Michigan Association of Blood Banks presents

Winter 2007

# In A Different Vein

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## MABB LOSES A DEAR FRIEND

**We are sad to announce that Kay Beattie, a friend and colleague of the MABB, has passed away on February 9, 2007. An article dedicated to her memory will follow in the April issue of In a Different Vein.**

## Inside This Issue



## PRESIDENT'S MESSAGE

By Suzan Bowers, MT(ASCP)SBB

The year 2007 is underway and so is my tenure as President of the Michigan Association of Blood Banks. I am privileged to be working with the best group of people on the MABB board. Together we plan on making 2007 another great year for Michigan Blood Bankers.

Before moving forward with 2007, I want to reflect on 2006 and my year as President-Elect. The Fall meeting was a big success and I thank everyone who helped pull it off. Schoolcraft College is such a great venue and the speakers really came through to make the program a success. From the planning committee meeting in December 2005 to all the phone calls and advice, until the day of the meeting, I had the support and encouragement of everyone. I especially need to thank John Judd for securing Marion Reid and Dr. Newman for keeping me on track and answering all my questions. I also need to thank all of the vendors who generously support our organization. Without them we could not have a meeting. A special thanks to those vendors who gave extra to provide the food or speaker's travel expenses. I also wish to thank Suzanne Butch and Dr. Sherwin Imlay for all the work they do to secure the continuing education credits for the medical technologists and physicians.

I would like to take this opportunity to thank Michelle Tuson for all her years of work as the Exhibit Coordinator. She is the reason we have had such great vendor participation and her hard work and dedication will be missed. She has passed along her knowledge to Karen Gizzi and I am confident that Karen will work just as hard to take care of our vendors.

I can't begin 2007 without thanking Dr. Bruce Newman for his service as President in 2006. His dedication to this organization is genuine and I look forward to his continued support on the

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board as Past President. I also need to thank Peggy Stoe and Kathryn Watkins as they leave our Board. Their dedication and support will be missed.

Now it's time to move forward into 2007. Dr. Laura Cooling is the new President-Elect and has already begun work on the Fall 2007 meeting. It is scheduled for September 19th and 20th at the VisTaTech Center at Schoolcraft College. Put the dates on your planner calendar now.

We have lots in store before the Fall meeting. The Education Committee, led by Terry Downs, is planning another full year of RAP sessions. Last year they expanded to Northern Michigan with a RAP in Gaylord. And what a success it proved to be. The committee is open to new members so if making new friends and having fun appeals to you, give it a try.

I am grateful to Mary DePouw for continuing as chairperson of the Publication committee. She will work closely with our new MABB webmaster, Bethany Neldrett, to publish our newsletter online at www.mabb.org. It takes a lot of work to put it all together and I thank them both. They are always looking for articles, items of interest, or just tidbits of information. Send them along to Mary at mdepouw@crittenton.com.

Membership renewals for 2007 were mailed in early February. If you already renewed, thank you for your continued support. If you haven't renewed yet, please be sure to get it in soon. The MABB is nothing without its members. Your support is the cornerstone of our organization and without it we could not provide the rich educational opportunities that have made us one of the best state organizations in the country.

You can contact me at 313-465-8516 or at bowerssl@usa.redcross.org. I welcome your comments or suggestions and look forward to serving the MABB as its 2007 President.

# 2007 ANNUAL MEETING PLANNED FOR SEPTEMBER 19–20th

By Laura Cooling, MD, Annual Meeting Chair
*University of Michigan*

The Annual Meeting Planning Committee met on Tuesday, December 5, 2006 at the Schoolcraft College to review the most recent annual meeting and to lay the groundwork for our next year. In addition to the MABB board, committee members included Sharon Lowry, Mary DePouw, Sharon Zimmerman, Sandy Lenneman, Bradley Eisenbrey, M.D. PhD, Suzanne Butch, Linda Cardine, John Judd, Tim Mervak, Barry Siegfried, M.D., and Kathryn Watkins. A special thanks to Sharon Zimmerman, who traversed half the state to be with us on a Tuesday night.

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**HOLD THE DATE**

**53rd MABB Annual Meeting: September 19 - 20, 2007**

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The 2006 fall meeting was considered a great success with nearly record attendance thanks to the efforts of Sue Bowers, our new president. Suzanne Butch, our PACE program administrator, provided a summary of attendees comments and suggestions. The total attendance, including participants, vendors and speakers, was 153 on Wednesday and 130 on Thursday. Positive comments and suggestions included "very educational", repeating a "top ten" list next year, and bring back Amy Dixon (the motivational speaker). The most consistent negative comment was the evaluation forms, which we will address.

