## TITLE: Transfusion Reaction Workup

PRINCIPLE:

Each transfusion service or blood bank should have a system for detecting, reporting, and evaluating any adverse reaction to, or complication of transfusion. The system must include a method for reporting and recording cases of suspected post transfusion disease. There must be a thorough investigation and a report in each case. To assure adequate care of the patient, to prevent subsequent errors, and for medico legal eventualities, it is imperative that very careful and complete records be made and retained indefinitely.

The records must include: type of reaction, extent and results of investigation, conclusions, follow-up and report made to physician, patient’s chart, and collection facility or manufacturer if the fault is determined to be the product transfused. Signatures of each person involved in the investigation must be part of these records.

FDA regulations: In the event of a fatal reaction (donor or recipient), the Director of the Bureau of Biologics, shall be notified by telephone as soon as possible and a written report sent to him within seven days. This shall be done by the Senior Technologist or a designee.

Peter W. Marks, MD, PhD

240-402-8000
fax 301-595-1310

### CLINICAL SIGNIFICANCE:

The classic hemolytic transfusion reaction may begin with a chill, headache, chest or back pain, nausea, vomiting and/or a sudden rise in temperature. The initial reaction generally is NOT fatal. A blood sample collected at the time of the earliest symptoms may have hemoglobin in the serum. The first urine sample may contain hemoglobulin, red cells, or pigmented casts. After the initial reaction there may be no further signs, but some cases may show a lessened output of urine. Severely affected patients may have renal shutdown and subsequently die.

### PERSONNEL:

Medical Technologists

**SPECIMEN COLLECTION/TREATMENT:**

Draw one Blood Bank tubes (Pink EDTA) from the patient using the SoftID protocol

 THESE ARE STAT SAMPLES AND MUST BE TAKEN TO THE BLOOD BANK IMMEDIATELY.

**REAGENTS AND EQUIPMENT:**

See individual procedures.

### CALIBRATION:

None indicated

### QUALITY CONTROL:

See individual procedures

NOTE: All transfusion workups are STAT.

## STEPWISE PROCEDURE:

A. Transfusion Reaction Work-Up

1. Check all clerical work involved in the initial crossmatch. This includes

patient identification, blood unit labels and all pre-reaction records for

 possible errors in patient or blood identification at the bedside or in the

 laboratory. Make sure that there is agreement between all orders, tubes and computer entries.

2. NOTE THE APPEARANCE OF THE PATIENT’S SERUM (COMPARE THE PRE AND POST TUBES) AND THE DONOR BLOOD.

 3. Do a direct Coombs on the patient’s pre and post-specimens using Poly Coombs.

 4. Retype the patient (pre and post).

5. NEGATIVE AND/OR COMPATIBLE RESULTS ON THE ABOVE INVESTIGATIONS MEAN THAT THERE HAS NOT BEEN A HEMOLYTIC REACTION, AND IT IS NOT NECESSARY TO CONTINUE WITH PHASE II OF THE WORKUP.

1. Give the investigation to the pathologist for his remarks.

 7. Transfusion reaction workups must be reviewed within 24 hours.

 8. Place pre and post transfusion samples in the daily rack, allowing for 21 days

 post transfusion storage.

**NOTE: TRANSFUSION REACTION WORK UPS WILL OCCUR ON ALL TRANSFUSED BLOOD PRODUCTS (i.e. RBC, Frozen Plasma, Platelets, ECT), AS THE CARE GIVER DEEMS APPROPRIATE. IN CASES OF A TRANSFUSION REACTION BEING CALLED ON FFP OR PLATELETS THERE MAY NOT BE A PRE-TRANSFUSION SPECIMEN, IT IS OK TO ONLY REPORT THE RESULTS ON THE POST-REACTION SPECIMEN. PLEASE MAKE NOTE IN SOFTBANK AND ON THE REPORT THAT “NO PRE-TRANSFUSION SAMPLE AVAILABLE”.**

B. PHASE II OF WORK UP:

 IF THE PATIENT’S CLINICAL CONDITION STRONGLY SUGGESTS A

 HEMOLYTIC REACTION, FURTHER INVESTIGATION IS WARRANTED

 DESPITE A NEGATIVE PRELIMINARY RESULT. IF ANY FINDINGS ARE

 POSITIVE, DOUBTFUL OR INCOMPATIBLE, THE FOLLOWING TESTS

 MUST BE DONE AND THE RESULTS RECORDED. BE SURE TO

 NOTIFY A PATHOLOGIST AND BLOOD BANK SENIOR TECH.

 NOTE: ANY OF THE FOLLOWING TESTING WILL BE PERFORMED AT THE

 REQUEST OF THE PHYSICIAN OR A PATHOLOGIST

1. Order a POST2, do an antibody screen on both the pre and post specimens. Put these results in with the rest of the transfusion workup. Also do an antibody screen on the donor(s), if possible. A positive antibody screening indicates the presence of an antibody which must be identified.

1. Recrossmatch both the pre and post specimens with the donor(s) according to

 Procedure 4840-BB-308, including the AHG phase.

