**2011 SCABB Sol Haberman Award Winner**

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Student: LifeShare Blood Centers

**DISCREPANT RESULTS OF JK PHENOTYPES IN PEOPLE OF AFRICAN DESCENT**

**Oral Abstract Key (denotes Oral Presentations)**

**ABSTRACT 1**

**Donor / ADMIN**

Author(s): B Bryant, MD; R Flynn, University of Texas Medical Branch, Hitchcock, TX

**THERAPEUTIC PHLEBOTOMY PROCEDURES AND THEIR IMPACT ON A RURAL HOSPITALS RED CELL INVENTORY AND FISCAL STATURE**

**BACKGROUND:** Therapeutic phlebotomy programs offer an important community service and often provide financial and donor unit resources for the hospital. This study assessed the financial impact and red cell inventory contribution of a small, rural hospital-based therapeutic phlebotomy program.

**METHODS:** Therapeutic phlebotomy procedures over 13 months were evaluated at a 142-bed rural hospital. The hospital had an FDA variance for a hemochromatosis (HH) donor program. The revenue for the non-HH therapeutic phlebotomies and the savings attained for units added to the red cell inventory from allogeneic eligible HH donors were compiled.

**RESULTS:** During the study, 84 patients were involved in the therapeutic phlebotomy program. Of the 62 HH patients, 43 met eligibility requirements for allogeneic donations resulting in 207 donor units collected for the blood bank inventory and a savings of $21,000 in blood costs. Additionally, 22 non-HH patients underwent 183 therapeutic phlebotomy procedures earning the hospital over $15,000 in net revenue.

**CONCLUSION:** The therapeutic phlebotomy program at this small, rural 142-bed hospital provided a financial gain of $36,000/13 months. The HH donor program contributed approximately 4% to the red cell inventory. A therapeutic phlebotomy program is financially lucrative and provides a community service to patients.

**ABSTRACT 2**

**Component / ADMIN**

Author(s): Ricardo Hinojosa, United Blood Services, McAllen, TX; Barbara J. Bryant, UTMB, Galveston, TX

**LEUKOCYTE REDUCTION FILTRATION EFFICACY PERFORMED AT VARYING TIME INTERVALS POST COLLECTION**

**BACKGROUND:** A multi-site blood center experienced unacceptable post leukoreduction filtration WBC counts. Since pre-filtration storage time and temperature were suspect, WB units were stored in transport shippers for at least 2 hours, cooling towards 1-6°C, prior to filtration. This study compared the effect of storage times in transport shippers on the residual WBC counts of leukoreduced units.

**METHODS:** Collection and filtration of WB units was accomplished using the Fenwal Express System with Integral Sepacell RS-2000 WB Leukocyte Reduction Filter. Units were collected and placed in transport shippers containing ice. Leukoreduction filtration was performed at designated intervals post collection. Acceptable leukoreduction was defined as < 5 x 10⁶ residual WBC.

**RESULTS:** Fifty donor units were selected randomly over three months. Units were held in transport shippers, and leukocyte reduction was performed at designated post collection intervals. Storage times ranged from 28 – 458 minutes. All residual WBC counts were acceptable.

**CONCLUSION:** Storage time of WB units in transport shippers did not play a role in the efficacy of the leukoreduction. This study demonstrated the 2 hour storage time prior to leukoreduction filtration could be eliminated resulting in time savings and increased efficacy in the component production laboratory.
ABSTRACT 3

Personnel / ADMIN

Author(s): Matthew Poncin, Carter BloodCare, Bedford, TX; Lesley Kresie, MD, Carter BloodCare, Bedford, TX and UT Southwestern, Dallas, TX

JOB SATISFACTION: WHERE ARE YOU?

BACKGROUND: Job satisfaction is a key determinant of whether people are happy or not with their professional lives. This may be reflected in the employee’s attendance, attitude, and motivation in the workplace. In order to determine the current level of satisfaction among Clinical Laboratory Scientists (CLS) and Clinical Laboratory Assistants (CLA) within the blood banking community, a survey was created and submitted to several regional laboratories.

METHODS: A short, ten question survey was created which asked participants to rate how satisfied they were with various aspects of their place of employment on a five point scale. The survey was sent out to four Texas laboratories through an online survey website. All answers were anonymous.

RESULTS: A total of 84 people completed the survey; the respondents consisted of Clinical Laboratory Assistants, Medical Technologists, and Managers/Supervisors. Out of the 84 respondents: forty-nine (58%) have worked in a laboratory eleven or more years, fourteen (17%) have worked six to ten years, and twenty-one (25%) have worked zero to five years. Thirteen (16%) respondents were dissatisfied with their job, fifty-five (65%) were satisfied with their job, and sixteen (19%) were extremely satisfied with their job. When asked about compensation, twenty-nine (35%) were dissatisfied with the compensation that they received for the responsibilities that were assigned to them, forty-nine (58%) were satisfied and six (7%) were extremely satisfied. With regard to leadership, fifteen (18%) were dissatisfied with their manager/supervisor, forty-four (52%) were satisfied, and twenty-five (30%) were extremely satisfied. Out of the 84 people responding, sixty-two (74%) were proud to work for their employer, twenty (24%) said that sometimes they were proud to work for their employer, and two (2%) were not proud to work for their employer.

