

# PROCEDURE: RED BLOOD CELL EXCHANGE

(ALSO REFERRED TO AS RBC EXCHANGE TRANSFUSION)

## Description:

Red blood cells are cells that carry oxygen. In specific diseases, such as sickle cell disease or certain infections, red blood cells become abnormal or infected and cannot carry oxygen effectively. Red blood cell (RBC) exchange transfusion is a procedure in which a machine removes a patient's abnormal red blood cells using a centrifuge to separate the blood into its various parts. These abnormal cells are replaced with several red blood cell units from healthy volunteer blood donors.

## Reason for the Procedure:

RBC exchange transfusion is used when it becomes necessary to replace (exchange) abnormal red blood cells. If these cells are not exchanged, serious problems may occur, including shortness of breath, chest pain, lung tissue damage, or strokes.

## Venous Access:

In some cases, RBC exchange transfusion can be done using needles that are placed in each arm. Blood is removed from one arm, exchanged with red blood cells from healthy donors, and returned to the patient through the other arm. In patients with small or fragile peripheral veins, the placement of a central venous catheter may be necessary.

## Duration:

The length of the procedure varies from patient to patient, and depends on the amount of abnormal red blood cells that need to be exchanged. A normal RBC exchange transfusion lasts about 1-2 hours.

## Risks and Side Effects:

RBC exchange transfusion is a safe procedure, but side effects can occur. Common side effects include fatigue, nausea, dizziness, feeling cold, and tingling in the fingers and around the mouth.

It is very important to tell medical staff if these symptoms occur. Serious problems such as allergic reactions to red blood cells and infections due to viruses such as hepatitis and HIV are extremely rare.

## Diseases for Which RBC Exchange Transfusion is Used:

RBC exchange transfusion is used to treat serious complications of sickle cell disease including stroke and chest pain, and can also be used in certain infections such as malaria or babesiosis in which red blood cells are damaged.

## Number of Procedures that are Required:

For acute complications of sickle cell disease or certain infections, a single procedure is usually sufficient to replace enough abnormal red blood cells to help patients feel much better. Some patients with sickle cell disease may benefit from periodic exchanges to prevent future complications.

## Other Considerations:

Healthy donor red blood cells are used during RBC exchange transfusions and are matched closely to the patient's red blood cells. Patients are often given medication prior to, or during the procedure to help prevent allergic reactions.

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