

Implementing Cumulative Quantitative Blood Loss at Delivery

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Plan

Obstetric hemorrhage is a major cause of morbidity and accounts for more than 10% of maternal mortality in the US. Signs or symptoms often do not appear until blood loss is substantial; early recognition of excessive bleeding allows intervention prior to deterioration in vital signs.

Traditionally, clinicians assess blood loss by visual estimation at the time of delivery (estimated blood loss, EBL). Studies have shown these estimates underestimate blood volume by up to 35-50%. More concerning, EBL is particularly unreliable when blood loss is high, leading to failure to identify obstetric hemorrhage.

We reviewed the literature on best practices for accurately determining obstetric blood loss. ACOG, the Alliance for Innovation on Maternal Health, and the California Maternal Quality Care Collaborative all propose use of quantitative methods for improving measurement of blood loss. Quantitative blood loss assessment (QBL) uses graduated cannisters and drapes to measure volume of blood, and a scale to weigh blood soaked absorbent materials to determine blood loss more accurately.

AIM STATEMENT

To improve recognition of obstetric hemorrhage and increase accuracy of estimate of blood loss by implementing a QBL protocol, at 80% of births in SBH Labor & Delivery, over a 3 month period.

Do

Core team created including 2 physicians, medical student, midwife and nursing staff

Plan for implementation of QBL protocol developed

All absorbent materials commonly used in births were weighed, and dry weights, recorded

A QBL Calculation worksheet was developed to assist staff in QBL calculations, including how to subtract dry weights from the weight of bloody absorbent materials.

Quantification of Blood Loss	
Total Weight of soaked items	A
Fluid volume:	B
Vaginal drape Post placenta _____ pre-placental volume _____ Cesarean Canister Post placenta _____ pre-placental volume _____	C
Normal Saline: 1000mls (mls in the bag)	D
Item # Item Dry Weight (g)	E
4x4 gauze	4x4
Vag Pack	x 25
Blue Towel	x 50
1 lap sponge	x 20
Lap sponge holder	x 25
1 gown	x 10
1 ton blue cloth	x 25
1 white cloth	x 50
1 orange green comfort cloth	x 25
white cloth cloth	x 530
mesh underwear	x 15
bed sheet	x 520
Baby blanket	x 85
Gown	x 365
Add all total dry weight	D
A+B	E
Minus C+D	F
Total QBL	(mls)

Picture 1 . QBL Calculation Worksheet

Volumetric and gravimetric (weight) methods of quantitative blood loss measurement were taught to all staff on Labor and Delivery -Nurses 25 -Techs 3 -Clinicians (midwives/physicians) 9

Methods of instruction included videos, hand outs and hands-on simulations.



Picture 2 . QBL sim in progress

Study

Over 5 months, QBL was implemented at 80% of vaginal and 76% of cesarean deliveries.