Several terrific ideas for the 2007 meeting were discussed. We are currently approaching potential speakers for this year's meeting and believe that it will be as entertaining and informative as 2006. I hope that you will join us next fall for the 2007 MABB meeting on September 19th and 20th. Mark your calendars now and plan to join your friends at Schoolcraft College.

## CASE STUDY

Submitted By Allyson Henstock
*Mount Clemens Regional Medical Center*

A 75 year old male was admitted for an outpatient transfusion in May, 2006. The order was to transfuse two units of leuko-reduced packed red cells. The patient was transfused with 2 red cell units three weeks prior and one unit three years earlier.

The patient has a history of coronary insufficiency and diagnosis of anemia due to occult blood loss.

The patient's blood group is O Positive. His pre-transfusion hemoglobin was 8.6gm/dl. The pre-transfusion antibody screen using gel column technology was negative.

The pre-transfusion vital signs taken at 0900 were temperature 97.20 F, pulse 62, respirations 14, and blood pressure 131/46.

The first unit of O positive immediate spin crossmatch compatible red cells was issued at 0904.The transfusion was started at 0930 with no change in vitals at 1015, thirty minutes after the transfusion was started.

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At 1050 the patient complained of chills. There was no change noted in his vitals with a temperature noted of 97.40 F. (At this point the patient requested to be accompanied to the bathroom. He commented to the nurse that "My urine has never looked that way before!") One "Other" symptom noted was cyanotic fingernail bed = indicative of decreased O2 saturation.

At 1108 the transfusion was stopped, the Transfusion Service was notified and a Transfusion Investigation was ordered STAT.

The blood group types were repeated on both the post reaction specimen and the donor bag. Both were group O Positive. The post-reaction direct antiglobulin test was negative and a clerical check found no discrepancies in donor or patient identity. There was no visible hemolysis in the pre-transfusion specimen; however, the post- transfusion plasma did demonstrate visible hemolysis.


See photo submitted. (Note: Our SOP requires a second post-reaction be obtained to rule out hemolysis due to a traumatic draw.)

A post-reaction urine specimen was obtained. The urine was cloudy and dark red with large amount of free hemoglobin blood but zero intact red cells (hemoglobinuria). The urine protein was noted as greater than 300mg/dl = a HIGH value.

Another post reaction blood specimen was received at 1217. The hemoglobin was 8.8. Blood chemistries were normal including normal BUN and creatinine levels. Visible hemolysis in the plasma was still present.

The pre-transfusion and post reaction antibody screens were repeated.

No antibody was detected in the pre-transfusion specimen. The post reaction screen was positive with one plus reactivity noted in screen cell II ( R2R2).

Antibody identification using untreated cells with both the pre-transfusion and post reaction specimens identified no antibody in the pre-transfusion and anti-E in the post reaction specimen.

A ficin-treated panel using the pre-transfusion and post reaction specimens identified anti-E in both.

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The pre-transfusion specimen was antigen typed for E and found to be E negative. Even though the patient had been transfused with two red cell units three weeks prior, this result was considered valid since no mixed field positive agglutination was noted.
The donor unit was 4+ E positive. The unit was not typed for little e.

The patient was taken to the Emergency Center and observed. His IV access was kept open and the patient was treated supportively.

The patient was admitted to the telemetry unit. The next day the CBC and chemistry results were hemobglobin 6.8gm/dl, hematocrit 20.1 and the BUN was elevated at 20.4 with creatinine normal. The urinalysis was not repeated. One day post reaction the patient received a second unit of E negative red cells without incident and was subsequently transfused with four E negative units over the next three months.

Conclusion: Acute Hemolytic Transfusion Reaction due to anti-E antibody.

Recommendations included a request that a 120-day post transfusion specimen be submitted for further antigen types for future reference. (This has not been done although the patient has not been transfused at this facility since 9/06 and has had numerous encounters since.)

# A WINTRY REVIEW OF THE GAYLORD RAP SESSION

By Sharon Lowry, MT(ASCP)SBB


One of the two Fall 2006 RAP Sessions was held in Gaylord on November 3rd. The topic was "Comfort Testing: How Much Is Enough?" The setting was the Holiday Inn Express but it looked like the Polar Express as there was quite a bit of snow in Gaylord that day. The lobby was warm and inviting with rustic décor and a fireplace burning – a welcome site from the snowy outdoors.

Before the session we enjoyed a delicious lunch of lasagna and were entertained with plenty of blood bank chatter and introductions. The desserts, coconut filled chocolate cookies, apple filled sugar cookies, and turtle brownies, were baked locally at Jan's Deli and Meat Market. Jan's is worthy of a visit if you find yourself in the Gaylord vicinity.

