

2014
NPUAP/
EPUAP/
PPPIA
Guidelines

Feeding Your Wound: Fuel to Heal

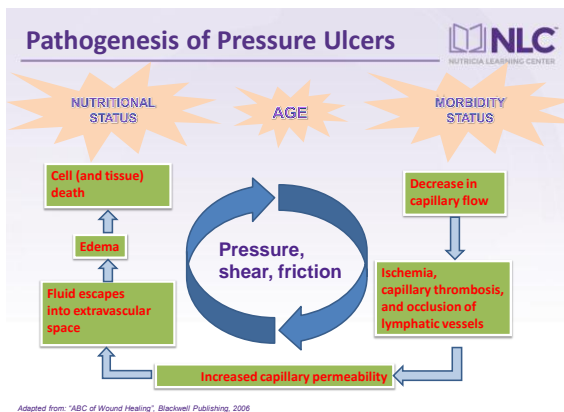
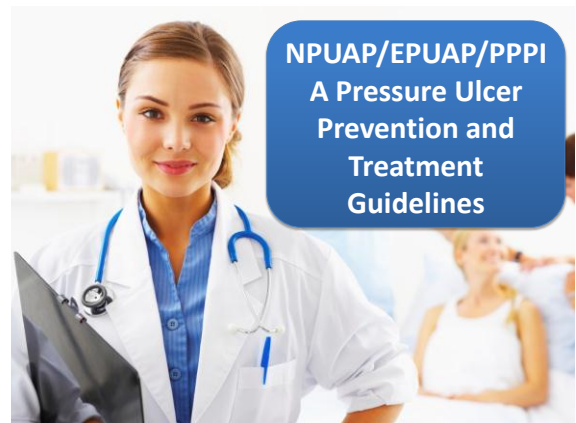
Mary Ellen Posthauer, RDN, LD, CD, FAND



Objectives



1. Recognize the importance of screening and assessment to identify malnutrition and pressure ulcer risk
2. Examine the building block of nutrition (macronutrients and micronutrients) that dominate healing
3. Apply the 2014 NPUAP/EPUAP/Pan Pacific Pressure Injury Alliance nutrition guidelines into practice
4. Discuss practical nutrition and hydration strategies for healing wounds

**NPUAP/EPUAP/PPPI
A Pressure Ulcer
Prevention and
Treatment
Guidelines**

Goal of Guideline



- The goal of this international collaboration was to develop evidence-based recommendations for the prevention and treatment of pressure ulcers that could be used by health professionals throughout the world.
- Produced by the Guideline Development Group (GDG).
- Each section had a small work group (SWG) representatives from each organization.

Criteria



Inclusions

Study designs: Clinical controlled trials with a minimum of 10 subjects
Systematic reviews with Cochrane methodology meta-analyses
Qualitative studies as appropriate to the topic

Exclusions

Animal studies (unless other not available)
Studies of chronic wounds - unless sub-group of ≥ 10 subjects with Pressure Ulcers was analyzed separately

Level of Evidence Rating to Support Recommendation



- A – **Direct scientific evidence** from properly designed and implemented **controlled trials** on **PrU in humans** (or humans at risk of PrUs), providing statistical results that consistently support the recommendation (level 1 studies/clear cut evidence)
- B – **Direct scientific evidence** from properly designed and implemented **clinical series** on **PrU in humans** (or humans at risk of PrUs) providing statistical results that consistently support the recommendation
- C – **Indirect evidence** (e.g., healthy humans, animal models and/or other types of chronic wounds **and/or expert opinion**)

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Clinical Practice Guideline

Strength of Recommendations (SOR) Assists Health Professionals Prioritize Interventions



Strong positive recommendation: definitely do it



Weak positive recommendation: probably do it



No specific recommendation



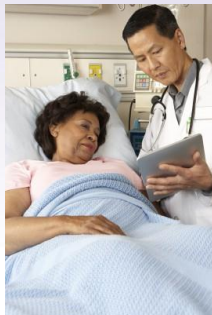
Weak negative recommendation: probably don't do it



Strong negative recommendation: definitely don't do it

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Malnutrition



- Increases morbidity and mortality.
- Decreases function and quality of life.
- Increases frequency and length of hospital stay.
- Increases health care costs.

