Business Concept: Anemia Center/Clinic/Service
Proposal submitted by Department of Blood Management

Concept Name
Anemia Center/Clinic/Service, Pre-op Treatment Center, Blood Management Outpatient Service, etc.

Description
The Anemia Center will offer physicians/surgeons the services of a physician, nurse practitioner, or pharmacist and the Outpatient Infusion Center (OIC) to refer their surgical patients for screening and treatment of anemia and iron-deficiency as a clinical strategy to improve patient blood management. The physician, nurse practitioner, etc. in association with the Blood Management/Conservation/Reduction Program, under the oversight of e.g., Medical Director, will also accept referrals from surgeons and prescribe treatment regimens that will be administered in the OIC.

Clinical / Operational Impact
Our QM department, Transfusion Committee, Laboratory/Blood Bank, Blood Management Workgroup, etc. identified orthopedic joint replacement (DRG 209/210) and cardiac surgery (DRG 105/106/107/109) as “high-user” blood products. In year, at hospital name, # of orthopedic patients were transfused (N=_____) at _____ units per patient, a total of _______ packed red blood cells. In cardiac surgery, ____% were transfused (N=____) at _____ units per patient a total of _____ PRBCs. In year, a hospital chart review of # CABG patients reaffirms that pre-operative anemia is the greatest predictor of transfusion.

The Anemia Center will have the following clinical impact:
• Decreased blood use in elective surgery. This is accomplished by reducing transfusion requirements and easing supply issues. One study concludes that pre-operative anemic patients are more than 3 times as likely to receive banked blood products during their hospitalization. The prevalence of pre-operative anemia is high. Reports indicate that up to 35% of joint replacement, 34% of non-cardiac, and as many as 75% of colon cancer patients are anemic prior to surgery. Another study (N=225) concluded that pre-operative iron supplementation in patients with iron deficiency anemia resulted in a reduction in transfusion requirements.
• Decreased costs. Correcting preoperative anemia in our elective orthopedic patients ____% would yield a savings of $____ based on blood bank cost estimate $____ x _______ cases x ________ packed red blood cells.
• Improved patient outcomes by decreasing infections and length of stay. One hospital demonstrated an 80% reduction in RBC transfusion and a 40% reduction in deep wound infections in orthopedic patients (N=28,861). Another study of elective total hip replacement patients (N=225) confirmed that patients with preclinical anemia on admission had a higher incidence of postoperative infection and transfusion and a longer post-operative hospital stay. Another hospital evaluated orthopedic patients (N=500) by combining pre-operative therapy with a surgical blood conservation algorithm using blood salvage, adherence to strict transfusion guidelines, and lowered transfusion thresholds. They reported an overall transfusion rate of 4% your hospital rate with a 3-4 day hospital length of stay.
The Anemia Center will be an operational improvement of the current Blood Management Outpatient Service (BMOS).

- Since year, the BMOS effectively eliminated the need for transfusions in pre-surgical anemic patients declining blood therapy by a small segment of committed physicians.
- Growth to attract more patients was hampered by surgeon time constraints to screen their patients and prescribe early interventions, patient logistics, e.g., surgical referrals from outlying PCPs, and our lack of qualified personnel, e.g., physicians, nurse practitioner, to assess and prescribe treatment
- Anemia Center will be a pro-active, viable alternative to reactive management of surgical blood loss (i.e., transfusion) and will expand to meet the needs of all elective anemic orthopedic, cardiac, and gynecologic surgical patients
- The Anemia Center clinician physician, nurse practitioner, pharmacist and Blood Management Program staff will track referrals, subsequent surgical volumes, and measure clinical efficacy of the treatment regimen per protocol
- Blood Management Program will be able to track blood PRBC usage in elective orthopedic joint replacement and open heart procedures.

**Patient/Physician/Staff Relations**

The Anemia Center will increase patient satisfaction:

- The public is becoming increasingly aware of the risks associated with transfusions and the benefits of alternative blood management.
- In a poll conducted by the Anemia Institute for Research and Education in 1999, 84% of consumer participants stated they would prefer an alternative to blood transfusion if it were available.

The Anemia Center offers a practical solution to administrative concerns by:

- Offsetting the increasing costs of blood products (10% annually).
- Lessening the strain on uncertain blood inventories due to a shrinking donor pool (only 5% of those eligible donate), while elderly surgical populations increase; a disaster could immobilize operating rooms across the city.
- Improving reimbursement by shifting cost of anemia therapeutics from inpatient to outpatient treatment.