Terry Downs, MT(ASCP)SBB of University of Michigan Hospitals presented the first lecture "What's the Type?" She focused on getting the correct ABO when confronted with weak/missing

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antigens, weak/missing antibodies, unexpected antigens, and unexpected antibodies. She outlined a simple systematic approach to use:

- Rule out clerical error, procedure error, and reagent or equipment malfunctions,
- Obtain the patient's transfusion history, diagnosis, age, and compare the ABO results with previous records,
- Review the results of the antibody screen (Was it positive?),
- Analyze the reactions and begin your resolution with your best guess on whether it is a forward or reverse problem, and
- HAVE PROCEDURES WRITTEN!

This was an excellent lecture touching on all categories of ABO discrepancies, the necessary reagents, directions to resolve each type of problem, and transfusion recommendations. She finalized her talk with several interesting case studies.

Ann Steiner, MT(ASCP)SBB of Ortho Clinical Diagnostics shared her extensive, invaluable experience in a most appropriate lecture "Comfort Testing". Ann focused on serologic basics and streamlined testing, including what tests are required, what tests can be dropped, and what tests should be added. She led us to a greater understanding of the rationale for the changes that many blood banks and transfusion services have implemented, for example:

- Specimen: Plasma instead of serum,
- ABO Group: No anti-A,B in a forward ABO type,
- Rh Type: Use of a serum-suspension vs. washed cell suspension,
- Weak D: Cord bloods for maternal RhIG and initial testing of donor units,
- Antibody Screen: Anti-IgG instead of poly AHG

Ann advised us how to make changes with comfort. Prior to implementing a change, she recommends you know the answers to the following questions:

- Is it legal?
- Is it safe?
- Is it beneficial?

Why do we do what we do? Ann indeed enlightened us all to a new comfort level!

If you didn't attend the Gaylord RAP but wish you could hear a lecture repeated, or you have an idea for a RAP session or location, please let MABB know.

# THE TRIALS OF TRALI

By Mary Jo Drew, MD, MHSA
*Medical Director of Blood Bank – Henry Ford Hospital, Detroit MI*

**Introduction**

Transfusion-related acute lung injury (TRALI) was first reported in the 1950s, but not recognized as a distinct clinical entity until 1985. It is characterized by acute, non-cardiogenic pulmonary edema occurring immediately or within hours of transfusion of any blood component, although fresh frozen plasma and platelet components are most frequently implicated. The reported incidence is highly variable, ranging from 1 in 1000 to 1 in 100,000 transfusions in North America.

**Clinical presentation and diagnosis of TRALI**

A recent report by a Canadian consensus panel defines TRALI as a new episode of acute lung injury (ALI) occurring within 6 hours transfusion, which is not temporally related to any other risk factor for ALI. Patients who are already critically ill may have one or more additional risk factors for ALI, such as sepsis, shock, trauma, cardiopulmonary bypass, or pneumonia, which may complicate the clinical presentation. ALI is defined by acute hypoxemia, demonstrated by a $PaO_2/FiO_2 < 300$, $SpO_2 < 90\%$ on room air; bilateral fluffy infiltrates on chest X-ray, and no evidence of central venous hypertension or cardiac failure. TRALI often presents with signs and symptoms including shortness of breath, hypoxemia, bilateral pulmonary edema, and fever.

**Differential diagnosis**

It is important to distinguish TRALI from other causes of dsypnea and hypoxia that may be associated with transfusion. Respiratory distress due to bronchospasm and hypoxia may occur in an allergic or anaphylactic transfusion reaction. These reactions commonly include reddening of the skin and/or hives not present in TRALI. Fever, respiratory distress and hypotension leading to vascular collapse may be seen after transfusion of a bacterially-contaminated blood component.

A key differential diagnosis in a case of suspected TRALI is that of transfusion-associated circulatory overload (TACO), which may present with many of the same symptoms and signs. Key to the diagnosis of TACO is evidence of cardiac failure, including: an enlarged cardiac silhouette on chest X-ray, elevated plasma brain natriuretic peptide (BNP) level, elevated plasma troponin, and elevated central venous or pulmonary artery wedge pressure. The two syndromes may coexist in a critically ill patient, and if TRALI cannot be definitively excluded, further work up is indicated (see below).

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**Pathogenesis**

Increased capillary permeability is the final common pathway of all proposed mechanisms of TRALI. Movement of plasma into the lung alveoli (air spaces) then causes pulmonary edema. There are two leading theories of TRALI pathogenesis: the antibody hypothesis and the "2 event" hypothesis.

The antibody hypothesis states that donor antibodies to HLA or neutrophil antigens in the recipient stimulate the recipient's WBCs, especially neutrophils, via activation of complement. These activated PMNs localize to the pulmonary capillary endothelium and release vasoactive substances, which cause endothelial damage resulting in pulmonary edema.

