Have You QBL’d Today?
Our Challenge as Providers

“...everyone in healthcare really has two jobs when they come to work every day: to do their work and to improve it.”

Paul Batalden, MD

“I did then what I knew how to do. Now that I know better, I do better.”

Maya Angelou
Maternal Deaths In CA: Preventability?

Main E, et al, Obstet Gynecol 2015;125:938-47
Pregnancy Related Deaths Due to Healthcare Provider Factors: 4 Years In CA

Denial and Delay

G3P1, post dates induction: cervidil, oxytocin
Vacuum-assisted delivery. Immediate hemorrhage.

- Treatment within 20 minutes of delivery: improvement
  - Massage, Methergine, Hemabate, Curettage
- OB leaves hospital.
- OB returns (35 minutes later) after continued bleeding and hypotension.
  - Above steps repeated twice, plus packing.
- Delay in getting and administering blood.
- Patient codes.
- First unit of PRBC given \(2\frac{1}{2}\) hours after hemorrhage starts.
- Multiple organ failure, anoxic brain injury, death 14 days PP.
What If?: QBL Utilized

- G1P0, arrest of dilation 9 cm, uncomplicated LTCS, BMI 35
- Routine QBL reported to CS team by OR nurse of 750 cc as subcutaneous stitches done. Dressing placed. MD leaves OR.
  - Fundus expressed prior to PACU transfer, staff notes more blood than typical. Additional QBL of 300 by weight.
  - Staff notifies MD. MD opts to not leave hospital yet. 20 minutes later, PACU RN calls MD for large amount of vaginal bleeding.
  - Lower uterine segment atony improved with uterotonics and Bakri. PACU team does QBL on bloody “lake” under the patient (chux): additional 1250 cc
- HR 90 bpm, BP 110/60
- Since total QBL now 2300, 4 units PRBC ordered, with 2 delivered to PACU
- Additional vaginal bleeding occurs, decision to go back to OR.
- HR 120 bpm, BP 100/40. First two units infusing. FFP thaw requested
- In OR, QBL from vagina additional 1100 cc and MTP activated prior to exlap. 3rd/4th previously crossed PRBC units given, 6 uncrossed units arrive in OR 15 minutes later
- Exlap with unresponsive lower segment uterine atony, supra cervical hysterectomy done (undesired fertility).
- Total QBL 4600 cc. Total 8 units PRBC given perioperative plus additional 2 units for equilibrated Hct of 19%. Discharge home POD #4
Quantification of Blood Loss: QBL

- CMQCC Standard Recommendation
  - All births
  - Reaffirmed in updated guidelines 2015
- AWHONN Standard Recommendation
  - All births
- National Maternal Health Initiative 2013
  - One of 7 safety objectives
Design Goals

• Make it easy to do the right thing!

• Hardwire changes into routine practice via education, training, order sets, protocols, the environment

• Be sure staff has right tools:
  • Build the “burning platform”: why does this matter?
  • Education. What are the expectations? What is our culture?
  • Scales in every room where QBL to be done
  • Calculators with dry weights
  • Cards with dry weights of infrequently used items attached to scale
For Every Birth

- Begin QBL immediately after delivery of infant and continue ongoing assessment until bleeding stable
- Usually 2 hours postpartum
- Acute phase
  - QBL at time of vaginal delivery
  - QBL intraop for CS
- PP phase
  - From delivery phase to time of transfer to pp room (SVD)
  - Recovery room phase to time of transfer to pp room (CS)
  - Part of SBAR to postpartum nursing staff
QBL: Why?

• All studies: We are poor at EBL with large volumes
  • Consistently UNDERESTIMATE

• Every case review of maternal death in CA from hemorrhage, blood loss significantly underestimated
  • Studies show we can get better with training with EBL but that gains are partially lost over time and we remain poor at large volumes even when “freshly” trained.
  • Not related to experience of provider

• DENIAL leads to DELAY

• If its not standard for all cases, we don’t know how to do it when we need it
  • And we don’t recognize WHEN we need it until late in the game…
• Goal is NOT a “perfect, precise” number
• Of course inaccuracies will persist
  • Amniotic fluid contamination
  • Urine
  • Clots in the drapes
  • Etc
• QBL is more accurate than EBL
  • When patient has a hemorrhage, doing QBL is second nature for the team/staff/unit
  • “This is how we do it here....”
  • Allows for earlier recognition of excessive blood loss and improved communication among team members.
  • Avoid delay in management of excessive blood loss
In 2009-2010, as a result of participation with CMQCC OB Hemorrhage Collaborative:

• Encouraged RNs and OBGYN physicians to attend lectures on OB Hemorrhage

• Hosted QBL skill labs for nurse and physician staff
  • Focused on improving visual estimation only

• Educated nursing staff on methods for QBL

• Made changes in EMR “Delivery Summary” to reflect QBL measurements

• By the end of 2010, documentation of QBL occurred in 50-60% of all deliveries. But, audits suggested that staff were confused regarding the definitions of the different methods of QBL
Lessons Learned

• Study done on our unit to determine if we could improve our assessment of blood loss
  • Pre test
  • Post test
  • Second post test done 6 months later

• We got better at estimation with skills lab and retained that improvement over 6 months,

• BUT we were still pretty poor at estimation of large volumes (when it counted).

