

Eating Well During Radiation Therapy

Your Nutrition Guide for Treatment & Recovery

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Evidence-based guidance from ESPEN 2021, ASPEN 2026 (H&N), MASCC/ISOO, ASTRO, MSK, and MD Anderson

Section 1: Why Nutrition Matters During Radiation

Good nutrition during radiation therapy directly affects your treatment outcomes. Patients who maintain their weight and nutritional status have fewer treatment breaks, fewer hospitalizations, and better cure rates.

The Numbers

- Head & Neck RT: 35-60% arrive malnourished; up to 88% become malnourished during treatment
- Esophageal cancer RT: 85% malnutrition, 79% weight loss during treatment
- Critical weight loss ($\geq 5\%$) occurs in 60% of patients by end of RT
- Weight loss during RT is associated with worse overall survival and progression-free survival

Your Goals During Treatment

- Maintain your weight (or lose as little as possible)
- Meet your protein and calorie targets
- Stay hydrated
- Manage side effects through food choices

Every calorie counts during radiation. This is not the time to diet or "eat clean." Your body needs fuel to heal from radiation and fight cancer.

Section 2: Your Nutritional Targets

Calories

Target: **25–30 calories per kilogram of body weight daily** (per ESPEN 2021 cancer nutrition guidelines; higher if experiencing complications or significant weight loss). For **head and neck cancer**, newer ASPEN 2026 guidance recommends at least **30 kcal/kg/day**.

Simple calculation example: A 150-lb (68 kg) person needs approximately **1,700–2,040 calories per day** during RT (or $\geq 2,040$ for H&N; cancer).

Protein

Target: **1.0–1.5 grams per kilogram daily** (ESPEN 2021). For **head and neck cancer**, ASPEN 2026 recommends **1.2–1.5 g/kg/day**. Include protein at every meal and snack.

Example: A 150-lb person needs **68-102 grams of protein per day**.

Hydration

Target: **at least 64 oz (8 cups) of fluid daily**; more if diarrhea, vomiting, or fever.

Target	Goal	Example
Calories	25–30 cal/kg (H&N;; ≥ 30)	1,700–2,040 for 150 lb
Protein	1.0-1.5 g/kg	68-102 g for 150 lb
Fluids	64+ oz/day	More if diarrhea or vomiting
Meals	6-8 small meals	Every 2-3 hours
Weigh yourself	2x per week	Track trends, not daily fluctuations

Section 3: Managing Side Effects Through Food

Radiation affects different parts of your body differently. The strategies below are organized by side effect.

Mouth & Throat Pain (Mucositis) — Head & Neck Radiation Therapy

Timeline: Affects up to 91% of H&N; RT patients; begins weeks 1-3.

What to eat: Soft, moist, room-temperature or cold foods. Examples: smoothies, yogurt, pudding, mashed potatoes, oatmeal, scrambled eggs, ice cream.

What to avoid: Citrus, tomatoes, spicy foods, rough/crunchy textures, very hot foods.

Pain management tips: Take pain medication 30 minutes before eating. Try a salt-and-soda rinse before meals. Ask your team about lidocaine rinse.

Emerging evidence: A 2024 meta-analysis suggests curcumin mouthwash may reduce mucositis severity/pain in H&N; RT, but this is not yet strong enough for a routine recommendation. Ask your oncology team if this is available at your center as a complementary option.

Difficulty Swallowing (Dysphagia)

Food texture levels: Adjust texture based on your swallowing function.

- **Level 1 (Pureed):** Pudding consistency — smoothies, pureed soups, yogurt, baby food, applesauce
- **Level 2 (Mechanically soft):** Ground meats, well-cooked pasta, mashed vegetables, soft bread
- **Level 3 (Advanced):** Soft regular foods, avoid crunchy/hard/sticky items

Thickened liquids: If thin liquids are difficult to swallow, thicken them with baby rice cereal or commercial thickeners.

Swallowing exercises: Do them even if you can still swallow — this prevents muscle atrophy during and after treatment.

