SOUTH CENTRAL
Association of Blood Banks

2022 | **Abstract** Journal

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Award Winner
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Title:
Direct Antiglobulin Test Sample Preparation

Abstract:
The direct antiglobulin test (DAT) is a common test performed in blood banks and immunohematology labs around the globe to determine whether red cells have been sensitized in vivo. Upon review of package inserts from various manufacturers and textbooks, it was discovered that no instructions outline which part of the tube is best to obtain cells for a DAT. Comparison testing was performed using centrifuged samples and well-mixed samples. Cells were obtained from both the bottom of the sample tube, and from the top of the cells in the centrifuged sample. The results show cells from the bottom of a centrifuged sample yielded the highest positive DAT rate. A positive DAT leads the technologist to perform an elution to potentially identify an alloantibody or autoantibody and help guide the clinician. If the DAT is negative, no further testing is typically performed. Providing accurate laboratory results is the goal of all laboratory staff.

Introduction:
The direct antiglobulin test (DAT) has been performed since the early 1900's, although not widely reported until after 1945, when anti-human globulin (AHG) came into use.1 While there are multiple methodologies to perform a DAT, the tube test is considered the gold standard. If the tube DAT is the gold standard, then why isn't the testing standardized? Sample preparation requirements for all testing, including DATs, should be specified in package inserts, and standardized between laboratories. IgG sensitized RBCs should be heavier than non-sensitized RBCs and will settle to the bottom of the tube. Using a well-mixed sample when performing the IgG DAT will provide a more accurate reflection of the cells in circulation, especially in a recently transfused patient.

Materials and Methods:

Tube DATs were performed using 12x75 tubes, Helmer cell washers, and Ortho anti-IgG reagent. Multiple staff members performed testing, to prevent bias. Staff were instructed to document reactions on a worksheet including: specimen sticker, transfusion history, auto control result from automated gel testing, reaction grades for well-mixed, and spun (top and bottom) IgG DAT, lot number and manufacturer of anti-IgG, eluate results if performed, technologists' identification, and test date. The following steps were performed for tube DAT:

1. Prepare a 3-5% cell suspension with isotonic saline, utilizing cells obtained from each of the three locations in the specimen:
    a. Centrifuged specimen with cells obtained from the bottom of the specimen
    b. Centrifuged specimen with cells obtained from the top of the cell column
    c. Well-mixed specimen
2. Place 1 drop of the cells from each suspension into a properly labeled 12x75 test tube
3. Wash 3-4 times with isotonic saline
4. Add anti-IgG per manufacturer's instructions
5. Spin, read, and document reactions
6. Add Coombs control cells to all negative reactions

Results:

Techs performed and submitted results from 41 samples. Of the 41 samples, 13 had a positive IgG DAT which are represented in *Table 1*. Four of the 13 positive DATs demonstrated the same strength of reactivity in all tests. One sample was stronger in the well-mixed sample, and one was stronger when cells were obtained from the top of the cell column in a centrifuged sample. Two samples had equivocal test results with the cells from the bottom and one other location in the sample. A total of five showed stronger reactivity in the bottom of the tube compared to the top and well-mixed as shown in *Chart 1*. In total, 11 of 13 had greater or equal strength when testing cells from the bottom of the specimen.

Discussion:

Many laboratories today perform the majority of pretransfusion testing using an automated analyzer. There are multiple manufacturers of these analyzers; one is utilized here to compare gel auto control with tube DAT results. When the analyzer's pipet retrieves cells from the patient sample tube, the cells are obtained from the bottom of the tube. Conversely, when staff perform tube testing, there isn't a standardized method from which to obtain cells for testing.[1-10] The tube DAT may be reported differently if cells are obtained from different locations in the tube. This variation could account for the numerous positive auto controls from gel automation, coupled with tube testing yielding a negative DAT. This false negative testing is dangerous; it can cause clinicians to be unaware of a potential delayed reaction or hemolysis from red cell destruction.[3]

If a patient has an antibody identified in the plasma, a positive auto control, and the same antibody (or additional) is found in the eluate, this information aids the clinician to watch for a delayed serologic transfusion reaction.[1] If the same patient has a negative DAT, the eluate would not be performed unless extenuating circumstances arose, and therefore the clinician may not be watching as closely for a delayed reaction.[3] This hypothesis supports the theory that cells coated with antibody are heavier, and thus settle to the bottom of the tube.

