Malnutrition and Dehydration in Older Adults

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objectives

• Describe the significance of malnutrition and dehydration in older adults

• Discuss changes that occur with aging that can affect nutrition status

• Identify risk factors for malnutrition, dehydration, and eating difficulties

• Describe strategies to promote nutrition and hydration including optimal intake during mealtimes
“Malnutrition is not something observed only in third-world countries.”

“Older persons suffer a burden of malnutrition that spans the spectrum from under- to overnutrition.”

“Malnutrition in the elderly is one of the greatest threats to health, well-being, and autonomy....”

2. Geriatrics Review Syllabus: A Core Curriculum in Geriatric Medicine, Sixth Edition (GRS6); American Geriatrics Society 2006
A few definitions of malnutrition:

– Faulty or inadequate nutritional status
– Undernourishment from insufficient dietary intake, poor appetite, disease state
– Clinical symptoms: muscle wasting and weight loss, low body mass index (BMI)
Malnutrition

• Etiology based malnutrition definitions
  – Endorsed by ASPEN, Academy of Nutrition and Dietetics, ESPEN

Nutrition Risk Identified
Compromised intake or loss of body mass

Inflammation Present?

No

Starvation Related Malnutrition (pure chronic starvation, anorexia nervosa)

Yes

Mild to Moderate Degree

Chronic Disease-Related Malnutrition (organ failure, pancreatic cancer, rheumatoid arthritis, sarcopenic obesity)

Yes

Marked Inflammatory Response

Acute Disease or Injury Related Malnutrition (major infection, burns, trauma, closed head injury)
• What may cause malnutrition in older adults?
M – Medication side effects
E – Emotional disorders
A – Anorexia, alcoholism
L – Late life paranoia
S – Swallowing Problems
O – Oral health complications
N – No money
W – Wandering and other behaviors associated with dementia
H – Hyperthyroidism
E – Enteric complications and disorders
E – Eating problems
L – Low salt, low cholesterol diet
S – Social problems (isolation)
## Age-related physiologic changes with potential nutrition related outcomes

<table>
<thead>
<tr>
<th>Organ system</th>
<th>Change</th>
<th>Potential Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body composition</td>
<td>↑ Fat, ↓ muscle mass</td>
<td>↓ BMR</td>
</tr>
<tr>
<td></td>
<td>↓ Body water</td>
<td>Dehydration</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>↓ Gastric acid secretion</td>
<td>↓ absorption of folate, vitamin B12, iron</td>
</tr>
<tr>
<td></td>
<td>↓ motility</td>
<td>Constipation</td>
</tr>
<tr>
<td></td>
<td>↓ Lactase activity</td>
<td>Avoidance of milk products</td>
</tr>
<tr>
<td>Organ System</td>
<td>Change</td>
<td>Potential Outcome</td>
</tr>
<tr>
<td>----------------------</td>
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<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Hepatic</td>
<td>↓ size and blood flow</td>
<td>↓ albumin synthesis rate</td>
</tr>
<tr>
<td></td>
<td>↓ activity drug-metabolizing enzymes</td>
<td>Poor or delayed metabolism of certain drugs</td>
</tr>
<tr>
<td>Immune</td>
<td>↓ T-cell function</td>
<td>Anergy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>↓ resistance to infection</td>
</tr>
<tr>
<td>Neurologic</td>
<td>Brain atrophy</td>
<td>↓ cognitive function</td>
</tr>
<tr>
<td>Renal</td>
<td>↓ glomerular filtration rate</td>
<td>↓ renal excretion of metabolites, drugs</td>
</tr>
<tr>
<td>Sensory-perceptual</td>
<td>↓ taste buds, papilla</td>
<td>Altered taste, ↓ ability to detect sweet/salt</td>
</tr>
<tr>
<td></td>
<td>↓ thirst sensation</td>
<td>Dehydration</td>
</tr>
<tr>
<td></td>
<td>↓ olfactory nerve endings</td>
<td>Altered smell</td>
</tr>
<tr>
<td>Skeletal</td>
<td>↓ bone density</td>
<td>↓ fractures</td>
</tr>
</tbody>
</table>
Risk Factors For Mealtime Problems

