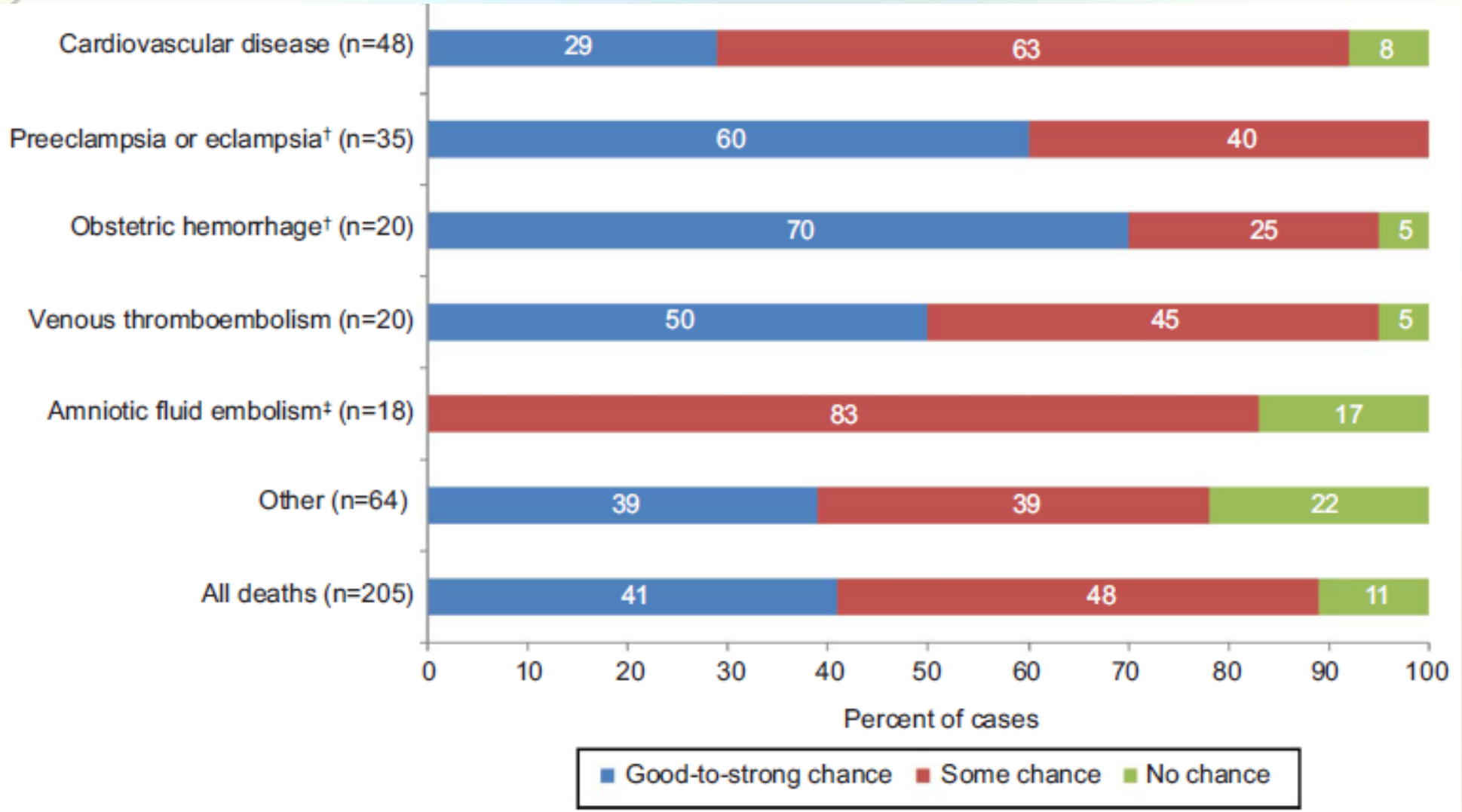
Have You QBL'd Today?

