concentration (Alleman, 2014). There is an apparent lag time for sodium to reach a steady state when diffusing in and out of brain cells, water diffuses almost instantaneously. Consequently, rapid administration of fluid causes equally rapid diffusion of water into the dehydrated brain cells, causing marked cerebral edema. Because ECF volume is maintained relatively well in hypertonic as opposed to the other types of dehydration, shock is not a usual manifestation.

Nursing Care Management

Nursing observation and intervention are essential for detection and therapeutic management of dehydration. A variety of circumstances cause fluid losses in infants and small children, and changes can take place quickly. An important nursing responsibility is observation for signs of dehydration. Nursing assessment should begin with observation of general appearance and proceed to more specific observations. Ill children usually have drawn expressions, have dry mucous membranes and lips, and "look sick." Loss of appetite is one of the first behaviors observed in most childhood illnesses, and the infant's or child's activity level is diminished from baseline or usual activities. The child is irritable, seeks the parent's comfort and attention, and displays purposeless movements and inappropriate responses to people and familiar objects. In some cases, the child may not protest advances by the health care worker and procedures such as taking vital signs or starting an IV infusion. These are signs that the child truly feels bad and that the condition is serious and immediate intervention is necessary. As the child's illness and level of dehydration become more severe, irritability progresses to lethargy and even unconsciousness.

Assess capillary filling time by pinching the abdominal skin, chest, arm, or leg and measuring the time it takes for the blood to return. Capillary filling time in mild dehydration is less than 2 seconds, increasing to more than 4 seconds in severe dehydration. The technique is effective in children of all ages. However, it can be altered in the presence of heart failure, which affects circulation time, and hypertonic dehydration, in which fluid loss is primarily intracellular. Additional clinical signs observed in children with dehydration include cool mottled extremities, sunken eyes, tachypnea, and changes in sensorium.