Nausea & Vomiting — Abdominal, Pelvic, or Chest Radiation

Key strategy: Eat BEFORE you feel nauseous. Small meals every 2-3 hours.

Anti-nausea foods: Ginger (tea, candy, fresh), lemon water, peppermint tea, saltines, bland starchy foods (white rice, toast, plain potatoes).

What to avoid: Greasy/fried/spicy foods, strong odors, eating 2-3 hours before treatment.

Temperature trick: Serve food room temperature or cold (reduces nausea-inducing smells).

Medication: Take ondansetron (Zofran) on schedule, not just when you feel nauseous.

Diarrhea — Pelvic or Abdominal Radiation

Prevalence: Affects 50-80% of pelvic/abdominal RT patients.

Low-residue diet: White rice, white bread, lean meats, bananas, applesauce (BRAT diet).

What to avoid: High-fiber foods, raw vegetables, dairy (temporarily), caffeine, artificial sweeteners (sorbitol).

Probiotics — Emerging evidence: Some probiotic formulations (e.g., multi-strain Lactobacillus-based products) have shown benefit in reducing RT-induced diarrhea in clinical studies. Evidence quality is limited and heterogeneous, and brand/formulation continuity has been an issue in probiotic research. Start BEFORE treatment if possible. Ask your team for a specific recommendation rather than self-selecting a brand.

Hydration is critical: Drink 3-4 quarts daily; include electrolytes (sports drinks, broths, coconut water).

When to call your team: Diarrhea >6 episodes/day, blood in stool, or signs of dehydration.

Emerging nutrients: Oral glutamine and arginine have shown possible benefit for RT-related oral mucositis in early trials (including a 2025 triple-blind RCT), but these should be considered emerging/conditional, not routine standard care. Discuss with your dietitian before starting any supplements.

Taste Changes (Dysgeusia)

Timing: Common during H&N; RT; may persist months after treatment ends.

Strategies: Experiment with tart/sour flavors (lemon, vinegar), umami flavors (soy sauce, parmesan, mushrooms), stronger seasonings.

Metallic taste tip: Use plastic utensils instead of metal.

Zinc supplementation: 50-100 mg/day has mixed evidence but may help — discuss with your oncology team.

Recovery: Taste usually returns gradually 1-6 months after RT ends.

Dry Mouth (Xerostomia) — Head & Neck Radiation

Strategy: Add sauces, gravies, and broths to all foods.

- Dip dry foods in liquid before eating
- Sip water constantly throughout meals
- Sugar-free gum or lozenges stimulate saliva production

- Medications: pilocarpine, cevimeline (ask your doctor)
- Artificial saliva products: Biotene, XyliMelts

Loss of Appetite & Early Satiety

Strategy: Eat calorie-dense foods, not volume-dense. Prioritize protein and calories FIRST (before filling up on vegetables).

Liquid calories count: Smoothies, milkshakes, nutritional supplements all contribute to your daily targets.

Accessibility: Keep snacks visible and accessible (nightstand, car, desk).

Structured eating: Set timers to eat every 2-3 hours even if you're not hungry.

Section 4: High-Calorie, High-Protein Power Foods

These are the foods that pack the most nutrition into small portions.

Food	Nutrition per serving	Notes
Eggs (scrambled/boiled)	6g protein, 70 cal each	Cheap, versatile, quick
Greek yogurt (full-fat)	15-20g protein, 150-200 cal/cup	Add granola or fruit
Peanut/almond butter	7g protein, 190 cal per 2 tbsp	Add to smoothies, toast, oatmeal
Avocado	3g protein, 240 cal per fruit	Add to smoothies, toast, salads
Cheese (any kind)	7g protein, 110 cal per oz	Snack or add to meals
Nuts & trail mix	5-7g protein, 170 cal per 1/4 cup	Easy to keep nearby
Olive oil	0 protein, 120 cal per tbsp	Add to soups, pasta, vegetables
Boost VHC shake	22g protein, 530 cal per 8oz	Complete liquid meal
Ensure Max Protein	30g protein, 150 cal per bottle	Higher protein option
Ice cream (full-fat)	3-5g protein, 270 cal per cup	Yes, ice cream counts!

