The SABM Standards

SOCIETY FOR THE ADVANCEMENT OF BLOOD MANAGEMENT®

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Goals for today’s talk

• Review principles of PBM
• Brief history of Standards in PBM
• Review of 12 SABM PBM Standards
• Short examination of evidence base behind standards – outcomes focused
• Preview of Quality Guide
Why do we need Standards in PBM Programs?

Definition:

- Something established as a measure or model to which other similar things should conform
- A benchmark for measuring and comparing similar or analogous activities
- Only useful if compliance monitored and evaluated
Underlying Principles of PBM

• Patient Blood Management is NOT about transfusion, it is about managing patients’ modifiable risks with the goal of improving outcomes

• Discussion begins and ends with transfusion ONLY because it is still the default position – changing

• Clinically not just laboratory focused

• The use of Blood Components is one of many modalities, each of which should be used in an evidence based fashion, and transfusion therapy is **NO MORE OR LESS IMPORTANT** than any other
Who gets transfused?

• 94% of transfusions in surgical patients can be attributed to:
  – low preoperative hemoglobin levels
  – excessive (uncontrolled) surgical blood loss, and/or
  – inappropriate transfusion practices

**ALL MODIFIABLE RISKS**
Patient Blood Management

- Optimizing Coagulation
- Interdisciplinary Blood Conservation Modalities
- Patient-Centered Decision Making
- Managing Anemia

IMPROVED PATIENT OUTCOMES

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Managing Anemia

Create methods for early and ongoing detection of anemia

Enhance physiologic tolerance of anemia by minimizing oxygen consumption

Employ timely evidence based pharmaceutical and nutritional intervention to support erythropoiesis

Determine causes and contributing factors of anemia

Apply evidence based rationale for use of red cells
Patient Blood Management

Optimizing Coagulation

- Evaluate both quantitative and qualitative measures to assess true coagulation status
- Accurately assess true cause of dysfunctional bleeding dysfunction
- Employ goal-directed therapy to correct coagulation abnormalities
- Apply evidence-based rationale for use of plasma

IMPROVED PATIENT OUTCOMES

- Optimizing Coagulation
- Interdisciplinary Blood Conservation Modalities
- Patient-Centered Decision Making
- Managing Anemia
Patient-Centered Decision Making

Listen to patient needs, desires, and concerns

Explore treatment possibilities, provide patient with correct and current information about all PBM interventions

Inform patients of risks, benefits, and alternatives of treatment choices

Integrate patient values and autonomy in decision making, decide together on a course of action and tailor a plan of care which incorporates patient choice

Document and communicate patient’s preferences
Patient Blood Management

**Interdisciplinary Blood Conservation Modalities**

- Adopt precise and meticulous surgical technique using all available methods of hemostasis
- Rapidly diagnose and promptly arrest blood loss in all situations
- Employ appropriate intraoperative blood conservation modalities in an evidence-based fashion
- Use available intra and post operative autologous blood conservation modalities
- Use methods to measure and assess hemoglobin loss
- Control diagnostic blood loss
The SABM Standards – History

• Recognition of an unmet medical need
• Many were focusing on the product – blood components – and their appropriateness
• Just because a transfusion is appropriate – was it avoidable? – Concept of Modifiable Risk
• Led to the creation of a set of Administrative and Clinical Standards for Patient Blood Management Programs in 2009
History of SABM PBM Standards

- 2001: Formation of SABM
- 2002: First Annual Meeting
- 2003: First discussions of creation of Standards
- 2004: Full organization and Appointment of expanded BOD
- 2005: "Full adoption of use of term Patient Blood Management"
- 2006: Creation of First Edition of SABM PBM Standards
- 2008: Quality Guide to the SABM PBM Standards
- 2009: Third edition of PBM standards under construction
- 2010: Update of Quality Guide
- 2011: Second Edition of SABM PBM Standards Released
- 2012: Third edition of PBM standards under construction
- 2013: Update of Quality Guide
- 2014: Third edition of PBM standards under construction
- 2015: Update of Quality Guide

SABM TIMELINE
The SABM PBM Standards

• Are:
  – An Instruction Manual – A Blueprint for building a new infrastructure for improved patient care
  – A guidance document to assist in creating a clinical culture focused on PBM and outcomes

• Are NOT:
  – About regulatory issues
  – Performance indicators
Standard 1: Leadership and Program Structure