CONCLUSION: Based on the results of the survey, a majority of the CLS and CLA polled are satisfied with their job. This is also evident by the number of years that they have dedicated to their management. Overall, this survey shows that the majority of the people responding were satisfied with their job. When asked about compensation, twenty-nine (35%) were dissatisfied with the compensation that they received for the responsibilities that were assigned to them, forty-nine (58%) were satisfied and six (7%) were extremely satisfied. With regard to leadership, fifteen (18%) were dissatisfied with their manager/supervisor, forty-four (52%) were satisfied, and twenty-five (30%) were extremely satisfied. Out of the 84 people responding, sixty-two (74%) were proud to work for their employer, twenty (24%) said that sometimes they were proud to work for their employer, and two (2%) were not proud to work for their employer.

ABSTRACT 4

Personnel / ADMIN

Author(s): Matthew Poncin, Carter Bloodcare, Bedford, TX; Lesley Kresie, MD, Carter BloodCare, Bedford, TX and UT Southwestern, Dallas, TX

CLINICAL LABORATORY ASSISTANT: WHAT IS MY ROLE?

BACKGROUND: Our company first implemented the role of Clinical Laboratory Assistants (CLA) in 2002. The primary reason was to allow the Clinical Laboratory Scientist more time to focus on patient care. CLAs are now being increasingly utilized in various clinical settings. CLAs can be trained to do many tasks, such as: specimen processing, equipment maintenance, and numerous clerical duties. To better reflect the duties that are performed by CLAs in our institution, and to determine additional responsibilities that the CLA could fulfill, a survey tool was implemented to update the job description.

Study: To support the lean initiatives in our company, the job descriptions were consolidated, standardized, and formatted to conform to Human Resource standards. The laboratory CLAs were then surveyed to determine which duties were currently being performed and which duties the CLA would like to learn. The survey results were used to generate a final list of duties and to better define others in the job description.

CONCLUSION: CLAs play a vital role to the overall work flow of the laboratory. To keep up with the changing needs of the laboratory, the job description needs to be updated periodically. Maintaining the job descriptions through regular updates also provides a more detailed description of the required duties, which in turn, allows the best candidate for the position to be hired. The implementation of a survey tool for this process proved to be an excellent way to completely understand the duties that are being performed or need to be performed by the CLA. The survey also allowed the staff to have a voice in the development of the CLA’s role in the department.

ABSTRACT 5

Collection / ADMIN

Author(s): F. Carson, Carter BloodCare, Bedford, TX

CAN THE VISTA INFORMATION SYSTEM® CONTRIBUTE TO OUR WORKSMART INITIATIVES?

BACKGROUND: Our blood center has embraced the WorkSmart (our program name for Lean/6-sigma initiatives) concept to maximize the efficiency of our operations as well as meet all regulations, including those of the European Union. In 2007, we completed a WorkSmart project in our donor centers to standardize the layout and improve workflow. With the new WorkSmart program, we implemented a “pod” set up consisting of one phlebotomist attending two apheresis and one whole blood bed allowing for maximum efficiencies and flexibility in product collection.
ABSTRACT 5 (CONTINUED)

BACKGROUND: All supplies are kept in each pod which allows the phlebotomist to stay with their donor(s) and provide the utmost customer service. To add to our initiative, in 2009, the Vista Information System® by Caridian BCT was introduced into the WorkSmart program to help to maximize the efficiency of our operation.

Study: The Vista Information System® is a software solution that interfaces with the Trima Accel® Collection System allowing one to automate the procedure data run sheet, monitor apheresis collections, maintain a database with captured information and allows one to customize collections based on inventory needs. The donor is registered in the blood bank computer system, which automatically transfers the donor information to the Vista Information System®. The donation procedure is then maintained electronically and information is uploaded to the blood bank computer system at the end of the procedure to complete the record.

With the automation of the procedure data run sheet for apheresis collections, apheresis record completion time (includes documentation and record review) decreased from 23.6 minutes to 8.4 minutes. With this extra time, phlebotomist are able to focus on the donor. Because of this, we have seen marked improvement in customer satisfaction. Apheresis donor repeatability increased from an average of 2.06 times (from 12/15/08 - 03/31/09) to 2.11 times (from 12/15/09 - 03/31/10). Individual phlebotomist customer service scores have increased from 6.64 in April 2009 to 6.72 in February 2010. (Scale 1-7 with the top achievable score of 7.0.)

CONCLUSION: While the Vista Information System® did not completely eliminate process steps, it electronically captured 3/4 of the required documentation on apheresis procedures. Electronically capturing data has helped reduce errors and has also allowed collection staff members more time to focus on the donor. The Vista Information System® contributed to our WorkSmart initiative and has helped to increase operational efficiency by producing the optimal production needs, while allowing staff to focus on compliance and customer service.

