The Overarching of Pressure Injuries: The 3 legged stool - Wound Care

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Objectives

Participants will:

- Define the principles of wound healing
- Describe the importance of wound bed preparation before treating a pressure injury
Successful Wound Healing – Need a Plan

• **Systematic wound bed preparation approach to address:**
  - Underlying causes of a wound
  - Patient-centered concerns & care
  - Reality of healing

• **Encourages:**
  - Treating wounds with an EVB & interprofessional approach

Sibbald & colleagues. Wound Bed Preparation 2014 Update. Advances in Skin & Wound Care March 2014

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What caused this pressure injury?

Because.....For successful healing or preventing recurrence, the cause has to be corrected

Identify/Prevent/Treat the Cause

• Consider---
  • Comprehensive wound assessment
  • Blood flow adequate?
  • What are the co-morbidities/co-factors
    • Nutrition?
    • Glycemic control?
    • Medications?
    • Smoking?
    • Pain?
    • Pressure/Shear !!!!
Case Exemplar

- 98 year-old female
- Admitted to hospital for pneumonia, anorexia, & dehydration
- Bedbound
- Unstageable pressure injury on admission

Wound Bed Preparation

© R.G. Sibbald, E.A. Ayello and H. Smart 2014

Identify/Prevent/Treat the Cause

Local wound care
(Healable, maintenance, non-healable)

Patient/Family Centered Concerns

Debridement

Inflammation/Infection

Moisture Balance

Edge Effect

Sibbald & colleagues. ASWC. 2011 & 2014
Family wants “everything done for the patient.”

_Sibbald & colleagues, Advances in Skin & Wound Care, 2011 & 2014_

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**Patient/Family Centered Concerns**

- Interprofessional approach
- Referrals as needed
- Individualize care
  - Support systems
  - Environmental factors
Wound Bed Preparation

- Person with a Wound
- Identify/Prevent/Treat the Cause
- Local wound care (Healable, maintenance, non-healable)
- Patient/Family Centered Concerns
- Debridement
- Inflammation/Infection
- Moisture Balance
- Edge Effect

Reality of Wound Healing

Healable Wound
- Underlying cause can be corrected
- + adequate blood supply to heal
Reality of Wound Healing

Maintenance Wounds

- **The cause can be corrected - but:**
  - Clinical impediment
    - Debridement
    - Smoking cessation
    - Glycemic control
  - Lack of adherence
  - System resources
    - Addressing social/financial situation

Reality of Wound Healing

Non-healable

- Inadequate systemic or local factors for healing
Case Exemplar

- Patient/Family Centered Care
  - Family discussions:
    Patient not a flap candidate

Wound Bed Preparation

Person with a Wound

Local wound care
(Healable, maintenance, non-healable)

Debridement

Inflammation/Infection

Moisture Balance

Edge Effect

Identify/Prevent/Treat the Cause

Patient/Family Centered Concerns

© R.G. Sibbald, E.A. Ayello and H. Smart 2014

Sibbald & colleagues. ASWC. 2011 & 2014
Case Exemplar

• Family plan
  • Take patient home & “heal” wound with dressing changes
• Surgeon plan
  • Debrided wound at bedside

Topicals - Maintenance Wounds

• Impaired capacity to heal
  – Address wound characteristics & maintenance wound situation
• Consider topicals to control bacteria but preserve cells (non-cytotoxic)
  – Antimicrobials, absorbent dressings, selective enzymatic debrider

Sibbald et al., 2011, 2014
Topicals – Nonhealable Wounds

- No capacity to heal
  - Address wound characteristics & patient/family centered concerns
- Consider topicals to control bacteria
  - Cytotoxicity is less important
  - Providone Iodine, odor control, high absorbency dressings, medical grade honey

Case Exemplar Endpoint

- Given rapid decline while in hospital, focus became end-of-life care
- Patient expired while in hospital
Objectives Re-visited

Participants have:

- Defined the principles of wound healing
- Described the importance of wound bed preparation before treating a pressure injury

Treatment of Pressure Injuries
The 3-Legged Stool

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DCN, MHA, RDN, FAND
Disclosures

• Nancy Munoz
  – No financial disclosures

Learning Objectives

• Understand the impact of malnutrition on risk for pressure injury development and treatment

• Define the National Pressure Ulcer Advisory Panel (NPUAP) Nutrition Clinical Practice Guideline for the prevention and treatment of pressure injury

• Implement appropriate nutrition interventions for the prevention and treatment of pressure injuries
Nutrition and Health