• Decided that **directly measured** QBL was the way to go
  • Would use direct measure of volumes and weight of bloody items ONLY, not visual estimates
No More EBL

• Early 2011: aggressive education campaign regarding definitions/methods for QBL
  • Electronic message boards on unit
  • Talking points in daily huddles
  • Discussion at staff meetings
  • Unit newsletter
• Removed “% saturation” as an option in EMR.
• Unit standard defined as combination of “direct measure” and “weight of bloody items”
• “What’s in the Pouch?” campaign to engage MD participation
• Tracking and posting of QBL documentation on unit
• By July 2011, QBL documentation improved
Prior to the CMQCC hemorrhage collaborative, no commercially available drapes available in US.

- Worked with vendor to modify existing drape and add printed markings/calibrations
- Fenestration to collect other items dropped into drape
Vaginal Birth: Two Step Process

• 95% of the time: 2 step process
  • Part I: QBL immediately after delivery. MD finishes at perineum
    • “What’s in the pouch?”
    • If SROM just prior to delivery or large volume amniotic fluid at delivery, note pouch volume prior to placenta delivery and subtract from final volume
  • Part II: QBL at completion of recovery. Typically 2 hours
    • Weight of bloody standardized “pack”
    • White chux, peach peripad, cold pack

• Rarely Part III
  • Multiple saturated “baby lap” sponges from vaginal/perineal repair
  • Multiple chux or floor spills
  • Dry weights of all additional potential items posted by scales in each delivery room
QBL: Vaginal Birth
QBL: Vaginal Birth
In every delivery room: Scale (bolted to wall)

1. Weighing the recovery “bundle” of saturated items in a red bag (see next slide)
2. Weighing saturated baby laps if lots used during the perineal repair
QBL: Vaginal Delivery

- Postpartum recovery standardized bundle
  - White chux
  - Peach peripad
  - Cold pack
  - Single dry weight for 3 items together
QBL at Cesarean Section: How We Did It

• Waited until we did vaginal QBL for a period of time
• Watched our smaller sister hospital (3,000 deliveries/yr) institute QBL at CS
  • They developed an Excel calculator
  • We took it to our Epic “Build” team, and they embedded it in our EMR
• Assembled stakeholders
  • Women’s OR Leadership
    • Nurse Educator and Nurse Manager
  • Women’s OR Anesthesiology Department Chairperson
  • Labor and Delivery Leadership
    • Nurse Educator and Nurse Manager
  • OB Physician Champion
Context: Complex System, Lots of People

- Our center
- Private, urban, non profit hospital
- Flagship of multihospital system
- Affiliated with a university training program: Residency and Fellowship training programs in ObGyn and MFM
- >6000 deliveries/yr, approximately 1:3 deliveries are CS
- 24/7 in house MFM, neonatology, and OB anesthesiology
- 100+ private Ob Gyns
- Women’s OR Department separate from Women’s LandD Department
- Cesareans staffed by mix of women’ OR and L and D staff, occasional floats from main OR
QBL at Cesarean Section

• Small tests of change
• Developed a process:
  • How are we going to do this thing?
  • Tweaked the process several times as we went along
  • Demonstration during selected scheduled cesareans over 2 months
    • Some private cases of physician champion, some resident cases
    • One to one mentoring of LandD and OR staff identified as champions
QBL at Cesarean: Important Lessons Learned

1. Only needed two steps >95% of the time
2. Don’t expect every physician to take the lead or even buy in. You’ll be disappointed.
3. Make it easy! CRITICAL!
   - Scale in every CS room (baby scale).
   - Calculator with built in dry weights (in the EMR or an excel program)
   - Only need dry weight cards for the <5% of cases with extra needs.
4. Timing matters: report so entire team knows the number
   - Done before staff time is needed for final patient care: ie wound dressing/clean patient/move to RR
   - Record QBL/suctioned blood before irrigation used.
   - Record QBL/bloody sponges while incision being closed
5. Takes <2 minutes in 95% of cases
QBL at CS: Two Step Process

Part I. Suctioned Blood
- Deliver infant. Suction amniotic fluid.
- Scrub tech signals circulator to change suction tubing to second canister before placenta delivery.
- Record volume of second canister BEFORE irrigation after drapes suctioned of significant blood if present
- **Use single canister (with no suction tube change)** if AROM/SROM prior to cesarean

Part II. Bloody Sponges
- Hang in sponge bags during case (tossed off field by scrub tech, hung by circulator)
- Weigh entire bundle of sponges in their hang bags as abdomen being closed
- Subtract dry weight of sponges/bags from total weight (use standardized EMR calculator/excell spreadsheet)

