

ANEMIA MANAGEMENT FOR SURGERY

Brian Muirhead FRCPC
Department of Anesthesia
University of Manitoba

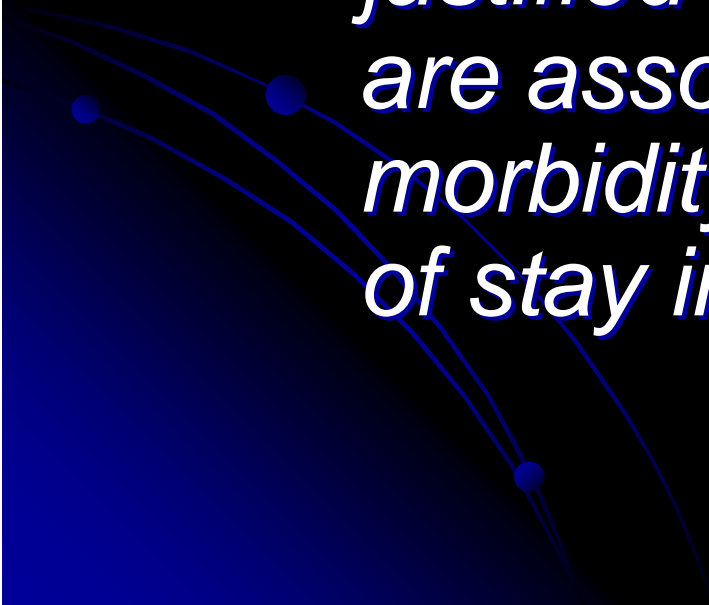


For those who leave or doze off

- Sick patients who are anemic do not do well
- Sick patients who are anemic and receive a transfusion may do worse
- Avoid anemia
- Treat anemia

WHY BLOOD CONSERVATION

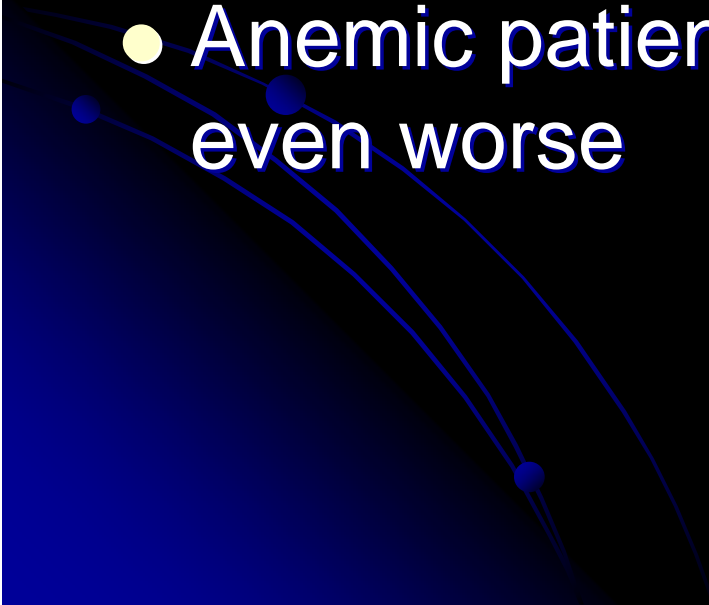
Recent studies show that justified or not, transfusions are associated with higher morbidity, mortality and length of stay in hospitals



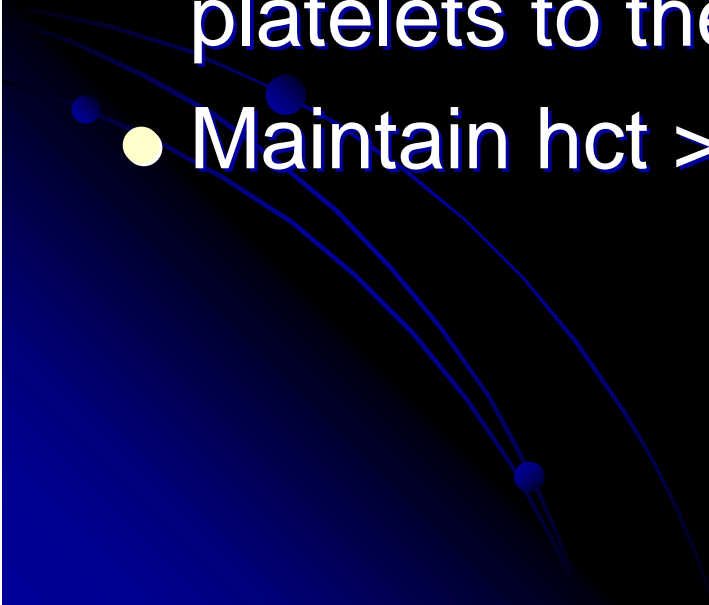
Is Anemia Bad?

