

## ***Malnutrition in the Elderly***

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#### **Educational Objectives**

By the end of this educational activity, participants should be better able to:

1. Identify causes of involuntary weight loss in the elderly.
2. Identify age-related changes in nutrition and risk factors for poor nutritional status.
3. Implement methods of nutrition screening and assessment.
4. Utilize interventions for weight loss.

#### **Speaker Disclosure**

Dr. Moquist has disclosed that he has no actual or potential conflict of interest in relation to this topic.

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Dale C. Moquist, MD  
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- Dr. Moquist will not discuss or present information that is related to an off-label or investigational use of any therapy, product or device.

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## Topics Covered

Age-Related Nutritional Changes  
Screening and Assessment  
Nutritional Syndromes  
Nutritional Interventions  
Summary

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## Age-Related Nutritional Changes

Body Composition  
Energy Requirements  
Macronutrient Needs  
Micronutrient Needs  
Fluid Needs

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## Audience Polling Question 1

A 74-year-old woman comes to the office for routine follow-up. She works 3 days a week in a library shelving books. History included HTN and takes amlodipine 5 mg/d. She asks whether she should take a multivitamin. Which of the following is the most appropriate?

1. Take a generic multivitamin
2. Take a multivitamin formulated for older women
3. Defer discussion until routine lab tests are completed
4. Eat a well-balanced diet instead of taking a multivitamin

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## Audience Polling Question 2

A 75-year-old African American man comes to the office for routine follow-up. He lives alone and walks slowly into the office using a cane. History includes OA, HTN and Hypothyroidism. On exam BP=152/86 and BMI=28.7. Which one of the following lowers his mortality risk?

1. His blood pressure
2. His race
3. His BMI
4. His need of a cane

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## Body Composition

- Decrease in bone mass
- Decrease in lean mass
- Decrease in water content
- Fat mass increases
- Volume of distribution shifts
- Creatinine can overestimate renal clearance
- Greater intra-abdominal fat stores

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## Energy Requirements

- Reduced demand for energy
- Lower basal metabolic rate
- Reflects loss of lean body mass
- Resting energy is principal contributor to energy
- Energy from physical activity is most variable component
- Avoid overfeeding while meeting basal requirements

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## MACRONUTRIENT NEEDS



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## What Does the Pyramid Mean?

- Eight 8-ounce glasses of fluid
  - Watch sodium content
- Whole grain fibers
  - Note fiber icon in every section
  - 6 or more servings
- Leafy greens, orange and yellow vegetables, and colorful fruit: Rich in Vitamin A & C and Folic Acid – 3 servings

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## More on Food Pyramid

- Deep colored fruit – Frozen, fresh, dried or canned; 2 or more servings
  - 100% fruit juice
- Dry beans, nuts, fish, poultry, lean meat and eggs: 2 or more servings
- Low and nonfat dairy products: 3 or more servings
- Use saturated fats, sugar and salt sparingly!!

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## Macronutrient Needs Summary

- Protein: 10-30%; 0.8g/kg/day (1.5 g/kg/day under stress)
- Fat: 20-35% of total energy intake with reduced
  - Cholesterol
  - Saturated Fats
  - Trans Fatty Acids
- Carbohydrates: 45-65% of total energy intake: Complex carbohydrates as preferred source
- Fiber: 30 g/day men; 21 g/day women
- Fluid Needs: 30ml/kg of body weight/day

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**MyPlate for Older Adults**

**Fruits & Vegetables**  
Whole fruits and vegetables are rich in important nutrients and fiber. Choose fruits and vegetables with deeply colored flesh. Choose canned varieties that are packed in their own juices or low sodium.

**Healthy Oils**  
Liquid vegetable oils and soft margarines provide important fatty acids and some fat-soluble vitamins.

**Herbs & Spices**  
Use a variety of herbs and spices to enhance flavor of foods and reduce the need to add salt.

**Grains**  
Whole grain and fortified foods are good sources of fiber and B vitamins.

**Dairy**  
Fat-free and low-fat milk, cheese and yogurt provide protein, calcium and other important nutrients.

**Protein**  
Protein rich foods provide many important nutrients. Choose a variety including meat, beans, fish, lean meat and poultry.

