Wake Forest Baptist Medical Center	**Emerge Fridges Daily Maintenance – ED and L&D** BB.R.1039.4	**Dept:**	**324311**
		Dept Name	**Blood Bank**
		Effective Date:	**12/5/13**
		Revised Date:	**3/31/2020**
Name & Title: CLIA Laboratory Medical Director		**Contact:**	**Julie Simmons/ Christina Warren**
Signature: G. Pomper		**Date:**	**7/23/19**

1. General Procedure Statement:

A. Purpose: The ED Emerge Fridges in Adult and Pediatric ED and Labor and Delivery are maintained daily to reconcile units, restock, check unit appearance and check temperatures. The recorder chart is changed weekly. MTP Packs are prepared (using the BloodTrack Manager® Software) to dispense multiple units of universally-compatible blood products in a single transaction.

B. Responsible Department/Scope:

Procedure owner/Implementer: Julie H. Simmons/Christina S. Warren
Procedure prepared by: Julie Simmons
Who performs procedure: Department staff/management

C. Definitions:

Emerge: Courier software for emergent release of blood (uncrossmatched)
Courier: Software for release of both crossmatched and uncrossmatched blood
Kiosk: Monitor to interact with Blood Track Manager and refrigerator
Blood Track Manager: Software within Blood Bank to manage inventory within Emerge fridges and print reports associated with transactions.
MTP Packs: New functionality: A pack can be created to represent what is in a cooler.
"Packs": MTP Pack will be (2) O Positive whole blood.
'Packs' will be physically placed in properly prepared large red MaxQ cooler and can remain at 1 to 6C for up to seven (7) days. If removed for use – the 'Pack' should be used within 5 hours and then returned to Blood Bank.

MOH: Massive Obstetrical Hemorrhage
MTP: Massive Transfusion Protocol
L&D: Labor and Delivery
LND: Abbreviation displayed on Blood Track
SCC: Soft Computer System, Blood Bank computer system
Activate Out: Blood Track manager computer function to put blood into 'stock' refrigerator
Putting In: Blood Track Courier computer function to place blood into specific refrigerator location.

D. Sections:

I. Printing Reports (Inventory History) to Determine Products Needed for Restock
II. Removing Units from "Return Drawer" and Fridge
III. Appearance Check
IV. Reconcile Return Shelf
Missing units, Spiked, Unit Returned <20 minutes, Unit returned >20 min,
Unit assigned but not transfused, Abnormal appearance, Unit Expired
V. Temperatures
VI. Install and Change Chart Paper for ED Emerge Fridges
VII. Miscellaneous Tasks for Kiosk
VIII. MTP packs

E. Protocol

1.0 MTP 'Packs' will be created and stored in the large red MaxQ coolers within the Adult ED Fridge on designated shelves.

2.0 The large red Max Q cooler has been validated to maintain a temperature of 1 to 6C for seven (7) days when packed correctly.

Refer to *Blood Coolers Protocol;BB.Protocol.1026*

3.0 Three frozen MaxQ ice bricks **MUST** be conditioned in the refrigerator at 1 to 6 C for 24 to 48 hours before packing MTP Pack coolers. Failure to do this will result in the temperature dropping below 1C during storage.

4.0 MTP Packs consist of two (2) blood products: 2 Group O positive whole blood.

5.0 Blood inspection will be completed on days that the fridges are physically stocked.

6.0 The temperature can be obtained by calling the unit and requesting that the digital temperature be read by nursing. The temperature will be obtained from the Rees. Both of these temperatures will be recorded on these days and NA will be recorded for Chart.

7.0 It is important to check the chart when physically going to the fridge to ensure it is on the correct day/time and there are no unexplained spikes.