- “Efficacy of red blood cell transfusion in the critically ill” Marik et al Crit Care Med 2008;36(9) 2267-74
- Red blood cell transfusions associated with increases morbidity and mortality
- Increased mortality, morbidity, and cost after red cell transfusion in cardiac surgery patients Murphy et al Circulation 2007;116:2544-2552

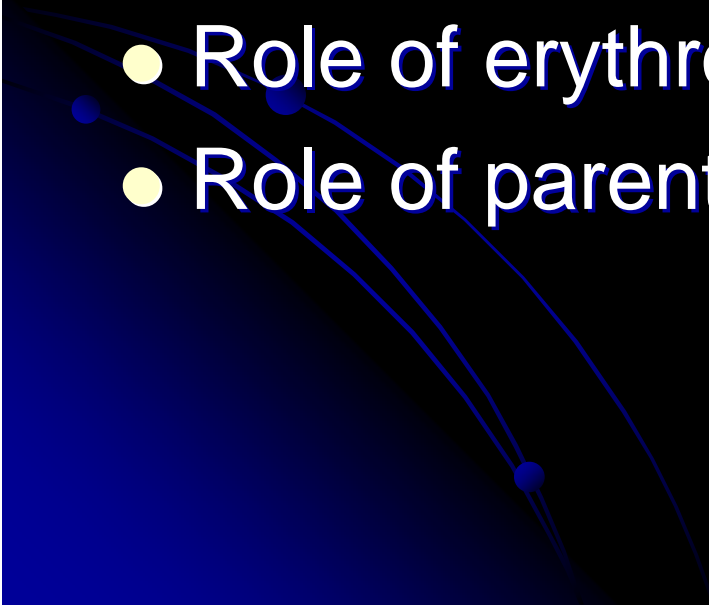
Is Anemia Bad?

- Role of Anemia in Traumatic Brain Injury
Salim et al J Am Coll Surg 2008;207:398-406
 - Anemic patients have worse outcomes
 - Anemic patients who are transfused do even worse
- 

Does anemia beget anemia?

- Hardy JF et al, Can J Anaesth 2004:51(4)
 - Erythrocytes activate platelets and contribute to their aggregation
 - Rheological effect causes margination of platelets to the endothelium
 - Maintain hct > 30 for clinical bleeding
- 

Correcting Anemia

- 10 – 30% of elective patients are anemic
 - Identification preoperatively
 - Decrease blood sampling
 - Mostly iron deficiency
 - Role of erythropoietin
 - Role of parenteral iron
- 

Preoperative Anemia

Karsky JM et al. Etiology of preoperative anemia in patients undergoing coronary artery bypass surgery, Can J Anaesth 1999;29(9):979-82

