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Pressure Injuries, Protein and Beyond: Understanding the Recommendations

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Disclosures

- Speaker's Bureau/Honorarium
  - Abbott Nutrition
  - Nutricia North America
- *None pose any conflict of interest for this presentation*

The opinions reflected in this presentation are those of the speaker and independent of Nutricia North America

Learning Objectives

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Participants in this activity will be able to:

- Understand protein recommendations for the nutrition management of pressure injuries from the 2019 International EPUAP/NPIAP/PPPIA Clinical Practice Guidelines
- Review the research behind the increased protein needs in wound management
- Discuss the recommendations behind added nutrients recommended for stage 2 or greater pressure injuries including high protein, arginine, zinc, and antioxidants
- Demonstrate how this could be applied to your clinical practice

Pressure Injury Clinical Practice Guideline

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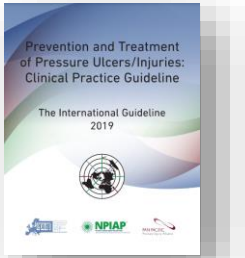
- Collaborative effort between NPIAP, EPUAP, and PPPIA
- Updated every 5 years
- Latest version released November 2019



The 2019 International EPUAP/NPIAP/PPPIA Pressure Injury Prevention and Treatment Clinical Practice Guidelines can be found at: http://internationalguideline.com/

Printed copies of both the Quick Reference Guide and full 2019 International EPUAP/NPIAP/PPPIA Pressure Injury Prevention and Treatment Clinical Practice Guidelines can be obtained at https://guidelinesales.com/

*The 2019 International EPUAP/NPIAP/PPPIA Pressure Injury Prevention and Treatment Clinical Practice Guidelines does not endorse or indicate any specific product

European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA; 2019.

Clinical Practice Guidelines Are Not Prescriptive

- General practice recommendations to aid clinical decision making for specific clinical situations
  - Not fixed protocols

- Should be tailored to the needs and circumstances of the individual patient and specific care setting

National Institutes of Health https://www.nccih.nih.gov/health/providers/clinicalpractice

15 Nutrition Recommendations

- 3 - Nutrition Care Process
- 4 - Energy and Protein
- 3 - Nutritional Supplementation
- 2 - Artificial Nutrition
- 1 - Hydration
- 2 - Neonates and Children

Each recommendation has 4 elements

- Grade
- Evidence summary
- Implementation considerations
- Evidence discussion

Grading: Strength of Evidence

	Strength of Evidence
A	• More than one high quality Level I study providing direct evidence • Consistent body of evidence
B1	• Level 1 studies of moderate or low quality providing direct evidence • Level 2 studies of high or moderate quality providing direct evidence • Most studies have consistent outcomes and inconsistencies can be explained
B2	• Level 2 studies of low quality providing direct evidence • Level 3 or 4 studies (regardless of quality) providing direct evidence • Most studies have consistent outcomes and inconsistencies can be explained
C	• Level 5 studies (indirect evidence) e.g., studies in normal human subjects, humans with other types of chronic wounds, animal models • A body of evidence with inconsistencies that cannot be explained, reflecting genuine uncertainty surrounding the topic
Good Practice Statement	• Statements that are not supported by a body of evidence as listed above but considered by the Guideline Governance Group to be significant for clinical practice

European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA; 2019.

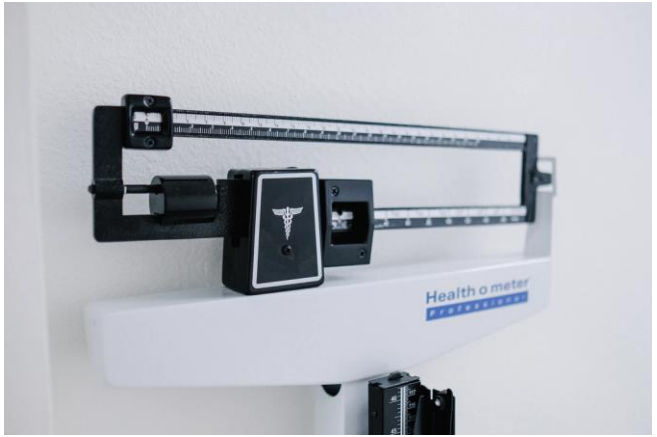
Grading: Strength of the Recommendation

	Strength of Recommendations Extent to which adherence will do more good than harm
↑↑	Strong positive recommendation: Definitely do it
↑	Weak positive recommendation: Probably do it
↔	No specific recommendation
↓	Weak negative recommendation: Probably don't do it
↓↓	Strong negative recommendation: Definitely don't do it

European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA; 2019.

