



OHIO ASSOCIATION OF BLOOD BANKS



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From The OABB President

Dear OABB members,

If it seems that you picked up an old issue of the OABB Newsletter because the President's message is from me, you are not in the wrong year. Our current President, Mary Schumacher, had an opportunity to take a job closer to where her family is and "with a heavy heart" resigned her position. I first met Mary back in 1990 when she had already been very active in OABB. At that time she had already served several terms on the Education and Scientific Committee. Before becoming President in 2008 she served three terms as the OABB secretary and then President-elect. In all of her positions Mary has always been willing to help anyone that she could and has represented OABB well. We will miss Mary in the OABB leadership, but we understand her decision and wish her all of the best.

The OABB By-Laws does not specifically designate who fills an office if the elected member is not able to complete their term. The Board decided that, in this case, I would be capable of filling in, having just completed a term in 2008. I mention this mostly to let everyone know that our next Annual Meeting of the membership will be April 29, 2010 in Columbus, Ohio. It is at this meeting when changes to the By-Laws can be presented and voted upon. The Board will be looking at this topic before then and we would like

to hear any suggestions for improvements from the membership.

Thank you to the Education Committee for organizing another informative Fall Workshop in October. The topic surrounded DATs; their workup and interpreting the results. Everyone in attendance gave the meeting high marks and appeared to come away from it with new knowledge. This committee also coordinates our Proficiency Tests (please see related article, What's in a name?, in this Newsletter). Results of these PT's are available on the OABB website at <http://oabb4u.org>. The website also provides the other committees and Board members along with their contact information. Feel free to contact any of us with suggestions to improve your professional organization.

Speaking for the entire OABB Board, I wish everyone a happy and healthy Holiday Season. During the first time around as your President, I commented about how valued our relationships are in this organization. I continue to be thankful for each and every one of them and hope that you do too. From my experience, the best way to build these relationships is to become active in the organization.

Respectfully,

Gregg Witham, MT(ASCP)SBB
OABB Past-President

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OABB Continuing Education Activity

Adverse Effects of Blood Transfusion (0.5 CH)

After reading this continuing education article, the participant shall be able to:

- ◆ Define acute and delayed reactions
- ◆ Identify the hallmark symptoms of an acute hemolytic transfusion reaction
- ◆ Differentiate between a delayed and acute adverse reaction
- ◆ List findings in several categories of transfusion reactions

Introduction

There are four broad categories of transfusion reactions: acute immunologic, acute non-immunologic, delayed immunologic, and delayed non-immunologic.

Acute reactions are defined by when they occur in relation to the transfusion event: they occur during or within 24 hours of the transfusion. They may be immunologic or non-immunologic. Examples of acute immunologic reactions include intravascular hemolytic, extravascular hemolytic, febrile, allergic, and transfusion-related acute lung injury (TRALI). Examples of non-immunologic acute reactions include bacterial contamination and circulatory overload.

Delayed reactions, by definition, occur over time and also may be either immunologic or non-immunologic. An example of a delayed immunologic reaction is a delayed hemolytic/serologic transfusion reaction that generally occurs a few days after the transfusion event. Graft versus host disease is another example of a delayed immunologic reaction. An example of a delayed non-immunologic reaction is iron overload.

Acute intravascular hemolytic transfusion reaction (AIHTR)

Acute intravascular hemolytic transfusion reactions are usually due to ABO incompatibility or to another complement-fixing red cell antibody. The two critical signs for diagnosing AIHTR are hemoglobinemia and hemoglobinuria. LDH levels are also increased, since LDH is released from the lysed red blood cells. An increase in serum bilirubin is observed 6-12 hours later. AIHTR may lead to acute renal failure and DIC with the severity dependent upon the rate and volume of blood infused. The severity of the reaction dictates treatment. Hypotension and renal blood flow are the main concerns and treatment or prevention of shock may avoid renal failure.

Acute extravascular hemolytic transfusion reaction (AEHTR)

Acute extravascular hemolytic transfusion reactions (AEHTR) usually do not present with symptoms that are as clinically severe as AIHTR. Rarely is there hemoglobinemia or hemoglobinuria, instead there will be hyperbilirubinemia, urine urobilinogen, increased LDH, and decreased hematocrit.

Febrile reactions

Febrile non-hemolytic transfusion reactions are usually due to antibodies to leukocytes or plasma proteins, or to passive cytokine infusion. These reactions are seen in increased frequency in patients who may be alloimmunized following pregnancy or transfusions, with a higher rate of reaction seen following platelet transfusion. Leukocyte-reduced blood products decrease the frequency of febrile non-hemolytic reactions, but some patients still have reactions. Many of these reactions are due to the underlying clinical condition of the patient.

Allergic reactions

Allergic reactions can range in severity. Urticarial (hives) reactions are usually due to antibody to donor plasma proteins and are easily managed with antihistamines. Anaphylactic reactions can be quite severe and often occur in patients who are IgA deficient and have antibodies to IgA. These patients need IgA-deficient blood products.

