Dear WABB Members:

I am both honored and grateful to have the opportunity to serve as your President. It is my goal to build on the excellent tradition of the WABB and further promote the association’s outstanding educational programs in Blood Bank and Transfusion Medicine. Let me introduce myself. I grew up in Milwaukee, Wisconsin, and subsequently attended college at the University of Wisconsin in Madison, where I obtained my M.D. degree and a Ph.D. degree in Oncology. After completing a residency in Pathology at the University of Wisconsin Hospital and Clinics, I joined the faculty of the Department of Pathology and Laboratory Medicine at the University of Wisconsin, where I serve as Associate Director of the Transfusion Service. I am also the Senior Medical Director of the American Red Cross Badger-Hawkeye Region. These professional responsibilities, plus being Course Director for Immunohematology in the Clinical Laboratory Science Program at the University of Wisconsin, provide me with a strong background to support the WABB mission.

In review, last year’s educational programs were very successful. The workshops held in May at the Badger-Hawkeye Region of the American Red Cross facility in Madison were well organized and attended. Our 26th Annual Fall Seminar on September 15 and 16 at the Radisson Hotel in Pewaukee was outstanding. Our Education Committee assembled an excellent group of speakers who presented a broad scope of contemporary Blood Bank topics. Most impressive was the phenomenal attendance by WABB members and nonmembers from all over Wisconsin and even surrounding states. To me, this is a strong endorsement for the quality of the WABB educational mission. When I met Dr. Ira Shulman, one of our fall seminar speakers at the AABB meeting in October, he again complimented our association on the excellent program we organized. I congratulate the Education Committee for the outstanding job, and thank them for their dedication and commitment.

Looking forward to year 2005, we want to build on our past success and make our 27th Annual Fall Seminar even better. Incorporating a vendor fair was well received, both by attendees and participating vendors, and we will continue the program. As for the educational program, I encourage all WABB members to take an active role in working with our Education Committee to develop a program that addresses the interests and needs of our Wisconsin Blood Bank Community. In addition to continuing our spring workshops and fall seminar, I want to explore the feasibility of developing web-based educational opportunities using our WABB website similar to what the AABB has successfully done.

Finally, I would like to recognize our outgoing President, Pat Broderick, who provided excellent leadership and guidance to our association. Thank you, Pat. As incoming President, I look forward to working with all WABB members to make our association one of the best.

John Weiss, MD - WABB President
Dr. Shulman began by discussing commonly used blood products such as Red Blood Cells (RBCs), Platelets (concentrates and pheresed), Fresh Frozen Plasma and Thawed Plasma (which is good for 5 days), Cryoprecipitated Anti-Hemophilic Factor (AHF) and AHF Concentrate.

He next focused on the evolution of transfusion risks. The transfusion risk due to transmission of viruses has dropped dramatically since the late 1980s. Today, four conditions account for the majority of acute fatal transfusion reactions: transfusion-related acute lung injury (TRALI), ABO-incompatible blood transfusion, bacterial sepsis from component contamination, and anaphylaxis. Especially in the critically ill, these occur at rates that exceed the viral risk by at least 10- to 100-fold.

Dr. Shulman reviewed an appropriate protocol for a suspected transfusion reaction. This includes bedside verification of patient identity on ID bracelet, blood unit, and transfusion record. A physician examines the patient to decide if the symptoms could be a reaction to the transfusion. If a transfusion reaction is suspected, the Blood Bank must be notified and a laboratory workup initiated.

A diagnosis of TRALI is made if, during or within 6 hours after completion of transfusion, there is acute onset of respiratory distress, hypoxemia, bilateral lung infiltrations in chest radiographs, no evidence of circulatory overload, no prior acute lung injury (ALI), and no other temporarily associated ALI risk factor(s). TRALI is usually caused by antibodies to leukocytes present in the plasma of a donor product. Such antibodies include HLA class I and HLA class II antibodies, or antibodies to granulocytes or monocytes. Some cases of TRALI occur in the absence of demonstrable antibodies. The products most commonly responsible for TRALI reactions are FFP and Pheresis Platelets. A TRALI reaction can also occur when a patient has antibodies directed against the leukocytes in a unit of donor red blood cells. Dr. Shulman suggested that, quite likely, we will be hearing a lot more about TRALI in the near future.