Protein Intake for Individuals with a PI

- Provide 1.25 to 1.5 g/kg body weight/day for adults with a PI who are malnourished or at risk of malnutrition. (B1, ↑↑)
  - Provide adequate protein for positive nitrogen balance
  - Assess renal function



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The Evidence

- Breslow: Individuals receiving higher protein, higher energy diets achieved statistically greater reductions in pressure injury surface area compared to baseline than those receiving a standard diet
  - n=28
  - Long-term care
  - Tube feedings or meal supplements contained either 24% protein or 14% protein for 8 weeks

Breslow RA. https://doi.org/10.1111/j.1532-5415.1993.tb06940.x

The Evidence

- Iizaka: Meeting energy and protein requirements was associated with wound healing for deep pressure injuries
  - n=194 from 29 institutions
  - Three weeks of evaluation
    - Nutritional status (anthropometry and biochemical tests)
    - Wound status (structured severity tool)
    - Energy and protein intake were determined from medical records on a typical day
    - Protein intake varied from 0.95 g/kg body weight/day to 2.1 +/- 0.9 g/kg

Iizaka S. https://doi.org/10.1111/ggi.12420

Evidence

- Lee: Providing hydrolyzed collagen supplement (45 g/day) compared to placebo resulted in a 60% reduction in PUSH scores after 8 weeks versus a 48% reduction in the control group.
  - n=89 (71 completed the study)
  - Long-term care residents in 23 facilities across 4 states
  - randomized to receive standard care plus a concentrated, fortified, collagen protein hydrolysate supplement (n = 56) or standard care plus placebo (n = 33) 3 times daily for 8 weeks
  - Wound healing was assessed biweekly using the PUSH tool, version 3.0

Lee Sk. PMID: 16557055 DOI: 10.1097/00129334-200603000-00011

The Calorie Connection

- Calories = Energy
- If energy needs are not met, protein will be misused for energy.

Demling RH. PMCID: PMC2642618

Putting It in Perspective

	RDA	CPG Low	CPG High
	0.8 g/kg	1.25 g/kg	1.5 g/kg
125 lb patient	45 g	71 g	85 g

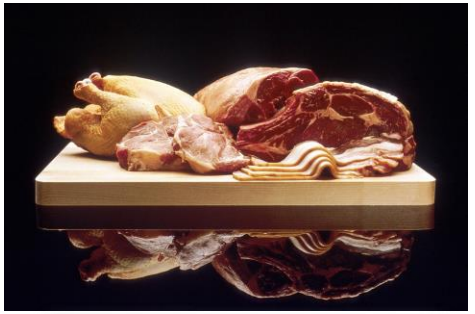
Putting It in Perspective

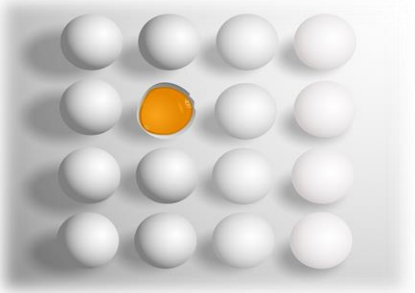
	RDA	CPG Low	CPG High
	0.8 g/kg	1.25 g/kg	1.5 g/kg
125 lb patient	45 g	71 g	85 g
	6.5 ounces	**10 ounces**	**12 ounces**

There are about **7 g** of protein in 1 ounce of cooked meat.

Food Sources of Protein

- Animal Sources of Protein
  - The largest source of protein, especially in U.S.
  - Beef, veal, pork, lamb, poultry, fish, eggs, milk, yogurt, and cheese
  - Vegetarian patients need alternative sources





Modular Protein Supplement Choices

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1. Whey

- High biological protein source
- Formulated from cow's milk

2. Casein

- Milk protein extract
- Less bio-available than whey

3. Soy

- Good biological legume protein

4. Collagen

- Natural to the body
- Main component of cartilage, ligaments, tendons, bones and teeth

Deciding on a Protein Supplement

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- Form
  - Liquid or powder
- Final volume
- Nutrient density
- Palatability
- Ease of administration
- Use in tube feedings
- Digestibility and tolerance
- Cost