However, the initial hypothesis was a well-mixed sample would provide a higher positivity rate (similar to the package insert for fetal bleed screen testing methodology which requires a well-mixed sample).[12] Performing standardized tube DAT sample preparation will limit the chances of a false negative DAT, and perhaps allow the technologist to identify a clinically significant alloantibody in the elution.

Summary:

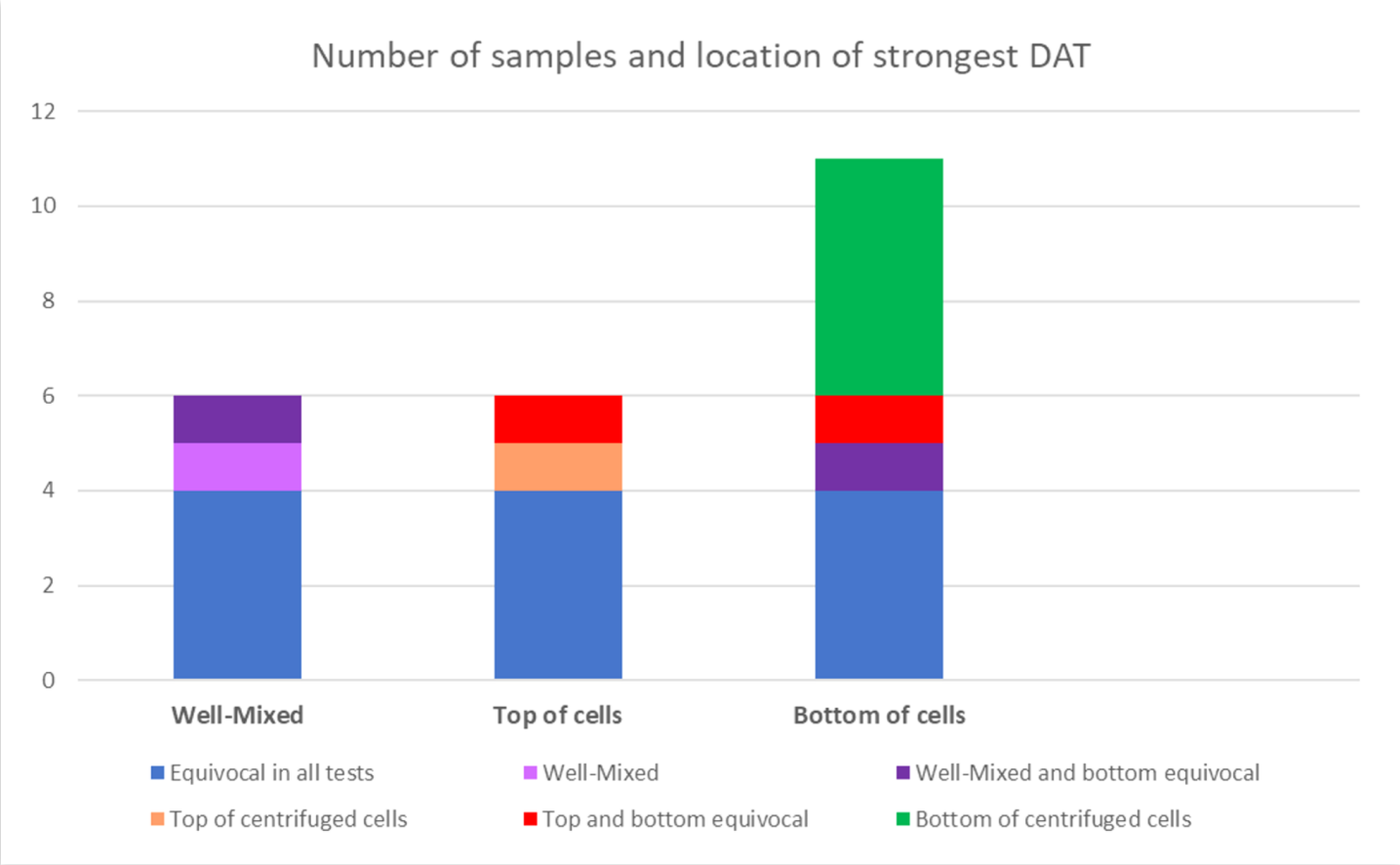
Numerous authors have written books on laboratory testing, and specifically on immunohematology testing. Several textbooks were reviewed,[5-7] as well as anti-IgG package inserts from Ortho,[8] Grifols,[9] Alba,[10] and Immucor,[11] local laboratory procedures, and multiple journal articles[1-4]; none mention where in the sample tube the technologist should extract the cells when performing a tube DAT. The finding of 11 out of 13 samples (85%) yielding a stronger or equivocal reactivity of DAT strength in cells obtained from the bottom of the sample, suggests there could be a benefit to additional standardization among laboratories and technologists when performing DATs.