2. Procedure: I. Printing Reports (Inventory History) to Determine Products Needed for Restock

Chemical Risk Assessment: none
Biological Risk Assessment: low
Protective Equipment: lab coat, gloves
Supplies: N/A
Reagents: N/A
Equipment: N/A
Specimen Requirements: N/A

<table>
<tr><th>STEP</th><th>INSTRUCTIONS</th><th>CHANGE / APPROVAL</th></tr>
<tr><td>1.0</td><td>Enter Blood Track Manager to generate reports to manage inventory.</td><td></td></tr>
<tr><td>2.0</td><td>Generate the Inventory Report to see available inventory.
<table>
<tr><th>Function</th><th>Do</th><th>Comments</th></tr>
<tr><td>Reports</td><td>Click Report (left side of screen.)</td><td></td></tr>
<tr><td rowspan="6">INVENTORY</td><td>Select Inventory

Click “Generate” (bottom of screen)</td><td>Highlight the inventory report row.</td></tr>
<tr><td>Select location for report from drop down of “Inventory Report for”

Click “Generate”</td><td>Drop down choices are:
All Locations (Default)

Adult-Fridge
Peds-Fridge
L&D-Fridge
Stock Fridge</td></tr>
<tr><td>Inventory will display for location selected</td><td></td></tr>
<tr><td>Click “Print”</td><td>Inventory will print</td></tr>
<tr><td>To escape inventory report, click “Back” to reach home screen</td><td></td></tr>
</table>
2.1 Generate the Inventory Report for each fridge (Adult, Peds and L&D) for reconciliation of fridges each day and post on Inventory Clipboard.

2.2 Check fridges on monitor to make sure all units are moved into fridges.

2.3 Blood units will remain in inventory in SCC system.</td><td></td></tr>
</table>

<table>
<tr><th>STEP</th><th>INSTRUCTIONS</th><th>CHANGE / APPROVAL</th></tr>
<tr><td>3.0</td><td>Determine available inventory from “Inventory” report and number of units needed for restock.

Blood Product Inventory Levels in ED Adult, ED PEDS and L&D
<table>
<tr><td></td><td colspan="2">Packed Cells</td><td>Whole Blood</td><td colspan="2">Plasma</td><td rowspan="2">MTP packs</td></tr>
<tr><td>Location</td><td>O positive</td><td>O negative</td><td>O positive</td><td>A</td><td>AB</td></tr>
<tr><td>ED Peds</td><td>0</td><td>2</td><td>0</td><td>0</td><td>1**</td><td>0</td></tr>
<tr><td>ED Adult</td><td>8</td><td>6</td><td>4 to 6</td><td>4</td><td>0</td><td>2</td></tr>
<tr><td>LND</td><td>0</td><td>4</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table>
** Must be thawed plasma. Do NOT use liquid in L&D or PEDS.

3.1 Check for expiration dates on inventory report.
3.2 Subtract from available inventory units expiring:
a. Red Cell in next 10 days
b. Plasma next day
3.3 MTP packs will expire 7 days from the date prepared.</td><td></td></tr>
<tr><td>4.0</td><td>Determine appropriate number of blood products of each type needed to replenish inventory based on step 3.
4.1 Condition cooler(s) needed for inventory delivery and returns from ED and L&D refrigerators.
a. Credo cooler will hold up to 12 products for delivery to ED.
b. Credo cooler when emptied can be used to return any products from ED.
c. MaxQ coolers may also be used.
4.2 Pull number of units of one group at a time from inventory in Blood Bank.
4.3 For MTP packs see section VIII: MTP packs</td><td></td></tr>
<tr><td>5.0</td><td>Using Blood Track Manager, Activate Out each unit.
5.1 Refer to: Activate Out in Blood Track Manager
5.2 For MTP pack blood track steps Refer to: Blood Cooler Protocol; BB.Protocol.1026</td><td></td></tr>
<tr><td>6.0</td><td>Place units in appropriate conditioned cooler(s) to take to ED and/or L&D.</td><td></td></tr>
</table>