White J, *J Acad Nutr Diet*. 2012 112(5): 730-738.

Inflammation & Malnutrition



- Inflammation (d/t infection, injury, surgery, etc.): an important underlying factor that increases risk for malnutrition.
- May contribute to suboptimal response to nutrition intervention and increased risk of mortality.



White J, *J Acad Nutr Diet* 2012;112:730-730

Definitions: Adult Malnutrition



- "Malnutrition is most simply defined as any nutritional imbalance." (Dorland 2011)
- Undernutrition: lack of calories, protein or other nutrients needed for tissue maintenance and repair.
- Undernutrition and malnutrition used interchangeably.

White J, *J Acad Nutr Diet* 2012;112:730-730

Diagnosing Malnutrition: 2009 Academy Workgroup (with ASPEN reps.)

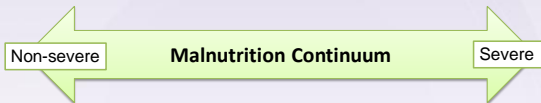


Identification of ≥ 2 of the following characteristics:

1. Insufficient energy intake
2. Weight loss
3. Loss of muscle mass
4. Loss of subcutaneous fat
5. Localized or generalized fluid accumulation that may sometimes mask weight loss
6. Diminished functional status as measured by hand grip strength (strong research; cost effective)

White J, *J Acad Nutr Diet* 2012;112:730-730

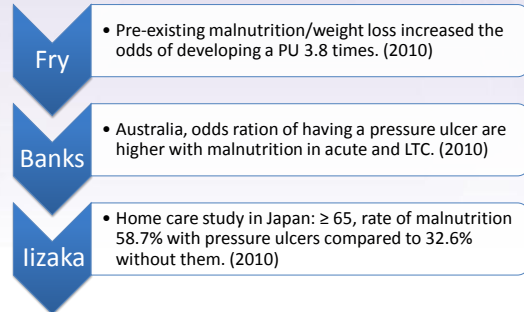
Definitions: Adult Malnutrition



- Adult undernutrition: continuum of inadequate intake and/or increased requirements, impaired absorption, altered transport, and altered nutrient utilization.
- Weight loss can occur at multiple points along this continuum.
- May also have inflammatory, hypermetabolic, and/or hypercatabolic conditions.

White J, *J Acad Nutr Diet* 2012;112:730-730

Malnutrition & Pressure Ulcers



Nutrition Screening, Assessment, and Care Planning



Nutrition Screening



1. Screen nutritional status for each individual at risk of or with a pressure ulcer:
 - at admission to a health care setting;
 - with each significant change of clinical condition; and/or
 - when progress toward pressure ulcer closure is not observed. (Strength of Evidence = C, Strength of Recommendation -SOR = probably do it)

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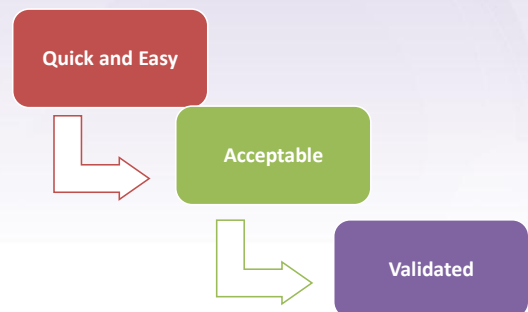
Nutrition Screening



2. Use a valid and reliable nutrition screening tool to determine nutritional risk. (Strength of Evidence = C, SOR= Probably do it)
3. Refer individuals screened to be at risk of malnutrition and individuals with an existing pressure ulcer to a registered dietitian or an interprofessional nutrition team for a comprehensive nutrition assessment. (Strength of Evidence = C; SOR=probably do it.)

