Autologous Donation: Insuring the benefits outweigh the risks –

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Objectives

• To provide the benefits and risks of autologous donation.
• 2. To review the criteria for autologous donation.
• 3. To review other blood management alternatives.
Post-Krever Inquiry Recommendations (1997):

...‘precautionary principle’

For elective surgical patients:

• Increase awareness and availability of autologous blood donation programs
• Patients be informed of the risks of transfusions and the available alternatives well in advance of their surgery to enable them to take advantage of these alternatives
PAD Program

• Major modality for many centres

• > 50% of collected units were routinely wasted

**Patients become anemic pre-operatively**

• OR schedules constantly changing and PAD blood outdating (good for 42 days only and old blood is not good for your patient)
Pre Autologous Donation

- Overall efficacy of PAD depends on the extent of bone marrow stimulation to produce **new** RBCs to replace the donated blood
- Endogenous erythropoietin response is suboptimal at the level of mild anemia achieved during routine autologous blood collections
- **Aggressive** PAD or the administration of erythropoietin/IV iron is required to accelerate erythropoiesis and expand RBC mass
PAD Program at the QEII

Number of Patients

- PAD
- Transfused
- No PAD
- Transfused

Department of Anesthesia

Dalhousie University

Inspiring Minds
Faculty of Medicine
CBS/ Capital Health Pre- Autologous Donation Algorithm

Surgeon’s Office
Surgery Date Booked

PBMP Screening
Appropriate?

CBS Referral

No

Deferred

Yes

CBS Collection

If High Risk

Capital Health Program
Decisions, Decisions...

What evidence do we have that we are doing the right thing?
Cochrane Review 1950-2009

• The review of 14 RCTs of PAD showed a reduction in the need for allogeneic blood, the methodological quality of the trials was poor and the overall transfusion rates (allogeneic and/or autologous) in these trials were high, and were increased by recruitment into the PAD arms of the trials.

• This raises questions about the true benefit of PAD. In the absence of large, high quality trials using clinical endpoints, it is not possible to say whether the benefits of PAD outweigh the harms.

Fast Forward-13 years

Perioperative Blood Management Services
Blood Management

The appropriate use of blood products, blood management techniques and patient directed

*Blood management* is no longer an option

It’s a necessity
Why Blood Management?

• Facilitate transfusion avoidance and optimize blood management in elective surgical patients
• Enhance transfusion practice outside of blood bank
• Interact with physicians, nurses and patients to promote blood management and alternatives to transfusion
Why is Blood Management Important?

Resource Allocation

- Demand for RBC’s in North America is estimated to increase from 12 – 20 million units from 1990 to 2030
- Shrinking inventory and increased demand - aging of baby boomers → donor pool
- Cost ↑ due to advanced technology for testing
Why is the Optimization of Preop Hgb important?

• Preop Hgb is one of the most important predictors of the need for blood transfusion in patients undergoing elective surgery\(^2\).

• Optimization of preop Hgb reduces the need for transfusion.

How is Blood Management Accomplished?

Identify at risk population

Krever recommendations:

• Consider transfusion alternatives for elective surgical patients (>10% risk of transfusion)

Why perioperative patients?

• 50-70% of blood products used in hospitals are used in the perioperative setting (Hebert et al, 2004)

• Potential exists to modify some predictors of transfusion in elective surgical patients

• Pre-op Hgb, Blood loss

• Wide variation in transfusion practice for procedures
How is Blood Management Accomplished?

Pre-op Hgb optimization:
4-6 week lead time for assessment, screening and appropriate interventions:
• Correction of nutritional anemia
  Iron therapy – dietary advice, supplements - Vit B12, Folate
• Careful attention to patient medical history, pre op meds
  ASA, Clopidrogel (Plavix), NSAIDs, herbal supplements
• Pre operative autologous donation (PAD)
• Acute normovolemic hemodilution (ANH)
• Erythropoietin therapy
  • ? Delay surgery
EPREX* - Erythropoietin

- Erythropoietin is a naturally occurring hormone produced primarily in the kidney and is the principal regulator of red blood cell production.

- EPREX* is a recombinant human erythropoietin that contains the same amino acid sequence of isolated natural erythropoietin.
Should I Use Iron with ESAs?

• “When erythropoietin (epoetins or darbepoetin) is used to treat the anemias of chronic renal failure, cancer chemotherapy, inflammatory bowel diseases, HIV infection and rheumatoid arthritis, functional iron deficiency rapidly ensues unless individuals are iron-overloaded from prior transfusions. Therefore, iron therapy is essential when using erythropoietin to maximize erythropoiesis by avoiding absolute and functional iron deficiency.”

Ultimately, the safest blood transfusion is the one not given!
Thank you
Thought for the day......

“Blood transfusion is a lot like marriage. It should not be entered into lightly, unadvisedly or wantonly, or more often than is absolutely necessary.”

Beal, RW, 1976
Questions