GI, gastrointestinal; *IV,* intravenous; *IWL,* insensible water loss; *NG,* nasogastric.

Water Intoxication

Water intoxication, or water overload, is observed less often than dehydration. However, it is important that nurses and others who care for children be alert to this possibility in certain situations. Children who ingest excessive amounts of electrolyte-free water develop a concurrent decrease in serum sodium accompanied by central nervous system (CNS) symptoms. There is a large urinary output, and because water moves into the brain more rapidly than sodium moves out, the child may also exhibit irritability, somnolence, headache, vomiting, diarrhea, or generalized seizures. The affected child usually appears well hydrated but may be edematous or even dehydrated.

Fluid intoxication can occur during acute intravenous (IV) fluid replacement, too rapid dialysis, tap water enemas, feeding of incorrectly mixed formula, or excess water ingestion (Greenbaum, 2016). Patients with CNS infections occasionally retain excessive amounts of water. Administration of inappropriate hypotonic solutions (e.g., 0.45% sodium chloride) may cause a rapid reduction in sodium and result in symptoms of water overload.

Infants are especially vulnerable to fluid overload. Their thirst mechanism is not well developed; therefore, they are unable to "turn off" fluid intake appropriately. A decreased glomerular filtration rate does not allow for repeated excretion of a water load, and antidiuretic hormone levels may not be maximally reduced. Consequently, infants are unable to excrete a water overload effectively.

Administration of inappropriately prepared formula is one of the more common causes of water intoxication in infants (Greenbaum, 2016). Families who cannot afford to buy enough formula may dilute the formula to increase the volume or even substitute water for the formula. A family may run out of formula and dilute the remaining amount to make it last until they are able to purchase more. In addition, water is sometimes used for pacification. Water intoxication can also occur in infants who receive overly vigorous hydration during a febrile illness.

A number of clinicians have reported water intoxication in children after swimming lessons, in water births, and with