

Structure, Process, and Outcome Data of AWHONN's Postpartum Hemorrhage Quality Improvement Project

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ABSTRACT

Objective: To describe the structures and processes implemented during the Association of Women's Health, Obstetric, and Neonatal Nurses Postpartum Hemorrhage (AWHONN PPH) Project.

Design: An 18-month, multiregion, multihospital quality improvement project.

Setting/Local Problem: Fifty-eight hospitals located in Washington, DC; Georgia; and New Jersey.

Participants: Volunteer registered nurse hospital leaders implemented the AWHONN PPH bundle, which consisted of structure and process improvements.

Intervention/Measurements: The process and effectiveness of the implementation of the interventions were measured and compared between baseline and after implementation.

Results: All structures and processes showed improvement but were not fully implemented at all sites. Registered nurse participation in drills increased from 0% to 92%, quantification of blood loss increased from 5% to 45%, hemorrhage risk assessment increased from 10% to 70%, prebirth risk assessment increased from 2% to 52%, postbirth risk assessment increased from 2% to 57%, and debriefing increased from 1% to 13%. No statistically significant differences were found in the pre- and postimplementation outcomes measured (maternal deaths, blood products transfused, women with massive transfusions, peripartum hysterectomies during the birth admission, and ICU admissions for women who gave birth and/or had a postpartum hemorrhage). Participants' self-assessments of their monthly implementation efforts (leader intensity) were not correlated with implementation fidelity (the degree to which the intervention was provided as proposed).

Conclusion: None of the 58 hospitals were able to implement all of the structure and process changes before the end of the 18-month implementation phase. This suggests that an 18-month implementation phase may be too short.

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Problem Description

Postpartum hemorrhage (PPH), a common and increasingly frequent complication of birth, occurs in approximately 2.9% of all births (Bateman, Berman, Riley, & Leffert, 2010; Callaghan, Kuklina, & Berg, 2010) and is a leading cause of maternal morbidity and mortality (Berg, Callaghan, Syverson, & Henderson, 2010; Creanga et al., 2015; Joseph et al., 2017). The rate of blood transfusions during birth hospitalization increased by 183% from 1998–1999 to 2008–2009 (Callaghan, Creanga, & Kuklina, 2012).

Available Knowledge

A variety of structure and process improvements have been promoted to improve outcomes

related to PPH (Bingham, Lyndon, Lagrew, & Main, 2011). Recommendations include structural changes, such as obstetric hemorrhage interdisciplinary simulation drills, and interdisciplinary education and process changes, such as objective methods for the measurement of cumulative blood lost, performance of accurate risk assessments, and team debriefings. These and other structure and process components were recently included as part of the Obstetric Hemorrhage Patient Safety Bundle released by the Council on Patient Safety in Women's Healthcare and co-published in several peer-reviewed journals (Main et al., 2015). These structure and process components have been effective to improve PPH outcomes. For example, in one system, Shields et al. (2011) found a

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Baseline data indicated a need to implement quality improvement initiatives to increase the number of postpartum hemorrhage preparedness elements available for clinical staff.

27% reduction in the total number of blood products used after the implementation of an initiative to improve the recognition and management of PPH.

In 2014, in an effort to reduce hemorrhage-related morbidity and mortality in hospitals in Georgia, New Jersey, and Washington, DC, the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) launched the Postpartum Hemorrhage Project, an 18-month, multiregion, multihospital quality improvement project. The AWHONN PPH Project was developed with the use Donabedian's classic framework, which is divided into three categories: structure (context, staff), process (transactions among clinicians and patients), and outcomes (measurements of the effect of the structures and processes on the health care of patients and populations; Donabedian, 1966). The three structural improvements included in the 18-month AWHONN PPH Project effort were to (a) review and update obstetric hemorrhage policies and procedures to include clear definitions of hemorrhage and clinical actions based on the amount of blood lost, (b) perform simulation drills, and (c) educate all clinical staff members on key elements of PPH project components. The five recommended process changes were to quantify blood loss at every birth; perform three obstetric hemorrhage risk assessments at admission, before birth and after birth; and debrief after all Stage 2 and 3 hemorrhages. Outcomes measured included maternal deaths, blood products transfused, women with massive transfusions (four or more units of packed red blood cells [PRBCs]), peripartum hysterectomies during the birth admission, and ICU admissions for women who gave birth and/or had PPH.

Rationale

The PPH Project was developed because of the high rates of obstetric hemorrhage-related morbidity and mortality previously outlined. Three geographic regions, Georgia; New Jersey; and Washington, DC, were identified and selected for the PPH Project because of their high rates of maternal mortality. The Donabedian model provided a logical framework to guide our

project based on structure, process, and outcomes. The PPH Project structure and process changes that were identified to be priorities for action in these regions were based on the recommendations of the California Maternal Quality Care Collaborative and later formed the foundation for the National Partnership for Maternal Safety consensus patient safety bundle (Main et al., 2015).

A pre-implementation survey was developed on the basis of guidance from the PPH Project Expert Panel to assess whether the gaps in preparedness identified in California were also gaps in preparedness in these geographic regions. Clinical leaders from 99 birthing hospitals in Georgia; New Jersey; and Washington, DC responded to the survey. Respondents indicated that none of these hospitals had all of the 38 recommended PPH preparedness structures and processes available (mean = 23.1 elements available; range = 12–34; Bingham, Scheich, Byfield, Wilson, & Bateman, 2016). Fewer than 50% of these hospitals reported that they had massive hemorrhage protocols; performed risk assessments, debriefings, or simulation drills; or measured blood loss. The amount of education about postpartum hemorrhage provided to the clinicians who worked at these hospitals was not measured by the survey. Analysis of the data indicated a need to improve PPH structure and process measures at these hospitals. The baseline study and the high rates of maternal mortality in Georgia; New Jersey; and Washington, DC were the reasons we launched the PPH Project in these regions.

Specific Aims

During an 18-month period, the primary aim of this project was to implement the following:

1. Three structural changes: update obstetric hemorrhage policies and procedures; educate registered nurse (RN), physician, and midwife staff about PPH; and ensure that RNs, physicians, and midwives participate in PPH drills
2. Five process changes: quantify blood loss at births; perform risk assessments at admission, before birth, and after birth; and perform debriefings after Stage 2 and 3 hemorrhages.

The secondary aim was to measure selected patient outcomes: maternal deaths, blood products transfused, women with massive

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