This is NOT the time to count calories DOWN. Every calorie is helping your body heal from radiation. High-fat, high-calorie foods are your allies during treatment.

Section 5: Hydration

Minimum: 64 oz (8 cups) daily — more if diarrhea, vomiting, or fever.

What Counts as Fluid

Water, broth, sports drinks, popsicles, ice chips, juice, decaf tea, milkshakes, soups.

Signs of Dehydration

- Dark urine
- Dry lips and mouth
- Dizziness, especially when standing
- Headache
- Skin tenting (skin doesn't snap back when pinched)

When to Call Your Team

- Unable to keep fluids down for >12 hours
- Severe diarrhea (>6 episodes/day)
- Dizziness standing up
- IV hydration may be available at your cancer center if you're struggling

Practical Tips

- Keep an insulated water bottle nearby at all times
- Sip throughout the day (not large amounts at once)
- Flavor water with fruit slices or mint to make it more appealing
- Track intake: mark off 8 oz cups as you drink them

Section 6: Tube Feeding — A Tool, Not a Failure

If your medical team recommends a feeding tube, this is a proactive tool to ensure you complete treatment without interruptions — not a sign of failure.

When It's Recommended

- Head & Neck RT when swallowing becomes too painful (feeding tube rates in H&N; cancer are often higher than many expect — a 2025 systematic review reported overall gastrostomy prevalence around 44%, with most placements reactive rather than prophylactic)
- Esophageal cancer RT with severe esophagitis
- Significant weight loss (>10% in 6 months)

How It Works

A **PEG tube** (percutaneous endoscopic gastrostomy) is the most common type — a small tube placed directly into your stomach. Most tubes are temporary and removed after treatment recovery.

Benefits

- Ensures adequate nutrition even if swallowing is too painful
- Prevents treatment breaks due to malnutrition
- Reduces hospitalizations
- Patients with feeding tubes have **BETTER** treatment outcomes than those who struggle to eat inadequately by mouth

Patients who maintain nutrition through a feeding tube have better treatment outcomes than those who struggle to eat poorly. Accepting a tube feeding is a proactive, evidence-based choice.

ASPEN 2026 H&N; Cancer Nutrition Pathway

The new ASPEN 26 guideline for adults with head and neck cancer recommends:

- **Malnutrition screening at first presentation** and regularly throughout treatment/recovery
- **Comprehensive assessment** with validated oncology nutrition tools (PG-SGA)
- **Weekly dietitian contact** during RT/CRT
- **Interdisciplinary management** including speech pathology for swallowing

Section 7: Food Safety — What You Actually Need to Know

You may have heard of a 'neutropenic diet.' For most people getting radiation for solid tumors, routine neutropenic diets are not recommended. Meta-analyses have not shown a proven reduction in infection or mortality from neutropenic diets. Careful food safety matters more than avoiding fresh foods. Focus on these 4 basic food safety rules.

The 4 Rules of Food Safety

1. **CLEAN:** Wash hands, surfaces, utensils before preparing food.
2. **SEPARATE:** Keep raw meat away from other foods; use separate cutting boards.
3. **COOK:** Cook meats to safe internal temperatures: 165°F poultry, 145°F pork/fish, 160°F ground beef.
4. **CHILL:** Refrigerate food within 2 hours; don't eat leftovers >3 days old.

Foods to Avoid During Radiation

- Raw or undercooked meat, eggs, fish
- Unpasteurized dairy products
- Unwashed produce

Focus on eating well with safe food handling — not restricting your already limited diet. You're not immunocompromised from radiation alone; safe food handling is sufficient.

