

S.W.A.T.

SURGERY WITHOUT ANEMIA OR TRANSFUSION

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FAQS

Q: When should one consider parenteral iron therapy and what is the dose?

A: Parenteral iron therapy is of value when a patient has decreased or depleting iron stores (MCV < 80fl or Ferritin < 21 mcg/L) and is unable to replete iron stores with oral iron because of non-compliance, side effects, or insufficient time.

The amount of parenteral iron required can be based on the following formula.

Iron Dextran: Dose (ml) = 0.0442 (desired Hb - observed Hb) x lean body weight + (1.26 x lean body weight)

Where 1ml = 50 mg elemental iron

The maximum single dose is 1000mg.

A test dose of 25mg is given over 15 minutes.

The incidence of anaphylaxis with Iron Dextran is 0.1-0.6%.

The effectiveness of parenteral iron may be less postoperatively because of SIRS (Surgical Inflammatory Response Syndrome).

For intraoperative blood loss:

Replacement Iron (mg) = blood loss (ml) x hct.

Venofor (iron sucrose) has a lower incidence of anaphylaxis and is currently only used in Renal Dialysis patients or patients with known hypersensitivity to Iron Dextran.

Blood Management Awareness Week

NOVEMBER 5-9, 2007

Look for activities at WRHA Hospitals November 5-9, 2007

53^e Annuel Assemblée Générale
53^e Assemblée Générale Annuelle

The College of Family Physicians of Canada (CFPC), The Manitoba College of Family Physicians (MCFP), and The CFPC's Sections of Teachers and Researchers...

Le Collège des médecins de famille du Canada (CMFC), le Collège des médecins de famille du Manitoba (CMFM), ainsi que les Sections des enseignants et des chercheurs du CMFC...

invite you to / vous invitent au :
Family Medicine Forum 2007
Forum 2007 en médecine familiale

Winnipeg Convention Centre

Join hundreds of colleagues for Canada's premier continuing education/professional development event.
Joignez-vous à des centaines de collègues pour la première activité d'éducation continue/développement professionnel en importance au Canada.

Du 11 au 13 octobre October 11 - 13

Winnipeg Convention Centre

www.cfpc.ca 1 800 387 6197










WRHA Perioperative Blood Conservation and Physicians & Nurses for Blood Conservation (PNBC) Booth #127 Stop by to see us

The Manitoba Provincial Blood Programs Coordinating Office

Manitoba spends approximately \$50 million per year to ensure the supply of blood, blood components and derivatives to Manitobans. We use approximately 42,000 red blood cell units per year at a cost per unit of about \$470.

This is an estimated cost based on the following publication:
DEVELOPING A COST MODEL FOR TRANSFUSION OF BLOOD COMPONENTS IN ONTARIO, R. Barty, T. Thompson, and T. Cameron, Ontario Regional Blood Coordinating Network, McMaster University, Hamilton, ON, Canada, Sunnybrook Health Sciences Centre, Toronto, ON, Canada, and The Ottawa Hospital, Ottawa, ON, Canada. We thank the authors for their kind permission to allow us to reprint their findings.

RESULTS

Cost Category	Task/Testing	Time	Rate	Cost	Reagent & Supply Cost	Total Cost	
Donor 	Blood Donation*	1 hour	\$20.50/hour**	\$20.50	N/A	\$61.50	
	Travel	2 hour	\$20.50/hour**	\$41.00	N/A		
Manufacturer 	RBC Production	Flat cost	\$339.00***	\$339.00	N/A	\$339.00	
Phlebotomy 	Collection of Pre-Transfusion sample	Flat fee	\$7.75	\$7.75	N/A	\$7.75	
Transfusion Service 	Pre-Transfusion Testing	WMS					
	❖ Specimen Handling	5 min	\$0.738	\$3.69	N/A	\$16.29	
	❖ ABO/Rh by Tube	5 min	\$0.738	\$4.59	\$0.90		
	❖ Antibody Screen by Gel	4 min	\$0.738	\$5.06	\$2.11		
	❖ Immediate Spin Crossmatch	4 min	\$0.738	\$2.95	N/A		
Nursing 	Blood Administration						
	❖ Ordering	15 min	\$0.716/min	\$10.74	\$5.12	\$15.86	
	❖ Starting or priming of IV						
	❖ Checking blood product						
	Patient Safety						
	❖ Vital signs	5 min	\$0.716/min	\$3.58	\$10.74	\$1.43	\$15.75
	❖ Pre transfusion						
❖ 1 per hour based on 3hours							
❖ Flush with saline							
Transport 	Transport and delivery of products	30 min	\$0.40/min	\$12.00	N/A	\$12.00	
	Grand Total	 +  +  +  +  +  =				\$468.15	

*Repeat donors with an appointment will require approximately 1 hour for a blood donation
 *** Canadian Blood Services 2005-2006

**Statistics Canada indicates the average Ontarians'

CONCLUSIONS

- ❖ Initial analysis estimates the cost of a RBC at \$468.15.
- ❖ ORBCoN plans to continuously assess and develop a more comprehensive approach that will incorporate several indicators that will reflect the cost of a RBC transfusion and be expanded to other blood products.

