Evan Call
Pressure Injuries:
The 6 Elements We Can Impact

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Support Surfaces, Performance, Effectiveness ...the Future
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Evan Call, presenting
Justification
With all we do, injury still occurs

Unavoidable injuries

- End of life, Kennedy Terminal ulcer
- Unavoidable
  - NPUAP Monograph (Pieper)
With all we do, injury still occurs

Preventable, but still occurring injuries

In their article on pressure injuries and risk factors, Dealey, et al state:

“It is not possible to prevent all pressure ulcers, and it would appear that despite provision of education and considerable resources, time and effort, the numbers of patients with PU have not really reduced as much as has been hoped.”


In their article discussing e-stim [or electrical stimulation] for PU prevention, Solis/Mushahwar, et al state:

“Recognizing the absence of a significant reduction in the incidence of pressure ulcers, new preventative interventions are needed. . . .” (Solis/Mushahwar).
With all we do, injury still occurs

**Preventable, but still occurring**

- **Attention**
- **Intervention**—dressings, microclimate, support surfaces, repositioning and nursing care, prevention, training
- **Proper surface**
- **New product development**—FEA, pressure mapping. (Or companies. Or researchers)

In discussing support surfaces, Rithalia states:

“Most pressure ulcers can be prevented if appropriate measures are instituted at an early stage.”

In their discussion of low- vs high-tech solutions Cavicchioli and Carella state:

“However, with some patient populations, the omission of one intervention may have unfavorable results.”
Can we think about these differently?

- **Pressure**- Immersion and Envelopment- spread over greater area
- **Friction**- Sheet, chuck, overlay, moisture - Balance positioning with release
- **Shear**- HOB, Type of Surface, Friction- Reduce sliding and release shear
- **Heat**- Type of surface, turn schedule- Skin off the surface to breathe
- **Moisture**- Surface selection, power - moisture reduction, risk reduction
- **Nursing Practice**- Turning, early mobility-
Pressure

Video of tush sitting down (Darin working on: adding arrows to indicate what changes to be watching for)
Friction

- The resistance to motion in a parallel direction relative to the common boundary of two surfaces
- Increased by the presence of moisture
Shear  (Darin working on these)

- Video of tissue shearing
  - Possible: Shearing motion in cells: 4-second video
    - <iframe src="https://player.vimeo.com/video/7549912" width="640" height="640" frameborder="0" allowfullscreen></iframe>****
    - http://cohengroup.lassp.cornell.edu/content/high-resolution-measurement-shear-mechanical-properties-articular-cartilage-using-grate-and, which is “High resolution measurement of shear mechanical properties in articular cartilage (4 seconds)"
  - 4 second video — non licensed, of shear motion in cell

- We don’t have much of anything for this slide
Heat

- Time lapse video of sweat forming on the skin

“Both temperature and humidity are influenced by several factors within the body and the environment, including length of time on the surface, air convection, heat radiation from lights or other sources, hormonal variations, and medication” (Rithalia).

“There is a direct relationship between skin surface temperature and skin perfusion regardless of the level of loading or deformation.” (Tomovo-Simitchieva/Kottner.)
Moisture

Possible approach:

- What we think of when we say water is present
  - Hydroplane across beach
- What we really get when water is present
  - Picture of something viscous (like honey)
Moisture
Nursing Practices

- Turning
- Repositioning
  - Positioning aids
- Dressings for prevention
- Skin care regimen
- Engaged nurses: see all aspects of care, knows true patient status
  - as opposed to aides, or CNAs, or Family care
- Engaged/motivated/educated:

In their discussion of the PROTECT protocol, DeMeyer, et al, state:

“The attitudes of nurses towards pressure ulcer prevention are significantly lower than the attitudes of tissue viability nurses and because this attitude leads to a lower application of fully adequate prevention, motivating nurses will be a challenge.”
What we are not good at changing

- **Disease state** (Garcia-Fernandez, et al)
- **Genetics** (ibid)
- **Lifestyle**
- **Nutrition** (also partly compliance) (Langemo/Posthauer)
- **Compliance:**
  “There was considerable variation in participants’ characteristics and in their compliance to instruction. . . . Although it’s possible to recruit a more homogenous group of participants, it will be difficult to control temperament.” (van Londen, et al)
Physiologic Control Models of Homeostasis and Allostasis
Allostasis

Key Concepts

- Multiple responses (complex, simultaneous interplay of reactions to input)
- Borrowing resources to survive (at what cost necessary)
- Many sources talk about the body adapting: NPUAP Monograph, Bergstrand, Gawlitta, Spahn, Butler, Kim, van Londen, etc
- TENS unit: We know that in just 10 minutes, the body will adapt to the input, so we must reprogram the unit to still be effective.
Allostasis

“A healthy body is equipped to protect and heal itself” (Spahn).

However:
“The absence of an adaptive response may be a factor in increased PU risk.” (Kim/Bogie)

- We can using allostasis to prevent pressure injuries through proper design and use of mattresses or support surfaces.
- Allostasis is a tool to use for the future—better understanding will help us interact, train, solve, research, plan for, address, assist and prevent pressure injuries.
Quotes to use (somewhere):

- “Most pressure ulcers can be prevented if appropriate measures are instituted at an early stage” (Rithalia).
- “Clinicians . . . Must recognize that product and treatment choices affect how the body autoregulates itself” (Spahn).
- “Poor support surface choices can be clinically and financially devastating to both the patient and the facility” (Spahn).
- “[O]ur current measurements do not sufficiently indicate superiority in mattress design” (Butler).
- “Choosing a support surface that facilitate a body’s ability to maintain a stable internal environment in an everchanging external environment…” (Spahn)
References


References, cont.


