



Series 3 Age-Friendly Community Resource ECHO

Knowing the Signs: Nutritional Deficiency in Dementia

RACHEL HAND, PA-C, MPAS

ASSOCIATE, REYNOLDS SECTION OF GERIATRIC AND PALLIATIVE MEDICINE

Objectives

- ▶ Recognize the changes that lead to weight loss in normal aging
- ▶ Review signs of involuntary weight loss and malnutrition in patients with dementia
- ▶ Recognize that malnutrition can also be seen in patients who are obese or overweight
- ▶ Review the types of nutritional deficiencies that can occur in patients with dementia
- ▶ Recognize the signs and symptoms of those nutritional deficiencies
- ▶ Review medications commonly associated with weight loss and nutritional deficiencies
- ▶ Review some steps we can take to improve nutritional intake

What happens in normal aging?

- ▶ Our body composition changes with age (it's harder to keep muscle, etc), so it is expected after age 70 for one to lose ~ 0.22 – 0.44 lbs per year
- ▶ For most of us, physical activity declines with age - In the United States, 28 to 34 percent of adults aged 65 to 74 and 35 to 44 percent of adults ages 75 or older are inactive. Inactivity exacerbates ongoing muscle loss and increases proportion of body fat mass

Physiologic Changes with Age

- ▶ Changes in our sense of smell – age raises the threshold for odor detection and lowers perceived odor intensity so it has to be more pungent for us to appreciate it and sometimes we don't smell well at all
- ▶ Changes in our taste buds - the number of taste buds remains constant, but thresholds for recognition of salt and other specific tastes increase, so things need to be saltier, sweeter, more sour etc. for us to appreciate the taste
- ▶ It may take longer for our stomach to empty, which results in the feeling of fullness longer
- ▶ Aging may influence production of, and our sensitivity to, several digestive hormones thought to be involved in satiety, and it changes the neurotransmitters involved in appetite stimulation

Common Issues that Can Occur With Age

- ▶ Sarcopenia (syndrome characterized by the loss of muscle mass, strength, and performance)
- ▶ Cachexia (inflammatory effects of disease)
- ▶ Inability to compensate after period of low food intake (low physiological reserve)
- ▶ Can result in long-term, persistent weight loss (can't bounce back)

What factors are involved in determining the nutritional needs of older adults?

- ▶ specific health problems and related organ system compromise (eg, cancers, end-stage kidney or liver disease)
- ▶ an individual's level of activity
- ▶ energy expenditure
- ▶ caloric requirements
- ▶ the ability to access, prepare, ingest, and digest food
- ▶ personal food preferences

Common Causes of Malnutrition and Involuntary Weight Loss in Dementias

- ▶ In persons with common dementias (Alzheimer's, Vascular)
 - ▶ lack of hunger signals
 - ▶ lack of recognition of time of day (meal times)
 - ▶ lack of insight into the need to eat
 - ▶ not enough supervision around meals
 - ▶ unrecognized need for hand-feeding
 - ▶ in latest stages, inability to swallow
- ▶ May insist on eating or drinking unhealthy foods/beverages (esp FTD)

Common Causes of Malnutrition and Involuntary Weight Loss in General

- ▶ ill-fitting dentures or oral issues (dental pain, gum disease)
- ▶ dysphagia (trouble swallowing)
- ▶ medications
- ▶ changes in taste and smell
- ▶ appetite loss (anorexia)
- ▶ disuse or muscle atrophy (sarcopenia)
- ▶ inflammatory effects of a disease process (cachexia)
- ▶ depression or anhedonia
- ▶ malignancy

Social Contributors

- ▶ inability to prepare or attend meals, due to:
 - ▶ mobility or transportation limitations
 - ▶ poverty - a greater proportion of older adults live near the poverty line, compared with the general population. Individuals with fixed incomes may use money previously spent on food for medications and other needed items
 - ▶ isolation - one-third of persons over 65 and one-half over 85 live alone, which typically decreases food enjoyment and calorie intake. Several studies have demonstrated that older adults who eat in the presence of others consume more than those who eat alone

What about obesity?

