



# e-Network Forum

## CALIFORNIA BLOOD BANK SOCIETY

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### ***Unexplained Positive Direct Antiglobulin Test (DAT) results in both pre- and post-transfusion specimens associated with a febrile reaction to transfusion***

**A colleague in Michigan** was working up a possible febrile transfusion reaction when it was found that both the pre and post reaction specimens exhibited 2+ reactions when the Direct Antiglobulin Test (DAT) was performed. A comparison of the pre and post reaction serum revealed no change in the serum reactivity and there was no evidence of hemolysis upon spinning down the pre and post reaction samples. The inquiring colleague wants to know what should be the least amount of additional studies that should be done in order to rule out a potential hemolytic reaction.

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The following suggestions were submitted in response to the above question:

1. **One blood banker from the Midwest** reported that at her institution, if there is any problem in what they call their "first tier" workup (Direct Antiglobulin Test pre and post, serum check pre and post and clerical check), then they default to their "second tier" work up. The second tier consists of the following:
  - ABO/Rh on pre and post samples
  - Antibody screen on pre and post samples including a reading at 37C
  - Repeat any special antigen typings
  - If 5 or fewer units have been transfused in the past 12 hours, antiglobulin crossmatches on all transfused units using the pre and post samples (blood obtained from segment, blood in tubing or from the bag including a 37C reading.
  - If 6 or more red cell units have been transfused in the past 12 hours, reconfirm the ABO of the units transfused using blood from tubing or bag
  - Any additional testing at the discretion of the Pathologist.
2. **A blood banker from the United Kingdom** suggested that if there was no change in hemopexin or haptoglobin levels, then hemolysis is unlikely to have occurred and, by definition, a hemolytic reaction would be ruled out. The UK blood banker suggested that in the absence of signs of hemolysis it might be appropriate to test for white cell antibodies (HLA or neutrophil specific) if it was deemed important to establish the exact mechanism for the febrile reaction.
3. **A Los Angeles transfusion service physician** suggested that in a case like this, she would visit the patient, look for jaundice or icterus and obtain a history from the patient and/or medical record. A positive DAT is commonly seen in **several diseases** such as CLL, multiple myeloma and autoimmune disorders. In the absence of a clear reason for the pre-transfusion sample to have a positive DAT, laboratory tests such as haptoglobin, LDH, bilirubin and pre- and post-HCT are helpful to rule out hemolysis.

**ADDENDA** July 29, 2002

4. **A blood banker from New York** reported that in his hospital where patients are receiving sequential transfusions and they do not routinely do DAT's, a finding such as described would be followed by an elution and screen/panel on the eluate. Occasionally, in the experience of the responding New Yorker, the indirect antiglobulin test is still negative in such cases and a **restimulated antibody appears only on the patient's transfused cells.**

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**Posted:** July 28, 2002

**Addenda:** July 29, 2002