Table 1:

Specimen #	A/C result	Top	Bottom	Mixed	Eluate specificity
211850064	NA	1+	**2+**	**2+**	Negative
211850082	NA	0	W+	**1+**	Panagglutination
211860094	3+	**4+**	**4+**	**4+**	Invalid, unable to obtain negative last wash
211890081	1+	**W+**	**W+**	**W+**	Panagglutination
211890129	1+	**W+**	**W+**	**W+**	Negative
211900127	NA	**W+**	**W+**	**W+**	Negative
211930049	2+	**2+**	**2+**	1+	Negative
211930072	NA	3+	**4+**	3+	Not performed
211930182	2+	2+	**3+**	2+	Panagglutination
211990091	NA	W+	**1+**	W+	Not performed
212980070	NA	0	**W+**	0	Negative
213010086	NA	**1+**	W+	W+	Panagglutination
213220109	1+	W+	**1+**	W+	Panagglutination; WAA, Anti-E, Anti-c

Legend: standard immunohematology tube grading scale used, where reactions are graded as weakly positive (W+), negative (0), 1_, 2+, 3+, 4+(strongest). Strongest reactions are in bold typeface.

Chart 1:



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2022 | **Oral & Poster** Abstracts

The following Abstracts were submitted for review by the South Central Association of Blood Banks Program Committee Chairs and were selected in either ORAL or POSTER categories for the 2022 Abstract Journal.

ABSTRACT #	Abstract Title	Type	CAT	Authors
Sol Haberman	Direct Antiglobulin Test Sample Preparation	Oral	T/S	Diana Montecucco, MT, ASCP
1	Reducing Stat Turnaround Time to Assess Potential Cost Savings Using Lean Six Sigma Methods	Oral	T/S	Karl Stein, BB(ASCP)^{CM}, Richard Gammon, MD Wyenona Hicks, MS, MT(ASCP)SBB Linda Fatolitis, MBA, MT(ASCP)SBB
2	Comparison of Rh D Typing Results By Serology and Molecular Methods	Oral	T/S	Dr. Richard Gammon, MD Nancy Benitez, MHS (ASCP)SBB Frieda Bright Michelle Conceicao, BS(ASCP)SBB Kelley Counts Claribel Resto, MHS, MT(ASCP)SBB^{CM} Dr. Karl Rexer (1) OneBlood, SMT Medical Direction, Orlando, FL (2) OneBlood, Davie, FL (3) OneBlood, St. Petersburg, FL (4) OneBlood -Immunohematology Reference Laboratory, St. Petersburg, FL (5) OneBlood, Ft. Lauderdale, FL (6) Rexer Analytics, Winchester, MA
3	COVID-19 and MLS Shortages: One Facility's Strategy to Ease Laboratory Staffing Gaps	Poster	A	Linda Fatolitis, MBA, MT(ASCP)SBB Richard Gammon, MD Wyenona Hicks, MS, MT(ASCP)SBB OneBlood, Inc.
4	Anti-hrS Identified in a Caucasian with RHCE*ceHAR Mutation	Poster	T/S	Kaitlyn Taylor, LifeShare Blood Center, Shreveport, LA Katrina Billingsley, LifeShare Blood Center, Shreveport, LA
5	Optimized Enzyme-linked Antiglobulin Test Parameters for Antigen Screening Using 96 Well Microplate Format	Poster	T/S	Richard Gammon, MD OneBlood Michael Gannett, SBB(ASCP), Oneblood Mariem Prieto BB(ASCP), OneBlood, Inc.
6	The Benefits of Creation of a Centralized Academic Center at a Large Community Blood Center	Poster	A	Richard Gammon, MD, OneBlood, Inc.
7	The Implementation of AHG Titrations to Determine Eligibility of Low Titer Group O Whole Blood for The Walking Blood Bank	Oral	T/S	Tara Francis SBB(ASCP)^{CM} Claribel Resto-Marrero, MHS, MT(ASCP)SBB^{CM}