ABSTRACT 6

Education / ADMIN

Author(s): F. Carson, Carter BloodCare, Bedford, TX

BUILDING DONOR RELATIONSHIPS: BLUEPRINT FOR SUCCESS

BACKGROUND: Because customer service training is imperative for our phlebotomy staff, we developed an internal program called Building Donor Relationships (BDR). We first delivered BDR to frontline collections staff in 2007. The original course centered on listening styles, eye contact, junk words, gestures, and voice modulation/projection, as well as educational talking point scripts for staff to use with first time and repeat donors.

In 2008, we utilized collection staff focus groups to understand what more they needed from the BDR course going forward. Based on their feedback, we added modules on risk management, generational differences, dealing with unhappy donors, and non-verbal communication.

All current collections staff received BDR training between June and December 2008. Since January 2009, BDR has been delivered as part of initial phlebotomy training for all new staff. To date, we have delivered this course to 640 staff.

STUDY: In June 2009, one year after BDR was revamped, we surveyed 361 current staff via a Level 3 course evaluation. (Level 3 evaluations measure job behavior change and training impact.) A total of 249 staff responded to the questions below.

<table>
<thead>
<tr>
<th>Question</th>
<th>Top Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you used BDR materials?</td>
<td>At every opportunity (158); Occasionally (85)</td>
</tr>
<tr>
<td>What portions of BDR are you applying?</td>
<td>75-100% (161); 51-74% (71)</td>
</tr>
<tr>
<td>Does BDR help you do your job better?</td>
<td>Significantly (139); Extremely (70)</td>
</tr>
<tr>
<td>Name your biggest customer service challenges prior to BDR</td>
<td>Responding to listening styles (150); Unhappy donors (136); Facial expressions (91); Vasovagal reactions (81)</td>
</tr>
<tr>
<td>Benefits experienced from BDR?</td>
<td>Better donor interaction and customer service (75)</td>
</tr>
<tr>
<td>What are you doing differently after having BDR?</td>
<td>Adapting my listening style to donor (51); Being more aware of eye contact/attitude/expressions (34); Being more attentive to donors and their needs (30)</td>
</tr>
</tbody>
</table>

CONCLUSION: We have seen measurable course improvements over the last 2 years. Since 2008, course ratings have risen from 4.76 to 4.88 on a 5.0 scale. Instructor ratings have risen from 4.87 to 4.93 on a 5.0 scale. Average level 3 predicator results have risen from 97% to 100%, with attendees agreeing or strongly agreeing that they have both the inclination and confidence to apply the new learning on the job - numbers echoed on the actual Level 3 several months later.

Because of the success of BDR and as a result of the Level 3 feedback, we are moving ahead with BDR 2, designed to effectively deal with certain risk management issues and unhappy donor scenarios as identified by staff in the Level 3 evaluation.
ABSTRACT 7

Management Information Systems / ADMIN
Author(s): Terri Gough, Carter BloodCare, Bedford, TX
UNDISCOVERED BENEFITS OF NEW OPERATIONAL SOFTWARE: THE VISTA® INFORMATION SYSTEM

BACKGROUND: At the author’s blood center the decision was made to implement the Vista® Information System with the aim to decrease errors, manage inventory and increase customer satisfaction. After implementation, these and additional benefits were realized.

Study: With the implementation of the Vista® system, we were able to gain efficiencies in the following areas: Manual run records, Apheresis Information Cards (AIC), Standard Operating Procedures (SOP), processing steps, Trima Accel® Collection System (Trima) configurations and supply control. Prior to Vista®, manual run records were completed on every apheresis procedure. Post implementation, manual run records are only used during Vista® downtime, saving approximately 38,000 manually created run records each year. The new run records only require 72 data points as opposed to the previous 85 manually documented data points. Similarly, AICs were previously completed on every Trima procedure. Now, they are only utilized at non-Vista® sites. Information such as pre/post platelet values and comments pertaining to the donor can now be located within Vista®. Three SOPs were archived and the number of reference pages decreased by 18. Employees no longer enter donor information into Trima Accel® such as gender, height, weight, blood type, and pre-platelet count. This information is updated and available through Vista® (this allows a phlebotomist to spend more time with the donor, increasing customer satisfaction). Product weight and blood loss is no longer calculated in the field which has resulted in decreased errors. The LifeTrak® system is interfaced with Vista® and updated at the completion of each procedure. Post donation information such as product type, blood loss, arm utilized, phlebotomy start and end times, instrument serial number, platelet pre-count, and reaction information is no longer manually entered into our LifeTrak® blood bank system. Investigations can now be completed within 24 hours instead of the previous full week that was needed. Updating/changing Trima® information such as time and configurations can now be completed remotely from a PC instead of traveling to each site. This saves approximately 50 hours a year in travel to all the donor sites. Vista® also allows the blood center to track supply chain issues ensuring inventory is controlled according to SOP and in case of recall, lot numbers can be tracked more quickly.

CONCLUSION: Implementation of the Vista® Information System can have a positive impact on decreasing errors related to manual entry, improve supply chain management, and impact customer satisfaction. In addition, there has been a significant amount of time savings due to the limited amount of information entered manually.