2. Procedure: II. Removing units from "Return Drawer" and Fridge.

Chemical Risk Assessment: none
Biological Risk Assessment: low
Protective Equipment: lab coat, gloves
Supplies: N/A
Reagents: N/A
Equipment: Conditioned Cooler(s), Cart
Specimen Requirements: N/A

STEP	INSTRUCTIONS	CHANGE / APPROVAL
1.0	**Scan employee bar code at Hema Emerge kiosk.** 1.1 Scan employee bar code as first option, but may select manual log in and type in employee number if bar code fails to work. a. Investigate failed bar code upon return to Blood Bank.	
2.0	**Select "Taking Out" and follow the prompts.**	
3.0	**Select "Bulk Move" when screen appears.**	
4.0	**Open the door.**	
5.0	**Perform Daily Inspection of Blood.** *Refer to Protocol: Visual Inspection of Blood and Blood Products.*	
6.0	**Pull any units that need to be returned due to expiration date and units from the "return drawer".** 6.1 Check each drawer to make sure each contains appropriate group/type and type of product. a. MTP Pack Coolers are less than 7 days old b. Group O pos drawer contains Group O pos packed cells/Whole Blood. c. Group O neg/A or AB plasma drawer contains O negative packed cells and A or AB pos plasma in appropriate designated area of drawer. 6.2 Check each unit for acceptability to remain in drawer: a. Indate b. Intact labels c. Uncrossmatched Blood sticker d. Appearance acceptable **NOTE:** MTP packs should never be returned to the fridge. If a pack is returned to the fridge quarantine units and write QS for management to review.	

STEP	INSTRUCTIONS	CHANGE / APPROVAL
7.0	**Scan each unit.** 7.1 Do NOT scan units that were placed in the return drawer. These have to be reconciled when brought back to Blood Bank. 7.2 Place units from "return drawer" in ziplock bag labeled "Return Drawer" and place in Cooler for Returns. 7.3 Place any other units being returned into cooler for returns.	
8.0	**Proceed to adding inventory to refrigerators.** *Refer to: Putting in units at fridge (Tech).*	
9.0	**Return to Blood Bank with appropriate coolers.**	

2. Procedure: III Appearance Check of Units in Emerge Fridges

Chemical Risk Assessment: none
Biological Risk Assessment: low
Protective Equipment: lab coat, gloves
Supplies: N/A
Reagents: N/A
Equipment: Conditioned Cooler(s), Cart
Specimen Requirements: N/A

<table>
<tr><th>STEP</th><th>INSTRUCTIONS</th><th>CHANGE / APPROVAL</th></tr>
<tr><td>1.0</td><td>Perform blood inspection during restock or reconciliation of “return drawer” when refrigerator door has been opened.

1.1 Inspect the three drawers to make sure correct blood product and type are on the shelf.
1.2 Shelves are labeled with:

<table>
<tr><th colspan="2">PEDS ED</th><th colspan="2">ADULT ED</th><th colspan="2">L&D</th></tr>
<tr><td>Shelf</td><td>Blood Product/ Type</td><td>Shelf</td><td>Blood Product/ Type</td><td>Shelf</td><td>Blood Product/ Type</td></tr>
<tr><td>Top</td><td></td><td>Top</td><td>MTP Pack Cooler/ O pos whole blood</td><td>Top</td><td></td></tr>
<tr><td>2nd</td><td>O neg/A or AB plasma</td><td>2nd</td><td>MTP Pack Cooler/ O pos whole blood</td><td>2nd</td><td>O neg/A plasma</td></tr>
<tr><td>3rd</td><td>Returns</td><td>3rd</td><td>O pos packed cells</td><td>3rd</td><td>Returns</td></tr>
<tr><td></td><td></td><td>4th</td><td>O neg/A or AB plasma</td><td>4th</td><td></td></tr>
<tr><td></td><td></td><td>5th</td><td>Returns</td><td>5th</td><td></td></tr>
</table>

1.3 Do not open MTP packs. Review the Prepare date/time on tag outside of cooler to determine if at 7 days and needs to be returned to BB</td><td></td></tr>
<tr><td>2.0</td><td>Inspect blood products on each of the shelves in ED Adult, ED Peds and L&D for appearance.