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

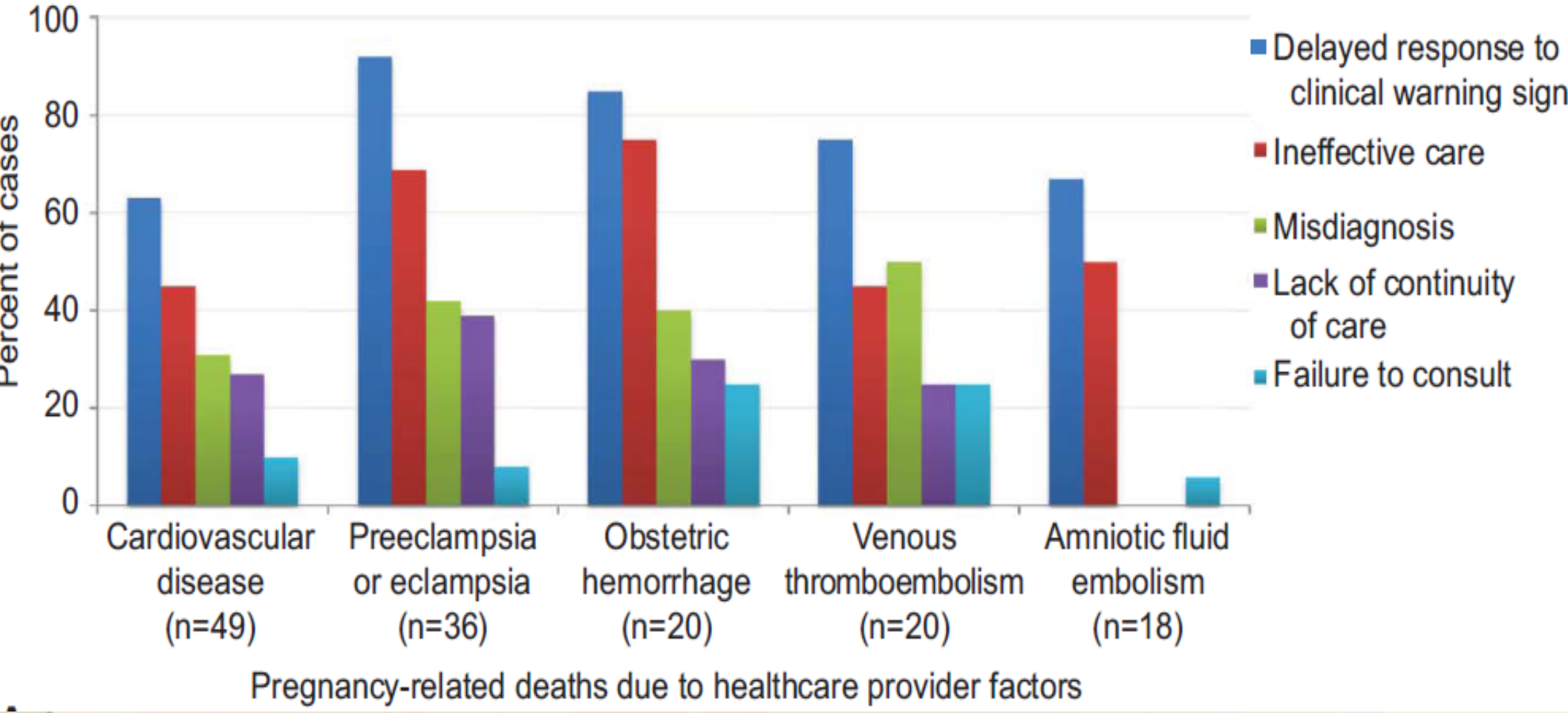
" I did then what I knew how to do. Now that I know better, I do better." Maya Angelou

Maternal Deaths In CA: Preventability?



Main E, et al, Obstet Gynecol 2015;125:938-47x

Pregnancy Related Deaths Due to Healthcare Provider Factors: 4 Years In CA



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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 **2½ 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…

QBL

- 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

How We Did It: Start With Vaginal Birth

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 on 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

QBL: Under Buttocks Drapes

- 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 perinuem
  - "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

