

REPORTING SYSTEMS

OB HEMORRHAGE MEASURES FOR HOSPITAL QI PROJECTS

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EXECUTIVE SUMMARY

- Total number of blood products used and the number of mothers who require large transfusions (≥ 4 units of packed red blood cells) have been validated by several large multi-hospital obstetric hemorrhage QI collaboratives as useful quality improvement measures.
- These measures are not designed or validated for use in comparing inter-hospital performance.

BACKGROUND

Quality improvement metrics can be divided into (1) outcome measures (identifying improvement of the health of the population at risk, e.g. reduced morbidity/mortality), (2) process measures (improving elements of care that are linked to improved outcomes, e.g. better risk assessment or estimation of blood loss), and (3) structural measures (ensuring that basic supporting features are in place within the institution, e.g. policies, equipment, staff training).

The focus of CMQCC and other obstetric hemorrhage QI collaboratives to date has been to reduce maternal morbidity by early identification and a standardized and timely response. Two measures, total number of blood products used and the number of mothers who require large transfusions (≥ 4 units of packed red blood cells), have been validated by several large multi-hospital obstetric hemorrhage QI collaboratives. These collaboratives have found that reduction in use of blood products of 20-30% is achievable.¹⁻³

A concern with using the rate of mothers receiving blood transfusion as a quality indicator is a possible unintended consequence of discouraging use of needed blood transfusions. We find that the focus on total number of units overall used for OB patients and the number of mothers who received ≥ 4 units of PRBCs minimizes this concern. Importantly, this measure is harmonized with the new Joint Commission definition of an Obstetric Sentinel Event that includes transfusion of ≥ 4 units of PRBCs. This will reinforce the importance of and the collection of this measure. The appropriate transfusion of 1-2 units of PRBC may actually lower overall blood product usage if early intervention prevents

further deterioration. Large transfusions of blood products are necessary and life-saving in massive hemorrhage situations. However, progression to massive hemorrhage may indicate situations that could be preventable if recognized and aggressively managed earlier. Thus focusing on this population of patients as an opportunity for improvement is important. Large numbers of units used also can have significant impact on costs as these interventions are expensive.

Note: these measures were designed and recommended for collaboratives and similar QI projects (including Hospital Engagement Networks) that utilize time course designs (same hospital comparisons over time). **They are not designed or validated as inter-hospital quality measures.** It is also anticipated that many collaboratives may also want to use other locally designed process measures and “deliverable lists” to support the change process.

OUTCOME MEASURES

Obstetric morbidity is uncommon so large numbers of patients must be observed to show improvement.^{4,5} Therefore, for practical use the hospital-level measures described below are designed to be collected from administrative data sets.⁶ These measures are under consideration to be used throughout the country as part of the National Partnership for Maternal Safety. An additional approach is use of the CDC metric for severe maternal morbidity for both the overall population and within those with OB hemorrhage.

1. Total number of transfusions

- Short Description: Total number of blood products transfused per 1,000 mothers
- Denominator: All women giving birth > 20 weeks (birth hospitalization)
- Numerator: Total number of PRBCs
- Expected Baseline Rate: 40-60 units per 1,000 mothers
- Source: Hospital blood bank data sets or ChargeMaster
- Collection steps: Identify maternity patients either by diagnosis related group (DRGs) or obstetric ICD-9/10 codes, then query the ChargeMaster (or blood bank) data set to determine the total number of blood products used

2. Number of massive transfusions

- Short Description: Number of mothers receiving 4 or more units of Packed Red Blood Cells per 1,000 mothers
- Denominator: All women giving birth > 20 weeks (birth hospitalization)
- Numerator: Women who received ≥ 4 units of PRBCs (This is also the new definition of an Obstetric Joint Commission Sentinel Event so it is likely to be captured)

- Expected Baseline Rate: 2-4 cases per 1,000 mothers (may be higher)
- Source: Hospital blood bank data sets or ChargeMasters
- Collection steps: Identify maternity patients either by DRGs or obstetric ICD9/10 codes, then query the ChargeMaster (or blood bank data set) to identify the women who received ≥ 4 units of blood products

COMMENTS

1. The typical maternity MS-DRGs (765, 766, 767, 768, 770, 774, 775) can be used to restrict the denominator to the typical labor and delivery population (≥ 20 weeks of gestation). While earlier pregnancies do have hemorrhages (e.g. ectopic and late miscarriages), these are quite uncommon and typically have different etiologies and would require a different QI project with a focus on different care venues (office, ER, OR). Furthermore, there is no good way of properly identifying the denominator population for earlier gestations, i.e. — all pregnancies? or all pregnancies beyond 8 weeks? Etc.
2. The numerator identifies all blood products rather than just RBCs. This is the definition used by the Joint Commission and supported by an ACOG/CDC/SMFM consensus committee (in press).
3. Units of blood products is a reasonable measure to collect using blood bank databases or ChargeMaster. A survey of California hospitals found that with little effort, an analyst can create a monthly report of patients transfused with the number of units per patient.
4. The Joint Commission revised definition of ≥ 4 units of blood units transfused as an OB Sentinel Event (January 28, 2014) will be a powerful tool to help drive this quality initiative and it will be important to have coordinated outcome measures.
5. Blood products are very expensive and most hospitals currently have projects underway to carefully scrutinize utilization. Therefore this project may be able to piggy-back on those efforts.

OB HEMORRHAGE STRUCTURE AND PROCESS MEASURES

Structure and process measures are also important but are often quite dependent on the specific QI project so they will not be specified here. They are much more difficult to collect with administrative data so often require chart reviews (however this is usually able to be accomplished with a sample). Structure measures usually are a check-off yes or no for a list of key features that need to be implemented for the intervention to work.

Examples of OB Hemorrhage process measures that are being used in collaboratives include: a) Rate of mothers who had a hemorrhage risk assessment on admission to L&D (chart review of a sample); b) Rate of debriefs after a hemorrhage (first identifying hemorrhages over 1,000 mL (or other trigger such as transfusion(s)) and then determining whether they had a debrief); c) Rate of adherence to the hospital hemorrhage protocol (chart review of a sample); and d) the proportion of medical and nursing staff that have completed a course on OB hemorrhage.

Examples of structure measures include: (Yes/No) has the institution... Implemented a hemorrhage cart? Implemented a hemorrhage protocol? Implemented a massive transfusion protocol? Instituted drills based on the hemorrhage protocol?

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