- ▶ Sarcopenic obesity is a combination of age-related muscle atrophy and increase in adiposity (fat tissue), and this condition has been associated with increased mortality rate and greater risk for falls and cognitive impairment
- ▶ Sarcopenic obesity and micronutrient deficiency with obesity are common
- ▶ For older adults, BMI and weight may not be reliable indicators of overweight or obesity in older populations, where normal weight may reflect loss of muscle mass rather than decreased adiposity. There is no consensus on the best method of measurement of obesity in older patients

Medications Associated with Weight Loss

ACE inhibitors
Allopurinol
Amantadine
Antibiotics (eg, erythromycin)
Anticholinergics
Antihistamines
Antiparkinsonian medications
(eg, levodopa, selegiline)
Benzodiazepines
Bisphosphonates
Calcium channel blockers

Cholinesterase inhibitors
Digoxin
Dopamine agonists
Iron
Loop diuretics
Metformin
Opiates
Spironolactone
SSRIs (eg, sertraline)
Tricyclic antidepressants

Drug-Nutrient Interactions

Drug	Reduced Nutrient Availability
Alcohol	Zinc, magnesium, vitamins A, B ₁ , B ₂ , B ₆ , B ₁₂ , folate
Antacids	Vitamin B ₁₂ , folate, iron
Antibiotics, broad -spectrum	Vitamin K
Colchicine	Vitamin B ₁₂
Digoxin	Zinc
Diuretics	Zinc, magnesium, vitamin B ₆ , potassium, copper
Isoniazid	Vitamin B ₆ , niacin
Laxatives	Calcium, vitamins A, B ₂ , B ₁₂ , D, E, K
Levodopa	Vitamin B ₆
Lipid-binding resins	Vitamins A, D, E, K
Metformin	Vitamin B ₁₂
Mineral oil	Vitamins A, D, E, K

Drug-Nutrient Interactions, cont.

Drug	Reduced Nutrient Availability
Phenytoin	Vitamin D, folate
Proton -pump inhibitors	Calcium, iron, magnesium, vitamins B ¹² , C
Salicylates	Vitamin C, folate
Trimethoprim	Folate

Common Signs and Symptoms of Nutritional Deficiencies

Commonly overlap with Dementias:

- ▶ Depression
- ▶ Irritability
- ▶ Insomnia
- ▶ Cognitive slowing
- ▶ Forgetfulness
- ▶ Dementia
- ▶ Psychosis

Common Signs and Symptoms of Nutritional Deficiencies

- ▶ Visual disturbances, which may be associated with optic atrophy
- ▶ Peripheral sensory deficits
- ▶ Weakness, which may progress to paraplegia and incontinence if severe
- ▶ Impaired position sense
- ▶ Impaired vibration sense
- ▶ Lhermitte sign, a shock-like sensation that radiates to the feet during neck flexion
- ▶ Ataxia or positive Romberg test
- ▶ Abnormal deep tendon reflexes
- ▶ Extrapyrarnidal signs (eg, dystonia, dysarthria, rigidity)
- ▶ Restless legs syndrome
- ▶ Changes in hair and nails

COMMON NUTRITIONAL DEFICIENCIES IN OLDER ADULTS

- ▶ **Vitamin B12 deficiency** — The prevalence of B12 deficiency in older adults ranges between 10 and 20 percent [[140](#)]. Some persons with low normal serum B12 levels may in fact be deficient, with resultant neurologic, psychological, or hematologic disease
- ▶ **Vitamin D deficiency** — Lack of sun exposure, impaired skin synthesis of pre-vitamin D, and decreased hydroxylation in the kidney with advancing age contribute to marginal vitamin D status in many older adults
- ▶ **Protein calorie malnutrition** – Inadequate protein intake can also contribute to sarcopenia and decreased function. A prospective cohort study found that adults aged 70 to 79 with protein intake ≤ 0.8 g/kg/day (the Recommended Dietary Allowance [RDA]) were at greater risk of developing mobility limitations over six years of follow-up than those with protein intake ≥ 1.0 g/kg/day
- ▶ **Iron deficiency** -

Vitamin B12 and Folate Deficiency

Vitamin D and Calcium

- ▶ Inadequate vitamin D status has been linked with muscle weakness, functional impairment, depression, and increased risk of falls and fractures
- ▶ Older individuals at higher risk for vitamin D deficiency include those who are institutionalized, homebound, have limited sun exposure, obesity, dark skin, osteoporosis, or malabsorption.
- ▶ The efficiency of calcium absorption from the gastrointestinal tract decreases significantly after age 60. Individuals between 70 and 90 years of age absorb approximately one-third less calcium than do younger adults.

TYPES OF NUTRITIONAL DEFICIENCIES IN OLDER ADULTS

▶ Less Common:

▶ Water Soluble

- ▶ Vitamin B1 (thiamine)
- ▶ Vitamin B2 (riboflavin)
- ▶ Niacin
- ▶ Vitamin B6 (pyridoxine)
- ▶ Folate
- ▶ Biotin
- ▶ Pantothenate
- ▶ Vitamin C

▶ Less Common:

▶ Fat Soluble

- ▶ Vitamin A
- ▶ Vitamin E
- ▶ Vitamin D

Other Dietary Factors

- ▶ Restrictive (vegetarian, vegan) diets – B12 deficiency
- ▶ Excessive alcohol – folate deficiency

Multivitamin?