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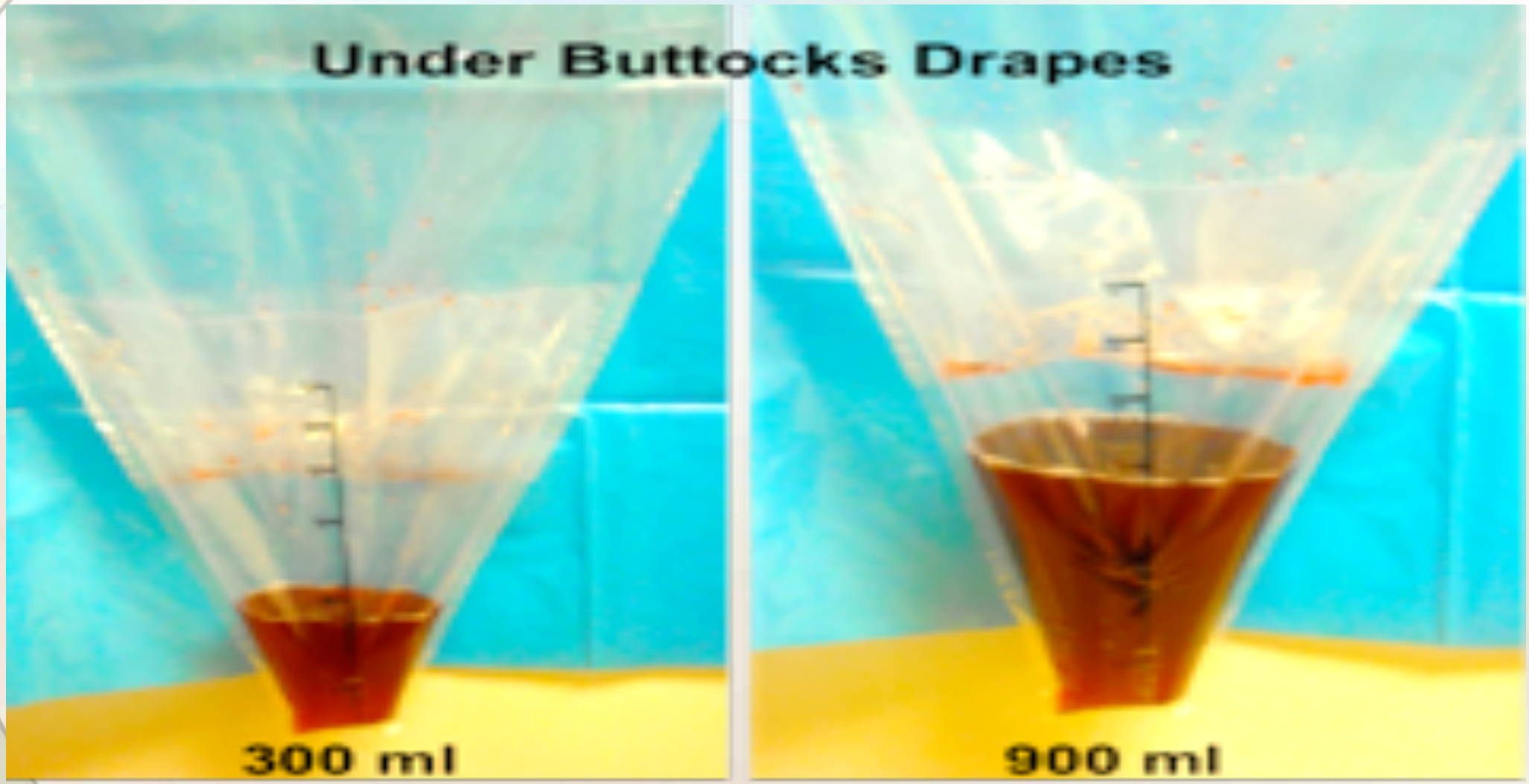