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Nutrition Screening Tool



Validated Screening Tools

MST Malnutrition Valid and reliable for use in acute care and ambulatory care to identify malnutrition (Ferguson, M et al. Nutrition 1999 15:458-464.)	MNA Mini-Nutritional Assessment Validated in individuals with PUs Validated and easy to use in older adults (Poulla, KA, 2012) www.mna-elderly.com/	MUST Malnutrition Universal Screening Tool To identify risk of undernutrition (BAPEN, 2008) Validated for use in older adults admitted to acute care http://www.bapen.org.uk/must_tool.html	SNAQ Short Nutrition Assessment Questionnaire Acute care, residential care and community adults ≥ 65 . http://www.fightmalnutrition.eu/fight-malnutrition/screening-tools/snaq-tools-in-english/
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Malnutrition Screening Tool (MST)

STEP 1: Screen with the MST

1 Have you recently lost weight without trying?

No 0
Yes 2

If yes, how much weight have you lost?

2-10 lb 1
11-20 lb 2
21-30 lb 3
31 lb or more 4
Unsure 0

Weight loss score: _____

2 Have you been eating poorly because of a decreased appetite?

No 0
Yes 1

Appetite score: _____

Add weight loss and appetite scores

MST SCORE: _____

STEP 2: Score to determine risk

MST = 0 OR 1
NOT AT RISK
Eating well with little or no weight loss
If length of stay exceeds 7 days, then reassess, repeating weekly as needed.

MST = 2 OR MORE
AT RISK
Eating poorly and/or recent weight loss
Provide individualized nutrition interventions. Perform nutrition consult within 24-72 hrs, depending on risk.

STEP 3: Intervene with nutritional support for your patients at risk of malnutrition.

Notes: _____

Abbott Nutrition

Prepared: M. A. & Nutrition 1999 15:458-464

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Step 1: Have you recently lost weight without trying? If yes, how much have you lost?
Step 2: Score to determine risk
Step 3: Intervene with nutritional support for those at risk of malnutrition

http://static.abbottnutrition.com/cms-prod/abbottnutrition.com/img/Malnutrition%20Screening%20Tool_FINAL.pdf

Mini Nutritional Assessment®

MNA®

Validated and easy to use in geriatric patients

Acute care, hospital based ambulatory care, LTC

<http://www.mna-elderly.com>

Malnutrition Universal Screening Tool

MUST

To identify risk of undernutrition (BAPEN, 2008)

BMI

Weight loss past 3-4 months
Acute disease (no intake > 5 days)

http://www.bapen.org.uk/must_tool.html

Step 1 BMI score
BMI ≥ 20 0
BMI 18.5-19.9 1
BMI ≤ 18.5 2

Step 2 Weight loss score
Unintentional weight loss
% Weight loss
0-5% 0
6-10% 1
11-15% 2
16-20% 3
21-25% 4
26-30% 5
31-35% 6
36-40% 7
41-45% 8
46-50% 9
51-55% 10
56-60% 11
61-65% 12
66-70% 13
71-75% 14
76-80% 15
81-85% 16
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Comprehensive Nutrition Assessment



Academy's Nutrition Care Process

Nutrition:

1. Assessment
2. Diagnosis
3. Intervention
4. Monitoring and Evaluation



Purchase the NCPT online at NCP@webauthor.com

Focus of Nutritional Assessment



- Evaluation of:
 - Energy intake
 - Unintended weight change (insidious weight loss, obese individuals also at risk)
 - Effect of psychological stress or neuropsychological problems
- Include a determination of the individual's caloric, protein and fluid requirements.



Every Pound Counts Counts



Loss of Weight	Complications	Associated Mortality
10%	↓immunity, ↑infections	10%
20%	↓ healing, weakness, infection	30%
30%	too weak to sit, pressure ulcers, pneumonia, no healing	50%
40%	DEATH, usually from pneumonia	100%

Demling, RH., 2009

Significant UWL (from UBW)



Unintended weight loss creates lean body mass loss

Obese individuals are also at risk



Lean Body Mass is Essential for:



Loss of Muscle and Recovery



A pre-existing deficiency of muscle mass before trauma coupled with acute loss of muscle mass and function makes recovery of normal function unlikely.



