

Putting the Power of Lean to Work in Blood Donor Collections at the Red Cross

Presented by:
Rick Panning, MBA, CLS(NCA)
VP, Laboratory Services, Allina Hospitals and Clinics
(former CEO, American Red Cross, St. Paul Region)

Lab Quality Confab
Atlanta, GA
September 25, 2008

Objectives

- Learn how a standard work and a redesign of work processes, emphasizing “pull” and single piece/small batch flow, caused significant gains in productivity and quality.
- Explore how the use of Lean methods and listening to the voice of the customer can guide significant improvements.
- Find out what metrics were used to measure success.

Need for Lean in Whole Blood Collections Process

- Challenge: Wait and processing time for donors needs to be reduced and made more consistent
- Challenge: Only 37% of population is eligible to donate and only 5-6% of those eligible actually donate
- Donor time is valuable. We need to respect and honor the volunteer commitment they have made
- Opportunity to increase collections capacity for the American Red Cross/reduce costs

Lean Process

- Objective: To Implement Process Improvement to Become More Effective and Efficient Through:
 - Continuous Improvement Of Our Processes
 - Eliminating Actions That Require Resources But of No Value For Donor
 - Providing A Platform For Implementing Standard Work
- Four Lean Region Pilots are Underway:
- Each Region Working with Black Belts/Lean Experts
- Test Potential Solutions
- Work Toward Continuous Improvement
- Work with Local QA and Team Members to Ensure Monitoring of Compliance and Number of Problems

Collections Standardization

- 4 of 36 Red Cross Blood Regions selected to pilot Lean changes
- Each of these 4 regions would pilot a different aspect of the Whole Blood collections process
- These four regions would implement all of the changes piloted by the other three regions throughout their region
- Divisional and system rollout

Lean Process - Timeline

Feb-June 2008

- Complete Pilot Site Kaizen Events
- Report Progress to Collections Process Council/Mgmt
- Approve Standard Work from Each Pilot Site

July-September 2008

- Replicate Each of Four Process Improvements in All Four Pilot Regions
- Assess Pilot Success

October-December 2008

Assess and Baseline All Regions

- Identify and Mitigate Barriers
- Train Divisions in Lean 101 Techniques
- Roll Out Process Improvements to Division
- Assess Roll Out and Effectiveness

Jan-April 2009: Remaining system rollout

Lean Education / Training

- Senior management, middle management, supervisors, Lean/6 Sigma Black belts
- Regional teams: Real time
- Content:
 - Lean background
 - How to use the tools
 - How to measure success
 - How to maintain during control phase

Kaizen

- In Japanese
- ? ("kai") means "change" or "the action to correct".
- ? ("zen") means "good".

Kaizen

- Kaizen is a daily activity, the purpose of which goes beyond simple productivity improvement.
- It is also a process that, when done correctly, humanizes the workplace, eliminates unnecessary work ("muri"), and
- teaches people how to perform experiments on their work using the scientific method, and
- how to learn to spot and eliminate waste in business processes.

Kaizen

- To be most effective kaizen must operate with three principles in place:
 - consider the process **and** the results
 - systemic thinking of the whole process and not just that immediately in view (i.e. big picture)
 - a learning, non-judgmental, non-blaming approach and intent will allow the re-examination of the assumptions that resulted in the current process.
- While kaizen usually delivers small improvements, the culture of continual aligned small improvements and standardization yields large results in the form of compound productivity improvement.

