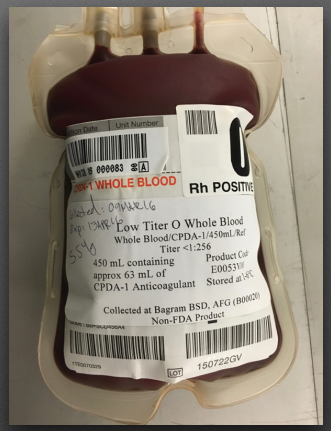
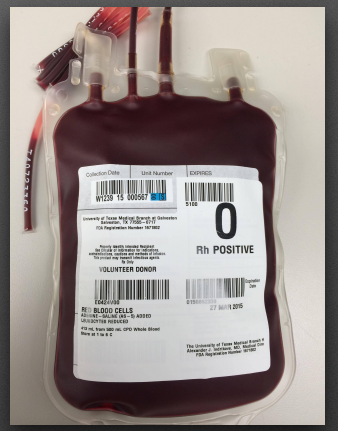
Viability

- Programs are dependent on the usage-case scenarios and frequency likelihood
- Analysis of Pre-Hospital need
  - Volume of patients encountered with potentially exsanguinating hemorrhage
  - Geography
  - Catchment area size
  - Available field resources
  - Available resources for blood supply

LTO-WB vs pRBCs

PARAMETER	WHOLE BLOOD	PRBC'S
VOLUME	350 - 450 ml	200 - 240 ml
INCREMENT IN HB	<1 gm/dl	> 1 gm/dl
RED CELL MASS/ML	Same as pRBC's	Same as WB
VIABLE PLATELETS	No	No
LABILE FACTORS	No	No
PLASMA CITRATE	++++	+
ALLERGIC REACTIONS	++++	+
FHNTR	++++	+
RISK OF TTI	++++	+
WASTE OF COMPONENTS	Yes	No





LTO-WB vs pRBCs

Whole Blood

500 mL

Hct 38% - 50%
Plts 150 - 400K
Plasma coagulation factors = 100%

Balanced Component Therapy

1 : 1 : 1

1 U pRBC = 335 mL with Hct 55%
1 U Plts = 50 mL @ 5.5 x 10^{10}
1 U plasma (275 mL) = 80% coagulation activity

1 U pRBC + 1 U Plts + 1 U FFP = 660 mL
with an Hct 29%, Plts 88K/μL and coagulation activity 65%

Choosing substrate

- Community Blood Bank vs Hospital Blood Bank
- Blood “turnaround time” - 42 days (pRBC) ; 21 days (LTOWB)
  - LTOWB up to 35 days when stored in a CPDA-1 (Citrate Phosphate Dextrose Adenine) anticoagulant solution and refrigerated
- Cost $$
- Ease of recycling blood products
- Cold Chain reliability - (2ºC - 6ºC storage)

Negotiations

- Community Blood Bank
  - Blood drives to reduce costs of blood products
  - Prefer to recycle pRBC for redistribution as long as cold chain preserved
  - Reliable recycling process with longer intervals

Negotiations

- Trauma Center
  - May offer either substrate
  - Recycling of LTOWB within a specific time frame
  - Follow up and Follow through
    - QI assistance
    - Continuation of care (trust relationships)


CONTRACT

Negotiations

- Blood supplier and EMS agency have a direct vendor/consumer contract. (60% of programs). EMS agency pays for all used and unused blood products. No return privileges. Products discarded upon expiration.
  - EMS agency has blood products for an agreed-upon timeframe, generally between 5 and 21 days. Dependent upon product type and preservative used.
    - After ensuring proper cold chain storage, EMS agency returns blood to supplier for credit. Blood then sold to hospitals and used as a short-date product. This is the fundamental core “Rotation Model”. Lower-use sites can send blood products to hospitals where they are more likely to be used before expiration.
    - Community blood supply replenished through agreements between EMS agency and Blood supplier to arrange for blood drives to sponsor increases in the total blood supply. These agreements are calculated and structured based upon the expected needs and use of blood products by the EMS agency.
    - LTOWB is returned to supplier and separated into components as appropriate

Negotiations

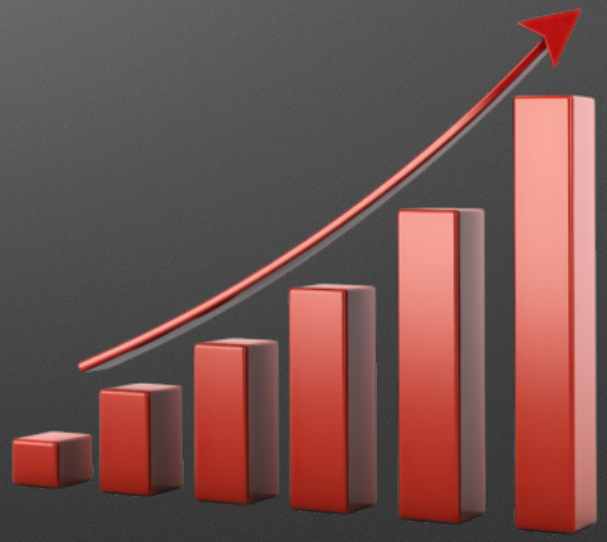
- LEO TEMS teams pick up blood products from a blood supplier for the specific duration of a mission and returned if unused.

- Local (Level III/IV) or Regional (Level I/II) transfusion service (HBB) provides the EMS agency blood products from internal inventory. Blood products that remain within identified criteria can be returned to the hospital's HBB before expiration and used.

- In rural areas, community blood suppliers can take blood products to a local hospital or another location they serve and hold it until EMS agency can pick it up. Blood products do not come from the hospital inventory. Reduces costs of shipping and courier costs associated with moving blood products around the area.

Negotiations

- Trauma Center Blood Utilization Committee
- Expanded Criteria
  - Trauma (Blunt and penetrating)
  - Post-partum Hemorrhage
  - Massive GI hemorrhage



The success of your program depends significantly on the stability of your blood supply.