The Anemia Center meets a growing need of physicians as they are:

- Re-examining transfusion practice in view of safety issues, complications, and questionable efficacy of stored blood our hospital average is # days old.
- Realizing that pre-operative anemia should be a contra-indication to elective surgery.
- Appreciating the clinical advantages of pro-active blood management demonstrated by increasing number of iron infusions (3-5 daily in the OTC) administered to their High-risk OB and GYN patients.
- Seeking more assistance from PBM department to participate in patient anemia discharge planning and preparing patients for future surgery.
- Experiencing increased patient volumes while contending with greater restrictive policies and that screening and preoperative management of anemia is costly in terms of time and human resources.
The Anemia Center will demonstrate to employees that:

- Hospital mission statement is more than a slogan due to increasing awareness of blood conservation technology through Blood Management Program’s in-servicing and education.
- Preoperative anemia is treatable and hospital is proactive.
- Hospital name here supports best practices that include strategic patient blood management.

**Operational Infrastructure**

The Anemia Center will use (physician, nurse practitioner, or pharmacist) in their own office for preoperative work-up and evaluation and treatment in the Outpatient Infusion Center. The physicians will be on-call and collaborate with the Blood Management Department in patient tracking and research initiatives.

Blood Management department will direct marketing and business development efforts to surgical practices and track Anemia Center assisted surgical cases. The Outpatient Infusion Center has space and staff to accommodate more volume; the Internal Medicine Center may use the Infusion Center for patient encounters, but will not require a permanent office.

**Growth**

A modest growth in orthopedic and cardiac surgical volumes is anticipated as the Anemia Center enhances name of hospital hospital’s reputation for commitment to high-quality care among medical staff and referring physicians. Surgical cases scheduled at other hospitals may be diverted here as a result of the Anemia Center and the continuity of inpatient care provided through the Blood Management Program clinical resources. The Anemia Center will also bolster the services of the CV, Ortho, and GYN surgeons, as well as integrate the OB/GYN, Family Practice, and Surgery residency programs (if a teaching hospital) in order to optimize blood management for their patients scheduled for elective surgery.

**Financial Impact**

The cost per annum for the Anemia Center is $___________ for (per physician, nurse practitioner; contract fee or employed clinician). Business development and marketing costs will be borne by the (BMP and Public Relations departments). Cost will be offset by:

- Savings in reduced blood usage in orthopedic joint replacement surgery
  Using our current blood bank estimates, the cost of delivering PRBCs in DRG 209/210 in year would have been $_______ (_______ units at $____ per unit). The unit cost includes acquisition, lab tests, type and cross matching, nursing costs and tubing but does not include indirect costs such as increased resource consumption and LOS in transfused patients. Estimating that ___% of orthopedic patients suffer pre-operative anemia, then # patients (___% of _____) were anemic. Correcting anemia in 50% of this population at a transfusion rate of # units per patient at $____ per unit would yield a cost-savings of $_______ alone.

- Potential savings from reduced blood use in elective cardiac and gynecologic surgery is anticipated with an Anemia Center assessment and early interventional anemia management.

- Improving reimbursement profile by cost-shifting from inpatient to outpatient treatment as inpatient utilization is typically absorbed in the DRG.
Background

PBMC will utilize the Outpatient Treatment Center (OTC) and require the hiring of one (1) FTE Patient Representative. The cost per annum for the Patient Representative is $50,000. Business development and marketing costs will be borne by the Blood Conservation Management (BCM) department.

The cost will be directly offset by savings. According to the 6 month Banner Good Samaritan Medical Center (BGSMC) analysis of 242 orthopedic joint replacement surgeries in 2007, correcting preoperative anemia in 38 patients would have yielded a savings of $192,960 alone (see following chart).

This is determined by the following:

1. **Eliminating the need for red blood cell transfusion:** Sonora Quest Laboratory 2008 cost estimates to transfuse one unit of red blood cells ($852) at an average of 1.93 units per transfused patient would yield a 12-month savings of $100,195.

2. **Reducing the hospital length of stay:** Correcting preoperative anemia in 13 hip replacement patients would have reduced length of stay by 2 days (6.7 transfused versus 4.4 non-transfused); thus Finance Department estimate of $892 per ortho-bed day 4 would yield a 12-month savings of $46,384.

3. **Improving patient throughput** by two days will yield a savings of $46,384.

Another key economic advantage is drug cost reimbursement. Outpatient cost for anemia therapy is reimbursable, whereas inpatient utilization of red blood cell cost (up to three units) is absorbed in the Diagnostic Related Group (DRG). Therefore, establishing an Orthopedic Preoperative Blood Management Center greatly improves the reimbursement profile.

### Red Blood Cell Utilization in Orthopedic Total Joint Replacement 1H 2007
**Department of Blood Conservation Medicine – Banner Good Samaritan Medical Center**

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<th>Pts Tx’d</th>
<th>% Tx</th>
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<th>Units/ Pt</th>
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<th>% Preop Anemia</th>
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**Assumptions:**

1. Cost to deliver one RBC Unit $852
2. Avg COS on Day 4 $892
3. Tx predicts LOS in THA

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<td>Reduce LOS (THA only)</td>
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BMP Anemia Center Concept – final.doc
References


