

volume exchanged. Vital signs, monitored electronically, are evaluated frequently and correlated with the removal and infusion of blood. If signs of cardiac or respiratory problems occur, the procedure is stopped temporarily and resumed after the infant's cardiorespiratory function stabilizes. The nurse also observes for signs of blood transfusion reaction and maintains the infant's blood glucose levels and fluid balance.

Throughout the procedure, attention must be given to the infant's thermoregulation. Hypothermia increases oxygen and glucose consumption, causing metabolic acidosis. Not only do these consequences hinder the infant's overall physical ability to withstand the long procedure, but they also inhibit the binding capacity of albumin and bilirubin and the hepatic enzymatic reactions, thus increasing the risk of kernicterus. Conversely, hyperthermia damages the donor erythrocytes, elevating the free potassium content and predisposing the infant to cardiac arrest.

The exchange transfusion is performed with the infant in a radiant warmer. However, the infant is usually covered with sterile drapes that may prevent the radiant heat from sufficiently warming the skin. The blood may also be warmed (using specially designed blood warming devices, never a microwave oven) before infusion.

After the procedure is completed, the nurse inspects the umbilical site for evidence of bleeding. The catheter may remain in place in case repeated exchanges are required.

### **Nursing Alert**

Signs of blood exchange transfusion reaction include tachycardia or bradycardia, respiratory distress, dramatic change in blood pressure (BP), temperature instability, and generalized rash.

## **Metabolic Complications**

High-risk infants are subject to a variety of complications related to physiologic function and the transition to extrauterine life.

Prominent among these are fluid and electrolyte derangements, hypoglycemia, and hypocalcemia. These complications often occur concurrently with or as a secondary result of other neonatal disorders and may therefore be difficult to differentiate from other conditions. The major characteristics of hypoglycemia and