1. POLICY

1.1. The Transfusion Service has instituted this policy to address the use of blood and/or blood components for transfusion in emergency situations when either blood components are needed immediately due to a trauma/life threatening situation or a patient's specimen does not have complete testing performed.

2. PURPOSE OF DOCUMENT

2.1. Emergency blood release may occur when:
- 2.1.1. The Massive Transfusion Protocol is implemented.
- 2.1.2. Red blood cells stored in the remote refrigerators in some UH Operating Rooms (trauma units) are needed.
- 2.1.3. Red blood cells and/or Plasma stored in the remote refrigerators in the UH, East Emergency Departments, Outpatient Care New Albany (trauma units), Outpatient Care Dublin (trauma units), and The James Outpatient Care West Campus (trauma units) are needed.
- 2.1.4. No current specimen is available: STAT request for uncrossmatched red blood cells and blood components.
- 2.1.5. A current specimen is available: ABO/Rh(D) typing is completed, antibody screen/workup/crossmatch not completed - STAT request for uncrossmatched red blood cells and other blood components.
- 2.1.6. A current specimen is available: ABO/Rh(D) discrepancy not completely resolved– STAT request for red blood cells and other blood components.

2.2. Crossmatch testing is performed on all red blood cell units that are transfused; when greater than 8 units of red blood cells are transfused within a 12-hour period, or the patient has received an amount of blood approximating the total blood volume those units would also be crossmatched.

3. SCOPE OF DOCUMENT

3.1. This procedure applies to all personnel working in the Transfusion Service.

4. RESPONSIBILITY

4.1. It is the responsibility of the Medical Director, Transfusion Service to:
- 4.1.1. Establish a process for issuing blood and blood components in an emergency situation.

4.2. It is the responsibility of the Compliance Officer, Transfusion Service to:
- 4.2.1. Monitor for changes in the regulatory standards.
- 4.2.2. Propose any necessary changes to the process.
- 4.2.3. Compile all reported deviations from the process for follow up by appropriate personnel.

4.3. It is the responsibility of the Manager and Lead Technologists, Transfusion Service to:
- 4.3.1. Write the procedure for issuing blood and blood components in an emergency situation.
- 4.3.2. Ensure the procedure is followed as written.

4.4. It is the responsibility of all Transfusion Service testing personnel to:
- 4.4.1. Follow the procedure as written.

5. PROCESS

5.1. *GUIDELINES FOR ALL EMERGENCY RELEASE/MTP SITUATIONS:*

5.1.1. **DO NOT DELAY PROVIDING RED BLOOD CELLS AND BLOOD COMPONENTS FOR ANY REASON INCLUDING NO CURRENT SAMPLE, NO WRITTEN ORDER OR PATIENT ANTIBODIES**

5.1.2. When a call is received to activate the MTP or request uncrossmatched products, obtain the following information
- a. Patient's complete legal name
- b. Patient's medical record number
- c. Gender and age (if known)

5.1.3. Remind the physician/caller that a Blood and Blood Component Order Form must be completed, signed by the physician (or other approved clinical practitioner) and sent to the Transfusion Service as soon as possible. They can also place an electronic order for Initiate Massive Transfusion Protocol or for whichever uncrossmatched/emergency release products they need

5.1.4. If emergency release units are requested that are not part of an MTP, the Blood and Blood Component Order form **must** be filled out and signed by the physician when time permits.

5.1.5. If no electronic order for products has been placed, request that an order be placed ASAP in the electronic health record.

5.1.6. If there is no time for the care team to order the appropriate products, order the LABPMTP in Beaker

a. **This DOES NOT qualify as the official MTP/emergency release order and is for laboratory purposes ONLY. The physician will need to place the appropriate order in IHIS when time permits.**

b. To place the LABPMTP in IHIS:

- Access the IHIS gateway and type "Encounter" in the search bar at the top right of the screen
- Enter the patient's MRN and select the current encounter
- Access the "Manage Orders" tab towards the top of the screen.
- Type "LABPMTP" in the search field and select.
- **Click on the "Providers" button and change from Order Mode to Per Protocol**
- Change the ordering provider to the Transfusion Service attending physician on service for the day.
- Sign the order by pushing "Sign orders" at the top of the screen.

