Nutrition for Wound Management

August 2020

SerenaGroup

Building the Nation's Leading Wound Care Team

When Should Nutrition Be Considered?

- **Wound Prevention-** patients' nutritional status should be evaluated and monitored to prevent the onset of pressure ulcers or other skin breakdown
- **Wound Preparation-** patients' nutritional status should be evaluated prior to surgical procedures to ensure normal course of healing
- **Wound Treatment (Acute + Chronic)-** patients' nutritional status should be evaluated and monitored throughout the course of treatment to reduce the risk of delayed healing

SerenaGroup
Building the Nation's Leading Wound Care Team

Impact of Nutrition on Wound Healing

Everyone needs macro and micro nutrients to fuel their bodies for everyday life. Caloric intake provides the energy needed to keep the body functioning. However, those suffering from a wound or infection will need additional nutrients to aid their bodies in recovery.

Suboptimal nutritional intake can alter the body's immune function, collagen production and wound tensile strength. All are critical in wound healing.

Caloric intake for a patient with an ulcer is recommended at 30-35 kcal/kg,15 or up to 40 kcal/kg if the patient is underweight. These recommendations must be individualized to the patient

SerenaGroup
Building the Nation's Leading Wound Care Team

Macronutrients

Carbohydrates- stimulate insulin production, which is helpful in the anabolic processes of wound healing, particularly during the proliferative phase

Fats- aids in the structural process of tissue growth as well as improves the absorption of fat soluble micronutrients such as vitamins A, D, K

Protein – the "building block" of wound healing. essential to collagen synthesis, angiogenesis, fibroblast proliferation, immune function, tissue remodeling, wound contraction, and skin structural proteins. Leukocytes, monocytes, lymphocytes, and macrophages require protein for their formation and function in mounting an immune response. Protein deficiency results in impaired fibroblast proliferation and collagen synthesis during the proliferative phase of healing. A patient with an ulcer may demand 250% increase of protein intake and up to 50% increase in caloric intake

Hydration – fluids help maintain perfusion and oxygenation, dilute glucose and aid in the transportation of micronutrients and cellular waste

https://www.woundsresearch.com/article/nutrition-wound-care-management-comprehensive-overview

Hydration

Patients with ulcers should increase water intake

9-12 cups (2.25-3L) Of fluids per day or 1ml/kcal/day

Patients with Diabetes, Renal Failure or other conditions should follow Doctor recommendations before increasing fluid intake

SerenaGroup
Building the Nation's Leading Wound Care Team

Micronutrients

Amino Acids

- Arginine- increases nitric oxide which is essential during the inflammatory phase. Also stimulates growth hormone and the activation of T-cells
- Glutamine- aids in the immune process, decreases infectious complications and protects against inflammatory injury

Vitamins

- Vitamin A- increases the activity of epithelial cells, melanocytes, fibroblasts and endothelial cells. A deficiency in vitamin A has a negative impact on B and T cell function and antibody production
- Vitamin D- regulates structural integrity and transport functions of epithelial cells. A vitamin D deficiency is often found in patients with venous and pressure ulcers
- Vitamin C- increases collagen formation and antioxidant function. Deficiency results in impaired immune response and increased fragility of capillary and collagen tensile strength

https://www.woundsresearch.com/article/nutrition-wound-care-management-comprehensive-overview

Micronutrients continued

Minerals

- Zinc- deficiency affects all phases of wound healing. In the inflammatory phase, there is decreased immunity and increased susceptibility to infections. In the proliferative phase, there is impaired collagen synthesis and tensile strength. Finally, in the remodeling phase, there is a dampening of fibroblast proliferation, collagen synthesis, and epithelialization. Zinc supplementation should only occur if a deficiency is present, as too much zinc can have negative impacts on wound healing and overall health
- Selenium- improves antioxidant function
- Iron- iron supplementation has been shown to prolong inflammation and no evidence exists that iron supplementation benefits wound healing. Patients with iron deficiency anemia, which is known to inhibit wound healing due to decreased oxygen transport to proliferating tissues, may benefit from iron supplementation; however, more data is required to establish treatment guidelines

https://www.woundsresearch.com/article/nutrition-wound-care-management-comprehensive-overview

Risk Factors

- Psychosocial factors
- Increased or decreased intake
- Deficiencies
  - Vitamin deficiencies
  - Mineral deficiencies
- Chronic Disease
  - Diabetes
  - Renal disease
  - Auto-immune disease

SerenaGroup
Building the Nation's Leading Wound Care Team

Risk Assessment

Nutritional assessment is a requirement in outpatient wound care and should be performed upon the patient's initial visit.

