lactic acid, pyruvate, and other acid metabolites, which contribute to the development of metabolic acidosis.

Renal compensation is impaired by reduced blood flow through the kidneys, and little urine is formed. Increased serum osmolality stimulates the secretion of ADH to conserve fluid and initiates the renin/angiotensin mechanisms in the kidney, causing further vasoconstriction. Aldosterone is released to promote sodium retention and conserve water in the kidneys. If dehydration increases in severity, urine formation is greatly diminished, and metabolites and hydrogen ions that are normally excreted by this route are retained.

Shock, a common manifestation of severe depletion of ECF volume, is preceded by tachycardia and signs of poor perfusion and tissue oxygenation (e.g., low pulse oximeter readings). Peripheral circulation is poor as a result of reduced blood volume; therefore, the skin is cool and mottled, with decreased capillary filling. Impaired kidney circulation often leads to oliguria and azotemia. Although low blood pressure may accompany other symptoms of shock, in infants and young children, it is usually a late sign and may herald the onset of cardiovascular collapse.

## Diagnostic Evaluation

To initiate a therapeutic plan, several factors must be determined:

- The degree of dehydration based on physical assessment
- The type of dehydration based on the pathophysiology of the specific illness responsible for the dehydrated state
- Specific physical signs other than general signs
- Initial plasma sodium concentrations
- Serum bicarbonate concentration ($HCO_3$)
- Any associated electrolyte (especially serum potassium) and acid-base imbalances (as indicated)

Initial and regular ongoing evaluations assess the patient's progress toward equilibrium and the effectiveness of therapy.

In the examination of an infant or younger child, one of the most important determinants of the extent of dehydration is body weight because this can assist in determining the percentage of total body fluid lost; however, since the pre-illness weight is often unknown,