T/S # 1 – Oral

TITLE: Reducing Stat Turnaround Time to Assess Potential Cost Savings Using Lean Six Sigma Methods

AUTHOR(S): Karl Stein, BB(ASCP)^{CM}, Richard Gammon, M.D., Wyenona Hicks, MS, MT(ASCP)SBB, Linda Fatolitis, MBA, MT(ASCP) SBB

BACKGROUND & OBJECTIVES:

The average STAT turnaround time (TAT) for type and screen (T&S) samples at a large transfusion service was initially 53-minutes. The TAT goal was 45-minutes. Lean Six Sigma'sDefine, Measure, Analyze, Improve, Control Method was utilized to identify tactics to reduce the TAT by 8 minutes. Samples are centrifuged for 6 minutes and orders manually entered into the laboratory information system (LIS) by Laboratory Assistants (LA). Testing is performed using automated gel column agglutination technology with automation, 97% of the time, to offer the biggest opportunity for savings.

MATERIALS & METHODS:

The entire process was outlined using a Suppliers, Inputs, Process, Outputs, Customers diagram and process map. Feedback from end users, LA and Medical Laboratory Scientists (MLS), was also considered. TAT was measured from order entry to verification of test results in the LIS. Potential annual employee cost savings was calculated ($30 US dollars/1640 samples/month). Time studies were performed for sample order entry. Metrics from the LIS were utilized to determine number of STAT samples, average verification time of results, and average TAT. Results After analysis of preliminary process mapping and metrics of average daily TAT, two potential process improvements (PI) emerged. Time could be reduced by limiting sample batch sizes processed by LAsto three. Timing studies of this preanalytical change indicated order entry by LA averaged 6 minutes per sample batch of 3, which correlated with a 6-minute centrifugation time. Thisreduced TAT by 3- minutes. In addition, time could also be reduced by designating an MLS to process only STAT T&S. By limiting the designee's responsibilities and reducing the average verification time of results, an additional 2-minute reduction in TAT from 8-minutes to 6-minutes was achieved.

CONCLUSION:

The PI changes implemented resulted in a TAT reduction of 5-minutes, just 3-minutes short of the 45 - minute TAT goal. These improvements resulted in an 9.4%reduction from the overall TAT, reducing the employee cost per STAT T&S by $2.83, a potential annual cost savings of $55,694.