2.1 Document appearance check on Emerge Daily Activity form by checking.

Refer to Front Desk: Blood and Blood Products: Storage, Transport, Transfer, Return and Reissue.
Refer to Protocol: Visual Inspection of Blood and Blood Products.</td><td></td></tr>
</table>

2. Procedure: IV. Returning Units to Blood Bank and Reconciling "Return Drawer"

Chemical Risk Assessment: none
Biological Risk Assessment: low
Protective Equipment: lab coat, gloves
Supplies: N/A
Reagents: N/A
Equipment: Conditioned Cooler(s), Cart
Specimen Requirements: N/A

<table>
<tr><th>STEP</th><th>INSTRUCTIONS</th><th>CHANGE / APPROVAL</th></tr>
<tr><td>1.0</td><td>Determine the reports needed to reconcile products from "return" drawer.

Reports Available to Reconcile Inventory and Products in "Return" Drawer
<table>
<tr><th>Report</th><th>Description</th></tr>
<tr><td>Patient History</td><td>All transactions for the specified patient. Can be filtered by date range. Can search by CSN number.</td></tr>
<tr><td>Unit Expiration</td><td>All units that have expired or will expire within the specified number of days.</td></tr>
<tr><td>Unit History</td><td>All transactions for a specified unit. Can be filtered by date range.</td></tr>
<tr><td>Location History</td><td>All transactions completed within the specified physical location of the site. Defaults to the last 7 days. Can also generate for specific date range.</td></tr>
<tr><td>Storage History</td><td>All transactions completed at the specified storage location. Defaults to transactions in last 7days. Can also generate for specific date range.</td></tr>
<tr><td>Inventory</td><td>Current inventory for the specified storage location.</td></tr>
<tr><td>No Scan</td><td>Situations where a user logged in, the door was unlocked but a unit was not scanned. Defaults to transactions for the last 7 days. Reports can be generated for a specific date.</td></tr>
<tr><td>Emergency Blood History</td><td>All units removed via the Emergency Blood function. Defaults to transactions completed yesterday. Can generate for a specific date range.</td></tr>
</table></td><td></td></tr>
<tr><td>2.0</td><td>Generate the appropriate report.
<table>
<tr><th>Blood Track Manager</th><th>Do</th><th>Comments</th></tr>
<tr><td>Select Reports</td><td>Double click on report or click "generate" to run report.</td><td>Change date range if necessary. Enter information from prompts as needed for each specific report.</td></tr>
<tr><td>Cancel Reports
Or Return to Previous Screen.</td><td>Click "back"</td><td>Blood Track Manager will stop generating reports.</td></tr>
</table></td><td></td></tr>
</table>

<table>
<tr><th>STEP</th><th>INSTRUCTIONS</th><th>CHANGE / APPROVAL</th></tr>
<tr><td>3.0</td><td>Determine which units need to be Return to stock (brought back from Emerge Fridges).

3.1 This should be majority of units as the initial transaction.</td><td></td></tr>
<tr><td>4.0</td><td>Log into Blood Track Manager.

