Michigan Association of Blood Banks presents

Fall 2006

In A Different Vein

Michigan Association of Blood Banks, c/o Lisa Tyzo, 29832 Buckingham, Livonia MI 48154
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PRESIDENT'S MESSAGE

By Bruce Newman, MD

The Good Times

We just had an excellent 52nd Annual MABB Meeting. The turnout was high, Schoolcraft's VisTaTech Center facility and its food were excellent, the exhibitors were pleased, and the educational content was great.

Inside This Issue

Attendees were able to receive PACE credit this year for the first time, and physicians were able to receive 10 hours of CME I credit. Sue Bowers did an excellent job, and she will comment more specifically on the meeting in her article. Laura Cooling will be our new President-Elect and her main role is to have a successful 53rd Annual Meeting. She will be entering a two-year cycle of hard work, excitement, and fun; and it starts in December with a brainstorming session. We invite people to the brainstorming session, and if you feel that you can add to the session, please let Laura Cooling know (see www.mabb.org for her contact information), so she can invite you.

It was an honor and a privilege to be President-Elect and the same will be true for being President when I complete my term at the end of December. I will always view these past two years as the "The Good Times". Why? It is the people that you have the privilege to meet and work with—colleagues from the Board, from Committees, speakers, members, hospitals, and attendees at the Annual Meeting. It is the friends that you make. It is the growth because of all the things that you had to do or lead. It is the knowledge that I will be a better contributor to MABB when I am done because of the experiences I had, the relationships that I developed, and what I learned. But please, let me share some insights.

Planning the annual meeting is like planning a wedding. It is complicated, and you need luck. MABB has a notebook binder that describes action steps---it helps. You also have the President (Peggy Stoe in my case) who just completed the previous annual meeting and is a great source for advice and help. In the end you do your best; you hope for the best, and you pray that it all goes well. While everyone, both workers and participants, wants the meeting to go well, there is a unique symbiotic relationship between the President-Elect and the President. The President-Elect is in charge of all of the work; the President is in charge of running the event. They both have a vested interest to make sure that the Annual Meeting goes well, and they work closely together to make sure that all of the bases are covered. What is also very unique is that you gain tremendous experience from planning and executing the Annual Meeting, but you never, ever do it again. But that's okay because doing it for one year is hard enough.

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The next year one becomes President. Article 5, Section 1 in the Bylaws describes what the President does but it is very general. Peggy told me that the first thing I had to do was create a budget—you do that before you become president. My response was, "How do you do that?" She said take last year's budget and decide what you think will change. Then, adjust the budget appropriately. I got through it. I quickly realized that I had to lead five meetings, and I had to have a general plan (not on paper but in my head) regarding what I wanted to accomplish. I started reading all of the MABB documents (Bylaws, Policy Manual, Newsletters, Minutes, and Meeting Agendas); and I found that past Minutes and Meeting Agendas were crucial to understanding how to organize and lead a meeting. I learned that to have a good meeting, you have to communicate with everyone before the meeting. By the second meeting (or maybe it was the third), I actually knew what I was doing. Well, one more meeting in December, and I can move on.

I will be on the Board for one more year, and I will be called Past-President. It is a great position. First, there are no responsibilities; and second, it is an open-ended job. I think I can do it! In fact, I am confident that I can be a very good Past-President. To be serious, I plan to help Mary Depouw find people to work on our newsletter, and I want to promote MABB membership. I also want to make MABB membership more valuable for people who live outside of the Detroit area. I learned a lot over the past two years---and I am looking forward to using my knowledge to mentor and to do more next year. Yes, these past two years were good years and "good times".

BRINGING US TOGETHER – 52nd Annual Meeting

By Suzan Bowers, MT(ASCP)SBB

The Michigan Association of Blood Banks held its 52nd Annual Meeting on September 20th and 21st at the VisTaTech Center at Schoolcraft College in Livonia. Titled "Bringing Us Together", the meeting was a great success for the MABB and a great educational opportunity for the blood banking community.

The topics of the presentations were varied and included serology, continuing education and personal growth. The prestigious Kay Beattie Lectureship Award was presented to Marion Reid, Director of Immunohematology at the New York Blood Center, for her lecture "Blood Group Systems: An Update". She followed it up on Thursday with "Approaches to Locate Rare Blood Donors". Roslyn Yomtovian, MD returned to give two lectures, "Urgent Problems in the Transfusion Service" and "Platelet Bacterial Contamination: Never all Yin not all Yang". Our own John Judd gave an ever entertaining lecture on "Strategies for Managing Conflicting Rh Typing Results" and Brad Eisenbrey, MD told us how to "Manage Tissue in the Transfusion Service". Sharon O'Callaghan also returned to give an update on BPD reporting and Judy Sullivan from AABB told us "Continuing Education: To Stop Learning is NOT an Option". Amy Dixon from Beaumont spoke about "Personal Effectiveness" and James Robbins, MD from Beaumont spoke on "Blood Usage in the OR". Glen Hendricks from Red Cross told us how to be prepared for a disaster. Rounding out the program were the ever popular Serological Case Studies on Wednesday and the Clinical Case Studies on Thursday.

