calcium, hematocrit, serum electrolytes, and blood gases. Samples may be obtained from the heel; by venipuncture; by arterial puncture; or by an indwelling catheter in an umbilical vein, an umbilical artery, or a peripheral artery (see the Atraumatic Care box in Chapter 7 and Collection of Specimens, Chapter 20).

When numerous blood samples must be drawn, it is important to maintain an accurate record of the amount of blood being removed, especially in ELBW and VLBW infants, who can ill afford to have their blood supply depleted during the acute phase of their illness. There is an increased emphasis on drawing as little blood as possible from high-risk neonates to minimize the depletion of blood volume and avoid blood transfusions and associated complications. To avoid the need for repeated arterial punctures, pulse oximetry, which measures the saturation or percentage of oxygen in the hemoglobin, is typically used. The nurse notes changes in oxygenation (or other aspects being monitored) associated with handling and adjusts the infant's care accordingly. The frequency of vital signs is determined by the infant's acuity level (seriousness of condition) and response to handling.

The nursing process in the care of high-risk newborns and their families is described in the Nursing Process box.

◉ Nursing Process

The High-Risk Newborn and Family

Assessment

At birth, the newborn is given a rapid yet thorough assessment to determine any apparent problems and identify those that demand immediate attention. This examination is primarily concerned with evaluation of cardiopulmonary and neurologic functions. The assessment includes assignment of an Apgar score (see Chapter 7 and evaluation for any obvious congenital anomalies or evidence of neonatal distress). A systematic assessment is carried out after the high-risk newborn is stable (see also Clinical Assessment of Gestational Age, Chapter 7).

Diagnosis (Problem Identification)

Many nursing diagnoses may be evident after a careful assessment