- Lack of staff assistance; inadequate or absent preparation and set up of meal tray
- Inadequate education of caregivers who are responsible for delivering, serving, and actively assisting at meals
- Lack of adaptive equipment for those with impaired functionality
- Use of physical restraints
- Improper chair or table surface or discrepancy of chair to table height
Malnutrition: a vicious cycle

- Reduced mobility
- Malnutrition
- Reduced capacity to feed oneself
- Apathy, depression, reduced attention
- Loss of muscle mass
- Reduced appetite
- Reduced appetite
Significance of Malnutrition

Malnutrition ...

- Is a precursor to frailty
- Increases morbidity and mortality and reduces quality of life
- Prolonged hospital stay
- Increased risk for poor health status
- Institutionalization
- Is found across the health care spectrum
  
  40-60% of hospitalized older adults are malnourished or at risk for malnutrition

(2002 Nutrition Screening Initiative)
Hydration

• Older adults are at increased risk for dehydration
  – Body water decreases with age
  – Many medications increase water loss
  – Thirst mechanism not as effective
  – Self limit fluid intake
  – Decreased mobility to reach fluids
High Risk Populations

• Nursing home residents
• Patients with chronic mental illness (e.g., schizophrenia, bipolar disorder, obsessive-compulsive disorder)
  – Blunted thirst sensation from antipsychotic medications
• Stroke patients
  – Dysphagia
  – Poor palatability of thickened fluids offered to patients to prevent aspiration
• Surgical patients – prolonged NPO status
Consequences of Dehydration

- Constipation
- Increased falls
- Medication toxicity
- Increased infections (i.e., urinary and respiratory)
- Dehydration + comorbidities can cause emergency hospitalizations and increased risk of repeated admissions
- 50% of Medicare beneficiaries admitted with primary or secondary diagnosis of dehydration had increased one year mortality rate
Calories

• Calorie needs decrease about 5% per decade after age 50
  – Decrease in physical activity
  – Decrease in muscle mass
  – Decrease in metabolism

• Need careful meal planning to get adequate nutrients in fewer calories
Protein

• Protein is important for older adults
  – Maintain healthy cells
  – Sustain immune system
  – Prevent muscle wasting
  – Fight infections
  – Wound healing
  – Enzymes
  – Hormones

• Protein needs may increase due to surgery, illness or disease
Protein

• Adults need 0.8 g/kg
• Some studies report older adults may need more protein 1.0 to 1.25 g/kg
• Because calorie needs decrease make lower fat choices
Specific Nutrients of Concern

- Vitamin D
- Vitamin B12
- Water
- Fiber
Vitamin D

• Two sources
  – Dietary intake – dairy products, fish, fortified foods
  – Cutaneous (skin) production – “sunshine vitamin”
    • Decreases with age
    • Limited sun exposure
    • Use of sunscreen
  – 50% of independently living elderly Americans have vitamin D insufficiency
Guidelines for Obtaining Sufficient Vitamin D

- Check baseline level
- The new recommended daily allowance (RDA), as set in 2010, is based on age:
  - 1-70 years of age, 600 IU daily
  - 71 years and older, 800 IU daily
Vitamin B12

• 15% of older adults are deficient in vitamin B12
• People with atrophic gastritis are particularly vulnerable to vitamin B12 deficiency
• B12 deficiency can result in irreversible nerve damage
Digestion

• Atrophic gastritis affects almost 1/3 of people over 60; characterized by inflamed stomach, bacterial overgrowth, and lack of hydrochloric acid and intrinsic factor. This results in impaired digestion and absorption of vitamin B12, biotin, folate, calcium, iron and zinc.
Vitamin B12