T/S # 2 – ORAL

TITLE: Comparison of Rh D Typing Results By Serology and Molecular Methods

AUTHOR(S): Dr. Richard Gammon, MD , Nancy Benitez, MHS (ASCP)SBB , Frieda Bright, Michelle Conceicao, BS(ASCP)SBB , Kelley Counts , Claribel Resto, MHS,MT(ASCP)SBB^{CM} and Dr. Karl Rexer, (1)OneBlood, SMT Medical Direction, Orlando, FL,(2)OneBlood, Davie, FL, (3)OneBlood, St. Petersburg, FL, (4)OneBlood -Immunohematology Reference Laboratory, St. Petersburg, FL, (5) OneBlood, Ft. Lauderdale, FL, (6)Rexer Analytics, Winchester, MA

BACKGROUND/CASE STUDIES:

Molecular testing is the preferred method to determine D antigen status on the red blood cells, but it takes time for results. During the interim, obstetric patients and those with discrepant results will need to receive RhD negative blood or Rh Immune Globulin (RhIG) to avoid risk of developing anti-D. This study was to determine if serology results achieved a concordance allowing them to be used for transfusion and RhIG decisions while the molecular results were pending.

STUDY DESIGN/METHODS:

Six affiliated hospitals participated. Samples were sent to the immunohematology reference laboratory (IRL) to be tested for RhD status by DNA using the BioArrary BeadChip Assay. Subsequently, samples were de-identified and sent to a second IRL for RhD testing by serology using the ALBAclone RhD Variant Kit. For this study, a concordance rate of >80% was considered acceptable.

RESULTS/FINDINGS:

A total of 49 samples were evaluated from March 10, 2020 through September 14, 2021. Serological compared to molecular results was: concordant 65.3% (32/49), and discordant 34.7% (17/49). This observed concordance rate is significantly lower than the clinically acceptable 80% concordance rate ($z = 2.57$, $p < .05$). The turnaround-time (TAT) was a mean 3.0 hours for each serology evaluation and a mean of 4.4 days (range 1-4 days, median 5 days) for molecular evaluation. No statistical testing was needed to compare the TAT of the serology and molecular testing. For every sample, the serology evaluation was available substantially faster than the molecular evaluation. Molecular test results were available next-day for 26.5% samples (13/49) and required multiple days for 73.5% of samples (36/ 49).

CONCLUSION:

Based on the study results, the TAT for serological based testing was faster than molecular testing, and helpful in limited cases. However, due to a low concordance rate of 65.3% it could not be used in place of molecular testing to quickly determine if RhD negative blood was required or if RhIG administration was necessary.

A # 3: POSTER

TITLE: **COVID-19 and MLS Shortages: One Facility's Strategy to Ease Laboratory Staffing Gaps**

AUTHOR(S): Linda Fatolitis, MBA, MT(ASCP)SBB, Richard Gammon, MD, and Wyenona Hicks, MS, MT(ASCP)SBB , OneBlood, Inc.

BACKGROUND/CASE STUDIES:

During the pandemic, educational programs transitioned more to remote learning. Also, since Spring 2021, nearly 33 million Americans quit their jobs as part of the Great Resignation. National shortages of Medical Laboratory Scientists (MLS) created an environment where workers sought out new jobs for better pay, incentives, and flexibility. In response, the blood center (BC) implemented a full-time (FT), 3-month paid Blood Bank Technology (BBT) training program for qualified employees.

STUDY DESIGN/METHODS:

Executive BC management reviewed aspects of MLS vacancies during 2020-2021. At one large hospital, 33% of MLS were at or near retirement age. Vacancies due to Family Medical Leave Act (FMLA) totaled 109 weeks. The timeframe to fill open positions ranged from 60 to 100 days. Advertisement expenses were $3,626 and paid overtime (OT) amounted to $250,000. Consequently, resources were dedicated to modify the current parttime (PT), 6-month non-paid BBT program. Learning objectives were updated to include remote instruction and didactics adapted to a 3-month FT program. Live streamed meetings concentrated on concept application and problem-solving as opposed to remembering and understanding which occurs in traditional class time. Recorded narrated lectures and "how to" MicroLearning Lab Modules with knowledge checks were developed. All exams were converted from in-person to an online format. This content was hosted on the e-learning management system. Outcomes for the first FT BBT class were compared to the last two part-time classes. The financial investment included an estimated annual student salary of $173,000.