5.1.7. If there is any active patient order in SOFT, it can be modified to allow for the selection of the appropriate MTP products.

a. To modify orders in SOFT

- In the LIS, go to **PATIENT > ORDERS > MODIFY**
- Select the current admission
- Select the active order number
- Under the Product field:
  - Select the BB MTP PROTOCOL (ORDER_BMTP)
  - In the Units field enter 1 (units cannot be 0)
  - Do **not** select the physician's order of MTP (ORDER_MTP)
- F12 –Accept
- Acknowledge the pop-up stating "Dates and times are not in the proper order. Are you sure?" with Yes
- Save Changes? Yes

5.1.8. **Selecting Units**

a. Look up the patient's history in the LIS, noting relevant attributes and antibodies

b. Honor any attributes or antibodies, as appropriate.

- See 5.2.3 for guidelines on massively bleeding patients.
- Select antigen negative if appropriate and available.

c. Select the oldest red blood cells and blood components for transfusion

d. In the LIS, go to **PATIENT > ORDERS > UNITS > Em_Issue**

- Scan all blood components to be issued and accept.
- Put "OK" for Condition
- In the "Issued to" box, type "MTP" or badge number, as appropriate, and accept.
- Labels will print, and the units have been issued in the LIS
- Perform a Technical Label Check prior to the products being sent to the floor to ensure that the crossmatch labels are completed correctly, and the units are labeled appropriately.

5.1.9. **Physical preparation of uncrossmatched units:**

a. Place an "Uncrossmatched Blood" sticker on red blood cells

b. Stamp "Crossmatch Not Done" on crossmatch labels of red blood cells

c. Remove a segment (which includes the complete segment number) from each red blood cell unit for crossmatching (and antigen typing, if needed).

- Place the segment in a test tube labeled with the donor identification number (DIN) and product code

d. Maintain proper identification of the blood components being used by keeping the retained segments for crossmatching (and antigen typing, if needed) together labeled with the patient's legal name and medical record number and then with the sample after it arrives at the Transfusion Service.

e. When time does not permit selecting the units in the LIS, prepare hand-written crossmatch labels as follows:
- Full legal name and MRN of patient
- DIN and product code of the unit
- ABO/RH of the unit and patient (if known)
- Unit expiration date/time
- "ND" in the crossmatch field
- Your initials on the TLC line/Issued by lines, as appropriate
- Date and time of issue

f. Document the unit number, product code, ABO/RH, and expiration date on the Transfusion Service Downtime Patient Testing Worksheet
- In the Status field, indicate if the unit was issued with tech initials, date, and time to keep track of units issued
- This will be used to enter the units into the LIS when time permits

g. Use the override code "**UXM**" for any exceptions that occur throughout the process.
- Perform a Technical Label Check prior to the products leaving the Transfusion Service to ensure that the crossmatch labels are completed correctly, and the units are labeled appropriately.
  - Refer to Selection of Blood Components for Transfusion.
  - Refer to Attachments 1 and 2 following the procedure.

5.2. **Massive Transfusion Protocol**

5.2.1. At OSUWMC, four units of red blood cells and four units of thawed plasma are sent in a large Igloo style cooler when the MTP is implemented.

a. At OSUWMC, a platelet component (dependent on inventory) is provided with the first cooler. Subsequent platelet components will only be provided upon request.

b. At OSUWMC, if the patient's name is "TRAUMA" a platelet component must be issued with each cooler.

5.2.2. At Satellite locations, only two units of red blood cells and two units of thawed plasma are sent.

a. A platelet component (dependent on inventory) is provided with the first cooler. Subsequent platelet components will only be provided upon request.

b. If the patient's name is "TRAUMA" a platelet component must be issued with each cooler.

c. Refer to Attachment 2 following the procedure.

