



Rush Copley Medical Center

Proc. #4840-BB-412

TITLE: Massive Transfusion Protocol (MTP) and Emergency Release of Blood Products (EREL)

PRINCIPLE:

MTP Transfusion Protocol and Emergency Release of Blood Products processes are in place to provide a standard process for efficient and effective management of a bleeding adult, pediatric or obstetrical patient requiring massive blood product transfusion or emergency unit(s). Function Emergency Issue (Em_Issue) is used for the timely allocation and issuing of blood products without being blocked from QA failure(s).

CLINICAL SIGNIFICANCE:

A Clinical care services team will consider activating the massive transfusion protocol (MTP) if a patient has: active uncontrolled bleeding, ongoing need for transfusion, high likelihood of needing >4 units in 1st 3-4 hours or >10 units in 1st 12 hours. The massive transfusion protocol can be activated initially or at any time during the care of a bleeding patient (e.g. if continued active bleeding, worsening coagulopathy).

PERSONNEL:

All blood bank staff must be familiar with this procedure.

SPECIMEN:

See [Proc.#4840-BB-100] – Sample Requirements and Ordering Blood and Other Components

REAGENTS AND EQUIPMENT:

1. MTP or Emergency Release Phone Activation Form [Proc.#4840-BB-412.1F]
2. Yellow or Bright Orange – Uncrossmatched Blood Stickers
3. Yellow – Emergency Stickers
4. Blank Downtime Transfusion Tag
5. Printer
6. Patient labels
7. Cooler label slip
8. MTP cooler
9. Frozen gel packs
10. Refrigerated gel packs
11. MTP cooler status binder



DEFINITIONS:

1. MTP: Massive Transfusion Protocol
2. EREL: Emergency Release
3. BB: Blood Bank
4. RBC: Red Blood Cell
5. FFP: Plasma
6. PLT: PLT
7. CRYO: Cryoprecipitate
8. LIS: Laboratory Information System
9. DIN: Donor Identification Number (blood product unit number)
10. PTS: Pneumatic Tube System
11. QA: Quality Assurance

NOTE & LIMITATIONS:

1. During emergency situation, VERBAL dispense and transfuse orders are accepted from patient care areas. All verbal orders will be followed up by Blood Bank staff to obtain written retrospective order from the patient licensed provider.
2. Written transfusion orders are required for all blood products, including products obtained from a remote refrigerator, including Labor and Delivery (LD) and Yorkville (YED) refrigerators. However, signed request is not required PRIOR to dispensing of the emergency blood products.
3. For all blood requested prior to completion of pre-transfusion testing, Emergency Release activation protocol or MTP activation protocol MUST be followed to issue blood.
4. Electronic provider authorization is embedded in the MTP/Emergency Release Transfusion orders in Epic. This can be ordered as time permits, during or after the emergent event. EPIC ORDER IS NOT REQUIRED TO ACTIVATE EMERGENCY RELEASE OR MTP PROTOCOL. **Pending IT response. 9/15/2021 – Currently all MTP/EREL activation must have ONE (1) signed Emergency Release Authorization Form [PROC.#4840-BB-412.2F].**
5. The blood bank shall, retroactively, obtain provider's signature on all paper Emergency/Urgent Transfusion request forms that were used to issue blood during downtime.
6. Blood product barcodes for all units issued shall be placed on the activation form to ensure seamlessness and efficiency with retroactive unit allocation, issue and reconciliation in SoftBank.
7. For timely dispensing of blood products, all pre-made units are to be tagged with blank downtime transfusion tags.
8. Only group-A plasma can be used as emergency plasma. **Pending IT update. Currently using group-AB plasma.**



