Improving Blood Utilization

Trish Cruz, RN
Amir Ghiassi, MD

6/9/16

Overview

- Background
- Insights
- Guidelines
- Interventions/Strategies
- Wastage
- Outcomes/Results

Background

- Blood management and transfusion safety are important for our patients because transfusions are high-volume, high-risk, and poorly utilized.

Mediware

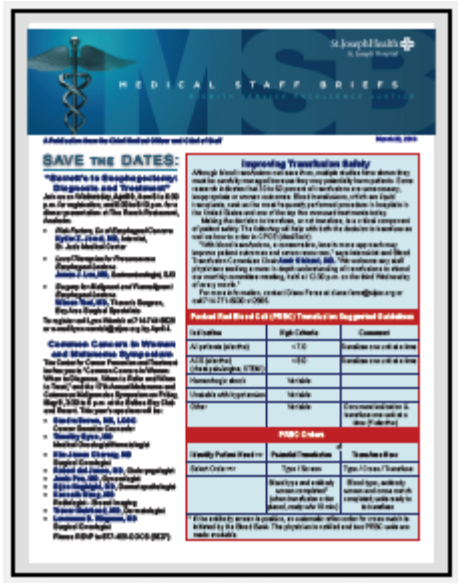
Insights

- Unnecessary transfusions waste precious resources and cause avoidable harm.
- Making the decision to transfuse or not transfuse is a serious element of patient safety.
- Implementing evidence-based blood management and improving processes can translate into improvement for the patients we are privileged to serve.
- You may need an expert to kick start your program. (Mediware)

Current Transfusion Guidelines

PRBC Transfusion Suggested Guidelines		
Indication	Hgb Criteria	Comment
All Patients (elective)	< 7.0	Transfuse 1 unit at a time
ACS (elective) **(Chest Pain/Angina, STEMI)**	< 8.0	Transfuse 1 unit at a time
Hemorrhagic Shock	Variable	
Unstable with Hypotension	Variable	
Other	Variable	Document indication & Transfuse 1 unit at a time (if elective)

Communication



Communication

C.E.U.

Clinical Education Update

April, 2014

MAGNET RECOGNIZED
AMERICAN NURSES CREDENTIALING CENTER

Transfusion Safety:

- A blood transfusion is a liquid transplant
- TACO: Transfusion Associated Circulatory Overload
- TRALI: Transfusion Related Acute Lung Injury

Transfusion Guidelines

PRBC Transfusion Suggested Guidelines		
Indication	**Hgb Criteria**	**Comment**
All patients (elective)	< 7.0	Transfusion 1 unit at a time
ACS (elective) Chest Pain/Angina, STEMI	< 8.0	Transfuse 1 unit at a time
Hemorrhagic Shock	Variable	
Unstable with Hypotension	Variable	Normovolemic
Other	Variable	Document indication & transfuse 1 unit at a time (if elective)

Communication

Esteemed Panel of Experts Invited to Hear

The Bloody Truth

"Dr. Hannon's evidence based presentation changed my blood product transfusion practices."

Amir Ghiassi, MD, Intensivist

"This was the best presentation I have ever attended."

Mike Mullaney, MD, Hospitalist

Speaker: Tim Hannon, MD

Doctor Tim Hannon is a board certified anesthesiologist who serves as medical director of the St. Vincent Indianapolis Blood Management Program, a forward thinking program which he designed and implemented with great success. Since its establishment in 2001, the blood management program has reduced hospital transfusions by over 30%, resulting in annual savings of over 7000 units of blood products and cost savings that exceed $4,000,000 per year. The program has also substantially improved quality of care and increased patient safety, becoming a model for innovative quality improvement. Dr. Hannon is also the Founder and CMO of Strategic Healthcare Group LLC, a healthcare consulting group that is the national leader in safe, efficient and effective blood management solutions.

STRATEGIC HEALTHCARE GROUP LLC
Promoting safe, efficient and effective blood utilization practice

Blood Usage High at SJO

Evidence behind blood administration
How blood usage affects physicians

Wednesday
September 18, 2013
5:30 – 7:30 PM
Zoul Auditorium

RSVP: Kristin.Taylor@stjoe.org or 714-568-5550

GET THE FACTS

1. America is blood thirsty
2. Transfusion education is a bloody mess
3. Less is more for transfusions
4. Transfusions are double trouble for hospital acquired infections
5. Transfusion complications: You break it, you pay for it

St.JosephHealth
St. Joseph Hospital

The Bloody Truth 1

Interventions / Strategies

- Chartered a Transfusions Safety Committee with physician champions, Blood Bankers, and other stakeholders.
- Mandatory education for physicians, RNs, and couriers.
- Road-show education where nurses on all shifts in all departments reviewed RBC transfusion guidelines and received “Nurses are the heart of transfusion safety” badge holders.
- Built standardized order sets and inserted them into “favorites” of all physicians who had ordered blood during the prior 12 months.