5.2.3. Look up the patient's history in the Laboratory Information System (LIS).

a. Determine if the patient has any relevant comments or special attribute requirements like irradiated products.

b. If the patient has irradiated in their history, at least the first 4 red cells provided should be irradiated.
- Determine if the patient could potentially require several rounds of the MTP. If so, the irradiation requirement can be removed.
- The irradiated attribute may be removed from the patient's blood bank history if the patient is expected to take large amounts of red cells.
- Enter a comment in the patient's blood bank history stating that the irradiated attribute needs put back in when the MTP is over.
- Notify the pathologist and complete a Release From Standard Procedure form when time permits

5.2.4. Select/issue units in the LIS as described in 5.1.7 to 5.1.8.

5.2.5. Place the tagged red blood cell units and thawed plasma units in the MTP cooler.

a. Document on the TIC Shipment Log.
   - Refer to Use of Igloo coolers.

5.2.6. Do a read back of the patient's full legal name, MRN, and the products being picked up with the courier.

5.2.7. Continue preparing coolers of products until the MTP is over.

5.2.8. As time permits, document the following on the MTP log:
   a. Patient's complete legal name
   b. Patient's medical record number
   c. Gender and DOB
   d. Name of physician initiating the MTP
   e. Patient's location
   f. Date and time MTP was initiated

5.3. Use the following situations to determine the type of products to be given:

5.3.1. **If the patient has a current specimen AND is eligible for electronic crossmatch:** ABO/Rh(D) compatible red blood cells should be used in place of the uncrossmatched group O red blood cells.

b. **When the laboratory computer system is non-operational and electronic crossmatches cannot be done:**
   - Remove a segment from each red blood cell unit for crossmatching.
     - Place the segment in a test tube labeled with the donor identification number (DIN) and product code
     - Perform an Immediate Spin Crossmatch
     - Document following the Computer Downtime Policy
   - Any ABO compatible thawed plasma or platelets may be used in these cases.

5.3.2. **If the patient has a current specimen but no second blood type has been performed at an OSU facility:**
   a. ABO type-specific non-red blood cell components can be issued
   b. "O" red cells must be selected and an I.S. crossmatch performed
      - The Rh type of the original blood type performed on the current specimen can be matched.
      - Using professional judgement, decide if time permits to complete the I.S. crossmatch for the first cooler being issued.
      - Issue the first cooler uncrossmatched if time does not permit crossmatching
        - Subsequent rounds of red cells should be crossmatched
        - Post-issue crossmatches will need to be performed when time permits on any red cells selected and/or issued
          - Follow step 5.5
      - Order the TypeC as soon as possible in Beaker and call the nurse to request the sample be drawn ASAP.

5.3.3. **If the patient has a <u>current specimen</u> but the <u>antibody screen is positive:</u>**
   a. ABO type-specific non-red blood cell components can be issued
   b. Issue any previously crossmatched units first, if available.
   c. If units are currently being crossmatched, new units must be selected for immediate issue.
   d. Select the oldest ABO/Rh(D) compatible red blood cells that are antigen negative, when available, for all alloantibodies that have been identified.
      - **Exception**: If this is the first blood type done at an OSU facility, group "O" red cells must be used
      - **Do not delay providing red cells if antigen negative units are not available, give random units**
      - Refer to Selection of Blood Components for Transfusion.

e. Notify the pathologist when time permits when there is no time to complete the serological crossmatch, if antigen negative units are not available, or if the patient has an autoantibody that is demonstrable.
   - Always follow the pathologist's instructions.

f. Post-issue crossmatches will need to be performed when time permits on any red cells SELECTED and/or ISSUED, including units transfused from remote refrigerators, even if the units are ultimately returned to the Transfusion Service
   - Follow step 5.5

5.3.4. **If the patient <u>DOES NOT have a current specimen</u>**:

a. Remind the physician and/or caregiver that a type and screen specimen should be collected prior to transfusion if possible and sent to the Transfusion Service as soon as possible.