9. Emergency blood is stored in LD refrigerator, available at all times:
 - Care teams should be advised to use these units by Blood Bank staff whenever there is anticipated delays of longer than 5 minutes to get a blood cooler ready for a runner.
10. **IMPORTANT** – DO NOT turn the runner away without blood OR cause delay in dispensing blood to the patient for ANY REASON. If:
 - a. The runner doesn't have the needed patient ID,
 - i. Provide the runner with a piece of paper and a pen
 - ii. Ask the runner to call the nursing unit to obtain the needed patient information.
 - b. The runner is unable to contact anyone in the care unit by phone,
 - i. Document any information that the runner has for the intended recipient (e.g. room number, care area contact info, product type(s) requested, name of person who sent the runner, etc.).
 - ii. If there is a cooler already ready for the patient and the correct room number/care area is provided, send the cooler with the runner. **NOTE:** If there are multiple MTP patients in the same care area, ascertain that the correct cooler is sent to the correct location for the correct patient.
 - iii. If the presence of the runner is the first indication that the blood bank is aware of an MTP or Emergency needs,
 - Immediately prepare an MTP pack.
 - If runner is able to provide patient information in relation to age & gender, prepare a cooler with the appropriate MTP blood type and pack size.
 - If runner is NOT able to provide patient information in relation to age & gender, prepare an adult O neg MTP cooler. Caregivers will obtain what they need and return the rest.
 - iv. Blood Bank staff is responsible for calling patient care information to obtain additional necessary information after the cooler is issued to the runner. Document obtained information accordingly.



11. Patient not in LIS:

- a. If a sample is received, it may be labeled with an MRN and Downtime, Patient.
 - i. Will not have a CSN
- b. Use [downtime accession number] to process and to test sample.
- c. Do not delay issuing MTP / EREL if a downtime sample is received.

STEPWISE PROCEDURE:

1. General MTP & EREL information:

- a. Emergency Blood Availability in Patient Care Areas:
 - i. Labor and Delivery
 - ii. Yorkville ED
- b. Pre-made MTP Packs (partial) Availability in Blood Bank Areas:
 - i. Three (5) units of O POS RBCs
 - ii. Three (5) units of O NEG RBCs
 - iii. Two (2) units of A FFPs, are pre-made and stored on the designated bins in the uncrossmatched refrigerator.
- c. Pre-made EREL Availability in Blood Bank Areas:
 - i. Two (2) units of O POS RBCs
 - ii. Two (2) units of O NEG RBCs, are pre-made and stored on the designated bins in the uncrossmatched refrigerator.
- d. Pre-made PLT Availability in Blood Bank Areas:
 - i. One (1) unit of PLT (any type), is pre-made and stored on the designated shelf in the platelet agitator.
- e. Blood Products Selection During MTP and EREL:

	RBCs	FFPs	PLTs	CRYOs
Male	O POS	A	A or any	Any
Female > 55yo	O POS	A	A or any	Any
Female ≤ 55yo	O NEG	A	A or any	Any
Pediatric (anyone ≤ 15yo)	O NEG	AB	AB>A>B>O	AB>A>B>O



- f. Blood Products Selection During MTP and EREL when the availability of blood products is limited:

Patient Requires	1 st Choice	2 nd Choice	3 rd Choice
O POS MTP	O POS MTP	O NEG MTP	O POS MTP ASAP
O NEG MTP	O NEG MTP	O POS MTP	Notify BBMD immediately
Pedi MTP	O NEG MTP	O POS MTP	Notify BBMD immediately

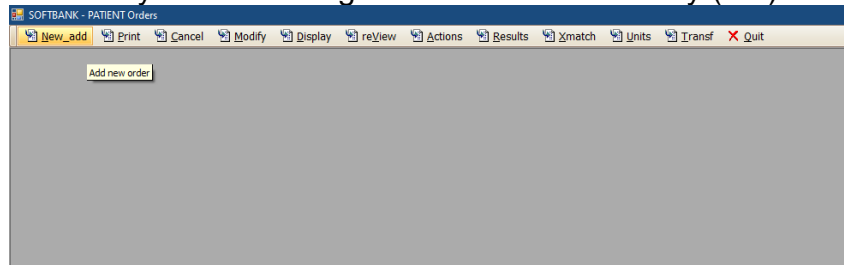
- g. Composition of MTP Packs:
 - i. 5 RBCs, 5 FFPs and 1 PLT
- h. MTP Pack Dispensing Requirements:
 - i. MTP pack will be dispensed from the blood bank ONLY in designated, validated MTP cooler.
 - ii. RBCs and FFPs to be stored within the cooler compartment.
 - iii. PLT and CRYO to be stored within the attached insulated compartment.
 - iv. Each MTP cooler is valid for twelve (12) hours from the time it is packed. All blood products returned in a cooler after 12 hours will need to be quarantined.
 - v. Only one (1) MTP pack will be dispensed per MTP cooler.
 - vi. A cooler must be re-packed with new frozen gel packs and new refrigerated packs when the cooler only has six (6) hours left to its expiration.
 - vii. If a patient is in continuous MTP modes, the same cooler can be used for the same patient without changing the expiration time.
 - viii. All patients who have received multiple O POS RBCs from current MTP activation will continue to receive Rh POS RBCs even if the patient is determined to be Rh NEG.