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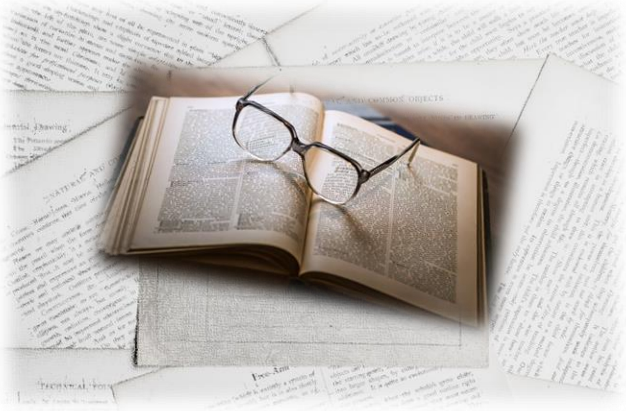
Nutritional Supplementation

Supplements for Individuals with a PI

- Provide high calorie, high protein, arginine, zinc, and antioxidant ONS or enteral formula with Stage 2 or greater PI who are malnourished or at risk of malnutrition (B1, ↑)



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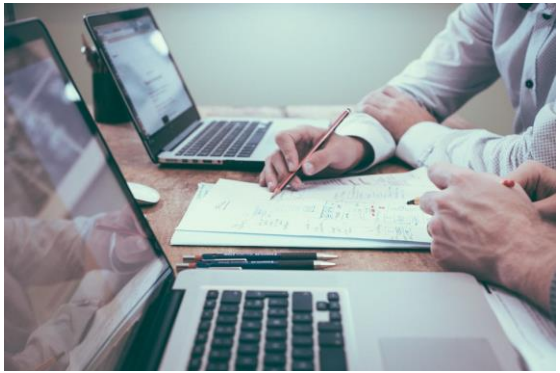
Research

- “There is growing evidence that supports a positive effect on PI healing of adding arginine and micronutrients (zinc and antioxidants) to high calorie, high protein nutritional supplementation via ONS or TF ”
  - Levels 1 and 3

Arginine, Zinc, and Antioxidants

- **Design:** Multicenter, randomized, controlled, blinded trial
- **Setting:** Long-term care and home care services
- **Patients:** 200 adult malnourished patients with stage II, III, and IV PUs
- **Interventions:** An energy-dense, protein-rich oral formula enriched with arginine, zinc, and antioxidants (400 mL/d) or an equal volume of an isocaloric, isonitrogenous formula for 8 weeks



Cereda E, Klersy C, Serioli M, Crespi A, D'Andrea F; OligoElement Sore Trial Study Group. A nutritional formula enriched with arginine, zinc, and antioxidants for the healing of pressure ulcers: a randomized trial. Ann Intern Med. 2015 Feb 3;162(3):167-74. doi: 10.7326/M14-0696. Erratum in: Ann Intern Med. 2015 Dec 15;163(12):964. PMID: 25643304.

What They Measured

- Primary end point
  - The percentage of change in pressure ulcer area at 8 weeks

Cereda E, Klersy C, Serioli M, Crespi A, D'Andrea F; OligoElement Sore Trial Study Group. A nutritional formula enriched with arginine, zinc, and antioxidants for the healing of pressure ulcers: a randomized trial. Ann Intern Med. 2015 Feb 3;162(3):167-74. doi: 10.7326/M14-0696. Erratum in: Ann Intern Med. 2015 Dec 15;163(12):964. PMID: 25643304.

Results

	Enriched Formula n = 101	Control Formula n = 99
Mean Reduction in PU area	60.9%	45.2%

- Adjusted mean difference was 18.7%
  - CI: 5.7 to 31.8%
  - P = 0.017

Cereda E, Klersy C, Serioli M, Crespi A, D'Andrea F; OligoElement Sore Trial Study Group. A nutritional formula enriched with arginine, zinc, and antioxidants for the healing of pressure ulcers: a randomized trial. Ann Intern Med. 2015 Feb 3;162(3):167-74. doi: 10.7326/M14-0696. Erratum in: Ann Intern Med. 2015 Dec 15;163(12):964. PMID: 25643304.