QBL: Vaginal Delivery

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**

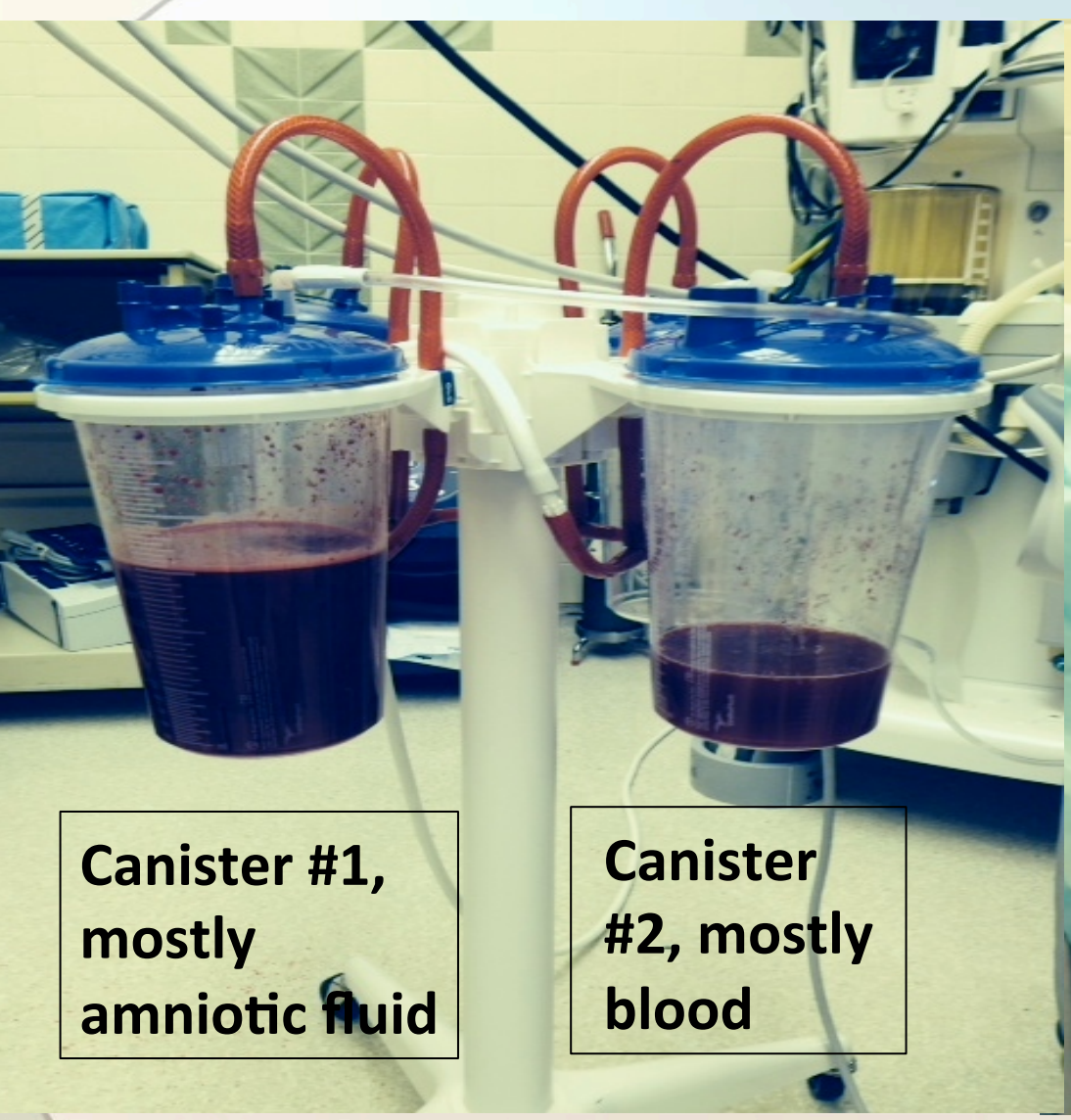
Lessons Learned: Reality Testing

- 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



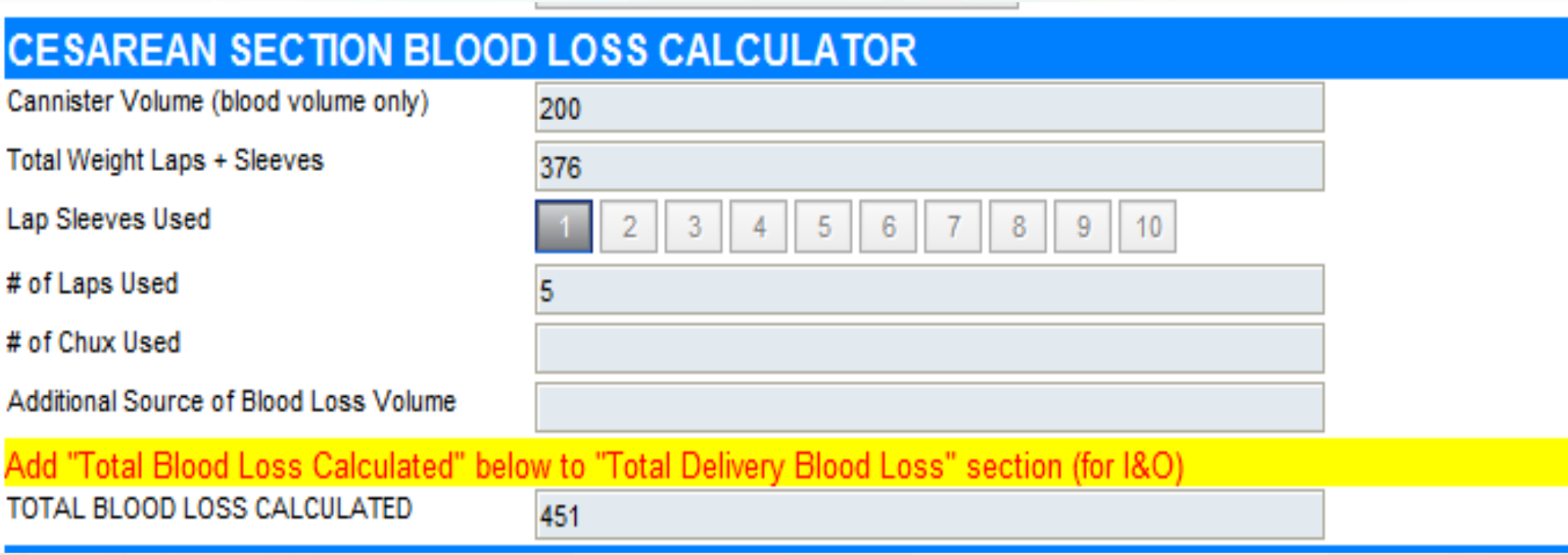
Canister #1, mostly amniotic fluid

Canister #2, mostly blood

Sleeves with sponges unhooked, rolled up en masse, weighed together, see next slide