1. Place order in Laboratory Information System for a bilirubin to be drawn six (6)

 hours after the transfusion was stopped. Omit the charge on these orders with comment “Transfusion Reaction”.

 4. Place an order for UMAC; notify patient’s nurse that it needs to be collected. Check at least one post-transfusion urine for hemoglobin.

 5. Send bag and remaining blood to Microbiology for a gram stain and

 culture. Make out a miscellaneous requisition to accompany the sample to the

 Microbiology Department.

 Write the donor number, patient’s name and “return to the Blood Bank” on the

 requisition.

 6. Record all results of the tests in SoftBank under Patient > Transfusion > Workup; record all the results for extra blood bank testing, chemistries, urine and prelim micro under Shift + F7 Comment. These comments will show up on the Transfusion reaction report.

 7. When all chemistries, urine results and preliminary bacteriology results (gram

 stain) are back and the blood bank investigation is done, give the

 investigation to the pathologist for his remark

1. Place pre and post transfusion samples in the daily rack, allowing for 21 days

post transfusion storage.

 9. ALL TRANSFUSION WORK-UPS ARE STAT and should be reviewed

 within 24 hours by the Pathologist.

 10. NOTE: IF ANY OF THE ABOVE TESTS INDICATES OR STRONGLY

 SUGGESTS A HEMOLYTIC REACTION, BACTERIAL CONTAM-

 INATION, AND/ OR OTHER SERIOUS REACTIONS NOTIFY THE

 PATHOLOGIST AND ATTENDING PHYSICIAN

 IMMEDIATELY.

### REPORTING RESULTS

Transfusion Reaction Workup (Phase I)

1. Receive post-transfusion sample in lab
2. Open Soft Bank
3. Open Patient>Transfusion>Workup
4. Enter patient information – F 12
5. Caution Screen appears, Esc to close
6. Choose Transfused Unit, Click Enter-Reaction from side menu
7. Screen opens with Transfusion Reaction Data - F 12
8. Save changes? Yes
9. Choose rack # from drop down box
10. Select reaction box and click F7-Results,
11. Enter results
12. F-12 Save changes
13. Continue to next result box, repeat from F7 until all boxes are complete

STOP: If further workup is indicated, continue to Phase 2 procedures now

1. Print report by selecting Cont+P, select printer
2. Take report to Pathologist for comment
3. Open Patient>Transfusion>Reaction
4. Enter Patients name
5. Caution box appears, Esc to close
6. Choose Unit and press Enter
7. Enter pathologist’s impression from dropdown menu
8. Enter pathologist’s name
9. F-12 Accept, “Save Changes?” Yes
10. Choose printer

Transfusion Reaction Workup (Phase 2)

1. Patient>Transfusion>Workup
2. Enter patients name
3. Select Unit, choose Enter Reaction from side menu
4. Choose Ctrl+T-Phase 2, screen opens with Phase 2 data
5. F12-Accept, Save changes
6. Move to a result box, select F7-Results, enter results, F-12 Save changes, until resulting completed
7. Print report using Control-P, select printer
8. Give to pathologist for review
9. Open Patient>Transfusion>Reaction
10. Enter pathologist’s impressions
11. Enter pathologist name
12. Print report

**INTERPRETING RESULTS**

Since compatibility testing is performed for the detection of antibodies to the red cells antigens, adverse effects of transfusion are most commonly caused by leukocytes, platelets, and/or plasma proteins. In addition every transfusion carries a risk of alloimmunization as well as transmission of disease. All the care in crossmatching blood in the laboratory can be negated by the administration of blood to the wrong patient.

 All transfusion reactions should be reported to the blood bank and evaluated to the extent considered appropriately by its Medical Director.

**ORDERING TRANSFUSION REACTIONS AFTER A TRANSFUSION IS STOPPED**

Transfusion reactions should be documented by the nurse in IDTx under reactions. When the nurse enters in a reaction(s) into IDTx, SOFT will automatically order a POST1 and the specimen is available to be drawn via SoftID. In certain cases a transfusion reaction is noted AFTER the transfusion has been stopped. If the nurse still has the blood product bag available they can go back in and re-stop the transfusion to be able to enter in the reaction(s) to order the POST1 transfusion reaction (SEE EXAMPLE 1).

If they are calling a transfusion reaction AFTER the transfusion has been stopped and the bag is already discarded, the Blood Bank Tech will have to put in the order. When you receive a phone call of a transfusion situation with this situation go into Order Entry under the Blood Bank tab and order a POST1. This will allow the specimen to be drawn using SoftID. Let the nurse know you will be sending up the downtime Transfusion Reaction Report Form (SEE EXAMPLE 2), they need to fill out the top of the form and include the unit number involved in the reaction. When the sample and paperwork is received in the lab, go to:

Patient>Transfusion>Edit (close comment box)

Double click on unit involved in reaction

Enter Nurse’s observations

F12

Now you may continue on with the Stepwise Procedure for the transfusion reaction.

### REFERENCE

Soft Computer Company, Clearwater, Florida

AABB Technical Manual, 16th Edition, 2008.

Standards for Blood Banks & Transfusion Service, 25th edition, 2008

S: LaboratoryP&P/BloodBank/4840-BB-502ch11/19/10