DeKalb Medical
Pushing Beyond

KEYS TO OBTAINING AND MAINTAINING ZERO HEEL ULCERS IN A 500-BED FACILITY

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Abstract

In March, 2008, incidence of heel ulcers in a 500-bed acute care facility was 6%, roughly three times the national average.[1,2,3,4] Interventions to prevent pressure ulcers included use of multi-podus boots and pillows. The facility's Systems Coordinator, who is a CWOCN and the facility's representative of the hospital system's SMART team, began an extensive search for a device that could assist the hospital in achieving better outcomes. She tried multiple products, including the industry's leading heel protector. Lamentably, she found herself able to "wiggle out" of every one. One company even attempted about 10 different iterations of prototypes. None were able to stay in place reliably.

Finally, the principal investigator worked with a local company to develop a heel protector that would stay in place. A physical therapist from the facility also worked with the company to include an innovative support mechanism to prevent plantar flexion contracture caused by shortening of the Achilles tendon. The principal investigator then developed an evidence-based protocol,[4,5,6,7] predicated principally on the presence of co-morbidities, that provided guidance as to when a pillow or the heel protection device should be applied. Finally, she worked with IT personnel to encapsulate the protocol in that facility's electronic medical record (EMR) system, so that nurses are alerted automatically when the intervention is called for.

After institution of the intervention, the facility's heel ulcer rate declined rapidly and steadily. The facility has maintained a zero nosocomial heel ulcer rate since 2009.

Keys to driving heel ulcers to zero – and maintaining a zero rate – include (1) instituting an evidence-based protocol, (2) encapsulating the protocol into the hospital's EMR to alert nurses automatically when the intervention is needed, and (3) selecting a heel protection device that stays in place even with extreme patient movement.

Three Keys to Success

Evidence-Based Protocol

A literature review identified the following co-morbidities as being associated with the development of heel ulcers: immobility, diabetes; peripheral vascular disease; hypotension, or reduced perfusion to lower extremities; vasopressors; and smoking.4-14 The 2009 NPUAP Guidelines4 call for offloading the heels of patients with or at risk for heel pressure ulcers. These risk factors and interventions were synthesized into a formal protocol.

Product Selection

The principal investigator began an extensive search for a device to improve outcomes, but her tests found patients would be able to "wiggle out" of every one. One company even attempted about 10 different iterations of prototypes. None were able to stay in place.

Finally, the principal investigator worked with a local company to develop and customize a heel protector that would reliably stay put.

EMR Integration

After the intervention showed early success, the principal investigator worked with the facility's IT personnel to encapsulate the protocol into the facility's electronic medical record (EMR) system. Nurses are now alerted automatically whenever the intervention is indicated.

Keys to reaching and maintaining a zero rate of injury included research, product selection, and EMR integration.

References

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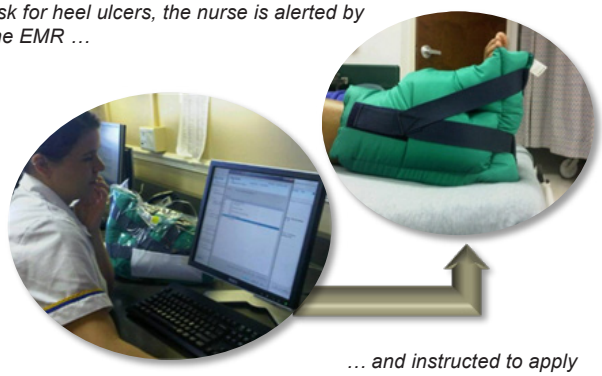
EMR Integration

When chart data indicate that a patient is at risk for heel ulcers, the nurse is alerted by the EMR …



… and instructed to apply heel suspension boots.

EMR integration helps ensure that the right patient gets the right intervention at the right time – every time.

Evidence-based Protocol

No Break-down

Patient is immobile[9] and has one of the following:
- Diabetes[5,9,14]
- Smoker[14]
- Peripheral Vascular Disease[5,14]
- Decreased Blood Pressure[14]

- Turn q2 hrs and check heels
- Apply heel protectors

OR

- Use soft boots to suspend heels
- Place order in computer per MD approved protocol

Patient is immobile[9] and has one of the following:
- Unresponsive[9,12,14]
- Intubated[14]
- Vasopressor Therapy[5,9,14]
- Paralyzed[9,11,12,14]
- Absent pedal pulses[9,14]
- Fractured hip[5,9,14]

- Use soft boot to suspend heels

OR

- Use multipodus boot if MD or WOC ordered
- Place order in computer per MD approved protocol

Stage I-II Breakdown OR Superficial Thickness Wound

Suspend heels if wound is on heel, using soft boot or pillow under calf.

Wound Care daily and prn:

1. Cleanse with wound cleanser
2. Blot dry with gauze
3. Apply solid hydrogel
4. Secure with rolled conforming gauze
5. May use same hydrogel for 1 week if not soiled
6. Place order in computer per MD approved protocol.

Stage III-IV & Unstageable OR Full Thickness Wound

Consult WOC nurse per MD approved protocol. Suspend heels if wound on heel using soft boot or pillow under calf.

Wound Care daily and prn:

1. Cleanse with wound cleanser
2. Blot dry with gauze
3. Apply non adherent dressing (xeroform or non adherent woven mesh)
4. Apply absorbent dressings as needed
5. Secure with rolled conforming gauze.
6. Place order in computer per MD approved protocol.

*** All MD or WOC orders supersede this protocol**

DeKalb Medical's evidence-based, heel ulcer protocol is now integrated into the hospital's EMR system.

Product Selection Criteria

Do No Harm

Primary selection criterion was to do no harm, which included providing **suitable openings** that route tubing away from patients' skin, and a design that **prevents hyperextension of the knee.** Six(6) products **completely offloaded the heel,** and five (5) of them also helped to **prevent plantar flexion contracture.** Only one, however, was also **machine washable**; was judged to be **durable**; and **stayed in place** during the principal investigator's tests in which she attempted to "wiggle out" of each product.

Summary of Results

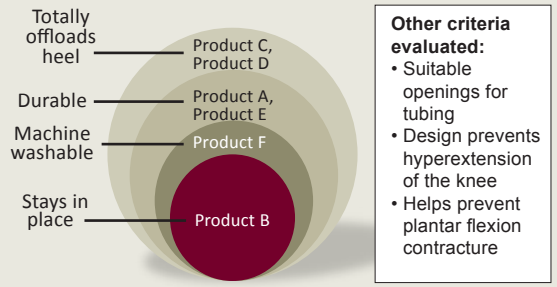
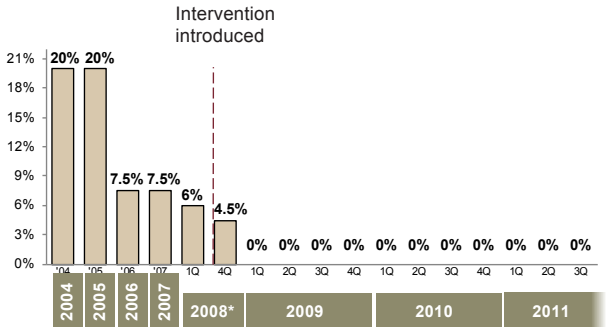


Figure: Venn diagram of products and selection criteria

DeKalb worked with a local company to develop and customize the only heel protector to reliably stay in place.

Heel Ulcer Incidence



* Note: Quarterly prevalence and incidence measurements began in the fourth quarter of 2008.

DeKalb Medical has maintained a nosocomial heel ulcer rate of ZERO for eleven consecutive quarters.

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