McMaster University, Hamilton, ON, Canada, Sunnybrook Health Sciences Centre, Toronto, ON, Canada, and The Ottawa Hospital, Ottawa, ON, Canada. We thank the authors for their kind permission to allow us to reprint their findings.

The Manitoba Provincial Blood Programs Coordinating Office is a small unit within Manitoba Health which was created to provide leadership and coordination of the Manitoba Blood System. The system is complex and involves many organizations (see chart below).

Manitoba Blood System

Component	Key Role
Manitobans	End user of blood, blood components and derivatives & services ('customer')
Regional Health Authorities	Service providers
Diagnostic Services of Manitoba	Blood bank operators
Canadian Blood Services (CBS)	Supplier of blood, blood components and derivatives
College of Physicians and Surgeons	Manitoba Quality Assurance Program (funded by MB Health) & Practice Guidelines
Health Canada	Regulator of product and manufacturing processes
MB Health Provincial Blood Programs Coordinating Office	Policy, leadership, coordination and funding.
Ministers of Health	Only voting members of the CBS corporation, responsible for funding and appointing the Board of Directors

Working cooperatively with our partners listed in the table above, our mission is to improve the quality, safety, efficiency and effectiveness of the Manitoba blood system. Recent key initiatives include:

- Improving the quality of practice for Nursing through the development of the Manitoba Transfusion Medicine Best Practice Resource Manual for Nursing (2007)
- Improving the quality of Blood Bank practice through the development of the second edition of the Manitoba Transfusion Quality Manual for Blood Banks (2007)
- Improving the quality of the Manitoba Adverse Event Reporting System (AERS), a surveillance system for monitoring transfusion reactions to blood, blood components and derivatives.
- Effective and efficient utilization of blood, blood components and derivatives through inventory tracking, clinical utilization guidelines, blood conservation measures etc..

In future editions of this newsletter we will describe these and other projects in more detail.

Contact Information:

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 September 25, 2007

WRHA Perioperative Blood Conservation Program (PBCP) Guidelines for the Use of Erythropoietin for Elective Surgery

Based on the recent Eprex Advisory (April 16, 2007), the product monograph and blood conservation literature, the PBCP recommends the following:

1. Eprex may be used alone or in combination with PAD to reduce allogeneic RBC transfusion in elective surgery.
2. Concomitant supplemental iron is recommended with Eprex, even in the presence of demonstrable iron stores. The recommended dose is Ferrous Fumarate 300 mg PO BID (200 mg elemental iron per day). Intravenous iron may be considered based on the iron profile. ALL patients undergoing elective surgery, without other contraindication, should receive adequate thromboprophylaxis as per the seventh ACCP consensus conference guidelines. Although not in a thromboprophylaxed population, one open-label randomized study in elective major spine surgery demonstrated increased risk of VTE in patients treated with Eprex.

Do Not Use Eprex	Myeloid Malignancies
	Head & Neck Cancers
	Anemic Patients with cancer where the anemia is cancer-related, or <i>not</i> due to chemotherapy
	Seizure disorders (may use cautiously with support from attending Neurologist)
	Uncontrolled Hypertension
	Hypersensitivity to mammalian-cell derivatives
	Pure Red Cell Aplasia

May Use Eprex in anemic pre-operative patients to achieve target Hb 120g/L	Anemic patients with Non-Myeloid malignancies where the anemia is due to recent chemotherapy
	Anemic patients with chronic renal failure

May Use Eprex in anemic or non-anemic pre-operative patients to achieve target Hb 130g/L	Patients with a Hb<130g/L going for a non-cancer related surgery with a >10% risk of allogeneic transfusion [#]
	Jehovah's Witness patients

[#]Exercise caution in patients with cardiac disease, or at increased risk of VTE

References

- Health Canada Endorsed Important Safety Information on Erythropoiesis-Stimulating Agents, Janssen-Ortho. April 16, 2007.
- Callum JL & Pinkerton PH. 2005 Bloody Easy2 page 78
- Geertz WH et al. Prevention of Venous Thromboembolism: The 7th ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest 2004; 126(3) Supp338S-400S
http://download.Veritasmedicine.com/PDF/CR004621_ToplineResults.pdf



