



**BISMARCK
CANCER
CENTER**

Lung Cancer Nutrition Therapy



During Radiation Therapy

Depending on the location of treatment, you may experience pain or difficulties while swallowing. Also during this time your body may be using extra energy to heal from treatment. To maintain your weight and tolerate treatment better you may need to change what you are eating.

Eat and drink more often:

- Eat 6 small meals or every 2-3 hours while awake
- Use high calorie beverages such as:
 - Nutrition drinks like Ensure Plus, Boost Plus, and Carnation Breakfast Essentials. Use Boost Glucose Control or Glucerna if diabetic
 - There are many nutrition drinks on the market. Choose one that works for you. While shopping for nutrition drinks look for beverages that provide at least 250 calories and 12 or more grams of protein per 1 - 8oz/237ml serving
 - Whole milk, juice, PowerAde or Gatorade, milkshakes, and smoothies
 - Reminder that water/fluid intake is very important but beverages like water, plain coffee and tea do not offer calories
- Drink at least 64oz/8 cups/1900ml of fluids per day

Protein:

- Your body is using additional protein during this time to heal from treatment and maintain a healthy immune system
- Good sources of protein are eggs, beans, dairy products, soy, nuts, lean meat, fish and poultry
- Bean dishes like baked beans, bean salads, mild chili or refried beans are excellent high calorie and protein foods to add
- Try to choose a source of protein for most meals

Eat more fat:

- An extra tablespoon of butter, oil or some margarine will offer 100 calories
- Whole fat dairy products
- Use regular versions of foods – avoid light, fat-free, “zero” or “diet” type foods and beverages
- Use sauces, gravies and dips
- Add avocado to foods like toast, eggs, rice and beans

Fruits and Vegetables:

- Fruits and vegetables are important during this time to help your body heal from treatment. However, many fruits and vegetables do not offer many calories or protein.
- Use sauces, yogurt, vegetable dips, bean salsas, guacamole and salad dressings.
- Avocado is higher in calories, add to salads or sandwiches or eat with crackers.



During Radiation Therapy

Food textures:

- Hard or crunchy food may be painful or difficult to swallow. It is best to avoid fried foods, chips, pretzels, hard granola or cereal clusters
- Breads, crackers and other dry foods may become difficult to swallow
- Soft or pureed foods may be tolerated better or foods like pudding, mashed potatoes or rice with gravy, hummus, beans, hard-boiled eggs, yogurt, and cottage cheese.
 - To puree foods, use a food processor, blender or “bullet” type mixer. Depending on the food, you may need to steam it or cook it first and cut it into small pieces. Add a small amount of liquid, preferably whole milk or juice and blend, assess texture for your tolerance and blend again and add more liquid if needed.

Pain with swallowing (esophagitis):

- Use soft, moist foods
- Choose a bland diet. Avoid highly seasoned foods, spicy foods or acidic foods as these may irritate sores
- Choose cool or room temperature foods
- Avoid alcohol and tobacco products
- Swallow prescribed numbing “mouthwash” 10 minutes prior to meals

Vitamins/Minerals/Herbs:

- Speak to your doctor and pharmacist before taking any vitamin, mineral or herbal supplements
- Do not take more than 100% daily value of any vitamin/mineral, unless instructed by your doctor

Skin:

- Take care of the skin being affected by radiation by applying lotion or Aquaphor multiple times per day. Informing your care team if skin is red and painful or irritated.



After Radiation Therapy

If you do experience difficulties with swallowing it could last for several weeks after you have finished radiation treatment. Continue to follow a high calorie high protein diet with soft foods until swallowing improves.



After Radiation Therapy ...continued

Long term survivorship:

After side effects have improved the recommendations are to follow a plant-based diet for improved survivorship.

Achieve a Healthy Weight

- A modest weight loss of just 5% of your body weight if you are overweight or obese can have great health benefits
- Lose weight gradually

Exercise Daily

- Limit sedentary activities by reducing sitting time, taking stairs when able and parking further away from entrances
- Aim for moderate physical activity, 120 minutes per week or 30 minutes four days per week
- Small burst of physical activity is better than no activity
- As fitness level improves intensity of activity or length of time will need to increase

Choose More Fruits and Vegetables

- Aim for three ½ cup servings of vegetables and two ½ cup servings of fruits each day
- Put fruits and vegetables on your plate first, then add other food after
- Have fruits and vegetables as snacks
- Plan your meals around produce