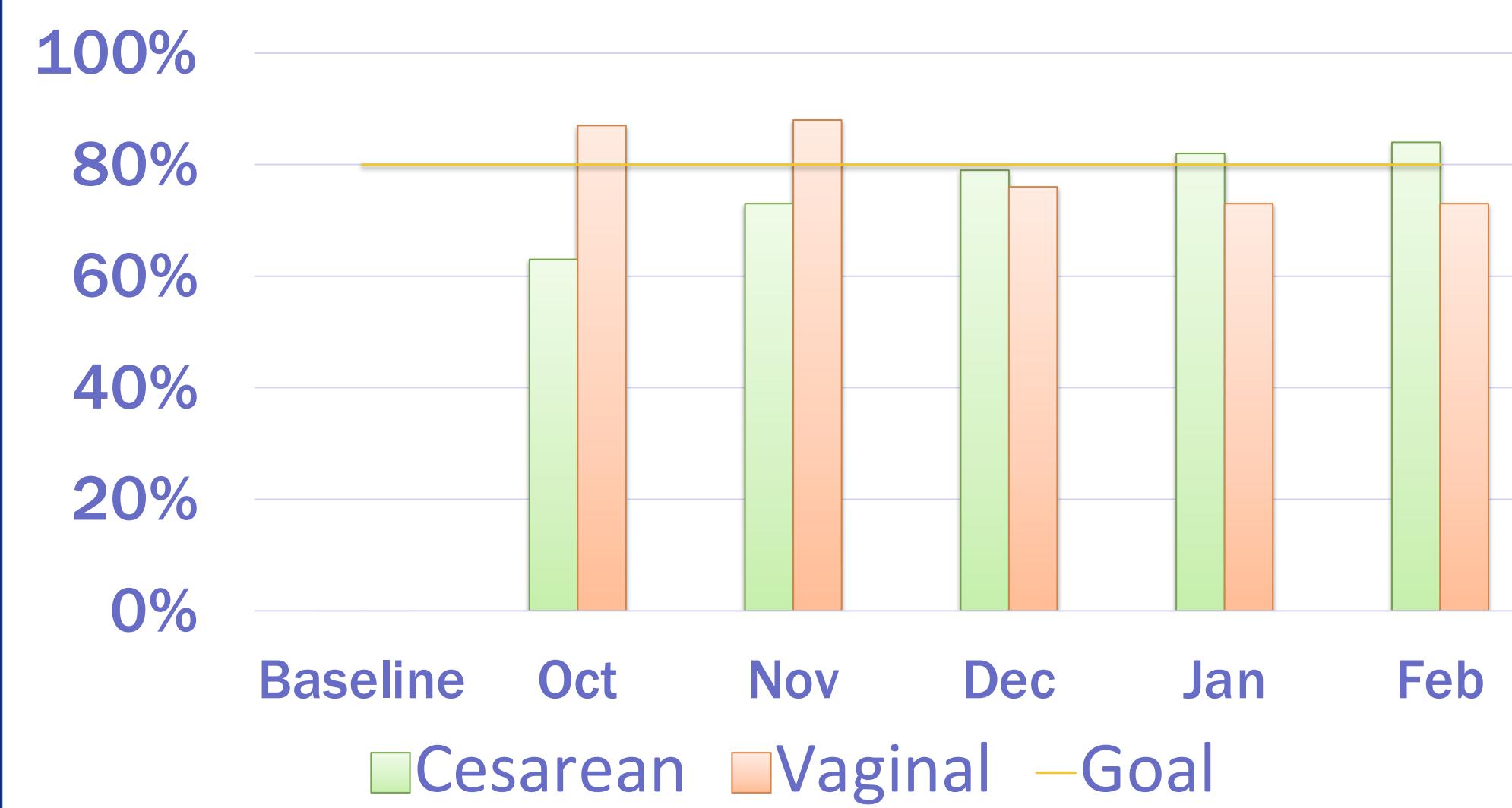


Chart. 1 QBL Implementation over project period.

Compared to visually estimated blood loss (EBL), QBL assessment found lower mean blood loss in vaginal births and higher mean blood loss in cesarean births.

In vaginal and cesarean births, use of QBL increased rate of identification of abnormal blood loss and hemorrhage, as compared to EBL.

	EBL (Baseline)	QBL
Mean Blood Loss at Vaginal Birth	356ml	272ml
Vaginal births with blood loss >500ml	6%	13%
Vaginal births with blood loss >1000ml	0%	1.4%
Mean Blood Loss at Cesarean Birth	744ml	931ml
Cesarean birth with blood loss >1000ml	11%	29%

Table 1. Performance of EBL vs QBL.

Staff Surveys

Agree or Strongly Agree

I understand how to perform QBL	95%
I feel competent performing QBL	92.5%
Performing QBL takes too long	30.7%
QBL interferes with other care	18%

Table 2. Staff survey data.

Act

Based on the findings of the first 5 months of this project, we will continue to implement QBL at all deliveries. Surveys show good acceptance of QBL, however the time expenditure is a concern. Modifications were made to calculation forms based on staff feedback. Dry weights were updated as supply stock changed. During this project staff used the newborn scale to weigh soaked materials, however it is less sensitive at very low weights

Next Steps:

- Continuing to improve efficiency of QBL calculation process
- Obtain a dedicated and more sensitive QBL scale for use in L&D
- Modify EHR delivery note to allow clearer documentation of EBL or QBL
- Track rates of transfusion to see if QBL implementation affects use of blood products
- Identifying and implementing screening for risk factors for hemorrhage during prenatal care and at hospital admission

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