Kortebein P, et al. *JAMA* 2007; 297:1772-4.

Dietary Intake



- Depression affects appetite of 30% of adult outpatients.
- Loss of appetite related to high risk of malnutrition.
- Increases risk of poor wound healing.
- Decreased ability to eat independently.

↓
Risk for undernutrition and delayed healing.



Horn 2004; Gilmore 1995

What about labs?



No lab test can specifically determine an individual's nutritional status.

- Serum protein levels may be affected by metabolic stress, inflammation, renal function, hydration and other factors.



What about labs for diagnoses of malnutrition?



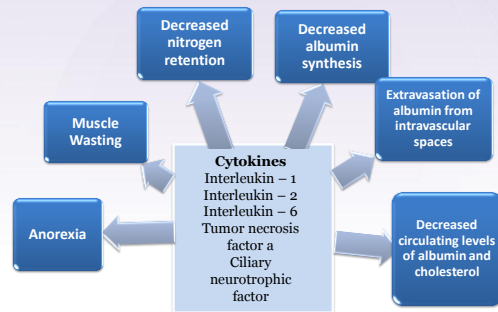
Not recommending any specific inflammatory markers for diagnosis at this time.

Inflammatory biomarkers, C-reactive protein and other positive acute phase reactants were excluded – **no conclusive relationship to nutritional status**



White J, *J Acad Nutr Diet* 2012;112:730-730

Inflammation and Stress→ Release of Cytokines



Source: Council for Nutrition Clinical Strategies in LTC

Laboratory Parameters-Inflammation



Decreased

- serum albumin
- serum transferrin
- serum prealbumin
- platelet count
- OR increased white blood cell count

Increased

- C-reactive protein (↓'d in liver failure)
- blood glucose
- percentage of neutrophils in the CBC
- Marked negative nitrogen balance

Nutrition Assessment



1. Assess weight status for each individual to determine weight history and significant weight loss from usual body weight (>5% change in 30 days or ≥10% in 180 days).
SOE = C; SOR= Probably do it

2. Assess the individual's ability to eat independently.
SOE = C; SOR= Definitely do it

3. Assess the adequacy of total nutrient intake (food, fluid, oral supplements, enteral/parenteral feedings).
SOE = C; SOR= Definitely do it

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Pressure
Ulcer
Prevention
and
Treatment
Guidelines

Care Planning



1. Develop an individualized nutrition care plan for individuals with or at risk of a pressure ulcer. (SOE = C, SOR= Probably do it)
1. Follow relevant and evidence-based guidelines on nutrition and hydration for individuals who exhibit nutritional risk and who are at risk of pressure ulcers or have an existing pressure ulcer. (SOE=C, SOR= Probably do it)

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Interprofessional Team



Allen 2013- quasi-experimental study on effects of comprehensive interprofessional nutrition protocol

General Recommendation: Nutrition Intervention for Pressure Ulcers



General Recommendations



Use your clinical judgment based on a thorough medical and nutritional assessment to make appropriate *individualized* recommendations



Individualized care plan should focus on:

- improving and/or maintaining overall nutritional status
- acceptance of nutrition interventions
- clinical outcomes

What Does the Evidence Suggest?



Energy Intake

Responsive increase in metabolic rate which increases caloric needs (triggered by PrU, infection, severe illness, trauma, etc.)