2. Handling of MTP Activation

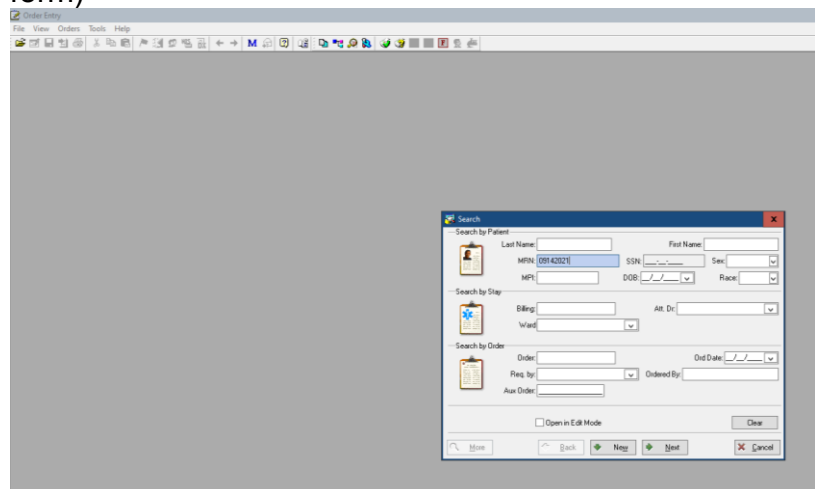
- a. MTP Activation:
 - i. Either by an activation call from the care team or by a runner showing up at the Blood Bank asking for blood products.
 - ii. Upon receipt of MTP activation phone call, blood bank staff shall,
 1. Obtain a blank **MTP and EREL Phone Activation Form [PROC.#4840-BB-412.1F]**
 2. Record the MRN on the form as it's provided by the person on the phone

3. Log on to SoftBank > Patient > Orders > New_add

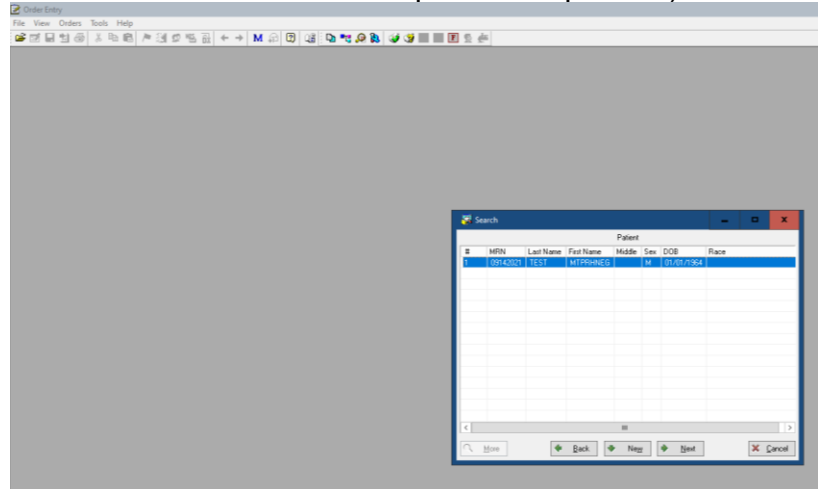
➤ The system will bridge to SoftLab Order Entry (OE).



