



**Medical
Nutrition
Therapy (MNT)
&
Cancer palliative
care**

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Palliative care

an approach that can be provided **in conjunction with curative treatment**.

Palliative care focuses on **providing relief from symptoms** and alleviating the stress of illness.





Palliative care

Teams of specially trained health professionals work alongside a patient's other providers **to give an extra layer of support** for achieving the goal of **improved quality of life** for both the **patient and family**.

Though the palliative care approach is **best to initiate at the diagnosis of a disease**, there are many benefits to starting care at any point during the progression of a particular disease.



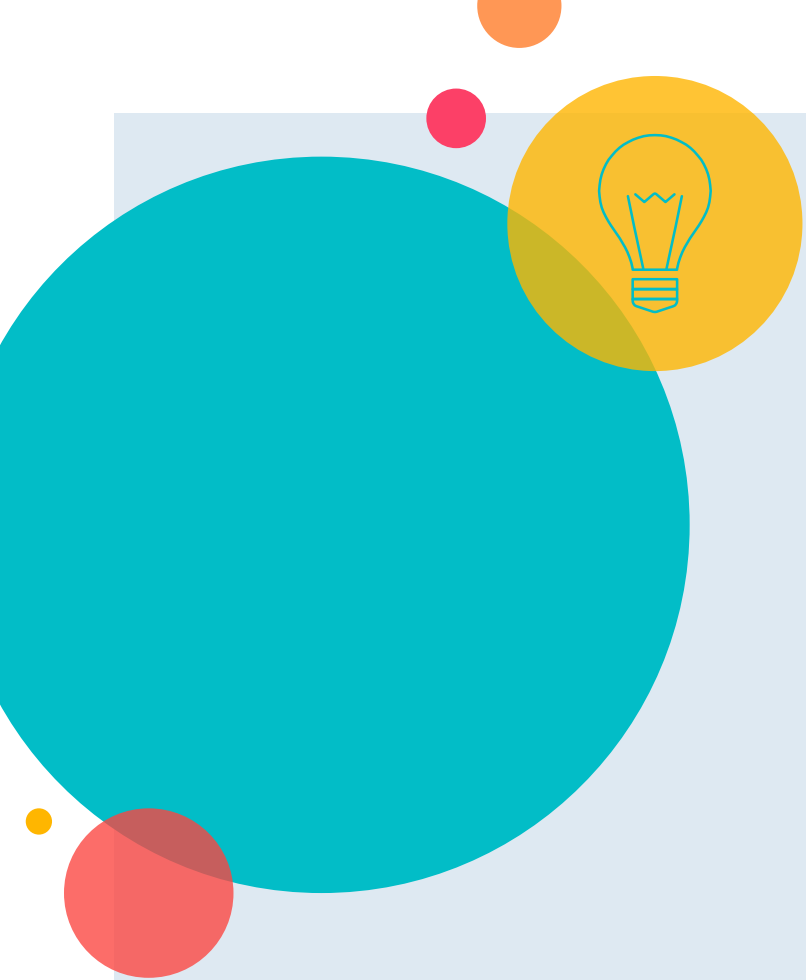
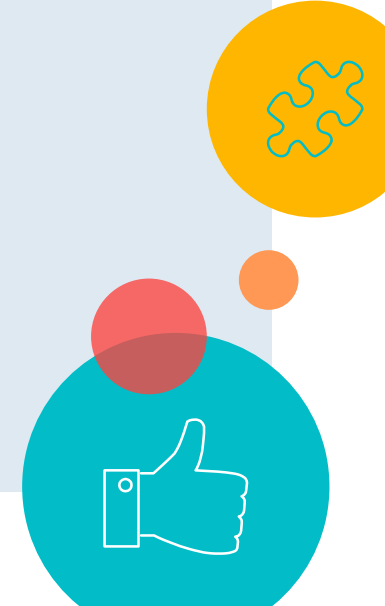