Review of the causes of ABO-incompatible transfusion errors showed that 1/2 are due to failure to identify the correct recipient at the time of transfusion, 1/3 are due to laboratory errors, and 1/6 are due to phlebotomy errors. Prevention should focus on accurate identification of patient and of the blood sample tested. Performance of a second ABO test (using a sample from a second phlebotomy) is also recommended.

Bacterial contamination of blood products is found most often in platelet transfusions, although...
A day in the life of an SBB student...

By Jeni Heraly, MT(ASCP)

Ask any former Specialist in Blood Banking (SBB) student what it is like to go through the program offered by the Blood Center of Wisconsin in Milwaukee and they would love to tell you stories. You’ll hear about the hours spent figuring out the unknowns for the Immunohematology Reference lab rotation. Former students will gleefully warn you of the twelve hour days spent at the Blood Center organizing and presenting the annual Wet Workshop. The busy week spent with last minute preparations and the relief of finally presenting it. There are of course the horror stories of not having the PowerPoint presentation the day of the lecture because the disk was left at home or it was saved on CD and it needed to be on floppy. You can count on hearing about the night spent trying to keep your eyes open at 3 a.m. while hanging out in the NAT lab (Nucleic Acid Testing) for the Infectious Disease Testing rotation.

In reality all of these stories are true. Every student will experience some version of all of these “horror” stories. But a day in the life of an SBB student is as varied as the students themselves. Because of the almost entirely independent nature of the program and the wonderful support from the staff at the Blood Center, not all days are the stuff of student’s nightmares.

You can expect for the first year to be required to attend the Friday lecture series. It runs from September through the following August and covers every topic from red cell antigens and platelet antibodies to equipment management and the AABB Quality System Essentials. There are approximately twenty rotations (clinical experience) encompassing almost all departments at the Blood Center from Human Resources to Component Preparation to Molecular Diagnostics. Time spent in each rotation varies from a couple of hours to a month depending of the amount of material to be covered and the needs of the individual student. All rotations are scheduled according to the convenience of the individual student and the department they are visiting. A few rotations ask that the students schedule time to come through together due to the nature of the objectives, the time required, and the workload of the department.

Once the lectures that correspond to a test are completed, the student can schedule time to take one of the approximately fifteen tests. At the completion of the program there is a final, cumula-

www.wabb.org

Check out the website for photos of the 2004 Fall Seminar - you might find a picture of yourself! Many thanks to Lisa Leszczynski for the great shots.

Our network is expanding. Check out the “links” section - we’ve added links to the blood centers - American Red Cross, the Blood Center of Southeastern Wisconsin, and the Blood Center of North Central Wisconsin. And if you happen to be in the Red Cross or BCSE website, you can link to WABB from there. You can also link to WABB from the AABB website.

The California Blood Bank Society has been added to the state and regional links. From this website you can view Dr. Ira Shulman’s e-Network Forum, dedicated to questions and comments regarding timely issues in the blood bank. From this link you can also ask a question of your own or sign up for the eNF mailing list.

We have also added links to our sponsors and vendors, including Marshfield Laboratories, Abbott Diagnostics, Haemonetics, Immucor-Gamma, Baster, Helmer, Ortho Clinical Diagnostics, Precision Dynamics Corporation, Standard Register, and Terumo.

So when you have a chance, take a little time to go surfing around the WABB website and its new connections.

We welcome suggestions and comments from you to improve the website. If you have any ideas, please contact Peggy Schroeder at pe.schroeder@hosp.wisc.edu.
“A day in the life...” continued from Page 3

tive test intended to scare the knowledge into you if you haven’t ab-
sorbed it already. Once that is taken and corrected, the program director
and coordinators go through the test with the student to be sure that they
know and understand all the information that they have been tested on.

Along with lectures, rotations, reading and tests, all SBB students are
expected to design and independently complete a research project of
quality to be presented at a conference. One of the Friday lecture series
is assigned to each student to prepare and present. They are expected to
collaborate with a department to host an employee blood drive. And last,
but certainly not least, they work with the Immunohematology Reference
Lab to plan, organize and present the annual Wet Workshop.