ABSTRACT 8

Collections / DRC
Author(s): J Giacoletti, D Liles, W Alaman, G Paranjape, J Chiu, Carter BloodCare, Bedford, TX; University of Texas Southwestern Medical Center, Dallas, TX
LIGHTS, CAMERA, ACTION USING VIDEO TO ENGAGE COLLECTION STAFF

BACKGROUND: The majority of collection staff falls into the generational group that is known by a myriad of names. Gen-nexers, Millennial, Gen-Y. One thing that is consistent with this group is that they tire quickly when you use the standard medium of print, with its read and linear style of training. This group is receptive to technology and multimedia training, especially if it is also entertaining. Since there is little on the market that is blood bank and phlebotomy specific, how is a blood center to motivate, educate and inspire a group that can become bored so quickly?

STUDY: Often times, what is available to use in training classes is sufficient, but does not have real world scenarios of collection staff doing their daily job tasks. With no video reference of phlebotomy, screening a donor, or performing donor look-up, how is a Gen-nexer supposed to relate, and more importantly, learn from scenarios that do not offer a relatable image?

Our blood center began working with video as a supplement to the training of collection staff. Working with an outside vendor who was sensitive to the blood bank’s needs, we were able to create sets of videos that would be able to be utilized by our training staff. These videos are to be used to show a situation, and then allow for discussion on a variety of subjects, such as risk management, donor relations, proper procedure and interactions between staff members. Focusing on real world scenarios that were suggested by our collections staff for the issues that they were dealing with; the first set of videos were broken down into appropriate and inappropriate situations. The videos were immediately embraced by the staff. In training classes, the staff has a connection to the scenes, either from participation, recognition of a co-worker in the scene, or relatability of the situation. Staff from prior generational groups also benefited from the use of video, and welcomed the change from the media of print. After training, staff was surveyed to see if the new course with video meets their needs. Out of 249 staff, 209 staff stated that the course helped them do their job better either “extremely” or “significantly.” They were better prepared in handling situations that arise, and could recall back to the videos that had been presented as reference points for dealing with issues such as unhappy donors and risk management.

CONCLUSION: Utilizing the medium of video for training of Gen-nexers has proven to be effective at our blood center. As we move forward with our training, the incorporation of more video based scenarios will only help to enhance our Gen-nexter collection staff.

1 “A portrait of “Generation Next” Pew Research Center 2007-01-09.”
MINIMIZING PLATELET WASTE ACROSS THE BAYLOR HEALTH CARE SYSTEM

Platelets are one of the many important, rare and expensive blood products needed for patient care. Platelets have a short shelf-life and must be used within 5 days. One unit of platelets costs $515. In 2009 the Baylor facilities wasted an average of 50 units of platelets per month, costing $25,750.

Our goal was to decrease platelet wastage by 40% across the system by January 1, 2010 by implementing conservation processes among the Baylor facilities and partnering with our two community blood banks.

Individual Baylor facilities have contracted with two different blood banks in the Metroplex to supply them with platelets. Before this team started, there was no coordinated system effort to look at platelet conservation initiatives among the Baylor facilities.

Our first plan was to coordinate sharing across the Baylor Health Care System to utilize any platelets before expiration. If one facility possessed any platelets that were going to expire, other BHCS facilities would be contacted. If needed, the platelets would be shipped there for use. This process resulted in an inconsistent decrease in waste.

Our plan was re-examined and we decided that we needed to involve our blood suppliers. The suppliers would assist the BHCS to distribute any platelets that were about to expire. In addition to each facility looking for facilities in need of platelets, the blood suppliers would also contact other facilities within and outside of the BHCS. This process was then modified to send all short dated platelets to BUMC, where the greatest utilization occurs.

In 2009, approximately 50 platelets were wasted by BHCS per month. After the process was implemented, the waste decreased to 4 platelets per month. If the trend continues, BHCS has the potential to save over $350,000 per year.

IMPLEMENTATION PHASE I: We redesigned our mobile staging area for better flow placing all like equipment on the same storage rack(s). The racks were placed in a horseshoe pattern with the walkway wide enough to pull the loading cart through for an easy one step loading process. Our equipment check list form was then updated to follow the flow of the room. We implemented a “red tag” system to put in the designated storage area when equipment is out for repair; this created an easy stand out way for the staff to see that a piece of equipment was missing. We also identified several bottleneck areas and made changes that leaned out these steps. Improvements were made by reassigning paperwork from being printed daily to weekly; we changed our process with blood boxes assembled at the drive site instead of per mobile. In addition, we had our supply person pack the drink coolers and apheresis supplies.

RESULTS FOR PHASE I: These initial steps reduced our pack time for WB collection by 15 minutes and eliminated pack time for apheresis collections with an annual estimated cost savings of $14,840.00. We decreased forgotten/missing equipment by 63% with additional cost savings of $1,770.00. We added a part time supply person to assist with packing at an annual cost of $2,175.00, resulting in an estimated return on our investment of $16,600.00.

IMPLEMENTATION PHASE II: To further promote cost savings and increase efficiency, we took our lean process to the next phase and began kitting supplies. In partnership with an outside vendor we utilized the Six Sigma DMAIC process.

D (define) additional reduction of forgotten equipment and pack time
M (measure) current pack time
A (analyze) average mobile size (number of donors)
I (improve) kitting of screening, phlebotomy, snack, and cleaning supplies
C (control) one team piloted to ensure all needs were being met, then increased to three teams prior to rollout. Our team also customized a cart that reduced the use of nine storage containers for equipment and supplies.