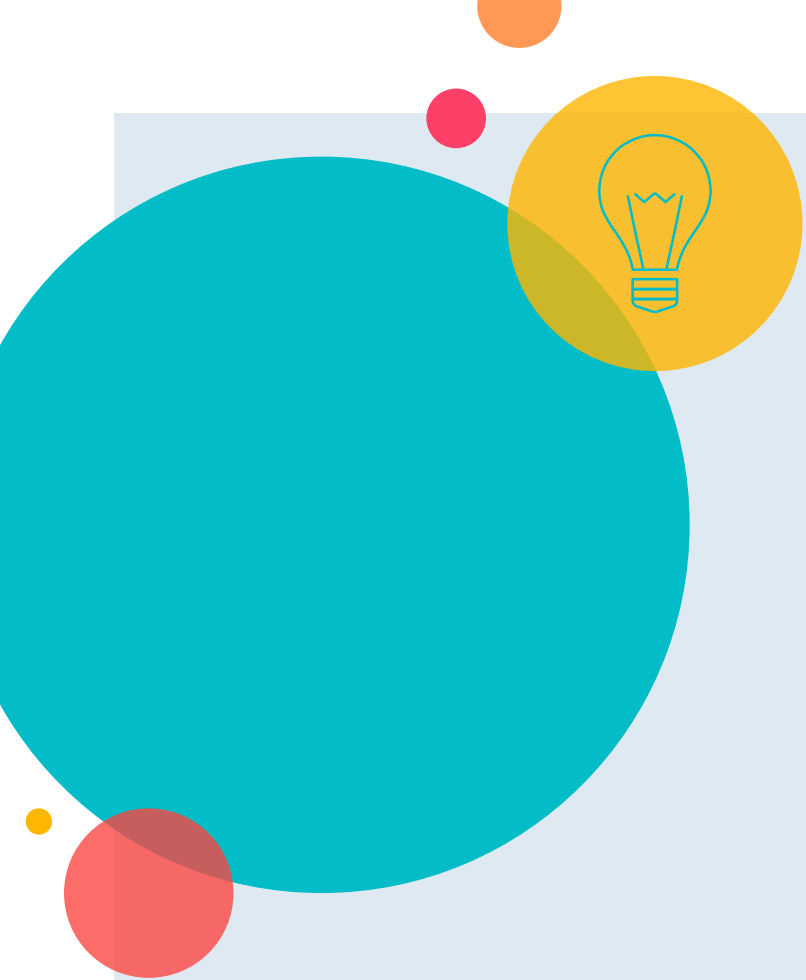
**Good nutrition is especially important
because both the cancer and its
treatments can change the way of eating.**