Specific challenge in the blood collection environment

- For mobile blood drive operations you do not have the luxury of being in the same space for an extended period of time
- Lends itself to the Kaizen process
- In North Central, we did all of our Kaizen improvement events in drives that would be in the same location for 3-5 days

4 pilot regions in the Red Cross

- Central Plains Region – Venipuncture
- New York Penn Region – Overall Operational Effectiveness (Pod set-up)
- **North Central Region – Health History & customer service focus**
- Western Lake Erie Region – Mobile Unit Assistant & Volunteer Activities Integration

St Paul Assessment – “Before” Observations

North Central - HH
D M **A** I C

STANDARD WORK

- Drive layout varies from charge to charge
- Use of sticky note visual cues- is not standard work
- Practice of volunteer greeters to reschedule walk-ins
- Variation in experience of the coordinator (training of the coordinator/ training of the greeter/ Availability of talking points)
- Doing one physical finding at a time vs parallel tasks
- Physical findings not done in same order
- Order of staff looking at reference material first
- Ratio of walk-in to appt. Donors (what guidance charge gives in how to manage walk-ins)
- The donor shuffle vs "Make-A-Date"

5S

- Tubs in middle of the floor
- Paper towels/extra chux in history
- Duplication of supplies
- Organize the history tote
- Printer tables are cluttered (deferral letters, blue folders, large cuffs)
- Large cuff is not in a standard location
- History improperly laid out (donor on left)

PULL / KANBAN

- Donor flow is a push system, we want to make it a pull system
- Double Red queue always full with long wait (make this a pull system or we will lose or double red donors)

Opportunities to organize, standardize and create a pull system

13

Kaizen Event 1 - Action List March 19-21, 2008

North Central - HH
D M **A** I C

Item	Action Items
1	Improve Donor Sign-In <ul style="list-style-type: none"> – Identifying First Time Donors (stickers) – Donor Flow (appt / walk-in stickers) – Stop Sign with: ID, Eligible Date, etc.
2	Improve HH <ul style="list-style-type: none"> –Visual HH Status (“Finished” or “Occupied”) –HH POUS Equipment: Stethoscopes, Cuffs (large) –HH POUS Supplies: Gloves, Markers –Standardize HH Setup: Donor on left, Palms (at one master), Printer locations

Preparing for the first Kaizen Event

American Red Cross- Confidential

14

Health History Standardization North Central Region

- Health History Layout
 - * HH printer location - printer between HH
- Sync of Palm Pre-drive
 - * Order to do Physical Findings
- HH Standard Work
- Use Flip Signs as Visual Cues

Improvement Idea Flip Cards -Before-

- Health historians can't see if histories are occupied.
- Staff walk the length of all the histories looking for a vacant booth.
- Staff can't tell when donors are done with SAHH and waiting.



No way for staff to tell which booths are occupied.

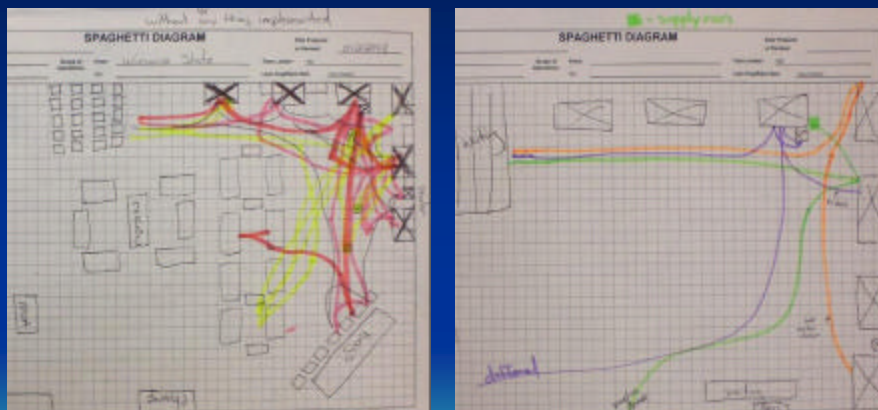
Improvement Idea -After-

- Create flip signs for visual cues of HH Status.
 - Ready – Pink
 - In-Use – Orange
 - Re-check - Yellow
 - 2RBC – green
- Quality Improvement-
Improved donor confidentiality.