b. **Group O red blood cells and group A thawed plasma must be issued until an ABO/Rh(D) type is completed on a current specimen, regardless of the patient's historical blood type or antibody history.**
   - ABO type specific non-red cell components may be issued if an ABORH has been performed during the patient's current admission
   - Group AB thawed plasma may be used depending on current inventory levels

c. The first uncrossmatched red blood cells may be either O Rh(D) negative or in certain cases O Rh(D) positive:
   - If the patient is a male of any age, or a female 51 years of age or greater, O Rh(D) positive red blood cells should be used during the MTP.
     - Notify the pathologist, when time permits, of the switch to Rh(D) positive red blood cells if the patient types as Rh(D) negative.
   - If the patient is a female who is 50 years of age or younger and is Rh(D) negative and massively bleeding, O Rh(D) positive red blood cells may be provided only until the emergent situation has ceased, then switch back to Rh(D) negative red blood cells.
     - If the patient is not massively bleeding, provide Rh(D) negative red blood cells.
     - The switch to Rh(D) positive red blood cells should be made as early as possible in the MTP and requires permission from the pathologist or the MTP physician.
     - If unable to contact the pathologist, follow up with them as soon as possible.
     - Always follow the pathologist's instructions.

d. **Refer to Attachment 2 following the procedure to determine how many and what type of blood components are prepared for the next set of blood components for the MTP.**

e. Perform the above steps repeatedly until ABO/Rh(D) compatible red blood cells and ABO compatible thawed plasma can be provided.

f. Continue to periodically request a type and screen specimen if one has not been received.
   - Contact the pathologist if help is needed in obtaining a specimen from the unit.

g. Post-issue crossmatches will need to be performed when time permits on any red cells SELECTED and/or ISSUED, including units transfused from remote refrigerators, even if the units are ultimately returned to the Transfusion Service
   - Follow step 5.5

5.3.5. **If the patient has a Transfusion Reaction Workup in progress:**

a. Group O red blood cells must be given and issued <u>UNCROSSMATCHED.</u>

b. ABO type specific or type compatible plasma/platelets may be issued.

c. Notify the attending pathologist on call immediately

5.4. **Use of the Emergency Release uncrossmatched units stored in remote refrigerators:**

5.4.1. The Emergency Department, Operating Room, Outpatient Care New Albany, Outpatient Care Dublin, and The James Outpatient Care West Campus are to perform the following:

a. Immediately notify the Transfusion Service each time uncrossmatched units are transfused.

b. Document the following on the crossmatch label prior to transfusing uncrossmatched units:
   - Patient's complete legal name
   - Patient's medical record number

- The date and time the units were transfused

c. Complete the patient information section of the Blood and Blood Component Order form with the following:
   - Patient's complete legal name
   - Patient's medical record number

d. Complete the emergency release section of the Blood and Blood Component Order form with the following:
   - Date and time
   - Physician's name (printed)
   - Physician's signature

e. Fax, send via the tube system, or hand deliver the Blood and Blood Component Order form to the Transfusion Service as soon as possible.

f. If the patient is not current, collect a specimen on the patient as soon as possible and send it to the Transfusion Service so ABO/Rh(D) compatible blood components and crossmatch compatible red blood cell units can be provided.

5.4.2. The Transfusion Service personnel will:

a. Retrieve the retained segments from the appropriate location in the walk-in refrigerator

b. Select and Issue the uncrossmatched units in the laboratory computer system when it has been confirmed the patient has been transfused the units stored in the remote refrigerators.

c. Issuing uncrossmatched units on the patient will automatically release them from the test patient.

d. Type "UXM" (Issued uncrossmatched at the request of physician) in the issuing comment area (where the badge is usually scanned).

e. Perform a serologic crossmatch, as necessary
   - Follow step 5.5

f. Prepare replacement uncrossmatched units as described in Preparation and Replacement of Emergency Release Blood Components