Attendance at the meeting topped recent years, with approximately 160 on Wednesday and 130 on Thursday, including audience, vendors and speakers. The facility is top notch with convenient

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access and superb food. The number of exhibitors was up this year to 22 vendor tables. The vendor feedback about the meeting was very positive, with some saying we host the best state meeting that they attend.

The Sheik Saeed Memorial Scholarship was presented to Golden Kroeger, MT (ASCP) from the U of M. We had a large student turnout each day, as the agenda had something for everyone, from student to MD. All in all, the Annual Meeting was a roaring success but we look forward to topping it next year. So hold the date: September 19th and 20th , 2007 again at Schoolcraft College. See you all there!

HOLD THE DATE

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

TRANSFUSION MEDICINE: INTERNATIONAL STYLE

By Janis Hamilton, MT(ASCP)SBB

Reference Lab, American Red Cross Blood Services, SE Michigan Region

Receiving samples, performing ABO/Rh types, antibody screens and crossmatches, identifying antibodies, pooling platelets, issuing blood components. You do these tasks multiple times each working day. Did you ever stop to think that this work is being performed in countless labs all over the world? I had the extraordinary opportunity to experience blood banking in unique ways in two different countries this year. Each experience served to emphasize the global nature of our profession with both many similarities and many differences in various parts of the world.

A trip to Lund, Sweden in the southwestern part of the county gave me the opportunity to visit a hospital blood bank, Unversitetssjukhuset i Lund (Lund University Hospital), and the associated donor center, Lundatappen. With two professional colleagues, I dropped by during the Friday evening shift of a holiday weekend. Many similarities with a US holiday shift were noted: Minimal staff. Racks of lab coats and gloves. Quiet atmosphere. Antibody studies being performed in gel cards. Charts listing antibody characteristics. Worksheets for recording patient results. A transfusion reaction study was being performed that evening. The list of test charges was posted by the computer terminal- in Swedish, of course. But I could easily identify items on the test menu because of similar word forms: DAT, Blodgrupp ABO/RhD automat. The blood refrigerator held some differences. The European blood banks utilize the ISBT labeling standard that will soon spread throughout the US, giving a different appearance to the blood label. Their units also list any additional red cell phenotype information that is available on the donor. Several e- units were quickly identified in the general inventory. This hospital also has a unique blood issue policy. During off shifts, the crossmatched units are placed in a special section of the blood bank refrigerator. When a transfusion is to be given, hospital ward personnel come to the refrigerator and select the units tagged for their patient. Overall, a US hospital blood bank technologist would feel comfortable stepping into this facility.

Several months later, I was on the road again to the 29th International Congress of the International Society of Blood Transfusion held in Cape Town, South Africa. Similar to our AABB Annual Meeting, the Congress is a designed to update transfusion medicine professionals on current information related to blood collection and testing, donor management, and scientific discoveries. The meeting was attended by over 1900 individuals representing 99 countries. While sessions were conducted in

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English, the international background of the attendees resulted in a mixture of languages and accents in the air at all times. The scientific content of the meeting, developed largely around simultaneous half-day sessions devoted to various topics, illustrated the great expanse of transfusion medicine development around the world. Session titles ranged from Progenitor Cells, Advances in Haemostasis, Bacterial Contamination of Blood Products, Donor Management, and Artificial O_2 carriers to Transfusion in Resource Limited Countries and Update of Transfusion Practice in Africa. Principles of establishing a voluntary donor base, viral testing strategies, and counseling the HIV- and hepatitis-positive blood donor (in countries where the HIV seroprevalence rate is >10-15%) were topics that illustrated to me the large diversity in blood programs and transfusion medicine issues worldwide. While a pediatric transfusion medicine issue in a developed country might be the efficacy of granulocyte transfusions, pediatricians in a developing country struggle with red cell product availability and the lack of appropriate supplies such as small bore needles.