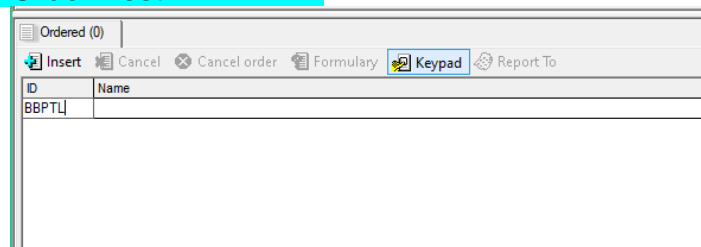
a. Type in patient MRN as provided by care giver on the phone (**WRITE down MRN** on the phone activation form)



- b. Verify the patient's name, age and gender as displayed on LIS screen with caller/care giver (once these information are verified, they can be transcribed to the form AFTER the MTP pack is dispensed)



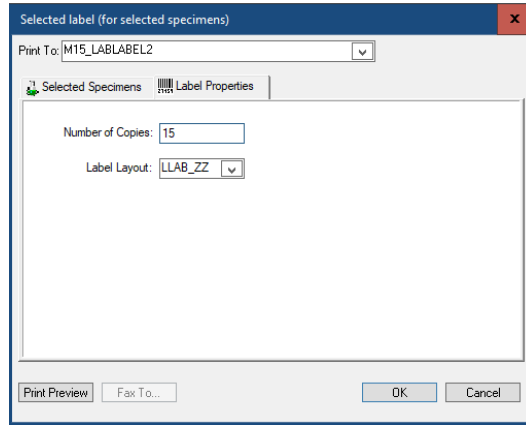
- c. Do not exist OE screen
- d. With the care giver still on the phone,
- Obtain activation location and call back number
 - Complete all other fields on the "Patient & Order info" section as needed
 - Check off type as requested
 - MTP
 - Single
 - Continuous
 - Request care giver to send a runner (if not already sent)
4. Immediately upon completion of the phone call,
- Click add new order
 - Order Test ID: BBPTL



- Save the order – the system will prompt to print labels

d. Enter the number of labels to print:

i. MTP – 15 labels



- e. Attach one (1) accession label to the box PRINT & AFFIX PATIENT LABEL HERE on the [Proc.#4840-BB-412.1F]
- f. Attach one (1) accession label on the cooler label slip
- g. Time stamp the activation time at the end of the call (upper right of the [Proc.#4840-BB-412.1F])
- h. Announce MTP and notify the BB senior tech/tech in charge

b. MTP Preparation and Issue:

- i. Obtain the pre-made MTP pack from designated shelf
- ii. Retrieve the **Unit Transfer Invoice** printouts (RBCs, FFPs, and PLT) containing all the units DIN barcodes
- iii. Staple the pre-made location change printouts to the back of the activation form [Proc.#4840-BB-412.1F] with patient information
- iv. Attach one (1) accession to each blood products
- v. Proceed with packing the MTP cooler. See [Proc.#4840-BB-415] – MaxPlus MTP Cooler 2.0®.

c. MTP Dispension:

- i. If the MTP pack is ready and runner has not arrived, CALL the care team listed on the activation form [Proc.#4840-BB-412.1F] to inform the care team that the cooler is ready for pick up.