Improved donor confidentiality

Improvement Idea - Flip card- Before-



**Walking distance decreased from 257ft to 114 ft
(approx 48 secs per staff per history)**

Improvement Idea Health History Table

-Before-

- **Problem**

- Health Histories set-up in many configurations.
- Some of the configurations donor on right or left side.
- Staff had to look for equipment.
- Biohazard equipment mixed with clean equipment.



No Standard Set-Up

Improvement Idea Health History Table

-After-

- **Steps Taken**

- Reconfigured HH table so that it could be set-up the same in each Health History Booth
- Added visual aids to assist staff in consistent set-up.

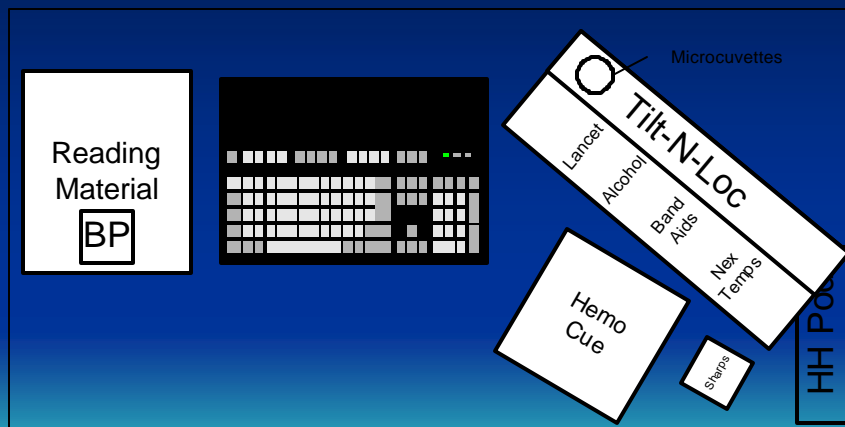
- **Results**

- Supplies and equipment within reach
- Aesthetics more appealing for donor



Standard Layout

Health History Standard Layout



Improvement Idea Printer Tables -Before-

- **Problem**
 - *Printer table set-up in many configurations. Some of the configurations required excessive reaching, and or where messy.*
 - *With multiple printers and tables staff have to search for printer.*



Printers hard to reach and supplies were hard to find

Improvement Idea Printer Tables

-After-



Reduced search time.

- Steps Taken

- Reconfigured printer table so that it could be set-up the same at each printer table.
- Added visual aids to assist staff in consistent set-up.

- Results

- Improved cleanliness.
- Reduced search time for printers time. Easily reach both printers.

Improvement Idea “Priming the pump”

-Before-

Problem

- Phlebotomists stand in the unit at the start of the draw waiting for the first donors to come out of histories.
- Donors wait longer in the HH queue to get started and productivity of the staff decreases because the phlebotomists are just standing and waiting.

-After-

Results

- Staff assigned to phlebotomy should start histories before the history-assigned staff.
- At the beginning of the draw, all histories are full,
- Throughput the first hour is higher and matches the higher demand at the start of the draw.

Through-put at the start of the draw was 28 donors/hour

Standardize Order of Physical Findings

Health History Physical Findings

1. Enter weight
2. Put thermometer in mouth
3. Do fingerstick and test hemoglobin
4. While hemoglobin is being tested, do pulse. Record results and rhythm.
5. Look at both arms and record results
6. Read hemoglobin
7. Read temperature
8. If necessary, recheck hemoglobin
9. Do blood pressure

Improvement Idea Manage Breaks -Before-

- **Problem**

- Staff do not check in and out, so charge doesn't know who has been gone for how long.
- Staff are often gone longer than scheduled break time.
- No guidance available, no tools/forms for charges to use to manage breaks.
- No controls in place, no training for charges.

Poorly managed breaks negatively impacts donor flow.

Manage Breaks -After-

- Full-time equivalent crew in histories increased from 3.7 staff to 4.1 staff.
- Because more historians were available, donor wait time after SAHH decreased, which decreased total history cycle time from 13.3 min to 11.2 min.
- Through-put improved from 18 donors/hour to 22.5 donors/hour
- Staff productivity improved from 5.0 donors/staff/hour to 5.6 donors/staff/hour.