Aim for Plant-Based Meals

- Reduce red meat intake to 18oz per week
- Limit processed meats such as sausage, bacon, bologna, salami, and ham
- Choose legumes more often as protein source

Choose Foods that are More Fresh

- Choose fresh and frozen produce instead of canned
- Reduce sodium intake by reducing processed foods; choosing foods with 300 mg or less of sodium per serving and limited salt added while cooking and at the table.
- Experiment with herbs and spices to flavor foods
- Limit intake of processed foods that are high in fat and sodium and don't offer much nutrition like chips, baked goods, sugar-sweetened beverages and candy

Look for whole grains

- Look for whole grains as the first ingredient
- Try to incorporate more whole grains such as: brown rice, whole grain pasta, oats, and quinoa
- Aim for most of your grain choices to be from whole grains
- Try easy substitutions such as brown rice instead of white rice

Consume More Water

- Unless otherwise directed by your doctor, aim for 64oz of water daily
- Reduce alcohol intake
 - Men: limit 2 drinks per day; Women: limit 1 drink per day
 - One drink is equal to:
 - 5oz of wine
 - 12oz of beer
 - 1.5oz of liquor
 - Choose non-caffeinated beverages more often



Recipes

Doubled milk: (*Use this mixed into other recipes like puddings, smoothies, shakes and smoothies)
Ingredients:

1 cup whole milk with $\frac{1}{4}$ cup powdered milk.
Add additional flavoring as desired and serve cold.

This drink offers at least: 211 calories, 24gm carbohydrates, 14gm protein

Ensure/Boost shakes:

Ingredients:

1 Ensure Plus or Boost Plus
 $\frac{1}{2}$ cup ice cream
Optional: Fresh or frozen fruit, flavoring syrup, peanut butter

Directions: Blend until smooth in blender.
Serve cold.

This drink offers at least: 487 calories, 61g carbohydrates, 16g protein

Instant High Calorie, High Protein Pudding:

Ingredients:

1 box instant pudding mix
12oz can of evaporated milk
 $\frac{1}{2}$ cup whole milk
Optional: Frozen whipped topping, chocolate syrup.

Directions: Pour evaporated milk and whole milk into a large bowl or blender. Slowly pour instant pudding mix into the milk and mix or blend until smooth. Pour into 4 dishes. Refrigerate and serve cold. Top as desired for more calories.

This dessert offers at least 240 calories, 33g carbohydrate and 8g protein.

Hard-Boiled Eggs:

Ingredients:

Eggs

Directions: Place eggs into sauce pan in a single layer. Add cold water to cover eggs by 1 inch. Heat over high heat to just boiling. Remove from heat. Cover and let eggs stand in hot water for 9 minutes for medium eggs, 12 minutes for large eggs, and 15 minutes for extra large eggs. Drain and serve warm. Or, cool completely under cold running water or in a bowl of ice water, then refrigerate. Eggs can be stored in the refrigerator with shell on in an airtight container for 1 week.

Super Shake:

Ingredients:

1 Ensure Plus or Boost Plus
1 Magic cup
1 Benecalorie

Optional: Fresh or frozen fruit, flavoring syrup, peanut butter

Directions: Blend until smooth in blender.
Serve cold. Shake will be thick.

This drink offers at least: 980 calories, 86gm carbohydrates, 30g protein

Peanut Butter Banana Shake:

Ingredients:

$\frac{1}{4}$ cup Whole Milk
1 frozen banana
 $\frac{1}{2}$ cup ice cream
 $\frac{1}{4}$ cup peanut butter

Directions: Blend until smooth in blender.
Serve cold.

This drink offers at least: 666 calories, 22g protein

High Calorie High Protein Gelatin Dessert:

Ingredients:

$\frac{1}{2}$ cup hot water
1 small box gelatin dessert mix, any flavor
12oz can evaporated milk
Optional: fresh or canned fruit

Directions: Dissolve gelatin mix in hot water. Add evaporated milk and mix. Pour into 4 dishes. Add fruit as desired.

This dessert offers at least 210 calories, 28g carbohydrate, 8g protein

Hot Cocoa

Ingredients:

$\frac{1}{2}$ cup half-and-half, warmed
 $\frac{1}{2}$ cup whole milk, warmed
4 tablespoons chocolate syrup
2 tablespoons dry milk powder or protein powder
2 tablespoons whipped cream (for topping)

Directions: Blend all ingredients except whipped cream with a whisk or spoon until smooth. Top with whipped cream.

This drink offers at least: 600 calories and 16 grams protein.