The "2 event" or neutrophil priming hypothesis states that TRALI is the end result of 2 independent events. The first may be the underlying condition of the patient, which predisposes the neutrophils to be primed and adherent to the pulmonary capillary endothelium. The second event causes activation of these neutrophils, release of toxic substances and capillary damage resulting in pulmonary edema. Either event may be triggered by transfusion of bioactive lipids or cytokines that accumulate in stored blood products.

**Clinical management**

Supportive care is the mainstay of TRALI management. Oxygen therapy and mechanical ventilation if needed are generally adequate. Hypotension may be managed with IV fluids. Diuretics are not indicated, as they may cause hypovolemia. The role of steroids is controversial; in most cases they are not helpful. Most patients resolve X-ray changes and clinical symptoms within 72 hours. Mortality may range from 5-25%, with mortality rates of 5-10% most frequently recorded.

**The blood bank's role**

The blood bank can play an important role in educating hospital physicians in recognizing the signs, symptoms, and differential diagnosis of TRALI. If TRALI is reported, the blood bank should obtain records of blood products transfused within the preceding 6 hours. An investigation should be done to determine that the reaction is consistent with TRALI rather than TACO, which is far more common. If TRALI is still suspected, samples should be obtained from the patient for HLA type, HLA antibody screen, and neutrophil antibody. This testing may be completed at the hospital or the blood center, and will assist in the blood center's investigation.

The reaction and suspect products should then be reported to the blood center. Their investigation will focus on multiparous female donors, donors who have received transfusions,

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and products transfused closest to the time of the reported reaction. The blood bank physician should act as intermediary in relaying results of the investigation and need for further testing to clinicians.

Voluntary reporting of TRALI reactions is encouraged on the MEDWatch site: http://www.fda.gov/medwatch. If a fatality occurs due to TRALI, reporting must occur as soon as possible CBER at fatalities2@cber.fda.gov. A written report must follow within 7 days of the incident.

**Prevention of TRALI**

The main focus for prevention of TRALI has been the removal of "implicated" donors"—that is, donors with antibodies specific to the HLA or neutrophil type of the recipient in question—from the donor pool. However, many times investigations of TRALI reactions turn up incomplete results. The donor may have antibodies, but the specific antigens are not present in the recipient. Or the recipient or donor may not be available for testing. It is not agreed how these donors should be handled.

Other proposals seek to restrict donations from classes of donors that may be of higher risk of having anti-leukocyte antibodies, such as multiparous women, or by antibody detection via laboratory screening. However, this may not prevent all TRALI reactions, and may exclude many safe donors. If the "2 event" hypothesis of TRALI is correct, many TRALI reactions may occur in the absence of donor antibody. So these strategies to restrict donations are controversial.

In the end, the best way to prevent TRALI, or any transfusion reaction, is not to transfuse any blood product unnecessarily. The blood bank can help to educate clinicians both in the recognition of TRALI reactions and in the appropriate use of blood components, to increase transfusion safety for all patients.

# JOB POSTING – Reference Laboratory Supervisor

Michigan Community Blood Centers is in search of a qualified individual for:

**Reference Laboratory Supervisor**

This is an exciting opportunity to make a positive difference with your life. We are seeking an experienced, detail-oriented individual to provide technical oversight to the Red Cell Reference Lab. This position will consult with hospital blood banks and transfusion facilities regarding patient transfusion issues, perform basic through advanced testing procedures, interpret complex test results in order to determine recipient compatibility, resolve compatibility problems and provide antigen-negative units for transfusion. There is opportunity to present at reference lab national meetings. Position requires on call rotation. The ideal candidate will have prior management experience and at least 3 years experience in antibody identification and other related serological problem solving techniques. Requires MT(ASCP). SBB preferred (or equivalent); or SBB eligible and willing to pursue certification.

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Competitive compensation & comprehensive benefit plan and relocation package. All interested parties please send cover letter, resume & salary expectations to:

Michigan Community Blood Centers
1036 Fuller Ave. N.E.
P.O. Box 1704
Grand Rapids, MI 49501-1704

Or email your questions and inquiries to: aaustin@miblood.org.

Humor is a rubber sword -- it allows you to make a point without drawing blood."
**- Mary Hirsch, author & humorist -**

## WE NEED YOUR HELP!

This newsletter depends upon submissions from members just like *YOU!* Please take time to submit an article that would be interesting to the rest of the members. It does not have to be journal quality, and it can even be as simple as sending the reference to an article of interest that you read recently, but *we need to hear from you!!!*

The deadline for next issue is **April 1, 2007**. We hope to hear from you by then!

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**www.mabb.com**
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