**Fluids**  
Drink plenty of fluids. Fluids can come from water, tea, coffee, soups, and fruits and vegetables.

**Remember to Stay Active!**

Tufts AARP Foundation

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## Healthy Eating Tips for Age 65+

1. Drink plenty of fluids
2. Make eating a social event
3. Plan healthy meals
4. Know how much to eat
5. Vary your vegetables
6. Eat for your teeth and gums
7. Use herbs and spices
8. Keep food safe
9. Read the nutrition facts label
10. Ask your doctor about vitamins or supplements

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## Micronutrients: Adequate Intakes

Nutrient	Men	Women
Calcium mg	1000	1000
Magnesium mg	420	320
Vitamin D IU	600-800	600-800
Vitamin C mg	90	75
Folate ug	400	400
B12 ug	2.0	2.0
Iron mg	8.0	8.0
Cu ug	900	900
Thiamine mg	1.0	0.9
Vitamin A ug/d	625	500

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## Fluid Needs

- Decreased perception of thirst
- Impaired response to serum osmolality
- Reduced ability to concentrate urine
- General fluid needs: 30ml/kg/d
- Dehydration: Most common fluid/electrolyte in older patient
  - Decreased urine output
  - Constipation
  - Mucosal dryness
  - Confusion/dizziness

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## Screening and Assessment

Anthropometrics  
 Nutritional Intake  
 Laboratory Tests  
 Drug-Nutrient Interactions  
 Determine  
 Mini Nutritional Assessment  
 SNAQ

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### Audience Polling Question 3

Consumption of which one of the following is associated with reduced frailty and disability among older African American adults?

1. Fruit Juice
2. Vegetables
3. Salads
4. Potatoes

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### Audience Polling Question 4

- An 81-year-old woman was admitted to the hospital 3 days ago because of hypotension, depressed sensorium and urosepsis. She responds to IV fluids and antibiotics and is now alert and cooperative. For the last 2 days, she has been on a regular diet with oral nutritional supplements between meals. Nurses notes indicate her nutrient intake has varied with consumption ranging from 24% to 75% of meals. Her history includes recent repair of perforated gastric ulcer.
- On exam, weight is 142 lbs., down from 152 lbs. 3 months ago. BMI=21.6. Non-inflamed surgical wound, which is healing. Serum albumin=2.7. 4+ pretibial & presacral edema.

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### Audience Polling Question 4, Cont.

Which one of the following is the best option at this point to determine the patient's need for additional nutritional support?

1. Screen for nutritional risk using the Mini Nutritional Assessment
2. Obtain serum prealbumin level
3. Order calorie counts for 3 days
4. Measure biceps and triceps skin fold thickness and arm muscle circumference

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### Anthropometrics

- Study of human body measurements on comparative basis
- Involuntary weight loss of 10 pounds in 6 months
  - Functional limitations
  - Health care charges
  - Need for hospitalization
- Minimum data set:
  - Loss of >5% of weight in past month
  - >10% of body weight in past 6 months
- Low threshold for BMI is 18.5

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### Nutritional Intake

- Inadequate intake below threshold level of RDI
- Poor intake is indication of illness
- 25-50% below RDI: Indicator of inadequate intake
- Energy intakes of men and women 65-98
  - 37-40% had energy intakes <2/3 of RDI
  - Many reported skipping at least one meal a day
- MDS in NH: Intake of <75% of food provided triggers nutritional assessment

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### Laboratory Tests

- Low Serum Albumin: Lacks sensitivity and specificity
  - Associated with injury, disease and inflammation
- Serum Prealbumin: Protein marker of clinical significance
  - Reflect short-term changes
  - Short half-life of 48 hours
  - Not accurate in presence of inflammation
  - Effectiveness of interventions/indicator of recovery
- Low Cholesterol Levels <160
  - Nonspecific feature of poor health: Independent of nutrient status
  - Detected in serious disease such as malignancy
  - Community older adults with hypoalbuminemia and hypocholesterolemia have higher rates of mortality

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## Drug-Nutrient Interactions

- Can modify the nutrient needs and metabolism
- Digoxin and Phenytoin can cause anorexia
- May interfere with taste and smell
- Reduce intake causing inattention, dysphagia, dysgeusia and xerostomia
- Medications causing constipation
- Anorexia: SSRIs, CA Channel Blockers, H2 Antagonists, PPI, Opioids, NSAIDs, Furosemide, KCl, Ipratropium, Theophylline, Cholesterol Inhibitors

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## Drug-Nutrient Interactions