Energy is essential for pressure ulcer healing



Need to provide adequate calories to promote anabolism, nitrogen and collagen synthesis

Creda 2011, Yamamoto 2009

Energy Intake



1. Provide individualized energy intake based on underlying medical condition and level of activity. (SOE = B, Probably do it)
2. Provide 30 to 35 kcalories/kg body weight for adults at risk of a pressure ulcer who are assessed as being at risk of malnutrition. (SOE = C, SOR= Probably do it)
3. Provide 30 to 35 kcalories/kg body weight for adults with a pressure ulcer who are assessed as being at risk of malnutrition. (SOE = C, SOR= **Definitely do it**)

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Energy Intake



- Adjust energy intake based on weight change or level of obesity. Adults who are underweight or who have had significant unintended weight loss may need additional energy intake. (SOE = C, SOR= **Definitely do it**)
- Revise and modify/liberalize dietary restrictions when limitations result in decreased food and fluid intake. These adjustments should be made in consultation with a medical professional and managed by a registered dietitian whenever possible. (SOE = C, SOR= Probably do it)

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Energy Intake



- Offer fortified foods and/or high calorie, high protein oral nutritional supplements between meals if nutritional requirements cannot be achieved by dietary intake. (SOE = B, SOR= **Definitely do it**)
- Consider nutritional support (enteral or parenteral nutrition) when oral intake is inadequate. This must be consistent with the individual's goals. (Strength of Evidence = C, SOR= Probably do it)

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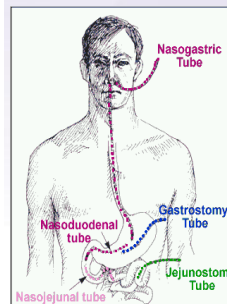
Nutrition Support



- NPO >3-5 days
- Hydration with IVs does not supply nutrients
- Places individual at risk of undernutrition and pressure ulcer development



Enteral Feedings



Determine if patient **actually** receives TF as prescribed:

- Is TF given as ordered (product, mLs/hr)?
- Are flushes given as ordered (flushes, flushes with meds)?
- Is the strength correct?
- Is the individual tolerating the feeding?
- Round the clock or intermittent (turned off)?

Protein



What does the Evidence Suggest for PUs?



All stages require adequate protein

Increased protein levels have been linked to improved healing rates (Lee 2006, Breslow 1993)

Inadequate Protein:

- prolongs inflammatory state
- inhibits antibody responses
- ↓ collagen synthesis & deposition
- ↓ cell multiplication
- ↓ wound contraction

Ensure Adequate Protein Intake



15%-38% of older men eat less than the RDI for protein.

27%-41% of older women eat less than the RDI for protein.



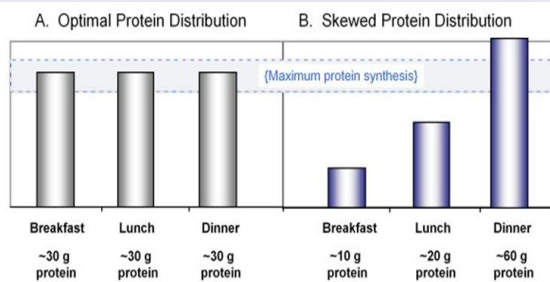
Morley J et. al. Nutritional recommendations for the management of sarcopenia
J Am Med Dir 2010;11:391-396.

What Does the Evidence Suggest for Optimal Protein Intake for Older Adults



- Positive association between protein ingestion and muscle mass
(PORT-AGE study group JAMDA 2013)
- Protein spread equally between breakfast lunch and dinner
(Paddon-Jones 2009)
- If needed, additional protein supplementation should given between meals (Wilson MM 2002)

Protein Distribution



Protein Intake



1. Provide adequate protein for positive nitrogen balance for adults assessed to be at risk of a pressure ulcer. (SOE = C, SOR= Probably do it)
2. Offer 1.25 to 1.5 grams protein/kg body weight daily for an adult at risk of a pressure ulcer who is assessed to be at risk of malnutrition when compatible with goals of care, and reassess as condition changes. (Strength of Evidence = C), SOR =Probably do it)
3. Provide adequate protein for positive nitrogen balance for an adult with a pressure ulcer. (Strength of Evidence = B, Probably do it)

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Protein Intake



4. Offer 1.25 to 1.5 grams protein/kg body weight daily for adults with an existing pressure ulcer who is assessed to be at risk of malnutrition when compatible with goals of care, and reassess as condition changes. (SOE = C, SOR= Probably do it)
5. Offer high calorie, high protein nutritional supplements in addition to the usual diet to adults with nutritional risk and pressure ulcer risk, if nutritional requirements cannot be achieved by dietary intake. (SOE = A, SOR= Probably do it)

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Protein Intake



6. Assess renal function to ensure that high levels of protein are appropriate for the individual. (SOE = C, SOR= **Definitely do it**)
 - Clinical judgment is required to determine the appropriate level of protein for each individual, based on the number of pressure ulcers present, overall nutritional status, co-morbidities, and tolerance to nutritional interventions.