RESULTS/FINDINGS:

Overall BBT exam average and American Association of Bioanalysts (AAB)exam pass rates were assessed (Table). Everyone in the first FT, 3-month paid class passed the AAB exam and the program demonstrated financial benefits. Cost savings were seen by eliminating advertisement fees and reducing OT expenses. Furthermore, this program offered a constant stream of new MLS employees for the BC with known established work histories.

Class Outcomes Comparison	Average Score on BBT Exams	AAB Exam Pass Rate	AAB Exam Scores*	
			Basic Knowledge	Immuno-hematology
FT paid 2021 (6 students)	86%	100%	79%	83%
Part-time 2021 (8 students)	85%	100%	83%	86%
Part-time 2020 (10 students)	83%	100%	75%	82%

*BC Benchmark 75%

CONCLUSION:

This FT, 3-month paid BBT training program provided a successful measure to address the BC's shortage of qualified MLS staff.

T/S: # 4 POSTER

TITLE: Anti-hr^S Identified in a Caucasian with RHCE*ceHAR Mutation

AUTHOR(S): Kaitlyn Taylor, LifeShare Blood Center, Shreveport, LA; Katrina Billingsley, LifeShare Blood Center, Shreveport, LA

BACKGROUND/CASE STUDIES:

A post-transfusion sample from a Caucasian female patient was submitted to the immunohematology reference lab (IRL) for antibody investigation. The patient's history was A RhD-negative with anti-D and routine transfusion of A RhD-negative RBCs. Initial IRL findings include panreactivity and RhD typing discrepancy.

STUDY DESIGN/METHODS:

Serologic testing was performed by manual tube method with low-ionic strength solution (LISS) and monoclonal anti-human globulin (AHG) from commercial suppliers. Testing phases included 5 minutes room temperature (RT), 10 minutes RT with LISS, 30 minutes 37˚C with LISS, and AHG. Rare RBCs frozen in liquid nitrogen were thawed, washed with 0.9% saline to remove hemolysis from thawing, re-suspended at 3-5% with 0.9% saline, and tested by the same tube method. An elution was prepared using a commercially available EDTA-glycine acid elution kit. The RhD discrepancy investigation was performed using patient reticulocytes recovered by microhematocrit centrifugation. Genotyping was performed using the HemoSelect assay.

RESULTS/FINDINGS:

Initial serologic panreactivity with commercial panel cells was observed at the AHG phase of testing only. Antibody reactions of 3+ were observed with RhD-positive cells while reactions with RhD-negative cells varied from microscopic to 1+. Anti-D was detected in the eluate and the last wash control was valid. The patient's initial RhD typing was weakly macroscopically positive and mixed-field using commercial anti-D antisera. Repeat typing using separated reticulocytes was 3+. RH genotyping predicted an RHCE*cE (R2) haplotype paired with an RHCE*ceHAR variant. The RHCE*ceHAR mutation encodes a partial D antigen and weak e antigen but does not produce the hrS antigen. Thawed r"r" RBC droplets were non-reactive with the patient serum at all testing phases, suggesting an "anti-e-like" antibody specificity. Anti-hr^S is suspected due to the variant e allele detected. Anti-D specificity in the serum and eluate was confirmed with selected R2R2 cells.

CONCLUSION:

Partial D and variant e antigens are most frequently expressed in Black populations (<1%). The variant RHCE*ceHAR allele occurs in <0.01% of the population, but is more commonly found in those with German ancestry. Since the patient's RHCE genotype is RHCE*ceHAR paired with an R2 haplotype, the patient did not express a normal e antigen and was able to develop an antibody typically found in those of African descent. This case is a rare example of a Caucasian patient expressing variant RhCE antigens and demonstrates the value of RHD and RHCE molecular analysis in antibody identification studies in all populations.

