CARE OF THE NEONATE: IT'S ALL ABOUT THE SKIN

Katherine Kunkel, MSN, RNC-NIC, WCC
Learning Objectives

- Recognize what are risk factors for the neonate within the intensive care unit.

- Understand the physiology of ulcer formation.

- List measures that can help prevent or minimize ulcer development.

- State the principles of best practice related to the Pressure Ulcer Prevention Bundle.
Assessment tools related to pressure ulcer prevention

- **Braden Pressure Ulcer Tool** – adult population

- **Braden Q Scale** – adapted from the Adult version
  - Has been validated in pediatric patients 3 weeks of age to eight years of age
  - Composed of 7 subscales. The subscales are rated 1 (least favorable) to 4 (most favorable) and a score < 16 would indicate a patient at risk for skin breakdown.

- **Modified Braden Q Scale**
  - Has 3 subscales, providing a shorter yet comparable tool

- **AWHONN – Neonatal Skin Condition Score**
  - Composed of 3 subscales not specific to pressure ulcer assessment.
  - Score of 3 (best) to 9 (worst) based on dryness, erythema and breakdown

- **Current** – other tools under development
Definition of a Pressure Ulcer

- According to the National Pressure Ulcer Advisory Panel (NPUAP), “A pressure ulcer is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear.

- Pressure ulcers are described using a staging system:
  - Stage I
  - Stage II
  - Stage III
  - Stage IV
  - Suspected Deep Tissue Injury
  - Unstageable
Stage I Pressure Ulcer
Stage III Pressure Ulcer
Stage IV Pressure Ulcer
Pressure Ulcer Formation Related to Medical Devices
Definition of a Mucosal Pressure Ulcer

- **Definition:** Mucosal Pressure Ulcers (MPrU) are pressure ulcers found on mucous membranes with a history of a medical device in use at the location of the ulcer.
- Mucous membrane is the moist lining (inner tissues) of body cavities that communicate with outside of the body. Mucous membrane tissues line the tongue, GI tract, nasal passages, urinary tract and vaginal canal.
- Pressure applied to this tissue can render it ischemic and lead to ulceration.
- Examples: a pressure ulcer that develops on nasal mucosa from pressure exerted by oxygen/CPAP nasal prongs; A pressure ulcer that develops on the inside of the lip from pressure exerted by an endotracheal tube.
Pressure Ulcer Development

- Compression of tissue between a bony prominence and external surface.

- Arterioles & capillaries collapse, causing disruption of oxygen & nutrients to the cells.

- Lack of oxygen & nutrients leads to:
  - Tissue hypoxia
  - Cellular death
  - Injury to the surrounding area
Factors Responsible for Ulcer Formation

- Intensity & duration of compression
  - Contributing factors include decreased mobility, activity and sensory perception.
  - Increased pressure over short periods, or slight pressure over long periods are equally damaging.

- Skin & soft tissue tolerance & integrity
  - Intrinsic factors
    - Nutrition
    - Perfusion
    - Oxygenation
  - Extrinsic factors:
    - Moisture
    - Friction
    - Shear
Pressure Ulcer Risk Factors

• According to literature, pressure ulcer prevalence rates have been recorded as high as 27% in pediatric intensive care units and as high as 23% in neonatal intensive care units.

• Common risk factors include:
  • Limited mobility
  • Reduced activity
  • Decreased sensory perception
  • Altered tissue perfusion
  • Nutritional status
  • Skin temperature
  • Skin moisture (incontinence)
  • Friction/shear forces
  • Age
  • Low albumin level
Estimated costs

- Stage I and II
  - Minimum of an additional $100.00/day

- Stage III and IV
  - Minimum of an additional $1,000.00/day

- Prevention
  - No additional costs!
Limited mobility, activity and sensory perception

- ELBW and VLBW infants lack the ability to move and change their position well. How we position them is important.
- Trivia: we normally shift our position every 11-15 minutes during our sleep.
Altered Tissue Perfusion, Nutritional Status and Skin Temperature

- **Tissue Perfusion**
  - Hypotension
  - Cardio-vascular instability
  - Anemia

- **Nutrition**
  - TPN
  - NPO status
  - Enteral feeds

- **Thermoregulation**
  - Neutral thermal environment
Age, Moisture, and Low Albumin

