



NUTRITION CONNECTION

NUTRITION FOR WOUND HEALING:

INSIGHTS FOR FOODSERVICE MANAGERS

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WOUNDS ARE ONE OF THE MOST COMMON CONCERNS

in long-term care facilities, causing harm to a patient's health as well as financial consequences for the facility. Data suggests around 7 to 14 percent of patients in traditional long-term care facilities suffer from wounds (numbers vary depending on the study/survey), with an even higher prevalence in long-term acute care (reaching as high as 28 percent).

Nutrition plays an essential role in meeting the complex physiological demands of wound healing. As a CDM, CFPP, you're entrusted with nourishing patients through the food you provide, and thus can play a vital role on the treatment team.

MALNUTRITION AND WOUND HEALING

The risk of developing and the rate of healing a wound (most commonly pressure ulcers, but can also be surgical wounds, skin tears, or abrasions) is adversely impacted by malnutrition as well as sarcopenia. This occurs through several mechanisms:

- Impaired immune function
- Loss of daily functional movement (more time in a bed or wheelchair leading to more pressure on an area, as well as reduced lean body mass from the loss of movement)
- Reduced subcutaneous fat (thereby increasing risk of pressure points near bones)
- Reduced collagen production and impaired skin health
- In sarcopenia (the gradual loss of muscle mass and function that often occurs in older adults), reduced availability of dietary protein intake for wound healing, as it's instead funneled towards replenishing the body's protein reserves

Long-term care patients are often at a greater risk of malnutrition due to poor appetite, feeding problems, impaired smell and taste, medication side effects, co-existing medical conditions, and/or mental health struggles.

CLINICAL NUTRITION GUIDELINES

Preventing and addressing malnutrition is a primary goal in wound prevention and treatment, and there are clinical nutrition guidelines available for best practice. These recommendations come from current research as well as collaborative guidelines developed by the European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance.

Optimize calorie intake.

Adequate energy intake is required to support the healing process. Current recommendations call for 30-35 calories per kilogram of body weight per day for patients who are malnourished or at risk for malnutrition (though specific recommendations vary based on medical conditions, genetics, physical activity, and other factors).

Provide enough protein.

Protein needs increase during all stages of wound healing, with some authors estimating as much as a 250 percent increase! Getting enough protein ensures the body will be able to develop new blood vessels and produce collagen to create tissue in the wounded area. Falling short on protein can lead to reduced lean body mass (muscle mass), which is linked to impaired immunity, increased infection risk, and decreased rates of wound closure. Current recommendations call for 1.2 to 1.5 g protein per kilogram of body weight per day during wound healing.



Consider the role of amino acids.

Increasing intake of certain types of amino acids—the building blocks of protein—may help healing. Arginine is of particular importance, as it acts as a precursor for collagen, and levels in the body drop quickly during inflammatory conditions like a wound. Studies that have looked at oral nutrition supplements with arginine (along with antioxidants and zinc) are linked to improved wound healing. Other amino acids like leucine (key for muscle protein synthesis) and glutamine (which acts as an antioxidant and has some anabolic properties) are important too.

Provide the right amount of carbohydrates and fat.

While protein is the primary macronutrient involved in wound healing, it is important to also ensure the patient gets the right amount



FATS ALSO PLAY A ROLE IN HEALING

through their
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of carbohydrates and fat. Low carbohydrate diets can impair energy reserves and make it more challenging for the body to synthesize protein and create new blood vessels for wound healing.

On the flip side, among those with diabetes, excessive carbohydrates can lead to high blood glucose levels which can reduce the activity of certain types of immune cells and increase infection complication risk. The goldilocks approach of getting the right amount—not too high, not too low—is key for these patients.

Fats also play a role in healing through their incorporation into cell membranes and nerve insulation. Because fats are calorie dense, they are also valuable to meet energy needs.

Provide enough fluids.

Staying hydrated is key for skin health, ensuring skin elasticity as well as blood and oxygen flow through the tissue. Fluids should be mostly water, but can also include unsweetened tea, milk, juice, or other beverages.

Ensure micronutrient needs are met.

Micronutrients refer to vitamins and minerals, and many of these are essential to the healing process. This includes (but is not limited to):

- **Vitamin C** – Involved in immune function (for example, the production and function of neutrophils, a white blood cell involved in the inflammatory phase of wound healing) as well as collagen production.
- **Zinc** – More than 200 enzymes need zinc to function properly! When a patient doesn't get enough zinc, they have decreased immune function, impaired collagen synthesis, and reduced cell and tissue development.
- **Vitamin A** – Involved in immune function (specifically B and T cell function during the inflammatory phase of wound healing) and stimulates growth of certain types of cells in the skin.
- **Vitamin D** – Studies have noted increased rates of deficiency among those with pressure ulcers, and Vitamin D is involved in several aspects of immune support.

