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Disease-associated **MALNUTRITION**

in the community

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MISSION

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DISEASE-ASSOCIATED MALNUTRITION IN THE COMMUNITY

THE PROBLEM

Malnutrition occurs when individuals do not receive enough calories, protein and micronutrients for optimal body function and overall health. Classic signs of malnutrition in individuals include unintended weight loss and low appetite (1). A more robust picture of the extent of malnutrition (moderate or severe) in individuals includes loss of muscle mass with weight loss, leading to decreased physical function or frailty, especially in older adults. If a disease process is present, inflammation may also be a factor, leading to to increased nutrient needs, lower appetite, and/or faster loss of muscle mass (2).

PREVALENCE

Malnutrition exists within both community and hospital settings, however its prevalence is difficult to measure due to lack of widespread screening. The presence of malnutrition in hospitalized patients was first established in a 1974 publication by Dr. Charles Butterworth, "The Skeleton in the Hospital Closet," which reported that 1 in 3 hospitalized adults were malnourished (3). While it has been almost 50 years since this article was published, it is largely accepted that the prevalence of malnutrition in hospitalized patients remains high, estimated to be 20-50% (4). However, risk for malnutrition increases with older age and acute and chronic disease (5, 6), pushing estimates even higher for these populations. A recent study conducted in an urban hospital treating patients with high acuity showed a malnutrition rate of 67% (2 out of 3 patients) (7).

The prevalence of malnutrition in community-dwelling adults is estimated to be 6-30% in the United States (8). Estimates are higher for at-risk populations. A community-based organization that provides nutrition services to clients with serious illness in urban areas found a malnutrition risk of 57% among its clients (9). The prevalence of disease-associated malnutrition, or malnutrition resulting from acute or chronic disease processes, is expected to increase in the future with the growth in the aging population and related chronic illnesses (10). Widespread screening through US national health surveys will be needed to improve surveillance of malnutrition in specific communities over time.



CONSEQUENCES

Malnutrition has multiple negative impacts on individuals and society. A malnutrition diagnosis leads to increased risk of functional decline, higher number of infections, and higher rates of hospitalization, institutionalization, and mortality (10). These in turn can lead to decreased quality of life and/or increased healthcare costs. Muscle loss and frailty that may result from malnutrition are themselves related to increased risk of falls and fractures, poor quality of life, increased disability and higher mortality (10). Direct medical costs due to disease-associated malnutrition at the state level can range from \$36 to \$65 per capita (11). Nationally, disease-associated malnutrition creates an estimated \$157 billion annual burden (\$508 per US resident) for the US economy, due to direct medical costs and decreased quality-adjusted life years (12).

POTENTIAL SOLUTIONS

There are numerous solutions for malnutrition, all of which center on improving nutritional intake. See Table 1 for a summary of the following approaches.

An individual-level approach to improving intake is through Medical Nutrition Therapy (MNT) in which registered dietitians (RDs) use nutrition assessment and counseling to tailor recommendations to an individual's medical needs and food preferences with the goal of dietary change. RDs provide ongoing monitoring and support to manage disease states, however individuals must be able to carry out recommendations on their own.

Registered dietitians also may recommend adding nutrient-dense foods and beverages in meals and snacks or supplementing foods already in the diet with additional calories and protein. While these recommended foods and supplements are widely available, the need to purchase items at a supermarket and prepare foods or meals at home can pose challenges for those with sickness, disability, or lack of social support.

Another dietary approach is for health professionals to recommend or prescribe oral nutrition supplements (ONS) or supplemental nutrition shakes, which contain a balance of protein, fat, carbohydrates, vitamins, and minerals. A recent study showed that snacks and ONS were equally effective in addressing nutritional risk in hospitalized patients, however cost could limit use after hospital discharge (13).

A solution for malnutrition in older adults (age 60+) is through nutrition programs established by the federal Older Americans Act and administered through local service providers via Area Agencies on Aging (14). Meals are pre-prepared and either home-delivered or available in the



TABLE 1.Malnutrition treatment approaches

APPROACH	PROS	CONS
Medical Nutrition Therapy (MNT)	 Services include individualized nutrition assessment and counseling with ongoing monitoring and support 	 Individual must be able to carry out recommendations including food shopping and preparation
Supplemental foods and beverages	Available in grocery stores and pharmaciesLow cost	 Individual must be able to manage diet including food shopping and preparation
Oral Nutrition Supplements (ONS)	 Available in grocery stores and pharmacies Easy to use (liquid) Shelf stable Measurable amount of protein and calories 	Higher cost than supplemental foods
Older Americans Act Nutrition Programs	 Meals are government- funded and no/low cost Meals provide 1/3 of total nutrient needs Reduced need for food shopping and preparation 	 Meals are not disease-specific Age requirements for qualification (>60 years) May include cost-sharing with participants in some areas
Medically Tailored Meal Programs	 Meals are consistent with disease state (diabetes, heart disease, cancer, kidney disease, etc.) Meals are home-delivered No age requirement Some programs include MNT Limited need for food shopping and preparation 	 Not available in every community Programs need sustainable funding for service expansion



community at congregate meal sites. Meals adhere to the current Dietary Guidelines for Americans and meet one-third of daily recommended nutrient needs. However, these programs are not fully funded by the federal government and sometimes require cost-sharing. Meals may also have limited effectiveness in addressing malnutrition because they are not usually tailored to meet the disease-specific nutritional needs prevalent in the aging population.

Last, a solution that addresses both malnutrition and accompanying disease states are medically tailored, home-delivered meal programs which are used to support nutritional status during medical treatment. These programs provide meals appropriate for nutrition-related disease. Clients also receive MNT to learn how to prepare similar meals so they can continue to achieve nutrient intake consistent with health and medical needs after the program ends. The benefit of this solution is that there are no age restrictions and clients receive meals that do not require preparation, so severity of illness, disability, or lack of social support do not impede successful outcomes. Community-based programs exist to meet this need (15), however their reach is limited to the select metropolitan areas in which they serve. Medically tailored meals are not consistently covered by health insurance plans so programs largely fund themselves through philanthropic efforts, which further limits access. There are commercial companies who operate nationally, but these require individuals to self-pay unless they have a health insurance plan that contracts with the meal provider.

CONCLUSION

Treating malnutrition has been shown to improve energy intake and functional status (16, 17) which promotes health and quality of life in at-risk populations. Addressing food and nutrient needs of those individuals in the community who are experiencing malnutrition can improve their ability to live in their homes and communities, which may promote increased socialization and less isolation. Positive health changes in individuals can also lead to healthcare cost savings through decreased emergency room visits, hospitalizations, and institutionalization (18, 19).

Society has much to gain when malnutrition is prevented or addressed in community settings rather than costly healthcare institutions. A systems approach could be used to direct resources to communities for malnutrition treatment. Individual needs could be met by offering a continuum of malnutrition interventions that match individual risk severity, cooking and shopping abilities, and socioeconomic status – from MNT alone for those able to prepare their own meals to medically tailored meal programs for those who need comprehensive nutrition support, whether malnutrition is due to aging, disease, or both.



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