- ii. MTP cooler to Runner:
 - 1. Runner should provide at least two (2) pieces of patient information (Patient's full name, MRN, or CSN#), which can be in the form of:
 - a. Patient demographic sticker
 - b. Patient's EPIC printout
 - c. Handwritten document by runner from verbal confirmation over the phone with patient care staff
 - d. Any other form of identification that can provide a link between the patient and the blood products in the cooler (**Document**)
 - 2. Attach the patient demographic sticker or manually record patient ID on the [Proc.#4840-BB-412.1F] (back / bottom of each MTP tier column) along with runner's initials (front / issuing info – date/time) at the time of cooler pick up
 - 3. Document issuing information in the corresponding boxes of the MTP pack – cooler# and pack time, visual inspection, issued to and tech ID on the bottom of the [Proc.#4840-BB-412.1F]
 - 4. Time stamp the corresponding box of the MTP pack on the bottom left of the [Proc.#4840-BB-412.1F] for MTP# DISPENSE / PICK UP
 - 5. If the runner arrives to pick up blood without a prior activation call, activate the MTP in blood bank.
 - a. For new MTP: Follow (section 2.a) above
 - b. For existing single MTP, ask the runner to call the activating location to confirm whether they would like a second (2nd) single MTP pack or convert the MTP from single to continuous.
- iii. MTP Pack/Blood Products via Pneumatic Tube System (PTS)
 - 1. MTP packs (RBCs, FFPs and PLTs) should only be sent through PTS as a last resort when it is not all possible for the patient care unit to procure a runner. This decision is at the discretion and coordination of patient care team and blood bank senior tech or charge person to ensure that blood are handled appropriately at the receiving end.
 - 2. Issue remainder of MTP pack through the PTS for products that were not ready when the MTP pack was picked up.
 - a. Thawed FFP/CRYO can be sent via PTS for care team to place inside the MTP cooler

- d. Additional MTP Packs
 - i. Allocate and issue applicable blood products using function Em_Issue
 - ii. Dispense applicable blood products, see (Section 2.c)

- e. Continuous MTP / Stay-ahead MTP
 - i. Condition to switch from Rh NEG to Rh POS:
 - 1. After 2 MTPs and bleeding continues
 - 2. When O NEG RBCs inventory is at/below five (5) and bleeding continues

 - *** Blood Bank staff must notify the care team prior to switching the Rh of RBCs*****

 - ii. BBMD notification:
 - 1. It is the discretion of senior tech or designee to directly alert attending for continuous activations during off-shift
 - iii. BBMD can be notified in the following format:
 - 1. Type of MTP/Gender and Age/Situation
 - 2. Examples:
 - a. Continuous MTP/Female \leq 55/No more O NEG RBCs
 - b. Continuous MTP/Male $>$ 15/Rh NEG
 - iv. BBMD will only call back if deemed necessary

- f. MTP Point Person
 - i. Upon notification of an MTP activation, the Blood Bank Staff becomes the designated point person
 - ii. Coordination of the MTP activation role is based on situation; may not be needed for single MTP
 - iii. The point person MUST
 - 1. Be actively involved during a continuous MTP
 - 2. Take over the coordination of problem resolutions that surfaced during an activated MTP
 - iv. The point person's role includes, but not limited to, the following:
 - 1. Maintain communication between the clinical care service team, the BBMD, and BB Staff(s)
 - 2. Direct and coordinate dispensing of MTP packs and preparation of additional blood products
 - 3. Delegation of replacement MTP packs. Direct and coordinate inventory maintenance of thawed plasma, and STAT blood product orders when necessary
 - 4. Direct and coordinate cooler/frozen gel pack/refrigerated gel pack maintenance
 - 5. Assist with MTP pack preparation as needed

- g. For consecutive MTP
 - i. Use Em_Issue function to continue allocation and issue until MTP is deactivated
 - 1. NEVER use function Select and Issue during an MTP
 - 2. Type specific blood products may be use as soon as blood type is determined two times via:
 - a. Historical blood type
 - b. Second sample confirmation

- h. Post – MTP/EREL Product Reconciliation

NOTE: When performing allocation and issue using Em_Issue, be sure to use the real time documented on the [Proc.#4840-BB-412.1F].