5 HR MOBILES	
• unit/HH switch every 1 1/4 hrs.	
• start 10 min breaks 1 hr into mobile, NO LATER!	
• start 20 min breaks 2 1/2 hrs. into mobile, NO LATER!	
6 HR MOBILES	
• unit/HH switch every 1 1/4 hrs.	
• start 10 min breaks 1 hr into mobile, NO LATER!	
• start 20 min breaks 3 hrs. into mobile, NO LATER!	
* change/supervisor may start breaks 10-20 minutes earlier, if desired.	

*Draws were staffed at Matrix.
Number of actual staff working was the same both days, but staff working in histories increased.*

Improvement Idea Manage Breaks -After-

	HH	UNIT	Floor	2nd
11:00-12:30	Carolyn (m) Shannon (m) Robin (m) Laura (m) Terese (m)	Megan (m) Joy (m) Sherrie (m) Christine (m)	Jabbi (m)	Jermy (m) Katy (m)
12:30-2:00	Megan Joy Sherrie Terese Christine	Carolyn Shannon Robin Laura	Jabbi	Jermy Katy
2:00-3:30	Carolyn Laura Shannon Robin Terese	Megan Joy Sherrie Christine	Jabbi	Jermy Katy
3:30-5:00	Megan Joy Sherrie Terese Christine	Carolyn Shannon Robin Laura	Jabbi	Jermy Katy

4		Minimum # of Historians in Health Histories During Staff Breaks
3-5 Health Histories:	2 Health Historians at all times	
6-7 Health Histories:	3 Health Historians at all times	
8-9 Health Histories:	4 Health Historians at all times	
10-11 Health Histories:	5 Health Historians at all times	
12-13 Health Histories:	6 Health Historians at all times	

*Staff felt their break time was the same.
The day before one staff person actually missed her break.*

Standardizing Breaks

Mobile Break Guidelines	
Minimum # of Historians in Health Histories During Staff Breaks	5 HR MOBILES
4-5 Health Histories: 2 Health Historians at all times	<ul style="list-style-type: none"> Unit/HH switch every 1 1/4 hrs Start 10 min breaks 1 HR into mobile, NO LATER Start 20 min breaks 2 1/2 hrs into mobile, NO LATER
6-7 Health Histories: 3 Health Historians at all times	6 HR MOBILES <ul style="list-style-type: none"> Unit/HH switch every 1 1/2 hours Start 10 min breaks 1 HR into mobile, NO LATER Start 20 min breaks 3 HRS into mobile, NO LATER <p>* change/supervisor may start breaks 10-20 minutes earlier, if desired</p>
8-9 Health Histories: 4 Health Historians at all times	
10-11 Health Histories: 5 Health Historians at all times	
12-13 Health Histories: 6 Health Historians at all times	

4/23/2008

Improvement Idea

The Stop Sign
(an evolution)
- goal is to keep donors out of queue that will not be eligible

Stop & Check
 Help us keep you
 and the blood supply safe


American Red Cross
1-800-GIVE-UP (giveblood.org)

STOP

Please stop and check with a staff member if any of the below apply to you:

- If you are less than 17 years old or weigh less than 110 pounds.
- If you DO NOT have positive identification, like a driver's license or American Red Cross donor card.
- If you are taking antibiotics for infection.
- If you are experiencing cold symptoms, sore throat or productive cough.
- If you have traveled in the past 12 months to tropical countries, especially in rural areas (India, Mexico, Costa Rica, Africa, etc.)
- If you have had cancer, treated or untreated, within the last 5 years.
- If it has been less than 56 days since your last whole blood donation.

The need is constant.
The gratification is instant.
Give blood.

BEFORE YOU REGISTER

Can you answer **YES** to the following statements?

I am **feeling well** today.

I am **not taking antibiotics or other medication** for an infection.