5.4.3. **Stat request for uncrossmatched red blood cells and blood components: NO SAMPLE, NOT an MTP**

a. Remind the physician and/or caregiver that a type and screen specimen should be collected prior to transfusion and sent to the Transfusion Service as soon as possible

b. Select group O red blood cells, AB plasma, AB platelets (if available, otherwise smallest volume of any ABO) and any ABO cryo until an ABO/Rh(D) type is completed on a current specimen, regardless of the patient's historical blood type or antibody history.
   - ABO type specific non-red cell components may be issued if an ABORH has been performed during the patient's current admission

c. The first uncrossmatched red blood cells may be either O Rh(D) negative or in certain cases O Rh(D) positive.
   - If the patient is a male of any age, or a female 51 years of age or greater, O Rh(D) positive red blood cells should be used.
     - Notify the pathologist, when time permits, of the switch to Rh(D) positive red blood cells if the patient types as Rh(D) negative
   - If the patient is a female who is 50 years of age or younger and is Rh(D) negative and massively bleeding, O Rh(D) positive red blood cells may be provided only until the emergent situation has ceased, then switch back to Rh(D) negative red blood cells.
     - If the patient is not massively bleeding, provide Rh(D) negative red blood cells.
     - The switch to Rh(D) positive red blood cells should be made as early as possible and requires permission from the pathologist or the physician requesting the uncrossmatched red cells.
     - If unable to contact the pathologist, follow up with them as soon as possible.

d. If there is difficulty in obtaining a patient specimen and eight units of AB thawed plasma have been issued, contact the pathologist, and explain the situation.

- The switch to group A thawed plasma can be made by the pathologist depending on the situation to avoid depleting our AB thawed plasma inventory

e. Select/issue units in the LIS as described in 5.1.7 to 5.1.8.
f. If more than two blood components are being sent at one time, prepare a large Igloo style cooler.
   - No more than four red blood cell units should be sent at one time.
   - Refer to Use of Igloo Coolers.
g. Continue to periodically request a type and screen specimen if one has not been received.
   - Explain to the floor that a specimen must be obtained so type ABO/Rh(D) compatible red blood cells and thawed plasma can be transfused.
   - Contact the pathologist if help is needed in obtaining a specimen from the unit.
h. Process the specimen as soon as it arrives.
i. Continue providing group O red blood cells/AB plasma if there is a problem with the patient's ABO blood typing
   - If a second blood type has never been performed on the patient at an OSU facility, continue providing group O red blood cells
j. Post-issue crossmatches will need to be performed when time permits on any red cells SELECTED and/or ISSUED, including units transfused from remote refrigerators, even if the units are ultimately returned to the Transfusion Service
   - Follow step 5.5

5.4.4. **Stat request for red blood cells and other blood components: current specimen available – ABO/Rh(D) completed but antibody screen/workup/crossmatch not completed**

a. ABO type-specific non-red blood cell components can be issued
b. Issue any previously crossmatched red cell units first, if available.
c. If units are currently being crossmatched, new units must be selected for immediate issue.
d. Select the oldest ABO/Rh(D) compatible red blood cells that are antigen negative, when available, for all alloantibodies that have been identified.
   - **Exception**: If this is the first blood type done at an OSU facility, group "O" red cells must be used
   - **Do not delay providing red cells if antigen negative units are not available, give random units**
   - Refer to Selection of Blood Components for Transfusion.
e. Notify the pathologist when time permits of the situation
   - Always follow the pathologist's instructions.
f. Continue processing the specimen
g. Once the workup is complete, provide crossmatched red cells as needed
h. Post-issue crossmatches will need to be performed when time permits on any red cells SELECTED and/or ISSUED, including units transfused from remote refrigerators, even if the units are ultimately returned to the Transfusion Service
   - Perform antigen typing corresponding to any antibodies identified
   - Follow step 5.5

5.4.5. **Stat request for red blood cells and other blood components: current specimen available – ABO/Rh(D) discrepancy not completely resolved**

a. Provide uncrossmatched group O, Rh(D) negative red blood cells.
b. Provide group AB plasma, AB platelets (if available, otherwise smallest volume of any ABO) and any ABO cryo until the discrepancy is resolved regardless of the patient's historical blood type

5.5. **Post-Issue Crossmatches**

5.5.1. Perform any necessary antigen typing corresponding to any known or newly identified patient alloantibodies

5.5.2. Perform an IS or IS-AHG (when necessary) serological crossmatch with the retained segments on all uncrossmatched red blood cell units that were selected and/or issued, including units that were transfused from the remote refrigerators, even if the units are ultimately returned to the Transfusion Service**.**
   a. Refer to Crossmatch.
   b. For units issued at Satellite locations:
      - If IS-AHG crossmatch is necessary, the IS-AHG crossmatch needs to be test redirected to UH and placed on the packing list.