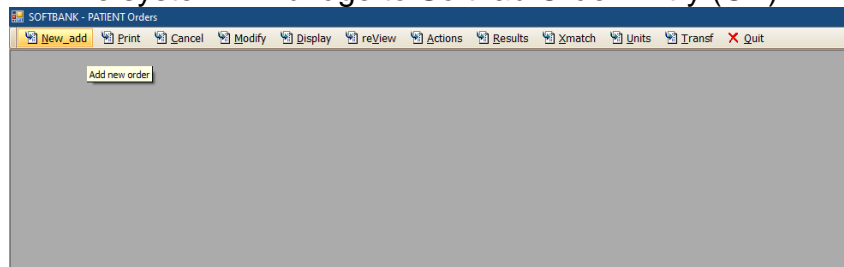
- i. Attach the Unit Transfer Invoice to [Proc.#4840-BB-412.1F].
 - ii. Perform patient-product reconciliation using SoftBank function – Emergency Issue (Em-Issue) as soon as:
 - 1. Product is dispensed from BB
- i. Post – Patient Testing Reconciliation
 - i. Result Type and Screen according to [Proc.#4840-BB-101]
 - ii. Request and result ABO2 according to [Proc.#4840-BB-109]
 - iii. For patient with negative antibody screen, the immediate spin crossmatch test(s) can be cancelled with reason – patient eligible for electronic crossmatch
 - iv. For patient with positive antibody screen:
 - 1. Notify BBST immediately for advice
 - 2. Perform antibody workup according to [Proc.#4840-BB-2006]
 - 3. Retrieve segments of the transfused units
 - 4. Depending on BBST decision:
 - a. Perform antigen typing and/or IgG crossmatch of the transfused units with patient’s plasma based on the method used for antibody rule out
 - b. Prepare compatible units as needed
 - v. If no specimen received:
 - 1. Ensure that all units have been issued using Em_Issue function
 - 2. Result ABO as NOT TESTED, enter comment – “Patient deceased/discharged, specimen not received for testing”

3. Handling of EREL Activation

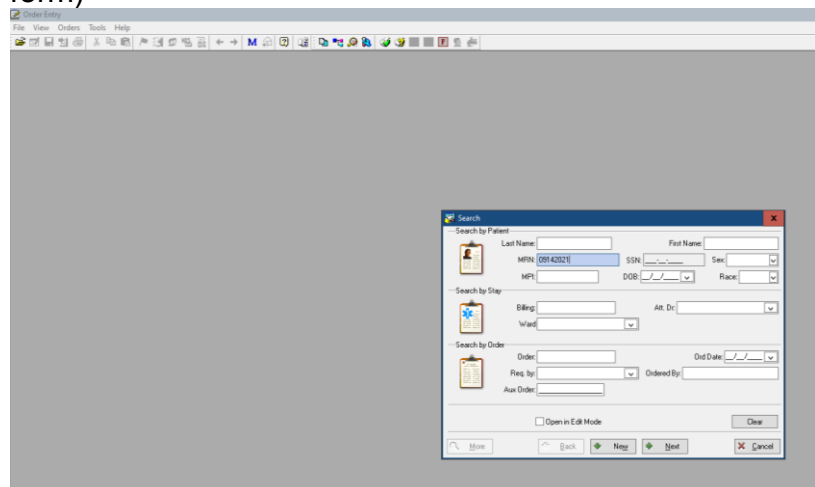
a. EREL Activation:

- i. Either by an activation call from the care team or by a runner showing up at the Blood Bank asking for blood products.
- ii. Upon receipt of MTP activation phone call, blood bank staff shall,
 1. Obtain a blank **MTP and EREL Phone Activation Form [PROC.#4840-BB-412.1F]**
 2. Record the MRN on the form as it's provided by the person on the phone
 3. Log on to SoftBank > Patient > Orders > New_add