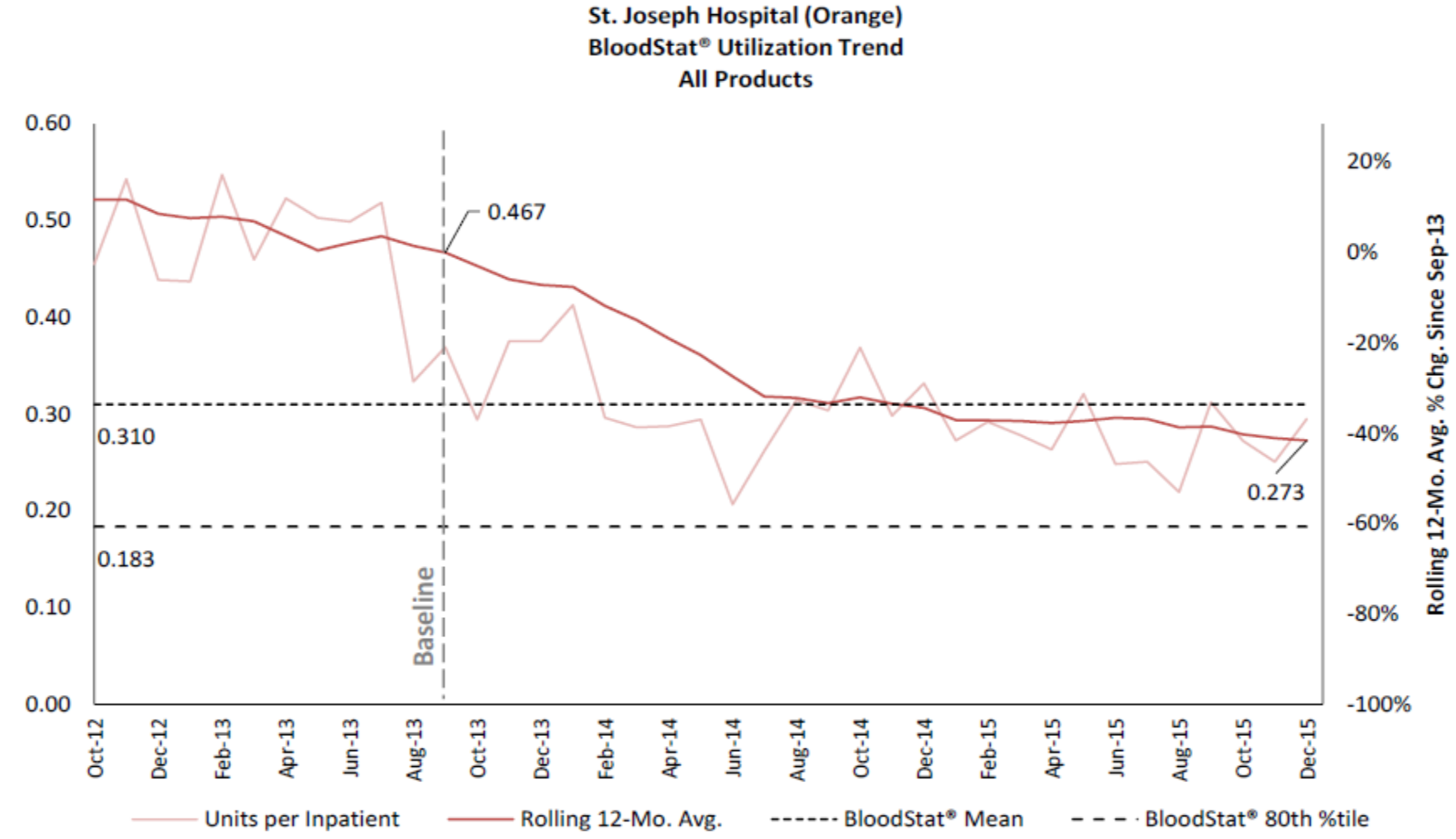
Metrics

				2015												
Ordering Practices	**Poor**	**Average**	**Goal**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**YTD**
Crossmatch:Transfuse ratio	> 2.5	2.0-2.5	< 2.0	1.87	1.8	1.90	1.85	1.78	1.35	1.82	1.72	1.73	1.74	1.67	1.67	1.74
Appropriate Use (pRBC, platelets, plasma, cryo)	**Poor**	**Average**	**Goal**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**YTD**
Gross utilization pRBC	Trend ↑	Trend ↔	Trend ↓	589	581	587	554	533	620	554	670	646	605	557	622	593
Gross utilization platelets	Trend ↑	Trend ↔	Trend ↓	129	109	135	105	127	120	84	138	153	97	111	132	120
Gross utilization plasma (tracking only)				55	91	137	214	139	87	113	123	156	105	79	159	122
Gross utilization cryo	Trend ↑	Trend ↔	Trend ↓	40	59	30	50	10	75	15	40	169	0	50	40	48
Lab/Blood Bank Practices	**Poor**	**Average**	**Goal**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**YTD**
RBC Product wastage and discard	>3%	2%-3%	< 2%	1.5%	1.1%	0.3%	2.0%	2.0%	0.6%	0.9%	0.7%	0.3%	0.1%	0.9%	0.8%	0.9%
Platelet Product wastage and discard	>10%	5%-10%	< 5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Plasma Product wastage and discard	>10%	5%-10%	< 5%	30.0%	4.0%	8.0%	3.6%	7.0%	1.0%	5.0%	6.0%	0.0%	3.8%	6.3%	11.0%	7.1%
Cryo Product wastage and discard	>10%	5%-10%	< 5%	4.8%	1.7%	0.0%	23.0%	10.0%	0.0%	46.0%	0.2%	23.8%	0.0%	20.0%	0.0%	10.8%
Tranfusion Reaction				**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**YTD**
Allergic (Nonanaphylactic)				2				1	1		1	1	1			7
Febrile				2		1		1	2	1						7
