Putting the 2019 Nutrition Recommendations for Pressure Injury Prevention and Treatment into Practice

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ANCC 1.5 Contact Hours

GENERAL PURPOSE: To explore the changes in the National Pressure Injury Advisory Panel, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance *Clinical Practice Guideline for Prevention and Treatment of Pressure Ulcers/Injuries* (CPG) nutrition recommendations and strategies for implementation.

TARGET AUDIENCE: This continuing education activity is intended for physicians, physician assistants, nurse practitioners, and nurses with an interest in skin and wound care.

LEARNING OBJECTIVES/OUTCOMES: After participating in this educational activity, the participant will:

1. Synthesize the current evidence regarding nutrition approaches to medical conditions, including pressure injury prevention and treatment.
2. Summarize the changes and recommendations in the 2019 edition of the CPG.

ABSTRACT

Healthy diets provide essential nutrients needed to maintain healthy skin and prevent or manage pressure injuries. The 2019 *Clinical Practice Guideline for Prevention and Treatment of Pressure Ulcers/Injuries* published by the National Pressure Injury Advisory Panel, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance includes specific nutrition recommendations for patients with pressure injuries. The purpose of this CE/CME article is to explore the changes in the nutrition recommendations and strategies for implementation.

KEYWORDS: guideline, nutrition, malnutrition, pressure injuries, pressure ulcers, prevention, oral nutritional supplements, recommendations

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INTRODUCTION

The National Pressure Injury Advisory Panel, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance's 2019 *Clinical Practice Guideline for Prevention and Treatment of Pressure Ulcers/Injuries* (CPG)[1] was developed by a team of 181 academic and clinical experts, the Guidelines Governance Group (GGG), a methodologist, and 168 small working group members using a rigorous methodology.[2] It includes recommendations and evidence summaries and two new features: good practice statements (GPSs) and implementation considerations. Each recommendation was written based on a body of supporting evidence and given a level of evidence, strength of evidence (SoE), and strength of recommendation (SoR) rating. The level of evidence was based on the study design, and the SoE rating was based on the evidence quantity, levels, and consistency. The SoR rating was determined by consensus voting and reflects the extent to which a clinician can be "confident that adherence to the recommendation will do more good than harm." The GPSs were not rated by SoE or SoR.

The criteria for SoE ratings used in the 2014 CPG[3] are compared with the criteria used in the 2019 CPG[1] in Table 1. One key change is that recommendations based on expert opinion were considered an SoE designation of C

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Table 1. COMPARISON OF 2014 AND 2019 STRENGTHS OF EVIDENCE RATINGS[1,3]

2014 Strength of Evidence Ratings	2019 Strength of Evidence Ratings	
A The recommendation is supported by direct scientific evidence from properly designed and implemented controlled trials on pressure ulcers in humans (or humans at risk of pressure ulcers), providing statistical results that consistently support the recommendation (level 1+ studies required)	A	• More than one high-quality level 1[a] study providing direct evidence • Consistent body of evidence
B The recommendation is supported by direct scientific evidence from properly designed and implemented clinical series on pressure ulcers in humans (or humans at risk of pressure ulcers) providing statistical results that consistently support the recommendation (levels 2, 3, 4, and 5 studies)	B1	• Level 1[a] studies of moderate or low quality providing direct evidence • Level 2[b] studies of high or moderate quality providing direct evidence • Most studies have consistent outcomes and inconsistencies can be explained
	B2	• Level 2[b] studies of low quality providing direct evidence • Level 3[c] or 4[d] studies (regardless of quality) providing direct evidence • Most studies have consistent outcomes, and inconsistencies can be explained
C The recommendation is supported by indirect evidence (eg, studies in healthy humans, humans with other types of chronic wounds, animal models) and/or expert opinion	C	• Level 5[e] studies, eg, 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 statements	• Statements that are not supported by a body of evidence as listed above but considered by the Guidelines Governance Group to be significant for clinical practice.

[a]Experimental designs.
[b]Quasi-experimental designs.
[c]Observational-analytical designs.
[d]Observational-descriptive studies (no control).
[e]Indirect evidence.

in the 2014 CPG,[3] whereas in the 2019 CPG,[1] all statements based on expert opinion were designated GPSs or included under implementation considerations. This change in methodology affected a number of the 2014 nutrition recommendations. However, it is important to note that not all clinical nutrition questions can be ethically examined in randomized controlled trials. Therefore, the nutrition GPSs and implementation considerations should be incorporated into clinical practice and not considered of lesser value than the other recommendations to achieve patient care goals.

Table 2 outlines the criteria for the SoR designations. The criteria for the SoR did not change in the 2019 CPG,[1] but the icons were updated.