- QBL reported to team before abdomen dressing applied
QBL at CS

- Rarely Part III: Other sources
- Dry weights of other items attached to laminated cards on baby scale in OR
  - Sheet or blanket for mop up of large floor spill
  - Bloody under patient chux
  - Kidney basin if large volume blood after fundal expression
Lessons Learned: Transitioning

- **Culture change is hard!**
  - Overcoming strong but wrong routines

- **Switch from EBL to QBL was an adjustment for many staff**
  - Self imposed pressure to “get it right”
  - We all accepted EBL was an estimate
  - Previously handled by anesthesiology
  - “Now its my responsibility”
  - QBL means there’s a “correct” number

- **Teach to idea that QBL is not a “perfect” number, BUT more accurate than EBL**
Lessons Learned: Reality Testing

• When the QBL was more than our EBL would have been:
  • Why?
  • We underestimated the blood in the sponges

• Reaffirmed importance of the visual cue of the hanging sponge bags to the entire team
  • We were not following our own OR policy of hanging sponges during the case
    • Often laid out in rows on the scrub RNs back table. No one else could see them
    • Inconsistent number sponges/bag when bags used
      • Policy is 5 per bag (sometimes 10 placed in a bag)
Lessons Learned: Irrigation

• Better to exclude than subtract irrigation
• Irrigation poured into incision is not completely suctioned out into canister
  • If canister contains 200 cc
  • Irrigate with 1000 cc used (to be subtracted),
  • Only 700 cc of irrigation suctioned into canister
  • Results in a negative number (200 + 700 = 900, minus reported irrigation 1000 cc = -100 cc
• “Close out” canister for QBL BEFORE irrigating, which is usually done just before abdomen closure, and after bleeding controlled
• Encouraged physicians to consider omitting irrigation entirely
Sleeves with sponges unhooked, rolled up en masse, weighed together, see next slide

Canister #1, mostly amniotic fluid
Canister #2, mostly blood
Total weight in gms recorded in calculator: 0.786
Example of QBL Calculator:
Dry weights of lap sponges, lap sleeves embedded

Above example: 200 cc from canister, total weight of 1 sleeve with 5 bloody laps was 376 gms, calculator automatically subtracted dry weight of 5 sponges/one sponge bag, added result to canister volume: Total QBL 451 cc
QBL: Next Steps after Demo Cases

• We announced and posted dates for implementation: Transparency

• Started with scheduled cases
  • Staff feedback solicited
  • What worked? What didn’t work? How is it going?
  • Physician OB and anesthesia champions spoke personally with individual MDs who were less than enthusiastic or difficult with RN colleagues
    • Reminded: Yes QBL also has inaccuracies, but still better than EBL. Appeals to better nature, goal is improved patient care
  • Identification of Champion RNs from Labor and Delivery
    • Expectation going in that L and D nurses who were circulating and had been doing QBL at vaginal birth for months would act as champions, encouraging the OR staff

• Transitioned to all cases two months later
Posters:
Hung for 4 months in advance of implementation, in OR, MD Lounge, Bathrooms, RN Lounge, Computer Workstations

**Routine Two Step Quantification of Blood Loss at CS**

1. **Suctioned blood**
   a. Between delivery of infant and placenta;
      i. OB suctions drape of amniotic fluid
      ii. Scrub staff directs Circulator to change suction tubing to second canister
      iii. Omit canister switch if minimal amniotic fluid (patient is post AROM/SROM, in labor)
   b. Circulator records volume in second canister in spreadsheet calculator/EPIC calculator
      i. Record before irrigation used (BEST!) OR
      ii. If irrigation used and suctioned, Scrub staff communicates amount to Circulator to be subtracted from canister

2. **Lap sponges**
   a. During case, bloody lap sponges passed off scrub table by Scrub staff
   b. Circulator places in hanging lap sleeve bags (5 sponges/sleeve)
   c. Circulator weighs bloody sponges and lap sleeve bags all together near end of case (sponges left in sleeves)
   d. Total weight, # sponges weighed, # hanging sleeves weighed, entered in spreadsheet calculator/EPIC calculator
QBL: CS Summary

- Emphasize two step, quick process 95% of the time
- Surprisingly fast. Most cases < 2 minutes
- Need a calculator. Make it easy!
  - Build into EMR
  - Excel spreadsheet or equivalent
- Start with cases of one or two physician champions: small test of change
- Transparency: THIS IS COMING. Advance notice
- Move to all scheduled cases
- Add unscheduled cases
How Is It Going?
Summary

- QBL all cases
- Provide sufficient resources
- Make part of nursing/staff routine workflow. No different than sponge count at vaginal or CS delivery for example

Vaginal birth: 2 key steps
  - Note amniotic fluid in bag prior to delivery of infant (but only matters if SROM close to delivery or amnioinfusion)
  - RN promptly elevates under buttocks drape as soon as MD finished in order to announce blood in drape to be recorded as QBL

CS birth: 2 key steps
  - Switch suction tubing to new canister prior to delivery of placenta (but only important if no prior ROM) and record canister volume prior to irrigation
  - Weigh bloody sponges/sponge bags all together and record prior to skin closure