Goals

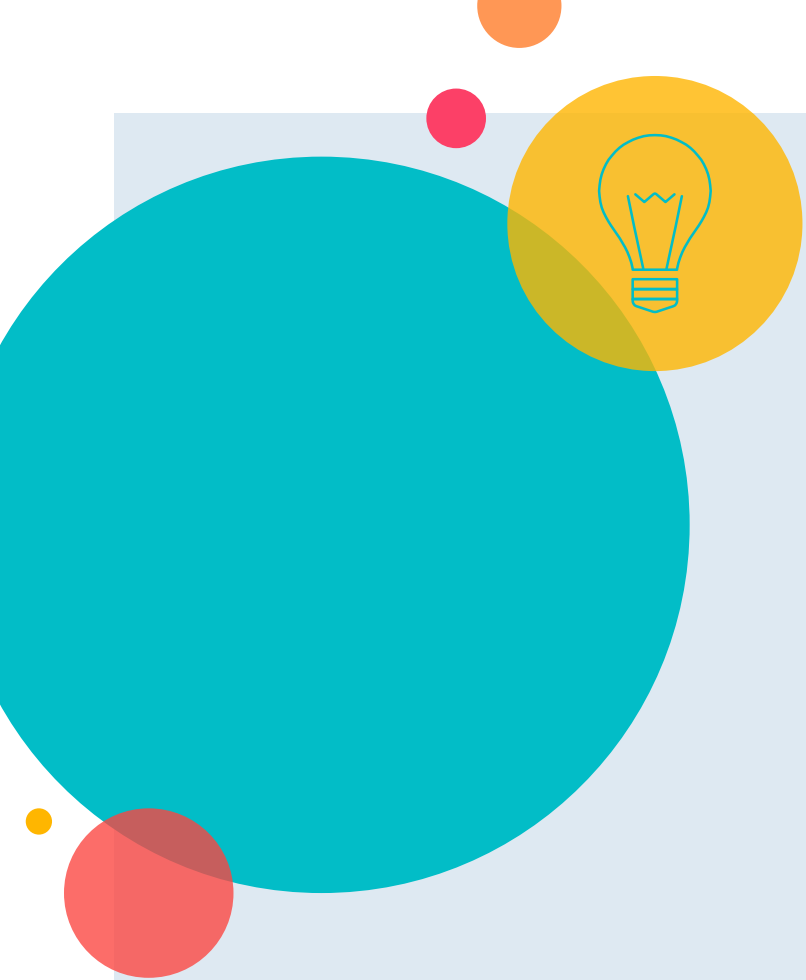

- goal is to **minimize the effects of nutrition impact symptoms** and to improve the individual's nutritional parameters.
- Intervention goals should be **achievable**, and **individualized** to maximize benefit.
- Goals must be directed **toward an objective measure** such as body **weight** or some other meaningful index.

