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| **University of Washington,**  **Harborview Medical Center**  **325 9th Ave. Seattle, WA, 98104**  **Transfusion Services Laboratory**  **Policies and Procedures Manual** | **Original Effective Date:**  April 1st 2011 | **Number:**  **5411-5** |
| **Revision Effective Date:**  3/1/2014 | **Pages:**  **5** |
| TITLE: Transfusion Reaction Investigation | | |

**Purpose**: To describe the evaluation, testing process, review and reporting of Transfusion Reaction Investigations (TRI)

**Policy:** Any untoward symptom occurring during or subsequent to the transfusion of blood or blood components should be considered a potential part of a life-threatening reaction and must be investigated with the following exceptions:

## Temperature rise (fever) of less than 1oC occurring without any other change in clinical status

* Mild urticarial reaction (hives) occurring without other change in clinical status

**Process:**

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| **Step** | **Action** | | **Related Documents** |
| **Initial Notification** | | | |
| **1** | * Receive call on a possible transfusion reaction. * Call transferred to technologist or lead technologist. * The technologist will identify the following:   + Whether the transfusion was completed or stopped.   + Date and time of reaction   + Patient name, HID and location   + Name of nurse/clinician reporting the transfusion reaction   + Symptoms of suspected reaction   + Have any un-transfused products returned immediately.     - ***Note****: If reaction is associated with hypotension, anaphylaxis, chest pain, flank pain, abdominal pain, pain at the site of infusion, severe respiratory distress or a rise in T ≥ 1***o***C or ≥ 38***o***C, contact Transfusion Services Medical Director or Resident/Covering Physician immediately.* | |  |
| **2** | * + - * Advise the nurse that they must send the following to Transfusion Services: * Suspected Transfusion Reaction Notification and Workup Request form (STRN&WR) * Copy of Transfusion tag, if available * Product bag of transfused unit with attached infusion set/IV tubing and intravenous fluids   + If the decision is made to discontinue the transfusion without the possibility of re-starting the component following evaluation.   + OR once the transfusion is completed * Post transfusion sample drawn in pink top EDTA tube * ***Note****: If symptoms limited to Temperature rise < 1oC without any other change in clinical status or mild urticarial rash, hives, redness or itching/pruritis, document reaction but no serologic investigation required.* | | * + - * Suspected Transfusion Reaction Notification and Workup Request form |
| **Step** | **Action** | | **Related Documents** |
| **Receipt and Evaluation** | | | |
| **3** | * + - * Perform computer order entry. Order is always STAT. | | * + - * Computer Entry of Blood Requests |
| **4** | * + - * Take sample, request form and product bag (if received) to a Clinical Technologist for emergency processing. | |  |
| **5** | * + - * Hold all in process orders.       * Further type specific blood products may not be issued without approval from Transfusion Services Medical Director or Resident/Covering Physician (unless symptoms limited to urticaria, rash, flushing, itching/pruritis and/or temperature rise <1oC without any other change in status).   ***⮞ Note:*** *The patient may ONLY receive emergency release universal donor RBC & plasma (O RBCs, AB plasma), or group AB, A or B platelets until a hemolytic transfusion reaction has been ruled out.* | | * Emergency Blood Product Release |
| **6** | * Evaluate clinical signs and symptoms | |  |
| **If** | **Then** |  |
| * Symptoms are incomplete or question “back to baseline” is not answered | * + - Contact the clinical care staff to obtain further information |  |
| * Symptoms limited to those of Mild Allergic Reaction, i.e: * Rash   + Urticaria   + Flushing   + Itching/pruritis * Temperature rise <1oC | * Further blood products may be released without requiring Transfusion Services Medical Director or Resident/Covering Physician approval |  |
| * Symptoms do **not** suggest a mild allergic or a severe transfusion reaction | * Further blood products cannot be released without Transfusion Services Medical Director or Resident/Covering Physician approval |  |
| * Symptoms suggest severe transfusion reaction   o Rise in temperature of  >10C or ≥38C  o Back/flank, chest, or  abdominal pain  o Pain at infusion site  o Hypotension  o Respiratory distress   * Anaphylaxis * Gram Stain Positive | * Notify Transfusion Services Medical Director or Resident/Covering Physician immediately * Further blood products cannot be released without Transfusion Services Medical Director or Resident/Covering Physician approval |  |

