9215-QE-PBM Quality Management Systems: From Blood Bank to Bedside and Back

October 23, 2011
10:30 AM - 12:00 PM
Event Outline

Event Title: 9215-QE-PBM Quality Management Systems: From Blood Bank to Bedside and Back
Event Date: Sunday, October 23, 2011
Event Time: 10:30 AM to 12:00 PM

Presenters: Suzanne Butch, Lawrence Goodnough, Pampee Young

<table>
<thead>
<tr>
<th>Speaker</th>
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Event Faculty List

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Disclosures: Nothing to Disclose

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Disclosures: Not Provided
Quality Management in the Transfusion Service: from Lab to Bedside and Back

Lawrence Tim Goodnough, MD
Professor of Pathology & Medicine
Stanford University School of Medicine
Director of Transfusion Service
Stanford University Medical Center

Quality Improvement Projects

Goals

• To integrate quality between TS and clinical units
• Establish standardized care pathways
• Improve patient safety

Quality Management in the Transfusion Service: Case Studies in Process Improvement

• Event Discovery Reporting (EDR)
• Antibody Evaluation in Elective Surgery Patients
• Wrong Blood in Tube

Quality Management: Event Discovery Reports

<table>
<thead>
<tr>
<th></th>
<th>FDA Reportable (BPDRs)*</th>
<th>Non-FDA Reportable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>60 (11.8%)</td>
<td>447</td>
<td>507</td>
</tr>
<tr>
<td>2010</td>
<td>42 (12.5%)</td>
<td>294</td>
<td>336</td>
</tr>
<tr>
<td>2011**</td>
<td>23 (19%)</td>
<td>98</td>
<td>121</td>
</tr>
</tbody>
</table>

* Biologic Product Deviation Reports
** First 6 months


Elective Surgery Diagnostic Testing

Elective surgery patients without specimens on day of surgery.

Goodnough et al. Transfusion 2011;51:600-609
Elective Surgery Diagnostic Testing Interventions

1. OR policy prohibiting initiation of case until T&S completed
2. Safety checklist (go pass, time-out) confirmation of T&S testing completed
3. Extended T&S specimen retention to 30 days
4. OR schedule reconciliation; patient log sheet faxed 5:00am to OR

Type and Screen/Crossmatch Specimens Received by Transfusion Service on Day of Elective Surgery

<table>
<thead>
<tr>
<th>Interval</th>
<th>I (15 Months)</th>
<th>II** (6 months)</th>
<th>III*** (10 months)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients without crossmatched blood*</td>
<td>43</td>
<td>7</td>
<td>18</td>
<td>68 (75%)</td>
</tr>
<tr>
<td>Incidence</td>
<td>1:133</td>
<td>1:328</td>
<td>1:225</td>
<td></td>
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</table>

*At Initiation of Anesthesia/Surgery
**Post Quality Improvement Intervention
***Subsequent Quality Assessment for Compliance

BENCHMARK ERROR RATES IN PATIENT IDENTIFICATION/SPECIMEN LABELING

<table>
<thead>
<tr>
<th>Location</th>
<th>Rate of miscollected specimens: “wrong blood in tube”</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internationally</td>
<td>0.5/1000 corrected</td>
<td>10</td>
</tr>
<tr>
<td>Scotland</td>
<td>0.17/1000</td>
<td>11</td>
</tr>
<tr>
<td>Johns Hopkins</td>
<td>0.35/1000</td>
<td>12</td>
</tr>
<tr>
<td>England and Wales</td>
<td>0.67-0.77/1000 corrected</td>
<td>13</td>
</tr>
<tr>
<td>France</td>
<td>1.3400 uncorrected</td>
<td>14</td>
</tr>
<tr>
<td>Stanford University Medical Center</td>
<td>1:500 corrected</td>
<td>Goodnough et al. Transfusion 2009;49:1321-38</td>
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SUMC TS Projects in Operations, Quality, and Risk Management

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<tr>
<th>Project</th>
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<tbody>
<tr>
<td>Impact of CMV reflex testing on management of blood inventory</td>
<td>Diagnostic Laboratory Testing</td>
<td>Transfusion 2010;50:1685-1689.</td>
</tr>
<tr>
<td>Complement (C1q) fixing solid phase screening for HLA antibodies</td>
<td>Diagnostic Laboratory Testing</td>
<td>Transfusion 2011; Epub 5/26/11</td>
</tr>
<tr>
<td>Transfusion medicine support of obstetric services</td>
<td>Diagnostic Laboratory Testing</td>
<td>Transfusion 2011; Epub 5/4/11</td>
</tr>
<tr>
<td>Improving platelet supply chains between blood centers and transfusion services</td>
<td>Inventory Management</td>
<td>Transfusion 2009;49:2045-7.</td>
</tr>
<tr>
<td>Age of blood: potential impact on blood inventory and availability</td>
<td>Inventory Management</td>
<td>Transfusion 2010;50:2233-2239.</td>
</tr>
<tr>
<td>A novel allocation strategy for blood transfusions</td>
<td>Inventory Management</td>
<td>Transfusion 2011 Epub 7/14/11</td>
</tr>
<tr>
<td>ABO plasma-incompatible platelet inventory management</td>
<td>Inventory Management</td>
<td>Transfusion 2011 (Abstract) In Press</td>
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<tr>
<td>transfusion protocol</td>
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QUALITY/RISK MANAGEMENT SOME LESSONS LEARNED