After completing all of this, and you still love learning, you can con-
tinue on to attain your Masters of Science in Transfusion Medicine at
Marquette University. After completing the SBB program at the Blood
Center you earn 18 graduate credits!

You can sub specialize in Business Administration, Education or
Biological Sciences to earn an additional 22 credits for your MSTM.

While it may seem that a lot is expected of you, the program objectives
are very attainable if you stay focused. There is an incredible
amount of support from the Blood Center staff and former students. And
the knowledge gained is beyond measure.

If you would like more information you can visit the Blood Center
website at www.bloodcenter.com or contact the program director Sue
Johnson, or coordinators Lynne LeMense and De Sauer at the Blood
Center of Wisconsin. They will be able to answer questions, give you
application and acceptance requirements, and put you in touch with
former students if you would like.

“Safety & Efficacy of Blood ...” continued from Page 2

RBCs may also be implicated. This risk should be significantly re-
duced by testing platelets for bacterial contamination as mandated as of
March 2004.

Anaphylaxis usually occurs in IgA-deficient patients but may also
occur in haptoglobin-deficient patients. Those who have had such a
reaction require washed RBC products in future transfusions. Most
IgA-deficient individuals do not develop anti-IgA and never experience
any problems with transfusion.

This presentation ended with a discussion of other, more subtle,
adverse outcomes of blood transfusions. The acutely ill patient often
may be best served by reducing or eliminating transfusion. If transfu-
sion is needed, leukocyte reduced products may be better for the
patient.

Submitted by Pat Broderick, MT(ASCP)
New Publications

AABB Featured Publication: **Transfusion Therapy: Clinical Principles and Practice**, 2nd edition

*Edited by: Paul D. Mintz, MD*

The second edition of *Transfusion Therapy* is the highly anticipated and much needed guidance on HOW and WHEN to prescribe blood components and derivatives. So much more than a handbook but not as daunting as a textbook, this is a must have for anyone in the field of transfusion medicine. (AABB Press, 2005, hard cover, 690 pages).

**BOOK EXPECTED TO BE AVAILABLE OCTOBER 2004.**

*Stock # 052003, List Price: $185, Member Price: $149*

AABB Featured Publication: **Transfusion Medicine Interactive: A Case Study Approach**

*By: Marian Petrides, MD; Nora Ratcliffe, MD, Roby Rogers, MD*

Transfusion Medicine Interactive is a CD-ROM that serves as an interactive textbook for those interested in understanding the practical aspects of clinical transfusion medicine. You receive auditory and text feedback while managing complex, multipart cases presented in a clinical-pathological conference format. It demonstrates how to reach conclusions from current data and how to proceed in accumulating further data to ensure accurate diagnosis and management of blood banking and transfusion events. It contains over 60 cases and a revolutionary simulator designed to walk you step-by-step through the interpretation of 12 antibody id panels, including multiple antibodies and autoantibodies. (AABB Press, 2004, CD-ROM, Mac- & PC-compatible).

*Stock #042020, List Price: $125, Member Price: $100*

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**Must a current blood sample always be tested for Rh(D) type prior to administration of Rh immune globulin?**

A transfusion medicine physician in San Diego reports that one of the ER physicians at his hospital has asked the hospital transfusion service to issue RhIg for a patient who had a spontaneous abortion at less than 8 weeks gestation (first trimester). The ER physician wanted to give the RhIg without sending a ‘current patient sample’ for Rhesus typing, to save the patient the cost of the Rh typing. The ER physician had ‘checked’ the computer and saw that the patient had previously typed as D Negative. In addition, not only does the record state the patient is Rh negative but the patient herself stated the same. At her THREE prior deliveries (all at the San Diego physician’s facility) she had Rh prophylaxis, so that the request to skip yet another Rh typing on this patient is not based on relying on a medical or computer “record” alone, but on what the patient states which is in concert with the record. However, in spite of the aforementioned details, the ER physician’s request was in direct conflict with hospital transfusion service policy which required Rh typing of a current patient specimen before the blood bank could issue RhIg. The ER physician thinks that the transfusion service policy is ridiculous since the computer and the patient indicate that the patient is Rh negative. The transfusion service physician is sympathetic to the ER physician and wonders if any regulations exist that a second, third, fourth, etc. Rhesus typing must be done for such a patient who is a candidate for a mini dose of RhIg. (A mini dose was requested because she was in her first trimester.)

