

Integrated Blood Conservation

Presented by

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OBJECTIVES

1. Discuss the impetus toward proper utilization of blood and blood components.
2. List some challenges facing today's health care in the United States.
3. Describe universal tools available for effective education in blood utilization.
4. Review the results of instituting hospital-wide blood utilization education and processes.

Growing Need for Blood Conservation

- Supply-Demand Gap Escalating
- Increased Awareness of the Clinical Impact in Transfusion Therapy
- Inconsistent Standard of Care
- Disaster/Emergency Preparedness

Blood Supply

- “Blood shortages also exist all over America”
- “Reports of wasted organs are increasing, and each day necessary surgeries are cancelled or postponed for a lack of an adequate supply in the hospital”
- “Today, there is less than a 3-day supply of blood nationwide. Never in modern times have our reserves been lower.”
- “...shortages are worsening because demand is growing and the eligible donor base is shrinking”
- “Our blood supply is inadequate to deal with a major disaster...”

(America's Blood Centers testimony to Oversight Committee on nation's blood supply post 9/11: transcript pgs 41-42)

Blood Demand

- Current U.S. Blood Demand Annually
 - 14 million units collected
 - 27 million blood components transfused to 4.5 million patients

The Contemporary Economics of Transfusion Timothy J. Hannon and Kathy Paulson Gjerde—National Blood Data Resource Center. www.nbdrc.org July 20,2003

- Blood Demand Increased by 27% from 1994-2001 and is increasing by 3-5% per year
 - Expanding elderly population that uses half of the blood supply
 - 46% of blood transfusions are to Medicare beneficiaries (12)
 - More complex/aggressive procedures

The Contemporary Economics of Transfusion Timothy J. Hannon and Kathy Paulson Gjerde—Marcus AD. Blood supply hits lowest level in years; surgeries canceled. *Wall Street Journal* June 26,2002:section D,page 1

Clinical Impact

Transfusion Related Immunomodulation

- Dose-dependant reduction in cellular immunity
- Decreases in NK Cell and macrophage activity, activation of T-suppressor cells
 - Effect has been known and well-documented in transplant literature for years
- 7-10 fold increase in postoperative infection rates leading to increased LOS, resource consumption, total hospital costs
- Increased cancer recurrence rates in transfused patients; increased 5 year mortality in CABG patients

The Contemporary Economics of Transfusion Timothy J. Hannon and Kathy Paulson Gjerde—Leal-Noval et al. *Chest* 2001;119:1461. Carson et al. *Transfusion* 1999;39:694-700 Moore et al. *Arch Surg* 1997;132. Vincent et al. *JAMA* 2002;288 (12) Shapiro et al, *J Trauma* 2003;55

Clinical Impact – con't

Older Blood = Higher Mortality

- Retrospective study by Duke and Columbia University: heart surgery patient outcomes following a transfusion & time of blood stored
- Of 321 patients: the mortality rate for patients receiving the freshest blood was 4%; as opposed to a 25% mortality rate for those who received oldest blood. Former spent 3.5 days in ICU compared to 17 days for latter

Source Anesthesia & Analgesia, 2006; 103:15-20 for Ivanhoe Med Art:

Inconsistent Standard of Care

American Society of Hematology:

“RBC transfusions are being given unnecessarily”

- ...nearly 20% of stable, uncomplicated CABG patients” receive unnecessary RBC transfusions.
- Of 14 million RBCs transfused annually in the U.S., an estimated 30% are given to CABG patients
- The study data “suggest that at least 170,000 units of RBCs are administered annually in the U.S. that should not be.”

American Society of Hematologists: Red blood cell transfusions are being given unnecessarily Jan 17, 2006: Volume 42 Issue 02 Pg 16

Disaster Preparedness

Disaster Operations Handbook

“Single greatest risk of domestic disasters and acts of terrorism is not lack of supply, but disruption of the blood system.”

(AABB Task Force Operations Handbook -
Hospital Supplement, 2003, pg. 2)



Proactive Rather Than Reactive

The diversity of disaster preparedness plans throughout US hospitals are primarily focused on what is to be done **AFTER** a disaster/event occurs.

Multi-disciplinary, hospital-wide blood conservation education focuses on “best practices” so as to be prepared **PRIOR** to a disaster/event.