Febrile + Allergic																0
Delayed Hemolytic																0
Acute Hemolytic																0
Chills																0
Circulatory Overload (TACO)																0
Trans Assoc Dyspnea							1									1
Delayed Serologic																0
Reported Reaction not substantiated				3					2		1		2		2	10
Total Transfusion Reactions				7	0	1	1	2	5	1	2	1	3	0	2	25

Interventions: Education

- Ongoing
- By service line
- Self-learning modules
- Skills Days
- 1:1 as needed

Utilization: Outcomes / Results



What about waste?

Waste: Management Changes

- Identified the problem of excessive component wastage
- Reviewed current use
  - Inpatient
  - Outpatient Infusion Center
- Reviewed existing processes
  - Inventory
  - Turn around time

Waste: Define Baseline

- **Establish inventory par levels**
  - Collaborate with provider
  - Review current use (average and range)
- **Monitor waste**
  - Type of component
  - Reason for waste (ordered, not used[1]; returned late)
  - Location of waste (OR, ED, Med/Surg)

[1]Clark. Blood and component wastage report. Transfusion 1989:29:139.

Identify Factors Affecting Waste

- **Outdating**
  - Define by component
    - PRBC 35 – 42 day shelf life
    - Platelets 5 day shelf life
- **Wastage**
  - Lack of awareness and training
  - Management of temperature-validated containers
  - Misinterpretation of PRBC temperature indicators
  - Need for accountability when ordering

Heitmiller. Blood wastage reduction using Lean Sigma methodology. Transfusion 2010;50:1881.

