Quantifying Blood Loss

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No Disclosures
Objectives

• Discuss the national initiative for quantifying blood loss
• Identify the benefits to quantifying blood loss vs. estimation of blood loss
• Review various methods for evaluating blood loss
Scope of the Problem

• Failure to recognize excessive blood loss during childbirth is a leading cause of maternal morbidity and mortality. (The Joint Commission, 2010)

• Women die from obstetric hemorrhage because of a lack of early and effective interventions. (Berg et al. 2005; Della Torre et al. 2011)
Clinical Picture

Confusing…

• Physiologic adaptation
• Young healthy women
• Significant delay in the manifestation of the conventional signs of shock:
  • Hypotension
  • Tachycardia
## PPH Classification

<table>
<thead>
<tr>
<th>Class</th>
<th>Acute Blood Loss</th>
<th>% Lost</th>
<th>Clinical Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1000cc</td>
<td>10-15</td>
<td>Dizziness, palpitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Minimal BP change</td>
</tr>
<tr>
<td>2</td>
<td>1,500cc</td>
<td>15-25</td>
<td>Tachycardia, tachypnea, sweating, weakness</td>
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<td></td>
<td></td>
<td></td>
<td>Narrowed pulse pressure</td>
</tr>
<tr>
<td>3</td>
<td>2,000cc</td>
<td>25-35</td>
<td>Significant tachycardia and tachypnea, restlessness,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>pallor, cool extremities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hypotension</td>
</tr>
<tr>
<td>4</td>
<td>&gt;2,500cc</td>
<td>35-45</td>
<td>Shock, air hunger</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oliguria/anuria</td>
</tr>
</tbody>
</table>

Clinical Issue

• Underestimation leads to delayed treatment
• Overestimation leads to unnecessary and costly interventions
Recommendations for QBL

• AWHONN Standard Recommendation
  *All births*
• CMQCC Standard Recommendation
  *All births*
• National Maternal Health Initiative 2013
  *One of 7 safety objectives*

_Council on Patient Safety in Women’s Health (2014)_
Conventional Practice

“Guesstimating”
Looks Can Be Deceiving
Value of Quantifying

Objective assessments:

• “Patient is actively bleeding. She just lost 500mL and her cumulative blood loss is now 1200mL”
Methods to Quantify

One gram = One milliliter
Quantifying Blood Loss for Vaginal Delivery Process

Basin – 124 grams

Laps – 20 grams

Blue Towels – 55 grams

Raytex – 5 grams

Chux – 37 grams

Underpad – 113 grams

Drape – 135 grams

5 Easy Steps

1. Note how much amniotic fluid is in the drape just after the delivery of the baby.

2. When you are cleaning up after the delivery:
   - Put a basin on the scale
   - Put the dirty drape in the basin (do not empty the fluids from the cone of fluids)
   - Subtract the amount of amniotic fluid from the total weight

3. Weigh chux/underpad and any other soiled materials

4. Fill out the blood loss worksheet

5. Report the weights to the provider
Vaginal Deliveries

- Begin right after the infant’s birth:
  - Note amniotic fluid, urine, etc. in the under-buttocks bag prior to birth.

- RN looks at the bag as soon as MD/CNM has completed the delivery to communicate the amount of blood in the calibrated drape as QBL.

AWHONN 2014
Two Step Method

1. Two Canisters

- Suction all of the amniotic fluid out of the drape between delivery of the infant and placenta
- Scrub directs the circulating nurse to switch the suction tubing to a second canister
- The second canister will be the blood loss (minus any irrigation used during the case) 

AWHONN (2014)
Two Step Method

2. Weighing laps and drapes

AWHONN (2014)
Novel Methods for Quantification

• Circulating nurse scans each lap as it comes off the field
• Captured image runs through an algorithm to evaluate the blood soaked lap
• Can filter out the impact of other fluids
• Quickly sends result to the display screen

Holmes et al.(2014) International Anesthesia Research Society
Quantification Tips

• Build weighing of pads into routine practice:
  – Establish dry weights of commonly used products
  – Have scales readily available in room

• Build electronic calculator into documentation
Conclusion

• Delay in recognition of large blood losses is a common finding in cases of maternal morbidity and mortality

• A policy of waiting to quantify blood loss only after the excessive loss is appreciated does not address this problem

• Standardization of procedures is an important aspect of improving safety and quality

CMQCC 2115
Resources

1. Council on Patient Safety in Women’s Health Care:
   – Safety Action Series
     *Quantifying Blood Loss*

2. AWHONN:
   • Postpartum Hemorrhage Project

3. California Maternal Quality Care Collaborative