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Transfusion-related acute lung injury (TRALI)

TRALI is usually caused by donor HLA or leukocyte antibodies in plasma components. TRALI is defined by acute onset, hypoxemia, and bilateral lung infiltrates on x-ray with no evidence of circulatory overload. Symptoms occur within 6 hours of the transfusion with no other acute lung injury risk factors. Donors implicated in a TRALI reaction will be subsequently deferred.

Bacterial contamination

Transfusion-associated sepsis due to bacterial contamination is an example of an acute non-immunologic transfusion reaction. Patients with this type of reaction usually present with chills, rigors, and fever. Both the patient and the component should be cultured to determine the cause of the sepsis.

Other acute non-immunologic reactions

Rare acute reactions include hypotension, circulatory overload, non-immune hemolysis due to physical or chemical destruction of the blood, air embolus, hypercalcemia in massive transfusion, and hypothermia with the rapid infusion of cold blood.

Delayed hemolytic/serologic transfusion reactions

A delayed immunologic reaction includes alloimmunization to RBC or HLA antigens with an anamnestic response following transfusion. A typical anamnestic response presents with a negative antibody detection test in the pre-transfusion sample, and an alloantibody becomes demonstrable in a subsequent sample collected a few days post-transfusion.

Transfusion-associated graft-vs-host disease (TA-GVHD)

TA-GVHD is a rare delayed immunologic reaction. This can occur in immunocompromised patients or patients receiving blood from related or HLA selected donors. The donor lymphocytes engraft in the recipient and attack the tissues, usually within 10-12 days following transfusion. This reaction is difficult to manage and is usually fatal.

Iron Overload

Iron overload is an example of a delayed non-immunologic transfusion reaction. This occurs in patients who receive multiple transfusions over a period of time, usually >100 units of Red Blood Cells. Iron overload can lead to diabetes, cirrhosis, and cardiomyopathy.

Importance to blood bank staff

It is important for staff working in the transfusion service to have an understanding of adverse transfusion reactions. More information can be found in the references provided.

References:

Brecher M, et al. AABB Technical Manual. 15th ed. AABB; 2005 p.633-661.

Gottschall J, et al. Blood Transfusion Therapy A Physician's Handbook. 8th ed. AABB; p.121-140.

Submitted by: Lynne Timpe, MT(ASCP)

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Answers will appear in the next issue of the OABB Newsletter.

Questions

- An acute reaction is defined by the
 - Affect on the patient's long-term outcome
 - Immune mechanism responsible for the reaction
 - Severity of the patient symptoms when it occurs
 - Timeframe in which it occurs in relation to the transfusion event
- Which of the following are the two critical signs in diagnosing an acute hemolytic transfusion reaction?
 - Fever and chills
 - Hemoglobinemia and hemoglobinuria
 - Hypoxia and shortness of breath
 - Increase in bilirubin and LDH
- Which of the following reactions are considered an acute reaction?
 - Detection of anti-c in a sample collected three days after transfusion that was not present in the pre-transfusion sample
 - Fever and chills during the transfusion due to cytokines in the unit of Red Blood Cells
 - TA-GVHD as the cause of death
 - Iron overload contributing to the patient's cardiomyopathy
- An allergic reaction to blood that is not controlled by antihistamines is:
 - Caused by bacterial contamination
 - Due to patient IgA-deficiency
 - From rapid transfusion of cold blood
 - Indicative of donor lymphocyte engraftment

Answers to OABB Continuing Education Activity: MNS System (0.5 CH)

- Which ISBT system includes the MNS antigens?
 - System 1
 - System 2**
 - System 3
 - System 4

- Which of the following antibodies is commonly considered clinically insignificant?
 - anti-S
 - anti-s
 - anti-M**
 - anti-U
- Which of the following is a high-incidence antigen in the MNS system?
 - M
 - N
 - S
 - U**
- What percentage of units from your inventory will be negative for the S antigen?
 - 0.01%
 - 11%
 - 45%**
 - 50%



News from the Proficiency Coordinator

There were 52 facilities that received the October Proficiency Sample and 43 (83%) returned results. Expected results:

ABO/Rh: A, D-
 Antibody screen: Positive
 Antibodies identified: anti-D & anti-C
 Antigen typing: D-C-

The next Proficiency Sample will be mailed in January. The results of previous Proficiencies are on the OABB website: www.OABB4U.org.

This sample was complicated by the presence of both anti-D and anti-C when given the challenge to evaluate whether the patient is a candidate for Rh Immune Globulin. When the patient has a history of receiving Rh Immune Globulin during her previous pregnancy and anti-D is detected in her plasma, one explanation is Rh Immune Globulin failure. The other explanation is the patient was protected from developing anti-D, but formed anti-G. The G antigen is present on cells that have either D or C, so the antibody appears to be a combination of anti-D and anti-C. For

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most facilities, determination of the actual specificities would require sending the sample to a reference laboratory who could do adsorption studies to determine whether the person had anti-D or not. Anti-D is considered to have more potential than anti-G for causing hemolytic disease of the fetus and newborn (HDFN), so if anti-D is not present, the woman should receive Rh Immune Globulin. Rh Immune Globulin can be given prior to the results of determining the actual specificities.



