

## Transfusion Dilemmas

Gerald V. Goresky, MD. FRCPC

Professor, Anesthesia, University of Calgary

### **Learning Objectives:**

- o **To review criteria for transfusion of volume, blood, and coagulation factors**
- o **To understand the factors which have increased awareness of complications of blood transfusion.**
- o **To conduct case reviews of decision points for transfusion of blood components**

### **Transfusion requirements are physiologically determined by the need for:**

- o Intravascular Volume - as determined by measurement of blood pressure, pulse, assessment of preload, response to fluid challenge, variation in arterial pressure waveform with ventilation, urine output, and peripheral perfusion
- o Oxygen Carrying Capacity - as determined by preoperative hemoglobin level, type of hemoglobin, intraoperative hemoglobin level, and signs of ischemia
- o Improved clotting/coagulation - as determined by degree of blood loss, presence of blood clot, and assessment of laboratory tests.

### **Perceptions of risk of blood transfusion have changed, because of:**

- o Appearance of Human Immunodeficiency Virus and transmission of disease through transfusion.
- o Fears that Jacob-Creutzfeld disease might be acquired from albumin transfusion.
- o Development of better non blood colloid solutions.
- o Education efforts by Jehovah's witness members which are more focused and more specific
- o Changing priorities which have clarified the need for transfusion in specific circumstances, and reduced the need for transfusion of blood products

The decision to transfuse blood products has become a serious social issue; we now have a responsibility to more clearly define medical need for transfusion - the physiology has not changed.

### **The following issues continue to cause controversy regarding transfusion of blood products:**

- o Obtaining Informed Consent
- o Use of Autologous Blood Transfusion, especially in children
- o Use of preoperative erythropoietin
- o Transfusion of Children whose families have religious objection to blood transfusion.
- o Use of albumin and other colloid solutions
- o When to transfuse?
- o Apnea of prematurity
- o Low hemoglobin for nutritional reasons
- o Presence of abnormal hemoglobins
  - o Sickle Cell Trait and Sickle Cell Disease

- o Thallasemia
- o Hemoglobin SC disease

**References:**

*The management of Sickle cell disease.* National Institutes of Health. National Heart, Lung, and Blood Institute Division of Blood Diseases and Resources NIH PUBLICATION NO. 02-2117 Revised June 2002 (Fourth Edition). Anesthesia and Surgery: 149-152

*Blood transfusion in anemic infants with apnea of prematurity.* Westkamp E, Soditt V, Adrian S, Bohnhorst B, Gronck P. *Biol Neonate.* 2002;82(4):228-32

*Postoperative apnea in former preterm infants after inguinal herniorrhaphy. A combined analysis.* Cote CJ, Zaslavsky A, Downes JJ, Kurth CD, Welborn LG, Warner LO, Malviya SV. *Anesthesiology.* 1995 Apr;82(4):809-22.

*Anemia and postoperative apnea in former preterm infants.* Welborn LG, Hannallah RS, Luban NL, Fink R, Ruttimann UE. *Anesthesiology.* 1991;74(6):1003-6.

*Blood transfusion effect on the respiratory pattern of preterm infants.* Joshi A, Gerhardt T, Shandloff P, Bancalari E. *Pediatrics.* 1987; 80(1):79-84

*Severe anemia associated with transient neurological deficits.* *Stroke.* 1991;22(9):1201-2.