Taking quantified blood loss from vision to reality: You can make it happen!

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Objectives

• Define quantified blood loss (QBL) and describe how to perform QBL for vaginal and cesarean births

• Readily identify at least 3 online resources for additional information about QBL and implementing quality improvement projects

• Analyze data on QBL implementation from a Minnesota hospital with a critical eye toward both successes and challenges

• Design an implementation strategy for your own site using recognized and proven change management techniques
Why hemorrhage?

*Note: Number of pregnancy-related deaths per 100,000 live births per year.*
Causes of pregnancy-related death in the United States: 2011

Hemorrhage

Note: The cause of death is unknown for 5.9% of all pregnancy-related deaths.
Top PREVENTABLE causes of maternal death

- Obstetrical Hemorrhage
- Hypertensive Disorders
- Venous Thromboembolism

- 18,000 women/year in the U.S. have a life-threatening OB hemorrhage
- Almost all preventable
40% relative reduction in PPH rate

- 8.5% ↓ all hemorrhages (22% to 13.5%)
- 2.7% ↓ Stage 2 hemorrhages (8% to 5.3%)
- 1.1% ↓ Stage 3 hemorrhages (4% to 2.9%)
Transfusions Reduced
Massive Transfusion Events Reduced
OB Hemorrhage in U.S.

• Increased 26% between 1994 and 2006
• Primarily driven by a 50% increase in incidence of uterine atony
• Physiologic changes and blood flow to uterus allow rapid loss of high blood volumes
  - 450 – 750 mL per minute
• Early recognition and treatment is key to prevent progression to higher volume hemorrhage and DIC
Early Recognition

• OB Hemorrhage risk assessment on admission
• Standardized definitions of hemorrhage levels
• Quantified Blood Loss not Estimated Blood Loss
Organizations United to Provide Safe Health Care for Every Woman
What is QBL?

- QBL is an objective method used to evaluate obstetric bleeding

- QBL is:
  - VOLUME (from under buttocks drape or suction canisters), plus
  - WEIGHT (from sponges, laps and towels, 1 gram = 1 mL)

The goal of QBL is not a perfect, precise measurement,

but something BETTER than visual estimation.
Why QBL?

• Visual Estimated Blood Loss (EBL) is flawed and imprecise.
  - Visual EBL **underestimates** blood loss by as much as **33–50%** (Pritchard 1965, Brant 1967, Patel 2006)
  - Visual EBL of hemorrhages (blood loss over 1000 ml) is **consistently underestimated** (Brant 1967, Duthie 1990, Dildy 2008, Stafford 2008)

• Calibrated drape has an error rate of **<15%** (Toledo, 2007)
Why QBL?

• Inaccurate measurement of blood loss has serious implications:

  - **Underestimation** delays lifesaving hemorrhage interventions

  - **Overestimation** may lead to costly, invasive, and unnecessary treatments (such as blood transfusions) that expose women to unnecessary risks.
Who is expected to use QBL?

- Everyone

It’s the way we do it here.
Quantification of Maternal Blood Loss

For **EVERY** birth, begin QBL immediately after infant’s birth and continue ongoing measurement until bleeding is stable. Usually about 2 – 4 hours postpartum.

**Continue QBL for PPH Stages 2 & 3.**

Establish blood loss thresholds to facilitate early recognition and guide life saving interventions.
Methods of QBL: Direct Measurement

Directly measure blood loss by using:

- Graduated suction canisters (Figure 1)
- Under-buttocks and OR drapes with calibrated pouches (Figure 2)


Used with permission: Beverly VanderWal, RNC-OB, MN, Long Beach, Memorial Medical Center.
Methods of QBL: Weight

- Use scales to weight all blood-saturated items (e.g., laps, chux, cloth pads, peripads) and clots.
- Standardize products used for deliveries and determine their dry weights.
- Create a laminated list of dry weights of items used during birth that may become blood soaked. Attach to every scale.

TIP:
A practical way of measuring blood in laps is to weigh them in groups of 5.

Converting Grams to Milliliters

Calculate the gram weight and convert to milliliters.