Drug	Reduced Nutrient	Drug	Reduced Nutrient
Alcohol	Zinc, Folate, Vitamins A, Bs	Laxatives	CA, Vitamins A, B2, B12, D, E, K
Antacids	Vitamin B12, Folate, Iron	Lipid-Binding	Vitamins A, D, E, K
Antibiotics	Vitamin K	Metformin	Vitamin B12
Colchicine	Vitamin B12	Mineral Oil	Vitamins A, D, E, K
Digoxin	Zinc	Phenytoin	Vitamin D, Folate
Diuretics	Zinc, Mg, B6, KCl, Cu	PPIs	CA, Iron, Mg, B12, C
Isoniazid	Vitamin B6, Niacin	Salicylates	Vitamin C, Folate
Levodopa	Vitamin B6	Trimethoprim	Folate

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## Risk Factors for Malnutrition

- Alcohol/Substance Abuse
- Cognitive Dysfunction
- Decreased Exercise
- Depression
- Functional Limitations
- Inadequate Funds
- Limited Education
- Limited Mobility
- Limited Transportation
- Chronic Illnesses
- Medications
- Poor Dentition
- Restricted Diet
- Poor Habits
- Social Isolation

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## Nutrition Tools

- Nutritional Screening Initiative
  - Determine checklist
  - Level I and II
  - Identify risks not to diagnose malnutrition
  - Not validated
- Mini Nutritional Assessment (MNA)
  - Uses 18 items to assess risk
  - Only validated for over age 65
- Simplified Nutrition Assessment Questionnaire
  - Administered through mail or sitting in waiting room
  - Identify Risk: Sensitivity of 88.2% and Specificity of 83.5%

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## Determine Checklist

- Disease
- Eating Poorly
- Tooth Loss, Mouth Pain
- Economic Hardship
- Reduced Social Contact
- Multiple Medicines
- Involuntary Weight Loss or Gain
- Need for Assistance in Self-Care
- Elderly (Age >80)

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## DETERMINE Background

- Developed by AAFP, ADA and NCOA
- Self-report questionnaire
- Screening instrument
- NOT Diagnostic
- Scoring
  - 0-2: Good
  - 3-5: Moderate nutritional risk
  - 6 or more: High nutritional risk
- Use for health care professionals for further assessment

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The Warning Signs of poor nutritional health are often overlooked. For the Checklist to find out if you or someone you know is at nutritional risk.

**DETERMINE YOUR NUTRITIONAL HEALTH**

Read the statements below. Circle the number in the "yes" column for those that apply to you or someone you know. For each "no," circle the number in the "no." Total your nutritional score.

There are times or occasions that make it hard to keep the food and/or amount of food I eat.	2
Eat less than 2 meals per day.	3
Eat less fruits or vegetables or milk products.	2
There is no one around the house or in the neighborhood who can help me cook.	2
There is food or meal problems that make it hard for me to eat.	2
I don't always have enough money to buy the food I need.	4
I eat alone most of the time.	1
I take 2 or more different prescriptions or over-the-counter drugs a day.	1
Without warning, I have lost or gained 10 pounds in the last 6 months.	2
I am not always physically able to shop, cook and/or eat well.	2

**TOTAL**

**Total Your Nutritional Score: 0-15**

**0-2** Good! You are at low nutritional risk. No further action is necessary.

**3-5** You are at moderate nutritional risk. You may wish to take steps to improve your eating habits and diet. See either an adult or geriatric dietitian, a registered dietitian or health educator for help. Recheck your nutritional score in 6 months.

**6-10** You are at high nutritional risk. Bring this checklist to your doctor and work with your doctor or dietitian, health or social worker professional with help that is available in your area. Ask your doctor to refer you to a registered dietitian.

**11-15** You are at very high nutritional risk. Bring this checklist to your doctor and work with your doctor or dietitian, health or social worker professional with help that is available in your area. Ask your doctor to refer you to a registered dietitian.

Remember that Warning Signs suggest risk, but do not represent a diagnosis of any condition. For the help you need, see either the Warning Signs of your nutritional health.

For more information on nutrition, visit [www.mna-elderly.com](http://www.mna-elderly.com) or call 1-800-877-8339.