“CBBS e-Network ...” continued on Page 6
Both the transfusion service and ER physicians wonder if the medical record and the patient’s remembrance is sufficient evidence of D typing status, acknowledging that patient identification can never be 100% guaranteed. Would others dispense the RhIg without typing the patient again? If not, what would you say to the ER physician? Of course you could argue (which the San Diego blood banker chose not to do) that a current patient sample should be submitted to see if the patient has become alloimmunized to D, realizing that the ER physician is likely to reply, “it is cheaper to give the mini dose than do the antibody screen and ID.”

ADDENDA Nov 30, 2004

The following comments have been received.1. A colleague at a hospital in Texas reports that her facility’s blood bank will dispense Rh Immune Globulin for immun prophylaxis without performing an Rh typing on a ‘current’ patient specimen. Rather, they will accept Rh typing results that have been reported by an accredited lab, as long as the actual laboratory report is available for viewing on the patient’s chart or in their prenatal records. If the patient’s records are not readily available, such as might occur if a patient comes to their ER having a miscarriage, the ER physicians will order an Rh determination. The Texas colleague concludes by saying that her facility has had no problems with accreditation of their laboratory as a result of the aforementioned practice.

Please submit comments to the e-Network Forum.
Ira A. Shulman, MDCBBS e-Network Forum Webmaster

Posted: 11/26/04
Addenda: 11/30/04

The e-Network Forum is supported in part by the American Association of Blood Banks.
fusion sample to be tested twice for ABO/Rh, with the second testing done by a different technologist. In addition, if the patient had no ABO/Rh result in the laboratory computer, a second (separate) specimen was required to be tested for ABO/Rh typing, before releasing non-group O red blood cell units.

2. Another California blood banker reports that at her University Medical Center a second or “confirmation” blood type is required when there is no previous ABO/Rh on file. They confirm the forward type on all samples for which ABO/Rh testing is ordered, with the exception of cord blood specimens. The confirmation type is done on a new cell suspension and all patient ID is carefully rechecked. Only one patient confirmation type is done at a time (batch testing is not permitted) and they do not list more than one patient on the computer screen at a time as the results are entered. The second typing may be done by the same technologist who performed the initial type. The reason for this is that there is only 1 technologist working in the Blood Bank at night.

3. A hospital system in San Diego that includes four hospital transfusion services implemented a policy in response to last year’s sentinel alert from JCAHO in which it was recommended NOT TO BATCH samples when performing crossmatching or ABO/Rh testing. This recommendation was unrealistic in a busy transfusion service, but as a compromise measure they implemented a policy that stipulated that a “first time” blood type for the purposes of compatibility testing would never be performed in a batch mode with other samples. If the patient had no historic blood type on file, the sample would be tested for ABO and Rh and reported independently of all other samples. If the patient had a historical blood type on file, then the blood type could be “batched” with other samples. The San Diego group is interested in hearing what other sites are doing.

4. Another Southern California physician reported that the AABB Standards require ABO grouping routine to be done using FOUR reagents (anti-A, anti-B, A1 cells and B cells) when determining a patient’s ABO as part of pretransfusion testing. According to AABB Standards, 21st edition 5.12.1 “The ABO group shall be determined by testing the red cells with anti-A and anti-B reagents and by testing the serum or plasma for expected antibodies with A1 and B red cells. If a discrepancy is detected and transfusion is necessary before resolution, only group O Red Blood Cells shall be issued.” In other words, both a forward and a back typing must be done, and the results must be compared for concordance. However, in the California physician’s opinion, the AABB Standards do not go far enough to protect patients from ABO-incompatible transfusion errors, because minimum compliance with the AABB Standards only require that a patient’s ABO grouping routine be done once, even if the sample tested is the first ever received in the laboratory for that patient. He suggests that it should be required to routinely validate the ABO grouping result of every new patient by testing a separately collected second sample. This approach is done at many institutions. Currently every donor unit of RBCs is required to be tested at least twice for its ABO to assure the unit is accurately labeled with the correct ABO. Why should we accept a lesser degree of accuracy when attributing ABO grouping results to patients?