Over 895 abstracts, 740 of which were posters, on virtually any transfusion medicine topic conceivable accompanied the meeting sessions. The immunohematology topics that I focused on reported new information on blood group antigens learned through molecular analysis and case studies of unusual antigens and antibodies, much like at an AABB meeting. A hot topic was the reports of donor red cell genotyping using the high through-put microarray systems that recently have appeared in the US. The exhibitor display again brought home the international aspect of this meeting. While many vendors were familiar names, the reagents, equipment, and automation showcased were sometimes different because items not licensed for sale in the US were being displayed.

Through out the similarities and differences seen in both experiences, there was one common denominator. No matter what the circumstances of an individual situation, each professional was driven by concern for the ultimate welfare of the patients they served. This, more than anything else, links the blood bank technologists and physicians in Michigan to those in Sweden, Romania, Japan, South Africa and every other country in the world. Truly, a noble profession.

JOB POSTING

Ready to expand your professional experience? Join us as a **Reference Laboratory Technologist**
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Position requirements

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313-494-2789

EMERGENCY REVERSAL OF WARFARIN ANTICOAGULATION

By Ann Alpern, MD

St. Joseph Mercy Hospital, Ann Arbor

Introduction
Since its introduction in the 1950s warfarin (Coumadin) has proven effective in treating and preventing thromboembolic events in a variety of at-risk patient populations. Indications include treatment of deep vein thrombosis and pulmonary embolus, and prevention of stroke and other embolic events in patients with atrial fibrillation, mechanical heart valves and hypercoaguable states. Currently, warfarin is the most commonly used oral anticoagulant in the United States (approximately 1.5 million patients).

Pharmacokinetics
Warfarin acts by inhibiting the gamma carboxylation step in the synthesis of the biologically active forms of the vitamin-K-dependent coagulation factors: II (prothrombin), VII, IX and X. Carboxylation allows the factors to bind to cell membranes, which is required for efficient catalytic activity. Warfarin reaches peak concentrations in plasma 4 hours after ingestion and circulates for a mean of 40 hours. Elimination is by liver metabolism, specifically the CYP2C9 isoenzyme in the cytochrome system. Genetic variations in this enzyme, variations in vitamin K intake and interactions with numerous drugs, medications and herbal supplements, result in fluctuations in drug levels and consequently, in the level of anticoagulation.

Monitoring warfarin anticoagulation
For patients on warfarin for more than a week, the degree of anticoagulation is assessed by monitoring the prothrombin time (PT) and international normalized ratio (INR). The PT is very sensitive to Factor VII levels. Since Factor VII has the shortest half-life of the vitamin K dependent factors, the PT becomes prolonged soon after treatment begins. However, anti-thrombotic effects are thought to correlate best with reductions in prothrombin levels. Prothrombin, with a half life of 60-70 hours, persists in circulation long after the initiation of warfarin therapy and the prolongation of the PT.

Bleeding Complications
Bleeding is the most frequent complication of warfarin therapy. Fatal hemorrhage occurs at a rate of 0.6% per year, with major hemorrhage occurring in 3% of patients per year. Minor hemorrhages occur in up to 10% of patients per year. The risk of bleeding increases with the INR. Other risk factors for bleeding include advanced age, history of a previous bleed, gastrointestinal pathology (ulcers, tumors, colitis, etc.) as well as certain drugs.

Reversal of Warfarin Anticoagulation
Common modalities for reversing warfarin anticoagulation include withholding doses, administering vitamin K and replacement of factors. The approach to reversal depends on among other things, the magnitude of the INR, the presence and seriousness of bleeding, and the indication for anticoagulation. In patients with serious hemorrhagic events, the guiding principle of treatment is rapid correction of the PT and INR.

Vitamin K Administration
Vitamin K is the only modality for warfarin reversal associated with prolonged correction of

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coagulopathy. Because factor synthesis has to occur to reverse the anticoagulation, reversal occurs slowly. If vitamin K is given orally, reversal usually takes 24 hours, but with IV administration reversal occurs within 4-6 hours. In treatment of serious bleeding complications, vitamin K is given with other faster acting modalities to provide sustained reversal. Vitamin K administration, in high doses, can result in warfarin resistance if anticoagulation needs to be reinitiated.

Plasma Transfusions

The mainstay of rapid warfarin reversal in the United State is factor replacement by means of plasma transfusions. Dose and speed of administration are critical factors in patients with life-threatening hemorrhage.

