Prevention of Medical Device Related Pressure Ulcers

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Introduction

- **Purpose**
  - To reduce the incidence of medical device related pressure ulcers in hospitalized patients.
- **Problem**
  - "Medical device related pressure ulcers have been shown to occur in 24-34.5% of patients" (Holdman et al., 2020, p. 8).
  - "The proportion of patients with hospital-acquired ulcers related to medical devices was 34.5%" (Black et al., 2010, p. 358).
  - "If patients are given a medical device, they are 2.4 times more likely to develop a pressure ulcer of some kind" (Black et al., 2010, as cited in Zakaria et al., 2018, p. 924).
  - "If a medical device is used for a prolonged duration, it can create unrelieved pressure or edema, cause friction/shearing that may impair sensation, reduce circulation, and alter the microclimate" (Cooper et al., 2020, p.152).

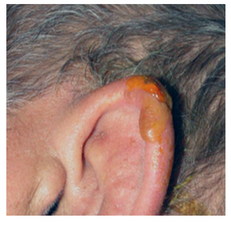
Materials and Methods

- Evidence Based Practice
  - Saint Mary-of-the-Wood College Database
  - Google Scholar
  - Cumulative Index to Nursing and Allied Health Literature (CINAHL)
  - Medline Complete
  - Health Source-Nursing/ Academic Edition
  - Union Health Database and Policies and Procedures
  - Keywords: medical device-related pressure ulcers, pressure ulcers, medical device-related pressure ulcer prevention, treatment for medical device-related pressure ulcer, medical device-related pressure ulcer bundles, policies and procedures for pressure ulcers, devices that cause pressure ulcers.

- Medical Device-Related Pressure Ulcer Prevention Bundle
  - Proper fitting medical devices
  - Methods of padding (Examples include: Mepilex, Sorbacell Foam Tracheostomy Drain Sponge, Polyethylene or Polyurethane foams , E-Z Wrap Foam Tube Cushions, Hermell Foam Adhesive Pressure Pads, or Tegaderm)
  - Straps for securement of devices

Results

Results	Discussion
"Pressure Ulcer Staging System Checklist (PUSS): this checklist was developed by the NPUAP. The tool was utilized to assess skin condition and detect if any ETT and/or NGT related pressure ulcers had occurred in any participants, and, if so, to what degree (study and control groups)" (Zakaria et al., 2018, p. 927).	When assessing the skin under a medical device a single assessment tool should be used for all assessments to ensure accurate skin assessments and consistent data. This will allow for the nursing personnel to detect any changes and by using a staging system this will allow for early interventions.
"A number of studies have used dressings to pad the skin between the medical device and the skin and reduced ulcers. Bundling the most common devices (eg, NIPPV masks) with preventive dressings will aid in getting the dressing on at the time of placement without delaying the process" (Black & Kalowes, 2016, p. 95).	As a prophylactic treatment a pad could be placed under the medical device when it is installed to prevent pressure ulcer formation. Taking the time to place a pad could be a simple task that reduces the incidence of pressure ulcer formation significantly.
"These assessments should include loosening and removing the devices on each shift (if the patient's medical condition allows) for a thorough skin inspection" (Black et al., 2010, p. 364).	Moving the device would allow for the best and most thorough assessment of the skin under the device for any signs of possible pressure ulcer formation. If the device can be moved it should be repositioned in a different area to prevent applying pressure to the same place continuously.
"Our findings reveal that implementing a multidisciplinary plan that includes education, bedside assessment by both caregivers (RT and RN), and movement of respiratory devices can reduce pressure injuries" (Holdman et al., 2020, p. 9).	The assessment should be performed by two RNs during shift change, the two people observing would allow for a more thorough assessment of the skin for early detection and assistance in moving the devices.
"Health care providers should be educated to assess all medical devices and replace those made from hard material with softer versions as soon as possible" (Cooper et al., 2020, p. 153).	Educating the registered nurses about the type of assessment they will use on the skin and how often they will perform the assessments would be an effective way to integrate it into practice.
"Medical devices need to be sized correctly to avoid excessive pressure and secured to prevent dislodgment without additional shear/pressure on adjacent skin" (Cooper et al., 2020, p. 152).	The proper fit of a device is just as important as the device itself, a proper fit of the device will ensure no extra pressure needs to be added to the device to keep it in place.



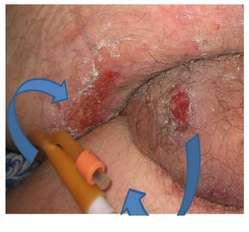
(Black & Kalowes, 2016, p. 93)

Table 2 Prevalence and HAPU rates: Overall and with/without MDR Pressure Ulcers

Prevalence rate	
Overall	9·7% (212 of 2178)
Excluding patients with only MDR ulcers	8·3% (181 of 2178)
Patients with MDR ulcers	1·4%
Hospital acquired rate	
Overall	5·3% (113 of 2079)
Excluding patients with only MDR ulcers	4·0% (83 of 2079)
Patients with MDR ulcers	1·3%

MDR, medical device related.

(Black et al., 2010, p. 361)



(Black & Kalowes, 2016, p. 93)

Conclusions

- Education of the nursing staff on prevalence and importance of medical device-related pressure ulcers is the first step of prevention (Holdman et al., 2020).
- Revision to the Existing Policies and Procedures:
  - Assessments of device and skin around the device should be performed at shift change with both nurses observing the skin (Black & Kalowes, 2016).
  - Correct sizing of medical devices should be used to prevent unnecessary pressure (Cooper et al., 2020).
  - Padding the device can allow for less pressure from the device on the skin as well as prevention of shearing (Zakaria et al., 2018).
  - During the assessment, the devices should be repositioned and moved in order to assess the skin properly (Black et al., 2010).

Future Work

- Future research should be performed to determine the amount of time that a device could be left in place before causing any complications such as pressure ulcers.
- Future research could be performed on specific devices and the complications that each individually put patients at risk for.
- Future research should be performed using the bundle created above to determine effectiveness of prevention of medical device-related pressure ulcers.

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