Control Factors Affecting Waste

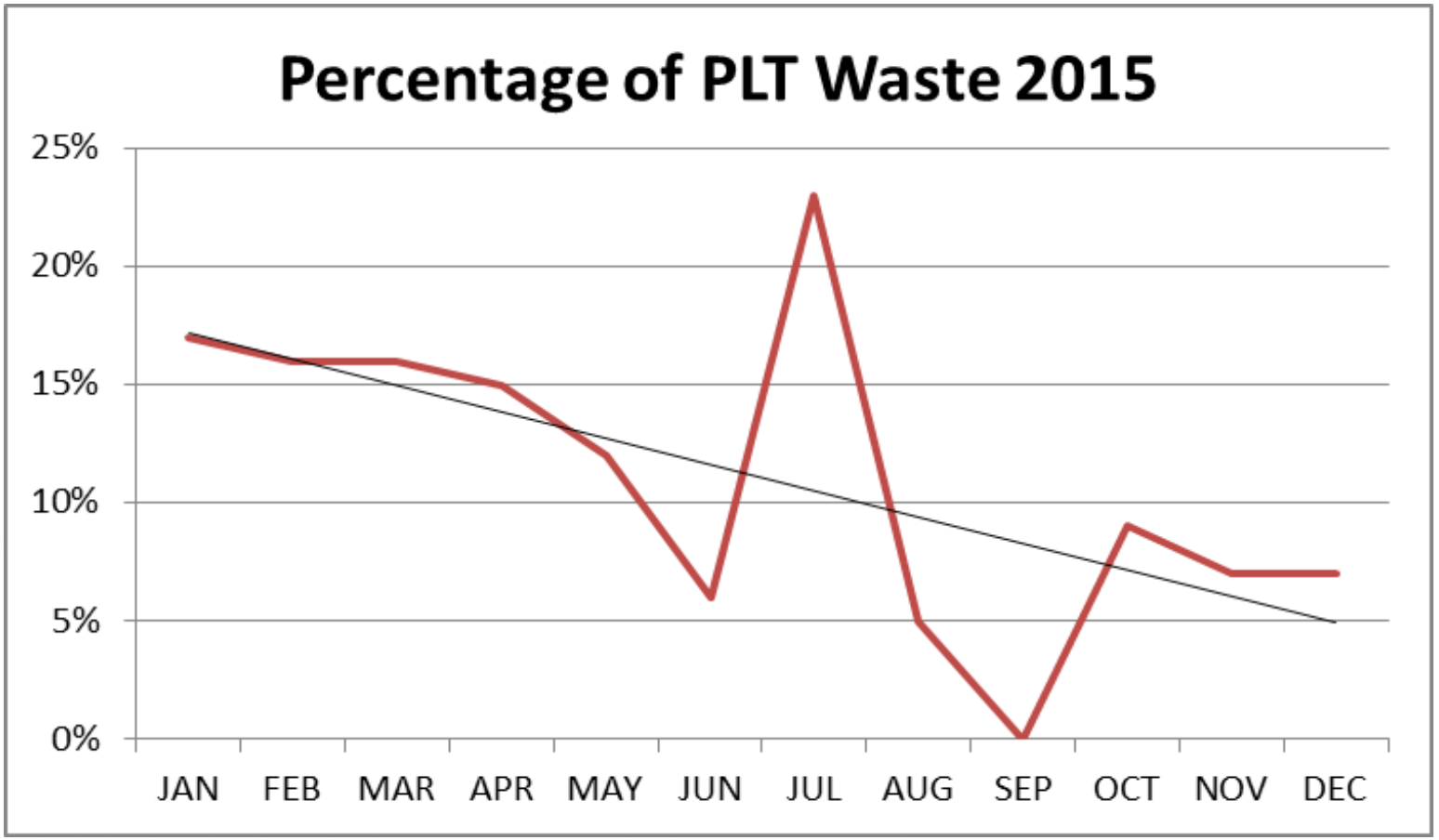
- **Education and training**
  - Couriers
  - Nurses
  - Collaborate with Medical Staff
- **Labels/signs**
  - On components
  - On coolers
- **Establish accountability**
  - Notify ordering provider of component and cost

Waste: Collaboration with Provider

- Provider: American Red Cross (ARC)
  - Decreased stock inventory for platelets and red cells
  - Faxed ARC with expiring units
  - Evaluated STAT vs. Routine Orders for Platelets
  - Initiated ARC to ship AB platelets on Thursdays

Waste: Revised PAR Levels

Waste: Outcomes / Results



Waste: Next Steps

- Blocked scheduling for Infusion Center
- Advanced communication regarding elective, complicated cardiac surgery cases
- Plasma and Cryoprecipitate education
- Evaluate feasibility of implementing Titer Group O Plateletpheresis
- Ensure consistent use of transport containers
- Label components and coolers

Waste: Next Steps

- Change the indication for Platelets on the order in Meditech
- Ongoing reassessment of PAR levels
- Research possibility of increasing AB stock
- Perform report reconciliation to increase accountability when ordering

Location and Reason for Component Loss	RBCs	Plate-lets	Plasma	Cryo	TOTAL Lost	% Lost
IN-DATE LOSSES (A) Units Wasted in Ward/ER/OR						
Improper ordering						
Improper handling						
Improper storage						
Accidental breakage/leakage						
Returned—wrong component or wrong patient						
Returned—hemolyzed/clotted component						
Patient not ready (no IV access, refusal, etc) or patient deceased before transfusion						
TOTAL						
(B) Units Wasted in Laboratory						
Blood bank equipment failure						
Improper ordering						
Improper selection						
Improper handling						
Improper storage						
Accidental breakage/leakage						
TOTAL						
(C) Units Wasted in Transport (eg, pneumatic tube system)						
Total In-date Losses (A+B+C)						
OUTDATE LOSSES (Components expired in the original storage state)						
Total Losses (In-date + Outdate)						

RBCs = Red Blood Cells; Cryo = Cryoprecipitated AHF; ER = emergency room; OR = operating room; IV = intravenous.

Waste: Next Steps

- Track reasons for wastage and focus future interventions on top contributors
- Data are power for change

Waste: Wish List

- Systematic replacement/refurbishment of refrigerators and other equipment.
- Remote monitoring for temperature-validated containers.

Overall: Outcomes / Results

- **10%** decrease of platelet wastage.
- Overall decrease in PRBC, Platelets, plasma, and cryoprecipitate of **37%.**
- Savings of **9,674** units.
- Total estimated savings of **$16,017,677**.
  - Purchase cost savings of **$1,949,503**.
  - Transfusion cost savings of **$3,938,363**.
  - Adverse Events cost savings of **$10,129,811**.

Questions?