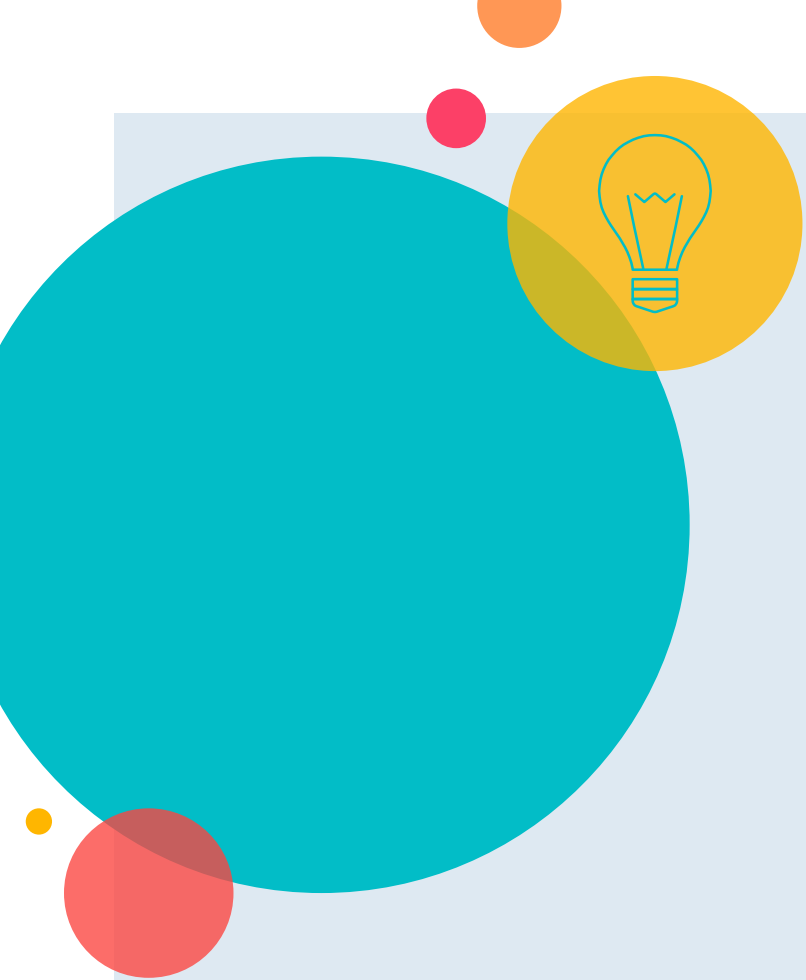
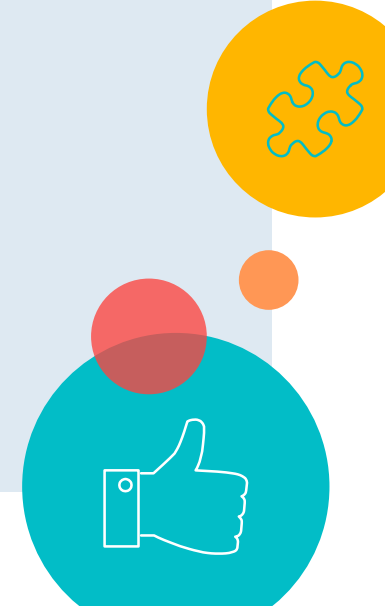
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- **Malnutrition, anorexia** (loss of appetite), and **weight loss** are **significant issues** in cancer care and are often present in many individuals at the time of diagnosis, even in children.
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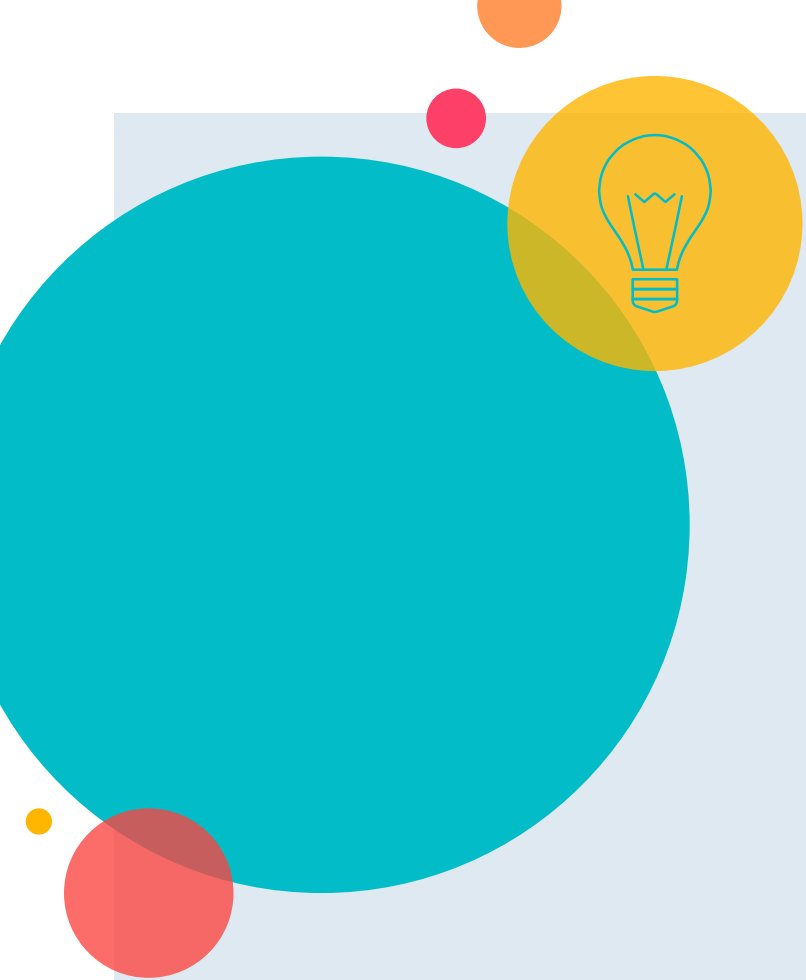
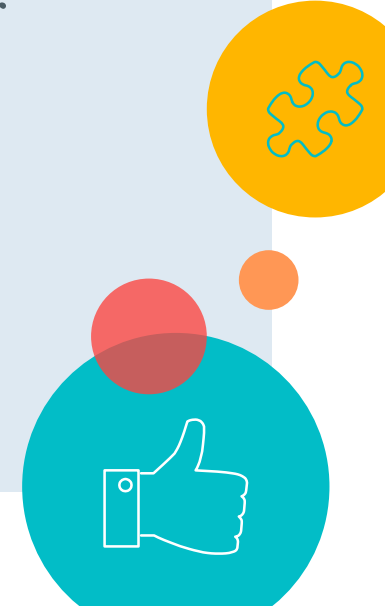
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- **The incidence of malnutrition** among individuals with cancer has been estimated to be **between 15% and 80%** depending on the type of cancer and intensity of treatment.
 - Studies consistently show that **even small amounts of weight loss** (less than 5% of body weight) before treatment is associated with a **poorer prognosis** and decreased quality of life.