### Mini Nutritional Assessment

- Evaluate risk of malnutrition among frail older adults
- Identify elderly who benefit from early intervention
- Administered by trained professional
- Consists of 18 items
- May be incorporated into EHR
- Available for phone/tablet
- Short-form of 6 questions
  - 12-14 no risk
  - 8-11 may be at risk for malnutrition
  - 0-7 malnutrition

### Mini Nutritional Assessment

- [www.mna-elderly.com](http://www.mna-elderly.com) accessed 9-29-2019
- Parts A-F is used for screening
- Score 12 or > not at risk
- Parts G-R used for assessment
- Total score > 23.5 normal
- Total score < 23.5 at risk
- No laboratory needed

The image shows a screenshot of the Mini Nutritional Assessment (MNA) form. It includes sections for 'Screening' (Parts A-F) and 'Assessment' (Parts G-R). The screening section contains 18 items, each with a score from 0 to 3. The assessment section contains 6 items, each with a score from 0 to 2. A scoring key at the bottom indicates that a total score of 12 or higher is 'not at risk', 8-11 is 'at risk', and 0-7 is 'malnutrition'.

### Screening

Complete the screening section by filling in the boxes with the appropriate numbers. Add the numbers for the screen. If the score is 11 or less, continue with the assessment to give a final nutritional risk score. Questions that should be assessed by the patient are clearly marked and sample questions are offered. The remaining questions should be assessed from patient's notes or using professional judgement.

**A** Has food intake declined over the past three months due to loss of appetite, digestive problems, chewing or swallowing difficulties?  
 0 = Severe loss of appetite  
 1 = Moderate loss of appetite  
 2 = No loss of appetite

**Ask patient**

- Have you eaten less than normal over the past three months?
- If so, is this because of lack of appetite, chewing or swallowing difficulties?
- If yes, have you eaten much less than before or only a little less?
- If this is a re-assessment, then rephrase the question.
- Has the amount of food you have eaten changed since your last assessment?

**B** Weight loss during the last 3 months?  
 0 = weight loss greater than 3kg (6.6lbs)  
 1 = does not know  
 2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs)  
 3 = no weight loss.

**Ask patient / from notes if long term patient or residential care**

- Have you lost any weight over the last 3 months?
- Has your weight got lower?
- How much weight do you think you have lost?
- Then rephrase:
- More or less than half a stone (3kg) in weight?

**C** Mobility?  
 0 = bed or chair bound  
 1 = able to get out of bed/chair but does not get out  
 2 = goes out

**Patient notes / information from care? ask patient if necessary**

- Are you presently able to get out of bed/chair?
- Are you able to get out of the house?

**D** Has the patient suffered psychological stress or acute disease in the past three months?  
 0 = yes  
 2 = no

**Patient notes / professional judgement / ask patient**

- Have you suffered a bereavement recently?
- Have you recently moved home?
- Have you been unwell recently?

**If the patient's notes specify an acute disease score 0**

**E** Neuropsychological problems?  
 0 = severe dementia or depression  
 1 = mild dementia  
 2 = no psychological problems

**Patient notes / professional judgement**

Some indication of mental state of the patient may be obtained from the care planning staff or medical notes.

If the patient is severely confused answers to the following questions should be checked for accuracy with care/nursing staff (questions A, B, C, D, E, I, M, O & P)

**7** Body mass index (BMI)? (weight in kg/height in m<sup>2</sup>)

- 0 = BMI less than 19
- 1 = BMI 19 to less than 21
- 2 = BMI 21 to less than 23
- 3 = BMI 23 or greater

**Calculated by assessor**

BMI is used as an indicator of whether the patient is an appropriate weight for their height. BMI is calculated by dividing the weight in kg by the height in m<sup>2</sup>.

$BMI = \frac{\text{weight (kg)}}{\text{height (m)}^2}$

Before calculating BMI, ensure that the patient's weight and height are recorded on the MNA<sup>®</sup> form.

1. For conversion of weight and height see appendix 1, and 4
2. If height has not been measured, please measure using a stadiometer (height gauge)
3. If the patient is unable to stand, please calculate height from demi-span (appendix 2)
4. On the BMI chart provided match up the height and weight of the patient, and read off the BMI score
5. Fill in the appropriate box on the MNA<sup>®</sup> form to represent the BMI of the patient

The screening section of the questionnaire is now complete. Add up the scores to obtain the screening score.

If the score is 12 points or greater, the patient is not at risk and there is no need to complete the rest of the questionnaire.

If the score is 11 points or less, the patient may be at risk from malnutrition and the full MNA<sup>®</sup> assessment should be completed.