The Mini Nutritional Assessment (MNA)* is a widely accepted tool for assessment and has been adopted into many EMR systems. However, there are several other variations that may be used. The MNA compiles food intake, weight loss patterns, mobility, eating habits and body mass index (BMI) to determine a patient's risk of malnutrition or malnourishment.

The risk assessment tool will categorize each patient as low, moderate or high risk. These classifications can help guide clinical decision making and wound healing.

**Nestlé Nutrition Institute*

SerenaGroup
Building the Nation's Leading Wound Care Team

Clinical & Diagnostic Markers

Clinical Markers

- Moderate or severe weight loss
- Moderate or severe weight gain
- General or local fluid accumulation
- Reduced grip strength
- Extreme BMI (high or low)

Diagnostic Markers

- C-reactive protein
- Prealbumin- when taken over a period of time to assess change

SerenaGroup
Building the Nation's Leading Wound Care Team

Care Planning & Goal Setting

Upon completion of the nutritional risk assessment and Provider recommendation, nutrition should be added to each patient's plan of care.

<u>Documentation should include:</u>

- Results of the risk assessment
- Any clinical or diagnostic markers that have been taken into consideration
- Any risk factors
- Patient education
- Clinical intervention

**plan of care should be reviewed and updated on a monthly basis*

SerenaGroup
Building the Nation's Leading Wound Care Team

Intervention

Low Risk

- ✓ Verbal education
- ✓ Educational handouts or brochures
- ✓Access to online resources

Moderate Risk

- ✓Verbal education
- ✓ Educational handouts or brochures
- ✓Access to online resources
- ✓Oral supplementation (macro or micro)
- ✓Potential Registered Dietitian Consultation

High Risk

- ✓Verbal education
- ✓ Educational handouts or brochures
- ✓Access to online resources
- ✓Oral supplementation (macro or micro)
- ✓Registered Dietitian Consultation

All clinical interventions are suggestions and subject to Provider interpretation and decision making

SerenaGroup
Building the Nation's Leading Wound Care Team

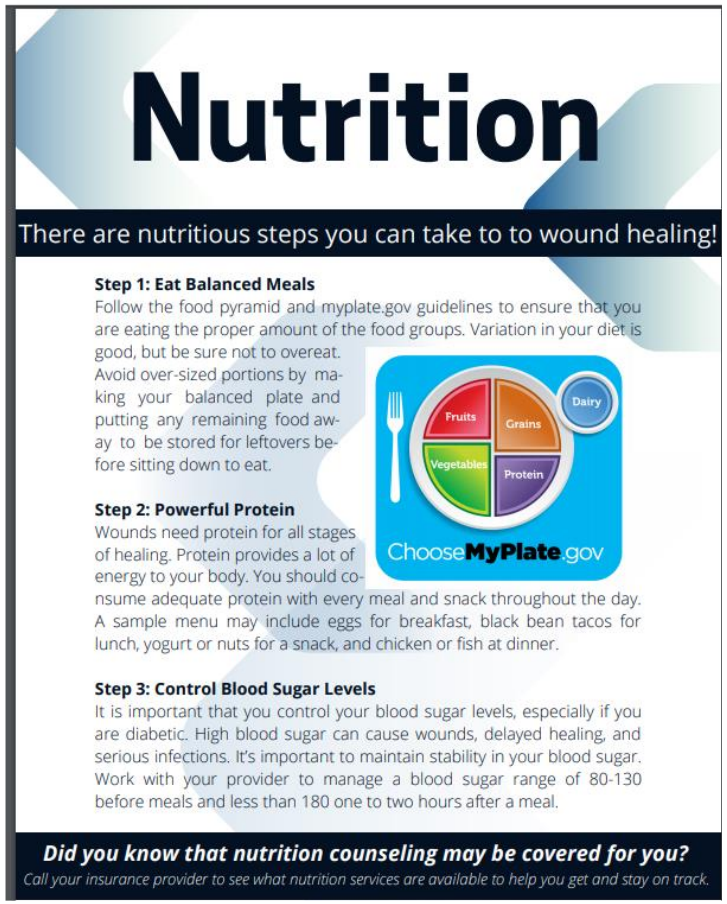
Patient Education

Education should be performed upon the initial visit and as needed throughout the course of treatment

- Weekly reinforcement of suggestions and positive behavior is encouraged
- Handouts are beneficial because up to 80% of verbal instructions are forgotten by the time the patient returns home
- Education should be documented and tailored to fit the patient's plan of care, nutritional assessment and learning assessment

SerenaGroup
Building the Nation's Leading Wound Care Team

Educational Brochures



Nutrition

There are nutritious steps you can take to to wound healing!