I have **not had a transfusion or non-sterile piercing** in the past 12 months.

I **weigh at least 110 pounds**.

I am **at least 17 years of age**.

I have positive identification such as an **American Red Cross donor card or a driver's license**.

Thank you for making an appointment today.

We appreciate your time and effort.



American Red Cross

Talk To Red Cross Staff Before Registering If:

1. You have **lived or traveled** outside the United States. **Most travel is not a reason for deferral.**
2. You are **taking any medications** that you have a question about in regards to blood donation.
3. You **have had a tattoo** in the past 12 months.
4. You are **allergic to iodine**.

American Red Cross Bloodwork Session
Deferral or Before You Register

Page 1 of 2
1-844-358-7424 x2-1.2

Please Read This Important Information.

Thank you for coming to donate blood.

Our top priorities are ensuring your well-being and a safe blood supply.

Please talk with a Red Cross staff member:

- If you are less than 17 years old or weigh less than 110 pounds.
- If you do not have positive identification, like a driver's license or American Red Cross donor card.
- If you are taking antibiotics for infection.
- If you are experiencing cold symptoms, sore throat, or productive cough.
- If you have traveled in the past 12 months to tropical areas such as India, Mexico, Costa Rica, Africa, etc.
- If you have had cancer in the past 12 months.
- If it has been less than 90 days since your last whole blood donation.
- If you have been tattooed within the last 12 months.



The need is constant.
The gratification is instant.
Donate blood!



So What???

- Goal:
 - Reduce Health History Total Process Time from average of 25 minutes by 30% to 50% in the North Central Region by the end of April 2008
 - Reduce Process Time by eliminating Non Value Add (NVA) time
 - Create Standard Work
 - Match Cycle time to Takt/Customer Demand
- Results:
 - Reduced Health History time at Over-Goal Drives from 34 minutes to 21 minutes
 - No increase in Staff
 - Increased Productivity by 39%

Highlight work in other pilot regions

Introduction

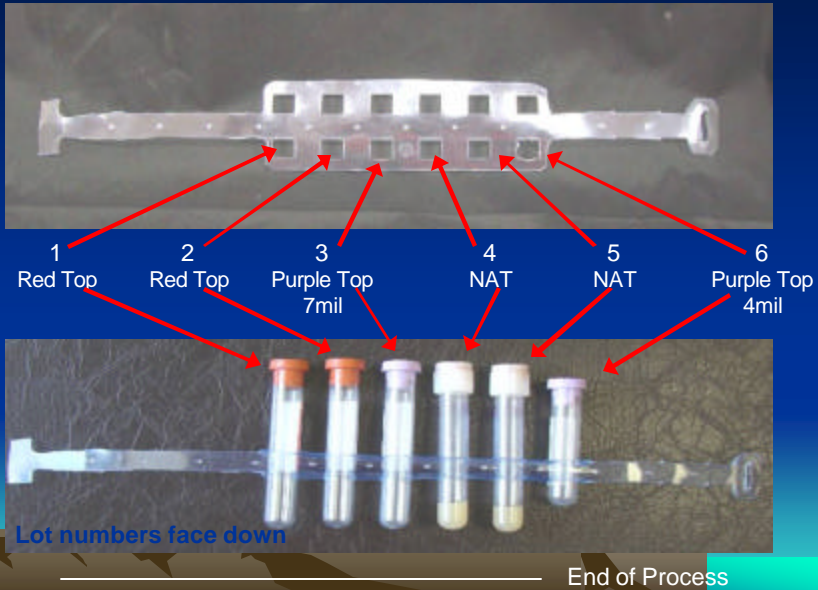
- Goal:
 - Reduce Venipuncture (VP) Total Process Time from average of 37 minutes by 30% to 50% in the Central Plains Region by the end of April 2008
 - Reduce Process Time by eliminating Non Value Added time
 - Create Standard Work
 - Match Cycle time to Takt/Customer Demand
- Results:
 - Reduced Veni-Puncture time from 37 min to 21 min
 - No increase in Staff
 - Reduced Donor wait time for a bed from 16 min to 3.5 minutes
 - Increased Productivity by 46%