Table 2. STRENGTH OF RECOMMENDATIONS 2019[1]

↑↑	Strong positive recommendation: Definitely do it
↑	Weak positive recommendation: Probably do it
↔	No specific recommendation
↓	Weak negative recommendation: Probably do not do it
↓↓	Strong negative recommendation: Definitely do not do it

To assist clinicians in incorporating the 2019 CPG[1] into their current practice, implementation considerations are provided for each recommendation and GPS. It is important to note that the recommendations and GPSs were written to apply to many nutrition-related medical conditions, but may not be appropriate in all contexts, settings, and circumstances. Moreover, all practitioners must use clinical judgment in each individual case regarding the patient's preferences and available resources.

Realigning a healthcare organization's clinical practices to be consistent with the most current evidence-based clinical practice guidelines and good practice recommendations is a process. Effective change requires an implementation plan with reasonable timelines.

MAJOR CHANGES IN THE NUTRITION CHAPTER

Clinicians familiar with the nutrition recommendations from previous editions of the CPG will note that there are fewer recommendations in the new edition (29 recommendations in 2014 CPG vs 10 recommendations and five GPSs in 2019 CPG).[1,3]

The SoE ratings for the 2019 CPG[1] nutrition recommendations are of higher quality and consistency than

the 2014 CPG; all but one of the recommendations were based on either B1 or B2 level of evidence. There are no nutrition recommendations supported by level A evidence. All of the nutrition recommendations received a positive SoR as determined by consensus voting of small working group and GGG members. The supplemental table (http://links.lww.com/NSW/A35) summarizes and compares the 2014 and 2019 nutrition recommendations and GPSs. In addition, the importance of nutrition is noted in chapters on growth factors, biologic dressings, wound dressings, biophysical agents, and pressure injury surgery. These chapters do not include specific nutrition recommendations or GPSs.

Major Changes in Nutrition Recommendations for Pressure Injury Prevention

One of the major changes in the 2019 CPG[1] is specific to nutrition recommendations for pressure injury prevention. Older editions of the CPG included specific and prescriptive recommendations for energy and protein intake for adults at risk of a pressure injury and malnutrition. Indirect evidence demonstrates that providing nutrition supplements to individuals at risk of pressure injuries who are malnourished results in improved energy intakes.[4,5] The 2019 CPG methodologists' literature review found one study that demonstrated an association between consumption of high-protein nutrition supplements and a significant reduction in the incidence of pressure injuries.[6] Another smaller study reported favorable but nonsignificant results.[7] However, other studies showed no significant effect in reducing the incidence of pressure injury with high-calorie and high-protein nutrition supplements.[8,9]

The nutrition small working group and GGG agreed that adequate energy and protein intake is essential for skin health. However, the small working group did not find high-quality research evidence to indicate that a higher consumption of energy and protein reduces the incidence of pressure injuries in individuals assessed to be malnourished or at risk of malnutrition who were also at risk of a pressure injury. Recommendation 4.4 and GPS 4.5 address the importance of nutrition in pressure injury prevention:

4.4: Optimize energy intake for individuals at risk of pressure injuries who are malnourished or at risk of malnutrition.

4.5 Adjust protein intake for individuals at risk of pressure injuries who are malnourished or at risk of malnutrition.

It is important to note that evidence-based clinical guidelines have been published for older adults, adults with acute or chronic diseases, and critically ill adults who do not have a chronic wound. These clinical guidelines recommend higher energy requirements and protein intake of at least 1 g protein/kg body weight per day. Table 3 outlines nutrition recommendations for older adult and critically ill adult populations. These individuals are likely to be malnourished and at risk of pressure injuries because of aging, impaired cognition, impaired ability to perform activities of daily living, chronic or acute conditions, and other factors.[10–18]

The 2019 CPG[1] acknowledges that there are no apparent negative effects of providing increased energy and protein to adults at risk of pressure injuries. Moreover, there are quality economic analyses that report cost-savings and reduced lengths of hospital stay associated with increasing energy and protein intake in adults at risk of pressure injuries who are malnourished or at risk of malnutrition.[19–21]

It is vital for nutrition and wound care professionals to recognize the prevalence of malnutrition in all care settings. The results from a 2009 to 2015 survey using the Malnutrition Screening Tool reported that the prevalence of malnutrition risk was about 33% of non-ICU acute care patients in the US.[22] Moreover, it is important to actively screen individuals for indicators of declining nutrition status if the individual's clinical condition worsens and to provide nutrition supplementation as part of achieving the individual's clinical goals.[1] To this end, the 2019 CPG nutrition chapter provides implementation considerations specific to screening for malnutrition, the characteristics of malnutrition in children and adults,[23,24] components of a comprehensive nutrition assessment, and individualized nutrition care planning.[25] The 2019 CPG recognized that individuals identified as malnourished, with pressure injuries/at risk of developing pressure injuries, or with any significant change in condition should be referred to a registered dietitian/nutritionist for an in-depth nutrition assessment.[23]