FINAL RESULTS: We reduced the total WB pack time by 30 minutes and eliminated the pack time for automated collection, resulting in an estimated annual cost savings of $23,300.00. Forgotten or missing supplies and equipment was reduced by 99% with an estimated total savings of $2,362.00. We spent $2,819.00 on supplies for kitting and $6,300.00 on customized carts. With the part time supply person cost we had a final total calculated return on our investment of $25,644.00.
CONCLUSION: We over achieved our goal and are very happy with our cost savings and increase in efficiency. The process was well received by the staff. Our next step is to roll out the process to our other locations.

ABSTRACT 11

Transfusion / T/S
Author(s): John T. Ley MD1, Marina V. Kameneva PHD2, Mark H. Yazer MD1, Jonathan H. Waters MD1, 2

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ABSTRACT 12

RBC / T/S
Author(s): G. Mathur, L. Sutor, K. Houston, Carter BloodCare, Bedford, TX; J. Almance, Plaza Medical Center, Fort Worth, TX

ALLO ANTI –e IN e+ PATIENT DUE TO AN ALTERED RHce ALLELE

BACKGROUND: RH alleles that encode altered or variant D, C and e antigen in African ethnic groups often underlie the production of complex Rh alloantibody specificities. RHCE mutations result in qualitative and quantitative changes in C/c or E/e antigen expression with altered C or e. Altered or variant e expression is associated with RHce alleles that have multiple mutations. The red cells type as e positive but individuals homozygous for this allele make alloantibodies with e-“like” specificities that appear as autoantibodies. The red cells also lack the high prevalence antigen hrB. Not all red cells that type hrB neg by serologic testing are compatible with patient antibodies with different RH gene backgrounds.

CASE REPORT: A blood sample from LR, a 36 year old African American female diagnosed with sickle cell anemia, was received by the reference lab for antibody identification with a request for antigen negative units. LR received multiple transfusions. The patient had previous antibody history of Anti-C, -Fya, -Jsa, -K, -N, -S, -Bga and anti-e “like” antibody. The patient cells were thought to be hrB neg. Serological testing results indicated LR as B Rh pos, R2r, M+N-S-s+, K-, Fy(a-b+) and Jk(a+b+), P1+, Le (a-b+) and anti-e “like” antibody. The patient’s serum was evaluated by hemagglutination techniques using LISS and PeG as potentiators. Reactions were observed at IAT with screening cells (1+), auto control neg, DAT with polyspecific AHG neg. Antibody identification studies using selected panel cells confirmed Anti -C and -Jsa. The previous antibodies to K, S, Fya, N, Bga, and anti-e “like” antibody could not be conclusively demonstrated. The sample was sent to a reference laboratory for molecular studies and to determine if the anti-e “like” antibody was an autoantibody or an alloantibody. DNA testing was performed by PCR-RFLP. The patient is RHCE*ce24SV. This allele encodes variant e and is associated with VS+V+, hrB neg phenotype. Results of RHCE*E molecular testing showed no mutations in exons 1, 3, or 5. LR’s RH genotype is R0 ce variant R2.

CONCLUSION: Tests confirmed the patient has an altered Rhce allele associated with an hrB neg phenotype in trans to RHCE which is consistent with production of allo anti-e. The patient’s probable Rh genotype of R2r determined by serologic testing was shown to be different when tested by molecular methods. The e-variant explains the anti-e detection in LISS, PeG and ficin. The patient received 2 units of crossmatched compatible red cells that were negative for C, e, Fya, S and K antigens with no adverse effect. Anti-N & anti-Bga are not generally considered clinically significant and anti-Jsa is of negligible importance in blood transfusion due to the rarity of the corresponding antigen.
ABSTRACT 13

**Molecular Red Cell Genotyping / T/S**

*not presented at Joint Meeting*

**Author(s):** Katrina L Billingsley, G Noumsi, LifeShare Blood Centers, Converse, TX; J Posadas, L Gaur, Puget Sound Blood Center; J Moulds, LifeShare Blood Centers, Shreveport, LA

**Investigation of Molecular Typing Results Leads to the Identification of New JK Silencing Mutations in the African American Population**

**BACKGROUND:** To date, 14 polymorphisms causing Jk null phenotypes have been reported, two of which are associated with people of African ethnicity. Although these mutations were found in single individuals presenting with the Jk(a-b-) phenotype, it was suggested that they may cause discrepant Jk typings. Thus, to assess the occurrence of JK silencing mutations in the local African American (A-A) population, a comparative was conducted.

**METHODS:** A-A blood donors and sickle cell disease patients (n=250) were genotyped using HEA v1.2 (BioArray) and the results were compared to historical serological types. Discrepant results were confirmed by repeat serological typing or allele specific PCR (GTI). Unresolved discrepancies were sent for DNA sequencing.