Tube Holder

- Currently using rubber bands with tubes in a “bundle”
- Allow for easier attachment to bag set
- Allow for easier bar code reading on tubes
- Save time in the process
- Original prototype made out a a cut up shower mat

Attaching Prototype Tube Holder to Whole Blood Bags

Loading Tubes into Tube Holder



Attaching Prototype Tube Holder to Whole Blood Bags



Improvement Idea -Tube Holder After-

- Result:
 - It is easy to scan
 - Easy to insert and remove tubes
 - Allows sample tubes to be drawn
 - Keeps the bag and tubing together



Tube holder keeps tube in-place for easy scan and fill

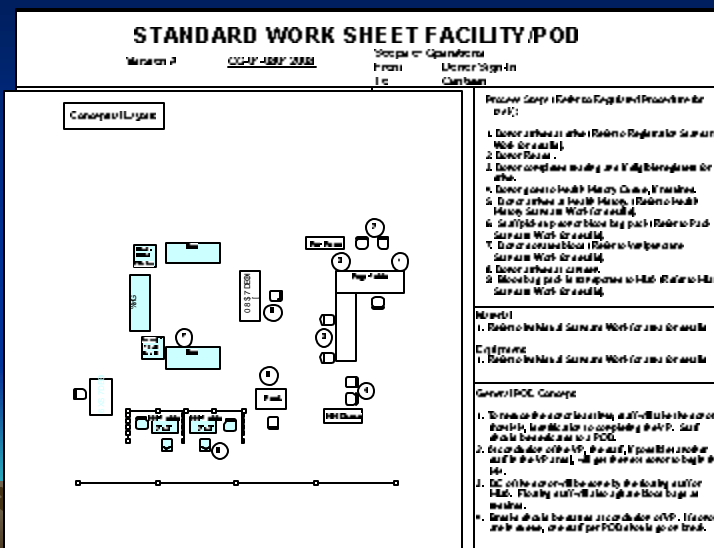
Donor Flow Safety and Workplace Organization (New York Penn)

- Integrated HH/ VP (Pod set-up)
- Facilitating MUA, Float Staff
- Place Canteen near Reception to share volunteers
- * Perform Safety/5S checklist before drive

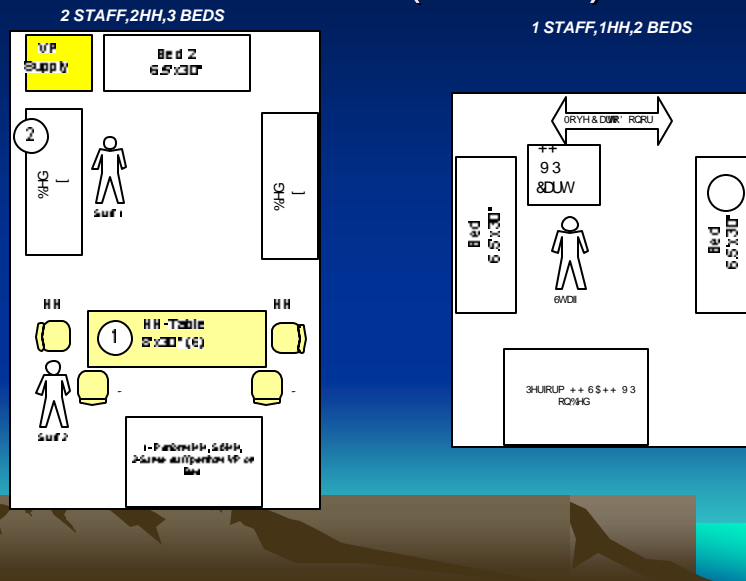
Pod Set-up

- Before: Set up a specific number of Health history stations and phlebotomy beds in 2 different parts of the drive physical space
 - Often resulted in 2 separate waiting queues
- After: Pod with 2 Health Histories and 3 Phlebotomy beds and 2.5 staff (float in the process)
 - Health Historian takes donor to bed and starts phlebotomy
 - One waiting queue (before the health history)

