

Exchange Blood Transfusion in Neonates

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Purpose of the Study

- To prevent accumulation of bilirubin in the blood above dangerous level.
- To prevent kernicterus as well as to prevent accumulation of other by-products of hemolysis from hemolytic disease.
- To replace red blood cells which have poor oxygen releasing capacity and poor carbonic anhydrase activity as in premature infants.
- To remove toxic metabolites and to correct anemia.

Definition

Exchange Transfusion is a technique or procedure used most often to maintain serum bilirubin at levels below neurotoxicity. It refers to giving whole blood in exchange of an infant blood. The infant's blood is repeatedly drawn out in small amount and replaced with equal amount of compatible donor blood.

Responsibilities

- Responsible to Staff Nurse - Exchange transfusion procedure should be done by a physician under aseptic technique assisted by a nurse.
- Patient should be connected to cardiac monitor and pulse oximeter for continuous vital signs monitoring throughout the procedure.
- Fresh whole blood that is properly typed and cross matched should be used for exchange transfusion - Consent from parents must be obtained by the physician.

Explain the procedure to parents

1. To lessen anxiety and promote understanding the procedure.
2. Place infant under radiant warmer and keep his temperature within thermo neutral zone. Hypothermia increased oxygen and glucose consumption causing metabolic acidosis and also inhibit the binding capacity of albumin and bilirubin and hepatic enzymatic reaction thus, increase risk of kernicterus. Hyperthermia damages the donor erythrocytes elevating the free potassium content thus predisposing the infant to cardiac arrest.

3. Attach electronic cardiac monitoring Device and pulse oximeter to infant. For continuous monitoring of infant's condition and possible complications of the procedure.
4. Place infant on his back. Restrain all Four extremities. Proper positioning facilitates easy access to procedure.
5. Insert a nasogastric tube if patient has not been NPO. To evacuate the stomach and should be left in place to maintain gastric and prevent regurgitation and aspiration of gastric juices.
6. Check donor blood for type, age and Other identifying data, check blood pH. The majority of fatal transfusion reactions are caused by clerical errors. It is strongly recommended that two qualified individuals do the task. Do not proceed with the procedure if there is discrepancy. Contact blood bank immediately.
7. Wash hands and wear gloves. To prevent spread of infection and to ensure sterility.
8. Assemble equipment making sure sterility is maintained. Assist the doctor in setting up blood and exchange transfusion equipment. To facilitate a well-organized procedure that is free from interruption.
9. Once umbilical catheter is inserted in the umbilical vein, the physician will start exchange transfusion under strict aseptic technique. Note and record the time exchange transfusion started. Record each successive withdrawals and infusion of blood stating exact amount and time. Documentation provides information as a basis for further management and continuity of care.
10. After each 100 ml. of blood is exchanged, 0.5 ml - 1.0 ml Calcium Gluconate is injected thru IV slowly. To prevent hypocalcaemia since the donor blood has been collected in Citrate Phosphate-Dextrose.
11. Closely monitor vital signs during and after the procedure. To determine possible signs of complications as well as patient's tolerance to procedure. If signs of cardiac and respiratory problem is observed, stop the procedure and stabilized the patient.
12. When the transfusion is completed, umbilical catheter may be removed or left in place with an I.V. line or intravenous infusion. Removal of umbilical catheter prevents infection. Catheter may remain in place in case repeated exchange transfusion is required.
13. Record the time transfusion is completed, total amount withdrawn and infused, medications given, and patient's response to procedure. All facts related to procedure should be charted exactly for legal purposes as well as to provide information for further observation and management of patient's condition.

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