There is an effective organization-wide, patient-centered, patient blood management program. The program has a **physician medical director** to provide clinical leadership and oversight and a **program manager** to provide operational leadership. The program has a defined scope of service, mission, vision and values, policies and procedures, clinical protocols, educational programs for health care providers, and review of patient outcomes.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.1</td>
<td>There is a written mission, vision and values statement that describes the purpose of the program and how it fits the institution’s mission and values.</td>
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<td>1.2</td>
<td>The scope of service defines the clinical areas affected by the program.</td>
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<td>1.3</td>
<td>Job descriptions are maintained for the physician medical director, program coordinator and any additional staff.</td>
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<tr>
<td>1.4</td>
<td>Written interdepartmental policies and procedures guide practice and process.</td>
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<tr>
<td>1.5</td>
<td>Clinical protocols and guidelines approved by the medical director and program manager are written, followed and available to the staff at all times.</td>
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<td>1.6</td>
<td>There is a comprehensive education program targeting physicians, mid-level providers, nurses, pharmacists and other ancillary health care staff regarding the blood management program’s goals, structure, and scope. Educational activities occur at least annually.</td>
</tr>
<tr>
<td>1.7</td>
<td>Quality and outcome measures are identified and defined by the medical director and program manager, with data collection and reporting to the hospital quality improvement committee as scheduled.</td>
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<tr>
<td>1.8</td>
<td>Administration, at a leadership level, is represented on the Transfusion Committee or the Patient Blood Management Committee if it is independent of the Transfusion Committee.</td>
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There is a well-defined and consistent process for obtaining informed consent for transfusion from patients who accept transfusions. Additionally, there is a process in place for obtaining an advance directive from patients who decline transfusion for religious or other reasons. The hospital respects and supports patients who decline blood and blood components.
Outcome of Patients Who Refuse Transfusion After Cardiac Surgery

- N = 322 Witnesses and 87,453 non-Witnesses (N = 48,986 transfused)
- Witnesses – fewer complications and shorter LOS
- Witnesses had better 1-year survival (P = .007)
- Blood management strategies do not appear to place patients at heightened risk for reduced long-term survival

Transfusion therapy is administered in a safe manner by an appropriately trained and licensed provider.
Standard 4: Review and Evaluation of Patient Blood Management Programs

There is a process for evaluating the effectiveness of the patient blood management program that is integrated into appropriate quality review activities within each institution. The information is used to improve anemia management, minimize blood loss and improve transfusion practice. This evaluation is based on metrics defined by the hospital.
Effect of a patient blood management programme on preoperative anaemia, transfusion rate, and outcome after primary hip or knee arthroplasty: a quality improvement cycle†

A. Kotzé¹*, L. A. Carter¹ and A. J. Scally²

• After PBM implementation:
  – The anemia prevalence decreased from 25.9% (73/281) to 10.3% (29/281) after treatment (P < 0.001)
  – Lower ABT rates for hip (23-7%, P<0.001) and knee (7-0%, P=0.001) arthroplasty
  – LOS for THR and TKR decreased from 6 (5-8) days to 5 (3-7) and 4 (3-6) days, respectively (P<0.001)
  – All-cause re-admission rate within 90 days decreased from 13.5% (97/717) to 8.2% (23/281) (P=0.02)

• Better outcomes after PBM implementation

Br J Anaesth. 2012
Standard 5: Transfusion Guidelines and Peer Review of Transfusion

There is effective implementation of comprehensive, written guidelines for transfusion of blood products. These guidelines are evidence based. There is peer review of transfusion decisions based on these guidelines.
Outcomes Using Lower vs Higher Hemoglobin Thresholds for Red Blood Cell Transfusion

**Clinical Question:** Is a lower vs higher hemoglobin threshold best for minimizing both red blood cell use and adverse clinical outcomes when used to trigger red blood cell transfusions in anemic patients in critical care and acute care settings?

**Bottom Line:** Compared with higher hemoglobin thresholds, a hemoglobin threshold of 7 or 8 g/dL is associated with fewer red blood cell units transfused without adverse associations with mortality, cardiac morbidity, functional recovery, or length of hospital stay.
In summary, a restrictive transfusion strategy, as compared with a liberal transfusion strategy, improved the outcomes among patients with acute upper gastrointestinal bleeding. The risk of further bleeding, the need for rescue therapy, and the rate of complications were all significantly reduced, and the rate of survival was increased, with the restrictive transfusion strategy.
Standard 6: Preoperative Anemia Evaluation and Readiness for Surgery

There is a process to identify, evaluate and manage preoperative anemia in patients scheduled for elective surgery where the expected amount of surgical blood loss increases the probability of perioperative red blood cell transfusion or where the degree of anemia increases the risk of surgery.
Preoperative Anemia Is Associated With Postoperative Mortality

Hb<12 g/dL for women and <13 g/dL for men

Age, Anemia and Iron Deficiency

- 35% of adults over the age of 65 have **unexplained anemia** *(defined as hemoglobin less than 12 g/dl)*
- 17% of adults over the age of 65 have **iron deficiency**
  - Of those with iron deficiency anemia, **only 50%** normalized their hemoglobin with oral iron therapy

Blood Cells Mol Dis. 2011;46(2):159
The hospital has the ability to collect, process, and reinfuse shed autologous blood. The hospital may also choose to collect blood from patients in the immediate preoperative period (acute normovolemic hemodilution) for reinfusion in the perioperative period.
• N = 1126 patients (Group 1) after the implementation vs. N = 3758 patients (Group 2) before implementation