Article review:

**Blood Transfusion and Cesarean Delivery
Rouse DJ et al. Obstet Gynecol 2006;
108:891-7**

By: Dr. T. Mutter, MD, FRCPC

This study was a sub analysis of data collected between 1999 and 2002 for a large American study involving 19 university centres and more than 57,000 primary (1°) and repeat (R) cesarean sections (C/S). Risk factors for intraoperative and/or postoperative packed red blood cell (PRBC) transfusion were determined by a multivariable analysis. 2.2% of 1°C/S and 3.2% of RC/S patients were transfused a median of 2 units of PRBC. Many classic risk factors for postpartum hemorrhage were *insignificant* predictors of transfusion risk including macrosomia, parity ≥ 5 , multiple gestation, chorioamnionitis, 1, 2, 3, or 4 previous C/S, increased duration of labor and the augmentation of labor. Placenta previa was the obstetric complication with the highest risk of transfusion but the odds ratio (OR) was much higher in RC/S (15.9) compared to 1°C/S (4.8). Similar to other smaller studies of C/S patients, general anesthesia (GA) was associated with an increased risk of transfusion (OR 4.2 in 1°C/S and 7.6 in RC/S). Given GA was used in about 7% of cases, it is unlikely that the increased transfusion risk was solely due to confounding from other risk factors for hemorrhage that weren't considered (i.e uterine rupture, preexisting coagulopathy). Transfusion threshold and prophylaxis of uterine atony weren't standardized in this observational study. However, I still take away an increased respect for the risk of hemorrhage in patients undergoing GA for C/S and for patients with placenta previa, especially with a history of prior C/S. Finally, as in most studies of transfusion risk, baseline anemia (Hct < 30%) was one of the strongest predictors of transfusion. As the vast majority of anemia in pregnancy is due to iron deficiency and therefore treatable, we should treat iron deficiency aggressively in pregnant patients and encourage all those who provide prenatal care to do the same.

Glenda Klein RN

23 years nursing experience in areas such as PACU, ICU, ER, Medicine and Orthopedic Acute and Rehab.

Professional Member of:

Physicians and Nurses for Blood Conservation (PNBC)

Manitoba Association of Perianesthetic Nurses

Napan Association of Perianesthetic Nurses

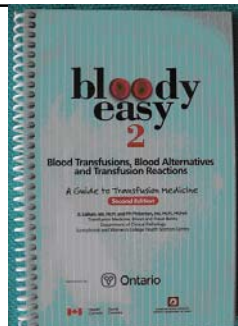
FAST FACTS:

BloodyEasy 2 - The 10 Commandments

Adapted from the WHO 1998 recommendations for the clinical use of blood:

1. Transfusion is only one part of patient management.
 2. Prescribing decisions should be based on national guidelines on the clinical use of blood, taking into account the needs of each individual patient.
 3. Blood loss should be minimized (and blood conservation strategies considered*) to reduce a patient's need for transfusion.
 4. A patient with acute blood loss should receive effective resuscitation (IV replacement fluids, oxygen, etc.) while assessing the need for transfusion.
 5. A patient's hemoglobin value, although important, should not be the sole deciding factor in starting transfusion. The decision to transfuse should be supported by the need to relieve clinical signs and symptoms and to prevent morbidity and mortality.
 6. The clinician should be aware of the risks of transfusion-transmissible infection (and non-infectious risks*) in the blood and blood products that are available for each individual patient.
 7. Transfusion should be prescribed for a patient ONLY when the benefits outweigh the risks.
 8. The clinician should clearly record the reason for the transfusion.
 9. A trained health care professional should monitor the transfused patient and respond immediately if any adverse effects occur.
- Informed consent for transfusion should be obtained prior to transfusion.*

*additional recommendations by the Blood Products Advisory Panel.



**Congratulations on Blood-
yEasy 2
Certification:**

**Dr. Pam Rohald
Dr. Ken Baron**

If you wish to be recognized for the completion of BloodyEasy 2
Please contact Esther Mark at 787-1277.

www.sunnybrookandwomens.on.ca

We are on the web at :

www.hsc.mb.ca/perioperative

www.pnbc.ca

www.anemiainstitute.org

www.hc-sc.gc.ca/ahc-asc/activit/com/krever

www.transfusionontario.org

www.sabm.org

<http://www.cmaj.ca/cqi/content/full/156/11/DC1>