I. High Volume Activities

   A. Diagnostic Specimens: Type and Screen/Crossmatch: 60,000/year
      1. Policies/Procedures
      2. Training/Competency
      3. Internal Assessments/Audits

   B. Therapeutic RBC Products: 40,000/year
      1. Policies/Procedures
      2. Training/Competency
      3. Internal Assessments/Audits
QUALITY/RISK MANAGEMENT SOME LESSONS LEARNED

II. Medium Volume Activities (300-500/year)
   A. Event Discovery Reports (EDRs)
      1. Investigations, Corrective Actions
      2. BPDRs
   B. Quality Management
      1. Preventative Actions Plans
      2. Tracking and Trending

III. Low Volume Activities
   A. Off-Site Transfusion Services: 50-200/year
      [Surgery Center, Infusion Center]
      1. Administrative/Medical Oversight
      2. External Assessments/Audits
      3. Inspection Readiness
      4. Review of Contracts
   B. ‘Sentinal Events’: JC, FDA, CAP/AABB, State of CA
   C. Risk Management
      1. Root Cause Analysis, Preventative Action Plans
      2. Customer Complaints

RELATIONSHIPS BETWEEN OPERATIONS, QUALITY MANAGEMENT, AND RISK MANAGEMENT

• Laboratory-based initiatives improve patient safety and clinical outcomes
• Resources need to be aligned with personnel and time required for quality and risk management

Patient Blood Management Performance Measures Project*

1. Preoperative Anemia Screening
2. Preoperative Blood Type and Antibody Testing
3. Transfusion Consent (NB: Gann Act)
4. Blood Administration (Nursing Oversight Including Patient Identification, Vital Signs)
5. Indications for RBC Transfusion
6. Indications for Plasma Transfusion
7. Indications for Platelet Transfusion

*Joint Commission
http://www.jointcommission.org/patient_blood_management_performance_measures_project/

Patient Blood Management

• Blood Management (2003): The appropriate use of blood and blood components, with a goal of minimizing their use
• Patient Blood Management (2011): A patient-centered evidence-based medical and surgical approach that is multidisciplinary and multiprofessional.
• Preventative strategies are emphasized
  – Management of anemia
  – Optimize hemostasis
  – Clinically-effective blood utilization

Society for Advancement of Blood Management (SABM) http://www.sabm.org/public/

Courtesy of Kim Pardini-Kiely, Vice President Clinical Effectiveness/Quality, SHC
Transfusion in Cardiac Surgery: What we Did…

Before and After Laboratory Guided Transfusion Algorithm

• What We Did:
  • Broad Physician Consensus
  • Laboratory Guided Algorithms
  • Education & Empowerment

• What Happened:
  • 500 patients in each group (before and after algorithm)
  • Red Blood Cell Transfusion Reduced 47%
  • Blood Component Transfusion Reduced 57%
  • Total Cost of Transfusion Reduced $2 Million/3 months
  • Improved Outcomes:
    • Reduced Bleeding
    • Reduced Kidney Injury

RBC Distributions based on NBCUS

Cancellation of Elective Surgeries by US Hospitals, 1997-2008

<table>
<thead>
<tr>
<th>Year</th>
<th>% Hospitals with Cancellation of ≥1 Day</th>
<th>Range of Days</th>
<th>Median Number of Days</th>
<th>Number of Patients Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>8.6</td>
<td>1-21</td>
<td>2</td>
<td>Not Determined</td>
</tr>
<tr>
<td>1999</td>
<td>7.4</td>
<td>1-150</td>
<td>2</td>
<td>568</td>
</tr>
<tr>
<td>2001</td>
<td>12.7</td>
<td>1-63</td>
<td>2</td>
<td>952</td>
</tr>
<tr>
<td>2004</td>
<td>8.4</td>
<td>1-39</td>
<td>2</td>
<td>546</td>
</tr>
<tr>
<td>2006</td>
<td>6.9</td>
<td>1-120</td>
<td>3</td>
<td>412 (721 weighted)</td>
</tr>
<tr>
<td>2008</td>
<td>4.4</td>
<td>1-100</td>
<td>2</td>
<td>151 (325 weighted)</td>
</tr>
</tbody>
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