“POD” Set-up



PROPOSED HH/VP CELL DESIGN ("POD")



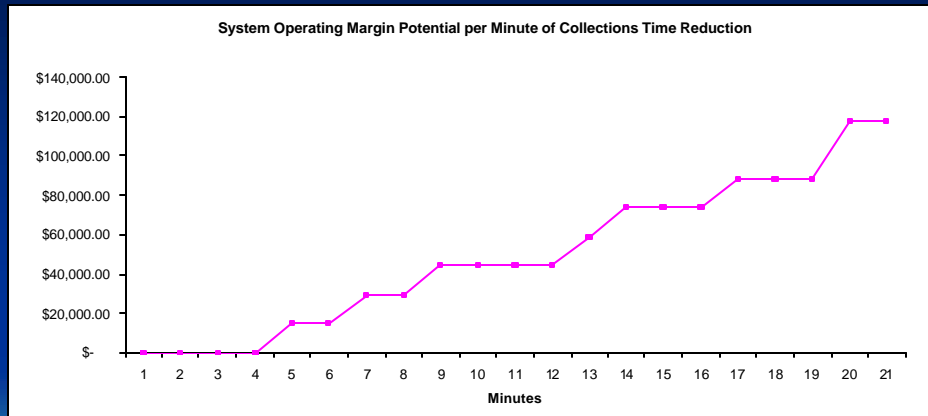
Donor Arrival-Variable TAKT

- Flexing of staff
 - Cart
 - Float Staff
- * Early unadvertised "Right Type" Drive -
 - Not supported by Hemasphere
- * Determining Takt, staffing and appointment with TAKT Calculator
- "ALL HANDS TO HH" start of drive

Solution: Scheduling Using the TAKT Calculator

SECOND-Calculate TAKT--Donor Flow				FIRST--Calculate # Donors Presenting:			
Drive INPUT Information--Required				Goal = 40			
Item	Enter Info for Calculation			HH Deferral (Ave%) = 11.3%			
Drive Duration (in hours) =	5			QNS (Ave %) = 3.0%			
# Donors Presenting =	CALCULATED 46 rounded up to whole #			# Donors Presenting (to meet goal) = CALCULATED 45.72 <small>excludes allowance for self deferring donors--not entering HH process)</small>			
Lunch or Dinner Allowance (minutes) =	30			NO SHOW RATE(Ave. %)= 30.00%			
# of Breaks =	2			WALK IN RATE(Ave.%)= 10.00%			
Break Allowance (minutes) =	10			APPOINTMENTS NEEDED 59.00			
# of Phlebotomists (Trained) =				ESTIMATED APPTS. PER HR 12			
% of Supervisor Time in Matrix =							
Time Drive runs past closing (in hours) =	0						
Staff Effectiveness Factor (in %) =	85% <small>for total drive time, including time past drive close time</small>						
TAKT (Minutes/donor)--							
CALCULATED =	4.62						
THIRD--Calculate Minimum Staff Required for Whole Blood							
Assumes Supervisor not part of staffing matrix							
Excludes impact of volunteers							
Assumes same time for deferrals as for all donors							
Excludes allowance for reactions, bag preparation, BDR review at end of drive unless time allotted in the VAT used							
Recent values for QNS, Deferral rate, VAT, etc . Need to be use in spreadsheet.							
TAKT (from TAKT calculation above) =	4.62						
VAT (from Lean studies) =	26.00 minutes						
Minimum phlebotomist staffing =							
CALCULATED	5.63						

Use TAKT time to calculate minimum phlebotomist staffing.



Red Cross System Savings @ 12 minute reduction = \$3.2 million