Hemostasis requires factor levels of 30% of normal ("normal" is 100 IU/dl) for most factors. Recent studies suggest that standard doses of plasma may not raise vitamin K dependent factors to hemostatic levels. Makris *et.al*. evaluated factor levels and coagulation tests following transfusion of 800 ml of fresh frozen plasma to 12 patients with a median pre-transfusion INR of 8.95. Post transfusion, the median INR was reduced to 2.3. Pre-transfusion median factor levels ranged between 3 and 10 IU/dl, while following transfusion the median factor levels for vitamin K dependent factors only reached 17 IU/dl to 20 IU/dl.[1] In a second study, Chowdhury *et. al*. compared factor levels in two groups of critically ill patients transfused plasma.[2] Group 1 received 12.2 ml/kg of plasma, while Group 2 received 33.5 ml/kg of plasma. Only one of five patients in Group 1 had post-transfusion factor levels in hemostatic ranges, while seven of seven in Group 2 obtained factor levels over 30 IU following transfusion. These studies suggest that plasma may need to be transfused in higher doses than currently administered to completely reverse warfarin anticoagulation.

In the setting of intracranial hemorrhage, rapid replacement of factors has proven critical to improving mortality and morbidity. At William Beaumont Hospital, Ivascu *et. al*. instituted a protocol to facilitate rapid transfusion of plasma to trauma patients with intracranial hemorrhage.[3] Using this protocol the mean time to initiate reversal went from 4.3 hours 1.9 hours. Treatment according to protocol resulted in a reduction in mortality of warfarin associated intracranial hemorrhage from 48% to 10%.

Since the vitamin K dependent factors are largely stable in refrigerated components, "thawed plasma" (fresh frozen plasma with out-date extended to 5 days following thawing) is comparable to fresh frozen plasma for warfarin reversal. Using "thawed plasma" may allow some hospitals to maintain an inventory of liquid components facilitating rapid provision of factors in critical situations.

Factor Replacement with Prothrombin Complex

Prothrombin complexes are virally inactivated, lyophilized concentrates of coagulation factors that were originally developed to treat congenital deficiencies of Factor IX. These concentrates contain the vitamin K dependent factors II, IX and X, and, depending on the formulation, may also contain factor VII. Prothrombin complexes, which can be reconstituted quickly in a small volume of fluid and infused rapidly, are the preferred modality for warfarin reversal when rapid reversal is required, in guidelines developed in the United Kingdom and Australia.[4, 5] Prothrombin complexes are not licensed for warfarin reversal in the United States. In addition, there are concerns about the cost of treatment and potential thrombotic complications.

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Recombinant Factor VIIa (Activated Factor VII)

Recombinant Factor VIIa is FDA licensed for treatment of patients with hemophilia that have inhibitors to standard factor therapy. Activated factor VII has been shown to "by-pass" the factor deficient step, resulting in clotting. The proposed mechanism of action involves binding to exposed tissue factor at sites of injury resulting in thrombin production, which activates platelets. Factor VIIa then attaches to the activated platelet surface and generates more thrombin. This product, costing about $2500 per dose, is infused IV bolus over 2-5 minutes and results in hemostasis in 10-20 minutes. Thrombotic complications appear to be rare. Case reports and small uncontrolled studies suggest that factor VIIa rapidly corrects the INR in bleeding patients with warfarin associated coagulopathy. A few studies in patients with intracranial hemorrhage associated with warfarin suggest that when used in conjunction with FFP or Prothrombin complexes, factor VIIa can more rapidly correct the INR and decrease plasma requirements than factor replacement alone. Whether this product is effective without infusion of other vitamin K dependent factors is not known. In addition, clinical benefit in reduction of bleed expansion, mortality or morbidity has not been determined. Nevertheless, a recent consensus conference concluded that recombinant factor VIIa is appropriate for treatment of some patients with warfarin associated intracranial hemorrhage.[6]

Conclusion

Warfarin treatment is proven to reduce the thromboembolic complications in certain groups of at risk patients. However, anticoagulation is associated with a substantial risk of serious hemorrhage. When life-threatening hemorrhage occurs, therapy includes rapid reversal of anticoagulation. Standard reversal protocols in the United States include parenteral administration of vitamin K and factor replacement with fresh frozen plasma or thawed plasma. Studies indicate that high doses of plasma may be required to reverse the coagulopathy, and that rapid infusion of factors may reduce mortality and morbidity in patients with intracerebral hemorrhage. Further studies are required to assess the role of prothrombin complexes and recombinant factor VIIa in patients with serious or life-threatening hemorrhage.

References:

[1] Makris, M. *et.al.* "Emergency Oral Anticoagulant Reversal: The Relative Efficacy of Infusions of Fresh Frozen Plasma and Clotting Factor Concentrate on Correction of the Coagulopathy." Thrombosis and Haemostasis 77 (3): 477-80 (1997).

[2] Chowdhury, P. *et.al.* "Efficacy of standard dose and 30 ml/kg fresh frozen plasma in correcting laboratory paramaters of haemostasis in critically ill patients." Br. J. Haematol. 2004 Apr;125 (1): 69-73.