Mini Nutritional Assessment Nestlé NutritionInstitute

MNA<sup>®</sup>

Calculator: Patient Name, Date, Height (cm), Weight (kg), BMI

Checklist for use during the assessment (Appendix 1):

1. Has the patient lost weight in the past 3 months due to loss of appetite, digestive problems, change in metabolism?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
2. Has the patient lost weight in the past 6 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
3. Has the patient lost weight in the past 12 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
4. Has the patient lost weight in the past 24 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
5. Has the patient lost weight in the past 36 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
6. Has the patient lost weight in the past 48 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
7. Has the patient lost weight in the past 60 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
8. Has the patient lost weight in the past 72 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
9. Has the patient lost weight in the past 84 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
10. Has the patient lost weight in the past 96 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
11. Has the patient lost weight in the past 108 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points
12. Has the patient lost weight in the past 120 months?
  - a. No weight loss: 0 points
  - b. Moderate weight loss: 1 point
  - c. Severe weight loss: 2 points

Final score: 0-30 points

0-10 points: Severe malnutrition  
11-13 points: Moderate malnutrition  
14-17 points: Mild malnutrition  
18-24 points: Normal nutritional status

### MNA Smart Phone App

- Sponsored by Nestlé: No advertisement
- Options
  - New screening
  - Previous screening
  - Follow-up screening
  - Personal settings
  - E-mail feedback
- Name
- Gender
- Date of birth
- Setting: Clinic, home, hospital, nursing home
- Uses MNA screening 6 items

### Simplified Nutritional Assessment

- Validated
- Administered by nonmedical person
- 4 questions with 5 options
  - A = 1
  - B = 2
  - C = 3
  - D = 4
  - E = 5
- Score of ≤ 14: Significant risk of at least 5% weight loss within 6 months

The American Journal of Clinical Nutrition

### Appetite Assessment Tool Predicts Weight Loss

APPENDIX B - Simplified nutritional appetite questionnaire (SNAQ)

Name: \_\_\_\_\_  
Sex: \_\_\_\_\_  
Age: \_\_\_\_\_  
Height: \_\_\_\_\_  
Date: \_\_\_\_\_

**Administration instructions:** Ask the patient to complete the questionnaire by circling the correct answer for each item. The total score is the sum of the scores for each item (A = 1, B = 2, C = 3, D = 4, E = 5). The total score is the sum of the scores for each item (A = 1, B = 2, C = 3, D = 4, E = 5). The total score is the sum of the scores for each item (A = 1, B = 2, C = 3, D = 4, E = 5).

1. My appetite is
  - a. poor
  - b. average
  - c. good
  - d. very good
2. How fat
  - a. I feel like eating only a few mouthfuls
  - b. I feel like eating only a few mouthfuls
  - c. I feel like eating only a few mouthfuls
  - d. I feel like eating only a few mouthfuls
  - e. I feel like eating only a few mouthfuls
3. How often
  - a. I eat
  - b. I eat
  - c. I eat
  - d. I eat
  - e. I eat
4. How often
  - a. I eat
  - b. I eat
  - c. I eat
  - d. I eat
  - e. I eat

### Nutritional Syndromes

- Anorexia of Aging
- Feeding Problems
- Swallowing Problems
- Obesity
- Involuntary Weight Loss



### Audience Polling Question 5

- A 67-year-old comes to the office because he has difficulty for the past week. He describes an uncomfortable sensation of food sticking in his chest. The sensation does not occur when he drinks liquids. History includes HTN, GERD, cirrhosis secondary to Hepatitis C and osteoarthritis. He is HIV positive. Current medications are antiretroviral therapy, proton pump inhibitor and acetaminophen. Attempting to swallow pills produce pain over the mid-sternum.
- On exam, his weight is down 1.4kg (3lbs.).

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### Audience Polling Question 5, Cont.

Which one of the following is the most appropriate initial step in evaluation?

1. Modified barium swallow
2. Barium esophagography
3. Upper endoscopy
4. Esophageal manometry

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### Anorexia of Aging

- Food intake is motivated between internal signals and environmental cues
  - Olfaction: Decrease with aging
  - Taste: Increase in taste threshold
  - Vision
  - Hearing
- Earlier satiety with less antral distension
- Do not forget depression and cognitive impairment

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### Feeding Problems

- Loss of functional ability to eat
- Decayed or missing teeth
- Ill-fitting dentures
- Tooth erosion
- Dry mouth from meds
- Edentulous: Fresh fruits, vegetables and high fiber foods
- Limitations in eating
  - Tremors
  - Arthritis
  - Vision Loss
  - Sedation
  - Memory Loss

