

	ECMO Protocol, Blood Bank B.B. Protocol.1042.5	Dept:	324311
		Dept Name:	Blood Bank
		Effective Date:	11/1995
		Revised Date:	4/30/2020
Name and Title: CLIA Laboratory Medical Director		Contact:	Julie H.Simmons
Signature:		Date:	

1) General Policy Statement:

It is the policy of Wake Forest Baptist Medical Center to provide the appropriate blood product to the ECMO patient. Extracorporeal Membrane Oxygenation (ECMO) is accomplished by using an ECMO pump (a modified heart-lung machine) which permits oxygenation of blood while bypassing the lungs. The usual length of ECMO is 5-7 days. The most common reason is due to respiratory failure. Blood Bank will support the ECMO patient by providing the appropriate blood product in a timely manner.

2) Responsible Department/Scope:

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

3) Definitions: For purposes of this Policy, the following terms and definitions apply:

- a) **WFBMC:** Wake Forest Baptist Medical Center and all affiliated organizations including Wake Forest University Health Sciences (WFUHS), North Carolina Baptist Hospital (NCBH), all on-site subsidiaries as well as those off-site governed by WFBMC policies and procedures.
- b) **Policy:** As defined in the Policy on Creating and Amending Policy, a statement of principle that is developed for the purpose of guiding decisions and activities related to governance, administration, or management of care, treatment, services or other activities of WFBMC. A policy may help to ensure compliance with applicable laws and regulations, promote one or more of the missions of WFBMC, contain guidelines for governance, and set parameters within which faculty, staff, students, visitors and others are expected to operate.
- c) **ECMO:** Extracorporeal Membrane Oxygenation
- d) **CODE ECMO (Pediatric/Neonate):** URGENT Alert via beeper of the need for 2 freshest units (mannitol free, if available), Emergency Release in Blood Bank blood cooler.
- e) **Mannitol free:** CPDA and AS-3 anticoagulants do not contain mannitol.
- f) **CODE ECMO beeper:** Beeper assigned to Blood Bank to alert of CODE ECMO.

4) Policy Guidelines:

A. General Protocol

- 1.0 ECMO is an urgent procedure. There is a standard ECMO procedure for both adults (age 17 years or older) and pediatrics (age 16 years and younger) which should be completed as quickly as possible. There is also a CODE ECMO for immediate emergent need for pediatric patients (age 16 years and younger).
- 2.0 Document all ECMO patients on the ECMO board in Blood Bank located by lockers.
 - 2.1 Record patient name, medical record number, and date initiated.

B. CODE ECMO (NICU/PICU only)

- 1.0 *The initiation of CODE ECMO via the CODE ECMO beeper indicates an immediate emergent need for 2 units of the freshest O negative, mannitol free (CPDA-1 or AS-3 preferably) packed cells on a pediatric patient (age 16 years or younger).*
- 2.0 Notification will occur via CODE ECMO beeper and indicates that two units of packed cells needs to be pulled and prepared for immediate emergency release.
- 3.0 Beeper information should contain: Name, MRN, Age, and Location
 - 3.1 If unknown name, MRN, etc., issue units with any identifier known or leave blank if using O negative packed cells.
- 4.0 Units do NOT have to be washed or irradiated when the CODE ECMO is initiated.
- 5.0 Freshest Red cell units should be continually available on the ECMO shelf.
- 6.0 Criteria for ECMO red cells are either CPDA-1 ≤ 7 days old or AS-3 ≤ 10 days old.
- 7.0 Two units of ECMO red cells should be pulled from the ECMO shelf and prepared for emergency release in a GoldenHour blood cooler along with pedi filters.
- 8.0 Subsequent products will be ordered, as needed, after the initial emergency release.
- 9.0 When ECMO orders are placed in WakeOne the ECMO Protocol requisition will print in the Blood Bank at the front desk. This request form will include physician, location, date, and time.

C. Standard ECMO

- 1.0 *The initiation of the standard ECMO is urgent and staff must respond immediately. Washed cells for ECMO Prime should be ready in <45 minutes when requested.*
- 2.0 Blood Bank will be notified of possible ECMO setup. If the patient is in house and time permits, a sample will be drawn for crossmatch.
- 3.0 When the standard ECMO is definite (ECMO orders are placed), an ECMO Protocol requisition will print in the Blood Bank at the front desk. This request form will include physician, location, date, and time.
 - 3.1 Record the patient's name, medical record number, ABORh, Age, and Date initiated on the ECMO dry erase board by the lockers.
 - 3.2 Refer to [*Attachment A: ECMO Protocol requisition example*](#)

4.0 Blood Component Requirements for **Initiation** of standard ECMO for **pediatric patients** (age 16 years or younger):

4.1 Red Blood Cells:

- a. Select the freshest units of blood that are Rh compatible with the patient. Group O is acceptable for all patients. If there is no sample and the Rh is unknown, select O neg.
- b. Select and WASH the freshest possible leukoreduced packed red blood cells to use for priming ECMO. Units are to be washed unless otherwise directed by the ECMO attending or designee.
- c. Neonates (≤ 4 months of age) should get irradiated products.
- d. If the patient is NOT a neonate (>4 months to 16 years of age) and a blood bank sample is available, crossmatch the units but **DO NOT wash until notified** the patient is ready for ECMO.

Note: Component Prep function may need to be completed prior to allocation.

4.2 Platelets: Select and set aside a leukoreduced plateletpheresis that can be split for the patient. Platelets will be ordered by volume and should be prepared as soon as ordered. If there is a time constraint, prepare the blood first.

4.3 Plasma and Cryo: Plasma and/or cryo will be ordered by volume and should be prepared as soon as ordered. If there is a time constraint, prepare the blood first.

4.4 For Neonates: *irradiate blood and plateletpheresis.*

Refer to Components: [Irradiation of Blood and Blood Products](#)

5.0 Blood Component Requirements for **Initiation** of standard ECMO for **adult patients** (age 17 years or older):

5.1 Red Blood Cells:

- a. Select the freshest units of blood that are Group and Type specific with the patient if Group and Type is known. If there is no sample, select O neg.
- b. If a blood bank sample is available, crossmatch the units.
- c. Adults do not routinely need washed so verify orders as needed.

Note: Component Prep function may need to be completed prior to allocation.

5.2 Platelets: Will be ordered as needed.

5.3 Plasma and Cryo: Will be ordered as needed.

6.0 Blood Component Requirements **After Initiation** of ECMO:

6.1 For transfusions occurring after the initiation of ECMO, it is unnecessary to wash the red blood cells.

4) Review/Revised/Implemented:

All protocols must be reviewed according to the Document Change 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.

5) Related Protocols:

Irradiation of Blood and Blood Products, BB.COMP.1022

6) References:

NA

7) Attachments:

Attachment 1: ECMO Protocol requisition example

8) Revised/Reviewed Dates and Signatures:

See Document Change Control