Challenges

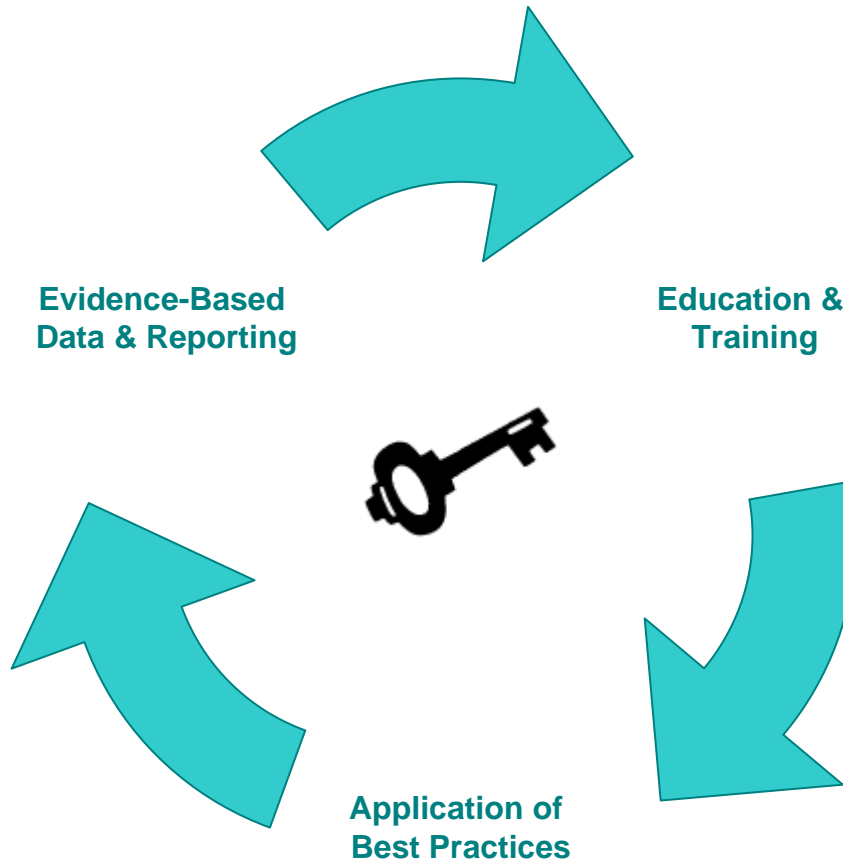
Hospitals seeking to reduce donor transfusions are having difficulty doing so in a timely and cost-effective manner for the following reasons:

- Lack of subject-matter expertise
- Inconsistent training / education of staff
- Absence of standardized policies
- Inability to track, analyze and report outcomes

Blood Conservation

- For proper blood utilization, the implementation of blood conservation processes and proven best-practice techniques can be attained through hospital-wide training and education.
- This is done by a comprehensive, multi-disciplinary process designed to promote a universal standard of care in transfusion therapy.
- Subject-matter expertise in the delivery of education is essential to provide hospitals with the ability to create a successful program in a relatively short time period.

Integrated Blood Conservation Process



Blood Conservation: “Tools”

- Program Manager: a dedicated, licensed clinician properly trained in blood conservation processes
- Development of standardized policies and procedures
 - Assures consistent standard of care
 - Reduces the “gaps” created through departmentalization within medical institutions
- Education of clinical and administrative staff
 - Proven medical processes and methodologies used to reduce the need for transfusions

Blood Conservation : Goals

- Implementation process is effective and conducted in a timely manner (6 Months)
- Disaster Preparedness Plan
 - Focused on *pre-event* education and training to limit or reduce the impact of a given event.
- Evidence-based data collection, analysis and reporting system
 - Readily available education from subject matter experts in the theory, methodology, procedures, and outcomes in blood conservation practice
 - HIPAA compliant, relational database to track blood utilization, analyze and report outcomes