**RESULTS:** A total of 1,186 donors had previous Jka serological typing results and 1,349 donors had previous Jkb results. A total of four Jka (0.3%) and 34 Jkb (2.5%) samples were found to be discrepant but the majority were due to serological mistyping or data entry errors. Only five of these samples (0.2%) were found to be truly discordant. All five were predicted to be Jk(a+b+) by genotyping, yet one sample was Jk(a-), while four samples were Jk(b-) by serology. DNA sequencing resulted in identification of JK silencing alleles. The silenced JK*A allele was due to a promoter region mutation, while all four of the JK*B silencing alleles were the result of a 64R>Q substitution. Thus, this JK*B null allele is fairly frequent occurring in 1:337 A-A donors. A retrospective review of patient testing also yielded discrepancies; two were JK*A/JK*B by genotype and JK(b-) by serology. Sequencing confirmed one patient positive for the 64R>Q substitution while the second patient appears to exhibit a currently undetermined mutation.

**CONCLUSION:** While some microarray genotyping assays have incorporated JK null detection, these are usually limited to the more common Polynesian and Finnish mutations. Previously JK nulls have rarely been found in A-A. As shown by this study, antigen screening which uses only SNP analysis may not detect blood group mutations due to silencing mutations and may lead to erroneous testing results. This may be of concern for sickle cell disease patients for whom genotyped matched blood is being selected.

ABSTRACT 14

**Transfusion / T/S**

**Author(s):** Denise Fyffe, Carter BloodCare, Bedford, TX

**APPROPRIATE TEMPERATURE MAINTENANCE**

**BACKGROUND:** As liaisons to our hospital customers, the Hospital Relations Department at Carter BloodCare is frequently contacted to perform surveys regarding best practices in the transfusion service. A recent survey was prompted by an article on the “30-Minute Rule” published in the “AABB News” magazine. The article suggested that the “30 Minute Rule” is not an “absolute and universal rule” for accepting blood units into the transfusion service for reissue. A survey was conducted to determine what impact stricter interpretations of guidelines for return of blood for reissue would have on hospital transfusion services.

**METHODS:** 130 hospitals were surveyed regarding their methods for verification of appropriate temperature maintenance of units outside of the monitored blood bank refrigerator.

**RESULTS:** A total of 28 facilities responded:

**Responses by bed size:**
- Bed Size <100: 10 respondents
- Bed Size 101-200: 2 respondents
- Bed Size 201-300: 8 respondents
- Bed Size 301-400: 3 respondents
- Bed Size 401-500: 2 respondents
- Bed Size >501: 3 respondents
- 130 hospitals were surveyed regarding their methodology for temperature maintenance when returning blood for reuse in transfusion services.

**DISCUSSION:** In questioning the “30 minute rule” as the sole criterion for accepting blood returned for reissue, AABB will require validation of temperature maintenance. It is highly possible that other accrediting agencies will follow the AABB’s example and implement stricter guidelines, thus forcing many hospitals to either implement methods of confirming maintenance of proper temperature outside of the monitored refrigerator, or validate a time limit in which the blood components will not exceed the upper temperature limit of 10°C when outside of the laboratory.

**CONCLUSION:** All hospitals who participated in the survey utilize a time limit of 30 minutes or less as at least one criterion for acceptable return of blood to the laboratory for reissue; however, 10 of the responding hospitals incorporate additional...
al criteria for acceptable return. If record the temperature of every unit upon return to the laboratory, and 3 verify that the temperature of units has not exceeded 10° when outside the refrigerator by affixing temperature indicators to units. One facility either utilizes a monitoring device or records the temperature of returned units. Additionally, one facility has validated the time limit in which the blood components will not exceed the upper temperature limit of 10°C when outside of the laboratory.


ABSTRACT 15

Transfusion / T/S
Author(s): Shana Josefy and Barbara Bryant, UTMB Galveston, TX

PREOPERATIVE COAGULATION STUDIES TO PREDICT BLOOD COMPONENT USAGE IN CORONARY ARTERY BYPASS GRAFT SURGERY

BACKGROUND: Bleeding remains a serious complication of cardiac surgery. Studies indicate preoperative fibrinogen concentration is an independent predictor of blood loss during coronary artery bypass graft surgery (CABG). This study evaluates if fibrinogen concentration is a better predictor of blood usage than the PT and aPTT tests.

STUDY DESIGN: During three months at a 350-bed community hospital, patients not taking clopidogrel bisulfate and undergoing CABG were included in this prospective study. The parameters evaluated included patient’s age, preoperative coagulation tests (PT/INR, aPTT, fibrinogen), and the number of blood products transfused.

RESULTS: Thirty-five patients were included with a mean blood usage of six units. Patient’s age approached significance as a predictor of blood usage and fibrinogen levels trended towards significance more than the other coagulation parameters.

CONCLUSION: In this study, the increased age of the patient and low plasma concentrations of fibrinogen were associated with increased blood usage. Although no indicators clearly demonstrated statistical significance (p<0.05), the vast difference in the p values for patients’ ages and fibrinogen levels indicated there was a trend in blood usage for CABG patients. Further studies with larger patient populations are indicated.

