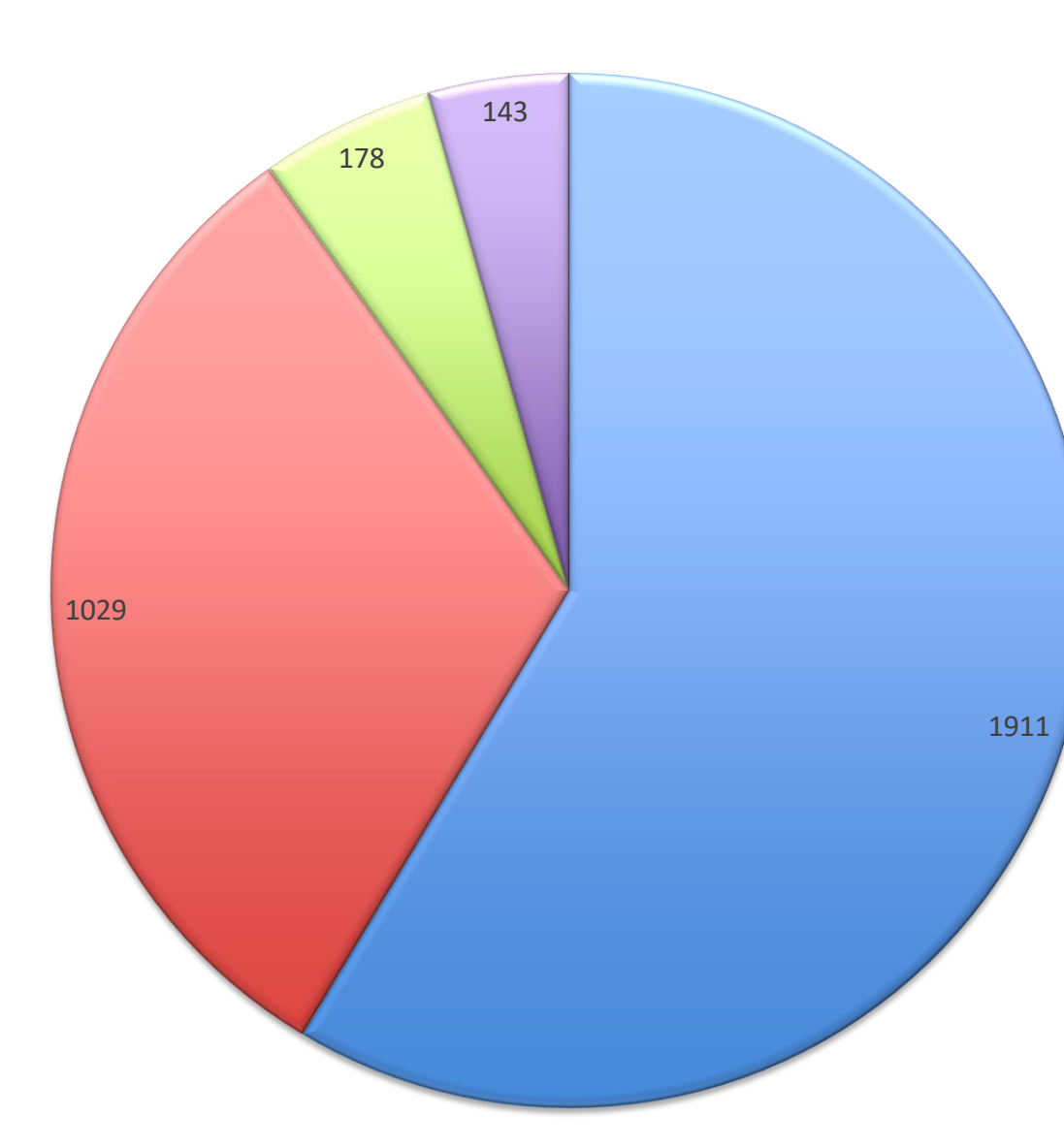


- The percentage of compliance (63.84,78,74,72,87,86,90,88,91, 95, and 92). Selected the 5<sup>th</sup> and 6<sup>th</sup> values then divided by 2 as median (Kelly, 2018)
- From April to October 2023 QBL is well under control.



The graph shows the increased QBL compliance and decreased use of EBL. The implementation of QBL resulted in significant reductions in EBL use.

QBL Performance



The key findings include, QBL compliance rate improved to 95%, use of EBL decreased to 8% from 44%, and recovery QBL increased from 10% to 50%. Identified 178 patients with PPH with 143 requiring blood transfusion.

## Implications for Practice

- QBL is an objective measurement that guides early recognition of PPH. It activates using the stages of PPH algorithm and interventions.
- It can help promote a shared decision model to provide individualized care and timely mobilization of team responses and resources.
- Completion of QBL in real-time may reduce the need for additional interventions, such as the administration of uterotonic medications which may lead to potential side effects, unnecessary procedures and blood transfusions (Hire et al, 2020)
- QBL can help improve notification time to attending provider of blood loss, enhance nurse-physician collaboration and teamwork.
- QBL can prevent underestimation of blood loss causing delay in PPH interventions.

## Lessons Learned

- Nurses played a crucial role in this transition, demonstrating their commitment to evidence-based practices and enhanced maternal safety in accordance with the Joint Commission's Maternal Safety Guidelines and the John Hopkins Medicine's Postpartum Hemorrhage Policy Appendix C (2020).
- QBL promoted nurse empowerment and patient advocacy which may potentially reduce complications.

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