Accurate Estimation of Blood Loss in the Perioperative Setting

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Problem
• Just how are we calculating blood loss?
• Who is calculating blood loss?
• Are our calculations accurate?

AONE Nurse Executive Competencies
• Leadership Transformational Leadership
• Knowledge of Healthcare Use of evidence base practices
• Professionalism Promote accountability and ethical care
• Business skills Decrease cost of care
• Communication & Relationship Building Staff working together to promote better patient outcomes.
Introduction

Past research has shown visual estimations of blood loss (EBL) are inaccurate and with recent emphasis on reducing post-partum hemorrhage, perioperative nurses wanted to implement a more accurate method of estimating blood loss in the surgical setting.

PICO Question

**Population:** Perioperative Team Members (Surgeons, Anesthesiologist, CRNA, Scrub Techs and Registered Nurses)

**Intervention:** Education for Blood Lost Estimation

**Comparison:** Pre Test (Pre education) evaluation and Post Test (Post Education) evaluation

**Outcome:** Improve, accuracy and consistency of recognition of potential serious hemorrhage for better patient outcomes

Research Question

- Would training perioperative team members (Surgeons, Anesthesiologist, CRNA, Scrub Techs and Registered Nurses) on how to estimate blood loss during surgery improve accuracy, create a consistent estimation method, and result in earlier recognition of potentially serious hemorrhage before the patient leaves the surgical suite?

Research question

- What is the current level of accuracy of visual blood loss estimation of each discipline involved in the surgical care of the patient?
- Does estimation of blood loss accuracy improve after the educational intervention?

Hypotheses

- Using current methods, estimation of blood loss is underestimated by the majority of perioperative staff.
- Visual estimation of blood loss will improve in accuracy after the educational intervention.

Significance

- Improved accuracy of estimating blood loss can initiate early diagnosis of hemorrhage and improve patient outcomes.
Overview

- Using a non-standardized visual method to estimate intraoperative blood loss (EBL) can be imprecise and result in complications for patients when the perioperative team either overestimates or underestimates EBL.

Current EBP

- Literature search concurs that the most accurate method of calculating blood loss is by the weight method, which is impracticable and time consuming.
- Reference posters can improve the accuracy of blood loss estimation.

Purpose

- The purpose of this project is to improve the estimation of intraoperative blood loss skills of perioperative team members.
- Promote awareness of blood capacity or absorption ratio of common products used in the surgical setting.
- Demonstrate more accurate methods of EBL by weighing surgical items used to absorb blood in the surgical setting.

Goals

- Improve clinicians' skills in EBL by providing education on how to estimate blood loss by either using a standardized visual method or weigh method.
- Assist clinicians in everyday practice to recognize patients at risk in the perioperative setting for hemorrhage-related complications.
- Improve communication of EBL in the surgical setting.

Project Goals

- Assess the effectiveness of educational intervention in improving blood loss estimation.
- Develop a Policy and Procedure on how to estimate EBL.
- Create a Blood Loss Estimation Reference Guide.

Policy and Procedure

- Develop a policy and procedure on how to estimate blood loss could assist clinicians in making more accurate estimations.
Research Design

- Quasi-experimental, pre-test post-test design with a purposive convenience sample of 51 perioperative team members.

Research Method

- Participants were asked to estimate the blood capacity of pre-weighed surgical items.
- Participants were educated on the blood capacity of each item.
- Post-test for re-estimation of original samples

Survey

- **Blood Loss Estimation Sample Survey**
  - How much blood is in a saturated dry lap?
  - How much blood is in a saturated lap pre moistened with 30 ml normal saline?
  - How much blood is in a saturated dry raytex sponge?
  - How much blood is in a saturated raytex sponge pre moistened with 3 ml normal saline?
  - How much blood is in a saturated blue pad?
  - What is your Clinical Role? Please circle one:
    - Surgeon RN
    - Scrub Nurse
    - OR RN
    - L/D RN
    - CRNA
  - How long have you practiced in the perioperative setting?
    - 1-5 yrs.
    - 6 to 10 yrs.
    - 11-15 yrs.
    - 16-20 yrs.
    - 21-25 yrs.
    - 26-30 yrs.
    - 31-35 yrs.
    - 35 yrs.

Job Classification

- Job Classification
  - Anesthesiologist: 4, 7.8%
  - Surgeon: 8, 15.7%
  - OR RN: 9, 17.6%
  - L/D RN: 17, 33.3%
  - Scrub Nurse: 7, 13.7%
  - CRNA: 6, 11.8%
  - Total Participants: 51, 100%

Years of Experience

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What did we discover?

- Professional classification and years of experience had no effect on accuracy.
Results

• Results from pretest indicated a wide range of estimates with little accuracy.
• Following education, accuracy improved dramatically.

Accomplishments

• Provided an educational program to promote awareness of visual reference tools to determine EBL.
• Explained current evidence-based practices for EBL using a weight system (1 ml blood = 1 gram).
• Created a visual reference chart with facility-specific products and their blood absorption capacity.

Develop Visual Tools to Assist Clinicians in Estimating Blood Loss

• Blood Loss Estimation Chart designed specific to the facility and the products currently used within the facility to absorb blood

How can we improve our practice?

• Developing clinical guidelines and policies and procedures on accurate EBL would help clinicians determine when to replace lost blood volume.
• Use reference poster/scales to measure blood loss to increase accuracy of EBL.
• Performing annual evaluations of blood capacity of products.
• Add blood loss component or calculator to patient’s computerized chart.

Obstacles

• Perioperative staff members arguing about accuracy of new methods to obtain EBL.
• Staff members unwilling to change current practices.
• Communication and creating consistency of nursing practice within two different units (OR and L/D).

Limitations of Study

• Simulated blood product was used for the study which could have visual estimate.
• Post test was conducted immediately so we could not determine if the knowledge would be retained long term.
Evaluation & Impact of Evidence Based Practice to Organization

- Perioperative nurses can take the leadership role in EBL in the operating room.
- Increased accuracy in EBL skills.
- Promote awareness of blood capacity of common products used in the facility to absorb blood.
- Improve communication between perioperative team members regarding patients' hemodynamic state supports improved patient outcomes.

Future Education

- Education on how to EBL by using a visual or weight method may assist clinicians identify patients at risk for hemorrhage related complications.
- EBL skills should be included in the annual skills competency's.

References