QUANTIFICATION OF BLOOD LOSS FOR THE OBSTETRICAL PATIENT: AN EVIDENCE-BASED PRACTICE IMPLEMENTATION PROJECT

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Problem Statement and Purpose

• Leading cause of maternal death
• Occurs in 4-6% of all pregnancies
• More than 50% in first 24 hours
• 54-93% of the PPH deaths may have been preventable
• Over 90% of the preventable mortality/morbidity linked to provider related factors

  Delay in treatment/diagnosis, ineffective management, lack of proper preventative measures (ACOG, 2013)
Problem Statement and Purpose

Of the 175 injury deaths, 64.0% were unintentional, 32.6% were intentional, and 3.4% were unknown. The most common manners of death, among injury deaths, were accident (65.1%), homicide (23.4%), and suicide (8.0%).

PICOT Question

**P**: Obstetrical Nurses

**I**: Use of an evidence based practice (EBP) nurse-driven protocol for measuring blood loss

**C**: Visual estimation of blood loss

**O**: Improve identification of postpartum hemorrhage (PPH)

**T**: 8-10 weeks

“In obstetrical nurses, how does an EBP nurse-driven protocol for measuring blood loss compared to physician visual estimation of blood loss affect the identification of postpartum hemorrhage (PPH) over an 8-10 week period?”
Theoretical Framework

Betty Neuman’s System Model

Focus:
- Response of the individual patient to stressors and the levels of nursing prevention interventions for attaining, retaining, and maintaining patient wellness

Nurse’s role:
- Focus on the variables that may affect the person’s response to stressors and eliminate the risk factors associated with them
Project Design - Methodology

- The Ohio State Wexner Medical Center
- Level III maternity unit
- Over 100 staff RNs
- 5,000 births/yr
- Patients - child bearing age
- Vary in ethnicity and cultural backgrounds
- Excluded STAT cesarean sections and water births
Project Design - Methodology

- Comparing visual estimation of blood loss to measured blood loss immediately following birth

- Comparison log

<table>
<thead>
<tr>
<th>Estimation of Blood Loss per Physician</th>
<th>Quantification of Blood Loss per Nurse</th>
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</table>
Cesarean deliveries:
- Surgical Technologist (ST) to set up 2 suction tubing and 2 yankauers
- ST to utilize #1 suction for amniotic fluid (white tip)
- ST to utilize #2 suction for post baby (blue tip)
- ST to remove #1 suction tubing from field, once ALL amniotic fluid has been suctioned (this includes amniotic fluid in the side pouches)
- RN, utilizing the newborn scale, will weigh all lap sleeves and bloody sponges after abdomen is closed and document that value in the Cesarean Section QBL Calculator
- RN/ST to note amount of irrigation used and document that value in the Cesarean Section QBL Calculator
- RN to note blood loss volume in #2 canister document that value in the Cesarean Section QBL Calculator
- RN to report QBL to team before abdomen dressing applied
- Anesthesia provider to document QBL in delivery summary
Project Design - Methodology

- **Vaginal Deliveries**
  - The RN to note the amount of fluid in the underbuttock drape immediately after the delivery of the newborn and document this value in the Vaginal Delivery QBL Calculator.
  - The RN to note the amount of fluid volume in the underbuttock drape prior to the repositioning of the mother after the completion of the vaginal delivery document this value in the Vaginal Delivery QBL Calculator.
  - RN, utilizing the newborn scale, will weigh all bloody laps, sponges, linen, chux pads etc. after the mother has been repositioned and document that value in the Vaginal QBL Calculator.
Project Design - Methodology

- Estimation of blood loss and QBL was compared for all vaginal and cesarean section deliveries
- Manual Comparison log was used to track visual estimated blood loss and QBL
- Comparison Log was collected daily/weekly
- Weekly results were provided via email updates
Evaluation - Analysis

• PPH definition: blood loss of ≥500 ml for a vaginal birth and ≥1000 ml for a cesarean birth (ACOG, 2006).
• Estimated blood loss per the delivering provider was compared to the QBL per the primary care nurse immediately after each delivery.
• Blood loss was measured in milliliters (ml) with one gram equaling one ml.
• A chi-square test of independence was used to examine for an association or dependence between two nominal variables; blood loss (EBL and QBL) and PPH (Yes or No).
## Results - Cesarean Births

**EBL and QBL * PPH in Cesarean Sections Crosstabulation**

<table>
<thead>
<tr>
<th>Blood Loss</th>
<th>QBL</th>
<th>EBL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPH Found</td>
<td>13</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>No PPH found</td>
<td>60</td>
<td>65</td>
<td>125</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>73</td>
<td>73</td>
<td>146</td>
</tr>
</tbody>
</table>
Results – Cesarean Births

Chi-Square Test on PPH in Cesarean Sections

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>1.042</td>
<td>1</td>
<td>.307</td>
</tr>
</tbody>
</table>
Results - Vaginal Births

**EBL and QBL * PPH in vaginal births Crosstabulation**

<table>
<thead>
<tr>
<th>Blood Loss</th>
<th>QBL</th>
<th>EBL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPH Found</td>
<td>18</td>
<td>22</td>
<td>40</td>
</tr>
<tr>
<td>No PPH found</td>
<td>155</td>
<td>151</td>
<td>306</td>
</tr>
<tr>
<td>Total</td>
<td>173</td>
<td>173</td>
<td>346</td>
</tr>
</tbody>
</table>
Results - Vaginal Births

*Chi-Square Test on PPH in vaginal births*

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<th></th>
<th>Value</th>
<th>df</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>.427</td>
<td>1</td>
<td>.514</td>
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Sustainability

- Physician recommendation
- New process for determining blood loss for cesarean section births
- Vaginal birth calculator in medical record
Implications for Practice

- QBL allows for earlier identification of a PPH
- Eliminates denial and delay
Conclusion

• Early identification of PPH leads to timely intervention improving patient outcomes and decreasing maternal morbidity and mortality.

• Visual estimation of blood loss most inaccurate means and linked to underestimation of approximately 30%-50% of all deliveries (Gabel & Weeber, 2012)

• Eliminating visual estimation of blood loss and utilizing QBL will assist in early identification of PPH and improving patient outcomes
Questions
References


Association of Women’s Health, Obstetrical, and Neonatal Nursing (2014). Quantification of blood loss. Author


References