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### Swallowing Problems

- 16-22% in adults >50 y/o
- Up to 60% in nursing home residents
- Risk factors
  - Degenerative neurologic disease
  - Neuromuscular impairments
  - Stroke
  - Alzheimer's Disease
  - Parkinson's Disease
  - Amyotrophic Lateral Sclerosis
  - Xerostomia

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### Obesity

- 14% in 1976 to 35% in 2010
- Associated with HTN, DM, CVD, OSA and OA
- Adverse Outcomes
  - Impaired functional status
  - Increased use of healthcare resources
  - Increased mortality
- Prevalence in all age groups, both genders and ethnic groups

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## Treatment of Obesity

- Diet
- Behavior modification
- Exercise
- Focus on more healthful weight
- For frail obese older adults
  - Emphasize preservation of strength and flexibility
  - Maintaining weight

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## Effect of Obesity

- Longitudinal population-based survey 1998-2006
- 10,755 respondents over age 65
- Falls, injuries and increased disability within 2 years
- Three classes of obesity
  - BMI 30.0-34.9
  - BMI 35.0-39.9
  - BMI >40.0
- Obesity associated with increased risk of falling and ADL disability
- Underweight was not associated with the above

Himes C. Effect of Obesity on Falls, Injury, & Disability. *JAGS* 2012 60:124-129

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## Weight Loss, Exercise or Both

- Randomized controlled one-year trial
- 107 adults >65 y/o and obese
- Randomly assigned to control group, diet group, exercise group and diet-exercise group
- Outcome: Modified physical performance
- Results:
  - Control 1% improvement
  - Diet group 12% improvement
  - Exercise group 15% improvement
  - Diet-exercise group 21% improvement

Villareal D. Weight Loss, Exercise, Or Both and Physical Function in Obese Older Adults. *NEJM* March 31, 2011. 364:1218-1229.

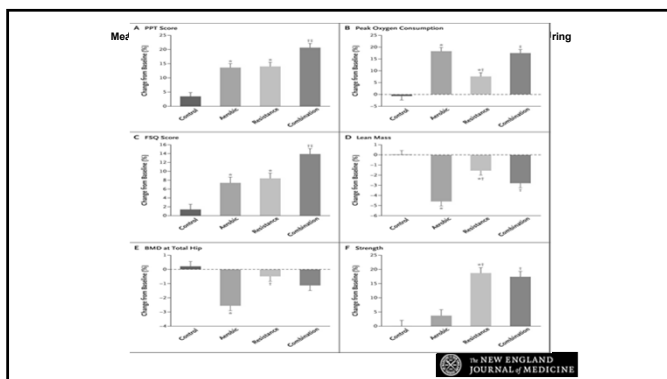
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## Aerobic or Resistance or Both

- 141 adults >65 y/o and obese
- Randomly assigned to aerobic training, resistance training or combined
- Primary Outcome: Physical performance test score
- Change at 6 months
  - Aerobic: 14%
  - Resistance: 14%
  - Combination: 21%
- Weight loss plus combined aerobic and resistance exercise was the most effective in improving functional status of obese older adults

Villareal D. Aerobic or Resistance Exercise, or Both in Dieting Obese Older Adults. *NEJM* May 18, 2017. Vol 376:1943-1955.

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## Involuntary Weight Loss

- Loss of 10lbs or >5% of body weight over 6-12 months
- >10% loss represents protein-energy under nutrition
- >20% loss represents impaired physiologic function
- BMI <17 consisted with under nutrition
- 13% community dwelling
- 25-50% hospitalized
- >50% nursing home
- Detailed testing guided by clinical condition

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## Etiology of Involuntary Weight Loss

- Organ-related 50%
- CHF
- COPD
- CKD
- Inflammatory States
- GI Conditions
- Medications
- Dementia
- Parkinson's
- Neoplasm 20%
- Idiopathic 20%
- Frailty
- Psychosocial 10%
- Depression
- Isolation
- Economic
- Environmental

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## Nutritional Interventions

- Oral Nutrition & Supplements
- Drug Treatment
- Culturally Appropriate
- Legal and Ethical Issues

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## Audience Polling Question 6

- A 77-year-old man comes to the office because he has had increased SOB since awakening this AM. History includes Parkinson's, GERD and oropharyngeal dysphagia. He is on a mechanical soft diet with nectar-thickened liquids. He has had 2 episodes of pneumonia in the past year. Patient is accompanied by his daughter, who ask what can be done to reduce his risk of pneumonia.
- On exam, temp=37.9, BP=130/75, heart rate=100, respiratory rate=24 and oxygen sat is 92% on room air. Diffuse crackles are heard. CXR shows infiltrates in the posterior segments of the upper lobes.