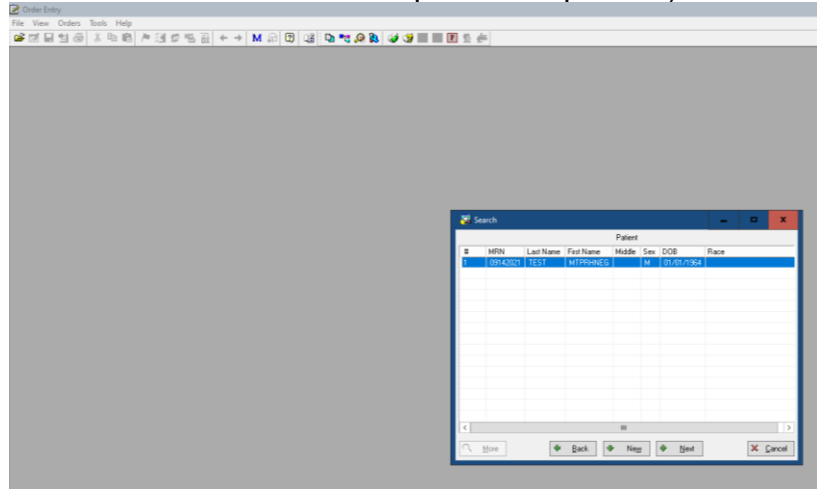
➤ The system will bridge to SoftLab Order Entry (OE).



- a. Type in patient MRN as provided by care giver on the phone (**WRITE down MRN** on the phone activation form)

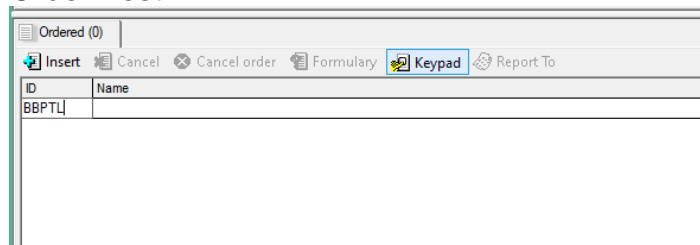


- b. Verify the patient's name, age and gender as displayed on LIS screen with caller/care giver (once these information are verified, they can be transcribed to the form **AFTER** the MTP pack is dispensed)



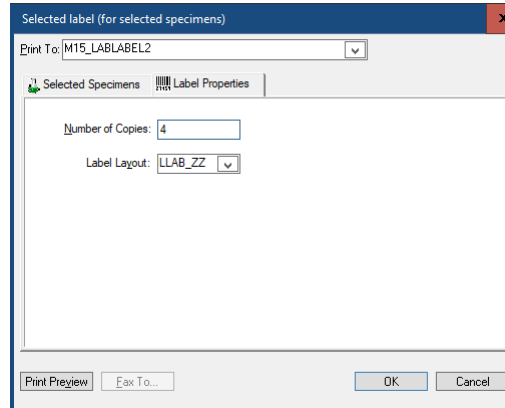
- c. Do not exist OE screen
- d. With the care giver still on the phone,
- i. Obtain activation location and call back number
 - ii. Complete all other fields on the "Patient & Order info" section as needed
 - iii. Check off type as requested
 - EREL
 - # of RBC
 - # of FFP
 - # of PLT
 - # of CRYO
 - iv. Request care giver to send a runner (if not already sent)

4. Immediately upon completion of the phone call,
- a. Click add new order
 - b. Order Test ID: BBPTL



- c. Save the order – the system will prompt to print labels

- d. Enter the number of labels to print:
 - i. EREL - # of product requested + 2



- e. Attach one (1) accession label to the box PRINT& AFFIX PATIENT LABEL HERE on the [Proc.#4840-BB-412.1F]
 - f. Attach one (1) accession label on the cooler label slip
 - g. Time stamp the activation time at the end of the call (upper right of the [Proc.#4840-BB-412.1F])
 - h. Announce MTP and notify the BB senior tech/tech in charge
- b. EREL Preparation and Issue:
 - i. Obtain the pre-made EREL units (RBCs/FFPs/PLT) from designated shelf
 - ii. Retrieve the **Unit Transfer Invoice** printouts (RBCs, FFPs, and PLT) containing all the units DIN barcodes
 - iii. Staple the pre-made location change printouts to the back of the activation form [Proc.#4840-BB-412.1F] with patient information
 - iv. Attach one (1) accession to each blood products
 - v. Proceed with packing the EREL cooler. See [Proc.#4840-BB-418] – Emergency Release Cooler.
 - c. EREL Dispensation:
 - i. If the EREL unit(s) is ready and runner has not arrived, CALL the care team listed on the activation form [Proc.#4840-BB-412.1F] to inform the care team that the cooler is ready for pick up.

