Compared with older children and adults, infants and young children have a greater need for water and are more vulnerable to alterations in fluid and electrolyte balance. Infants have a greater fluid intake and output relative to size. Water and electrolyte disturbances occur more frequently and more rapidly, and children adjust less promptly to these alterations.

The fluid compartments in infants vary significantly from those in adults, primarily because of an expanded extracellular compartment. The ECF compartment constitutes more than half of the TBW at birth and has a greater relative content of extracellular sodium and chloride. Infants lose a large amount of fluid at birth and maintain a larger amount of ECF than adults until about 2 to 3 years old. This contributes to greater and more rapid water loss during this age period.

Fluid losses create compartment deficits that reflect the duration of dehydration. In general, approximately 60% of fluid is lost from the ECF, and the remaining 40% comes from the ICF. The amount of fluid lost from the ECF increases with acute illness and decreases with chronic loss.

Fluid losses may be divided into insensible, urinary, and fecal losses and vary with the patient's age. Approximately two thirds of **insensible water losses (IWLs)** occur through the skin, and the remaining one third is lost through the respiratory tract. Environmental heat and humidity, skin integrity, body temperature, and respiratory rate influence insensible fluid loss. Infants and children have a much greater tendency to become highly febrile than do adults. Fever increases IWL approximately 7 ml/kg/24 hr for each degree rise in temperature above 37.2° C (99° F). Fever and increased surface area relative to volume both contribute to greater insensible fluid losses in young patients.

Body Surface Area

The infant's relatively greater body surface area (BSA) allows larger quantities of fluid to be lost through the skin. It is estimated that the BSA of preterm neonates is five times more, and that of newborns is two to three times more, than that of older children or adults. The proportionately longer gastrointestinal (GI) tract in infancy is also a source of fluid loss, especially from diarrhea.