

colonization in the gut to prevent many illnesses, including antibiotic-induced diarrhea and possibly *Helicobacter pylori* gastritis (Vitetta, Briskey, Alford, et al, 2014).

Evidence indicates that **vernix caseosa**, a white oily substance that coats term infants' bodies and is often found in abundance in creases of the axilla and groin, has innate immunologic properties that serve to protect newborns from infection (Visscher and Narendran, 2014). Vernix also appears to have a role in maintaining the integrity of the stratum corneum and facilitating acid mantle development (Visscher and Narendran, 2014). The epidermis of a full-term infant undergoes maturation during the first month of life; the newborn's skin acts as a barrier to infection, assists in thermal regulation, and prevents transepidermal water loss in term infants.

During infancy, **thermoregulation** becomes more efficient; the ability of the skin to contract and of muscles to shiver in response to cold increases. The peripheral capillaries respond to changes in ambient temperature to regulate heat loss. The capillaries constrict in response to cold, conserving core body temperature and decreasing potential evaporative heat loss from the skin surface. The capillaries dilate in response to heat, decreasing internal body temperature through evaporation, conduction, and convection. Shivering (**thermogenesis**) causes the muscles and muscle fibers to contract, generating metabolic heat, which is distributed throughout the body. Increased adipose tissue during the first 6 months insulates the body against heat loss.

A shift in the total body fluid occurs; at birth, 78% of a term infant's body weight is water, and there is an abundance of extracellular fluid (ECF). As the percentage of body water decreases, so does the amount of ECF—from 44% at term to 20% in adulthood. The high proportion of ECF, which is composed of blood plasma, interstitial fluid, and lymph, predisposes the infant to a more rapid loss of total body fluid and, consequently, dehydration. The loss of 5% to 10% of term newborns' initial birth weight in the first 5 days of life is attributed to ECF compartment contraction, enhanced renal tubular function, and rapidly increasing glomerular filtration rate (Blackburn, 2013).

The immaturity of the renal structures also predisposes infants to dehydration and electrolyte imbalance. Complete maturity of the kidneys occurs during the latter half of the second year, which is