- ▶ Routine supplementation with multivitamins and minerals is not indicated to reduce infections in frail older adults and is likely not beneficial **unless it is clear that the older adult is not meeting his or her micronutrient needs due to low overall intake**

Ways to Help!

- ▶ Engage the person living with dementia – people who eat with others have been found to eat more
 - ▶ Personal escorts to meals
 - ▶ Shared dining experiences
 - ▶ Provide cues and hand feed when needed
- ▶ Use brightly colored plates on different colored backgrounds
- ▶ Try brightly colored foods and vegetables
- ▶ If diet allows, add butter, olive oil, cheese, nuts, fresh herbs
- ▶ Add high fat and high protein additives (cook with tofu, olive oils, etc)
- ▶ Add spices if possible

Ways to Help!

- ▶ Make sure that feeding or shopping assistance is available, if appropriate. In a crossover controlled trial of feeding assistance in nursing home residents at risk of weight loss, those in the intervention group showed a significant increase in daily caloric intake and either maintained or gained weight, whereas those in the control group lost weight. Feeding assistance was resource-intensive and required an average 37 more minutes of staff time per meal [92]. Social work support may be important if inadequate finances are contributing to poor intake.
- ▶ Assure that meals and foods meet individual tastes. Suggest offering foods that fit the patient's ethnic or regional preferences.
- ▶ Consider ways to supplement the patient's diet. Increase the nutrient density of food. For example, increase protein content by adding milk powder, whey protein (found in many health food stores), egg whites, or tofu. Increase fat content by adding olive oil (or other "good fat") in preparation of sauces, fresh or cooked vegetables, and grains or pasta. If weight does not improve, offer daytime snacks between meals.
- ▶ Give a daily multivitamin and mineral supplement until the cause of inadequate intake is determined.
- ▶ Consider a liquid dietary supplement.

High Calorie High Protein Foods

- ▶ Milk (choose whole milk instead of skim or low-fat)
- ▶ Cheese (choose high-fat cheese instead of nonfat or low-fat)
- ▶ Eggs
- ▶ Meat (choose higher fat instead of lean)
- ▶ Poultry
- ▶ Fatty fish (ex. salmon)
- ▶ Nuts
- ▶ Beans
- ▶ Protein or meal replacement bars
- ▶ Adding spices and herbs to your meals can help boost flavor and eating interest. Try experimenting with different combinations to find your favorites.

Cases

▶ Mr. B

Cases

▶ Dr. W

Cases

- ▶ Sisters Mrs. G and Ms. F

Cases

▶ Mr. H

No benefit of feeding tubes in advanced dementia in observational studies

- ▶ No improvement in
 - ▶ Survival
 - ▶ Nutritional status
 - ▶ Wound healing
 - ▶ Aspiration pneumonia
 - ▶ Functional status, quality of life
- ▶ Harms include
 - ▶ Worsening pressure ulcers
 - ▶ Patient discomfort, agitation
 - ▶ Increased physical and pharmacological restraint use
 - ▶ Family less likely to report excellent end of life care
 - ▶ More ED use, death in hospital
- There is little evidence that death is associated with dehydration/ starvation.
- Discuss with patients and families that loss of appetite is part of the natural dying process. As patients get weaker, they need less and less food and fluids

The Clinical Course of Advanced Dementia

- ▶ 6th leading cause of death in the US
- ▶ Under recognized as a terminal disease
 - ▶ **30% of all decedents aged 65+ die from or with dementia**
- ▶ Characterized by a prolonged trajectory of severe disability
- ▶ **Eating problems are the most common complication in advanced dementia.**
 - ▶ Oropharyngeal dysphagia, aspiration, refusal to eat, inability to feed oneself, weight loss.

Using Goal-Directed Decision-Making in Advanced Dementia



- ▶ Clarify the clinical situation with proxy decision-maker
 - ▶ Where are we now in the disease trajectory?
- ▶ Determine values, care preferences, primary goals for care
 - ▶ Longevity
 - ▶ Comfort, Quality of life
 - ▶ Death at home
 - ▶ What care is perceived as burdensome?
- ▶ Present treatment options
 - ▶ **Expected benefits vs. risks based on best evidence**
 - ▶ Expected treatment burden
- ▶ **Weigh options and align with goals**

Summary:

- For advanced dementia,
- No role for feeding tubes, encourage hand feeding
 - If goal is life prolongation, oral antibiotics for pneumonia are reasonable.
 - If goal is comfort, antibiotics may increase burden.



Questions?

References