thus **reinforcing the importance of early MNT**



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- **Oral feeding** is the goal though individuals often experience symptoms that make it difficult.
 - The **causes of impaired oral intake are multifactorial** and **include:**
 - **oral ulceration**, xerostomia, **poor dentition**, intestinal obstruction, malabsorption, **constipation**, diarrhea, nausea, **vomiting**, reduced intestinal motility, uncontrolled **pain** and etc.
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- **inadequacy of food intake** has been considered to be present if :
 - patient **cannot eat** for more than a week
 - or the estimated energy **intake is <60%** of requirement for **more than 1-2 weeks**
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- **Partial reduction** in food intake also results in large **caloric deficits over time**.
 - in this instance, consideration should be given to the percent **daily deficit** (e.g. >25%, >50%, or >75% of energy requirements),
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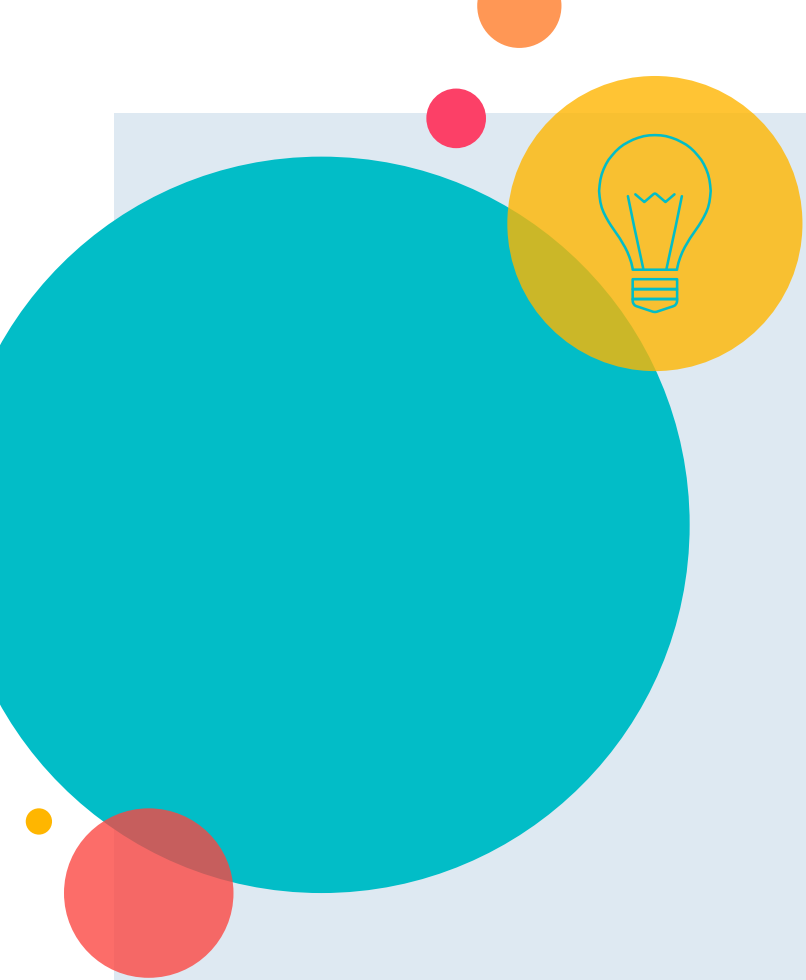
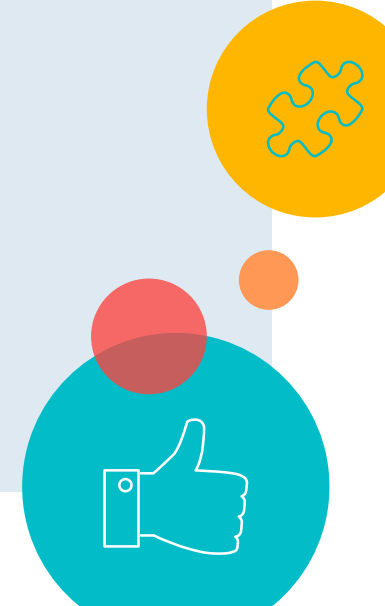


Grading scheme (grades 0-4) to predict **overall survival in patients with advanced cancer.**

The grading scheme is based on groupings of BMI and weight loss showing distinct median survival (0: best, 4: worst prognosis). ($p < 0.001$; adjusted for age, sex, disease site, stage and performance status).