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| **Step** | **Action** | **Related Documents** |
| **Phase 1 Testing: Clerical, Hemolysis Check, Serologic, and Culture** | | |
| **7** | * Perform clerical check of Post-transfusion sample and: * Transfusion Reaction Notification and Workup Request Form * Computer record * Transfusion Tag/Unit Label * Autologous or Directed Bag Tag, if applicable * Pre-sample if discrepancy found * If there is any discrepancy request a redraw and notify the Transfusion Services Medical Director or Resident/Covering Physician * Result Clerical Check test * Add Comments if applicable | * + Blood Order Processing |
| **8** | * + Enter unit number or “multiple” (test UNO).   + If the product bag is received, examine the bag, residual product, and attached administration set and IV fluids if submitted   + Add Comment test and record results.   + If bag is not received, indicate in Comments   + **Note:** Store transfusion reaction related unit bags and attachments on the Transfusion Reaction Shelf as soon as possible to preserve condition |  |
| **9** | * + - **If Rise in temperature of ≥10C or ≥ 38C**        * Submit appropriate order and request to Microbiology for unit gram stain and culture when:         + No medical director order required         + Medical Director requests submission to Microbiology     - If Gram Stain reported Positive,       * Call Medical Director immediately.       * Notify blood supplier. | Blood Product Culture form |
| **10** | * + Perform Phase 1 testing on post-transfusion sample   + Hemolysis check of post-transfusion specimen   + Direct Antiglobulin test (DAT) with Polyspecific AHG   + ABO/Rh | * + TRI Worksheet   + Computer system |
| **11** | * If the ABO/Rh matches the pre-transfusion results, and there is no visible hemolysis, and the DAT is Negative   + Report to the clinician or nurse: “No evidence of a hemolytic transfusion reaction”   + Record phone call on STRN&WR form.   + Contact the Transfusion Services Medical Director or Resident/Covering Physician and obtain approval for the patient to receive further/routine blood products |  |

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| **Step** | **Action** | **Related Documents** |
| **Phase 2 Testing: Evidence of Hemolysis and/or a Positive DAT** | | |
| **12** | * + - If there is any evidence of hemolysis and/or a positive DAT:       * Notify the Transfusion Services Medical Director or Resident/Covering Physician immediately:       * Perform Phase 2/extended testing as directed by the Transfusion Services Medical Director / Resident / Covering Physician.         + Pre-transfusion sample hemolysis check         + Pre-transfusion sample DAT         + Pre/Post transfusion sample eluate         + Pre-transfusion sample ABO/Rh         + Post-transfusion sample antibody screen/identification         + Pre-transfusion sample antibody screen/identification         + Pre/Post-transfusion sample compatibility testing (donor retention sample/segment from blood bag)         + Blood product culture         + PSBC referral   Notify the Transfusion Services Medical Director or Resident/Covering Physician of results  Determine if patient approved to receive further blood products | * + - ABO/Rh by Tube Method     - Antibody Screen by Tube Method     - Crossmatch by Tube IAT Method     - Antibody Panel by LISS IAT     - DAT by Tube Method |
| **TRALI Investigation** | | |
| **13** | Suspected TRALI--After consultation with Transfusion Medical Director or physician on call:   * Search product inventory for other components with the same unit number, and quarantine any that are found. * Call PSBC to notify them about the unit in question and possible TRALI. * Consult with medical director or physician on call to order HLA type on recipient. |  |
| **Notification of Supplier** | | |
| **14** | * The collecting facility is notified immediately by the Medical Director when there is a fatality or serious adverse event that may be related to the product or donor of a transfused product. * The notification must subsequently be done in writing. |  |
| **Delayed Transfusion Reaction Investigation** | | |
|  | * Investigate transfusion history for **all DAT Only orders** * If patient has been transfused in the last 4 months, the potential for delayed transfusion reaction exists and must be investigated:   + Perform parallel DAT on Pre-Transfusion sample, if available.   + Perform PEG antibody screen on Post-Transfusion sample.   + Perform PEG antibody screen on Pre-Transfusion sample, if Post is POS.   + Perform eluate(s) as indicated per SOP. * Complete ABID worksheet and Eluate Testing Form. * If the Elution is positive: * Antigen type the donor unit(s) for the antigen to the antibody eluted, using the retention segment, if available. * Notify the Medical Director immediately. | * DAT by Tube Method * Antibody Screen by PEG Tube IAT Method * Eluate Testing Guidelines * Antibody Elution Using Gamma ELUkit |

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| **Investigation Completion** | | |
| **15** | * + - Record all conversations, inquiries and observations on the STRN&WR form. |  |
| **16** | * + - Route completed STRN&WR form to the CT Lead or TS Manager:       * Final TRI posted to the patient’s record       * Final report routed to the patient’s chart |  |
| **17** | * + - Result TXRINT with the U.S. Biovigilance designation, based on the medical director’s review.     - After Medical Director has completed the consult, result TXPath, with the code JDJ.     - Discard blood bag | Table A |

**Table A: U.S. Biovigilance Network Adverse Reactions**

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| **SQ Code** | **Type of Reaction as listed by US Biovigilance Network** |
| **DLHTX** | Delayed hemolytic transfusion reaction |
| **DSTRX** | Delayed serologic transfusion reaction |
| **HYTRX** | Hypotensive transfusion reaction |
| **OTH** | Other |
| **PTPUR** | Post transfusion purpura |
| **TAGVH** | TA-Graft versus host disease |
| **TRALI** | Transfusion related acute lung injury |
| **TRDYN** | Transfusion related dyspnea |
| **TRPUNK** | Unknown pathophysiology |
| **TXALL** | Allergic Reaction |
| **TXCULT** | Transfusion associated infection (bacterial, viral, parasitic, other) |
| **TXFEB** | Febrile non-hemolytic transfusion reaction |
| **TXHEM** | Acute hemolytic transfusion reaction |
| **VOLO** | Transfusion associated circulatory overload |

**References:**

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Roback J (ed). Technical Manual, 16th Edition. AABB Press, Bethesda, MD. 2008.

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