5.5.3. If the units are crossmatch compatible, enter results and interpret as COMP.
   a. Add the comment "compatible after issued uncrossmatched" (UXMC) to each unit

5.5.4. If the units are crossmatch incompatible, enter results and interpret as INCOMP.
   a. Notify the pathologist immediately if any clerical or serological issue (positive antibody screen, incompatible crossmatch, etc.) occurs during testing.
   b. Add a comment and result Critical Value Notification.
      - Refer to Transfusion Service Critical Values.

5.5.5. Obtain a second specimen when additional units require a serological crossmatch, and the first specimen is used up.
   a. Perform an IS or IS-AHG (when necessary) serological crossmatch on any red blood cell units that had been issued prior to testing with the second specimen if they had not already been tested.
   b. Add a comment stating the units were issued off the previous sample

5.5.6. Perform the following when a specimen is never received for testing **OR** the first specimen is used up and a second specimen cannot be collected:
   a. Cancel the requested crossmatches in the LIS
   b. Go to **PATIENT > ORDERS > CANCEL**
   c. Double click the unit/crossmatch you want to cancel
   d. Cancel the crossmatch and explain why the testing was not performed in the comment box that generates

6. REFERENCES

6.1. American Association of Blood Banks. Technical Manual. Bethesda, MD: AABB; Current Version
6.2. American Association of Blood Banks. Standards for Blood Banks and Transfusion Services. Bethesda, MD: AABB Current Version
6.3. College of American Pathologists. Transfusion Medicine Checklist. Northfield, IL: CAP Current Version
6.4. FDA. Code of Federal Regulations. Rockville, MD: FDA, Title 21, Parts 200 and 600, Current Version

7. RELATED DOCUMENTS

7.1. Refer to QPulse System or Document Detail Report for related Laboratory Policies, Procedures, and Master Forms

ATTACHMENT 1

Situations for: Emergency Release of Uncrossmatched Blood Products or an MTP	Red Blood Cell Product ABO	Additional Information
No ABO/Rh or Antibody Screen completed	O Negative	➢ For all men and women over 50 years of age give O Positive ➢ >2 units use Igloo Cooler ➢ > 8-10 units switch to Rh(D) Pos, when massively bleeding
ABO/Rh completed but Antibody Screen not completed	ABO Compatible	➢ >2 units use Igloo Cooler ➢ > 8-10 units switch to Rh(D) Pos, when massively bleeding ➢ Give group "O" red cells if this is the first blood type ever done on the patient
ABO/Rh and Negative Antibody Screen	ABO Compatible	➢ >2 units use Igloo Cooler ➢ > 8-10 units switch to Rh(D) Pos, when massively bleeding ➢ Give group "O" red cells if this is the first blood type ever done on the patient
ABO/Rh and Positive Antibody Screen	ABO Compatible	➢ Consult pathologist when time permits ➢ Give group "O" red cells if this is the first blood type ever done on the patient

ATTACHMENT 2

MASSIVE TRANSFUSION PROTOCOL PACK (MTP)			
Product	**Number of Units UH/Satellite locations**	**Container Type/Temperature**	**Time before discard required**
Red Blood Cells	4/2	*Igloo Cooler	Use of Igloo Coolers
Plasma	4/2	*Igloo Cooler	Use of Igloo Coolers
Platelets**	1 pheresis	Room Temperature	Refer to Return and Reissue of Blood Components procedure

***4 units of red blood cells and 4 units of plasma may be put into one large Igloo Cooler (UH)**

***2 units of red blood cells and 2 units of plasma may be put into 2 small Igloo Coolers (Satellite locations)**

****Platelets may need to be specifically requested to be part of the MTP pack.**