PRACTICAL STRATEGIES

To ensure patients are properly supported with these clinical guidelines, here are practical strategies to put in place:

- Use a valid and reliable nutrition screening tool for patients and refer those at risk for malnutrition to a Registered Dietitian.
- Leverage your “front-line position” during mealtimes, actively observing individuals and noting any signs they may not be eating enough. Think like a detective: Could they need feeding assistance? Are they complaining about the taste of the food? Are they on a restrictive diet that may need to be liberalized? Bring these concerns to the care team who can address them.

- Flex your culinary creativity with fortified foods to help boost calorie and protein intake in those with wounds. For example, you could add powdered milk to soups, blend cottage cheese into pancake mix, or add egg whites when cooking oatmeal to pack in more protein. Additional calories can be added to foods by using more whole milk, butter, avocados, nut butters, or cheese. For example, a peanut butter banana smoothie with milk and avocado can be an easy way to sneak in a lot of calories.
- Increasing intake through food is always the best-case scenario, but if a resident is not meeting nutrition needs with food alone, they may need oral nutrition supplements

STAYING HYDRATED
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(ONS). These can ensure adequate intake and prevent further weight loss, both of which are important to the healing journey. Typically, it's best to provide ONS between meals, rather than during mealtimes.

- “Immunonutrition” ONS are supplements with extra nutrients added like arginine, zinc, and antioxidants. These products may help with faster healing compared to traditional products. For example, a study in the *Annals of otology, rhinology, and laryngology* noted “Mineral, vitamin, and antioxidant enriched supplements were more beneficial in increasing wound

healing than non-enriched protein supplements for diabetic foot and pressure ulcers.”

- Supplements that contain specific amino acids and metabolites may also be useful. For example, products like Juven contain arginine, glutamine, and HMB (a metabolite of the amino acid leucine) and can be mixed with water to form a light beverage. Research in the journal *Surgical infections* found that these products may enhance wound healing by supporting collagen formation. Another study in the *International wound journal* noted an almost two-fold better reduction in wound area when patients were given this type of product daily with their usual hospital diet, compared to patients eating the usual diet only.
- According to Dr. Nancy Collins, PhD, RDN, wound healing expert, “The new science of wound care involves the provision of a high concentration of the collagen dipeptides Prolyl-Hydroxyproline (PO) and Hydroxyprolyl Glycine (OG).” Supplements with these dipeptides

function to increase collagen production and enhance wound healing. Dr. Collins notes, “Of course, this science has to be translated into products for patients, so I have been using Expedite with great success.”

TAKING WOUND HEALING A STEP FURTHER: QAPI

Consider partnering with your facility’s Registered Dietitian to conduct a joint QAPI venture related to nutrition for wound healing. As a reminder, QAPI combines two essential aspects of quality program management – quality assurance (QA) and performance improvement (PI). The QA portion refers to ensuring your facility is meeting set standards; it’s a retrospective look. The PI portion is forward-thinking; it’s a systemic approach to improve results or processes in the facility.

When it comes to wound healing, the QA portion of this process could be comparing pressure ulcer rates or average healing times to national data or facility-wide goals. You can also compare nutrition intake to wound prevalence or healing rates.

The PI portion of the process could focus on improving nutrition status to support wound rates or healing. Doing a root cause analysis, you and the dietitian could determine the largest nutritional factors contributing to high prevalence and/or low healing rates. From there, you can develop the corrective plan of action with specific interventions.

CDM, CFPPs can work with RDs in a variety of ways on this QAPI initiative. Lisa Hugh, DHA, MSHS, RD, LDN, CEO of Southern Maryland Dietitian, tells us “I recommend starting with a current problem. Talk to each other and find out what is not going well.” For example, you can inform the RD about complaints you are hearing, or discuss goals that you notice aren’t being met. Together, you and the RD can work to find the root “why” to the problem and come up with a solution.

PRACTICAL EXAMPLES

We reached out to two dietitians to share practical examples of QAPI for wound healing.

Michelle Saari, MSc, RD, founder of the Long Term Care RD website (focused on helping dietitians, older adults and caregivers provide the best nutrition care possible to help individuals age well), described her experiences: “Some QAPI that was performed was having a list developed of every resident in our long-term care facility that had either skin

SAMPLE SCENARIO FOR A CDM, CFPP IN QAPI

Still stumped as to how you may play a role in a QAPI venture with an RD? Here’s one sample scenario to consider:

You and your facility’s dietitian collaborate in tracking the nutrition intake of residents with wounds. You compare healing in residents who consume more than 75 percent of their meals/supplements to patients that don’t meet this benchmark. You discover faster healing rates in those patients who meet that benchmark.

This data alone is valuable, as it shows a clear connection between nutrition services and rates of healing. From a facility standpoint, there are cost-savings associated with faster healing rates.

You and the dietitian can then take this a step further, conducting a root cause analysis to determine what factors are contributing to the lack of intake among the patients not meeting the benchmark. Collaboratively, you can develop specific interventions and corrective actions to help increase the percentage of patients meeting the 75 percent minimum goal.

For example, you might recommend new fortified foods that offer a variety of tastes and textures and incorporate more menu items that are identified as resident favorites, and the dietitian may outline a plan for a new oral nutrition supplement.

breakdown or a pressure injury. The pressure injuries were listed by stage and then prioritized based on severity as well as length of time they had the wound.”

