Skin and Its Complexities in the Extremely Low Birthweight Neonate

Alana Beilstein DNP, NNP-BC Aesa Jackson OTR/L ,CNT, NLP, NTMTC, CPST

BACKGROUND

Skin is the largest organ in the body. It is a complex and dynamic organ that provides multiple functions essential for human survival.

Functions include:

- Providing a physical barrier between the neonate and the environment
- Thermoregulation preserving caloric expenditure
- Antimicrobial defense
- Protection from environmental toxins, trauma, and ultraviolet radiation
- Provides tactile sensation

An intact epidermal barrier is required to maintain fluid homeostasis in the extrauterine environment.
Extremely low birth weight (ELBW) neonates are those born at less than 1,000gm (2lbs, 3oz.) and are usually 27 weeks gestation or younger. Skin in preterm infants is underdeveloped and has an immature function.

Premature skin:
Has a thinner stratum corneum and epidermis, which increases the risk of transepidermal water loss, causing electrolyte disturbances, increased heat loss, creating a high metabolic demand, with increased risk of microbial invasion and toxin absorption.

Decreased cohesion from anchoring fibrils: causing an increased risk of shearing force injuries.

Decreased melanocytes: increased risk for injury of ultraviolet light.

Decreased subcutaneous fat: limits the ability for thermoregulation and affects the pharmacologic distribution of fat-soluble medications.

These effects increase the risk of medical complications such as dehydration, hypotension, hyperosmolar hypernatremia, increased rates of intraventricular hemorrhage (IVH), sepsis, and poor growth, increasing morbidity and mortality.

PURPOSE

Identify the physiologic differences in the skin of the ELBW neonate.

Establish the foundation of knowledge to promote the evaluation of care that has the potential to alter neonatal skin integrity.

EVIDENCE

Routine skin assessment with documentation of findings.

Consider the use of a validated neonatal skin/risk assessment tool.

Identify risks for injury and mitigate injury as able
Gestational age
Physiologic abnormalities (edema, dehydration, hypotension)
Pharmacologic (sedatives, vasopressors)
Monitoring equipment
Medical devices (respiratory support, orogastric/nasal gastric tubes, vascular devices)

Provide adequate nutrition to help prevent pressure ulcers and promote healing of skin injury.

Use of products designed to mitigate injury (protective dressings, protective padding, water/air/gel mattresses).

EVIDENCE CONT.

Use of benzyl alcohol-free skin protectant.

Select adhesives that cause the least amount of trauma.
•Hydrogels and silicone-based adhesives are considered low trauma.

Treatment that is injury-specific and timely (Treatment recommendations are beyond the scope of this poster)

Avoid use of products that are known to have toxic agents
•Alcohol-organic products
• Oil-based solvents
•Agents that enhance bonding
•Adhesive bandages

RECOMMENDATIONS FOR PRACTICE

Establishing and adhering to research-based skin care guidelines in extremely low birth weight neonates is recommended to prevent toxicity, skin alterations, and disfigurement from injury.

REFERENCES

UMC Children's Hospital | 800 Hope Place Las Vegas NV 89102