10% of patients had anemia-

37% hospital acquired

29% iron deficient

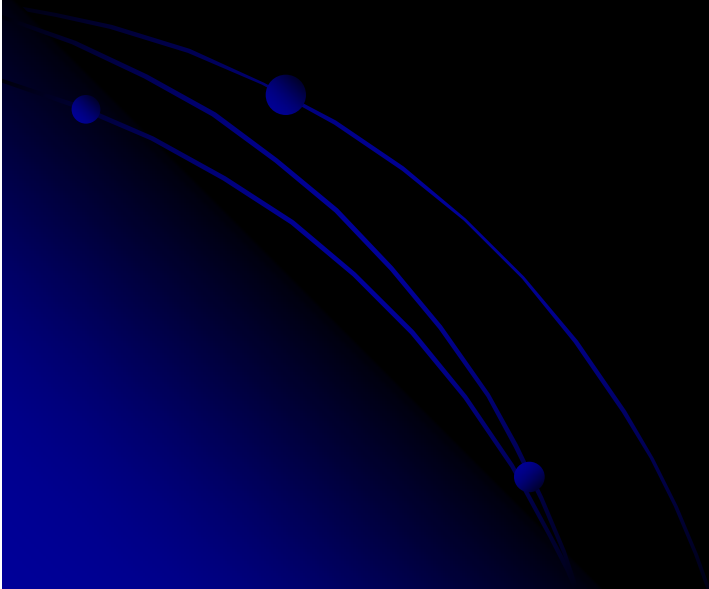
11% renal

Karsky (cont'd)

Anemia defined as Hgb < 120

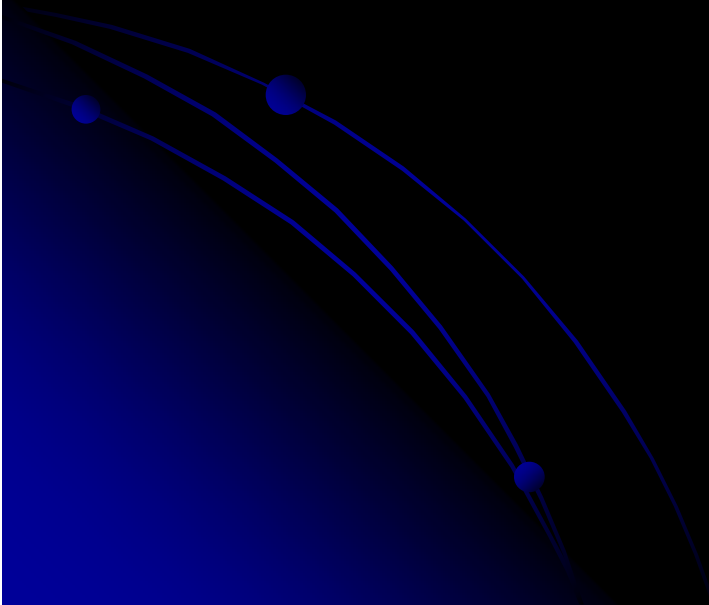
Overall transfusion rate 30%

Preop anemia rate 75%



Kulier et al 2003 ASA Abstracts

- Euroscore < 3 tolerate preoperative anemia
- Euroscore > 3 and anemic leads to increased morbidity and mortality



Anemia Algorithm for Surgical Patients

- CBC 6-12 weeks preop
- Abnormal hgb:
 - Males <130 g/L
 - Females <120 g/l
- MCV < 80
 - Ferritin <21 mcg/L or transferrin sat $< 15\%$, give iron supplementation
 - consider GI evaluation

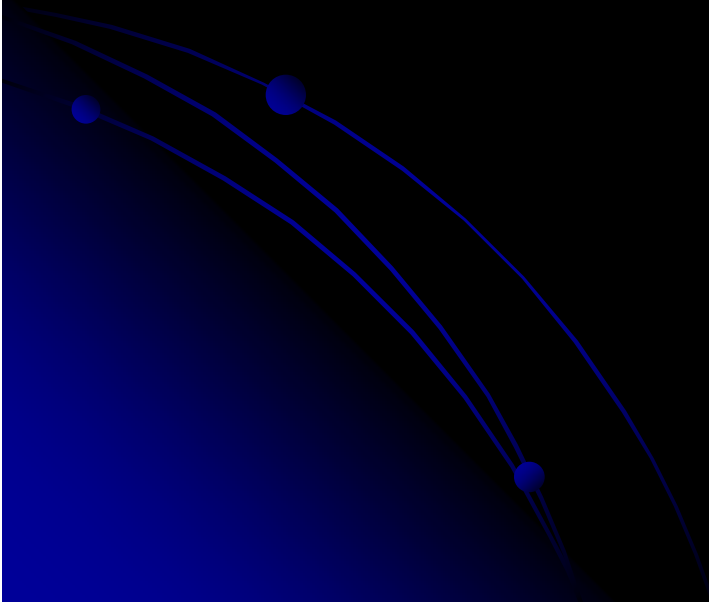
Anemia Algorithm

- MCV 80-100

- Creatinine >170 - nephrology work-up
- Normal creatinine do retic count
- Low retic count, evaluation for anemia of chronic disease
- Adequate retic count, rule out blood loss, hemolysis