Grams (a unit of mass) converted to
Milliliters (a unit of volume):

One gram = One milliliter
How to Calculate Total QBL

**Weight**

\[
\text{Weight} = \left( \text{Weight of Wet items (grams)} - \text{Weight of Dry items (grams)} \right) + \text{Weight of Blood clots (grams)} = \text{Blood loss amount via weighing (ml)}
\]

**Direct Measurement**

\[
\text{Total Fluid volume (ml) (canister or under-buttocks drape)} - \text{Total non-blood Fluid volume (ml) (e.g., urine, feces, irrigants)} = \text{Blood loss amount via measurement (ml)} + \text{Total QBL (ml)}
\]

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Vaginal Births

- Have a posted list of dry weights for delivery items that may become blood-soaked

- Begin QBL immediately after the infant’s birth (prior to delivery of the placenta) and assess and record the amount of fluid collected in the calibrated under-buttocks drape.
  - Keep in mind that most of the fluid collected prior to birth of the placenta is amniotic fluid, urine, and feces. If irrigation is used, deduct the amount of irrigation from the total that was collected.

- Record the total volume of fluid collected in the under-buttocks drape

- Subtract the pre-placenta fluid volume from the post-placenta fluid volume to more accurately determine the actual blood lost.
  - Keep in mind that most of the fluid collected after the birth of the placenta is blood.

- Add the fluid volume collected in the drapes to the blood volume measured by weighing soaked items to determine the cumulative volume of blood loss or QBL.
Cesarean Births

• Begin the process of QBL when the amniotic membranes are ruptured or after the infant is born.

• Suction and measure all amniotic fluid before delivery of the placenta.

• After delivery of the placenta, measure the amount of blood lost in the suction canister and drapes. At this point, most of the blood will be accounted for. Notify the team and document the amount of blood lost in milliliters.

• Prior to adding irrigation fluid, ensure that the scrub team communicates when irrigation is beginning.

• One of two methods can be used to suction the irrigation fluid: Continue to suction into the same canister and measure the amount of irrigation fluid OR provide another suction tube to collect the irrigation separately into another canister.

• Weigh all blood-soaked materials and clots. Calculate the weight and convert to milliliters.

• At the conclusion, add the volume of quantified blood in the suction canister to determine the total QBL.

• Lap pads dampened with normal saline contain minimal fluid. When they become saturated with blood, weigh them as you would a dry lap
How do I perform QBL in an actual hemorrhage?

• Call for help
• 1 person’s job is QBL
• Keep it going in a continuous fashion
• Document QBL where the team can see it – white board
• Call out QBL so team knows how much blood has been lost
• Teach an O.R. staff member to do the same if needed
More Resources

- Vaginal Delivery how to you tube video
  https://www.youtube.com/watch?v=4ma-It_3GoA

- Cesarean Delivery how to you tube video
  https://www.youtube.com/watch?v=og9FTq9ZuQM

- Vaginal Delivery with bed intact how to you tube video
  https://www.youtube.com/watch?v=4NgsZ5lVbrQ

- AHWONN QBL
  https://www.youtube.com/watch?v=F_ac-aCbEn0
Our experience
North Memorial Health Care

- Minneapolis/St. Paul metro area
- 2 hospitals
- 26 clinics
- 450+ providers
- 55,000 customers per month
- Only independent medical system in metro area
- Traditional medical staff models – combo of employed and private practice physicians
North Memorial Health Care - Obstetrics

- North Memorial Health Hospital
- Urban – North Minneapolis
- Demographics:
  - Primarily African American
  - Primarily Medicaid
- Volume < 1,000 births/year
- 5 employed OB/GYN Hospitalists
  - Family medicine residency (U of MN)

- Maple Grove Hospital
- Suburban
- Demographics
  - Primarily caucasian
  - Primarily privately insured
- Volume > 4,500 births/year
- All private practice
  - 6 groups
  - 50 providers
QBL Documentation Rate – NMHH/MGH

Live October 2015
Did you want to talk to the **Doctor** in charge or the **Nurse** who knows what’s going on?
EBL vs. QBL

EBL

QBL
Average Blood Loss Vaginal Deliveries

QLB - QBL-VAG

EBL - EBL-VAG
Average Blood Loss Cesarean Deliveries

QBL-Csection

EBL-Csection
Implementation Challenges
Lessons Learned

• Engage front-line physicians and representatives from all parts of multi-disciplinary team in consensus building around best clinical practice

• Recognize nursing staff are key to driving process change
  - PPH risk assessment success
  - QBL implementation success
  - Oxytocin for active management of 3rd stage
  - Nursing education
Lessons Learned