The 2019 CPG[1] focuses on individualized assessment of energy and protein requirements for individuals at risk of pressure injuries who are malnourished or at risk of malnutrition. The change reflects the shift in clinical nutrition care interventions to provide malnourished and frail adults with prehabilitation prior to surgery and more aggressive nutrition support services upon discharge.[26–30] Moreover, implementation of enhanced recovery after surgery recommendations including carbohydrate beverages up to 2 hours prior to surgery has significantly improved overall clinical outcomes including reduced lengths of hospital stay, fewer complications, lower rates of wound infections, and reduced postoperative insulin resistance.[31–34] Future research may demonstrate that addressing malnutrition proactively prior to surgery will reduce the risk of hospital-acquired pressure injuries.

Major Change in Nutrition Recommendation for Adult Nutrition Supplements

The recommendation for high-calorie, high-protein oral nutrition supplements (ONSs) containing arginine, zinc,

Table 3. ENERGY AND PROTEIN RECOMMENDATIONS FROM EVIDENCE-BASED GUIDELINES

Evidence-Based Guideline	Target Population	Energy Recommendation	Protein Recommendation
Trans-Tasman Pressure Injury guideline, 2011[10]	Adults with pressure injuries at moderate to high risk of delayed healing	30–35 kcal/body weight/d 125–145 kJ/kg body weight/d	1.25–1.5 g/kg body weight/d
PROT-AGE Study Group guideline, 2013[11]	Older adults with kidney disease who are at risk of protein-energy wasting	30–35 kcal/kg	1.2–1.5 g/kg body weight/d
	Older adults with severe injury or disease	Use indirect calorimetry to estimate energy needs, if unavailable, use an appropriate predictive equation. For individuals with obesity, refer to the ASPEN standards for critically ill adults with obesity	2.0 g/kg body weight/d
ASPEN guidelines, 2016[12] and 2017[13]	Critically ill adults[12]	Use indirect calorimetry to estimate energy needs, if unavailable, use an appropriate predictive equation or weight-based formula 25–30 kcal/kg per day	1.2 g/kg body weight/d
	Critically ill individuals with obesity[12]	Use indirect calorimetry to estimate energy needs, if unavailable, use weight-based equation BMI >30-50 kg/m^2: 11–14 kcal/kg actual body weight/d BMI >50 kg/m^2: 22–25 kcal/kg ideal body weight/d	BMI >30–40 kg/m^2: 2.0 g/kg ideal body weight/d BMI >40 kg/m^2: 2.5 g/kg ideal body weight/d
	Critically ill children[13]	Use indirect calorimetry to estimate energy needs; if unavailable, use Schofield[14] weight-height or weight equations or World Health Organization equations[15]	1.5 g/kg body weight/d
ESPEN guidelines, 2018[16,17]	Critically ill adults[16]	Use indirect calorimetry to estimate energy needs, if unavailable, use weight-based equation of 25 kcal/kg per day increasing to target	1.3 g/kg body weight/d achieved progressively
	Older adults[17]	30 kcal/kg body weight/d, individually adjusted based on nutrition assessment	1.2 g/kg body weight/d
Society for Sarcopenia, Cachexia and Wasting Disease, 2010[18]	Older adults	Not applicable	1–1.5 g/kg body weight/d

Abbreviations: ASPEN, American Society for Parenteral and Enteral Nutrition; BMI, body mass index; ESPEN, European Society for Clinical Nutrition and Metabolism.

and antioxidants has been expanded to include Stage 2 pressure injuries:

4.10: Provide high-calorie, high-protein, arginine, zinc, and antioxidant oral nutritional supplements or enteral formula for adults with a Category/Stage 2 or greater pressure injury who are malnourished or at risk for malnutrition.

The new recommendation is supported by evidence from a high-quality randomized controlled study concluding that disease-specific ONSs are related to significant pressure injury healing. Moreover, findings demonstrated more than three times greater likelihood of a pressure injury healing when patients consume a high-calorie, high-protein, disease-specific ONS containing arginine, zinc, and antioxidants for more than 4 weeks.[35] A quality/cost analysis demonstrated that the use of disease-specific ONSs is associated with cost savings in healing pressure injuries compared with standard ONSs.[36]

BRIDGING RECOMMENDATIONS TO PRACTICE

One of the most common situations clinicians struggle with is how to successfully increase energy and protein intake in individuals with early satiety, poor appetite, impaired cognitive status, impaired functional status (ie, dependent on others to assist at meals), illness, emotional distress,[37,38] impaired sense of taste and/or smell,[39–41] and/or limited understanding of the importance of nutrition in maintaining skin integrity and promoting wound healing. The 2019 CPG[1] nutrition chapter includes many implementation considerations to guide clinical practice and communicate that nutrition intake matters in the prevention and treatment of pressure injuries.