Anemia Algorithm

- MCV >100 fl
 - test B12
 - consider hematology evaluation



Erythropoietin for Elective Surgery

- Used alone or in combination with PAD
- Concomitant supplemental iron

Fe Fumarate 300 bid (200 mg elemental Fe)

- Intravenous iron – venofer vs dextran
- Perioperative thromboprophylaxis

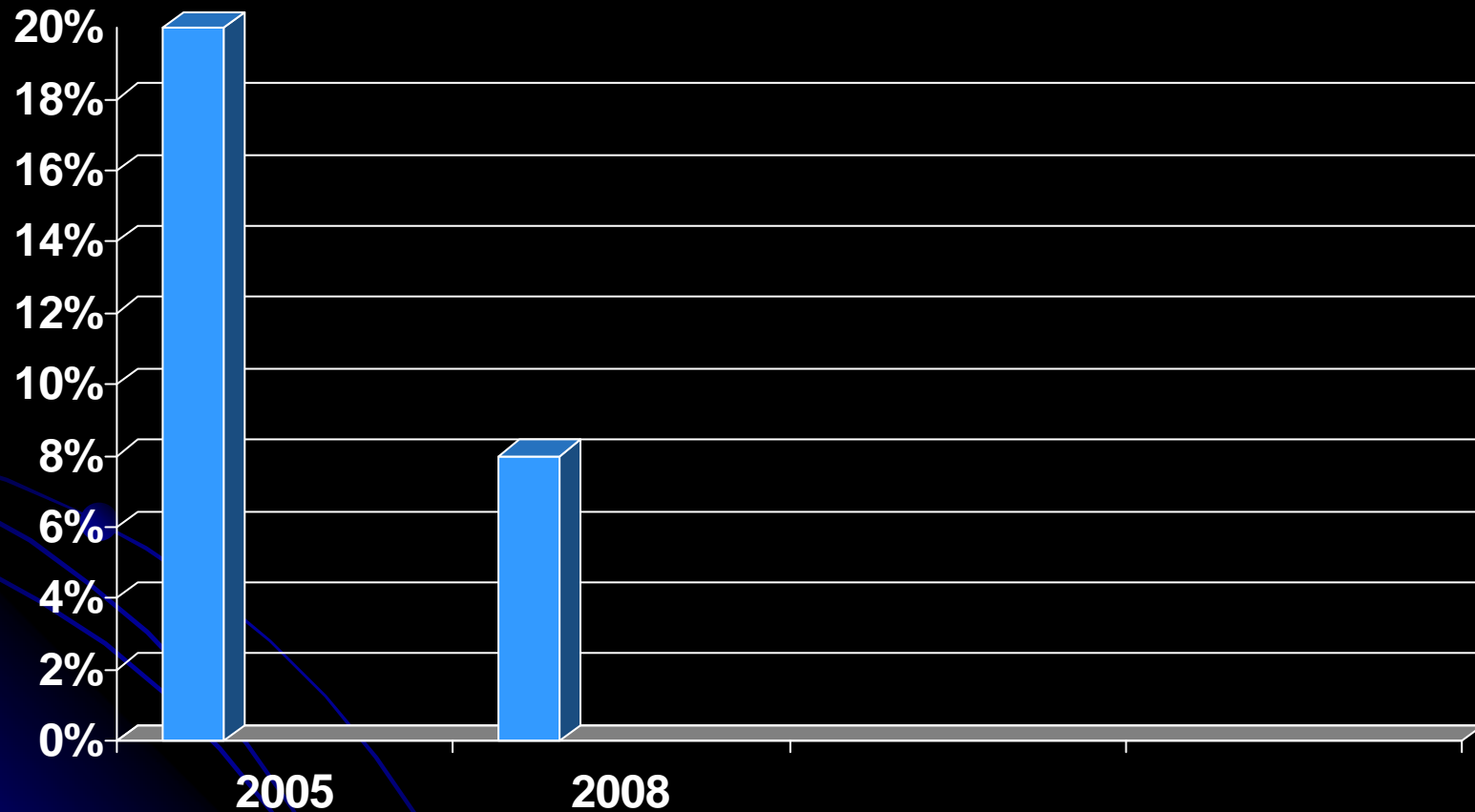
Do Not Use Erythropoietin