[3] Ivascu, F. *et. al.* "Rapid Warfarin Reversal in Anticoagulated Patients with Traumatic Intracranial Hemorrhage Reduces Hemorrhage Progression and Mortality." J. Trauma. 2005;59:1131-1139.

[4] Hanley, J.P., "Warfarin Reversal." www.jclinpath.com, August 16, 2006.

[5] Baker, R. *et.al.* "Warfarin Reversal: consensus guidelines, on behalf of the Australasian Society of Thrombosis and Haemostasis." MJA, Volume 181, No 9, Nov, 2004: 492-497

[6] Shander, A. *et.al.*"Consensus Recommendations for the Off-Label Use of Recombinant Human Factor VIIa (NovoSeven) Therapy." P&T, 30, No 11, Nov, 2005: 644-658.

2006 ANNUAL MEETING SCAPBOOK

Marion Reid, PhD – 2006 Kay Beattie Lectureship Award

Nick Pavecevic & Dave Raphaelian, *CareFusion Vendors*

Kelly Hart & Sue Lafrate, *Troy Beaumont*

Donneke Bregenzer— Case Study Presenter

Suzan Bowers, 2006 President Elect—The force behind the meeting!

Terry Downs & Ed Derose

Roslyn Yomtovian, MD & Marion Reid, PhD

For More Photos, Visit Us Online At

www.mabb.org!

After the rush—**Peggy Stoe, Jim Fiedor, Suzan Bowers & Margaret Wilde**

Terry Downs, Peggy Stoe & Sue Bowers


Tim Neldrett, *Red Cross Detroit NTL*


Dale Weinberg, *ZLB Behring*


Richard Meyers, *Thermo Electron Corp (Jewett)*

Justin Briggs, *Sarstedt*


Angelo D'Anna & Sandy Lenneman, *American Red Cross*


Jeff Weathers, *Pall Medical*

THANK YOU, VENDORS!!!

Dear Vendors:

Thank you for making the 2006 meeting another success. It is always a pleasure to meet and chat with each of you at our annual meeting. Your support and presence at our yearly meeting means much to the attendees as well as the MABB Board, and we could not put on the annual meeting without your support. I also wanted to thank those that were able to sponsor the individual speakers and breaks.

Sorry about the delay, but I will be forwarding the meeting attendee list to each of you soon via email. And the 2007 meeting will again be held at the VisTa Tech Center at Schoolcraft College in September. Dates and more information will follow after the planning meeting in December. We all look forward to seeing you again at the Michigan meeting next year.

Thanks again for a great meeting, and we will be in touch soon.

Michelle Tuson & Karen Gizzi
Vendor Coordinators

George Kelly & Jacque Nelson, *Baxter*


Craig Flegel, *Ortho-Clinical Diagnostics*

John Hatcher & James Martinec, *BioArray Solutions*


Ted Beatty & Marc Squire, *MedAlliance Group*


Nick Pavecevic & Dave Raphaelian, *CareFusion*

Linda Barar, *Michigan Community Blood Centers*


John Kling, Digi-Trax Corporation


Kathy Shortridge, *Immucor Gamma*


Rosemary Girard, *Fresenius Medical Care*

Rhonda Boeckle, *Fujirebio Diagnostics*

Shannon Smith, *Gambro BCT*

Amanda Arbuckle, *Helmer*

2006 ANNUAL BUSINESS MEETING

Michelle Tuson accepts the Founders Award from MABB President, **Bruce Newman**

MABB members gather in the Lecture Hall

Golden Kroeger accepts the Sheikh Saeed Memorial Scholarship from MABB President **Bruce Newman**

John Judd presents the Kay Beattie Lectureship to Marion Reid

MABB President-Elect **Suzan Bowers** presents MABB President **Bruce Newman** with the President's Award

Allyson Henstock, Suzan Bowers, Sharon Cisco and **Marion Reid** wait in the wings

John Judd, Jacque Nelson and **Bruce Newman** share a laugh

SPECIAL THANKS TO...

Special thanks to the MABB President and President-Elect, for all their diligent work and perseverance in putting together a terrific 2006 Meeting! Thanks to the Annual Meeting Committee, and congratulations on a successful meeting!

Special thanks to all vendors. Most especially, **a BIG Thank You to all MABB members** who joined us at the Meeting—without your attendance, the Annual Meeting is just not possible.

MABB President-Elect—
Suzan Bowers

MABB President—
Bruce Newman

SEND ARTICLES TO EDITORS:

The deadline for next issue is January 1st!

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