MEDICAL DEVICE-RELATED PRESSURE INJURIES
Medical Device Related (MDR) Pressure Injuries

- Defined “a localized injury to the skin or underlying tissue as a result of sustained pressure from a medical device. The skin/tissue injury will often have the same configuration as the device.” (members.nursingquality.org, 2016)

- “Pressure ulcers that result from the use of devices designed and applied for diagnostic or therapeutic purposes. The resultant pressure ulcer generally closely conforms to the pattern or shape of the device” (EPUAP, NPUAP, and Pan Pacific Pressure Ulcer Alliance. “Prevention and Treatment of Pressure Ulcers: Clinical Practice Guidelines.” Second Edition 2014, page 119)

- Varies in severity from stage I to DTI
Avoidable or Unavoidable?

“Unavoidable”: Consensus Statements

- When it is medically contraindicated to adjust, relocate, or pad underneath a therapeutic device (80% – 82% consensus)
- When a life sustaining vascular access or other medically medical device precludes turning and positioning (83%–87% consensus)
- When underlying edema or uncontrollable moisture under device compromises tissue tolerance to pressure/shear forces

Factors contributing to MDR Pressure Injuries

- “The rigidity and elasticity of the device
- Inappropriate size
- Poor fit or positioning
- Difficulty in securing the device to the body
- Overlooking the position of the device relative to skin/tissue surfaces
- Skin obscured from visualization
- Skin edema
- Altered microclimate”
What can cause MDR Pressure Injuries

- Any device used in a medical setting can cause a pressure injury
  - Casts/splints
  - IV Tubing
  - Needle caps
  - Bedpans
  - Oxygen tubing/mask
  - Cervical collars
  - Trach collars
  - Too tight dressings
  - Bipap, C-pap masks
  - Prosthetics

- Very important that devices are removed frequently and skin assessed

- Children at higher risk especially neonates
Common Locations

- **Where they occur**
  - #1 location: Head, neck, face, ear
    - 30 – 70% of Medical Device Related PI's
  - #2 location: Heel, ankle, feet
  - #3 location: Coccyx, buttock, sacrum

(NPUAP Consensus Statement on Unavoidable Pressure Ulcers, 2014)
MDR Pressure Injuries-Examples

From a pulse oximetry tube
MDR Pressure Injuries-Examples

From a brace
MDR Pressure Injuries-Examples

A heel ulcer found after a cast was removed
MDR Pressure Injuries-Examples

From ET Tube
MDR Pressure Injuries-Examples

From Cervical Collar
MDR Pressure Injuries-Examples

From knee brace
How Do I Stage MDR Pressure Injuries?

- Staged like other pressure injuries.
- However, if a pressure injury develops on mucous membrane, they cannot be staged.
  - Pressure injury inside a nostril from oxygen tubing or NG tube.
  - Pressure injury on lip from ET tube.
- According to NDNQI, a recent study found that nearly half of MDR pressure injuries were on mucus membranes.
Prevention

- Frequent skin checks under devices
- Frequent re-positioning of devices
- Are devices the correct size?
  - Ensure devices aren’t too tight
- Use of securement devices if appropriate
  - Decrease slippage
- Assess skin folds for “hidden” items
  - IV hubs
  - Thermometer covers
  - Food?
Prevention

- Ear protectors for oxygen tubing
- Don’t place devices on already damaged tissue
- Extra padding under devices
- If possible, rotate placement, i.e. for NG tubes or ET tubes
- Ensure patient is not lying on tubing
- Do all staff understand proper application of devices?
- Assess patient sensation
- Assess for increased edema under device
- Ensure pt has adequate blood flow
Prevention

- Are devices appropriate and adequate?
  - If you feel the devices used at your facility are subpar or causing frequent pressure injuries, SPEAK UP!

- Education of patient and family
  - Ask the patient, if awake, how the device feels
  - If non-verbal or not awake, look for pulling at devices

- Involve all disciplines—it’s everyone’s job!
  - Respiratory, physical, occupational and speech therapists
  - Physicians
Best Practices for Prevention of Medical Device-Related Pressure Injuries

- Choose the correct size of medical devices to fit the individual
- Cushion and protect the skin with dressings in high risk areas (e.g., nasal bridge)
- Remove or move the device daily to assess skin
- Avoid placement of device(s) over sites of prior, or existing pressure injury
- Educate staff on correct use of devices and prevention of pressure injury
- Be aware of edema under device(s) and potential for pressure injury
- Confirm that devices are not placed directly under an individual who is bedridden or immobile
Best Practices for Prevention of Medical Device-Related Pressure Ulcers in Critical Care

- Choose the correct size of medical device(s) to fit the individual
- Cushion and protect the skin with dressings in high-risk areas (e.g., nasal bridge)
- Inspect the skin in contact with device at least daily (if not medically contraindicated)
- Avoid placement of device(s) over sites of prior or existing pressure ulcer
- Educate staff on correct use of devices and prevention of skin breakdown
- Be aware of edema under device(s) and potential for skin breakdown
- Confirm that devices are not placed directly under an individual who is bedridden or immobile

<table>
<thead>
<tr>
<th>Device</th>
<th>Stage</th>
<th>Classification</th>
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<td>ET Tube</td>
<td>Stage III</td>
<td>Mucosal Pressure Ulcer</td>
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<td>Trach Ties</td>
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<td>Unstageable</td>
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<td>Oxygen Tubing</td>
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<td>CPAP Mask</td>
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<tr>
<td>O₂ Saturation Probe</td>
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</tr>
<tr>
<td>Arterial Line Tubing</td>
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<td>Stage II</td>
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Best Practices for Prevention of Medical Device-Related Pressure Ulcers in Pediatric Populations

- Choose the correct size of medical device(s)
- Cushion and protect the skin with dressings in high-risk areas (e.g., nasal bridge)
- Inspect the skin in contact with device at least daily (if not medically contraindicated)
- Avoid placement of device(s) over sites of prior or existing pressure ulcer
- Educate staff on correct use of devices and prevention of skin breakdown
- Be aware of edema under device(s) and potential for skin breakdown
- Confirm that devices are not placed directly under an individual
Best Practices for Prevention of Medical Device-Related Pressure Ulcers in Long Term Care

- Choose the correct size of medical device(s) to fit the individual
- Cushion and protect the skin with dressings in high-risk areas (e.g., nasal bridge)
- Inspect the skin in contact with device at least daily (if not medically contraindicated)
- Avoid placement of device(s) over sites of prior or existing pressure ulcer
- Educate staff on correct use of devices and prevention of skin breakdown
- Be aware of edema under device(s) and potential for skin breakdown
- Confirm that devices are not placed directly under an individual who is bedridden or immobile
Treatment

- Treat as you would all pressure ulcers
  - Debride necrotic tissue
  - Keep wounds moist and covered
  - Don’t place device over damaged skin
Questions?
References