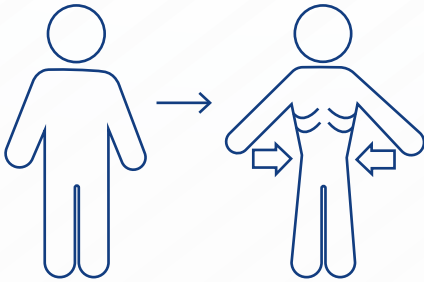


Cancer cachexia^{1,2,3,4,5}



- Cancer cachexia is a multifactorial syndrome characterized by progressive and unintentional weight loss and muscle atrophy, which diminishes both the quality of life and overall lifespan of patients
- The European Society for Medical Oncology (ESMO) defines cachexia as disease-related malnutrition accompanied by the presence of systemic inflammation

Prevalence of cachexia



30% of all patients with cancer¹



Patients with breast cancer, sarcoma, leukemia, and Hodgkin lymphoma: 40%³



Patients with colon, lung, and prostate cancer and non-Hodgkin lymphoma: 61%³



Patients with pancreatic and gastric cancer: 87%³

Clinical impact and disease burden of cancer cachexia



Impaired physical functioning



Increased drug toxicity and decreased chemotherapy efficacy



Higher risk of post-surgical complications



Higher medical costs

Despite the widespread occurrence of cachexia and international guidelines, challenges regarding its prevention, early identification, intervention, and management persist due to the lack of routine screening for malnutrition and suboptimal integration of nutrition and metabolic care into clinical oncology practice



Energy imbalance in the presence of an inflammatory environment causes weight loss and muscle wasting in cachexia. Anorexia-cachexia signaling mediators, such as activin A, myostatin, growth differentiation factor 15, and lipocalin-2, have also been implicated

Decreased energy intake



Patients with cancer cachexia have a variety of nutritional impact symptoms (NIS) that limit nutrient intake



Certain cancers, such as head and neck cancers or tumors in the gastrointestinal tract, affect energy intake by causing:

- Dysphagia
- Early satiety
- Malabsorption of nutrients



NIS caused by chemotherapy and radiation include:

- Decreased appetite due to altered taste and smell
- Food aversions
- Nausea
- Diarrhea

Increased energy expenditure and decreased energy intake over time lead to significant weight loss

Role of inflammatory cytokines in cachexia⁶



Upregulation of catabolic pathways







Affects the regeneration of skeletal muscle, leading to muscle wasting

Comparison of the effects of cachexia, anorexia, and sarcopenia⁸




	Cachexia	Anorexia	Sarcopenia
Decreased appetite	Yes	Yes	No
Decreased protein synthesis	Yes	Yes	Yes
Proteolysis	Yes	No	Yes
Lipolysis	Yes	Yes	No
Cytokine excess	Excessive	Minimal	Mild
Total energy expenditure	Increased	Decreased	Decreased

Symptoms of cancer cachexia

Physical

-  Pain/hyperalgesia
-  Nausea and vomiting
-  Changes in taste and smell
-  Fever and oral mucositis are associated with cancer cachexia
-  Lack of appetite/anorexia
-  Early satiety
-  Fatigue/exhaustion
-  Muscle wasting

Psychological

-  Anxiety
-  Depression
-  Insomnia
-  Delirium
-  Drowsiness/hypersomnia

Barriers to the diagnosis of cachexia



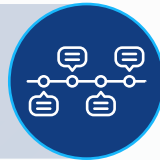
Several diagnostic criteria are available but not widely used in daily practice for the following reasons:

- Lack of awareness of cachexia and its diagnosis
- Difficulty in assessing the loss of skeletal muscle mass
- Assessment methods, such as weight and body mass index (BMI), are not suitable for obese patients with sarcopenia and patients with severe edema due to the effects of ascites
- Complexity in the etiology of cachexia and differences in the phenotype and progression rate of cachexia across diseases



Stages of cachexia are determined according to the clinical characteristics of the patient

The risk of progression from one stage to another depends on:



- Cancer type and stage
- Food intake
- Presence of systemic inflammation
- Physical inactivity
- Poor treatment response or surgical complications

Clinical criteria for staging of cachexia

Pre-cachexia



- ✓ Patients with minimal weight loss (2%–5%)
- ✓ Clinical and metabolic signs predictive of future weight loss are observed

Cachexia



- ✓ Weight loss >5% over the previous six months
or
- ✓ BMI of <20 kg/m² with ongoing >2% weight loss
or
- ✓ Depletion of muscle mass and >2% weight loss

Refractory cachexia



- ✓ Clinically resistant catabolic state
- ✓ Characterized by poor performance status, progressive cancer, and a life expectancy of <3 months

Cancer stage and goal of treatment (curative vs palliative) are currently not considered for the staging of cachexia



Monitor the change in the body weight to screen patients for skeletal muscle loss



Nutrition questionnaires

- Patient-Generated Subjective Global Assessment
- Mini Nutritional Assessment
- Malnutrition Screening Tool
- Nutritional Risk Screening 2002



Other methods used to assess body composition in patients with cancer include:

- Bioelectrical impedance analysis
- Computed tomography
- Magnetic resonance imaging
- Dual-energy X-ray absorptiometry

Careful evaluation of cachexia is necessary to determine the overall health status of a patient and to optimize treatment decision

Management of cancer cachexia^{7,10}



ESMO and European Society for Clinical Nutrition and Metabolism guidelines recommend the combination of nutrition, exercise, and pharmacotherapy for effectively managing cancer cachexia



Several studies highlight the benefits of nutritional counseling in cachexia management



Educating patients and caregivers to differentiate between normal weight loss and cachexia-related symptoms is key to improving treatment outcomes and enhancing the quality of life of patients with cancer cachexia

Healthcare providers should consider discussing these key points with patients and their caregivers for optimal patient care

- Loss of appetite is common in patients with advanced cancer
- Forcing a patient to eat is usually counterproductive, and can lead to increased nausea/vomiting, decreased social interactions, and increased patient distress
- Consulting a registered dietitian to discuss concerns and challenges related to nutrition, appetite, and meal planning is often recommended

Key messages

- ✓ Cancer cachexia is a multifactorial syndrome characterized by involuntary loss of weight and skeletal muscle, leading to progressive functional impairment, and is often diagnosed late
- ✓ Early diagnosis of cachexia enables timely nutritional interventions, improves conditions for chemotherapy or other anticancer therapies, and enhances patient outcomes
- ✓ Integration of a polymodal treatment strategy and early recognition of cachexia can help optimize aggressive cancer treatment, minimize toxicity, and improve patients' quality of life

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