Section 8: When to Worry — Weight & Nutrition Red Flags

Contact your care team immediately if you experience any of these:

Red Flag	What to Do
Weight loss >5% in 1 month	Call your care team; dietitian referral urgently needed
Unable to eat for >2-3 days	May need nutritional supplements or tube feeding evaluation
Severe diarrhea (>6 episodes/day)	Dehydration risk; may need IV fluids and medication adjustment
Unable to keep fluids down >12 hours	Dehydration emergency; call immediately
Blood in stool or vomit	Urgent evaluation needed
Severe mouth pain preventing eating	Pain management optimization needed; consider stronger medications
Unintentional weight loss >10% in 6 months	Significant malnutrition; comprehensive assessment needed

Ask your care team to refer you to a registered dietitian. Individualized nutrition counseling is proven to improve outcomes during RT — and it's covered by most insurance.

Section 9: Quick Reference by Radiation Site

Treatment Site	Common Side Effects	Nutritional Strategies
Head & Neck	Mucositis, dry mouth, dysphagia, taste changes	Soft/moist/cold foods, high-calorie supplements, swallowing exercises
Chest/Lung	Esophagitis, nausea, appetite loss	Soft bland foods, small meals, avoid hot/spicy, room-temp foods
Pelvic	Diarrhea, nausea, bladder irritation	Low-residue diet, probiotics (Visbiome/Culturelle), BRAT foods, extra hydration
Abdominal	Nausea, diarrhea, appetite loss	Small frequent meals, ginger, low-fiber, probiotics

Treatment Site	Common Side Effects	Nutritional Strategies
Brain	Nausea, fatigue, steroid-related appetite increase	Anti-nausea foods, balanced meals, manage steroid hunger

Section 10: Recommended Products & Resources

Category	Product	Est. Cost
Supplements	Boost VHC shakes (27-pack)	~\$55
Supplements	Ensure Max Protein (24-pack)	~\$35-40
Anti-nausea	Ginger tea / ginger chews	~\$8-10
Probiotics	Multi-strain probiotic (ask your team)	~\$30-60
Oral Care	Biotene mouthwash	~\$10
Oral Care	XyliMelts (dry mouth lozenges)	~\$12
Kitchen	High-protein cookbook	~\$20
Kitchen	Blender (for smoothies/purees)	~\$30-50
Hydration	Insulated water bottle	~\$15-25
Comfort	Lip balm (for dry lips)	~\$5
Support	Registered dietitian consult	Usually covered by insurance

Contact Information

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Eating during radiation therapy can be challenging, but every calorie helps your body heal. Don't be afraid to ask for help — your care team includes a registered dietitian who specializes in exactly this.

My Treatment Journal

A place to notice patterns, remember questions, and track what helps.

You do not need to fill this out perfectly. Even a few notes can help you see patterns, remember what worked, and tell your care team what is actually happening at home.

This Week

Week of / goals / anything I especially want help with

Daily Check-In

Day / Date	Energy (0-10)	Pain (0-10)	Eating / Drinking	Sleep	Main note
Mon					
Tue					
Wed					
Thu					
Fri					
Sat					
Sun					

Symptoms I Want to Watch

<input type="checkbox"/> Appetite	<input type="checkbox"/> Weight	<input type="checkbox"/> Protein intake
<input type="checkbox"/> Fluids	<input type="checkbox"/> Nausea / diarrhea	<input type="checkbox"/> Taste / swallowing
<input type="checkbox"/> Other: _____		

What I Tried / What Helped

Use this page to test small changes and keep track of what helps, what does not, and what you want to ask about next.

Problem or symptom	What I tried	Did it help?	Next step / question

Examples: taking pain medicine before meals, changing skin care timing, drinking earlier in the day, using a humidifier, adjusting fiber, walking after treatment, or asking for a refill.

Questions for My Care Team

Bring this page to visits. Small questions are worth writing down, especially when treatment days start to run together.

Symptoms or side effects I want to mention

Medication, refill, or product questions

Eating, drinking, bowel, bladder, skin, sleep, or activity questions

Logistics: appointments, transportation, work, family, forms

One thing I keep forgetting to ask