T/S: # 5 POSTER

TITLE: Optimized Enzyme-linked Antiglobulin Test Parameters for Antigen Screening Using 96 Well Microplate Format

AUTHOR(S): Richard Gammon, MD Oneblood, Michael Gannett SBB(ASCP), Oneblood, Mariem Prieto, BB(ASCP), OneBlood, Inc.

BACKGROUND:

Red cell antigen testing in donors is an important part of pretransfusion testing. Several blood group systems such as RH, KEL, FY, JK and MNS are important to find suitable blood for alloimmunized patients and those on phenotype matching transfusion protocols. Traditional tube-based testing for antigens can be expensive due to antisera and is time-consuming. Additionally, it can be challenging to scale to a large throughput. This project evaluates the parameters needed to utilize enzyme-linked antiglobulin test (ELAT) for antigentesting in 96 well microplate format.

METHODS:

To determine the appropriate parameters for ELAT methodology, a polyclonal anti-D was selected and antigen positive and negative red blood cells (RBCs) were pre-sensitized at 37°C for 30 minutes in test tubes for positive and negative controls respectively. After sensitization, cells were washed four times and suspended in saline with 0.2% bovine serum albumin (saline-BSA) at a concentration of 2.5%. A 50 µl aliquot of this suspension was added to a 96 well U bottom microplate, followed by 150 µl of Alkaline Phosphatase (AP) conjugated Goat Anti-Human IgG (diluted 1:1500 in Tris Buffered Saline with 0.1% Tween 20). The microplate was incubated at room temperature (RT, 20-25^{O}C), then washed four times with saline-BSA. After washing, 100 µl of PNPP (p-Nitrophenyl Phosphate) diluted in diethanolamine substrate buffer was added and the microplate incubated at RT for 30'. The microplate was centrifuged at 1000 RPM for 20 seconds and a 160 µl of supernatant was transferred to clean wells and the reaction was stopped with 20 µl of 3N NaOH. Absorbance was read at 405 nm in an ELISA microplate reader.

RESULTS/FINDINGS:

The parameters outlined in the methods were the settings that yielded the largest difference between the antigen positive and negative cells. The optical density (OD) at 405 nm of the antigen negative cells had a mean of 1.023 (range: 0.917-1.103), and for antigen positive cells had a mean of 3.696 (range: 3.399-3.854).

CONCLUSION:

OD readings in ELISA showed 3 times higher OD for antigen positive than antigen negative cells, which allowed use of this method for the differentiation of the antigen typing. The ELAT parameters presented in this project can further be optimized to allow for a larger scale antigen testing by utilizing sensitization in microplate format and, use of various specificities of antibodies to determine additional antigens and the use of multichannel pipettes to allow the testing of a large number of samples.

A: # 6 POSTER

TITLE: The Benefits of Creation of a Centralized Academic Center at a Large Community Blood Center

AUTHOR(S): Richard Gammon, MD, OneBlood, Inc.

BACKGROUND/CASE STUDIES:

Pathology Residents and Blood Banking and Transfusion Medicine fellows need to rotate through a blood center (BC) as part of their training and to be able to sit for their respective board exams. Previously, this process was not centralized at this BC. This lead to teaching hospitals not giving proper advance notice of students' rotations and thus BC faculty were either not available or not prepared. As there was no standardized curriculum, the quality of training varied widely within the organization. Finally, there was not a good understanding of how much BC time and resources were devoted to physician student teaching. To address these concerns, the BC decided to centralize this process.

STUDY DESIGN/METHODS:

The Chief Medical Officer created an academic center overseen by one of the Medical Directors that would centralize all physician student teaching. A part-time program coordinator from existing BC staff was also assigned to this project. Contracts were now required between the BC and teaching hospital. Curricula for both residents and fellows was reviewed for all programs. A formula was developed to determine the cost of BC resources needed per program: number of students per rotation multiplied by the hours per rotation and multiplied by an average BC faculty salary and benefits of $50 US dollars (USD) per hour. Revenue from blood drives in the previous 12 months at the teaching hospital was obtained from the BC's finance department to determine if this would cover the costs of the rotations. Facilities that chose not to hold blood drives were given the option to pay for the rotation costs to the BC.