• Flexibility to adjust expectations around timeline for full adoption of new processes

• Carefully pace and coordinate work
  - Allow time for new processes to become hardwired
  - Avoid overwhelming management and front-line staff
  - Align system clinical quality improvement efforts with local hospital and unit quality and process improvement work

• Analyze and share outcomes to show that process measures correlate with actual clinical outcomes
Diffusion of Innovation Theory

• Tries to explain how and why new ideas take root and also addresses RATE of change

• Everett Rogers
  - Professor of Communications
  - Book *Diffusion of Innovations*

• Categories of adopters
  - The different types of adopters at your hospitals and your organizational culture will determine your rate of innovation
Physicians are not innovators

- One of the first things we’re taught in medical school….  
  - First, do no harm
- We like data….GREAT data, not good data and not OK data, a LOT of data would be even better
  - The data on QBL isn’t great
  - Is there cost and effectiveness data?
- Prove to me that what I’m doing right now isn’t good enough
- CNM’s – are you innovators??
- RN’s – are you innovators??
Types of Adopters

• Innovators
• Early Adopters
• Early Majority
• Late Majority
• Laggards

• …Active resistors?
41%

% of people adopting the change

<table>
<thead>
<tr>
<th>Time</th>
<th>Innovators 2.5%</th>
<th>Early Adopters 13.5%</th>
<th>Early Majority 34%</th>
<th>Late Majority 34%</th>
<th>Laggards 16%</th>
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NORTH MEMORIAL HEALTH
Innovators

- Want to be the first
- Interested in new ideas
- Willing to take risks
- Might be first to develop new ideas...maybe they brought QBL to YOU as a nursing manager and asked why you aren’t doing it!

- The good news.....you don’t need to do anything to appeal to innovators!

- The bad news....you DO need to support and encourage them so they motivate and encourage their peers. You DO need to get them on your team.
Early Adopter
Early Adopters

- Opinion leaders
- Enjoy leadership roles
- Embrace change opportunities
- They don’t need to be convinced to change
- They DO need
  - how-to instructions
  - Information sheets on implementation
Innovators and Early Adopters – what you need to do

• Have leadership recognize these physicians in public meetings (MEC, Department meetings)
• Show the data on these physicians at meetings
  - Call them out
  - Ask them if they are willing to speak about their experiences
• Ask these physicians to join your team!
• Ask these physicians to be vocal on the unit that:
  - It wasn’t hard to switch to QBL
  - The nursing staff is well trained….most of the work is on them
Early Majority
• Rarely leaders
• Do adopt new ideas before average person
• But won’t try something until someone else has tried it first
• Need to see evidence that change works before adopting
• Use:
  - Data!
  - Success stories
Provider Feedback
Review and Report

QBL Provider Feedback Report

Clinical Integration

QBL Documentation Rate

![chart showing QBL Documentation Rate over time]

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Late Majority
Late Majority

- Skeptical of change
- Will only adopt after it has been tried by the majority
- Use:
  - Data!
  - How many other physicians are doing this and have adopted it successfully?
Early Majority and Late Majority – what you need to do

• Get data out in front of midwives every chance you get
  - Department meetings
  - Group meetings
  - One on one

• USE DATA

• Show QBL implementation rates
  • Peer pressure
  • “Everyone is doing this” ….Am I doing it??

• Show hemorrhage rate trends and link it back to QBL – this is about early recognition
  - Physicians need to see an actual clinical impact – outcome, not just process

• Have an innovator or early adopter share a success story
Laggard – ?? Active Resistor
Laggard/Active Resistor

- Bound by tradition
- Very conservative
- Skeptical of change
- Hard to bring on board

Use:
- Data
- Fear appeals
- Peer pressure
Late Adopters/Active Resistors – what you need to do

• Your hospital culture
  - This is what we do here
  - We don’t do EBL anymore
  - Nurses already calculated the weight, all you need to do is look at volume in under buttocks drape
  - Push past them

• Use your MEC, hospital leadership, department leadership
  - Fear factor – you will lose your privileges if you don’t participate

• Use your early adopters- one-on-one conversations

• Use DATA – show them your rates so they can see they are lagging
Cool Tools
QBL Calculator
### Labor/Delivery Blood Loss

**New Reading**

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### L/D Summary I&O Rows

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<td><strong>QBL 72hr Running Total (QBL Calculator)</strong></td>
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For more information

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