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## Audience Polling Question 6, Cont.

Which one of the following interventions has been shown to significantly reduce risk of pneumonia in this circumstance?

1. Manual oral hygiene, oral chlorhexidine rinses, and feeding in the upright position
2. Switching liquids to a honey-thick consistency
3. Enteral Feeding via gastrostomy or nasogastric tube
4. Laryngeal diversion surgery

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## Audience Polling Question 7

- An 86-year-old woman is brought to the office for a follow-up, accompanied by her daughter and her caregiver. History includes Alzheimer's Disease, stage 4 lung cancer, and recent R lower-extremity deep vein thrombosis. The caregiver states that the patient spends most of the day asleep, often difficult to arouse. Her appetite has decreased notably in the last 6 weeks; at her visit to the oncologist 1 month ago, weight was down by 2.3 kg (5lb). At that visit, the option of hospice was discussed with the patient's daughter. The daughter is not ready for her mother to start hospice care and asks what can be done to improve her caloric intake. On exam, weight has decreased further by 4.6 kg (10 lb)

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## Audience Polling Question 7, Cont.

Which one of the following is the most appropriate initial recommendation for this patient?

1. Oral dronabinol 2.5 mg twice daily
2. Oral megestrol acetate 400 mg/d
3. Placement of gastrostomy tube for enteral feedings
4. Small meals of the patient's favorite foods.

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### Audience Polling Question 8

- An 88-year-old man comes to the clinic because of unintentional weight loss over the last year. He is accompanied by his son, who says that his father is less active socially than in the past. He eats and sleeps well with no depressive symptoms, weakness or dizziness and no change in bowel habits. No surgery or serious illness in past 10 years. No meds. Normal colonoscopy 2 years ago. He lives alone and son manages finances. He is independent and drives to store.
- On exam, weight is 161 lb, 14% lower than 1 year ago. The rest of the exam is normal. Fecal guaiac is negative. MMSE=28 & PHQ=0. CBC, UA, CMP, & CXR are normal.

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### Audience Polling Question 8, Cont.

Which one of the following diagnostic evaluations is now indicated?

1. No further diagnostic testing
2. Computed tomography of chest, abdomen and pelvis
3. Upper and lower endoscopy
4. Low-dose dexamethasone suppression test

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### Preventing Under Nutrition

- Cater to patient's food preference
- Avoid restrictive "therapeutic diets"
- Enhance patient's preparedness for meal
- Enhance comfort, taste, appearance of food
- Enhance social aspect
- Provide adequate time
- Address oral/dental complaints
- Sitting up straight with chin down slightly

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### Dietary Supplements

- Often decrease food intake but overall nutritional intake increased due to nutrient quality and supplement density
- Contain macro- and micronutrients
- Available in liquid and bar forms
- Chose based on patient preferences, chewing ability or product cost
- Use of micronutrient supplements is growing
- Many vitamin and mineral supplements are available
- Poor to insufficient data that for routine supplements
- Most liquid formulas provide 1-1.5 calories/ml
- Obtain information about use of all supplements

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### Micronutrients

- Many are available in supermarkets and drug stores
- Folic Acid, Vitamin B6 and B12 can lower homocysteine
- Insufficient evidence whether protein, Vitamin E, Zinc improves immune function
- B-Carotene, Vitamin A, Vitamin E can increase mortality in some settings
- Vitamin E does not prevent CV disease or Alzheimer's

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### Vitamin D Deficiency

- Occurs in 30% of individuals >70 years old
- Associated impaired calcium absorption and reduced physical activity level
- USPSTF: Insufficient evidence to screen for Vitamin D deficiency in asymptomatic adults
- May be appropriate for older patients at risk
- Current USPSTF Recommendations:
  - Calcium 1000mg and Vitamin D 400 IU
- Vitamin D 800-1000 IU sufficient for 97.5% of adults > 70
- Vitamin D up to 4000 IU/D considered safe in nonfrail older
- National Academy of Medicine RDA
  - Age 1-70: 600 IU
  - Age 71+: 800 IU

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## Drug Treatment

- Mirtazapine: 7.5-30 mgm hs
  - Caution with renal or hepatic insufficiency
- Cyroheptadine: 2-4 mgm with meals
  - Potential for confusion in older adults
- Megestrol: 320-800 mgm/day in 2 divided doses (on Beers)
  - Weight gain is primarily fat
  - DVT
  - Fluid retention
  - Edema
  - CHF
- Dronabinol 2.5 mg BID up to 20 mgm
  - Somnolence and Dysphoria
- Anabolic Steroids: No significant improvement