• Significant reduction in % change of the intraop HCT, mean IAD volume and reduction in the CPB priming volume b/w Group 1 and 2

• Group 1 required significantly less blood transfusions, reduced postop respiratory failure, pneumonia, chest tube output, reoperation for bleeding and LOS

• Blood conservation is safe and effective in reducing transfusions in cardiac surgery, minimizing perioperative morbidity and mortality

Standard 8: Phlebotomy Blood Loss

There are written guidelines for minimizing blood loss due to phlebotomy for diagnostic laboratory testing.
For every 50 mL of blood drawn, the risk of moderate to severe HAA increased by 18% (relative risk [RR], 1.18; 95% confidence interval [CI], 1.13-1.22)

Blood loss from phlebotomy is independently associated with the development of HAA.
10 hospitals, from 1/09 to 08/11 188,447 Hospitalizations
Endpoints:
Mortality, Charges and LOS

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Mod</th>
<th>Severe</th>
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<tbody>
<tr>
<td>Definition</td>
<td>&gt;11 – 12F &gt;11-13M</td>
<td>9.1 - ≤ 11</td>
<td>≤ 9.0</td>
</tr>
<tr>
<td>HAA (74%)</td>
<td>29%</td>
<td>41%</td>
<td>30%</td>
</tr>
<tr>
<td>Mort RR</td>
<td>1.0</td>
<td>1.51</td>
<td>3.28</td>
</tr>
<tr>
<td>LOS</td>
<td>1.08</td>
<td>1.28</td>
<td>1.88</td>
</tr>
<tr>
<td>Charges</td>
<td>1.06</td>
<td>1.18</td>
<td>1.80</td>
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Standard 9: Blood Loss Associated with Surgery, Procedures and Underlying Medical Conditions Including Antithrombotic Therapy, Antiplatelet Therapy and Coagulopathy

There is an ongoing interdepartmental effort involving the patient blood management program, pharmacy, surgery, anesthesia and transfusion service/blood bank to minimize blood loss associated with surgery, interventional procedures, and underlying clinical conditions including antithrombotic and antiplatelet therapy, and coagulopathy.
Anemia, Bleeding, and Transfusion

Increased Mortality

Anemia

Bleeding

Transfusion

Early recognition and treatment of anemia is key!!
Impact of bleeding-related complications and/or blood product transfusions on hospital costs in inpatient surgical patients

- N = 103,829 cardiac, 216,199 vascular, 142,562 non-cardiac thoracic, 45,687 solid organ, 362,512 general, 384,132 reproductive organ, 246,815 knee/hip replacement, and 107,187 spinal surgeries
- Rate of bleeding-related complications was 29.9%
- Overall LOS associated with bleeding-related complications or transfusions was 6.0 days
- The incremental cost per hospitalization associated with bleeding-related complications

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Spinal</td>
<td>$17,279</td>
</tr>
<tr>
<td>Vascular</td>
<td>$15,123</td>
</tr>
<tr>
<td>Solid Organ</td>
<td>$13,210</td>
</tr>
<tr>
<td>Non-cardiac thoracic</td>
<td>$13,473</td>
</tr>
<tr>
<td>Cardiac</td>
<td>$10,279</td>
</tr>
<tr>
<td>General</td>
<td>$4,354</td>
</tr>
<tr>
<td>Knee/Hip replacement</td>
<td>$3,005</td>
</tr>
<tr>
<td>Reproductive organ</td>
<td>$2,805</td>
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- The study supports (recommends) implementation of blood conservation strategies
There is a written protocol for transfusion management of patients with rapid large volume blood loss and hemodynamic instability.
MH not T ! P

• 2 year study of 2986 patient records, at level one trauma center
• Improved transfusion ratios
• Reduced waste of blood components
• Reduction in Median hospital length of stay from 54 days to 26 days (p<0.05)

Injury, 2013 May;44(5):587-92
Standards 11: Management of Anemia in Hospitalized Patients

There is a process for early identification of hospitalized patients at risk for transfusion due to anemia or at risk for developing anemia during the course of their hospitalization. Anemia is actively managed to reduce the likelihood of transfusion.
Standard 12: Management of anemia in non hospitalized outpatients

There is a program to facilitate identification, diagnosis and management of anemia in non hospitalized patients served by the organization. Anemia is actively managed to improve clinical outcomes and reduce the likelihood of transfusion should the patient require hospitalization.
Prevalence of Iron Deficiency Anemia

• 30-60% of patients with RA have anemia

• 30-80% of patients with IBD have anemia

• 30-50% of patients with CHF have anemia

• 20-40% of diabetics without overt renal failure have anemia

• 40-60% of patients with chronic kidney disease have anemia

All of these are related to iron absorption and metabolism.
Conclusion

• SABM
• PBM Program Standards entering third iteration and being refined
• Focus on evidence based patient centered decisions by clinicians
• Focus on Modifiable Risks that can lead to poor outcomes
Thank you!

- http://www.youtube.com/watch?v=SzsUDS59EOw