5. A transfusion medicine physician in Ohio reports that at her facility they perform a repeat ABO typing on the same sample with the testing done by two different technologists, preferably by another person. This could also be fulfilled by comparing a current result with a previous test result found in the records check. She concludes that if greatest patient safety is the goal of repeat testing, it would seem that repeating from a DIFFERENT sample is a better choice than retesting the SAME sample over again.

**ADDENDA Dec. 10, 2002**

9. A transfusion medicine physician reports that at a 350-bed hospital in Los Angeles, they instituted a ‘double check’ system about a year and a half ago that requires confirmation of ABO group on all patients on whom they do not have an historical record of blood type, before non-group O RBC products may be released. The specimen must be from a different draw (staffing issues precluded the requirement that the phlebotomist be different, but it often is), but may also be obtained from an appropriate specimen from another area of the lab (e.g. a CBC drawn the day before), provided the sample meets blood bank criteria for proper labeling (this is convenient for the lab, and lessens second sticks on the patient). They do not require a double-check on group O patients, since if they are not group O, there is no harm in an RBC transfusion; this also helps keep the number of double-check draws down. [Web Master’s NOTE: While it is true that no harm is expected when inadvertently transfusing group O RBCs to a patient who is not group O, that might not be the case when inadvertently transfusing group O platelets or...]

“CCBB Website” continued on Page 8
"CCBB Website" continued from Page 7

FFP to a patient who is not group O]. The physician concludes that in emergency situations where there is not time for a double check, group O RBCs are issued pending completion of a double check.

ADDENDA Dec. 12, 2002

10. A blood banker in Ohio is finding this discussion very useful. She comments, however, that it would be extremely helpful, if possible, for the facilities that have instituted the ABO checking system by requiring a second sample (particularly for non-group O patients) prior to releasing non-O blood, to share their logistics or protocols - how is this orchestrated so that it works smoothly and efficiently, and minimizes the amount of additional group O blood dispensed?

11. A blood banker in Southern California reports that his hospital policy requires a second type to be performed on a sample drawn at a different time than the crossmatch or type and screen sample. Exceptions to this policy are:
   - a historical type is on file
   - the initial sample types group O
   - patient has donated an autologous unit and the ABO/Rh of the autologous unit is in the blood bank record
   - crossmatch sample was drawn in the operating room

Pre-op outpatients have their confirmatory type drawn on the day of surgery. The Transfusion Service sends a form each day to the Surgical Admit unit listing which patients need to be drawn. In many cases, there is already a sample in the laboratory which can be used (CBC, Chemistry sample, etc.) negating the need to stick the patient for a confirmatory sample. In the cases where a redraw is required, a venipuncture tech is dispatched to the patient location to collect a sample. Without exception patients have been very receptive to a second venipuncture when it is explained to them that it is for their safety. If a second sample cannot be obtained prior to the need for blood, group O red cells are issued. Confirming the blood type on a second sample has the obvious advantage detecting both testing and labeling errors. Since implementing this policy in 1996, the California hospital has detected 13 cases of incorrect ABO typing. All 13 of these errors were due to mislabeled blood samples. In 6 of the 13 cases, transfusion based on the initial blood type would have resulted in a acute hemolytic transfusion reaction due to major ABO incompatibility. Implementing the requirement for a confirmatory blood type on a second sample clearly contributes to patient safety at the reporting institution and has had a better yield than many of the other recipient safety measures that are required by regulation, e.g. NAT.

12. A blood banker who inspects other blood banks recently performed an audit at a Southern California Transfusion Service and experienced the exact situation as described in reply #4 above. The responding blood banker agrees that repeat ABO testing is not mandated by AABB Accreditation and Standards for patients who may be first time recipients, but yet this testing is stated for all donors. The responding blood banker supports a comparable requirement for patients as well as donors. He mentioned his opinion to the transfusion service supervisor and her exact reply was, “It is not required by Standards.”

