

Plasma Exchange & Liver Dialysis Therapy

Purpose: To provide guidelines for the staff's role in the initiation and continuation plasma exchange and liver dialysis therapy.

To provide plasma exchange for the patient with severe sepsis.

To provide liver support for the unstable patient with acute liver failure.

Policy:

1. Only ECLS physicians perform patient management for plasma exchange and liver dialysis.
2. The MICU staff/fellow shall be responsible for the determination of plasma exchange or liver dialysis on medical patients in the ICU, shall obtain informed consent for procedure and blood products from the patient or appropriate family member and contact the ECLS physician on call. Patients not in the MICU needing the procedure are identified through the Critical Care Consult Service.
3. A credentialed ICU RN shall be responsible for the nursing care of patients requiring plasma exchange or liver dialysis.
 - a. The credentialed RN is one who is credentialed in CEBT.
 - 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 Critical Care flow sheet shall be completed.
7. For plasma exchange, the ECLS physician will order the amount of fresh frozen plasma and albumin needed for the exchange.
8. The appropriate filter will be used for plasma exchange or liver dialysis.
9. Dialysate fluid and additives shall be ordered by the ECLS physician, as well as infusion rates, if needed.
10. Blood flow rate and removal rates shall be ordered by the ECLS physician.
11. The arterial and venous tubing shall remain unclamped during the procedure.
12. 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.
13. 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
4. Order and be the responsible transfusionist for the FFP.

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. Replacement Solution
3. Fresh Frozen Plasma
4. Albumin 5%
5. Dialysate

Plasma Exchange

1. 11.5 French Catheter and introducer setup
2. Mask, Cap, Sterile gown and gloves
3. Venous Filter and tubing pack
4. Heparinized Normal Saline (4000u/L) may need 4 liters of fluid to prime
5. Plasma exchange filter
6. CEBT machine

Liver Dialysis

1. 11.5 French Catheter and introducer setup
2. Mask, Cap, Sterile gown and gloves
3. Venous Filter and tubing pack
4. Heparinized Normal Saline (4000u/L) may need 4 liters of fluid to prime
5. Liver Dialysis filter (charcoal)
6. CEBT filter
7. CEBT machine x 2

Procedure:

MD

1. Obtains informed consent from patient or family
2. Places access catheter

ECLS physician

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

RN/MD

1. Prepares priming solution and filter setup.
2. Prepares machine for setup.
3. Sends lab specimen for type and match.
4. Orders needed amount of blood products from blood bank.
5. Collects and prepares supplies for placement of access catheter.
6. Performs 4-minute chlorohexidine scrub to insertion site. (Betadine may be used only if patient allergic to chlorohexidine)
7. For plasma exchange obtains fresh frozen plasma and verifies blood products with another licensed personnel.
8. Documents procedure.

Added Comments:

1. The anticoagulant is infused pre-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. Any observation of filter or circuit clotting will be documented and a physician will be notified immediately.
5. Alarms will be monitored for continuously and dealt with as soon as possible.
6. After procedure is complete the machines are cleaned thoroughly with the proper disinfectant.
7. After discontinuation the circuit and filter is disposed of in a biohazard container (red bag) that are located in the dirty utility room.
8. 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