Objectives

- Discuss the characteristics of medical devices that pose risk of pressure ulcer development for pediatrics and adults.

- Discuss strategies to implement new and revised recommendations for pediatric and adult patients at risk of pressure ulcers due to medical devices.
Device Related Pressure Ulcers
Let’s Prevent Them!

Let’s Talk Characteristics

What do they look like?

Where Are These?

Whose at Risk?

Are they avoidable?
Medical Device Related Pressure Ulcer

• Definition;
  – “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.”


Facts About Device Related Pressure Ulcers

• “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

NPUA.org: “The Unavoidable Outcome: A Pressure Injury Consensus Conference”
Published: J Wound Ostomy Continence Nurs. 2014;41(4):1-22
Device Related Injuries

Where they occur
• #1 location: Head, neck, face, ear
  – (30 – 70% of MDRPUS)
• #2 location: Heel, ankle, feet
• #3 location: Coccyx, buttock, sacrum

(NPUAP Consensus Statement on Unavoidable Pressure Ulcers, 2014)

Who is the Patient At Risk?

• **Who**: Anyone with a medical device

• **Where**:
  – Acute Care
  – Critical Care
  – Long Term Care
  – Home Care
Risk for Medical Device Pressure Ulcers

- Adult-
  - Strength of Evidence B
  - Strength of Recommendation 2 thumbs up
- Children-
  - Strength of Evidence B
  - Strength of Recommendation 2 thumbs up

Increased Risk With

- Impaired Sensation
- Moisture under the device
- Poor perfusion
- Altered Tissue Tolerance
- Poor nutritional status
- Edema
Medical Devices
Pressure Ulcers Waiting to Happen

- Nasogastric tubes
- Feeding tubes
- Endotracheal tubes
- Tracheostomy tubes/collars/straps
- Oxygen delivery
  - Mask
  - Nasal cannula
- IV/PICC line/Central lines
- Anti-Embolic stockings

- Foley catheters/condom catheters
- Fecal management systems/tubes
- NPWT
- Restraints
- Bedpans
- Abdominal binders
- Identification bands
- Orthopedic
  - Casts
  - Cervical collars
  - Back braces

Let’s Talk Strategies related to Guidelines

What to look for?
What to do?
How to prevent?
Recommendations for Selecting & Fitting a Medical Device

• **Review/Selection**
  – device with least pressure &/or sheer
    • Strength of Evidence **B**
    • Strength of Recommendation **2 Thumbs Up**

• **Ensure correct Size and fit**
  – Strength of Evidence **C**
  – Strength of Recommendation **2 Thumbs Up**

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The Patient Who Can’t Communicate....

• If awake/alert, ask specific questions
  
  “Does it hurt?”  
  “Is it too tight?”

• Observation
  – agitation, pulling, itching, grabbing of devices
  – it may be because it hurts!

• Include family - vigilance
Clinical Pearls:

- Close observation
  - Know increased risks
- Extensive Care Plan
- Education
  - Family/staff of care plan
- Consistent reassessment/re-evaluation
- Team involvement including patient & family if able


Recommendations for Selecting & Fitting a Medical Device

- Apply according to manufacturer’s specifications
  - Strength of Evidence C
  - Strength of Recommendation 2 Thumbs Up
- Ensure device sufficiently secured
  - Strength of Evidence C
  - Strength of Recommendation 2 Thumbs Up

Prevention: Ensure Device Not Too Small

Use audits to assess compliance: (external condom caths, stockings, boots, narrow trach ties, etc.)

Recommendations for Assessment of Skin and Medical Devices

- Inspect skin and under medical device at least twice daily ideally more frequently

  - Strength of Evidence C
  - Strength of Recommendation
    - 1 Thumb Up for twice
    - 2 Thumbs Up for more frequent

- Classification/Staging follows International NPUAP/EPUAP Guidelines

  - Strength of Evidence C
  - Strength of Recommendation 1 Thumb Up
  - Not new pressure ulcer category

Prevention: Assessment!