4.1 Click Transaction.
4.2 Click Return Stock.
a. Scan unit (s).

<table>
<tr><th>Situation</th><th>Transaction</th><th>Comments</th></tr>
<tr><td>Missing units</td><td>Requires Investigation</td><td>Unit may have been removed without scanning. Check “No Scan” report to see if someone opened the fridge but no unit was removed. Complete QA and RL6 for missing unit. Update unit in Blood Track and SCC when final disposition is known.</td></tr>
<tr><td>Spiked</td><td>Return Stock</td><td>Complete QA and RL6 for spiked unit. Update unit in Blood Track and discard unit in SCC for final disposition.</td></tr>
<tr><td>Unit Returned <20 minutes</td><td>Return Stock</td><td>May be returned to appropriate shelf in fridge OR if returned to Blood Bank, Return to Stock in Blood Track Manager.</td></tr>
<tr><td>Unit returned >20 min</td><td>Return Stock</td><td>Complete QA and RL6 for wasted unit. Update unit in Blood Track and discard unit in SCC for final disposition.</td></tr>
<tr><td>Unit assigned but not transfused</td><td>Return Stock</td><td>Determine if returned > or < 20 minutes and follow specific instructions above.</td></tr>
<tr><td>Abnormal appearance</td><td>Return Stock</td><td>Complete QA and RL6 for abnormal appearance. Update unit in Blood Track and discard unit in SCC for final disposition. Check with blood supplier for credit.</td></tr>
<tr><td>Unit Expired</td><td>Return Stock</td><td>Investigate how unit expired. Write up details in QA. Update unit in Blood Track and discard unit in SCC for final disposition.</td></tr>
</table>
</td><td></td></tr>
</table>

STEP	INSTRUCTIONS	CHANGE / APPROVAL
5.0	**Complete a QA and RL6 on any problem detected below:** • **Units not stored in appropriate location** • **Any non Group O packed red blood cell** • **Anything stored in fridge that is not appropriate (food, drinks, etc.)** • **Any units wasted in fridge.** • **Any MTP pack returned to fridge by nursing instead of taking to BB.**	
6.0	**Ensure all units are updated in Blood Track Manager.**	
7.0	**Post Inventory Report for each fridge to Inventory clipboard.**	

2. Procedure: V: Temperatures

Chemical Risk Assessment: none

Biological Risk Assessment: low

Protective Equipment: lab coat, gloves

Supplies: N/A

Reagents: N/A

Equipment: Conditioned Cooler(s), Cart

Specimen Requirements: N/A

STEP	INSTRUCTIONS	CHANGE / APPROVAL
1.0	**Record the temperature from the DataLogger, Helmer Display and Chart on Chart recorder when physically present at the fridge on the Emerge Daily and Weekly Tasks Form.** 1.1 Check chart recorder to make sure marking correct day, time and temperature. a. Adjust chart recorder if needed and document on chart correction made. b. Initial Chart check section on Emerge Daily and Weekly Tasks form.	
2.0	**Verify that the temperatures are within the appropriate range of each other (within 1.5C).**	
3.0	**Verify that the Rees temperature is within the appropriate range of the temperatures obtained in step 1 when return to Blood Bank on Wednesday.** 3.1 Notify management of any issues. *Refer to: Equipment Operations: Rees Alarm System*	

2. Procedure: VI: Install and Change Chart Paper for Emerge Fridges

Chemical Risk Assessment: none

Biological Risk Assessment: low

Protective Equipment: lab coat, gloves

Supplies: Refrigerator Chart

Reagents: N/A

Equipment: Conditioned Cooler(s), Cart

Specimen Requirements: N/A

STEP	INSTRUCTIONS	CHANGE / APPROVAL
1.0	**Change the chart weekly in each of the Chart Recorders for the Emerge Fridges in ED Adult, ED Peds and L&D.** **NOTE: The below are general guidelines. Refer to the actual unit instructions after removal of chart paper.** 1.1 Press and hold "C" button. a. When stylus begins to move left, release button. b. The LED flashes to indicate current temperature range. 1.2 Remove the chart knob (when stylus stops moving) and move knob up and away from chart paper. 1.3 Remove the current chart paper and set aside. a. Complete information in stamp on reverse side of chart. i. Date/Time Out and Initials 1.4 Stamp the back of the new chart paper. a. Record date/time installed and initials. b. Make sure Fridge is identified on chart. 1.5 Place new chart paper on chart recorder. 1.6 Lift stylus (gently) and rotate paper so current time line corresponds to time line groove. 1.7 Hold chart paper and reinstall chart knob. a. Ensure that the current date/time is aligned with time line groove when chart knob is tightened. b. Do not over tighten knob. 1.8 Confirm the temperature range is set to the correct value. 1.9 Press and hold "C" button. a. Release the button when the stylus begins to move right. b. Confirm the stylus is marking the temperature correctly. 1.10 Adjust temperature if needed by pressing and holding arrow buttons until stylus reaches correct temperature.	