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## RX Swallowing Problems

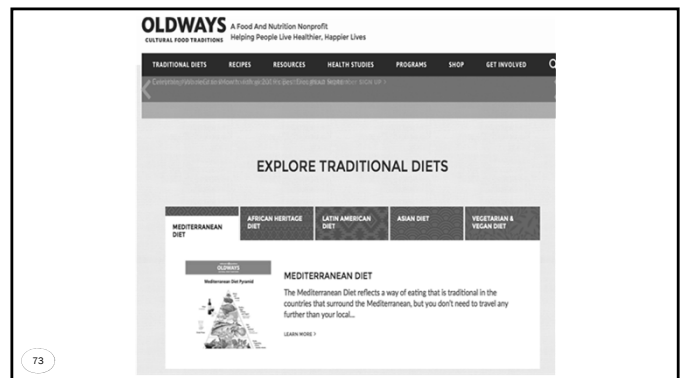
- Foods may be mechanically altered
- Xerostomia: Keep water close by and avoid salty foods
- Well seasoned to accommodate loss of taste and smell
- Positioning: Sitting straight up and chin down
- Food can be thickened to prevent aspiration pneumonia
- Texture from pudding-like to normal-texture solids
- Liquids: Spoon thick, to honey-like, nectar-like, and thin
- Speech path evaluation and registered dietician
- Modified barium swallow

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## Culturally Appropriate

- Minority Older: 21% in 2012 to 28% in 2030
- Ethnic and religious customs influence food preferences
- Some Latinos: Disease as destiny and fear effects of meds
- Hot and cold theory of disease
- MyPlate for older adults: Available in Spanish
- Oldways: Nonprofit for healthy eating [www.oldwayspt.org](http://www.oldwayspt.org)
  - Mediterranean
  - African Heritage
  - Latin American Diet
  - Asian Heritage
  - Vegetarian

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## Legal Issues

- Omnibus Budget Reconciliation Act of 1987
  - Any loss >5% in the past month
  - >10% loss in the past 6 months
- Minimum data set: Intake of <75% food provided triggers nutritional assessment
- Food and fluids offered to all patients
- Decision to start or discontinue artificial nutrition or hydration must be considered very carefully
  - Competent adults have right
- Evidence does not support use of feeding tubes with end-stage cancer, Dementia or COPD

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## SUMMARY

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## Summary

- Beware of weight loss of >5% in past month or >10% in past 6 months
  - Functional limitations
  - Health care charges
  - Need for hospitalization
- In nursing home, minimum data set intake of <75% of food provided triggers nutritional assessment
- Many laboratory parameters

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## Summary

- Screening tools
  - Determine checklist
  - Mini Nutritional Assessment short-form
  - SNAQ
- My Pyramid has evolved into My Plate
- Obesity is a form of malnutrition
- Medication rx can be an option
- Feeding and swallowing problems: Do an oral exam
- Do not forget cultural background of patient
- Remember your legal obligations

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## Resources

- *Geriatric Review Syllabus*, 10<sup>th</sup> Edition, 2019
  - Nutrition and Weight
- [www.hnrca.tufts.edu/myplate](http://www.hnrca.tufts.edu/myplate). Accessed 9-29-2019
- *Ham's Primary Care Geriatrics: A Case Based Approach*, 6<sup>th</sup> Edition 2014. Chapter 28 Malnutrition and Feeding Problems
- [www.mna-elderly.com](http://www.mna-elderly.com) Accessed 9-29-2019
- *GRS Teaching Slides*, 10<sup>th</sup> Edition. Nutrition and Weight.
- [www.oldwayspt.org](http://www.oldwayspt.org). Accessed 9-29-2019

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## Resources

- Kruienza H.M. Development and Validation of a Hospital Screening Tool for Malnutrition: the Short Nutritional Assessment Questionnaire (SNAQ). *Journal of Clinical Nutrition* 7-15-2004.
- Villareal D. Aerobic or Resistance Exercise, or Both in Dieting Obese Older Adults. *NEJM* 376:1943-1955.
- Wilson M. Appetite Assessment: Simple Appetite Questionnaire Predicts Weight Loss in Community-Dwelling Adults and Nursing Home Residents. *Am J Clin Nutr* 2005;82:1074-81

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