• Nutrition
  – Determinant of health
  – Promotes physiological wellbeing
    • Also contributes to social, cultural, and psychological quality of life
  – Promotes functionality
  – Effective disease management approach
    • Lessens chronic disease risk, slows disease progression, and reduces disease symptoms
      – Risk for developing pressure injuries
      – Treatment of pressure injury
Nutrition and Health

- To promote health
  - Meet macronutrient needs
    - Protein
    - Carbohydrates
    - Fat
  - Ensure Micronutrient are provided in sufficient amount to sustain body functions
    - Vitamins
    - Minerals

Malnutrition

Impact of Malnutrition
- Low mood
- Weight loss
- Low energy
- Muscle wasting
- Increased risk of falls
- Reduced independence
- Infections
- Confusion
- Increased risk of hospital admissions

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What is the nutrition status of our patients?

• Hospital Inpatients
  – Protein-calorie malnutrition was the most common type of malnutrition
  – In 2013, there were 1.95 million hospital stays that involved malnutrition
    • 1.25 million malnutrition-related stays (63.9%) were categorized as protein-calorie malnutrition
    • 21.6% malnourished due to weight loss or failure to thrive


What is the nutrition status of our patients?

• Other malnutrition related hospital stay types:
  – 8.3% cachexia
  – 4.4% underweight
  – 1.7% postsurgical non-absorption
  – 1% nutritional neglect

Cachexia

• Definition
  – a multifactorial syndrome characterized by severe body weight, fat and muscle loss and increased protein catabolism due to underlying disease(s)

• Increases patients' morbidity and mortality
  – Compared to other types of malnutrition, individuals with cachexia had the highest in hospital mortality
    • 11.7%


Consensus definition of sarcopenia, cachexia and pre-cachexia: Joint document elaborated by Special Interest Groups (SIG) “cachexia-anorexia in chronic wasting diseases” and “nutrition in geriatrics”. [PDF Link]

Cachexia

• Cannot be reversed with nutrition interventions
  • Even if the patient ingests more calories than needed, lean body mass will be lost
What is the nutrition status of our patients?

• Long Term Care Setting
  – 20% nursing home residents presents with some form of malnutrition
  – Prevalence ranged from 1.5-66.5%
    • Due to variable malnutrition definitions


Nutrition Risk for Developing Pressure Injuries

• Unintended weight loss
• Undernutrition
• Increased nutrient needs
• Malnutrition
• Dehydration
• Low BMI
• Inadequate food and fluid intake
• Inability to feed self
Nutrients and Wound Healing

Malnutrition: “insufficient calories, protein, or other nutrients needed for tissue maintenance and repair.”

Nutrients: Essential to support health, skin integrity, and pressure injury healing

- Carbohydrates
  - Provide glucose to support normal cellular activities
    - Protein synthesis
    - Secretion of hormones and growth factors
  - Calories are needed to support the inflammatory process, angiogenesis, collagen deposition
  - Prevent protein breakdown as an energy source

Nutrients and Wound Healing

- **Nutrients**: Essential to support health, skin integrity, and pressure injury healing
  - **Protein**
    - Immune system: Initiate healthy inflammatory response process for wound healing
    - Activate macrophages (clean the wound), release cytokines to trigger reactions essential for wound healing
  - **Protein Calorie Malnutrition**
    - can contribute to increased susceptibility to infection, decreased collagen and granulation tissue development during proliferative stage of wound healing

Nutrients and Wound Healing

- **Nutrients**: Essential to support health, skin integrity, and pressure injury healing
  - **Fats**
    - Dense source of calories
    - Essential component of cell membranes
  - **Essential fatty acid deficit interferes with the body's ability to have a normal immune response**
Nutrients and Wound Healing

- Nutrients: Essential to support health, skin integrity, and pressure injury healing
  - Vitamins and Minerals: Vitamin C
    - Immune response
    - Cell division (mitosis)
    - Monocyte movement into wound tissue $\rightarrow$ Macrophages during inflammatory phase
  - Deficiency: Produces capillary fragility and decreased wound strength

- Nutrients: Essential to support health, skin integrity, and pressure injury healing
  - Vitamins and Minerals: Vitamin A
    - Important for cell mediated immune function, collagen synthesis, and cross linking
    - Counteracts delay in wound healing seen in presence of steroid use, diabetes, and radiation damage
  - Deficiency: can contribute to increased susceptibility to infection, decreased collagen and granulation tissue development during proliferative stage of wound healing
Nutrients and Wound Healing