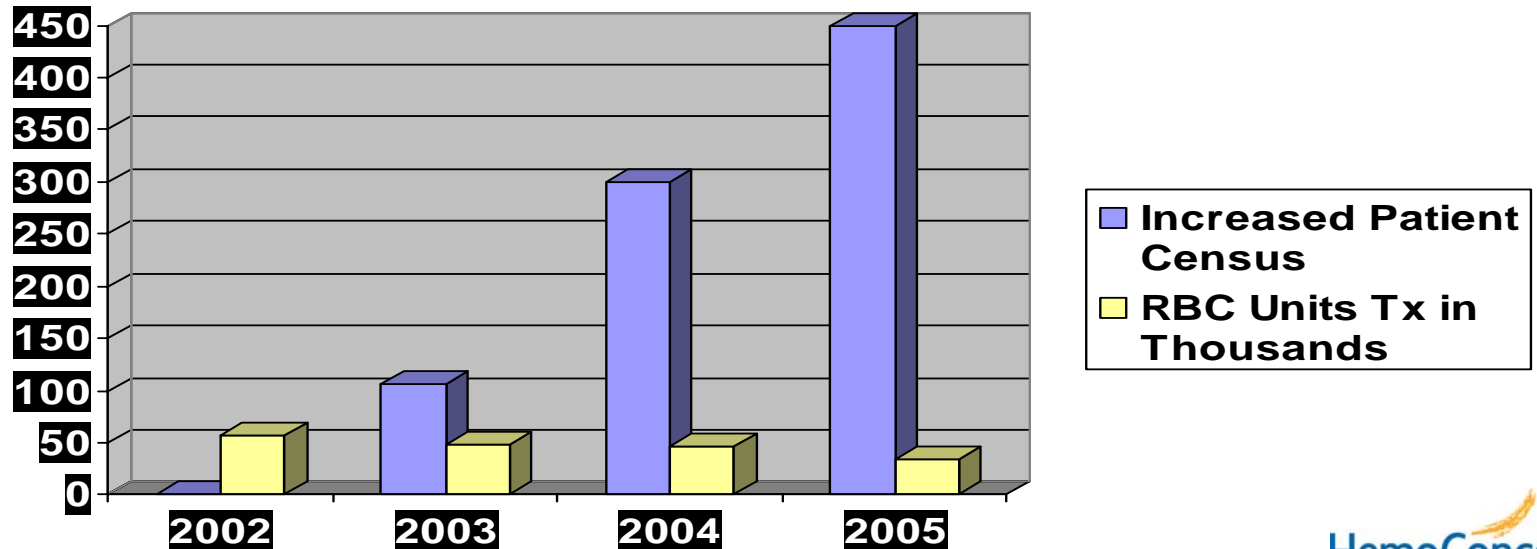
Expected Results in Blood Conservation Education and Processes

Fairview Hospital, CCF
Geisinger Medical Center
Virginia Commonwealth University Hospital

Blood Conservation Results

Fairview Hospital – (Cleveland Clinic System)

- 16.5% Reduction in Total Transfused RBC units in Year 1.
- 50% reduction in transfused blood for Cardiac Surgery (3 yrs post IBC)
- 48% reduction in transfused blood for Orthopedic Surgery (3 yrs post IBC)
- 66% reduction in post operative infections (orthopedic patient review)
- .8-day reduction in length-of-stay (orthopedic patient review)



Geisinger Medical Center

First year:

- Eliminated pre-Autologous donation
Previous - 100 units per month
- Despite increases in cardiac surgery; increased complex surgeries and increased patient census the RBC use has 'significantly' decreased.
- Reduced iatrogenic blood loss through improved laboratory testing processes.

AABB Transfusion July/August 2005 Pg. 26-27

Virginia Commonwealth University Medical Center

- Cardiac blood conservation program entailed extensive education & training in methodologies, procedures, and instituting new policies
- “Despite the decrease in transfusion (intra- & postoperatively) and the lower hematocrit, it appeared that not only were (patient) outcomes not adversely affected, they were **in fact improved**” . . . as measured by intra-aortic balloon pump requirement, catacholamine use, renal failure (defined as a doubling of preoperative creatinine or need for postoperative dialysis), and reoperation for bleeding.” Am J Med Qual 2006;21:230-237

CONCLUSION



What is needed.....

“To gain the upper hand on blood utilization will require rapid and sustained expansion of blood conservation education”

CONCLUSION



The time to act is NOW

- **Endorsement of a national blood conservation campaign**
- **Provide resources for:**
 - **Education**
 - **Data collection and analysis**
 - **Increased national awareness**

Questions?



Thank You!

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