ABSTRACT 16

T/S
Author(s): Jennifer Haywood, B Bryant, UTMB Galveston, TX; M Moulds, LifeShare, Shreveport, LA

DETERMINATION OF BEST METHOD FOR ANTIBODY IDENTIFICATION IN A REFERENCE LABORATORY

BACKGROUND: Methods used for antibody identification are: hemagglutination (tube), column agglutination (gel), and solid-phase red cell adherence. Our AABB IRL conducted a study to determine which testing method was optimal for detecting clinically significant antibodies.

METHODS: Patient specimens from August 2008 - September 2009 were first tested using routine tube method and then by manual gel and manual solid phase.

RESULTS: Of 254 samples tested, 115 showed agreement among all three methods. Tube method did not identify six clinically significant antibodies. The gel method did not identify 59 clinically significant antibodies; 56 were not identified by solid phase. Tube testing identified 27 clinically insignificant antibodies. Gel and solid phase identified two and three cold autoantibodies, respectively. Solid phase failed to detect 11 examples of anti-K1. Gel showed no identifiable pattern of reactivity in 13 samples compared to six for solid phase and none for tube.

CONCLUSION: Hemagglutination tube method was the best choice for our IRL.

ABSTRACT 17

RBC / T/S
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WHO’S YOUR DADDY? - REASONS & IMPLICATIONS FOR WEAK D TESTING ON PATIENTS

BACKGROUND: Most patients are not tested for weak D except for infants of Rh-negative women. While weak D donors are labeled Rh-positive, weak D patients are usually labeled Rh-negative. This may raise unexpected concerns regarding dosage of Rh Immune-Globulin (RhIg), accuracy of blood type and paternity. Recently, three patients at our institution necessitated weak D testing to resolve such issues.

METHODS: Anti-D testing was done using Biotest Anti-D (RH1) Blend (Seraclone® Human Monoclonal Blend [BS221/BS232/H41 11B7] Blood Grouping Reagent.

OBSERVATIONS: Case 1: A 31 year-old female at 36 weeks’ gestation presented to the emergency department (ED) with vaginal bleeding. She had not received RhIg because both parents were known to be Rh-negative. On admission, the mother was typed Rh-negative. She delivered a male infant who was typed Rh-positive. The feto-maternal screen was positive but flow cytometry was negative for fetal hemoglobin. Rh-positivity of the infant caused concern in the parents, which led to retesting of the mother, father, and infant. The mother was found to be weak D positive which explained the positive feto-maternal screen. Currently the mother is labeled Rh-positive in the electronic medical record (EMR).

Case 2: A 23 year-old female at term presented to the ED in labor and was typed Rh-negative. She suffered significant post-partum hemorrhage due to retained placenta. The infant was Rh-positive.
ABSTRACT 17  (CONTINUED)

The feto-maternal screen was positive and flow cytometry was negative. Further testing proved the mother was weak D. As in case 1, this likely explains the negative flow cytometry. The mother is currently labeled Rh-negative in the EMR.

Case 3: a 21 year-old female at 30 weeks gestation presented to the ED following a motor-vehicle collision. She was typed Rh-negative, but a dog tag indicated she was Rh-positive. She reported being typed prior to and early in pregnancy and that she had never been transfused. Weak D testing was performed and was positive.

CONCLUSION: Approximately 0.2 – 1% of Rh positive individuals consist of weak D phenotype. Among those, about 99% have quantitatively less D antigen and will not make anti-D. These individuals can receive Rh positive or negative blood without consequence. However 1% of weak D individuals are partial D Category VI who have an altered surface antigen and can make an alloanti-D. Anti-D reagents used in the US do not distinguish between quantitative weak D and D category VI, which is why it is recommended that weak D patients be routinely labeled Rh negative. This practice may raise concerns that must be handled on an individual basis. Adding a comment to the result in the EMR or writing a formal consult are ways to avoid confusion, patient distress, and wasted resources.

ABSTRACT 18

Management / ADMIN
Author(s): Vicki Finson, Blood Systems, Inc., San Luis Obispo, CA

PROGRAMS FOR RECOGNIZING AND REWARDING EMPLOYEE ENGAGEMENT

BACKGROUND: Recognizing employee performance and providing feedback are critical factors in creating a productive and engaged workforce. While these concepts are included in management training programs, making them priorities during busy days can be a challenge. By implementing a structured approach, we believed we could improve our systems and that staff would notice. Performance monitors ensure the policies are followed.

METHODS: The two areas targeted for improvement: routine discussion of employee performance and daily recognition. We implemented a monthly one-on-one meeting for each employee with their manager, to discuss: recent performance, progress toward development goal, and “topic of the month.” Every month, a topic is announced so staff can be prepared for a meaningful discussion. To ensure employee understanding, the manager states during every meeting, “We are meeting to discuss your current performance.” The managers must report any missed meetings.

To encourage daily recognition, we increased the use of our program where employees are recognized for teamwork and customer service with a “smiley” button. Employees wear them with pride, and redeem three buttons for a gift card. A list of awardees is posted monthly for further recognition and to highlight the program. Staff recognition programs are reinforced in quarterly management meetings.

RESULTS: Employee Opinion Surveys were used to judge the impact of our program. Staff rate each survey statement: 1-strongly disagree, 2-disagree, 3-neither, 4-agree, or 5-strongly agree. Mean score and % loyalty (% ‘strongly agree’) were used to assess the results.