• Nutrients: Essential to support health, skin integrity, and pressure injury healing
  – Vitamins and Minerals: Vitamin B
    • Essential co-factors in enzyme activity
  – Thiamine, riboflavin, vitamin B₁₂, and pyridoxine
    • Important in collagen matrix synthesis
  – Deficiency
    • Have an indirect effect on wound healing by contributing to host resistance
      – impaired antibody formation and white blood cell function
      – increases susceptibility to infections

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Nutrients and Wound Healing

• Nutrients: Essential to support health, skin integrity, and pressure injury healing
  – Vitamins and Minerals: Vitamin E and K
    • Vitamin E can interfere with the role of Vitamin A
    • Vitamin K deficiency can contribute to decreased coagulation, thus impairing the inflammatory phase of healing

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Nutrients and Wound Healing

• **Nutrients:** Essential to support health, skin integrity, and pressure injury healing
  
  – **Vitamins and Minerals:** Iron
    • Iron is essential for improving tissue perfusion
      – Transporting oxygen to the tissues
      – Necessary for collagen synthesis
    • Iron deficiency can contribute to
      – Increased tissue ischemia
      – Impaired collagen cross-linking
      – Decreased wound strength

Nutrients and Wound Healing

• **Nutrients:** Essential to support health, skin integrity, and pressure injury healing
  
  – **Vitamins and Minerals:** Zinc
    • Stimulates the activity of more than 100 enzymes
    • Necessary for membrane stability
    • Maturation of collagen in the proliferative and remodeling phases of wound healing
  
  – Deficiency can decrease
    • Rates of fibroplasia and collagen synthesis
    • Wound strength
    • Impair immune response, increasing susceptibility to recurrent infections
Pressure Injury
Prevention and Treatment

Nutrition Guidelines 2014

Nutrition Recommendations

- Nutrition screening
- Nutrition assessment
- Care planning
- Energy intake
- Protein intake
- Hydration
- Vitamins and minerals
NPUAP Pressure Injury Prevention
Take Home Message

• **Clinical Characteristics of Malnutrition**
  – Academy of Nutrition and Dietetics
  – ASPEN
  – Malnutrition:
    • Any type of nutrition imbalance
      – Undernutrition
        » lack adequate calories, protein, or other nutrients needed for tissue maintenance and repair
      – Over nutrition


NPUAP Pressure Injury Prevention
Take Home Message

• Hospitalized patients are at risk undernutrition
  – NPO
  – Disease process
• Unplanned weight change/insidious weight loss
• **Accurate height and weight**
• Healthy Meal Pattern and adequate fluids
• Food first
• Oral nutrition supplements
Resources

Offloading Preventing and Treating

Arthur Stone, DPM
Board Member NPUAP
Disclosures

- NPUAP Board Member
- Consultant Dabir Surfaces
- Consultant/Speaker Smith & Nephew
Objectives

- Discuss Why Off-loading is Important
- Discuss Risk Factors
- Discuss the NPUAP-EPUAP 2014 International Pressure Ulcer(Injury) Prevention & Treatment Guidelines
- Discuss evidence-based pressure injury prevention and treatment

Common Areas for Pressure Injuries
Risk factors

INTRINSIC FACTORS

Disease
Age
Body Type
Poor Nutrition
Incontinence
Infection
Immobility
Impact Injury
Friction and Shear Forces
Posture
Heat
Moisture
Excessive Uniaxial Pressure

EXTRINSIC FACTORS

I've been sitting out there for hours, waiting to see you!

I'm sure it's not done you any harm. So, what's the problem?

Pressure sores!
ASPECTS of Pressure Ulcer Prevention

A: Assess Pressure Ulcer Risk
S: Skin Assessment
P: Pain and Patient Concerns
E: Eating & Drinking
C: Continence & Moisture Management
T: Teaching
S: Support surfaces, T&P

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Repositioning and Early Mobilization

- Underlying cause of Pressure Injuries cannot form without loading,
- Frequency
- Repositioning Techniques
- Devices
- Mobilization

International Guideline: Pgs. 91-101

General Off-Loading Techniques

- Reposition ALL individuals at risk or with existing pressure injuries, unless contra-indicated
- Consider support surface selection
- Repositioning Bed/Seated individuals

International Guideline: Pgs. 91-101
Prevention Dressings
International NPUAP/EPUAP Prevention and Treatment of Pressure Ulcers (Injuries): Clinical Practice Guideline

- Repositioning and Mobilization
- Repositioning to Prevent and Treat Heel Pressure Ulcers (Injuries)
- Support Surfaces