		BMI (kg/m ²)				
		28	25	22	20	
Weight loss (%)	2.5	0	0	1	1	3
	6	1	2	2	2	3
	11	2	3	3	3	4
	15	3	3	3	4	4
	15	3	4	4	4	4



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- The relevance of rapid and unplanned weight loss (**10% of usual body weight in the past 6 months or 5% weight loss in the past 3 months**) has been observed consistently to be **associated with poor prognosis**.
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Strategies for modifying dietary intake may be necessary and depend on the specific eating problem and the individual's nutritional status.





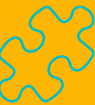
dietary intake include **Energy, Proteins, Fats,**
Carbohydrates, Fluid, Vitamins and Minerals.



Energy



- To ensure that adequate energy is being provided these **factors must be considered**:
 1. presence of **other diseases**
 2. **intent of treatment** (e.g., curative, control, or palliation)
 3. **therapies** (e.g., surgery, chemotherapy, biotherapy, or radiation therapy)
 4. presence of **fever or infection**
 5. other **metabolic complications** such as refeeding syndrome



Energy

- **Evidence-based guidelines** from the **American Society for Parenteral and Enteral Nutrition (ASPEN)** for quickly estimating energy and fluid needs of people with cancer based on body weight



Condition	Energy Needs
Cancer, nutritional repletion, weight gain	30-35 kcal/kg/day
Cancer, inactive, nonstressed	25-30 kcal/kg/day
Cancer, hypermetabolic, stressed	35 kcal/kg/day
Hematopoietic cell transplant	30-35 kcal/kg/day
Sepsis	25-30 kcal/kg/day

Data from Gottschlich MM, editor: *The A.S.P.E.N. nutrition support core curriculum: a case-based approach—the adult patient*, Silver Spring, Md, 2007, American Society for Parenteral and Enteral Nutrition; Hamilton KK: Nutrition needs of the adult oncology patient. In Leser M et al, editors: *Oncology nutrition for clinical practice*, Chicago, 2013, Oncology Nutrition Dietetic Practice Group of the Academy of Nutrition and Dietetics.



Proteins

- An individual's need for protein is **increased during times of illness and stress.**
- Additional protein is required by the body to repair and rebuild tissues affected by cancer treatments and to maintain a healthy immune system

Proteins

- factors in determining protein requirements :
 1. The degree of **malnutrition**
 2. extent of **disease**
 3. degree of **stress**



Condition	Energy Needs	Protein Needs
Cancer, nutritional repletion, weight gain	30-35 kcal/kg/day	1.0-1.5 g/kg/day
Cancer, inactive, nonstressed	25-30 kcal/kg/day	0.8-1.0 g/kg/day
Cancer, hypermetabolic, stressed	35 kcal/kg/day	1.5-2.5 g/kg/day
Hematopoietic cell transplant	30-35 kcal/kg/day	1.5 g/kg/day
Sepsis	25-30 kcal/kg/day	1.5-2.0 g/kg/day

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**Adequate energy
should be provided as a fuel source and to
prevent lean tissue loss.**



Fluid

- Dietitians managing cancer patients must ensure **adequate hydration and electrolyte balance** to prevent dehydration and hypovolemia.

Fluid

- Individuals need close monitoring for dehydration:
- **inadequate intake of fluid** because of **mucositis** or **anorexia**)
- hypovolemia (losses from **fever** or **GI fluids** such as **vomiting, diarrhea, or malabsorption**)
- **nephrotoxic effects** from anticancer treatments.



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Hematopoietic cell transplant	30-35 kcal/kg/day	1.5 g/kg/day
Sepsis	25-30 kcal/kg/day	1.5-2.0 g/kg/day
Fluid needs:		
Typical fluid requirements for adults 20 to 40 mL/kg/day or 1 to 1.5 mL/kcal energy expended		
RDA Method: 1 mL per 1 kcal consumed		
Body Surface Area (BSA) Method: 1500 mL/m ² or BSA x 1500 mL		

Data from Gottschlich MM, editor: *The A.S.P.E.N. nutrition support core curriculum: a case-based approach—the adult patient*, Silver Spring, Md, 2007, American Society for Parenteral and Enteral Nutrition; Hamilton KK: Nutrition needs of the adult oncology patient. In Leser M et al, editors: *Oncology nutrition for clinical practice*, Chicago, 2013, Oncology Nutrition Dietetic Practice Group of the Academy of Nutrition and Dietetics.