RESULTS/FINDINGS:

The three-year contracts established clearly defined expectations of both the BC and the teaching hospital. This included a standardized curriculum at the BC for pathology residents and Blood Banking and Transfusion Medicine fellows that could be tailored to the individual needs of the program directors. Per terms of the contracts the rotation schedule needed to be finalized and approved by both parties within 8 weeks of its start. This eliminated "drop offs" or last minute calls from the program directors requesting a student rotation. Two programs pay for the costs of the rotation that in 2021 generated $13,575 USD in revenue. The other four programs generate sufficient revenue from blood collection to cover costs. The revenue generated will allow for another BC hub location to become a site of student rotations in the 2022-2023 academic year.

CONCLUSIONS:

The creation of a centralized academic center benefits both the BC to ensure rotation costs are covered and future physicians through a standardized curriculum that has both available and properly prepared BC faculty.

T/S: # 7 ORAL

TITLE: The Implementation of AHG Titrations to Determine Eligibility of Low Titer Group O Whole Blood for The Walking Blood Bank

AUTHOR(S): Tara Francis SBB(ASCP)^{CM}, Claribel Resto-Marrero MHS, MT(ASCP)SBB^{CM}

BACKGROUND/CASE STUDIES:

The use of Low Titer Group O Whole Blood is the standard practice in the Navy as it is known to have less risks of adverse events. The military is unable to store blood components for transfusions on the naval ships. The blood center is routinely requested to host a blood drive and provide titration values of the group O participants eligible to donate. If an emergency transfusion is required, the military has a list of acceptable donors to collect whole blood from to use for immediate transfusion. Titer values of IgM Anti-A or Anti-B <256 are considered low. Safety concerns by the reference lab arose with only providing immediate spin (IS) titration values. To address this concern, the inclusion of Anti-Human Globin (AHG) iso-agglutinintitrations were also reported.

STUDY DESIGN/METHODS:

A total of 37 samples were forwarded to the reference lab for titration studies. A total of 4 sets of serial dilutions were performed from 1 to 1024 with normal saline as the diluent. Using A1 cells and B cells, 2 separate titrations were performed at IS at room temperature (16-24°C). In addition, another set of separate titrations were performed incubating the cells and plasma at 37°C for 60 min at AHG phase. The participants ages ranged from 20-43 with 31 being the average age. There were 9 female and 28 males participants. There was no obvious correlation between the age or gender and titration results.

RESULTS/FINDINGS:

Based on the IS titrations, 37/37 donors would have been considered to be an acceptable candidate for a low titer whole blood donor (a titer of <256 for with Anti-A or Anti-B). However, based on the AHG titration values, 21% (8/37) of the donors would have been considered to have high titers for Anti-A and 18.9% (7/37) donors would been considered to have high titer for the anti-B (≥256). The Median/Mode for the IS Anti-A and Anti-B was 42/64; and 28/32 respectively. Compared to the Median/Mode for AHG for Anti-A and Anti-B was 140/128 and 100/64 respectively. There was no obvious correlation between the age or gender and titration results.

			Titration Values								
			2	4	8	16	32	64	128	256	512
# Donors with titration results	Anti-A	IS	1	0	2	9	10	13	2	0	0
		AHG	0	0	0	0	2	10	17	7	1
	Anti-B	IS	2	1	5	11	12	5	1	0	0
		AHG	0	0	2	7	6	9	6	6	1

CONCLUSION:

Based on data obtained, performing only IS titrations for both the Anti-A and Anti-B would not provide enough data to determine if the donor would be eligible for Low Titer Group O Whole Blood donation due to falsely negative results. The AHG titrations values demonstrated a higher level of reactivity of the iso-agglutinin antibodies that could exclude donors otherwise accepted as eligible donors if decision was solely based on the IS titers. Therefore, titrations performed at AHG phase provided a more precise interpretation to determine donor eligibility and is a safer practice for whole blood components for transfusion.