- ii. EREL cooler to Runner:
 - 1. Runner should provide at least two (2) pieces of patient information (Patient's full name, MRN, or CSN#), which can be in the form of:
 - a. Patient demographic sticker
 - b. Patient's EPIC printout
 - c. Handwritten document by runner from verbal confirmation over the phone with patient care staff
 - d. Any other form of identification that can provide a link between the patient and the blood products in the cooler (**Document**)
 - 2. Attach the patient demographic sticker or manually record patient ID on the [Proc.#4840-BB-412.1F] (back / bottom of EREL column) along with runner's initials (front / issuing info – date/time) at the time of cooler pick up
 - 3. Document issuing information in the corresponding boxes of the MTP pack – cooler# and pack time, visual inspection, issued to and tech ID on the bottom of the [Proc.#4840-BB-412.1F]
 - 4. Time stamp the corresponding box of the EREL on the bottom left of the [Proc.#4840-BB-412.1F] for EREL DISPENSE / PICK UP
 - 5. If the runner arrives to pick up blood without a prior activation call, activate the EREL in blood bank.
 - a. For new EREL: Follow (section 3.a) above
 - b. For existing EREL, ask the runner to call the activating location to confirm another EREL
 - i. Edit product number and use next row/column available on form [Proc.#4840-BB-412.1F]
- iii. Blood Products via Pneumatic Tube System (PTS)
 - 1. EREL products should can be sent through PTS as a last resort when it is not all possible for the patient care unit to procure a runner. This decision is at the discretion and coordination of patient care team and blood bank senior tech or charge person to ensure that blood are handled appropriately at the receiving end.
 - 2. Issue EREL products through the PTS when the EREL unit(s) was not picked up in a cooler.
 - a. Be sure to notify care team all unused products via PTS must be returned within thirty (30) minutes from time of dispense.



- d. Additional EREL
 - i. Allocate and issue applicable blood products using function Em_Issue
 - ii. Dispense applicable blood products, see (Section 3.c)
 - e. Switching from EREL to MTP:
 - i. Same form can be used
 - 1. Update information
 - 2. Continue MTP process, see (Section 2)
 - f. Post – EREL Product Reconciliation, see (Section 2.h)
 - g. Post – EREL Patient Testing Reconciliation, see (Section 2.i)
4. Downtime tags for transfused units should be kept in the patient's paper chart.
5. Filing:
- a. All completed MTP/EREL documents should be placed in senior tech mailbox for review.
 - b. All reviewed MTP/EREL documents should be retained for 10 years.

RELATED DOCUMENTS:

- 1. PROC.#4840-BB-100 (Sample Requirements, Ordering Blood and Other Components)
- 2. PROC.#4840-BB-101 (Type and Screen)
- 3. PROC.#4840-BB-109 (Pre-Transfusion ABO/RhD Verification)
- 4. PROC.#4840-BB-308 (Compatibility Testing)
- 5. PROC.#4840-BB-403 (Blood Dispatch to outside locations)
- 6. PROC.#4840-BB-412.1F (MTP or Emergency Release Phone Activation Form)
- 7. PROC.#4840-BB-412.2F (Emergency Release Authorization Form)
- 8. PROC.#4840-BB-415 (MaxPlus MTP Cooler 2.0)
- 9. PROC.#4840-BB-415.1F (MaxPlus MTP Cooler 2.0 Packing Slip)
- 10. PROC.#4840-BB-415.2F (Cooler Location Form)
- 11. PROC.#4840-BB-416 (Blood Products Transfer)
- 12. Proc.#4840-BB-2006 (Positive Antibody Workup)

REFERENCES:

- 1. AABB, Standards for Blood Banks and Transfusion Services, *current edition*
- 2. AABB, Technical Manual, *current edition*

JOB AID:

- 1. PROC.#4840-BB-412.1JA (Emergency Blood Products Compatibility Table)
- 2. PROC.#4840-BB-415.1JA (MaxPlus MTP Cooler 2.0 Packing Guide)