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### **Continuous Extracorporeal Blood Therapy (CEBT) Formerly CRRT**

**Purpose:** To provide guidelines for the staff's role in the initiation and continuation of continuous renal replacement therapy.

To provide a more stable hemofiltration/dialysis technique to the unstable or septic patient in need of this therapy.

**Definition of terms:**

CAVH-Continuous arterial-venous hemofiltration  
CAVHD-Continuous arterial-venous hemodialysis  
CVVH-Continuous veno-venous hemofiltration  
CVVHD-Continuous veno-venous hemodialysis  
CVVHDF-Continuous veno-venous hemodiafiltration  
HVUF-High volume ultrafiltration  
SCUF-Slow continuous ultrafiltration  
TPE – Therapeutic Plasma Exchange (see plasma exchange policy)

**Policy:**

1. Only ECLS physicians perform patient management of CEBT.
2. The MICU staff/fellow shall be responsible for the determination of CEBT on medical patients in the ICU, shall obtain informed consent from the patient or appropriate family member and contact the ECLS physician on call. Patients not in the MICU needing CEBT are identified through the Critical Care Consult Service.
3. A credentialed ICU RN shall be responsible for the nursing aspects regarding initiation and maintenance of CEBT.
  - a. The credentialed RN has 1 year of ICU/nursing experience prior to credentialing. If the nurse is experienced he/she may be credentialed at 6 months with the approval of the CEBT director and ECLS coordinator.
  - b. Credentialing is performed on a yearly basis. If issues are noted prior to credentialing time in-services and updates are performed to educate RN's.
  - c. CEBT specialists are present as resources for the ICU staff. This nurse has at least 2 years of CEBT experience and undergone additional CEBT training.
4. The patient will have anticoagulants administered at the discretion of the ECLS physician.
5. Hourly intake and output shall be recorded.
6. A CEBT/MICU flow sheet shall be completed.
7. Dialysate fluid and additives shall be ordered by the ECLS physician, as well as infusion rates.
8. Blood flow rate and removal rates shall be ordered by the ECLS physician.
9. The arterial and venous tubing shall remain unclamped during CEBT.
10. The RN shall notify the ECLS physician if the tubing feels cool to touch, if the filter appears clotted, if changes in venous pressures, a decrease in ultrafiltration, or any other signs of CEBT circuit/filter compromise.
11. Distal pulses shall be monitored and documented every 4 hours.

**Responsible Parties:**

## MD

1. Cannulate arterial or venous sites.
2. Catheters are flushed to ensure patency
3. Primes arterial-venous tubing

## MD/RN

1. Primes veno-venous tubing
2. Observes and documents return of ultrafiltration.
3. Cleanse site with Hibiclens and place eye patch and transparent dressing. (If oozing present pressure dressing may be applied)

## Equipment/Supplies:

1. Anticoagulant continuous infusion if ordered
2. Calcium continuous infusion if using Sodium Citrate for anticoagulant
3. Replacement Solution
4. Dialysate

## CAVH/CAVHD

1. Hollow fiber arterial Hemofilter and tubing pack
2. Appropriate sized French catheters (this is decided by the physician) x 2 and introducer set up
3. OR minor pack, mask, cap, sterile gloves
4. Heparinized Normal Saline (2000units/L) Premixed

## CVVH/CVVH/CVVHDF/HVUF

1. Appropriate sized French catheter (this is decided by the physician)
2. Mask, Cap, Sterile gown and gloves
3. Venous Filter and tubing pack
4. Heparinized Normal Saline (2000units/L) Premixed
5. CEBT machine

**Procedure:**

## MD

1. Obtains informed consent from patient or family
2. Places catheters for CEBT

## ECLS physician

1. Writes orders for CEBT setup, desired anticoagulation, blood flow rates, removal rates, dialysis rates, and desired sliding scales.
2. Primes CEBT setup or ensures proper setup of qualified RN, also ensures desired rates are present on machine.
3. Connects patient to CEBT system and begins CEBT.

## CRRT Specialist

1. Informs ECLS physician if patient on CEBT is in need of new circuit set-up.
2. Primes subsequent set ups for CEBT once initial set-up for the patient has been completed by the ECLS physician.
3. Writes verbal orders as directed by ECLS physician.
4. Connects patient to CEBT system and begins CEBT.
5. Is clinical resource for ICU staff.
6. Provides in-services as needed for ICU staff.

#### RN/MD

1. Prepares priming solution and filter setup.
2. Prepares CEBT machine for setup.
3. Collects and prepares supplies for placement of access catheter.
4. Performs 4-minute chlorohexidine scrub to insertion site. (Betadine may be used only if patient allergic to chlorohexidine)
5. Documents procedure.
6. Changes catheter dressing when soiled or at least every 72 hours. Dressing is changed by cleaning site with chlorohexidine x 5 minutes then places eye patch and transparent dressing.
7. Documents changing of dressing on nursing flow sheet.
8. Updates family as needed regarding patient condition and treatment.

#### Added Comments:

1. The anticoagulant is infused pre-filter or post - filter.
2. The replacement fluid is infused pre-filter.
3. The head of the bed may be raised 30-45 degrees. (Catheters are flexible)
4. Heparin is titrated per ACT's
5. Sodium Citrate is used with coagulopathic patients.
6. Calcium infusion will be given to the patient away from the CEBT system. Ionized Ca will be obtained to monitor Calcium levels.
7. Any observation of filter or circuit clotting will be documented and a physician will be notified immediately.
8. Alarms will be monitored for continuously and dealt with as soon as possible.
9. After discontinuation of CEBT the machines are cleaned thoroughly with the proper disinfectant.
10. After discontinuation the circuit and filter is disposed of in a biohazard container (red bag) that are located in the dirty utility room.
11. Effluent bags are replaced as needed. The fluid is disposed of through a drain followed by bleach and the empty bag is placed in a biohazard container.

#### References:

1. Chulay, M. & Burns, S. (2006). AACN: Essentials of Critical Care Nursing.
2. Gambro Renal. Prisma operators manual.
3. Baxter Edwards Lifesciences. Aquarius operators manual.
4. Infection Control Guidelines IC 16
5. Wiegand, D & Carlson, K. (2005). AACN: Procedure Manual for Critical Care.