Arginine

- Both groups had the same amount of protein (40 g)
- Difference was the source of the nitrogen
  - Enriched group had arginine 6 g

Arginine

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- Under stress it becomes a conditionally essential amino acid
- Role in protein synthesis[1]
  - Promotes cell division
  - Hormone release
- Stimulates T cell response[2]
  - Helps prevent infection
  - Promotes cell division
- Nitric oxide production[1]
  - Promotes blood flow

1. Posthauer ME, Martin M. Wound healing. In: Mueller C, ed. A.S.P.E.N./Adult Nutrition Support Core Curriculum. 3rd ed. Silver Springs, MD: American Society for Parenteral and Enteral Nutrition; 2017:419–34.
2. Saghaleini SH, Dehghan K, Shadvar K, Sanaie S, Mahmoodpoor A, Ostadi Z. Pressure ulcer and nutrition. Indian J Crit Care Med 2018;22(4):283–9.

Zinc

- Enriched group = 18 mg
- Control group = 9.2 mg
- Involved in DNA synthesis, protein synthesis, and cellular proliferation[1]

Lin PH. Nutrients 2018, 10(1), 16; https://doi.org/10.3390/nu10010016

Zinc By the Numbers

- The RDA for zinc
  - 8 mg/day for adult women
  - 11 mg/day for adult men
- The UL is 40 mg/day for adult men and women
- 220 mg zinc sulfate = 50 mg elemental zinc

National Institutes of Health. Office of Dietary Supplements. Zinc Fact Sheet for Health Professionals. https://ods.od.nih.gov/factsheets/Zinc-HealthProfessional/.

Micronutrients

- Significant differences in
  - Vitamin C
  - Vitamin E
  - Manganese
  - Selenium
  - Copper

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Applying This to Your Facility

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1. Review your formulary
2. Review your policy and procedures
3. Conduct chart audits
4. Consider protocols or standing orders

Applying This to Your Practice

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1. Recognize nutritional needs are elevated for PIs
2. Evaluate current nutritional status and intake
3. Assess the difference between needs and current intake
4. If not meeting needs, investigate why not (root cause analysis)
5. Design a plan to fill the gap that addresses the cause

What is a Root Cause?

- Root causes are underlying causes
- Root causes are specific
- Root causes are addressable
- Root causes are identified when you cannot answer “why?” anymore
- Root causes are not people

American Society for Quality (2017). Root Cause Analysis Overview: What is Root Cause Analysis (RCA)?

The 5 Whys Approach

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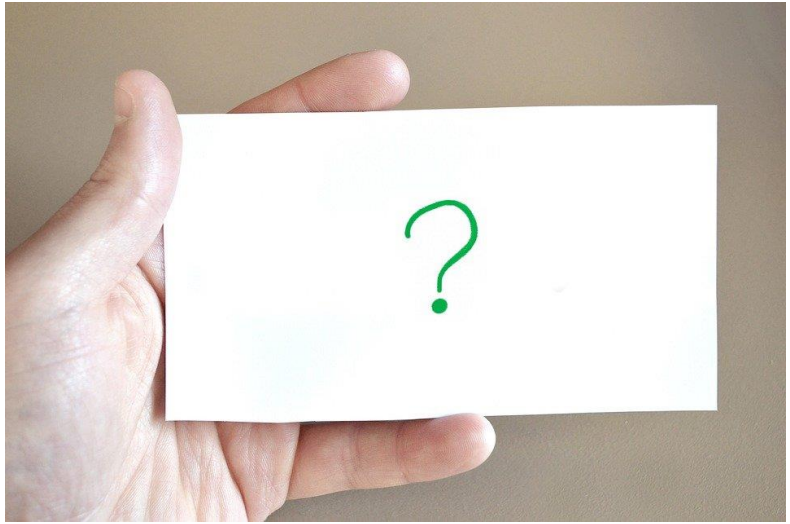
- My patient's pressure injury is not healing. **Why is that?**
- Because he has lost 20 pounds since getting the wound. **Why is that?**
- Because he eats only bites at each meal. **Why is that?**
- Because he says he gets nauseated after eating.



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2) Once webinar code is obtained, visit www.NutriciaLearningCenter.com and click on

'CE Credit Request'

**If you have not previously registered for NLC, you will need to register to obtain your CE certificate

3) Enter the webinar code obtained

4) Certificate will be visible for download on your NLC dashboard

1 CPEs Awarded

Webinar Survey

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Thank You For Attending

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