Saari continued: “After creating the list, the dietitian would work backwards and review every patient with a pressure injury. Each pressure injury patient had a full nutrition assessment done to ensure that their nutrition care plan covered their calories, protein, and fluid needs daily. Stage 3 and 4 pressure injuries would be placed on a high protein, high calorie diet to give them sufficient calories to heal wounds. The dietitian also went around with the wound care nurse to evaluate each wound in person.”

While it may be rare for a CDM, CFPP or an RD to go around with the wound care nurse to make rounds, it can be a valuable learning opportunity. As Saari notes, “Seeing a wound in person is much different than simply reading chart notes on it. Your heart and compassion really open up when you see wounds that are 5 centimeters deep and tunnelling. You begin to understand that impact that your nutrition care plan has on a patient.”

Lisa Hugh also described her experiences in QAPI projects: “At first, the facility only reported the number and types of wounds. Over time, we did several projects which focused on improving outcomes by ensuring compliance with the facility’s policies and procedures.”

Hugh describes how she regularly did audits focusing on documentation as part of QAPI. She asked questions like: “Were wounds documented on the initial nursing assessment as well as the initial nutrition assessment? If not, why not? Was an RD consult initiated when a new wound was observed? If not, why not? Were ordered supplements documented on the treatment administration record? Were refusals or poor intake documented appropriately?” She also focused on auditing when doing patient visits on wound rounds, noting any concerns related to dietary services.

Hugh took the information from these audits and discussed them in monthly QA meetings. Then “the interdisciplinary team would decide on corrective actions. Strategies included in-service, educational events, changes in policies, changes in documentation practices, and changes in communication systems.”

CDM, CFPPs can act as an integral part of these meetings and strategies. For example, CDM, CFPPs might have special insights about resident meal preferences and lack of intake, and be able to suggest fortified foods or products that could work for the resident. They can also be involved in in-services and educational sessions.

How do these actions benefit the facility? Hugh notes, “This ongoing process quickly changed the quality of the reporting as well as patient and staff outcomes. Many of the clinical staff obtained advanced training in wound care, the facility reported less skin breakdown, quicker wound healing, and lower costs related to wound care supplies.”

How’s that for a win-win?!

THE BOTTOM LINE

There’s no one-size-fits-all protocol or supplement to manage wounds – interventions must be individualized according to a resident’s current intake, risk of malnutrition, chronic conditions, and other factors. However, there are general clinical guidelines for evidence-based care, and as a foodservice manager you contribute significantly to outcomes by creating meals that align with these guidelines. By working with dietitians and other members of the patient care team on wound healing initiatives, you can improve the prognosis of patients and ensure cost savings for your facility. 🍎



REFERENCES

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CE QUESTIONS | NUTRITION CONNECTION



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This **Level III NUTRITION** article assumes that the reader has a thorough knowledge of the topic and the ability to apply the concepts. The desired outcome is to evaluate application and create continuous quality improvement into best practice.

Reading *Nutrition for Wound Healing: Insights for Foodservice Managers* and successfully completing these questions online in the ANFP Marketplace has been approved for 1 hour of continuing education for CDM, CFPPs. To earn 1 CE hour, visit www.ANFPonline.org/market and select **Edge CE Articles** within the Publications section. Purchase the article and complete the quiz.

1. What is the name for the condition characterized by a gradual loss of muscle mass and function that often occurs in older adults?
 - A. Osteoarthritis
 - B. Sarcopenia
 - C. Diabetes
2. What is the approximate recommended range of calories for patients during wound healing?
 - A. 20-25 kcal/kg/day
 - B. 25-30 kcal/kg/day
 - C. 30-35 kcal/kg/day
3. What is the approximate recommended range for protein intake for patients during wound healing?
 - A. 0.8-1 g/kg/day
 - B. 1.2-1.5 g/kg/day
 - C. 2.5-3 g/kg/day
4. Which of the following amino acids is involved in wound healing?
 - A. Arginine
 - B. Glutamine
 - C. Both of the above
5. One of your residents loves pancakes but needs extra protein for wound healing. Which would be the best option for fortifying the pancakes with extra protein?
 - A. Use a recipe that adds cottage cheese to the batter
 - B. Add 4 tablespoons of melted butter to the batter
 - C. Eliminate the eggs to make vegan pancakes
6. The newest science on wound healing involves providing supplements with Prolyl-Hydroxyproline (PO) and Hydroxyprolyl Glycine (OG) which are:
 - A. Single amino acids
 - B. Macronutrients
 - C. Collagen dipeptides
7. Which of the following would be the best example of a CDM, CFPP's involvement in the PI portion of QAPI for wound healing?
 - A. Calculating the prevalence of wounds in your facility at a given point in time and documenting it
 - B. Creating new fortified food interventions after you and the RD determine poor calorie and protein intake is a root cause
 - C. Neither of the above; the CDM, CFPP should not be involved in QAPI



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