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Protein Intake



- Supplement with high protein, arginine and micronutrients for individuals with a pressure ulcer Category/Stage III or IV or multiple pressure ulcers when nutritional requirements cannot be met with traditional high calorie and protein supplements. (SO E = B, SOR= Probably do it)

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Evidence on Amino Acids



Arginine

Conditionally indispensable during acute stress
Stimulates collagen synthesis
Contributes to nitric oxide & ↑ blood flow
May have some immune stimulating effects

Several recent studies demonstrate promising results

Key maybe synergistic combination of protein, key vitamins, minerals

Nutrition plus good nursing care and treatment

CUBE Trial



A multi-country, randomized, placebo-controlled trial to demonstrate the efficacy of a specific 'arg+ONS-spec.') on pressure ulcer healing in **non-malnourished patients with stage III-IV ulcers**

Ready-to-drink, **high-protein, arginine enriched nutritional supplement**

Containing per 200-ml serving:

20 g protein

3 g L-arginine

250 kcal

Vitamins and micronutrients including:

250 mg vitamin C

38 mg vitamin E (α-TE)

9 mg zinc

1.5 mg carotenoids



Patient Inclusion



Patients

- Between 18 yrs and 90 yrs
- Stage III or IV pressure ulcers (EPUAP & NPUAP grading)
- BMI ≥ 18.5 (18-70 yrs) or BMI ≥ 21 (>70 yrs)
- Nursing home or hospital based

Total group (ITT)	
Age*	74.9 \pm 14.6 y
BMI*	24.4 \pm 4.8 kg/m ²
Ulcer stage III/IV	31/12 (72/28%)
Pressure ulcer size* (ellipse)	10.5 \pm 11.5 cm ²
PUSH tool score*	11.5 \pm 3.1

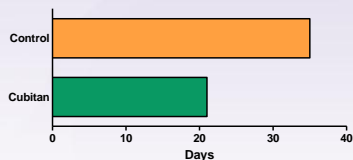
No significant differences between groups at baseline
* means \pm SD

Set-up

43 patients in intention-to-treat analysis (ITT)

- Intervention ('arg+ONS-spec.') group: 22 patients
- Control (placebo) group: 21 patients
- Product use: 3x200 ml/day; max. 8 weeks
- Standard diets and pressure ulcer care were maintained

Earlier Reduction in Ulcer Size from Baseline



With specific oral nutritional support a significant reduction in ulcer size was reached 2 weeks earlier compared to the control group.

•First time-point with a significant reduction compared to baseline

•Arg+ONS-spec.= day 21, P=0.011

•Control group = day 35, P= 0.019

•Means \pm SEM; data adjusted for center

Oligo Element Trial Study Group



- Multicenter, RCT to evaluate supplementation with arginine, zinc & antioxidants in high-calorie, high-protein formula to improve PrU healing
- 200 malnourished patients with stage II, III, and IV PrUs
- 8 week trial – LTC and home care in Italy
- Majority of PrUs on sacrum

Cereda E, Klersy C, Seriolli M, Crespi A, D'Andrea F; for the OligoElement Sore Trial Study Group. A Nutritional Formula Enriched with Arginine, Zinc, and Antioxidants for the Healing of Pressure Ulcers: a Randomized, Controlled Trial. Ann Intern Med 2015;162(3):167-17