Step 1: Eat Balanced Meals
Follow the food pyramid and myplate.gov guidelines to ensure that you are eating the proper amount of the food groups. Variation in your diet is good, but be sure not to overeat. Avoid over-sized portions by making your balanced plate and putting any remaining food away to be stored for leftovers before sitting down to eat.

Step 2: Powerful Protein
Wounds need protein for all stages of healing. Protein provides a lot of energy to your body. You should consume adequate protein with every meal and snack throughout the day. A sample menu may include eggs for breakfast, black bean tacos for lunch, yogurt or nuts for a snack, and chicken or fish at dinner.

Step 3: Control Blood Sugar Levels
It is important that you control your blood sugar levels, especially if you are diabetic. High blood sugar can cause wounds, delayed healing, and serious infections. It's important to maintain stability in your blood sugar. Work with your provider to manage a blood sugar range of 80-130 before meals and less than 180 one to two hours after a meal.

Did you know that nutrition counseling may be covered for you?
Call your insurance provider to see what nutrition services are available to help you get and stay on track.

Step 4: Consistency
It is important to maintain consistency in your diet. Your body comes to expect a schedule around what and when you eat. Not only will it help your digestion, but your body counts on having these nutrients to promote stability.

Step 5: Hydrate, Hydrate, Hydrate
The body needs fluids, but a body healing its wounds, needs more! The average person should drink 8 glasses of water a day, but wound care patients should exceed that. Proper hydration is essential to speeding up the wound healing process. By drinking water and unsweetened beverages, your body can carry out its waste easier and water carries Oxygen and nutrients directly to the wound bed.

Step 6: Eat the Rainbow
Like mama always said, "eat your veggies!" Fruits and vegetables provide essential nutrients like zinc and vitamin C that will aid in wound healing. Strawberries, spinach, oranges, red pepper, kiwi, broccoli, pineapple, and kale are some favorites that all offer different bonus nutrients. Be sure not to overdo it on fruits that contain higher amounts of sugar; natural or not, they may still increase your blood sugar levels.

Some wound types require more high-protein foods or an increased caloric-intake, some require dietary restrictions and the avoidance of food categories, so be sure to talk to your healthcare provider about what nutritional standards you should follow to increase your wound healing potential.

SerenaGroup
Building the Nation's Leading Wound Care Team

1. Wound healing increases a person's need for caloric intake, especially protein which is considered the building block for tissue growth.

   a. True
   b. False

2. A patient with an ulcer may demand 250% increase of protein intake and up to 50% increase in caloric intake

   a. True
   b. False

3. Vitamin and Mineral supplementation will aid in wound healing when;

   a. During any phase of wound healing
   b. When a deficiency is present
   c. Only under Provider recommendation
   d. B and C

SerenaGroup
Building the Nation's Leading Wound Care Team

4. Risk factors for malnutrition include

a. Psychosocial contributors

b. Increased or decreased intake

c. Vitamin or mineral deficiencies

d. Chronic disease

e. All of the above

5. All are true of the Mini Nutritional Assessment (MNA) except

a. It will identify a patient's risk for malnutrition or malnourishment

b. An MNA should be performed at the patient's initial visit

c. No follow-up is required after performing and documenting the MNA

d. The MNA should be used to determine patient education and treatment plans to optimize nutrition for wound healing

6. Clinical markers for malnutrition include;
    a. Moderate or severe weight loss or gain
    b. General or local fluid accumulation
    c. Increased sensitivity to hot or cold temperatures
    d. A and B

7. Only patients at moderate to high risk will benefit from nutritional education.
    a. True
    b. False

8. Weekly nutritional education is important because
    a. Patients often forget up to 80% of what is said during their appointment
    b. Positive reinforcement encourages sustainable behavioral changes
    c. Many patients can become confused on what healthy eating is
    d. All of the above

9. Your clinic has been provided with informational brochures to aid in patient education

a . True

b. False

10. Nutrition should be considered for;

a. Wound prevention

b. Wound preparation

c. Wound Treatment (chronic or acute)

d. All of the Above

SerenaGroup
Building the Nation's Leading Wound Care Team