ADDENDA Dec. 20, 2002

13. A colleague in Switzerland reports that according Swiss guidelines the ABO and Rh typing must be determined on two different samples before transfusion, unless the patient has a blood type on file. In addition some hospitals carry out a bedside test immediately before transfusion. The bedside test shows only major ABO incompatibilities. The Swiss colleague adds that patients in Swiss hospitals very often do not wear an identification wristband. Usually their ID card is attached to their hospital bed. Some but not all hospitals have implemented ID wristbands.

ADDENDA Jan. 8, 2003

14. From a pediatric hospital in a sunbelt state comes the following anecdote (verbatim) “This discussion on duplicate blood types comes at an appropriate time for a situation that happened in our hospital. (In a pediatric hospital, where sometimes the patient armband is on the patient’s doll in their bed or on their IV pump connected to the patient.) A phlebotomist went into a teenage patient’s room to collect a sample for a CBC (not a private room, two patients per room). The phlebotomist asked the patient in bed two if he was ‘John Smith’. The patient replied ‘Yes I am John Smith’ and the phlebotomist, with name confirmation from the patient, proceeded to collect a blood sample. Upon leaving the room, the phlebotomist said thank you to the John Smith and for him to have a good day. The patient in bed one spoke up and said, ‘but I am John Smith’. The teenage patient that had graciously placed his arm out and had his blood drawn started laughing. He was really Funny Randy and thought he would enjoy a practical joke.” The sunbelt blood banker laments that this might be yet another reason for employing duplicate samples, when a previous ABO/Rh is not on file. Finally, the blood banker concluded that they were glad the sample in question was not for a type and cross!
DIC, explained the concepts that underlie the treatment of a patient with DIC, and helped us understand the role of the blood bank in the support of a patient with DIC. He presented several case studies to help us grasp the complexities of this disease state.

Dr Kathy Puca, Associate Medical Director of The Blood Center of SE Wisconsin updated us on “Bacterial Detection: Where Are We Now.” A very pertinent talk which affects each transfusion service, a summary of her presentation appears in this newsletter. Louann Dake, MT(ASCP) SBB, Supervisor of the Reference Laboratory, University of Michigan, spoke on “Serological Problems: Gel vs Tube.” The lab at the University of Michigan is using the Ortho Provue automated blood bank system. Louann presented some very interesting diversities found between automation, gel and tube. She emphasized that in doing your validation studies you must also edit some of your policies. Sensitivity and specificity issues must be evaluated and decide which method works best for your lab. Wednesday ended with an “Ask the Experts Panel”, which was composed of the day’s speakers.

On Thursday, Dr. Ira Shulman, Director of Transfusion Medicine at the University of California, gave 2 excellent presentations on “The Safety and Efficacy of Blood Transfusion in the Critically Ill Patient” and “Evidence Based FFP Usage”. A summary of his presentation appears in this newsletter. Sue Johnson, MSTM,MT(ASCP)SBB presented a talk on “Why Do We Do What We Do? - Appropriateness of Serological Testing.” As always, Sue’s talk was both entertaining and extremely practical. She gave tips on how to select appropriate methods for testing, evaluating and changing methodology, as well as practical guidelines for cord blood testing, DAT, elutions and, of course, validation. Crystal Jones,RN gave a very interesting talk on “Bloodless Surgery”, always a topic of interest to Blood Bankers. Kim French educated us on the “Progression of Blood Management towards Total Component Management (TCM)”, explaining factors that impact our community blood supply. The educational sessions ended with an absorbing talk by Kristen Tym, from the Bioethics Center, Medical College of Wisconsin. She discussed what patient’s rights are, what is considered a medical ethics issue and then presented several scenarios for us to evaluate and ponder – what would we decide – what is medically ethical in these situations. The last feature of the day was an “Ask the Experts Panel”, which was composed of the day’s speakers. It was an excellent finish to a quality seminar.
A 75 year old male presented with weakness and shortness of breath due to a relapse of non-small cell carcinoma of the lungs stage 4. On admission his hemoglobin was 9.3 gm/dl and a type & screen was ordered. He typed as Group A Rh Negative and the preliminary antibody screen was positive by MTS™-Gel technique. Due to a history of multiple antibodies as a blood donor four years ago, a patient sample was referred to a reference laboratory for antibody identification. Anti-Jk a was identified in the patient sample and the other previously identified antibodies, anti-E and anti-C w, were no longer detectable. Testing was performed using PeG™ IgG-IAT with multiple selected cells apparently homozygous for the common antigens.