Fluid

- Signs and symptoms of dehydration include **fatigue, acute weight loss**, hypernatremia, poor skin turgor, dry oral mucosa, dark or strong-smelling urine, and decreased urine output.
- A general guideline for estimating fluid needs for all adults without renal concerns is 20 to 40 mL/kg though some patients may experience **increased needs** (30 to 40 mL/kg) **due to chemotherapy**.



IV hydration may be recommended for individuals struggling to achieve adequate hydration.



Micronutrients

- If individuals are experiencing **difficulty with eating** and **treatment-related side effects**, a standard multivitamin and mineral supplement that provides **no more than 100% of the DRIs** and **one without iron** is considered safe

Micronutrients

- Purified eicosapentaenoic acid (EPA) /docosahexaenoic acid (DHA) omega-3 supplements up to 2 grams/day have shown **antitumor activity and reduced neuropathy** in patients treated for neuropathy.



- **Nutrition Intervention**
Strategies for side effect of
Patients



Side Effect

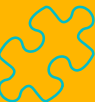


○ **Anorexia, poor appetite**

1. Maximize intake at times **when feeling best**.
2. **Eat by the clock** instead of waiting for hunger cues (set a timer).
3. Use protein and calorie-containing **supplements** (e.g., whey or soy powder, nutritional supplements).

○ **Nausea and vomiting**

1. Rest with **head elevated for 30 minutes** after eating.
2. **Avoid** foods with **strong odors** such as fish or eggs.



Side Effect

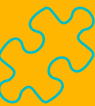


- **Diarrhea**

1. **Avoid high-fiber foods**, such as nuts, raw fruits and vegetables, and wholegrain breads and cereals and avoidance of dairy foods is sometimes helpful.
- 2.

- **Constipation**

1. Use **probiotic-containing foods** or supplements.
2. Include activities of daily living and **physical activity as able**.
3. **Laxative foods**.



Side Effect



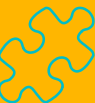
- **Sore throat, esophagitis, Sore mouth, mucositis**
 1. Prepare **smoothies with low acid fruits** like melon, banana, peaches and add yogurt, milk
 2. **Avoid alcohol**, citrus, **caffeine**, **tomatoes**, vinegar, and hot peppers or other spicy food.
 3. **Honey** ? Propolis ? ...



Side Effect



- **Fatigue**
 1. Choose **easy-to-prepare, easy-to-eat** foods
 2. Advise keeping nutrient-dense **snacks close at hand** and snack frequently.
 3. **Supplement** therapy
- **Neutropenia**
 1. Advise the **avoidance of raw or undercooked animal products**, including meat, pork, game, poultry, eggs, and fish.
 2. **“When in doubt, throw out”** and **“No oldy or moldy.”**

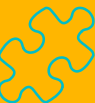


Side Effect



- **Altered taste or smell**
 1. **Eat cooler foods**, rather than warmer foods
 2. Flavor water with lemon or other fruit or herbs.

- **Thickened saliva/or dry mouth (xerostomia)**
 1. **Chew on carrots** or celery.
 2. Recommend using a **cool** mist **humidifier while sleeping.**





Effect of MNT (**M**edical **N**utrition **T**herapy) in :

1. Prevention and treatment of **Malnutrition**
2. **Hydration** and **Microutrient** intake
3. **Symptom Therapy**



References

- ❑ **Academy of Nutrition and Dietetics (AND)** Standards of Practice and Standards of Professional Performance for Oncology Nutrition Practice
- ❑ **American Cancer Society (ACS)**
- ❑ **American Institute for Cancer Research (AICR)**
- ❑ **Krause and Mahan's Food & The Nutrition Care Process** 2021
- ❑ **ESPEN Practical Guideline: Clinical Nutrition In Cancer**
- ❑ **ASPEN Practical Guideline: Clinical Nutrition In Cancer**

◦ با تشکر از توجه شما