- **Age**
  - Decreased gestational age > increased risk to pressure ulcer formation

- **Moisture**
  - Incontinence of urine and stool may be increased due to phototherapy, antibiotic therapy, drug withdrawal
  - Skin becomes 25 times more fragile at a relative humidity of 100% than at a relative humidity of 25%
  - Clean the skin gently at each time of soiling
  - Use skin barriers before there is evidence of skin breakdown
  - Remove damp/wet linen as soon as possible

- **Low Albumin - < 3.0**
  - A protein that regulates the osmotic pressure of the blood. Helps to “pull” back the fluid in the tissues to the vascular space.
Pressure Redistribution

- Among neonates and children, more than 50% of pressure ulcers are related to equipment and devices.
Skin Assessment

- Perform on admission and once a shift and/or with changes in patient condition.

- Evaluate risk factors that may impede skin integrity:
  - Monitoring cardio-respiratory leads, pulse oximetry, etc.
  - Monitoring adhesives to secure tubes and catheters
  - Monitoring patients receiving paralyzing agents and vasopressors
  - Monitoring surgical wounds/G-tubes/ostomies
  - Monitoring technology that limits position and mobility
Skin Assessment

- Monitor all bony prominences
  - Scalp, ears, sacrum and occiput
- Assess skin under equipment/devices
  - Pulse oximetry probes, blood pressure cuffs and arm boards
  - Nasogastric tubes
  - CPAP/NIV and nasal cannulas
- Document findings using descriptors:
  - Location
  - Measure size (length x width x depth)
  - Color
  - Drainage
  - Condition of surrounding area
Pressure Ulcers & Center for Medicare/Medicaid Services (CMS)

- Pressure ulcers have been classified as NEVER-EVENT by CMS.
- Never-Event are defined as hospital associated problems that CAN BE PREVENTED.
- Other examples of Never-Events include surgery on the wrong person, surgery on the wrong limb, foreign object left in a patient after surgery, infant discharged to the wrong person...
- Never-Events will NOT be reimbursed by insurance.
- Never-Events MUST be reported and can lead to mistrust by the public.
Potential for a Lawsuit

- Why bring a Pressure Ulcer lawsuit? It’s about exposing patient neglect. Pressure ulcers are preventable by good care. Unfortunately, it is the most vulnerable patients who cannot complain about the negligent care they receive. This is known as nursing home abuse and hospital patient neglect. Patients get neglected when nurses are understaffed and overworked. Because pressure ulcers are so preventable, these lawsuits can result in payment of hundreds of thousands of dollars.
Pressure Ulcer Prevention (PUP)

• Best Practice Bundle is focused on:

  ➢ Early identification of risk factors

  ➢ Complete skin assessment

  ➢ Interventions to reduce risk factors and minimize adverse effects of pressure
# Pressure Ulcer Bundle Prevention

<table>
<thead>
<tr>
<th>Identify patients at risk</th>
<th>AWHONN Skin Assessment</th>
<th>Assess on admission and every shift as indicated by change in status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>Minimize offending factors R/T pressure, friction, shearing</td>
<td>Gel pillow under occiput Reposition every 3-4 hours, maintaining good alignment Lift carefully Minimize exposure to moisture Minimize adhesives Rotate pulse oximetry site Observe &amp; prevent lying on lines</td>
</tr>
<tr>
<td>Treatment</td>
<td>Prevent infection Optimize healing Prevent scarring</td>
<td>Cleanse skin with sterile water, wounds with NS Provide nutritional support Ensure fluid and electrolyte balance</td>
</tr>
</tbody>
</table>
Family Centered Care

- Include the family when doing care
- Provide education that is appropriate to the family/caregivers of the newborn.
  - Use layman terms
- Demonstrate proper positioning
- Share the importance and rationale on the various preventive measures
Summary

- Neonatal skin has unique properties which increase the risk for trauma and injury.

- Pressure ulcers arise on susceptible areas of the body due to combination of pressure, moisture, immobility, shear forces as well as direct injury from medical devices.

- Pressure ulcers are classified as Grades I-IV and also include Unstageable and Suspected Deep Tissue Injury.

- Pressure ulcers have significant legal implications that directly affect nurses and are considered a “Never-Event” by CMS/Medicare.
References