Malnourished criteria



- UWL – 5%(30 days) and 10% 3months
- BMI< 20 age <65 and < 21 > 65
- Food intake =<60% of estimated total daily energy requirements in the week before the study. RDN calculated energy needs.
- Both groups received a 400 mL high-calorie, high-protein formula (100 ML ,4x /day)
- Standard wound care for all

Nutritional Supplement in 100mL



Intervention	Standard: Control
• Protein 10 grams	• Protein 10 grams
• Arginine-L 1.5	• Arginine-0
• Zinc 4.5 mg	• Zinc 2.3 mg.
• Copper 675 mcg	• Copper 338 mcg
• Vitamin C 125 mg	• Vitamin C 19mg
• Vitamin E 19.0 mg	• Vitamin E 2.3 mg

Conclusion



- 69.9% in intervention formula group had 40% or greater reduction in PU size compared to 54.1% in control
- The efficacy of these nutrients in wound healing is likely synergistic because there is no evidence supporting an independent effect when given alone
- This nutritional intervention may be beneficial when added to optimized local wound care for the treatment of pressure ulcers in malnourished patients.

Fluids: What Does the Evidence Suggest?



Dehydration is a risk factor for pressure ulcer development

Hydration needs must be met to assure proper prevention and healing

Hydration



1. Provide and encourage adequate daily fluid intake for hydration for an individual assessed to be at risk of or with a pressure ulcer. This must be consistent with the individual's comorbid conditions and goals. (SOE = C, SOR= **Definitely do it**)



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Hydration



2. Monitor individuals for S/S dehydration: changes in weight, skin turgor, urine output, elevated serum sodium and/or calculated serum osmolality. (SOE = C, SOR= Probably do it)
3. Provide additional fluid for individuals with dehydration, elevated temp, vomiting, profuse sweating, diarrhea or heavily draining wounds. (SOE = C, SOR= **Definitely do it**)

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Fluids



Needs
increase
according
to
insensible
water loss



Needs
may
decrease
for CHF,
renal
failure

Methods of Calculating Fluid Needs



1 mL/calorie consumed
30 mL/kg BW/day

In generally healthy individuals that are adequately hydrated, food accounts for >20% of total fluid intake. (DRI 2004)



Total fluid needs include water content of food.

What does the Evidence Suggest?



Micronutrients



Micronutrients



Most nutrient needs can be met through a healthy diet

However, individuals with pressure ulcers may not be consuming an adequate diet to meet established nutritional reference standards



Vitamins and Minerals



1. Provide/encourage individuals assessed to be at risk of pressure ulcers to consume a balanced diet that includes good sources of vitamins and minerals. (SOE = C, SOR = **Definitely do it**)
2. Provide/encourage an individual assessed to be at risk of a pressure ulcer to take vitamin and mineral supplements when dietary intake is poor or deficiencies are confirmed or suspected. (SOE = C, SOR = Probably do it)
3. Provide/encourage an individual with a pressure ulcer to consume a balanced diet that includes good sources of vitamins and minerals. (SOE = B, SOR = **Definitely do it**)
4. Provide/encourage an individual with a pressure ulcer to take vitamin and mineral supplements when dietary intake is poor or deficiencies are confirmed or suspected. (SOE = B, SOR = Probably do it)

Vitamin C



- Involved in the synthesis of collagen
- Acts on fibroblast proliferation and cellular immunity

There is no evidence to support vitamin C above the RDI unless a deficiency is diagnosed or suspected.



Zinc



Zinc: contributes to protein & DNA synthesis; immune function & cellular proliferation

Zinc requirements can be met by 2 servings/day of animal protein.



A multivitamin/mineral supplement daily (15 mg zinc) may be adequate. (DRI 2004)

Zinc



No research has demonstrated an effect of zinc supplementation on improved pressure ulcer healing.

When clinical signs of zinc deficiency are present, zinc should be supplemented at ≤ 40 mg elemental zinc/day (UTL).

