

97 Malnutrition and Nutritional Assessment

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Malnutrition can arise from primary or secondary causes, resulting in the former case from inadequate or poor-quality food intake and in the latter case from diseases that alter food intake or nutrient requirements, metabolism, or absorption. *Primary* malnutrition occurs mainly in developing countries and under conditions of political unrest, war, or famine. *Secondary* malnutrition, the main form encountered in industrialized countries, was largely unrecognized until the early 1970s, when it was appreciated that persons with adequate food supplies can become malnourished as a result of acute or chronic diseases that alter nutrient intake or metabolism, particularly diseases that cause acute or chronic inflammation. Various studies have shown that protein-energy malnutrition (PEM) affects one-third to one-half of patients on general medical and surgical wards in teaching hospitals. The consistent finding that nutritional status influences patient prognosis underscores the importance of preventing, detecting, and treating malnutrition.

Definitions for forms of PEM are in flux. Traditionally, the two major types of PEM have been *marasmus* and *kwashiorkor*. These conditions are compared in [Table 97-1](#). Marasmus is the end result of a long-term deficit of dietary energy, whereas kwashiorkor has been understood to result from a protein-poor diet. Although the former concept remains essentially correct, evidence is accumulating that PEM syndromes are distinguished by two main features: insufficient dietary intake and underlying inflammatory processes. Energy-poor diets with minimal inflammation cause gradual erosion of body mass, resulting in classic marasmus. By contrast, inflammation from acute illnesses such as injury or sepsis or from chronic illnesses such as cancer, lung or heart disease, or HIV infection can erode lean body mass even in the presence of relatively sufficient dietary intake, leading to a kwashiorkor-like state. Quite often, inflammatory illnesses impair appetite and dietary intake, producing combinations of the two conditions.

Consensus committees have proposed the following revised definitions. *Starvation-related malnutrition* is suggested for instances of chronic starvation without inflammation, *chronic disease-related malnutrition* when inflammation is chronic and of mild to moderate degree, and *acute disease- or injury-related malnutrition* when inflammation is acute and of a severe degree. However, because distinguishing diagnostic criteria for these conditions have not been universally adopted, this chapter integrates the older and newer terms.

MARASMUS (STARVATION-RELATED MALNUTRITION) AND CACHEXIA (CHRONIC DISEASE-RELATED MALNUTRITION)

Marasmus (starvation-related malnutrition) is a state in which virtually all available body fat stores have been exhausted due to starvation without systemic inflammation. *Cachexia* (chronic disease-related malnutrition) is a state that involves substantial loss of lean body mass in the presence of chronic systemic inflammation. Conditions that produce cachexia tend to be chronic and indolent, such as cancer and chronic pulmonary disease, whereas, in high-income countries, the classic setting for marasmus is in patients with anorexia nervosa. These conditions are relatively easy to detect because of the patient's starved