Total weight in gms recorded in calculator
0.786

Example of QBL Calculator:
Dry weights of lap sponges, lap sleeves embedde



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

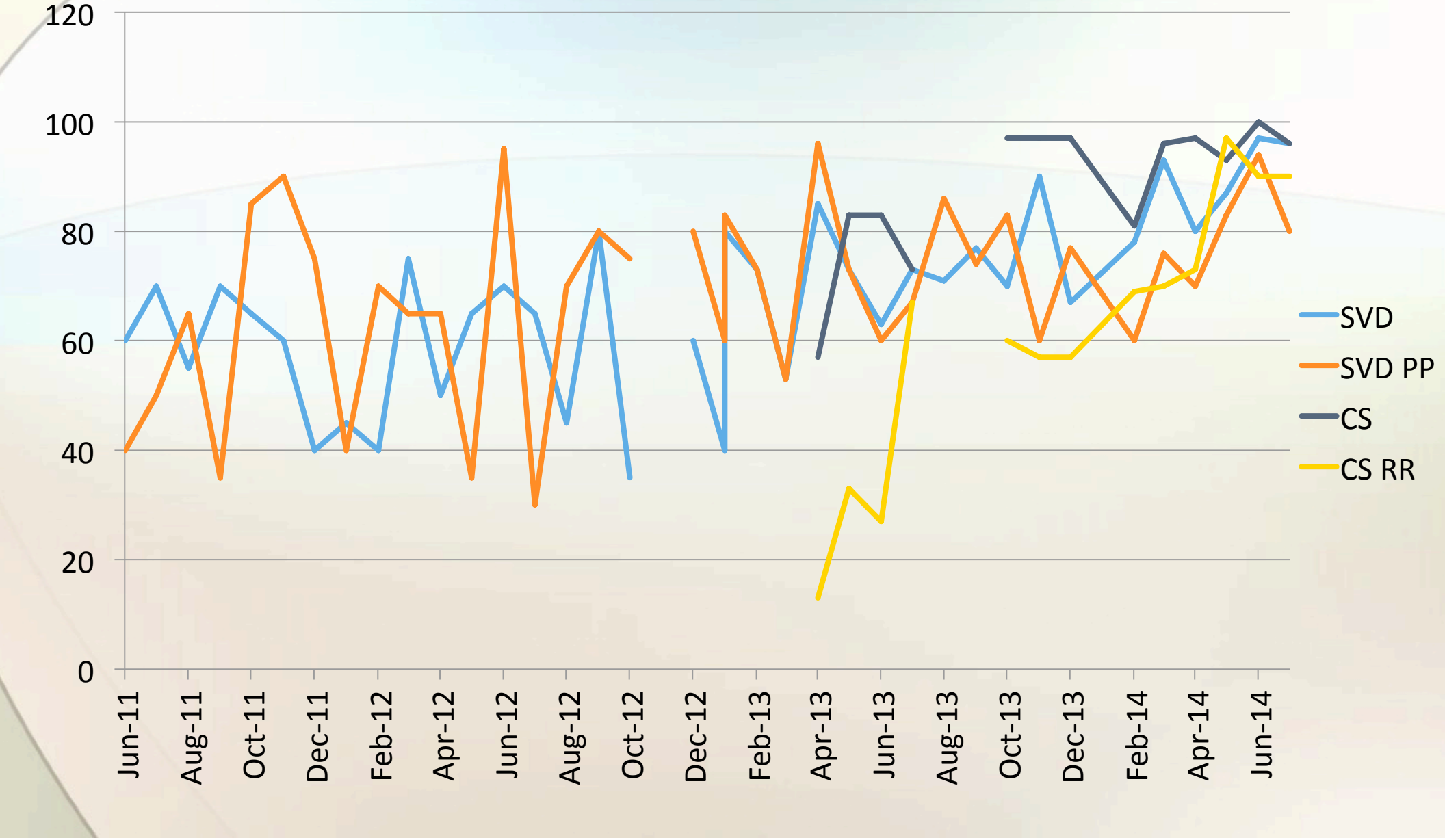
Routine Two Step Quantification of Blood Loss at CS

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