2. Procedure: VII: Miscellaneous Tasks for Kiosks

Chemical Risk Assessment: none
Biological Risk Assessment: low
Protective Equipment: lab coat, gloves
Supplies: N/A
Reagents: N/A
Equipment: Conditioned Cooler(s), Cart
Specimen Requirements: N/A

STEP	INSTRUCTIONS	CHANGE / APPROVAL
1.0	**Wipe area surrounding kiosk with cloth.** 1.1 Clean the monitor screen with monitor wipe. 1.2 Remove any areas not related to fridge.	
2.0	**Check the lock box at PEDs kiosk monthly to make sure key is inside and box is locked.**	
3.0	**Check downtime sheets at each kiosk for any transactions and resolve.** 3.1 Restock with forms.	

2. Procedure: VIII: MTP Packs- Daily

Chemical Risk Assessment: none
Biological Risk Assessment: low
Protective Equipment: lab coat, gloves
Supplies: N/A
Reagents: N/A
Equipment: Conditioned Cooler(s), Cart
Specimen Requirements: N/A

STEP	INSTRUCTIONS	CHANGE / APPROVAL
1.0	**Remove a set (3) of frozen (frozen at least 24 hours) MaxQ bricks.** 1.1 Time stamp the cooler prep flag. 1.2 Place in the refrigerator for 24 to 48 hours to precondition. **NOTE: Conditioning of frozen bricks by placing in the refrigerator for 24 to 48 hours is critical. If frozen bricks are placed directly in the cooler and it is placed in the refrigerator, the cooler may drop below 1C.**	
2.0	**Check bricks currently being conditioned.** 2.1 If the bricks have been in the fridge ≥48 hrs, refreeze them. 2.2 If the bricks are ready to use (refrigerated 24-48 hrs) proceed to next step, 3.0	
3.0	**Determine if MTP pack is needed in Adult ED** 3.1 For amount of packs needed to restock refer to Step 3.0 in *section I. Printing Reports (Inventory History) to Determine Products Needed for Restock.* 3.2 If needed, then setup new MTP pack(s) using bricks from step 2.0. 3.3 If packs are needed and the bricks in step 2.0 are not ready for use a canvas (Air Care) cooler can be substituted. Refer to *Blood Coolers Protocols*	
4.0	**Gather the following blood products and apply Safe-T-Vues per procedure:** 4.1 Group **O positive** whole blood- 2 units per MTP pack to be prepared a. Units must have at least 7 days left before it expires 4.2 Verify that the Safe-T-Vues were not accidentally turned red. They should be mostly white. a. Return to refrigerator if necessary to keep products at 1 to 6C. b. Complete this quickly. It only takes 20 minutes for the units to get >6C.	
5.0	**Refer to *Blood Coolers Protocols* for details on packing MTP coolers and creating in Blood Track Manager**	

3. Review/Revised/implemented:

All protocols must be reviewed according to document control protocol.
All new protocols that have major revisions must be signed by the CLIA Director.
All reviewed protocols with minor revisions can be signed by the designated section medical Director or designee.

4. Related Policies/Procedures:

Routine: Activate Out in Blood Track Manager
Routine: Putting in Units at Fridge (Tech)
Training: ED Emerge Daily Maintenance
Protocol: Blood Coolers Protocols

5. References

Roback, John D. et al. *TECHNICAL MANUAL*. Bethesda, MD: American Association of Blood Banks, updated periodically.

6. Attachments:

Attachment 1: Emerge Daily and Weekly Tasks form BB.FORMS.4039
Attachment 2: Copy of completed chart.

7. Revised/Reviewed Dates and Signatures:

See Archived Document Change Control