Assess skin under device

Recommendations for Assessment of Skin and Medical Devices

- Educate individual w/ medical device and/or caregiver to perform skin inspections
  - Strength of Evidence C
  - Strength of Recommendation 2 Thumbs Up

Education-key to success

- Device Education:
  - What, why, how long, where, etc
- Team involvement—may require staff education—rarely too much
- Education Documentation:
  - verbal, written, flow sheets
  - easy check off system
  - education plan - for consistent implementation


Recommendations for Prevention of Medical Device Related Pressure Ulcers

- Remove device that has pressure potential when medically feasible
  - Strength of Evidence C, Strength of Recommendation 2 Thumbs Up
- Keep skin clean and dry under device
  - Strength of Evidence C, Strength of Recommendation 2 Thumbs Up

General Preventive Care

- Educate patient and family
- View skin under devices each shift
  - Lift and reposition, if able
- Keep skin clean; free of moisture and secretions
- Use skin protectant/barrier ointment/dressing
- Pad from onset of care if known to be source of skin injury

Recommendations for Assessment of Skin and Medical Devices

- Reposition individual or reposition medical device to redistribute pressure & decrease shear force
  - Strength of Evidence C
  - Strength of Recommendation 2 Thumbs Up
    - Individual subsets for this statement in guidelines

Recommendations for Assessment of Skin and Medical Devices

- Consider Prophylactic dressing for preventing device related pressure ulcers
  - Strength of Evidence B
  - Strength of Recommendation 1 Thumb Up
- When selecting prophylactic dressing considerations should occur
  - Strength of Evidence B
  - Strength of Recommendation 2 Thumbs Up
  - Discussion also in Emerging Therapies for Prevention of Pressure Ulcers section of the guidelines

Prevention: Securement & Padding of Device, Tubing, etc.

Securement devices decrease movement/slippage of device; Padding protects skin from pressure, friction. Caths, PEGS, G tubes, NG Tubes, endotracheal Tubes, NPWT, etc.)
Strategies: Nasogastric Tubes

- Use tube stabilization or securing devices
- Check nares often
- Prevent migration
- Avoid securing towards top of head

Strategies: Endotracheal Tubes

- Assess skin under tubes each shift, especially lips
- Work with Respiratory Therapy to move/rotate sites if possible
- Use attachment/securing device
Strategies: Tracheostomy Sites

- Assess areas of rubbing - chin/neck - every shift
- Clean site per protocol; more often if increased secretions
- Cut gauze or foam as a collar under base
- Remove sutures ASAP to prevent pulling
- Check ties for moisture, tightness, friction
  - Use padding under straps

Strategies: BiPAP / CPAP Masks

- Include RT in team assessing sites
- Needs to fit tight to ventilate
  - Avoid other devices under mask
- Lift and reposition when able
- Pad with thin foam / HCD dressing
**Strategies: Oxygen Tubing/Masks**

- Watch nares, bridge of nose
- Keep tubing as loose as possible
- Watch ears, move hair
- Use tubing protectors

**Strategies: Abdominal Wall Feeding Tubes**

- Check site with each feeding or each shift (if not being used)
- Remove any sutures ASAP
- Stabilize!
- Use drain sponge, foam or hydrocolloid if irritated
- If leaking, find out why and fix if able!
Strategies: Bedpans!

• More common than you think!
• Monitor & remove timely
  – Make sure call light in reach
  – Set phone alarm

Devices Meant to Prevent

• Assure proper fit
• KNOW the patient’s blood flow
• Remove and inspect regularly
• Penny wise & pound foolish?
  – Push back if devices aren’t adequate
Other Devices / Sources of Injury

- Anything that can add to traumatic injury!
- IV fluids and lines, stopcocks, needle caps, debris

Devices That May Cause Injury: Anti-Embolism Stockings Compression bandages

- Before “routine orders” implemented think about:
  - Compression
    - adds 18-20mmHg pressure to compromised area (heel)
  - Add other co-morbidities (drugs, malnutrition, DM, etc.) and the risk for breakdown increases

Cock, K. Anti-embolism stockings: are they used effectively and correctly? Bri Jour Nsg 2006:Vol 15 No 5
Conclusion

• Visualize
• Closely Monitor
• Document, document, document
• Evaluate, Re-evaluate, Re-evaluate
• Involve Patient/Family/Care-Giver
• Educate
• Communicate
• Work as a TEAM
• Posters with data and pictures available

References

1. EPUAP, NPUAP, Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. 2014.