“In the last six months, outside of the annual review process, someone at work talked to me about my performance.”

- Pre: 3.9 mean; 29% loyalty
- Post: 4.3 mean; 48% loyalty

“In the last seven days, I have received recognition, a thank you, or praise for doing good work.”

- Pre: 3.7 mean; 29% loyalty
- Post: 4.2 mean; 42% loyalty

CONCLUSION: By implementing formal, monthly discussions about employee performance, almost half of staff “strongly agreed” that performance had been discussed, compared with 29% previously. The structured approach ensured staff engagement during the discussions. There has been overall improvement in staff performance after implementation of the monthly meetings.

By ensuring high visibility of employee recognition programs, 42% “strongly agreed” that recognition had been given, compared with 29% previously.

Employee Opinion Surveys provide important data for assessment of employee programs and management policies.

Consistent, conscious application of management principles makes a difference in the workplace. Managers are empowered to help staff perform at higher levels, and employee satisfaction and engagement improves.
ABSTRACT 19

Diseases / T/S

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TRANSFUSION RELATED ACUTE GUT INJURY: CLARIFYING THE ASSOCIATION BETWEEN RBC TRANSFUSIONS AND THE DEVELOPMENT OF NECROTIZING ENTEROCOLITIS IN NEONATES

BACKGROUND: Recent publications highlight the possibility of a correlation between RBC transfusion and development of necrotizing enterocolitis (NEC) in neonates. This putative syndrome has been tentatively titled “Transfusion-Related Acute Gut Injury” or TRAGI. One hypothesis proposed (null) is that red blood cell transfusions within 48 hours prior to development of NEC should be distributed randomly. The authors suggest that skew in their distribution supports a relationship between transfusion and diagnosis of NEC in that transfusions were clustered close to onset of NEC at 5±1 hours, (n=9), as opposed to a random distribution over the preceding 48 hours. We measured the timing of transfusion prior to diagnosis of NEC at our facility to determine if a similar pattern existed.

METHODS: We reviewed medical records for consecutive cases tagged with ICD-9 diagnosis codes of 777.5, .50, .51, or .52 (all NEC codes), excluding cases which were transferred to LLUMC for management of NEC. We recorded the time NEC was first diagnosed in the medical record and the time of antecedent RBC transfusion, if any.

OBSERVATIONS: During the 25 month study period, 75 patients were identified with new-onset NEC. Of these, 56 (75%) were transfused. NEC occurred within 48 hours of transfusion in 30 (54%) of the transfused patients. In this group, the average transfusion was at 17±14 hours prior to NEC onset; the exact Chi-squared for this data set versus an even distribution showed p=0.35.

CONCLUSIONS: In contrast to recent reports, our data set did not support a strong temporal clustering between RBC transfusion and the onset of NEC. The slight trend of NEC occurring nearer to transfusion than random distribution could be explained by clinical condition of the patient. The discrepancy between our results and recent literature reports may be due to differences in data collection, method of establishing initial diagnosis, patient population, or other factors. Retrospective studies typically cannot be interpreted to document causation; we were not able to show correlation.

ABSTRACT 20

Admin

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PILOT OF A COOLER ACCESSORY BAG TO ENCOURAGE RETURN OF PLATELETS AND CRYOPRECIPITATE AT ROOM TEMPERATURE

BACKGROUND: Plateletpheresis concentrates and cryoprecipitate are occasionally wasted when returned in coolers with ice, despite education and product labeling. It was thought that platelets and cryoprecipitate (PL/CR) might be piled in with other blood products when staff are in a hurry. We recognized that a separate compartment for transport might raise awareness of the importance of separating PL/CR from cold products. We hypothesized that an inexpensive, easy to implement solution would be useful if it prevented the wastage of even one product.

METHODS: Design ideas were explored, and a prototype was created, consisting of mesh bags with hook and loop tape, to attach to the handle of our coolers. The bags were labeled with ‘platelet products and cryo only, please.’ We developed a log sheet to track dispense and return patterns in the “accessory bags”, including product type, donation identification number, OR #, whether the product was used, how the product was returned (in accessory bag, cooler, or separately), and product temperature. We discussed the project with the appropriate OR staff prior to use.

OBSERVATIONS: In the pilot period, platelets, cryoprecipitate or both were issued in accessory bags on 34 occasions. Of those, 20 involved return of one or more PL/CR product. Eighteen of the 20 (90%) were in the accessory bag, two of the 20 (10%) were returned separately from the igloo or accessory bag. All 20 (100%) were returned within acceptable temperature range. No products were wasted during the pilot period. Thus far, blood banking staff report the system is straightforward and convenient to use. In addition, staff members say the implementation of the system does not adversely impact their workflow.

CONCLUSIONS: In this pilot study, we discovered the accessory bags are inexpensive to create and appear to be easy for OR, dispatch, and transfusion medicine staff to work with. The return pattern is consistent with awareness that platelets and cryoprecipitate do not belong in the coolers. Data collection for an additional 4 months without any wastage will provide a 95% confidence level that the program is an improvement. Given the relatively low implementation cost, we believe the program will be worthwhile even with a lower confidence level that it is beneficial.