	Document Scope: Departmental	
	Document Type: Clinical Practice Guideline Approved on 2019-08-10 Next Review Date: 2021-08-09	
	Therapeutic Plasma Exchange for the ABO Incompatible Liver Transplant Patient	Version: 2

This clinical practice guideline is departmental specific and applies only to activities within the Nephrology and Transplant programs. The group determined recommendations based on both the literature and the expert opinion of the Apheresis team at Cincinnati Childrens' Hospital.

Introduction

This Clinical Practice Guideline (CPG) refers to the therapeutic plasma exchange for a patient with an ABO Incompatible Liver Transplant. The number of plasma exchanges is patient specific and is ordered by the physician responsible for the patient's care.

Target users

- Nurses, Physicians within the Nephrology and Transplant programs.
- **Indications:** CPG applies to patients with an ABO Incompatible Liver Transplant
- **Contraindications:** Plasma exchanges should not be performed within 24 hrs of an operative procedure. If necessary to bypass this recommendation, the Staff M.D **must document** the need for the procedure in the patient chart.

ACE inhibitors should be held for at least 24 hours prior to plasma exchanges. Longer-acting drugs of this class, including enalapril and lisinopril, should be withheld for 72 hours.

Definitions


- **Fresh Frozen Plasma (FFP)** - the plasma that has been taken from a unit of whole blood and is frozen within eight hours of collection. FFP contains all the coagulation factors in normal concentrations. Plasma is free of red blood cells, leukocytes and platelets.
- **Total Blood Volume (TBV)** - the amount of blood in the whole body, both cells and fluid. The volume of the patient's blood is based on the patient's weight. The TBV is related to lean body mass. There is a difference between children and adults with newborns having a higher TBV per kg because of their higher packed red cell volume. TBV is calculated using the following formula:
 - Neonates (0-1 month): 100 ml/kg
 - Infants/children (1month-16 years) 80 ml/kg
 - Adolescents (16 yrs and older) 70 ml/kg

- **Plasma Volume** - the total volume of plasma in the body.

$$\text{Plasma Volume} = \text{Total Blood Volume} \times (1 - \text{hematocrit}).$$

- **Exchange** - patient plasma is replaced by donor plasma. The exchange product can be either FFP, 5% Albumin or a combination of both.

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- If antibody IS PRESENT pre-operatively at time of organ availability perform double-volume plasmapheresis until anti-donor antibody is no longer detected (<1:4 generally acceptable).
- Post-operatively consider plasmapheresis - if isohemagglutinin titers increase to >1:8

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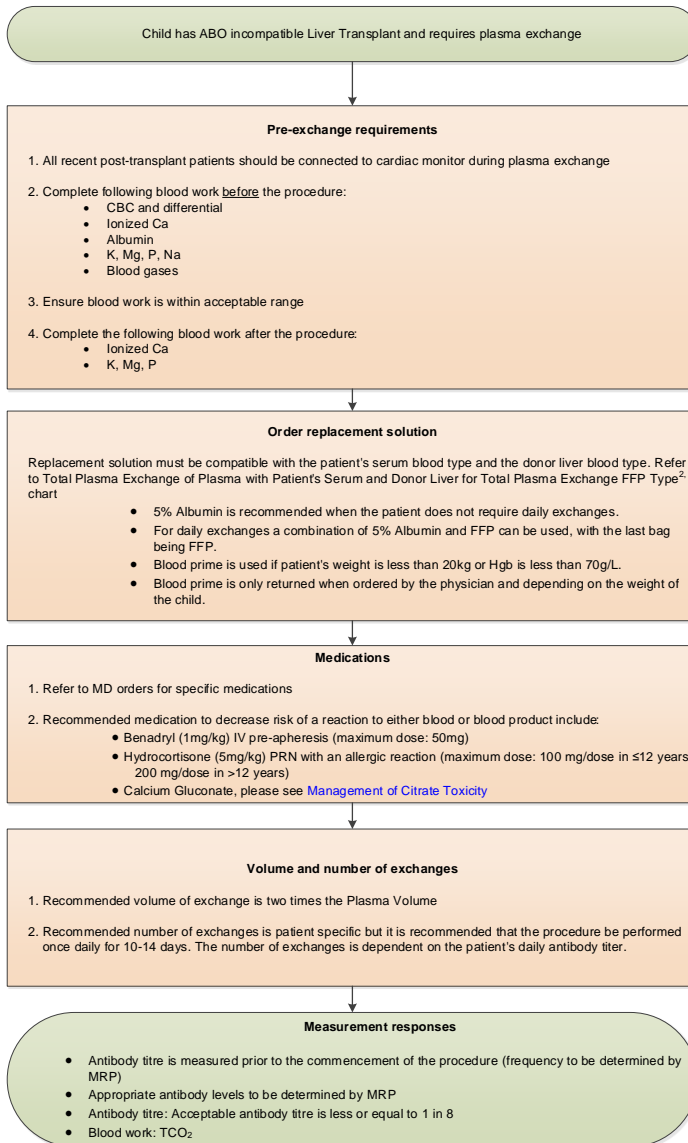
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Therapeutic Plasma Exchange for the ABO Incompatible Liver Transplant Patient

Clinical Guideline

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Therapeutic Plasma Exchange for ABO Incompatible Liver Transplant Patient




- Please note the following:**
- number of plasma exchanges is patient specific and ordered by MRP
 - plasma exchanges should NOT be performed within 24 hours of an operative procedure. MD **must document** if need to bypass this recommendation
 - ACE inhibitors should be held for at least 24 hours prior to plasma exchange. Longer acting drugs like enalapril and lisinopril should be held for 72 hours
 - If antibody IS PRESENT pre-operatively at time of organ availability perform double-volume plasmapheresis until anti-donor antibody is no longer detected (<1:4 generally acceptable)
 - Post-operatively consider plasmapheresis - if isohemagglutinin titers increase to >1:8

- Acceptable blood work values prior to exchange:**
- Mg: > 0.5 mmol/L
 - K: > 3.0 mmol/L
 - P: ≥ 1.0 mmol/L for children < 2 years; ≥ 0.7 mmol/L for children > 2 years
 - TCO₂: <30 mmol/L
 - Ionized Ca: > 0.9 mmol/L

Total Plasma Exchange of Plasma Compatible with Patient's Serum and Donor Liver

Donor Blood Type	Recipient's Blood Type	Total Plasma Exchange FFP Type
A	O	A
B	A	AB
A	B	AB
B	O	B
AB	A	AB
AB	B	AB
AB	O	AB




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Implementation of CPG:

Measurement of Responses

- Antibody titre is measured prior to the commencement of the procedure and at a frequency to be determined by the responsible physician. Appropriate antibody levels to be determined by the responsible physician.
- Antibody titre: Acceptable antibody titre is less or equal to 1 in 8.

Related Documents:

- [Therapeutic Plasma Exchange Procedure](#) ==> 
- [Management of Citrate Toxicity](#) ==> 
- [Blood Component Infusions](#) ==> 
- [Therapeutic plasma exchange for ABO incompatible transplant](#)

References

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Attachments:

[abx plasma exchange care pathway_july 2019.pdf](#)