### Donor Testing in 2000

<table>
<thead>
<tr>
<th>Antibody ID: Saline IgG-IAT</th>
<th>Current Patient Testing Sample #1</th>
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</thead>
<tbody>
<tr>
<td>Anti-Jk a (1+)</td>
<td>Anti-Jk a (2-4+)</td>
</tr>
<tr>
<td>Anti-E (1+)</td>
<td>Anti-E not detected</td>
</tr>
<tr>
<td>Anti-C w (1+)</td>
<td>Anti-C w not detected</td>
</tr>
</tbody>
</table>

Within a week the patient's hemoglobin had fallen below 9 gm/dl and a decision was made to transfuse. A new sample was drawn. Testing performed by the Transfusion Service on the new sample collected 7 days after the initial work-up, identified an anti-D by MTS™ Gel. The anti-Jk a was not detectable by the MTS™-Gel technique. The appearance of a new antibody was disturbing as the patient had not been transfused at this hospital since the first sample was drawn. A second sample was submitted to the reference laboratory where both anti-D (4+) and anti-Jk a (4+) were confirmed by PeG™ IgG-IAT. Retesting of sample #1 by PeG™ IgG-IAT once again revealed the anti-Jk a alone.

### Question #1: What was being detected by the MTS™-Gel antibody screen?

Looking back at the antibody screen test results from both patient samples, is the difference in the reaction strengths significant? Was sample #1 showing dosage? The homozygous cell, Jk(a+b-), reacted 2+ while the heterozygous cell, Jk(a+b+), reacted 1+. Screening cell II has the stronger expression of D, yet reacted the weakest with sample #1. The reactivity with screening cell II increased from 1+ with sample #1 to 2+ with sample #2 which gives the impression that another antibody was present.

### Question #2: What is the MTS™-Gel antibody screen detecting in sample #1?

Based on the results of the antibody panels performed on sample #2, the anti-Jk a appears to be non-reactive by MTS™-Gel technique. Retesting of sample #1 with PeG-IgG confirmed that no anti-D was detected. Insufficient sample was available to retrospectively test sample #1 by MTS™-Gel.

<table>
<thead>
<tr>
<th>Sample</th>
<th>MTS™ Gel</th>
<th>PeG™ IgG-IAT</th>
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<tbody>
<tr>
<td>Sample #1</td>
<td>Positive (1-2+)</td>
<td>Anti-Jk a (2-3+)</td>
</tr>
<tr>
<td>Sample #2</td>
<td>Anti-D (2+)</td>
<td>Anti-E not detected</td>
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</table>

<table>
<thead>
<tr>
<th>Sample</th>
<th>Anti-Jk a (2-4+)</th>
<th>Anti-D (4+)</th>
<th>Anti-E not detected</th>
<th>Anti-C w not evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample #1</td>
<td>Anti-Jk a (2-4+)</td>
<td>Anti-D (4+)</td>
<td>Anti-E not detected</td>
<td>Anti-C w not evaluated</td>
</tr>
</tbody>
</table>
Question #3: What was the transfusion history, recent and past?
No transfusions of any blood products (red cells, platelets, plasmas) were given during this admission. Therefore, the possibility for passive transfer of antibody from any administration of IVIG, RHIG or plasma products was also ruled out. Evidence for repeated exposure to transfusions is supported by the fact that the patient had developed multiple antibodies. The most likely explanation for the presence of the red cell antibodies would be transfusions at another facility or while in the military. Other means of exposure to foreign red cells could include needle sharing such as tattoos, body piercing or illicit drugs.

The rapid appearance of the anti-D within 7 days of the first sample seems to indicate an amnestic response. With no reactivity at room temperature, the anti-D appeared to be exclusively IgG. This scenario suggests that the patient may have been recently transfused at a different facility, unbeknown to the current hospital’s transfusion service.