- Myeloid malignancies
- Head and Neck cancers
- Breast cancer
- Cancer-related anemia
- Seizure disorders
- Uncontrolled hypertension
- Pure red cell dysplasia
- Hypersensitivity

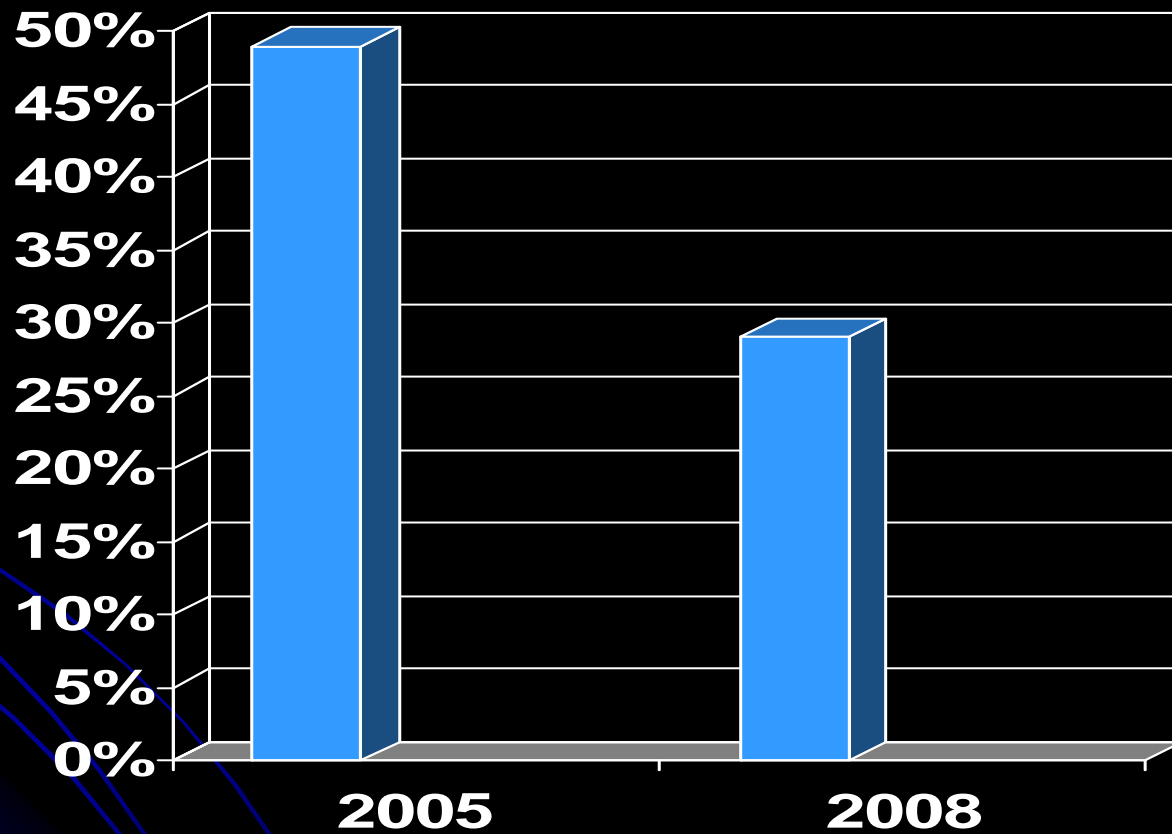
Erythropoietin

- Caution in cardiac disease
- Hgb < 130
- 20,000 – 40,000 units sc q7 days for three doses
- Covered by Manitoba Pharmacare if prescribed through PBCP