- Doses >40 mg/day can adversely affect copper status and possibly result in anemia.
- High serum zinc levels may inhibit healing. (Thomas 1997, Reed 1985, Dimant 1999, Goode 1992)

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Obesity and Pressure Ulcers



Obese Individuals



- There are no evidence based guidelines available related to the nutritional needs of the obese person with pressure ulcers
- Adequate calories, protein, fluids and nutrients are needed for healing
 - General consensus is that diets should be liberalized to promote healing
 - Once the PrU is completely healed, diet restrictions may be gradually implemented as needed
- Monitor skin integrity and coordinate with RDN (ongoing)

Medical Food Supplement



- Foods that are specially formulated & processed for the resident who is seriously ill or who requires the product as a major treatment modality
- Criteria:
 - for oral or tube feeding
 - labeled for the dietary management of a specific medical disorder, disease, or condition for which there are distinctive nutritional requirements
 - intended to be used under medical supervision

<http://www.cfsan.fda.gov/~dms/medfguid.html>

Oral Nutritional Supplements



- Significantly fewer hospital readmissions with high protein ONS.
- Significant improvement in handgrip strength with use of high protein ONS (also increase total dietary intake and improves body weight).
- ONS use is associated with decreased length of stay, episode cost, and 30-day readmission risk. (ROI of \$2.56 net savings due to averted 30-day readmissions for every dollar spent on ONS in the matched sample.)

Cawood AL, Elia M, Stratton RJ. Systematic review and meta-analysis of the effects of high protein oral nutritional supplements. Ageing Research Reviews, Volume 11, Issue 2, April 2012, Pages 278–296. Accessed 8/22/13 at <http://www.sciencedirect.com/science/article/pii/S1568163711000900>
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<http://www.ajmc.com/publications/issue/2013/2013-3-vol19-n2/Oral-Nutritional-Supplementation>

Steps to Successful Nutrition Care



1

- Screen and Assess Nutrition Status
- Individualize interventions and develop POC

2

- Provide diet based on estimated needs, consider fortified foods
- Offer supplements between meals if intake is inadequate

3

- Consider ONS fortified with arginine, vitamin or minerals if needs not met with high calorie/protein supplement
- Consider EN/PN based on resident's wishes, when needs cannot be met orally

Pressure Ulcer Care



Effective pressure ulcer treatment: multidisciplinary & holistic

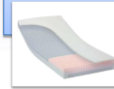
Nursing Care

Turning regimes, hygiene, etc.



Support Surfaces

Mattresses, cushions, protection, etc.



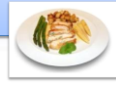
Wound Care

Dressings, cleaning, drainage, etc.



Nutrition

Delivery of nutrients to stimulate healing



We cannot simply give a patient with PU or at risk of developing PU a new and healthy skin!



April: 2015



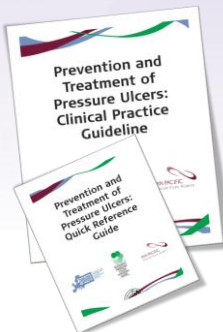
The Role of Nutrition for Pressure Ulcer Management: National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance White Paper

- Mary Ellen Posthauer, RDN, LD, CD, FAND, President, MEP Healthcare Dietary Services, Inc. Evansville, IN
- Merrilyn Banks, PhD, Director Nutrition and Dietetics, Royal Brisbane & Women's Hospital Herston, Queensland, Australia
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Advances in Skin and Wound Care – The International Journal for Prevention and Healing

New 2014 NPUAP-EPUAP and Pan Pacific Injury Alliance Guidelines



- **Quick Reference Guide:** summary of the recommendations and excerpts of the supporting evidence for pressure ulcer prevention and treatment. Intended as a quick reference.
- **Clinical Practice Guideline:** comprehensive version of the guideline, a detailed analysis and discussion of available research, critical evaluations and description of the methodology used to develop guideline.
- www.npuap.org to order copies

Questions?



CEU/CPE Instructions



To receive your CEU/CPE Certificate:

1. Go to www.NutriciaLearningCenter.com
2. Click on "CE Credit Request"
3. Enter code: **EWPUG1**
4. Certificate will be visible for download on your NLC personalized dashboard



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