Prevention of Deep Tissue Injury

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Risk profile for DTI

**Non-modifiable Risk Factors**
- Exposure to intense pressure prior to admission
- Anticoagulation?
- Body mass index
- Compromised perfusion
  - Vasoactive meds
  - Pre-existing PAD

**Modifiable Risk Factors**
- Exposure to intense pressure during stay
  - OR table
  - Diagnostic tables
  - Bedside chairs
  - Medical devices
- Exposure to long durations of pressure
  - Time in the chair
  - Time in one position in bed
  - Medical devices
- Exposure to shear
  - HOB up for VAP, head injury

Research in Modifiable Risk Factors

- Research on modifying intensity of pressure
  - Use of a microclimate/pressure redistribution mattress reduced DTI to zero in CV ICU (Black, Berke, 2012)
  - Small sample size in one facility
- Use of multilayer dressing on sacrum and heels in patients reduced pressure ulcer rates
  - Admitted thru ED, then to ICU (RCT by Santamaria, 2013 in press)
  - Admitted to ICU (RCT by Kawales, in press; Cherry, 2012; Chalken, 2012)
  - In the operating room (Brindle, 2012)
  - Change in DTI rate not specifically measured
Is a Change in Practice Needed to Reduce DTI from Prolonged Sitting?

- Prolonged sitting in the chair
  - Bedside chairs and Cardiac Chairs have poor pressure redistribution
    - Seat cushions are rarely prescribed
  - Some practices insist that patients be up in chairs for many hours “because it is good for them”
    - When combined with patients who are medicated for pain or too weak to move themselves the risk escalates

Is a Change in Practice Needed to Reduce DTI from Medical Devices?

- Fit the device to the patient
  - Measure for stockings, don’t guess
  - Use proper sized boots
- Pretreat the skin with dressings
  - Dressings shown to reduce ulcer incidence
    - Tracheostomy 8.1% to 3.4% (Boesch, 2012)
    - Oxygen tubing 37% to 0% (Turgenia, 2011)
    - NIPPV (Weng, 2012)
      - Film dressing 53.3%
      - Hydrocolloid 40%
      - No dressing 96.7%
- Remove or move daily to see the skin
- Track MDR ulcers
- Report defective devices to manufacturers

Research on Reducing Shear

- Role of shear in DTI formation less obvious clinically
  - Lateral rotation beds
- Research on reducing DTI in ICU would be in part from reduction of shear with VAP precautions
Prevention of DTI is already occurring with interventions to reduce pressure ulcers

However, we need to escalate prevention in OR, ICU, in chairs and beneath medical devices.