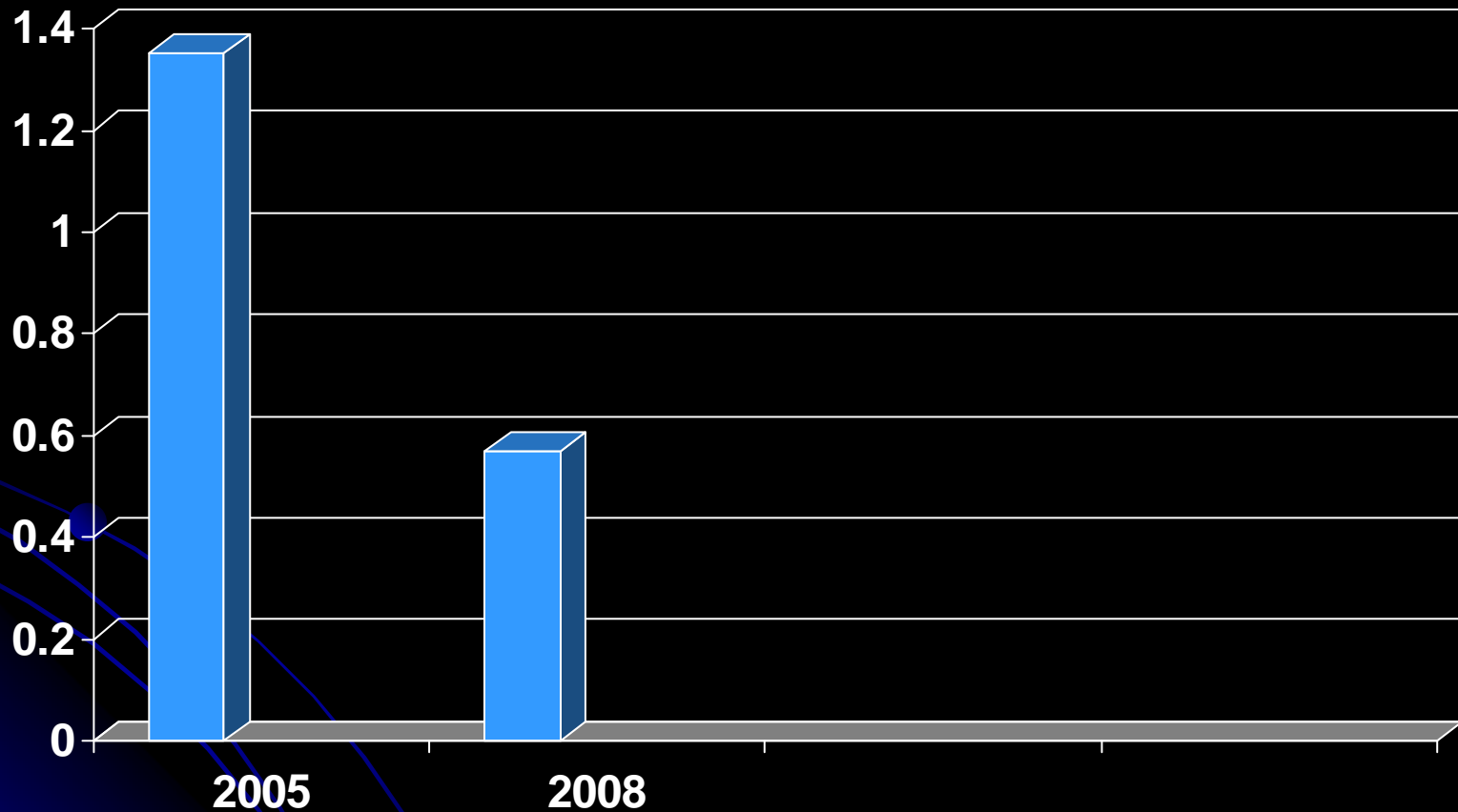
Anemic female patients




Transfusion Rate Concordia



Concordia RBC's per patient



Summary

- Avoid anemia
 - Treat anemia
 - Stop the bleeding
 - Avoid transfusions
 - Be aware of alternatives
 - Education
- 

BloodyEasy 2
**[www.sunnybrookandwomen's.
on.ca](http://www.sunnybrookandwomen's.on.ca)**

Esther Mark
WRHA PBCP
787-1277

