

Key Differences in Infant Skin

1. Infants born at term have a well-developed stratum corneum containing 10-20 layers. The epidermis is the outermost layer and provides an important barrier function. In preterm infants the stratum corneum may only have 2-3 layers. This deficiency and immaturity of the stratum corneum results in increased fluid and heat loss leading to electrolyte imbalance, reduced thermoregulation and increased infection risk.
2. Cohesiveness of the epidermis to the dermis differs in preterm and term infants. Fibrils providing the cohesion between the epidermis and dermis are fewer in number and are more widely spaced in preterm infants. This decreased cohesion increases the risk of skin injury. If the adhesive used forms a stronger bond with the epidermis than that of the epidermis to the dermis, skin breakdown is likely.
3. Differences exist within the skin surface pH. A slightly acidic skin surface plays an important role in the maturation and maintenance of the stratum corneum, also inhibiting the growth of pathogenic microorganisms. Vernix caseosa also helps to maintain skin hydration, thermoregulation and skin acidification. Premature infants of varying gestational ages and term infants are born with an alkaline skin surface (pH >6.0). For term infants, this usually falls to less than pH 5.0 within the first 3 days of life, providing an "acid mantle" and protection from external pathogens. Due to an immature skin structure and the reduced or negligible amount of vernix caseosa, the preterm infant has an alkaline skin surface for a longer period of time. The skin pH of a preterm infant may take one week to decrease to pH 5.5 and up to a month to reach pH 5.1 and is therefore more susceptible to infection in this time.
4. Colonization of the skin with microorganisms may also play a role in the newborn period. Recent advances in science have enabled the identification of different microbes present at birth. Skin microbiome describes the diverse microorganisms that live on human skin. The skin is colonized differently in infants born vaginally compared with those delivered by Caesarean section. The influence of this needs further understanding, but may give us insight in to the development of some skin disorders and assist us in providing optimal skin care from birth.