Question #4: How can the difference between the MTS™-Gel and PeG™ IgG-IAT results be explained?
There isn’t one method that will detect all antibodies. Every method has it’s strengths and limitations. There are reports in the literature that some examples of Anti-Jka, Anti-E and Anti-K may not be reactive by MTS™-Gel. 1,2

<table>
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<tr>
<th>MTS™-Gel Technology</th>
<th>Polyethylene Glycol (PeG)</th>
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<tr>
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<td>Advantages</td>
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<td>autoantibodies</td>
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Question #5: What impact did the patient’s immune status and treatment regimen have? Dexamethasone had been recently discontinued so the patient’s immune response had been suppressed. When sample #1 was drawn his WBC count was less than 500 mm³ and it is therefore understandable that his antibody production would be diminished. He subsequently received neupogen, a granulocyte colony stimulating factor, and his WBC count increased, approaching 30,000 mm³ within 6 days. With his bone marrow in high production, the antibody producing lymphocytes were also on the increase. Are all previous antibodies rebounding? Would the anti-E and anti-Cw eventually reappear also? There has been one report in the literature of G-CSF causing a gammopathy3.

Question #6: Could there be other explanations for the appearance of anti-D? Was it possible that the anti-D might be an autoantibody mimicking an allo anti-D? An autoantibody with mimicking specificity is made by an individual whose red cells lack the antigen, however, this antibody can be adsorbed to exhaustion on antigen negative red cells. Issitt reports that in many of the patients in whom mimicking antibodies are seen, the immune response is not normal.4 Was this patient beginning to develop warm autoimmune hemolytic anemia?

In summary, a patient’s altered immune state, unclear transfusion history and differing serologic methods may all have contributed to the complexity of this case. This case brings up many questions which unfortunately remain unanswered since the patient had expired as a result of his terminal disease. However, this case illustrates the complexities of transfusion medicine.

References:
1. Issitt PD, Combs MR, Booth K. Comparison of the MTS-Gel and polyethylene glycol (PEG) IAT methods. Transfusion 1997;37:S255
2. Ortho Clinical Diagnostics, Inc. Reagent red blood cells 0.8%Resolve® Panel A. Manufacturer package insert revised December 2003

Thank you to Rick Virta, MT(ASCP)SM and Sarah Beauchamp, MT(ASCP) from Veterans Administration Medical Center in Iron Mountain, MI for sharing this interesting case.
The Proposed 4th edition of Standards for Immunohematology Reference Laboratories

The AABB solicits public comment on the proposed 4th edition of Standards for Immunohematology Reference Laboratories. This comment period will take place from January 7, 2005 – March 7, 2005. The 10 quality system essentials (QSEs) remain the foundation for this next iteration of Standards. Each chapter represents one of the QSEs; for example, Chapter 1 is titled “Organization,” Chapter 2 is “Resources,” etc. Specific technical standards and requirements are in their appropriate chapters, as in the 3rd edition. Each standard that appeared in the 3rd edition appears in the 4th edition unless a conscious decision was made by the IRL Standards Program Unit (IRL SPU) to remove it. The following is a summary of changes made to this proposed edition of the Standards:

- All computer system and computer record requirements have been moved from chapter 6, Documents and Records, to chapter 3, Equipment.
- A significant change has been made to standard 5.2 (formerly 5.3) concerning participation in the American Rare Donor Program. The standard includes a different required minimum volume for antisera for hospital based reference laboratories.
- A change has been made to the record retention requirement associated with standard 5.4.1, which concerns the requirements detailed in a laboratory’s investigation reports described in Reference Standard 5R-A. The time period has been changed from five years retention time to an indefinite retention time. To achieve compliance with this retention time each laboratory will only need to retain a summary and not the actual receipt.
- The final major change is in the definition of a “clinically significant antibody.” To Comment on the Proposed Standards:
  - Send comments by March 7, 2005 to the Standards Department, AABB National Office, 8101 Glenbrook Road, Bethesda, MD 20814; fax (301) 907-6895; email: standards@aabb.org.
  - Include name and postal address/fax number/email address, as appropriate.
  - Identify the standard by its number at the beginning of the comments. This identification is especially helpful if you comment on more than one standard.
  - Provide alternative wording if you think it would improve the clarity of a standard. If you agree or disagree strongly with a proposed change, please state your reasons or submit data.

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