• Older adults lose the ability to absorb the naturally occurring form of B12 in food.
• To absorb naturally occurring B12 from food, one must split it from a protein carrier.
• Older adults may absorb vitamin B12 better in synthetic form, which is not bound to a protein carrier.
Water

• Water is more critical to life than food
• Older adults need 6-8 cups water daily
• Easy guide is 1 ml water/calorie with a minimum of 1500 ml or 6 cups
• Water can be in many forms
• Caffeine containing beverages can increase water loss
# Dehydration Signs

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Signs</th>
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<tbody>
<tr>
<td>0-1%</td>
<td>Thirst</td>
</tr>
<tr>
<td>2-5%</td>
<td>Dry Mouth, Flushed Skin, Fatigue, Headache</td>
</tr>
<tr>
<td>6%</td>
<td>Increased Body Temperature, Breathing, Pulse Rate</td>
</tr>
<tr>
<td>8%</td>
<td>Dizziness, Increased Weakness, Labored Breathing</td>
</tr>
<tr>
<td>10%</td>
<td>Muscle Spasms, Swollen Tongue, Delirium</td>
</tr>
<tr>
<td>11%</td>
<td>Poor Blood Circulation, Failing Kidney Function</td>
</tr>
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</table>
Fiber

• Two types of fiber
  – Soluble and insoluble fiber
• Both types are beneficial
  – Constipation
  – Diarrhea
  – Diverticulitis
  – Heart Disease
  – Colon Cancer
  – Diabetes
• Food is only one factor
Fiber

- Food is the best source of fiber
- 21g fiber daily for females and 30g fiber daily for males based on 14g fiber per 1,000 calories
- The USDA Daily Food Plan recommends ½ of all grains should be whole grains to help provide adequate fiber
Tips If Appetite Declines

- Eat meals at regular times
- Have the main meal earlier in the day
- Plan 5-6 smaller meals
- Boost calories in foods already consuming
- Try oral nutritional supplements
- Keep the physical surroundings pleasant and calm
Oral Nutritional Supplementation

• Shown to improve nutritional status in malnourished older hospitalized adults

• Oral liquid nourishment should be given at least 60 minutes prior to meals and at bedtime

• Give meds with oral nutritional supplements (if not contraindicated)
Tips If Smell and Taste Decline

• Use herbs and spices
• Use a variety of flavors
• Use a variety of visual clues
  – Colors
  – Shapes
  – Temperature
  – Textures
• Keep in mind the temperature of foods
Tips If Chewing and Swallowing Decline

• Swallowing assessment by speech therapy
• Use gravies and sauces to moisten food
• Ground meats are dry and difficult to swallow, try soft high protein foods
• Serve a beverage with the meal
• Eat slowly and chew thoroughly
• Be sure dentures fit properly
• Maintain as normal of a diet as possible
Tips If Emotional & Social Factors Decrease Food Intake

• Serve food attractively
• Use a variety of flavors, colors, temperature, shapes and texture
• Don’t serve same foods every day
• Make the surroundings pleasant
• Invite friends or relatives over
• Eat Out Occasionally
Tips if Strength, Energy or Coordination Decline

• Special eating utensils, cups and plate guards are available
• Some foods take a lot of effort to eat if coordination is a problem such as peas, rice, salads, soup
• Some foods need something to help them stick together
Tips if Strength, Energy or Coordination Decline

• Finger foods are ideal because they require less effort to eat
• Some modifications can help such as soup in a mug or spaghetti pre-mixed with sauce and melted cheese on top to help hold together
• Provide assistance with tasks requiring hand and finger dexterity, such as opening packages of crackers or cartons of milk, and cutting meat
Tips If Mental Status Declines

• May help to offer fewer choices and smaller portions with snacks as needed
• Set aside enough time for meals
• Check food temperature to prevent burns
• Food consistency may need to be modified to prevent choking
• Serving one food at a time may be less confusing
• Make physical surrounds pleasant and calm and avoid unnecessary distractions
MyPlate for Older Adults
Questions?