Medical orders for prolonged and often unnecessary fasting prior to diagnostic testing and other surgical procedures are another contributor to poor appetite.[42] Whereas short periods of fasting increase appetite, lengthy periods of fasting reduce appetite.[43]

Further, individuals at risk of or with pressure injuries make choices about what they are willing to eat. Chefs and clinicians strive to provide culturally appropriate foods to meet their nutrient requirements. Food service systems are rapidly evolving to meet both customer expectations and clinical nutrition goals.[44]

Fortified foods and ONSs are interventions that offer nutrient-dense choices to individuals at risk of or with pressure injuries. Nursing and medical staff can be invited to rate or score the food attributes, that is, taste, aroma, and texture of the fortified foods and ONSs provided in the facility to identify preferred products. (See the Figure for a simple score card to rate these attributes.) In some healthcare settings, it may be possible to invite individuals at risk of malnutrition to participate in product taste tests.[45] The taste test feedback can be used as a quality indicator of nutrient-dense products. Recipes of fortified foods that are deemed unacceptable may be modified. New products with more favorable food attributes may be considered after evaluating the acceptability of the current nutrition supplements in the formulary.

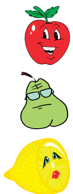
CONCLUSIONS

It is vital that nutrition interventions are successful in light of common practices in healthcare settings for fasting orders, the impact of illness and treatment on food intake, and the consequences for pressure injury risk among malnourished individuals. Practitioners should emphasize the importance of meal intake during family and patient education. Everyone has an opinion about the food and the ONSs served; these opinions are often voiced on patient satisfaction surveys.

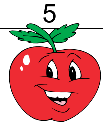
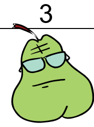
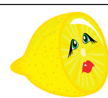
Decision-makers need to be involved and committed to making changes in food service systems and nutrition formularies to successfully implement the 2019 CPG nutrition recommendations. The financial implications of unpalatable food and ONSs for hospital-acquired pressure injuries or worsening pressure injuries are

Figure. SAMPLE SURVEY SCORE CARD

The product you are sampling provides ____(nutrient attributes)___ per portion. Please rate the taste of each sample. Scale:



5 = excellent
4 = very good
3 = acceptable
2 = fair
1 = not acceptable

Product	5	4	3	2	1
					
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	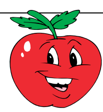		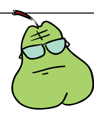		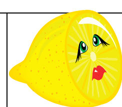
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	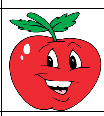		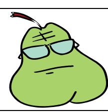		
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considerable. The Supplemental Table includes some ideas to help generate an action plan that is consistent with each organization's goals and objectives.

PRACTICE PEARLS

- Nutrition matters before, during, and after illness, injury, medical interventions, or surgery.
- The RDN is a key member of the medical team to identify individuals at risk of malnutrition and those who are malnourished.
- Individualized nutrition care optimizes clinical outcomes.
- Explore ways to improve outcomes using innovative nutrition interventions, for example, prehabilitation programs.
- Invest in quality nutrition products and use disease-specific ONSs to optimize healing.
- Remember that assimilating the nutrition recommendations and practice statements is a process. Thoughtfully develop an implementation plan and establish reasonable timelines for change. ●

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This activity provides ANCC credit for nurses and *AMA PRA Category 1 Credit™* for MDs and DOs only. All other healthcare professionals participating in this activity will receive a certificate of participation that may be useful to your individual profession's CE requirements.

CONTINUING EDUCATION INSTRUCTIONS

- Read the article beginning on page 462. For nurses who wish to take the test for CNE contact hours, visit http://nursing.ceconnection.com. For physicians who wish to take the test for CME credit, visit http://cme.lww.com. Under the Journal option, select *Advances in Skin and Wound Care* and click on the title of the CE activity.
- You will need to register your personal CE Planner account before taking online tests. Your planner will keep track of all your Lippincott Professional Development online CE activities for you.
- There is only one correct answer for each question. A passing score for this test is 13 correct answers. If you pass, you can print your certificate of earned contact hours or credit and access the answer key. Nurses who fail have the option of taking the test again at no additional cost. Only the first entry sent by physicians will be accepted for credit.

Registration Deadline: August 31, 2022 (physicians); September 2, 2022 (nurses).

PAYMENT

- The registration fee for this CE activity is $17.95 for nurses; $22.00 for physicians.