

Between ages 20 and 80, mean energy intake is reduced by up to 1200 kcal/d in men and 800 kcal/d in women. Decreased hunger is a reflection of reduced physical activity and loss of lean body mass, producing lower demand for calories and food intake. Several important age-associated physiologic changes also predispose elderly persons to weight loss, such as declining chemosensory function (smell and taste), reduced efficiency of chewing, slowed gastric emptying, and alterations in the neuroendocrine axis, including changes in levels of leptin, cholecystokinin, neuropeptide Y, and other hormones and peptides. These changes are associated with early satiety and a decline in both appetite and the hedonistic appreciation of food. Collectively, they contribute to the “anorexia of aging.”

### CAUSES OF INVOLUNTARY WEIGHT LOSS

Most causes of IWL belong to one of four categories: (1) malignant neoplasms, (2) chronic inflammatory or infectious diseases, (3) metabolic disorders (e.g., hyperthyroidism and diabetes), or (4) psychiatric disorders (Table 56-1). Not infrequently, more than one of these causes can be responsible for IWL. In most series, IWL is caused by malignant disease in a quarter of patients and by organic disease in one-third, with the remainder due to psychiatric disease, medications, or uncertain causes.

The most common malignant causes of IWL are gastrointestinal, hepatobiliary, hematologic, lung, breast, genitourinary, ovarian, and prostate. Half of all patients with cancer lose some body weight;

one-third lose more than 5% of their original body weight, and up to 20% of all cancer deaths are caused directly by cachexia (through immobility and/or cardiac/respiratory failure). The greatest incidence of weight loss is seen among patients with solid tumors. Malignancy that reveals itself through significant weight loss usually has a very poor prognosis.

In addition to malignancies, gastrointestinal causes are among the most prominent causes of IWL. Peptic ulcer disease, inflammatory bowel disease, dysmotility syndromes, chronic pancreatitis, celiac disease, constipation, and atrophic gastritis are some of the more common entities. Oral and dental problems are easily overlooked and may manifest with halitosis, poor oral hygiene, xerostomia, inability to chew, reduced masticatory force, nonocclusion, temporomandibular joint syndrome, edentulousness, and pain due to caries or abscesses.

Tuberculosis, fungal diseases, parasites, subacute bacterial endocarditis, and HIV are well-documented causes of IWL. Cardiovascular and pulmonary diseases cause unintentional weight loss through increased metabolic demand and decreased appetite and caloric intake. Uremia produces nausea, anorexia, and vomiting. Connective tissue diseases may increase metabolic demand and disrupt nutritional balance. As the incidence of diabetes mellitus increases with aging, the associated glucosuria can contribute to weight loss. Hyperthyroidism in the elderly may have less prominent sympathetic features and may present as “apathetic hyperthyroidism” or T<sub>3</sub> toxicosis (Chap. 405).

Neurologic injuries such as stroke, quadriplegia, and multiple sclerosis may lead to visceral and autonomic dysfunction that can impair caloric intake. Dysphagia from these neurologic insults is a common mechanism. Functional disability that compromises activities of daily living (ADLs) is a common cause of undernutrition in the elderly. Visual impairment from ophthalmic or central nervous system disorders such as a tremor can limit the ability of people to prepare and eat meals. IWL may be one of the earliest manifestations of Alzheimer’s dementia.

Isolation and depression are significant causes of IWL that may manifest as an inability to care for oneself, including nutritional needs. A cytokine-mediated inflammatory metabolic cascade can be both a cause of and a manifestation of depression. Bereavement can be a cause of IWL and, when present, is more pronounced in men. More intense forms of mental illness such as paranoid disorders may lead to delusions about food and cause weight loss. Alcoholism can be a significant source of weight loss and malnutrition.

Elderly persons living in poverty may have to choose whether to purchase food or use the money for other expenses, including medications. Institutionalization is an independent risk factor, as up to 30–50% of nursing home patients have inadequate food intake.

Medications can cause anorexia, nausea, vomiting, gastrointestinal distress, diarrhea, dry mouth, and changes in taste. This is particularly an issue in the elderly, many of whom take five or more medications.

### ASSESSMENT

The four major manifestations of IWL are (1) anorexia (loss of appetite), (2) sarcopenia (loss of muscle mass), (3) cachexia (a syndrome that combines weight loss, loss of muscle and adipose tissue, anorexia, and weakness), and (4) dehydration. The current obesity epidemic adds complexity, as excess adipose tissue can mask the development of sarcopenia and delay awareness of the development of cachexia. If it is not possible to measure weight directly, a change in clothing size, corroboration of weight loss by a relative or friend, and a numeric estimate of weight loss provided by the patient are suggestive of true weight loss.

Initial assessment includes a comprehensive history and physical, a complete blood count, tests of liver enzyme levels, C-reactive protein, erythrocyte sedimentation rate, renal function studies, thyroid function tests, chest radiography, and an abdominal ultrasound (Table 56-2). Age, sex, and risk factor-specific cancer screening tests, such as mammography and colonoscopy, should be performed (Chap. 100). Patients at risk should have HIV testing. All elderly patients with weight loss should undergo screening for dementia and depression by using instruments such as the

**TABLE 56-1 CAUSES OF INVOLUNTARY WEIGHT LOSS**

Cancer	Medications
Colon	Sedatives
Hepatobiliary	Antibiotics
Hematologic	Nonsteroidal anti-inflammatory drugs
Lung	Serotonin reuptake inhibitors
Breast	Metformin
Genitourinary	Levodopa
Ovarian	Angiotensin-converting enzyme inhibitors
Prostate	Other drugs
<b>Gastrointestinal disorders</b>	<b>Disorders of the mouth and teeth</b>
Malabsorption	Caries
Peptic ulcer	Dysgeusia
Inflammatory bowel disease	
Pancreatitis	<b>Age-related factors</b>
Obstruction/constipation	Physiologic changes
Pernicious anemia	Visual impairment
<b>Endocrine and metabolic</b>	Decreased taste and smell
Hyperthyroidism	Functional disabilities
Diabetes mellitus	<b>Neurologic</b>
Pheochromocytoma	Stroke
Adrenal insufficiency	Parkinson’s disease
<b>Cardiac disorders</b>	Neuromuscular disorders
Chronic ischemia	Dementia
Chronic congestive heart failure	<b>Social</b>
<b>Respiratory disorders</b>	Isolation
Emphysema	Economic hardship
Chronic obstructive pulmonary disease	<b>Psychiatric and behavioral</b>
<b>Renal insufficiency</b>	Depression
<b>Rheumatologic disease</b>	Anxiety
<b>Infections</b>	Paranoia
HIV	Bereavement
Tuberculosis	Alcoholism
Parasitic infection	Eating disorders
Subacute bacterial endocarditis	Increased activity or exercise
	<b>Idiopathic</b>