Welcome to the New Coordinator

Susan Vonderwell, MT(ASCP) is the new coordinator for shipping samples. Sue works for the American Red Cross, Central Ohio Blood Services Region as a Reference Laboratory Technologist. She will assure the 2010 samples are shipped in January, April, July, and October and will coordinate receipt of responses. The expected results will be posted soon after the deadline for returning the results.



What's in a Name?

Proficiency samples have been sent to member institutions since OABB has provided wet samples. But, what's in a name? If we are naming the samples proficiency samples, are they really a proficiency sample? They certainly are not if OABB wanted HHS approval as a proficiency sample provider. There are specific criteria that must be met to be a provider. Here are just a few:

- ◆ OABB would need to notify each institution that a sample was shipped so the institution could contact OABB within three days of the expected arrival date if the sample did not arrive, or arrived in poor condition.

- ◆ OABB must have a results form where there is an attestation statement that the institution treated the proficiency sample the same way they would a patient sample.
- ◆ OABB would need to meet criteria for the subspecialty of antibody identification, which would have five challenges in each shipment.
- ◆ OABB would need to provide reports to the institution with their score on the proficiency.
- ◆ OABB would need to maintain records on the institution's performance for five years.

As you can see, OABB does not do these things, but it does offer a wet sample four times a year. These samples can help fulfil a CLIA requirement, 493.1451(b)(8)(v), which essentially says to evaluate staff competency for accurate and proficient test performance by assessing through previously analyzed specimens or blind testing with internal or external testing samples.

With the first OABB wet sample in January 2010, you will note the new name: *Educational Wet Samples*. This allows each institution flexibility for how these samples are used and the extent of testing. As always, the expected result will be provided on the website, OABB4u.org, after the deadline for returning the result to receive a Certificate of Participation. The report with percent participation and expected result is also included in the next wet sample shipment.

OABB Newsletter Submissions

Letters, articles, and announcements of upcoming events may be submitted at any time.

Classified advertisements will be accepted from any member institution and printed at no charge.

Applications Now Being Accepted

MS PROGRAM: University-based regional blood center and transfusion service is accepting applications for 15-month Master's program in Transfusion and Transplantation Sciences. Applicants apply for one of two tracks. The **Blood Transfusion Medicine** track emphasizes all aspects of transfusion medicine including immunohematology, blood center and transfusion service operations, quality assurance, component therapy, cellular therapies, transplantation immunology and independent research. Students simultaneously fulfill the requirements for the Specialist in Blood Bank Technology (SBB) certification. The **Cellular Therapies** track emphasizes the biology, therapeutic use, and regulatory aspects of hematopoietic stem cells and other somatic cell therapies. The program includes significant hands-on laboratory experience in selection and manipulation of stem cells and in the production of novel cell therapy products. For more info and to apply visit www.grad.uc.edu. **Application deadline:** April 1 for autumn enrollment. **Contact:** Pam English, MT(ASCP) SBB, Hoxworth Blood Center, University of Cincinnati Medical Center, 3130 Highland Avenue, PO Box 670055, Cincinnati, OH 45267-0055, (513) 558-1275, email: pam.english@uc.edu

Columbus State Community College

Columbus State Community College is offering a refresher Immunohematology course during the spring quarter (March 29-June 11). For more information, please contact Sandy Arrighi at sarrighi@csc.edu. This course is designed to prepare students to perform, according to AABB standards, the routine serological procedures used in any transfusion service or blood bank. Stress is placed on the performance of pretransfusion testing and the recognition of the presence of serological incompatibilities in a patient's specimen. Students will be introduced to the techniques used in the resolution of the most commonly encountered serological difficulties. Class discussions will also include donor blood collection and processing for component therapy, blood transfusion practices, adverse affects of blood transfusion, investigation of transfusion reactions, and fetal-maternal blood incompatibilities.

Education Opportunities In Ohio

Cincinnati: Lectures presented in the Blood Transfusion Medicine (SBB) track and the Cellular Therapy track of the graduate program at Hoxworth Blood Center are open to anyone who would like to attend. Please contact Pam English at pamela.english@uc.edu or 513-558-1275 for a schedule and more information.

Hoxworth Blood Center participates in many of the AABB audioconferences offered on Wednesdays from 2-3:30P. All are held at Hoxworth's Central location - 3130 Highland Ave, Cincinnati, OH 45267. Please contact Pam English at pamela.english@uc.edu or 513-558-1275 for a schedule and more information.

Cleveland: Audioconference schedule for 2010 is pending for American Red Cross, Northern Ohio Blood Services Region. For more information, contact Marlene D'Amico: [dami-com@usa.redcross.org](mailto:damico@usa.redcross.org)

Columbus: The following continuing education is offered by American Red Cross, Central Ohio Blood Services Region. For more information, contact Deb Breech: dbreech@usa.redcross.org

Date	Topic
Feb. 24	Problem Solving: It's Not All About the Reactions
Apr. 28	Update on Platelet Transfusions
May 5	Addressing Common Citations: AABB and CAP

Dayton: For continuing education offered by Community Blood Center /Community Tissue Services™ contact Laurie Carolus at 937-461-3580 or email lcarolus@cbcts.org for more information.